PENNSYLVANIA SCALE COMPANY

7800 Touchscreen Count Weigh Scale and Indicator Technical Manual

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Manual 7800TM2022REV1

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Unpacking and Startup

Unpack the Scale

- DO NOT LIFT SCALE BY THE TOP SPIDER OR SUB PLATFORM!
- Remove the molded foam top from the carton. On 2 lb. and 5 lb. capacity scales the platform is packaged on top of this foam. Gently lift and remove the stainless-steel platform cover only.
- Remove any options which may be packed with the scale.
- Carefully remove scale from the packaging by grasping both sides of the base.

Scale Setup

- Place the scale on a stable, level surface for operation.
- Adjust the corner leveling feet until the level bubble indicates the unit is level.
- Firmly tighten hex jam nuts on the leveling feet. (Any time the scale is relocated, it should be leveled.)
- Remove the protective plastic wrap from the platform and place the platform on the spider.
- Plug the scale into 110/120 VAC

SPECIFICATIONS

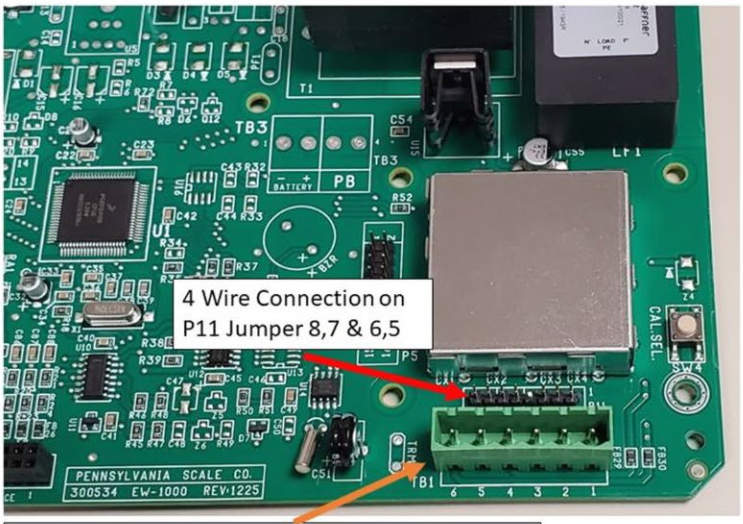
- **LOAD CELL A/D CONVERTER**
- **TYPE:** 24-bit delta sigma (1:16,777,216)
- **EXCITATION**: 5 VDC, 120 mA max.
- **SIGNAL INPUT**: 16 mv
- **SENSITIVITY**: 0.1 Uv/grad
- **UPDATE RATE**: 30 update/second
- **DISPLAY:** TOUCH SCREEN, high-impact glass, 800x320-dot resolution and 4.6" full-color LCD display with resistive touch panel
- **KEYPAD:** Full Alphanumeric plus controls
- **POWER INPUT**: 117/217 VAC, 50-60 HZ, 20 watts, fuse 0.50 A Slo-Blow.
- **SERIAL PORTS:** 2 Bi-directional RS232C
- **ENCLOSURE**: Cast Aluminum Chassis and Load Cell Spider, Stainless Steel Platter.
- **OPTIONS:**

- Second base input
- Battery AC operation, built-in re-chargeable system, 30+ hours of operation
- Printers for label, barcode label or receipt printing
- Barcode scanner
- Upgraded Internal Product DB,
- 1500 and 3000 entries
- 1 alarm buzzer mounted inside scale or indicator
- Ball-top transfer plate
- Roller conveyor
- Setpoint/relays DC or AC
- Alarm stack lights and buzzer
- Communications Wired
- Ethernet, WiFi, USB Virtual
- Com Port, USB HID/Keyboard Emulation and Bluetooth®
- Analog output, 4-20ma or 0-10vdc
- Custom label design and setup
- Custom engineering for unique applications

Connections:

INTERNAL LOAD CELL AND REMOTE BASE CONNECTIONS

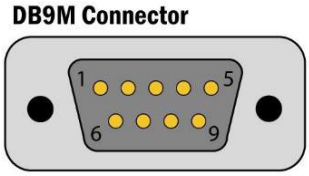
Quick Disconnect CPC Connector

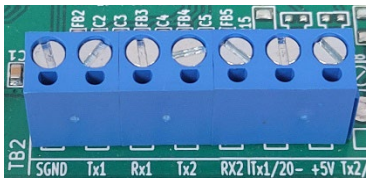


Internal Load Cell Connection
6 – EX+, 5 – Sen+, 4 – Ex-, 3 – Sen-, 2 Sig-, 1 – Sig+

RS-232 PIN ASSIGNMENTS AND IMPLEMENTED FUNCTIONS

Connection to the Serial Port is made via a DB-9 female connector found in the access area under the scale. Internal Instrument connection is on the main Board, TB2 1 through 7



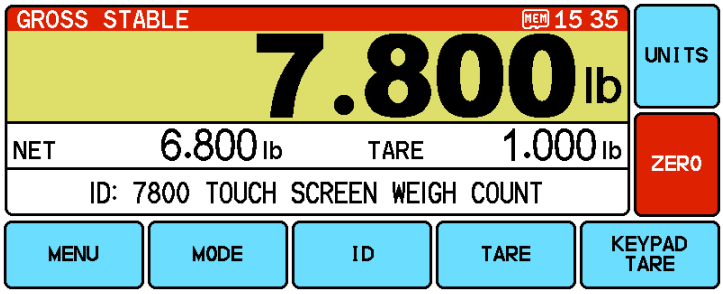


7800 Scale				7800 Indicator			
Com 1	**PIN#**	**Com 2**	**PIN#**	**Com 1**	**PIN#**	**Com 2**	**PIN#**
TXD Transmit	2	TXD Transmit	2	Ground	1	Ground	1
RXD Receive	3	RXD Receive	3	TXD Transmit	2	TXD Transmit	4
Ground	5	Ground	5	RXD Receive	3	RXD Receive	5
+5VDC	6 & 8	+5VDC	6 & 8	+5VDC	7	+5VDC	7

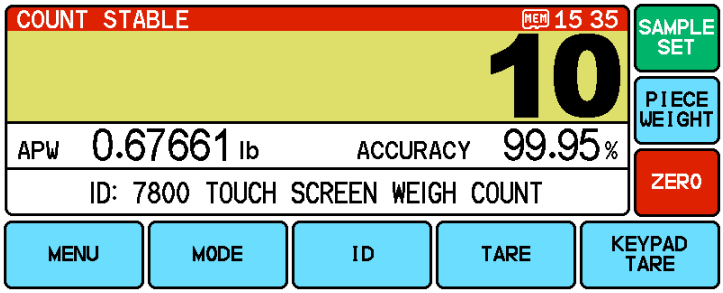
Operation Guide

The 7800 Touchscreen count/weigh scale and indicator uses a windows type operating system allowing the user to select the operational mode which only has the scale data and function buttons required for that operation. Use from any of the main operating displays use the MODE button to cycle through the available modes windows that are enabled. These include Weighing, Counting, Checkweighing and Setpoint Relay mode windows.

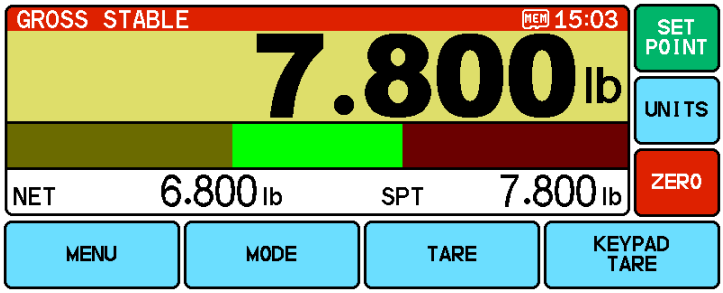
WEIGHING MODE



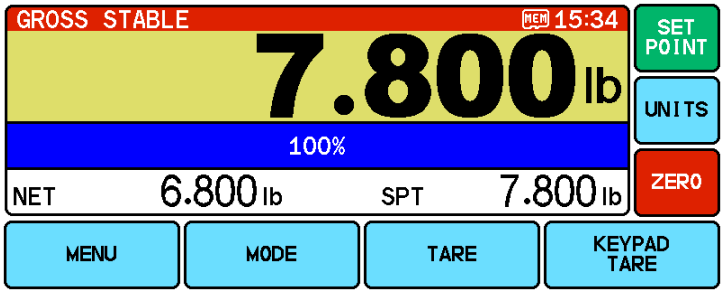
COUNTING MODE



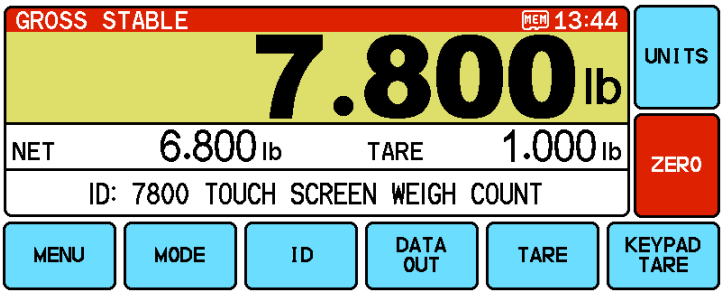
CHECKWEIGHING MODE



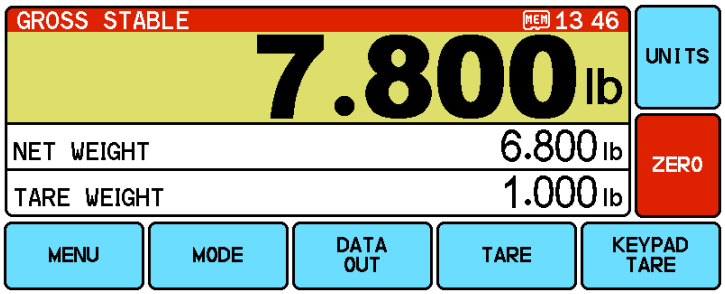
SETPOINT RELAY MODE



Weighing Mode, ID Function Enabled

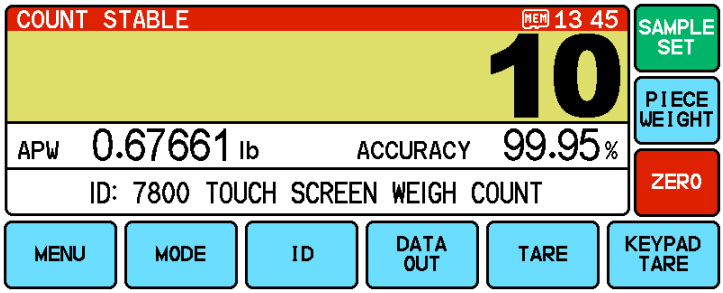


Weighing Mode, ID Function Disabled

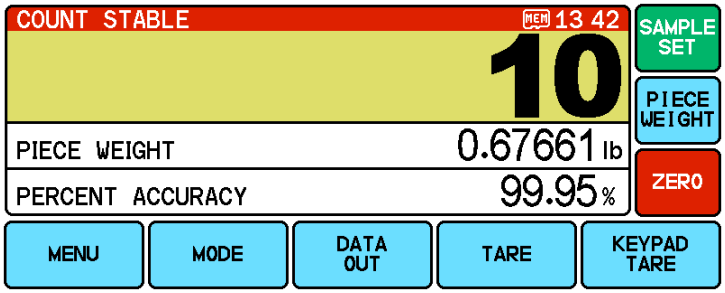


Scale Data Displayed	Function Buttons Available	Operation Performed
Primary Display Field GROSS WEIGHT Or GROSS/NET Configurable in Metrological Settings, parameter 101 Main Weight Display	MENU	Access calibration and configuration menus
Second Display Field NET WEIGHT And TARE WEIGHT Configurable in Metrological Settings, parameter 101 Main Weight Display	MODE	Cycles through available operational modes
Third Display Field TARE WEIGHT Or ACTIVE ID When ID, Description or Custom Defined Data Fields are enabled in ID Database Active ID is displayed	ID When ID, Description or Custom Defined Data Fields are enabled in ID Database	Enter an ID number, enter a new ID number in database, recall an ID number from database.
	DATA OUT	Sends formatted data output string to one or both comports
	GROSS NET Configurable in Metrological Settings, parameter 101 Main Weight Display	Cycles main display field between Gross and Net weight
	TARE	Performs a platform tare
	KEYPAD TARE Configurable in Metrological Settings, parameter 100 Keypad Tare Enable	Enter a known tare value
	ZERO	Zeros the scale
	UNITS	Cycles through primary and secondary units

Counting Mode, ID Function Enabled

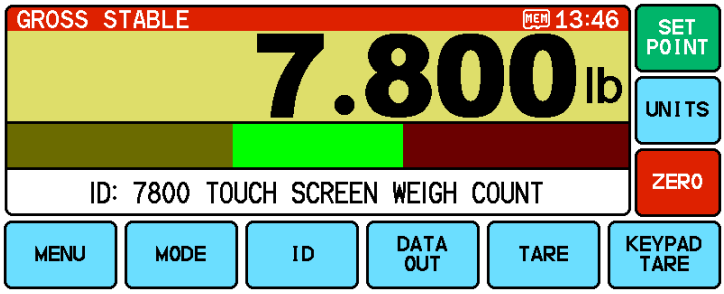


Counting Mode, ID Function Disabled

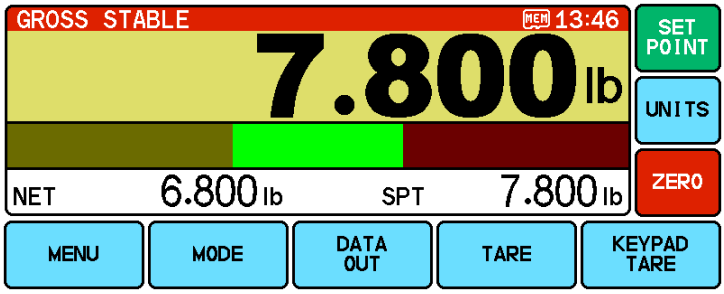


Scale Data Displayed	Function Buttons Available	Operation Performed
Primary Display Field COUNT	MENU	Access calibration and configuration menus
APW (Average piece Weight) ACCURACY/ERROR % Configured in Counting Modes Menu Parameter 56 Percent Mode and when ID function enabled	MODE	Cycles through available function modes
Third Display Field ACTIVE ID When ID, Description or Custom Defined Data Fields are enabled in ID Database Active ID is displayed OR Percent ACCURACY/ERROR Configured in Counting Modes Menu Parameter 56 Percent Mode and when ID function enabled	ID When ID, Description or Custom Defined Data Fields are enabled in ID Database	Enter an ID number, enter a new ID number in database, recall an ID number from database.
	DATA OUT	Sends formatted data output string to one or both comports
	TARE	Performs a platform tare
	KEYPAD TARE Configurable in Metrological Settings, parameter 100 Keypad Tare Enable	Enter a known tare value
	ZERO	Zeros the scale
	PIECE WEIGHT	Opens numeric keypad window for entry of known piece weights
	SAMPLE SET	Opens sample set window for establishing a piece weight through sampling process

Checkweigh Mode, ID Function Enabled

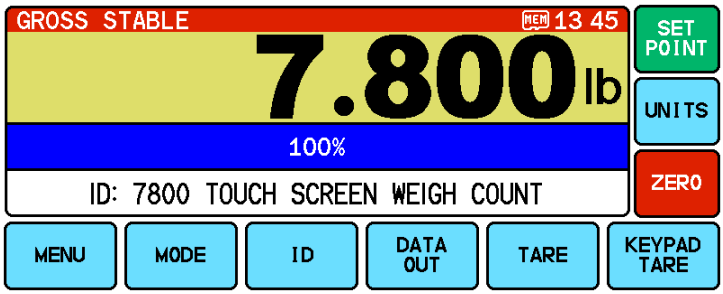


Checkweigh Mode, ID Function Disabled

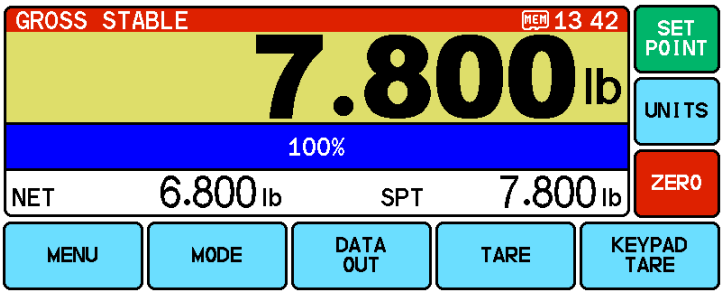


Scale Data Displayed	Function Buttons Available	Operation Performed
Primary Display Field GROSS WEIGHT Or GROSS/NET Configurable in Metrological Settings, parameter 101 Main Weight Display	MENU	Access calibration and configuration menus
UNDER/ACCEPT/OVER Checkweigh Bar graph Checkweigh by weight or count Configurable in Setpoint Configuration Parameter 8 Set Point Enable	MODE	Cycles through available function modes
Third Display Field ACTIVE ID When ID, Description or Custom Defined Data Fields are enabled in ID Database Active ID is displayed OR TARGET WEIGHT/COUNT Checkweigh by weight or count Configurable in Setpoint Configuration Parameter 8 Set Point Enable	ID When ID, Description or Custom Defined Data Fields are enabled in ID Database	Enter an ID number, enter a new ID number in database, recall an ID number from database.
	DATA OUT	Sends formatted data output string to one or both comports
	TARE	Performs a platform tare
	KEYPAD TARE Configurable in Metrological Settings, parameter 100 Keypad Tare Enable	Enter a known tare value
	ZERO	Zeros the scale
	UNITS	Change Unit of Measure
	SETPOINT	Opens Setpoint Target entry window for establishing a Target and Tolerance Values

Set Point/Relay Mode, ID Function Enabled

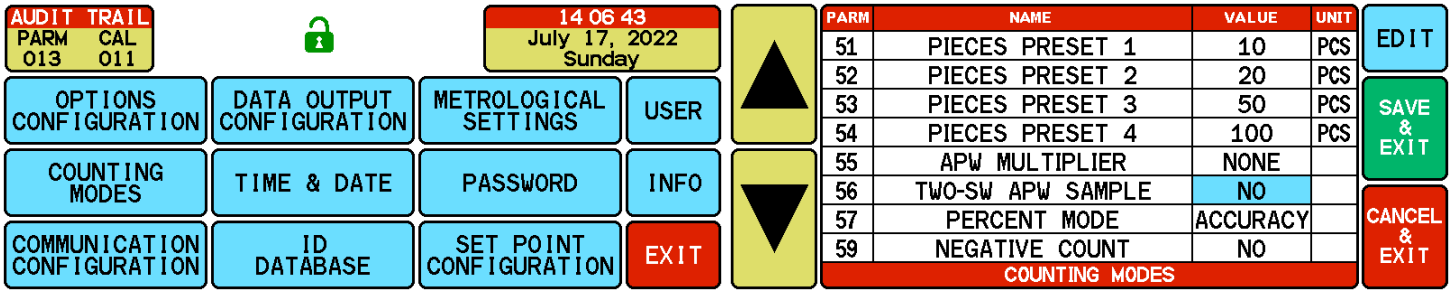


Set Point/Relay Mode, ID Function Disabled



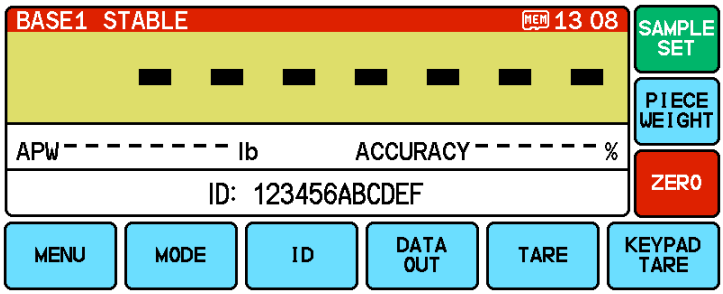
To Count an item using SAMPLE SET and ID DATABASE off

1 Step Counting In Counting Modes Set PARM 56 Two-SW APW SAMPLE To NO

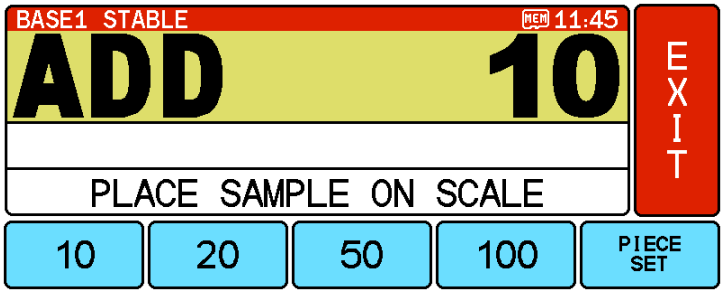


If using a container to count parts into place this empty container on the scale

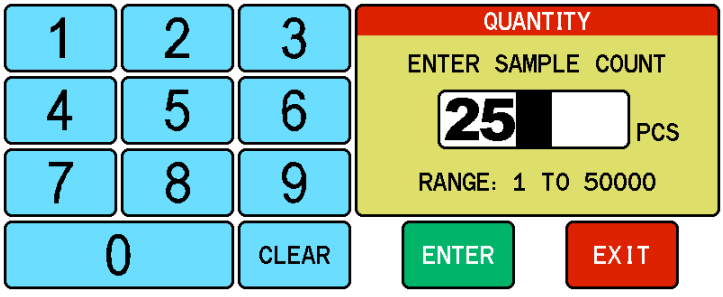
Use the MODE button to cycle through the counting mode window



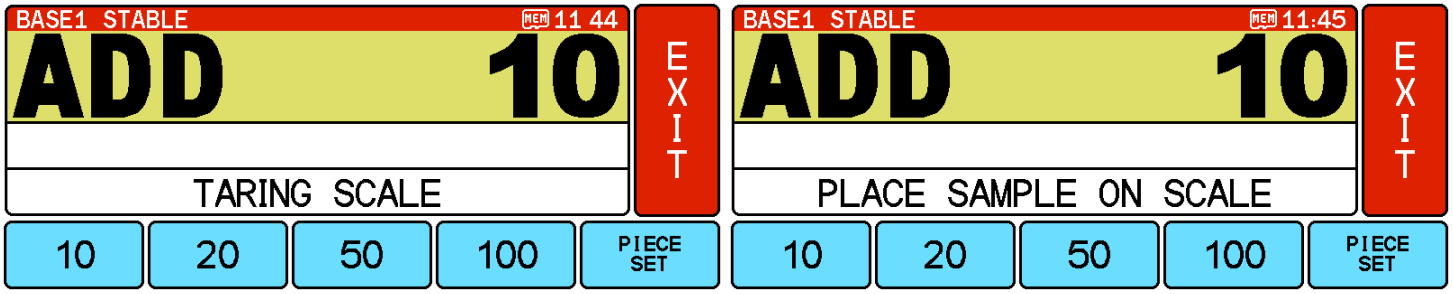
Select the SAMPLE SET button to enter piece weight calculation Window.



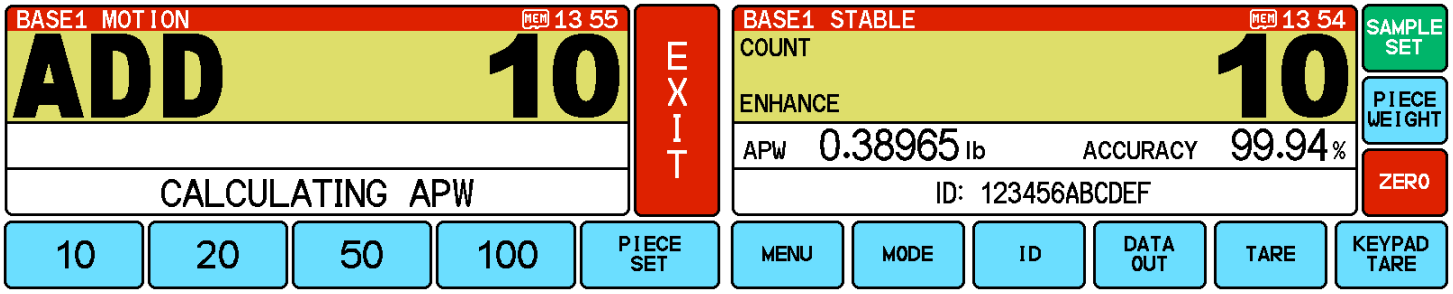
Select from the 4 preset sample size buttons or PIECE SET. If PIECE Set is selected a sample quantity window appears to enter a unique sample quantity.



Wait for the system to tare platform then prompt to add sample



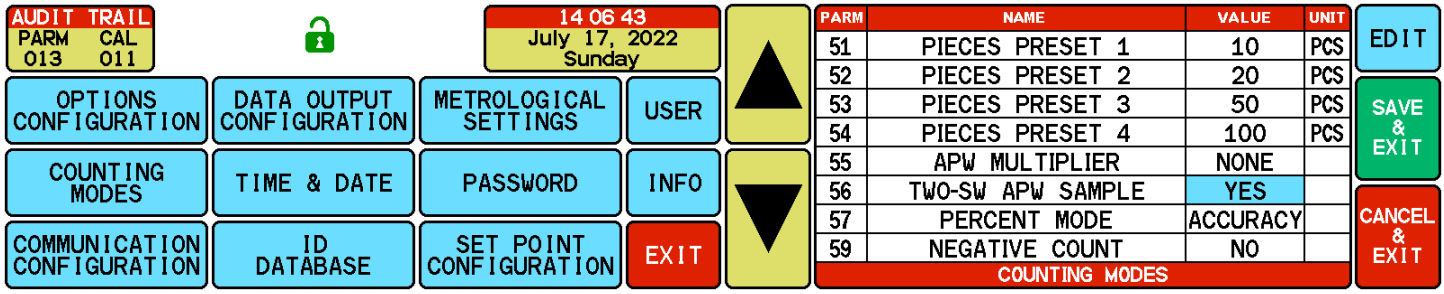
Place the entire sample quantity ALL AT ONCE on the scale piece weight is calculated and Counting Mode Window opens.



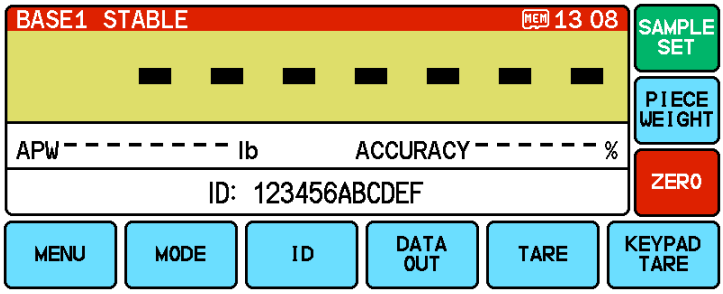
Place any additional items to be counted on the scale platform. Repeat above steps for different items to be counted.

2 Step Counting

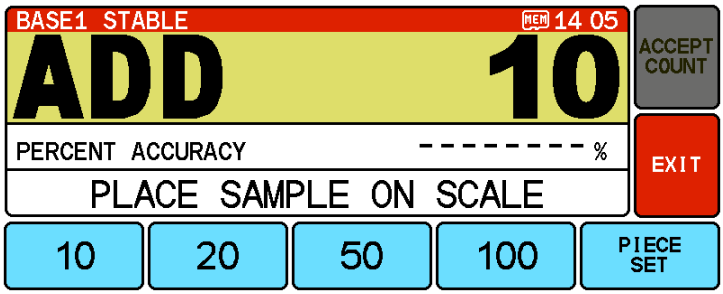
2 Step Counting In Counting Modes Set PARM 56 Two-SW APW SAMPLE To YES



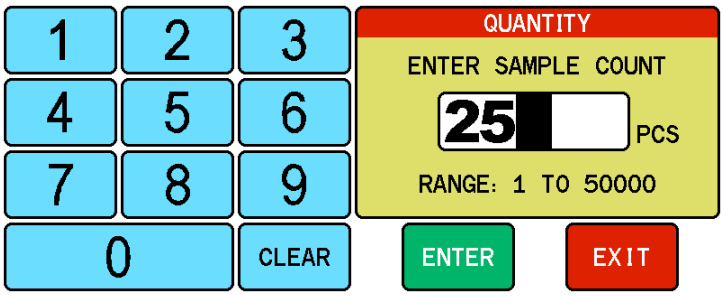
If using a container to count parts into place this empty container on the scale
Use the MODE button to cycle through the counting mode window



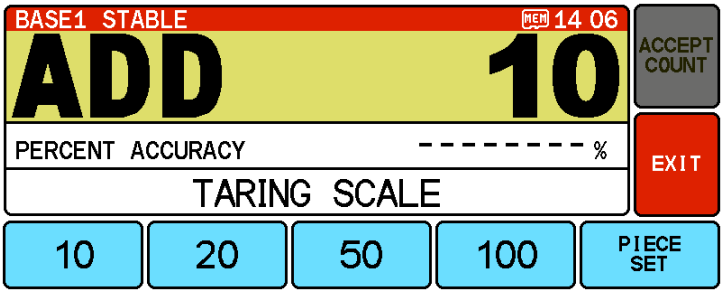
Select the SAMPLE SET button to enter piece weight calculation Window.

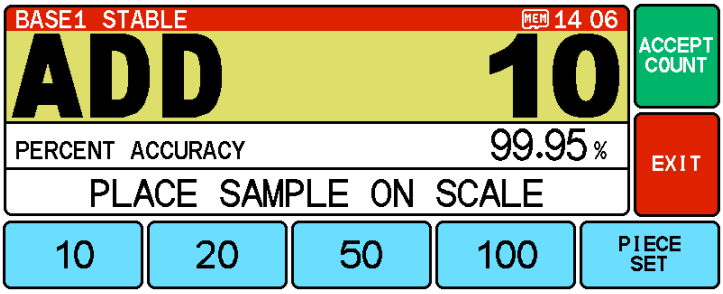


Select from the 4 preset sample size buttons or PIECE SET. If PIECE Set is selected a sample quantity window appears to enter a unique sample quantity.

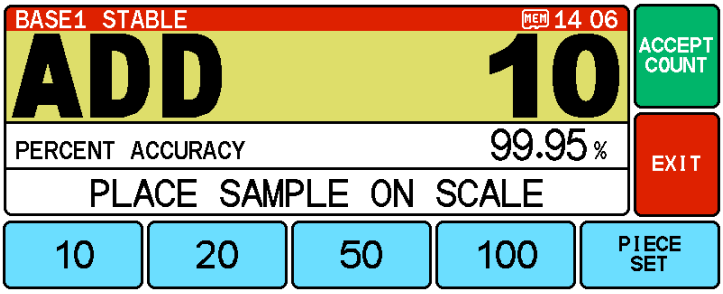


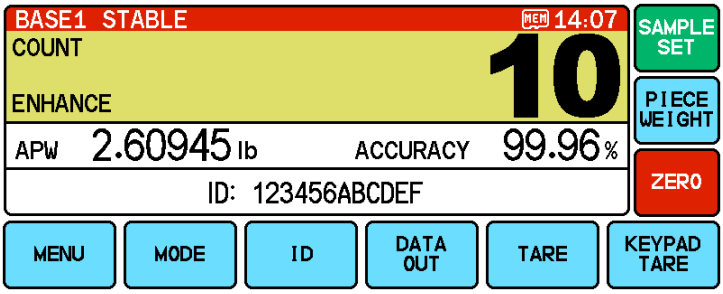
Wait for the system to tare platform then prompt to add sample





Place the entire sample quantity on the scale. When complete select the ACCEPT COUNT button. Piece weight is calculated and Counting Mode Window opens.



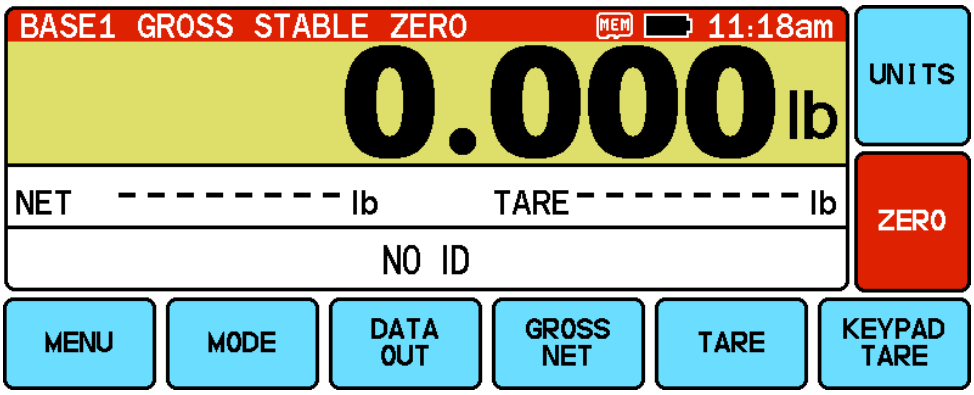


Place any additional items to be counted on the scale platform. Repeat above steps for different items to be counted.

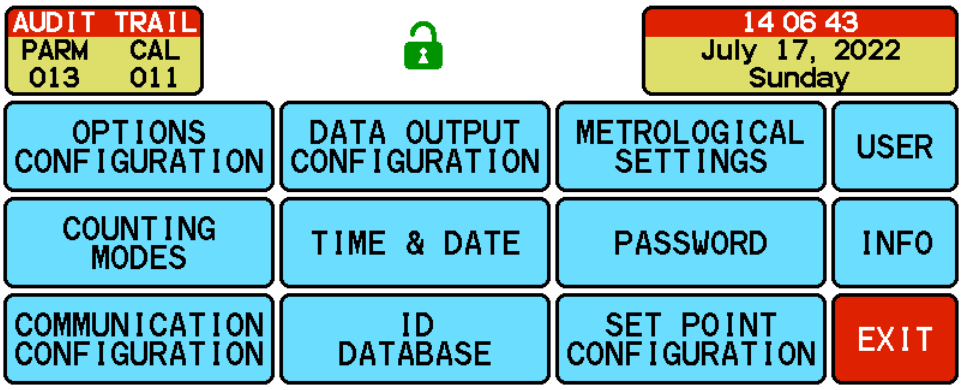
Configuration of Weighing Settings

From any of the main operating screens:

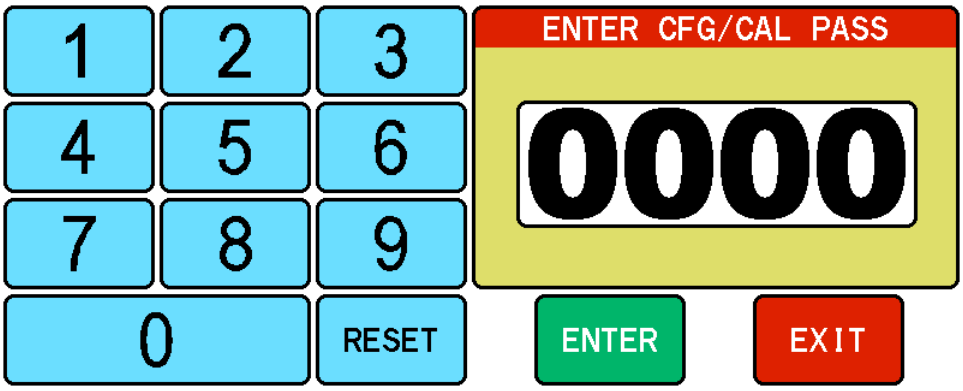
Select the MENU button



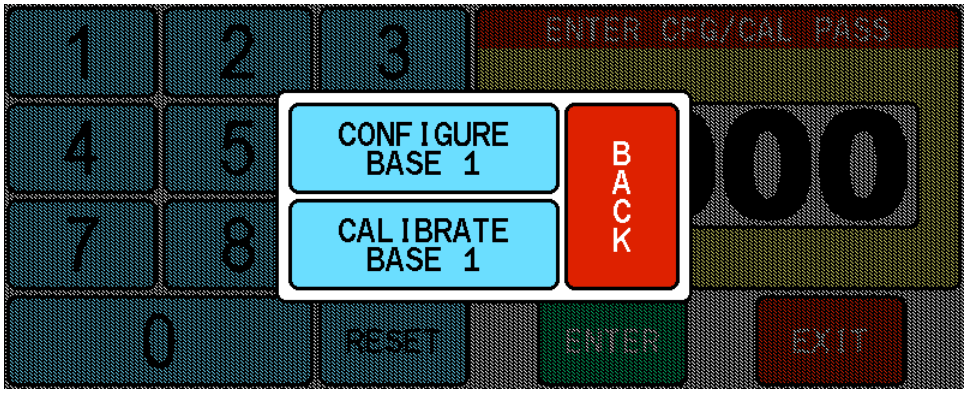
In the main menu select the METROLOGICAL SETTINGS button



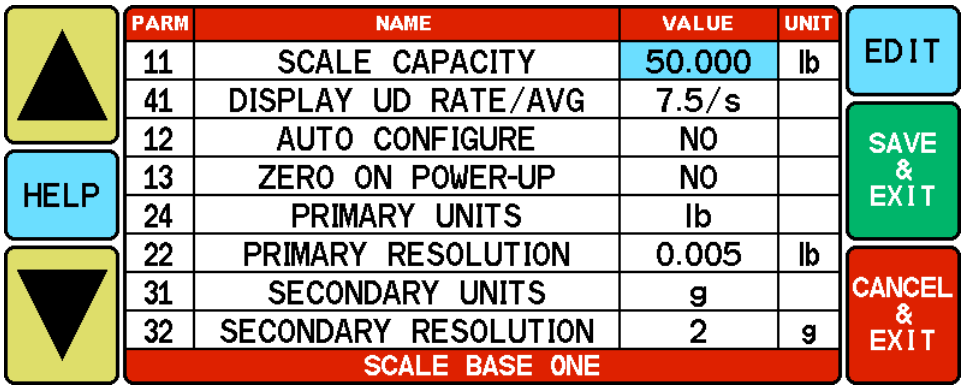
Enter Password if prompted. Default password is 0000



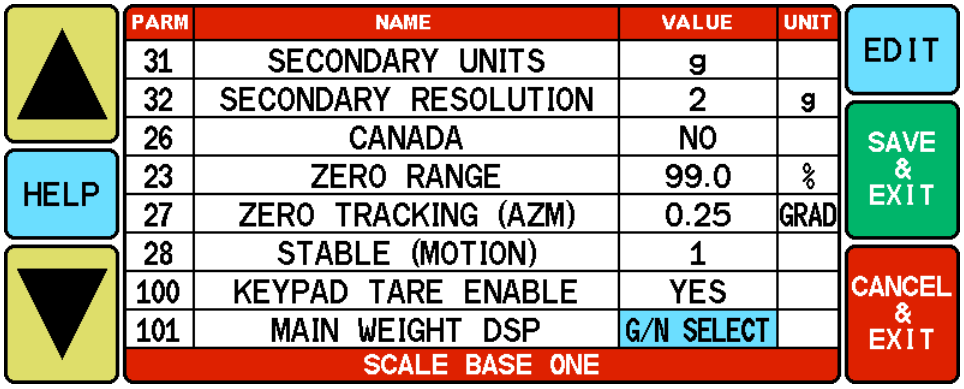
To configure or check the weight configuration of the system select CONFIGURE BASE 1 (Or BASE 2 if option installed)



This will open the weigh configuration menu. Visible on page 1



Use the DOWN arrow keys to scroll down for the settings visible on page 2:



To enter and/or change a setting use the UP/DOWN arrow keys to scroll up or down to setting and select the Blue EDIT button.

Selecting the Green SAVE & EXIT button will save and exit, Red CANCEL & EXIT will exit without saving Settings Menu:

Configuration of Weighing Settings Menu

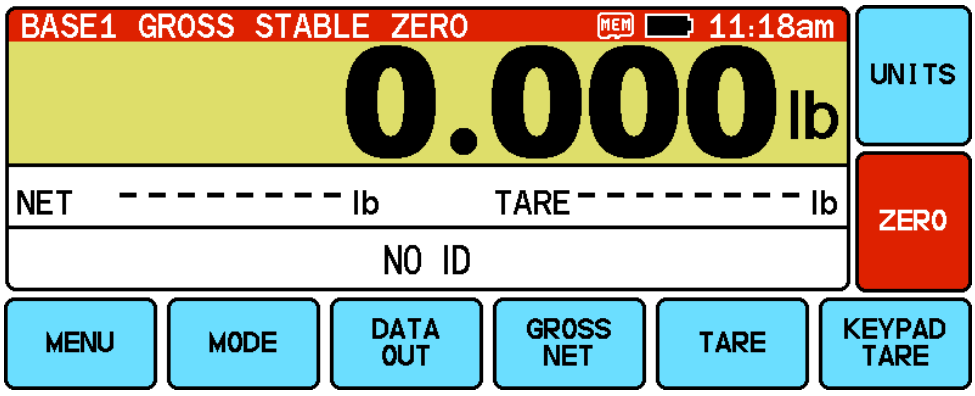
PARAMETER (PARM)	NAME	VALUE/SELECTIONS	UNIT
11	SCALE CAPACITY	• Sets the scale capacity. • Select EDIT and enter Scale Capacity in Primary Units, 1 – 999,999	
41	DISPLAY UD RATE/AVG	• Digital filtering setting the values represent number of updates per second. The lower the value the higher the filtering, higher the value the lower the filtering. • Available selections updates per second: 1.0, 1.5, 2.0, 2.5, 3.0, 30, 15, 10, 7.5, 6.0, 5.0, 4.0 & 3.0 • Select the EDIT button to cycle through available selections.	
12	AUTO CONFIGURE	• Configures all metrological setting to factory default • Available selections YES, NO • Select the EDIT button to cycle through available selections.	
13	ZERO ON POWER-UP	• Automatically Zeros Scale on Startup • Available selections YES, NO • Select the EDIT button to cycle through available selections.	
24	PRIMARY UNITS	• Primary unit of measure • Available selections: lb., kg, g, ozt, lbt, grn, dwt, oz, crt, ozf, ml, l, tons, and lb/oz • Select the EDIT button to cycle through available selections.	Primary UOM
25	PRIMARY RESOLUTION	• Sets the displayed weight graduation for primary units Select EDIT and enter primary resolution 0.00001 to 500	Primary UOM
31	SECONDARY UNITS	• Secondary unit of measure • Available selections: lb., kg, g, ozt, lbt, grn, dwt, oz, crt, ozf, ml, l, tons, and lb/oz • Select the EDIT button to cycle through available selections.	Secondary UOM
32	SECONDARY RESOLUTION	• Sets the displayed weight graduation for secondary units • Select EDIT and enter primary resolution 0.00001 to 500	Secondary UOM

PARAMETER (PARM)	NAME	VALUE/SELECTIONS	UNIT
23	ZERO RANGE	• The amount of weight as a % of capacity that the scale can zero. • Select EDIT and enter the % from 1% to 99%	
27	ZERO TRACKING (AZM)	• Zero tracking value entered as a percent of display resolution. Entering a 0.25* equals 25% of one display • graduation. “0” disables the zero-tracking feature. • Select EDIT and enter the % from 0% to 5%	
28	STABLE (MOTION)	• Stable/Motion configuration in grads/sec. Change is displayed weigh in graduations GREATER than this value will cause the scale to be in motion. • Available selections: OFF, 1, 3, 5 & 10 • Select the EDIT button to cycle through available selections.	
100	KEYPAD TARE ENABLE	• Enables or disables keypad entry of tare values • Available selections YES, NO • Select the EDIT button to cycle through available selections	
101	MAIN WEIGHT DISPLAY	• Selects the weigh value to display in primary window • Available Selections: Gross Only, Net Only, G/N Select • Select the EDIT button to cycle through available selections.	

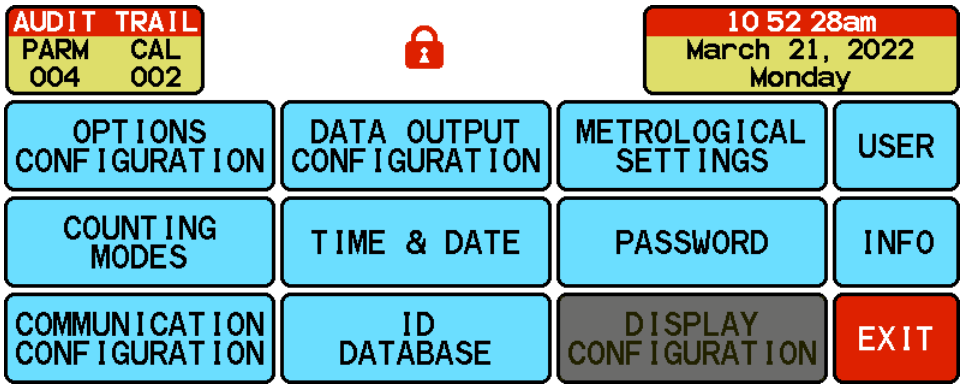
Calibration Procedure

From any of the main operating screens:

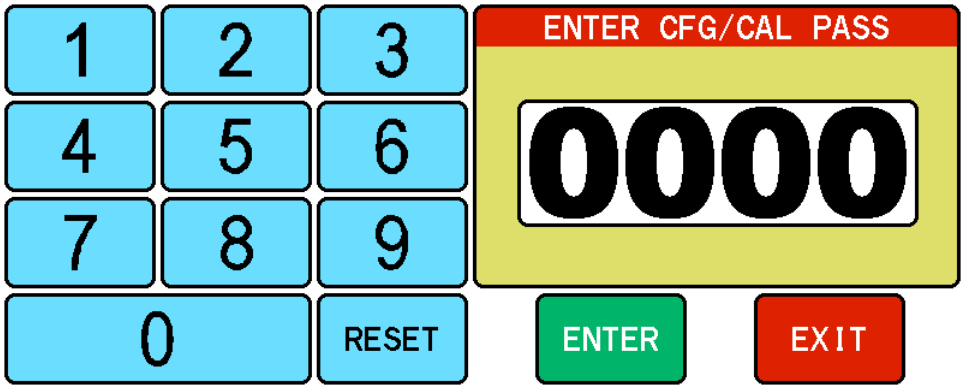
Select the MENU button



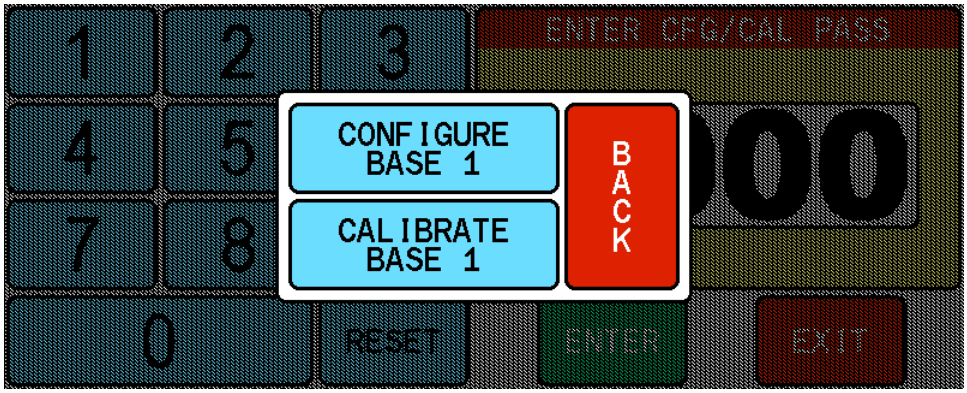
In the main menu select the METROLIGICAL SETTINGS button



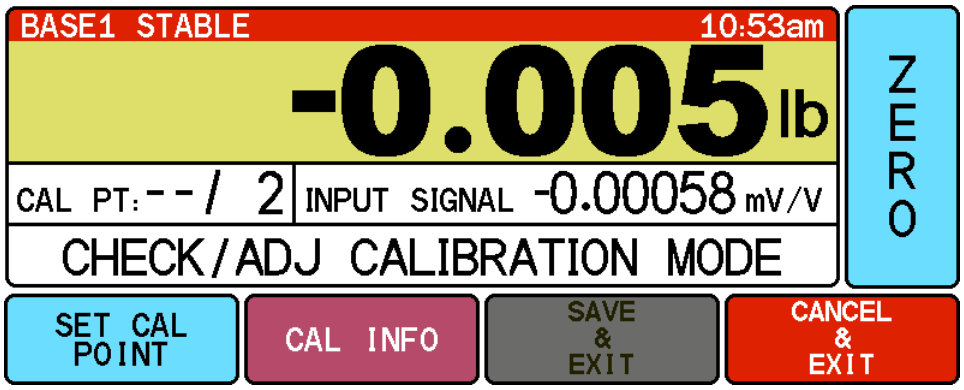
Enter Password if prompted. Default password in 0000



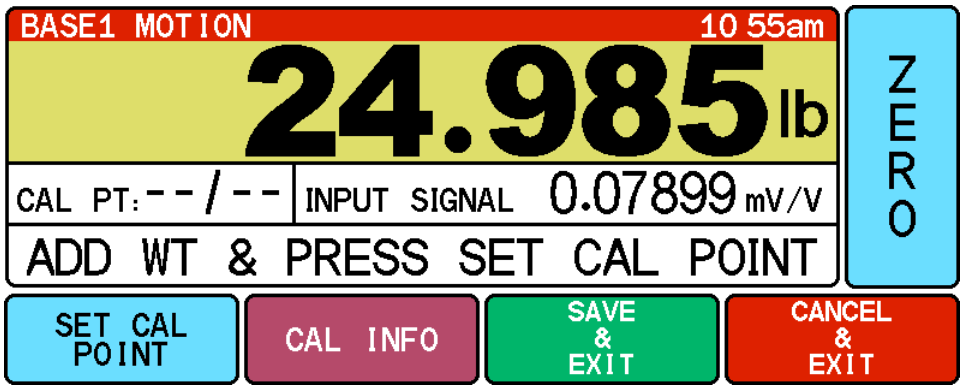
To calibrate the system select CALIBRATE BASE 1 (Or BASE 2 if option installed)



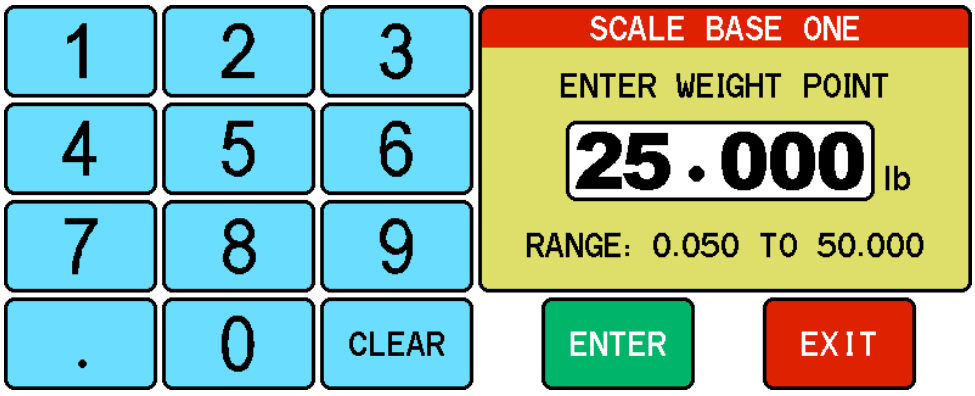
Zero Calibration, with no weight or items on the weighbridge select the ZERO button



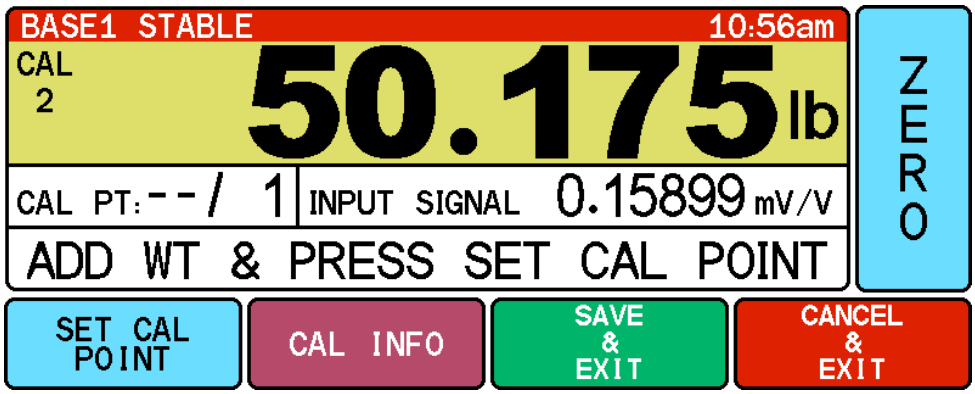
Place a known calibration weight on the scale to perform span calibration point 1. In this example a 25 lb. weight is used.



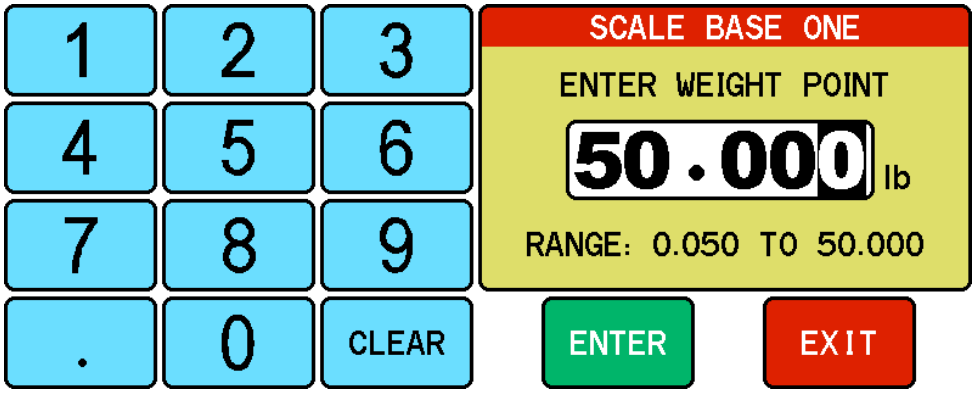
Select the SET CAL POINT and key in the calibration weigh value (25 lb. in this example)



Place a known calibration weight on the scale to perform span calibration point 2. In this example a 50 lb. weight is used.

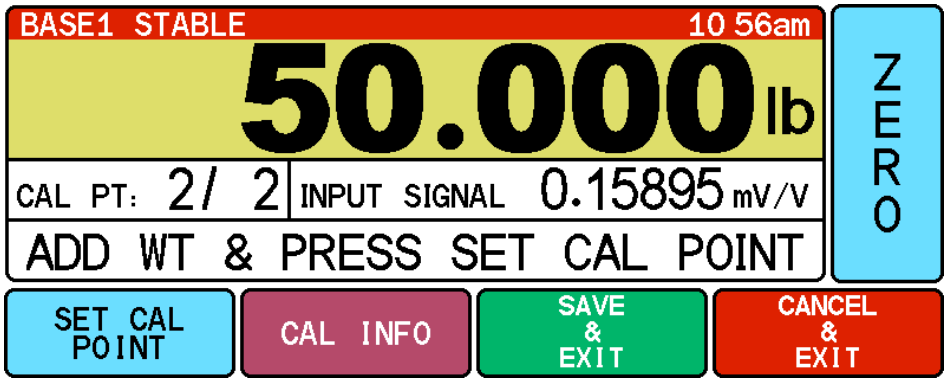


Select the SET CAL POINT and key in the calibration weigh value (50 lb. in this example)



Repeat as needed for up to 10 span calibration points.

At any point in the calibration process all calibration points can be viewed with mV/V and weights used by selecting CAL INFO



POINT	mV/V	lb
DEAD-ZERO	-0.00058	0.000
1	0.07782	25.000
2	0.15866	50.000
3	—	—
4	—	—
5	—	—
6	—	—
7	—	—
8	—	—
9	—	—
10	—	—

SCALE BASE1 CAL POINTS LIST

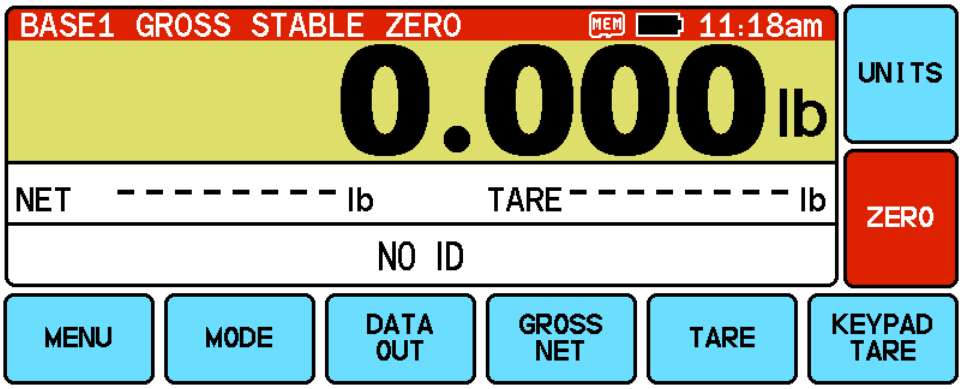
EXIT

When Calibration is complete select SAVE & EXIT to save and return to main menu. To exit without saving select CANCEL & EXIT

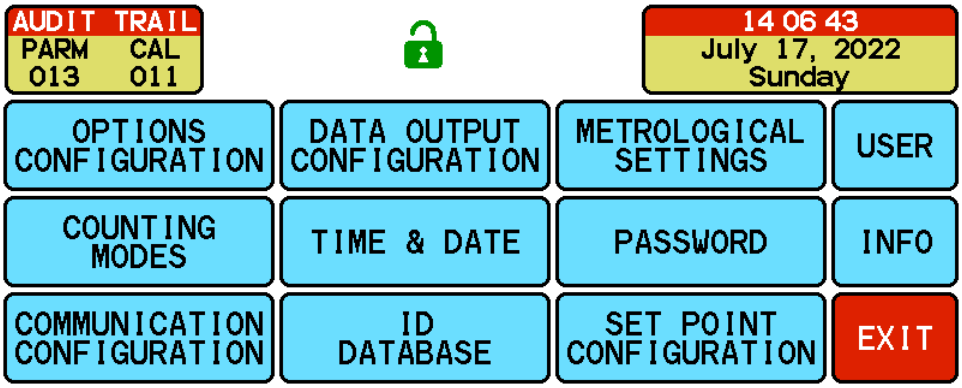
Configuration of Counting Modes

From any of the main operating screens:

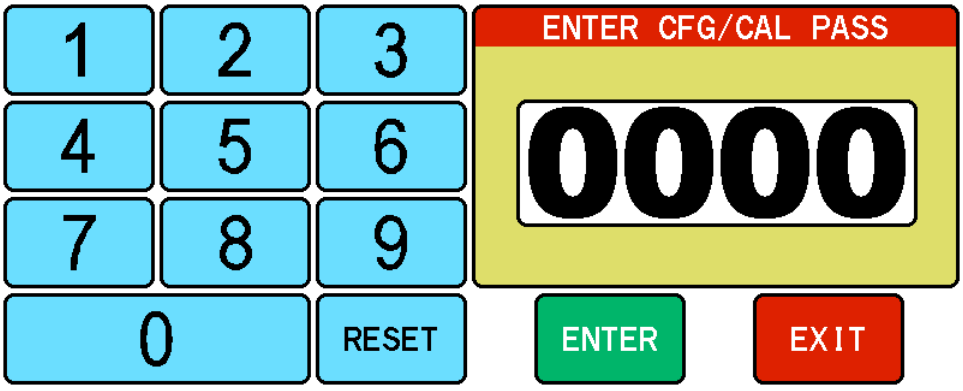
Select the MENU button



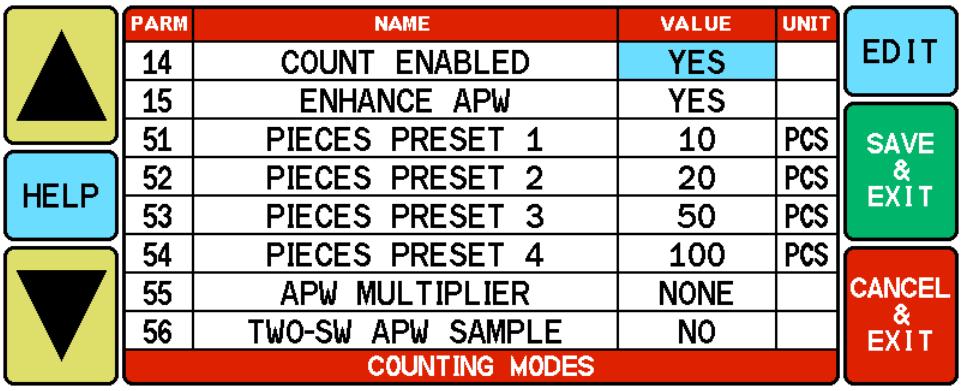
In the main menu select the COUNTING MODES



Enter Password if prompted. Default password in 0000

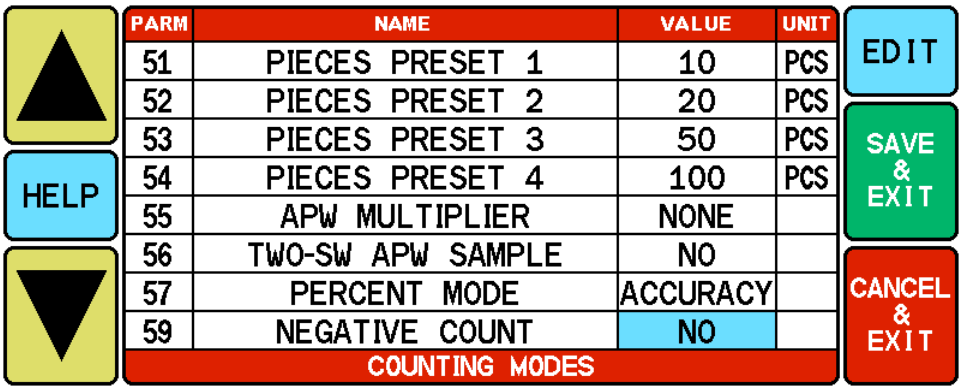


This will open the counting modes configuration menu. Visible on page 1



Use the DOWN arrow keys to scroll down for the settings visible on page 2

:



To enter and/or change a setting use the UP/DOWN arrow keys to scroll up or down to setting and select the Blue EDIT button.

Selecting the Green SAVE & EXIT button will save and exit, Red CANCEL & EXIT will exit without saving

Settings

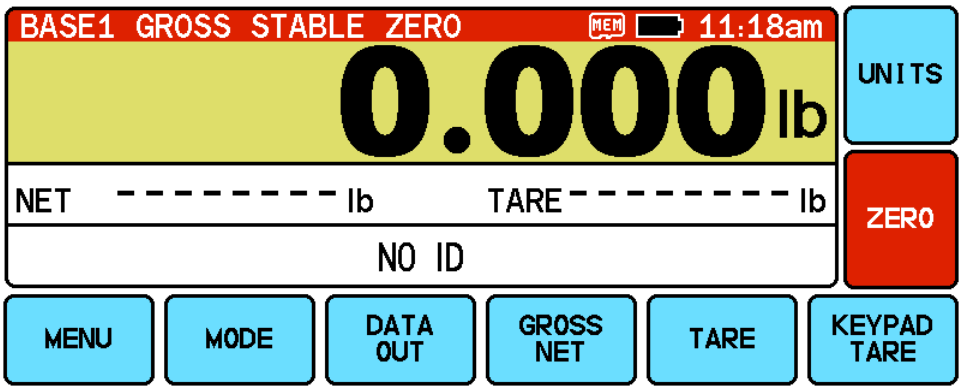
Counting Modes Configuration Menu:

PARAMETER (PARM)	NAME	VALUE/SELECTIONS	UNIT
14	COUNT ENABLED	• Turn the Counting function ON or OFF. • Select the EDIT button to cycle through available selections.	
15	ENHANCE APW	• Turns ON or OFF the Auto Sample Update function • Select the EDIT button to cycle through available selections.	
51 – 54	PIECES PRESET 1-4	• Edit preset sample sizes • Select EDIT and enter Scale Capacity in Primary Units, 1 – 999,999	PCS
55	APW Multiplier	• Turn ON or Off and select piece weight Multiplier • Select EDIT and scroll through NONE X100 or X1000	
56	TWO-SW APW SAMPLE	• ENABLE or DISABLE two step counting. When NO one step counting is enable • Select EDIT and scroll through NO or YES	
57	PERCENT MODE	• Enable % of accuracy, % of error or disable display of sample accuracy or error • Select EDIT and scroll through OFF, ERROR or ACCURACY	
59	NEGATIVE COUNT	• ENABLE or DISABLE Negative Counting • Select EDIT and scroll through YES or NO	

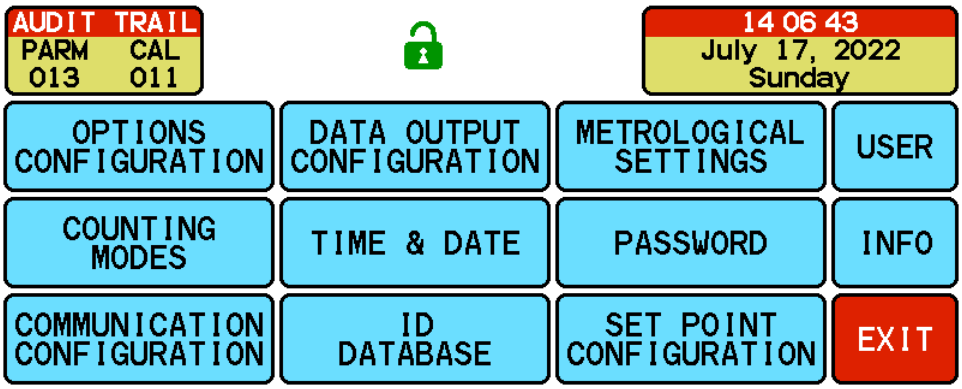
Configuration of ID Database

From any of the main operating screens:

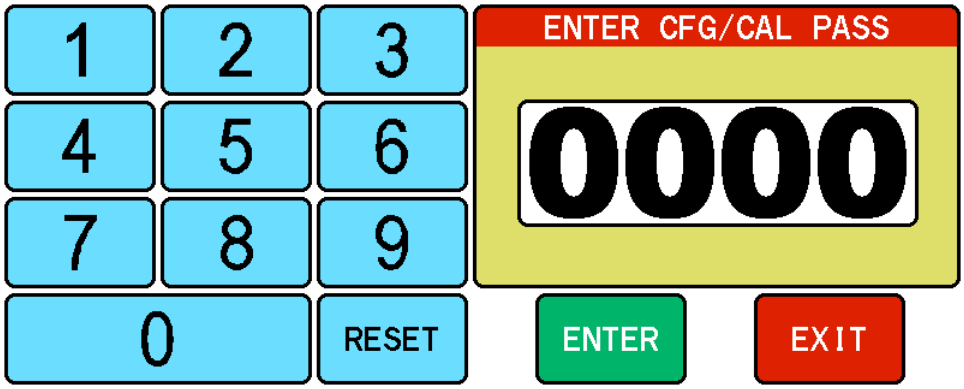
Select the MENU button



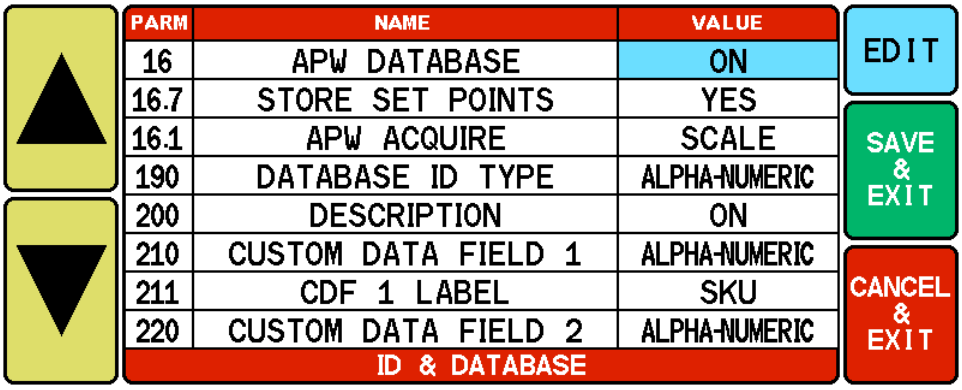
In the main menu select the DATA OUTPUT CONFIGURATION



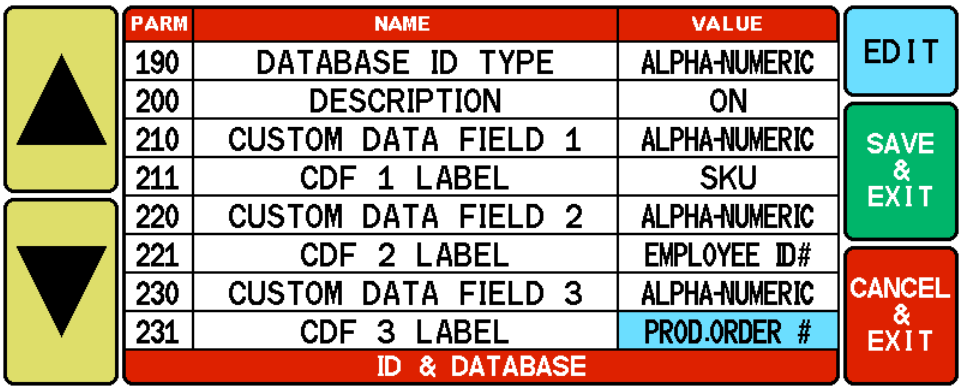
Enter Password if prompted. Default password in 0000



This will open the weigh configuration menu. Visible on page 1



Use the DOWN arrow keys to scroll down for the settings visible on page 2:



To enter and/or change a setting use the UP/DOWN arrow keys to scroll up or down to setting and select the Blue EDIT button.

Configuration of ID Database Menu

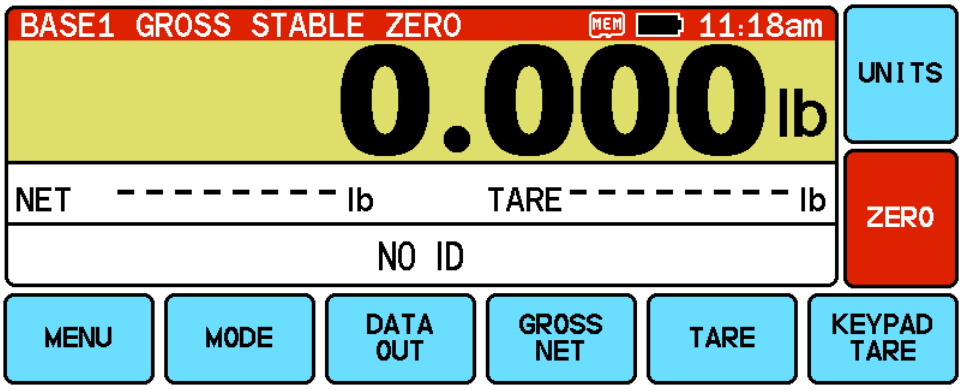
PARAMETER (PARM)	NAME	VALUE/SELECTIONS
216	APW DATABASE	• Enable or disable the PIECE WEIGHT storage in the DB • Selections are OFF or ON • Select the EDIT button to cycle through available selections.
16.7	STOE SET POITS	• Enable or Disable the SET POINT (CHECKWEIGH) values storage in DB • Selections are OFF or ON • Select the EDIT button to cycle through available selections.

16.1	APW AQUIRE	• When APW DATABASE is ON this determines how new piece weights are entered into the DB by sampling on scale or manually entering the APW • Selections are SCALE or MANUAL • Select the EDIT button to cycle through available selections.
190	ID DATABASE TYPE	• Sets up ALPHA-NUMERIC or NUMERIC only for DB • Selections are ALPHA-NUMERIC or NUMERIC • Select the EDIT button to cycle through available selections.
200	DESCRIPTION	• Enable or disable the description field • Selections are OFF or ON • Select the EDIT button to cycle through available selections.
210 220 230	CUSTOM DATA FIELD 1 CUSTOM DATA FIELD 2 CUSTOM DATA FIELD 3	• Enable or disable custom data fields 1, 2 or 3 and select if data is NUMERIC or ALPHA-NUMERIC • Selections are OFF, ON, ALPHA-NUMERIC or NUMERIC • Select the EDIT button to cycle through available selections.
211 221 231	CDF 1 LABEL CDF 2 LABEL CDF 3 LABEL	• Enters the user defined LABEL for each of the custom data fields that are enabled. • When these fields are on the operator will be promoted to enter the values and the label will appear on the keyboard entry screen • Select the CDF X Label to edit by using the UP/DOWN arrows to highlight • Select the EDIT button and key in the label on the Keyboard

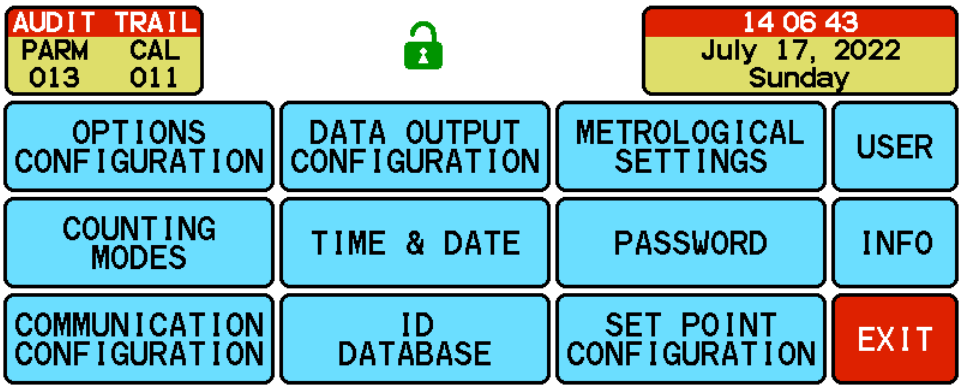
Configuration of Communication Protocols

From any of the main operating screens:

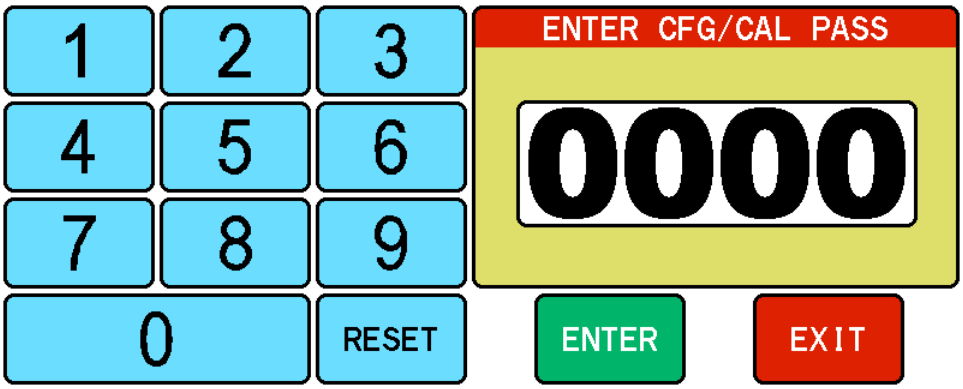
Select the MENU button



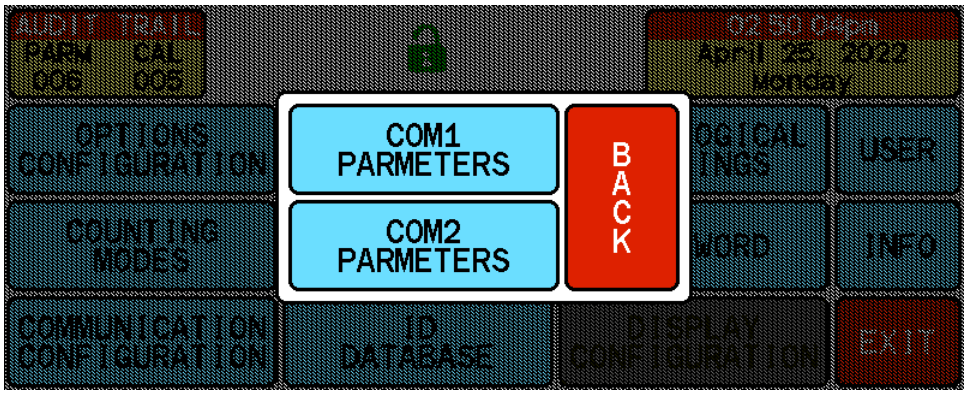
In the main menu select the COMMUNICATION CONFIGURATION



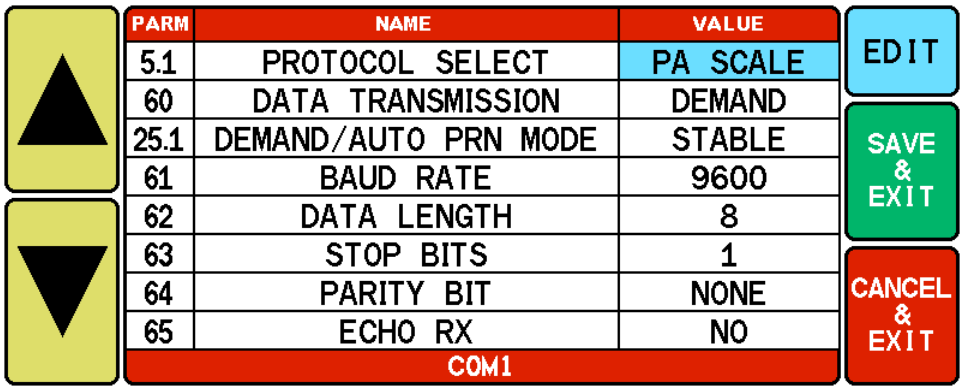
Enter Password if prompted. Default password in 0000



Select COM1 or COM 2



This will open the communication configuration menu for the port selected.



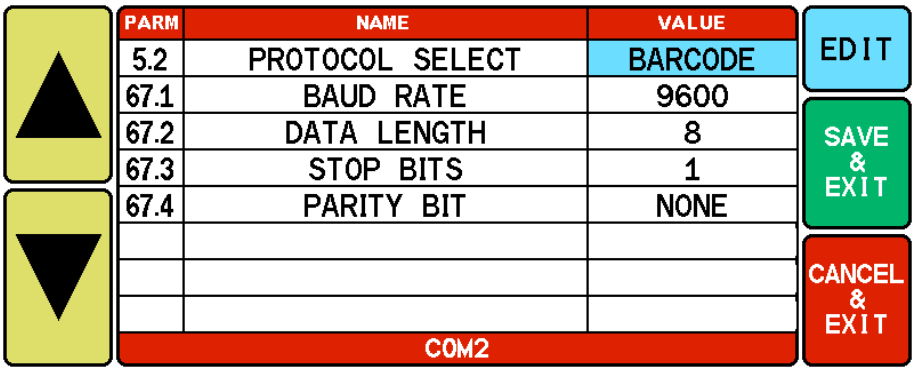
To enter and/or change a setting use the UP/DOWN arrow keys to scroll up or down to setting and select the Blue EDIT button.

Selecting the Green SAVE & EXIT button will save and exit, Red CANCEL & EXIT will exit without saving

COM 1 Communication Configuration Menu

PARAMETER (PARM)	NAME	VALUE/SELECTIONS
5.1	PROTOCOL SELECT	• Select the communication protocol • Available: PA SCALE, UPS, FEDEX 1200, FEDEX 9600, CONDEC, TOLEDO, NCI, BARCODE. See appendix below for details • Select the EDIT button to cycle through available selections.
61	BAUD RATE	• Select the baud rate • Available: 300, 600, 1200, 2400, 4800, 9600, 19200 & 38400. • Select the EDIT button to cycle through available selections.

PARAMETER (PARM)	NAME	VALUE/SELECTIONS
62	DATA LENGTH	• Select the data length • Available: 7 or 8 • Select the EDIT button to cycle through available selections.
63	STOP BITS	• Select the stop bits • Available: 1 or 2 • Select the EDIT button to cycle through available selections.
64	PARITY BIT	• Select the parity bit • Available: NONE, ODD or EVEN • Select the EDIT button to cycle through available selections.
65	ECHO RX	• Enable or disable echo back of received data transmission • Available: NO or YES • Select the EDIT button to cycle through available selections.



COM 2 Communication Configuration Menu

5.2	PROTOCOL SELECT	• Select the communication protocol • Available: PA SCALE, UPS, FEDEX 1200, FEDEX 9600, CONDEC, TOLEDO, NCI, BARCODE. See below for detailed information on these settings • Select the EDIT button to cycle through available selections.
67.1	BAUD RATE	• Select the baud rate • Available: 300, 600, 1200, 2400, 4800, 9600, 19200 & 38400. • Select the EDIT button to cycle through available selections.
67.2	DATA LENGTH	• Select the data length • Available: 7 or 8 • Select the EDIT button to cycle through available selections.
67.3	STOP BITS	• Select the stop bits • Available: 1 or 2 • Select the EDIT button to cycle through available selections.
67.4	PARITY BIT	• Select the parity bit • Available: NONE, ODD or EVEN • Select the EDIT button to cycle through available selections.

7800 communication protocols details.

Barcode

Configures the comport for use with the barcode option, part number “7800-XXX BC”. The Pennsylvania remote commands embedded in the barcode will allow for scanning in of scale data settings and in certain operations a barcode with scale data only may be scanned in without the remote command embedded.

This would include:

ID, Description Custom Data Fields 1,2 and 3 when prompted on the scale display

Selecting the keypad tare or piece weight and scanning a barcode with those values.

UPS WorldShip Emulation

Data 18 bytes, six data with decimal and leading zero blanking

Command	Description	Response Format
(cr) Carriage Return	Request weight on scale	(sp)(sp)0.00(sp)lb.(sp)GR(sp)(sp)(cr)(lf)(etx) Example, with 10.55 lbs. on scale: (sp)10.55(sp)lb.(sp)GR(sp)(sp)(cr)(lf)(etx)
(cr) Carriage Return	When in Overload/Underload condition	(cr)(etx)
(cr) Carriage Return	When scale in motion	(sp)(sp)0.00(sp)lb.(sp)gr(sp)(sp)(cr)(lf)(etx) “GR” becomes “gr”
Minus sign: included in data as “-0.10”, in place closest blank position. Default settings: 9600 - 7 - odd - 2		

FedEx Emulation (FED12 & FED96)

Data 14 bytes, including start (LF), space, six data (five plus decimal), LB/KG (upper case), <CR>, two status characters, and stop (ETX).

Command	Description	Response Format
W(cr) Capital "W"	Request weight on scale	(lf)(sp)000.00(Unit of Measure) (cr)(Status Character)(etx) Example, with 10.55 lbs. on scale: (lf)(sp)10.55LB(cr)00(etx)
ASCII Status Characters		Description
00		Normal weight - <30><30>
1X		Motion - <31><30>
2X		Center of Zero - <32><30>
3X		Not Center of Zero - <33><30>
X1		Under load - <30><31>
X2		Over load - <30><32>
X3		Motion/Over load - <31><32>
Data sent during any error		<000.00>
Default settings FED12: 1200 - 8 - N – 1, Default settings FED96: 9600 - 7 - E - 1		

Condec Emulation

Emulates Rice Lake data output and communication protocols for interface with RLWS remote scoreboard displays

Data Output	<STX> - Start of text <P> - Polarity <W7.> - 7-digit weight, floating decimal, leading spaces <U> - Units, upper case L or K <M> - Mode, upper case G or N <S> - Status, upper case <SP> - OK, M – motion, O – overload, Z – zero, I – invalid <CR><LF> - carriage return and line feed

Toledo Emulation:

Toledo Protocol Host Commands Following is a listing of host commands and scale responses. ASCII Start of Text character:(stx)<HEX 02>. ASCII Carriage Return: (cr)<HEX 0D>.

Command	Description	Response Format
W*	Send normal resolution weight data	(stx)XXXX.X(cr) for 300 X 0.1 lbs. capacity (stx)XXX.XX(cr) for 150 X 0.05 kg. capacity (stx)?(statusbyte)(cr) if current weight not valid
H	Send high resolution weight data	(stx)XXXX.XX(cr) for 300 X 0.1 lbs. capacity (stx)XXX.XXX(cr) for 150 X 0.05 kg. capacity (stx)?(statusbyte)(cr) if current weight not valid
Z	Zero the scale unless in motion or out of range under or over capacity	(stx)?(statusbyte)(cr)

Note:* A status byte message (STX)?(status byte)(CR) is sent in place of the requested weight data field if the scale is in motion, under zero, or over capacity when the weight data request is sent. The question mark “?” indicates that the following data is a non-ASCII status byte after than weight data. See below for status:

Bit No:	Description	Bit No:	Description
6	Always 1	5	Always 1
4	1 = Center of Zero 0 = Not at center of Zero	3	1 = Outside Zero capture range 0 = Within range
2	1 = Under Zero 0 = Within weighing range	1	1 = Over capacity 0 = Within weighing range
0	1 = Scale in motion 0 = Stable weight data		

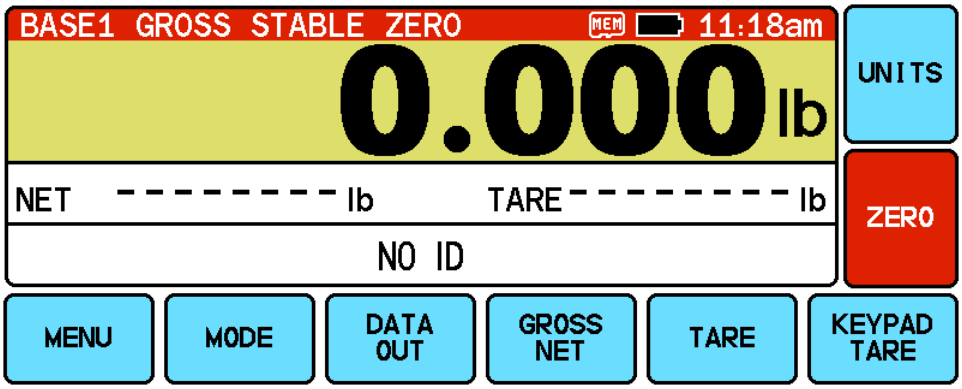
NCI Emulation:

Command	Description	Response Format
W	Sends weight and three-character status information. Note: lb.-oz is transmitted as oz only.	(lf)XXXXXXX(Unit of Measure)(cr)(lf)(Status Character)(cr)(etx). Example: 10.135 lbs. on scale transmits: (lf)(sp)10.135lb(cr)(lf)0p0(cr)(etx) If count is displayed, it is transmitted as: (lf)xxxxxxxct(cr)(lf)hhh(cr)(etx)
Z	Zero the scale unless in motion or out of range under or over capacity and sends two-character status	(lf)(status character)(cr)(etx) Example if successful scale transmits: (lf)00(cr)(etx)
T	Tares the scale unless in motion or out of range under or over capacity and sends two-character status	(lf)(status character)(cr)(etx) Example if successful scale transmits: (lf)00(cr)(etx)

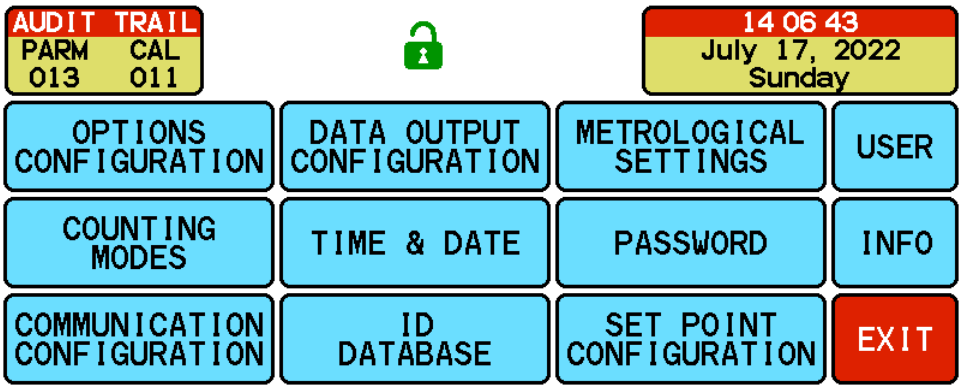
Configuration of Data Output

From any of the main operating screens:

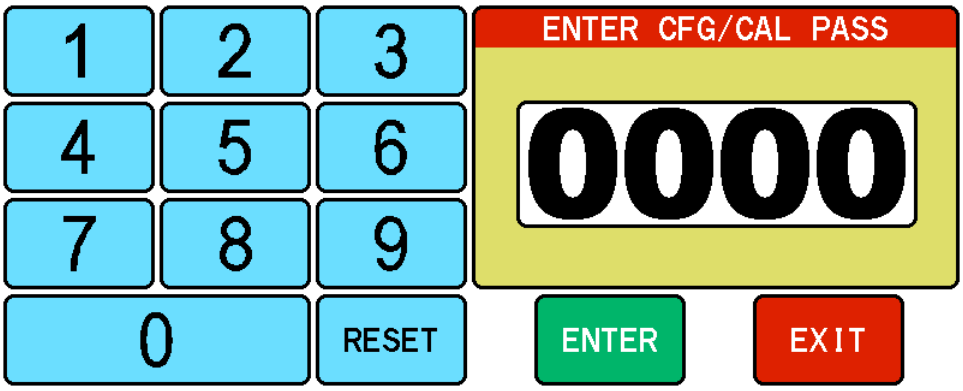
Select the MENU button



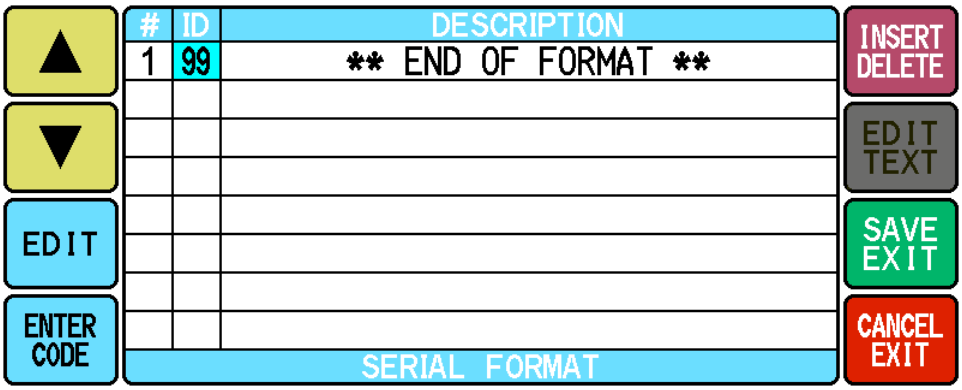
In the main menu select the DATA OUTPUT CONFIGURATION



Enter Password if prompted. Default password in 0000



In this menu are the data output selections and set up. Setup functions explained:



UP/DOWN ARROWS Select to scroll Up or Down

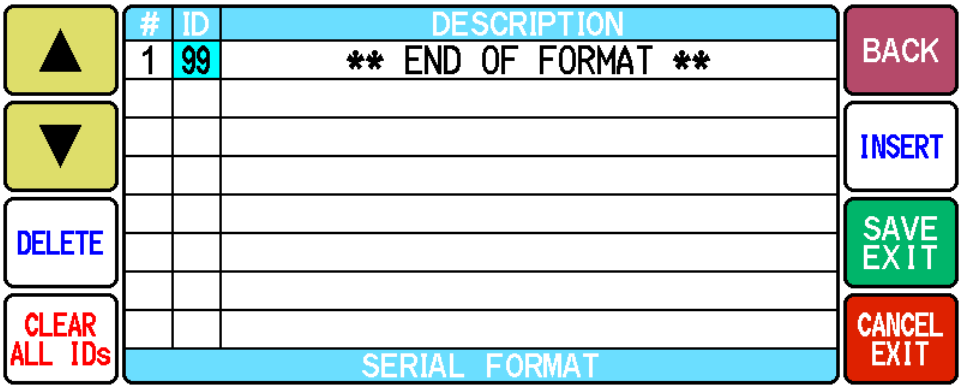
EDIT add or edit the data output slot highlighted from the list of available data output codes/descriptions

ENTER CODE add or edit the data output slot using the numeric code value

SAVE EXIT Save and return to main menu

CANCEL EXIT Return to main menu without saving

INSERT DELETE go to sub menu below



UP/DOWN ARROWS Select to scroll Up or Down

DELETE Delete the code in the highlighted data output slot

CLEAR ALL IDs Press and hold for 3 seconds to delete ALL data output slots

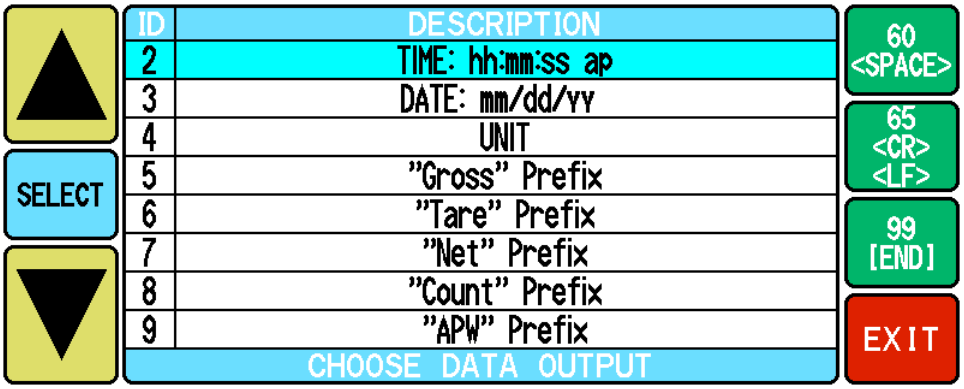
BACK Return to main Data Output Configuration menu

INSERT Add a new data output slot in the position highlighted or scrolled to

SAVE EXIT Save and return to main Data Output Configuration menu

CANCEL EXIT Return to main Data Output Configuration menu without saving

Data Output Codes:



This screen shows the top of the list of available data out put codes. Use the UP/DOWN arrow keys to scroll to the code needed and use the SELECT button to insert into the data string. You can also use the 60 <SPACE>, 65<CE><LF> or 99 [END] to insert these commonly used data output codes/functions.

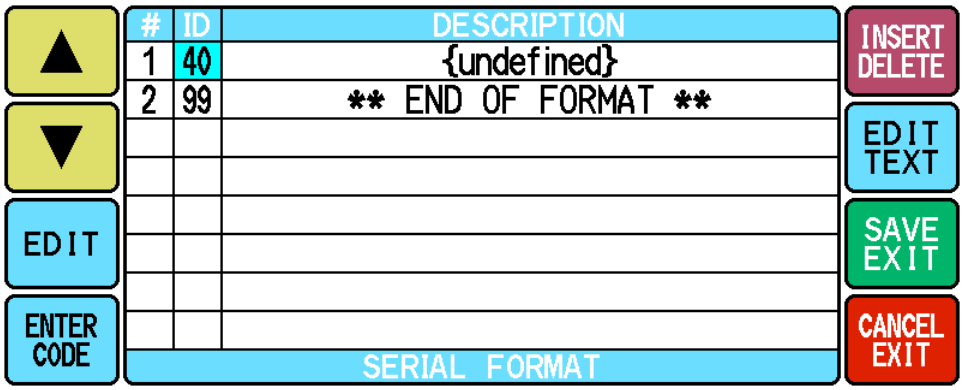
Data Output Codes And Functions Menu

ID	DESCRIPTION
2	• TIME: hh:mm:ss ap • Current time as set in scale
3	• DATE: mm/dd/yy • Current date as set in scale
4	• UNIT • Current unit of measure on display when data is outputted
5	• "GROSS" Prefix • The word GROSS to identify gross weight data
6	• "TARE" Prefix • The word TARE to identify tare weight data
7	• "NET" Prefix • The word NET to identify net weight data
8	• "COUNT" Prefix • The word COUNT to identify count data
9	• "APW" Prefix • The word PIECE WEIGHT to identify piece weight data
10	• "SAMPLE SIZE" Prefix • The word SAMPLE SIZE to identify the original sample size in qty

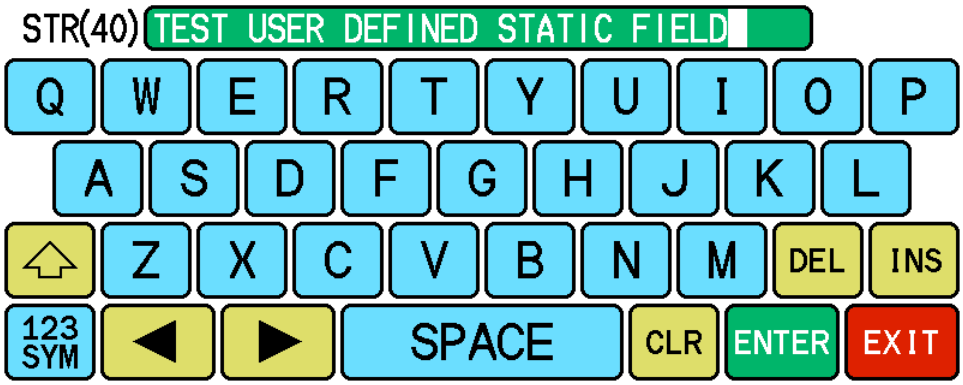
ID	DESCRIPTION
11	• "%ACC/%ERR Prefix • The word ACCURACY or ERROR to identify the % of accuracy or % of error data • To select if the scale displays and outputs % of accuracy or error go to the COUNTING MODES menu to setup
12	• "BASE" Prefix • The word BASE to identify the base in use value
13	• "ID" Prefix • The word ID to identify the ID data
14	• BC Printer Prefix 1 • The string FR"F1" for use in barcode label printing application
15	• BC Printer Prefix 2 • The string ? for use in barcode label printing application
16	• BC Printer Suffix • The string P1 for use in barcode label printing application
19	• "PIECES" Prefix • The word PIECES to identify the piece count on the scale data
20	• GROSS VALUE ONLY • Gross weight data
21	• TARE VALUE ONLY • Tare weight data
22	• NET VALUE ONLY • Net weight data
23	• COUNT VALUE ONLY • Count data
24	• APW VALUE ONLY • Piece weight data
25	• SAMPLE SIZE VALUE ONLY • Sample size data
26	• %ERR/ACC VALUE ONLY • % of error or accuracy data
27	• BASE VALUE ONLY • Base in use data
28	• ID VALUE ONLY • ID data
29	• GROSS UNROUNDED VALUE ONLY • Gross unrounded weight data

ID	DESCRIPTION
30	• PREFIX GROSS WT UNITS • Outputs: GROSS(WEIGHT VALUE)(CURRENT UNIT OF MEASURE)
31	• PREFIX TARE WT UNITS • Outputs: TARE(WEIGHT VALUE)(CURRENT UNIT OF MEASURE)
32	• PREFIX NET WT UNITS • Outputs: NET(WEIGHT VALUE)(CURRENT UNIT OF MEASURE)
33	• PREFIX COUNT NUMBER UNITS • Outputs: COUNT(NUMBER VALUE)(PCS)
34	• PREFIX APW PIECE WEIGHT UNITS • Outputs: PIECES(PIECE WEIGHT VALUE)(CURRENT UNIT OF MEASURE)
35	• PREFIX SAMPLE SIZE • Outputs: SAMPLE SIZE(NUMBER VALUE)
36	• PREFIX % ERR/ACC • Outputs: % OF ERROR OR ACCURACY (% VALUE) • To select if the scale displays and outputs % of accuracy or error go to the COUNTING MODES menu to setup
37	• PREFIX BASE # • Outputs: BASE (NUMBER) that is the active base 1 or optional 2
39	• PREFIX ID • Outputs: ID(ID NAME)
40 – 49	• USER DEFINED STATIC DATA FIELD

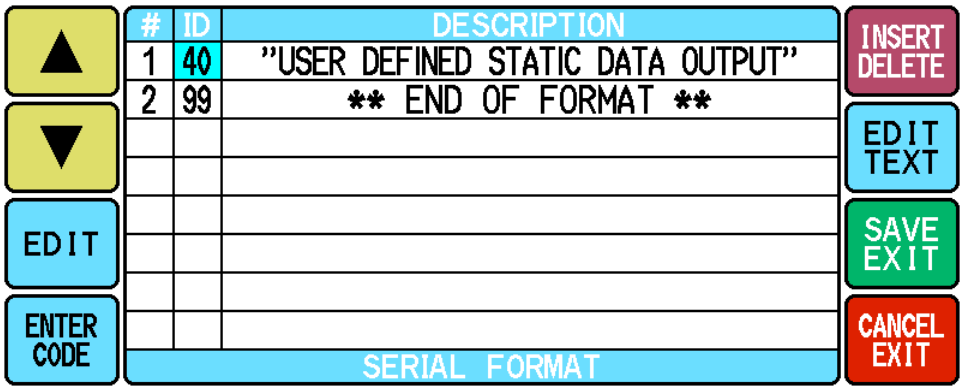
When selecting one of the code 40 – 49 user defined static data fields the actual data outputted can be entered through the scale keyboard. Use the UP/DOWN arrow keys to highlight the data output slot that contains the code:



Select EDIT TEXT and key in the data



The scale will now out put the data entered at this point in the data output string



ID	DESCRIPTION
52	• STATUS CHARACTER • Outputs status character to show scale condition
53	• ABO CS • Outputs ABO Checksum for data validation
54	• LEADING ZERO EN • Outputs all weight values with leading zeros (0) instead of spaces
55	• LF DELAY 1S • Delays the LINE FEED command by 1 second
56	• LF DELAY 2S • Delays the LINE FEED command by 2 seconds
57	• LF DELAY 3S • Delays the LINE FEED command by 3 seconds

ID	DESCRIPTION
58	• LEADING ZERO/NO DP • Outputs all weight values with leading zeros (0) instead of spaces and no decimal point
59	• DISPLAY • Outputs current weight or count values on primary display
60	• <SPACE> • Outputs a SPACE
61	• <HT> • Outputs a HORIZONTAL TAB command
62	• <LF> • Outputs a LINE FEED command
63	• <SOH> • Outputs a START OF HEADER command
64	• <CR> • Outputs a CARRAIGE RETURN command
65	• <CR><LF> • Outputs a CARRIAGE RETURN LINE FEED command
66	• <FF> • Outputs a FORM FEED command
67	• <SO> • Outputs a SHIFT OUT command
68	• <SI> • Outputs a SHIFT IN command
69	• <NUL> • Outputs NULL command
72	• <STX> • Outputs START OF TEXT command
73	• <EXT> • Outputs END OF TEXT command
74	• <TAB> • Outputs TAB command
75	• [PAPER CUT] • Outputs PAPER CUT command
76	• [PAPER RELEASE] • Outputs PAPER RELEASE command
78	• [START INVERSE] • Outputs START INVERSE command
79	• [PAPER STOP INVERSE] • Outputs STOP INVERSE command

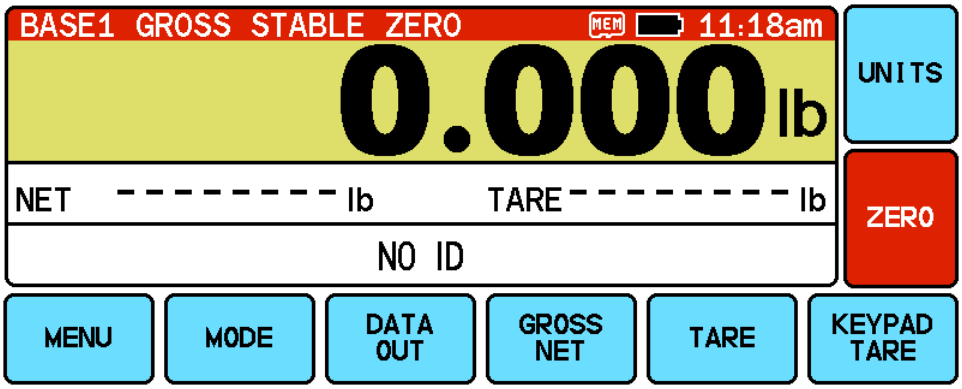
ID	DESCRIPTION
80	• PREFIX ACCUM-TOTAL UNITS • Outputs: ACCUM(ACUMULATED WEIGHT/COUNT VALUE)(CURRENT UNIT OF MEASURE)
81	• ACCUM TOTAL PREFIX • Outputs ACCUM TOTAL
82	• ACCUM VALUE ONLY • Outputs Accumulated weight or count data only
83	• CLEAR ACCUM • Clears the Accumulator register of data
84	• CLEAR ACCUM QUERY • Clears the Accumulator query
85	• TRANSACTION PREFIX & COUNTER • Outputs TRANSACTION(# OF ACCUMULATIONS)
86	• TRANSACTION PREFIX • Outputs TRANSACTIONS
87	• TRANSACTION COUNTER ONLY • Outputs(# OF ACCUMULATIONS)
88	• TOTAL PREFIX • Outputs TOTAL
90	• OUTPUT CONDEC FORMAT • Outputs data in CONDEC format for interface with third party remote scoreboard type displays
95	• {ESC FUNCTION} • Outputs ESCAPE command
97	• ** COM2 START** • Starts the data output to COM 2, everything preceding this will output to COM 1
98	• ACCUM START • When ACCUMULATE is enabled the data after this will output every time an ACCUMULATE function occurs
99	• END OF FORMAT • End of outputted data format
100	• DESC LABEL • Outputs DESC to identify the DESCRIPTION field • Can be enabled or disabled in the ID DATABASE menu
101-102	• CDF1(2 or 3) LABEL • Outputs user defined label for custom data fields 1 through 3. • This Label is set up in ID DATABASE menu • Can be enabled or disabled in the ID DATABASE menu

ID	DESCRIPTION
110	• DESC TEXT • Outputs the data entered in the DESCRIPTION FIELD • Can be enabled or disabled in the ID DATABASE menu
11-113	• CDF1(2 or 3) TEXT • Outputs the data entered in the custom data fields 1 through 3. Can be enabled or disabled in the ID DATABASE menu

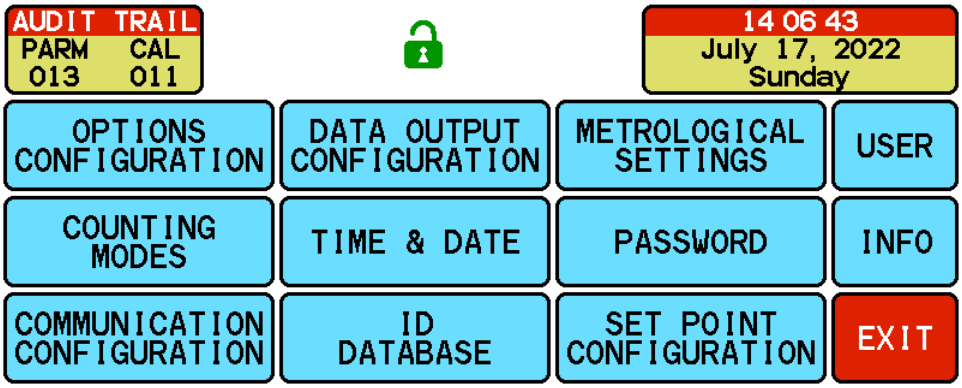
Configuration of Time and Date

From any of the main operating screens:

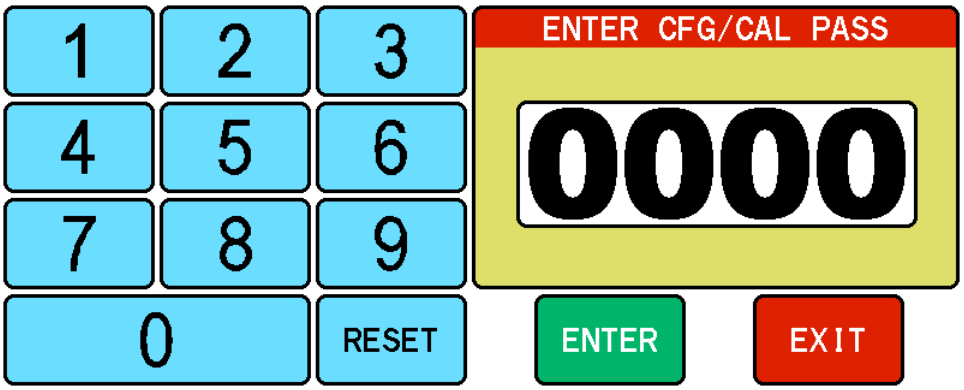
Select the MENU button



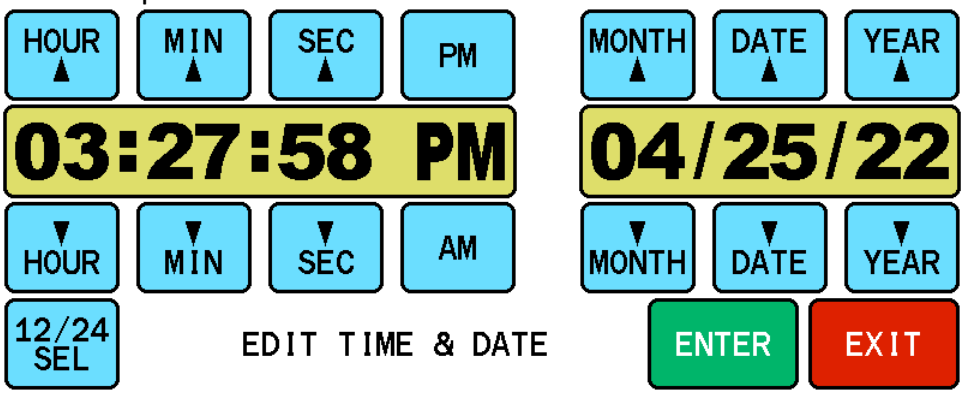
In the main menu select the TIME & DATE



Enter Password if prompted. Default password in 0000



This will open the time and date menu.



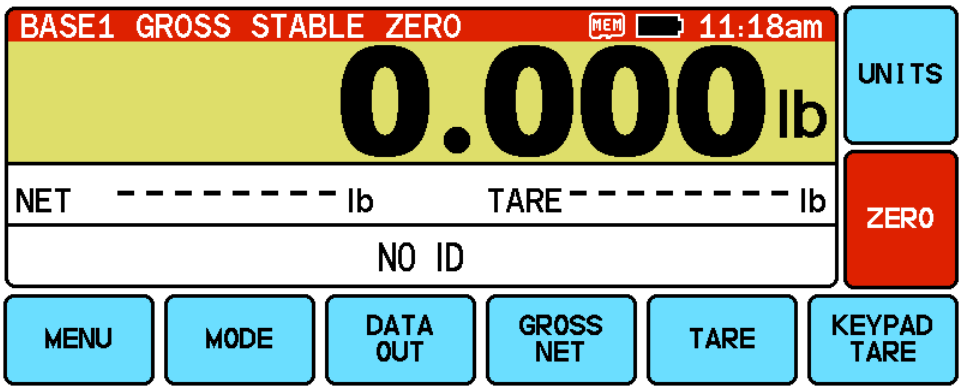
Use the UP and DOWN arrow keys to adjust the time and date settings

Select the 12/24 SEL button to scroll between 12-hour AM/PM and 24 hour military time.

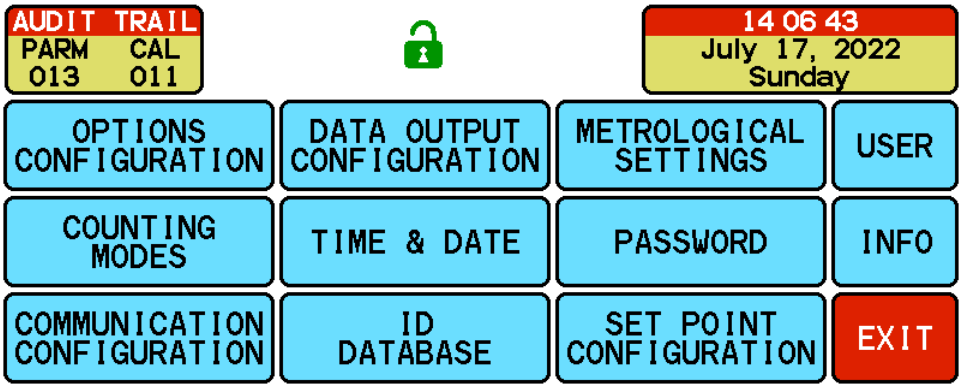
Options Configuration

From any of the main operating screens:

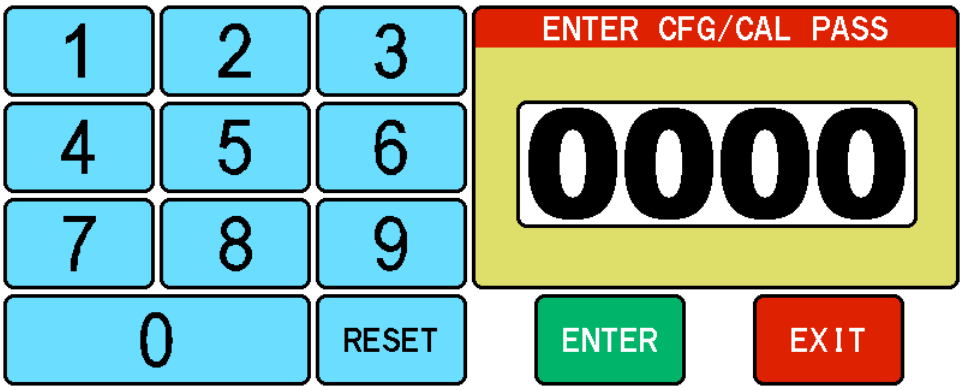
Select the MENU button



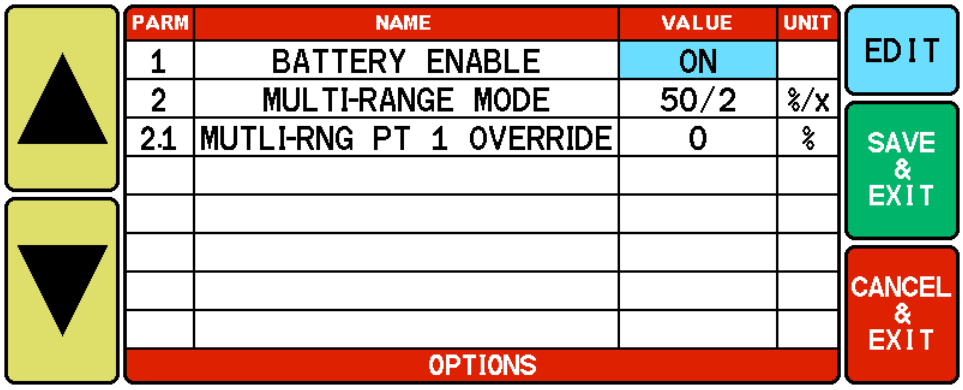
In the main menu select the OPTIONS CONFIGURATION



Enter Password if prompted. Default password in 0000



This will open the Options Configuration Menu.



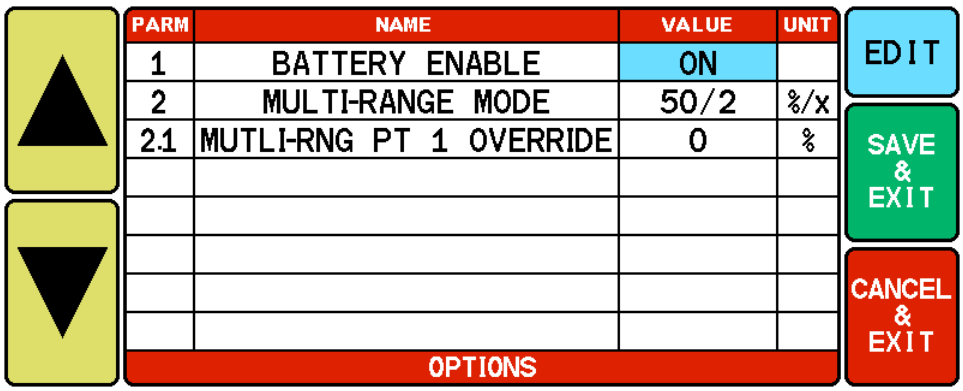
To enter and/or change a setting use the UP/DOWN arrow keys to scroll up or down to setting and select the Blue EDIT button.

Selecting the Green SAVE & EXIT button will save and exit, Red CANCEL & EXIT will exit without saving

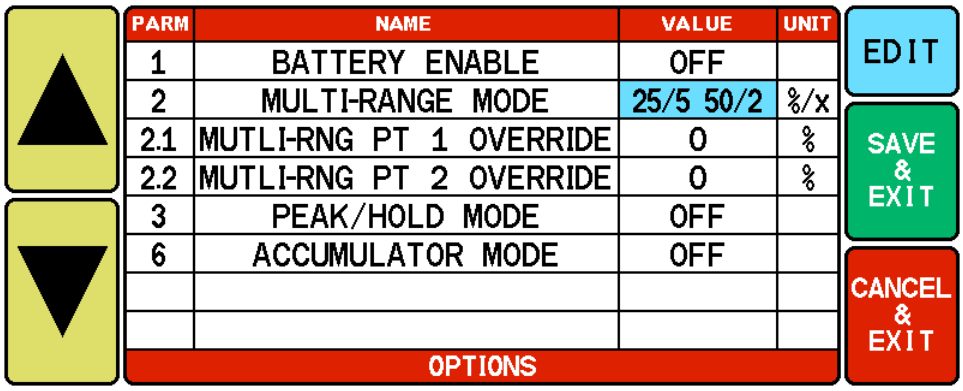
Options Configuration Menu

PARAMETER (PARM)	NAME	VALUE/SELECTIONS	UNIT
1	BATTERY ENABLE	• Enable or disable the battery option • Selections are ON or OFF • Select the EDIT button to cycle through available selections.	
2	MULTI-RANGE MODE	• Enable and configuration Multi Range Mode • Selections are OFF, 50/2, 50/5, 25/2, 25/2, 20/2, 20/5, 20/10, 10/2, 10/5, 10/10, 25/5 50/2, 10/5 50/2, 25/10 50/2, 10/10 50/2, 1/100 & 10/10. See chart at end of this section for details of these settings	%/x

When 50/2, 50/5, 25/2, 25/2, 20/2, 20/5, 20/10, 10/2, 10/5 or 10/10 are selected additional menu selections are enabled as shown below:



When 25/5 50/2, 10/5 50/2, 25/10 50/2, 10/10 50/2, 1/100 or 10/10 are selected additional menu selections are enabled as shown below:



PARAMETER (PARM)	NAME	VALUE/SELECTIONS	UNIT
2.1	MULTI-RANGE PT1 OVERIDE	• First % of scale capacity that scale resolution defaults to normal as set up in CONFIGURE BASE 1 (Or 2) • Select EDIT and enter % of Scale Capacity in Primary Units	%/x
2.2	MULTI-RANGE PT2 OVERIDE	• Second % of scale capacity that scale resolution defaults to normal as set up in CONFIGURE BASE 1 (Or 2) • Select EDIT and enter % of Scale Capacity in Primary Units	%/x

Dual and Triple Ranging Setup – Based upon the displayed resolution setting in METROLOGICAL SETTINGS\CONFIGURE BASE 1(2)

DTR Setting	High Resolution up to % of capacity	Resolution Increase Factor	Medium Resolution	Resolution Increase Factor
0				
1	50%	2		
2	50%	5		
3	25%	2		
4	25%	5		
5	20%	2		
6	20%	5		
7	20%	10		
8	10%	2		
9	10%	5		
10	10%	10		
11	25%	5	50%	2
12	10%	5	50%	2
13	25%	10	50%	2
14	10%	10	50%	2
15	1%	100	10%	10

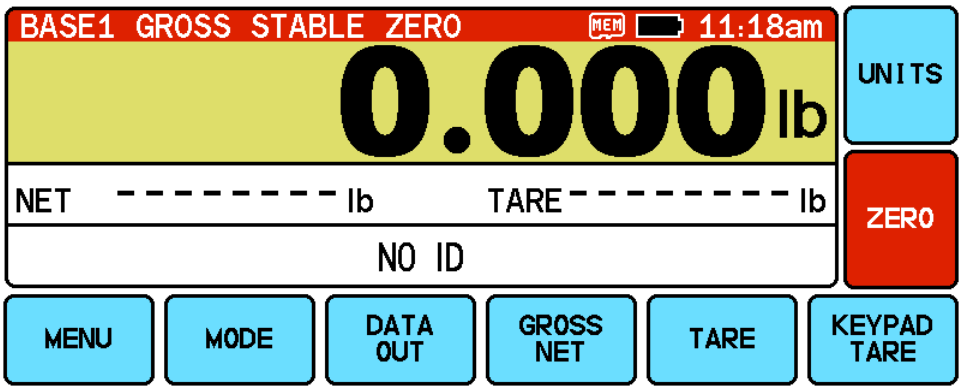
Dual and Triple Ranging Example

Scale Capacity 100		RES 22 (Displayed resolution 0.01)		
DTR Setting	High Resolution Up To lbs.:	High Resolution at This Setting:	Medium Resolution Up To lbs.:	Medium Resolution at This Setting:
0				
1	50	0.005		
2	50	0.002		
3	25	0.005		
4	25	0.002		
5	20	0.005		
6	20	0.002		
7	20	0.001		
8	10	0.005		
9	10	0.002		
10	10	0.001		
11	25	0.002	50	0.005
12	10	0.002	50	0.005
13	25	0.001	50	0.005
14	10	0.001	50	0.005
15	1	0.0001	10	0.001

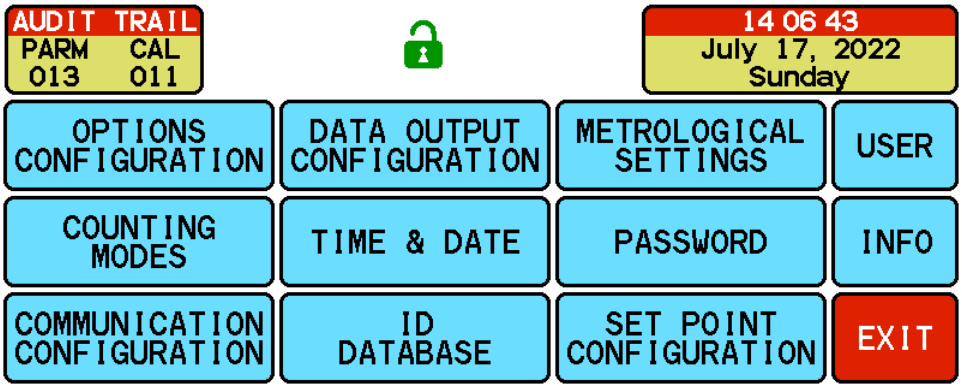
User Configuration Menu

From any of the main operating screens:

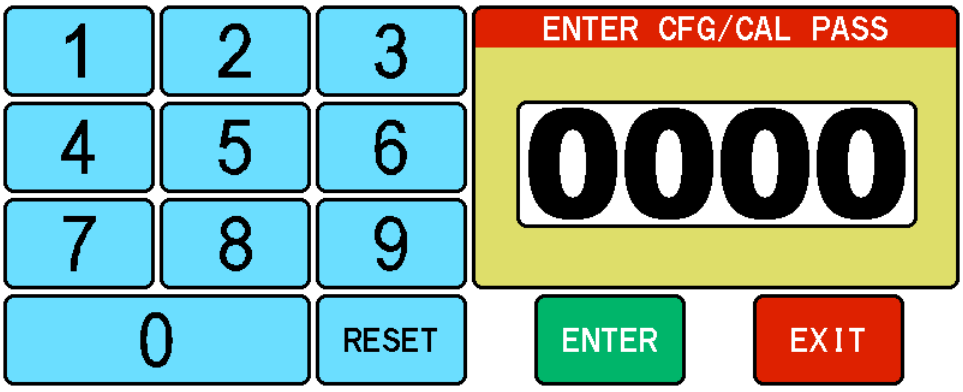
Select the MENU button



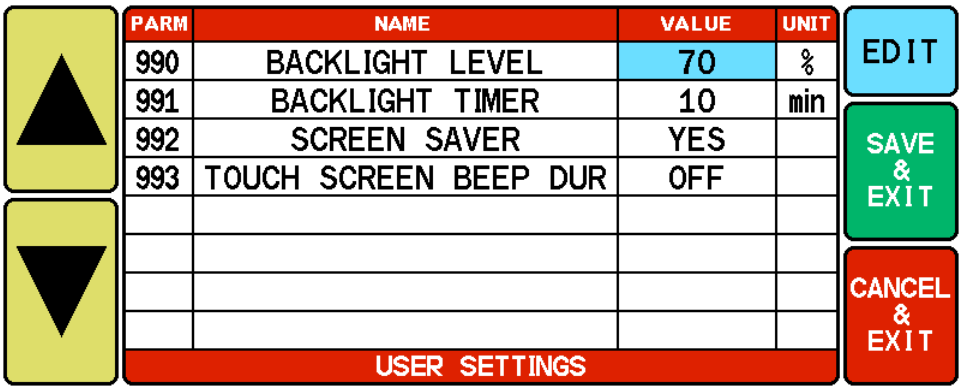
In the main menu select the USER



Enter Password if prompted. Default password in 0000



This will open the USER Menu.



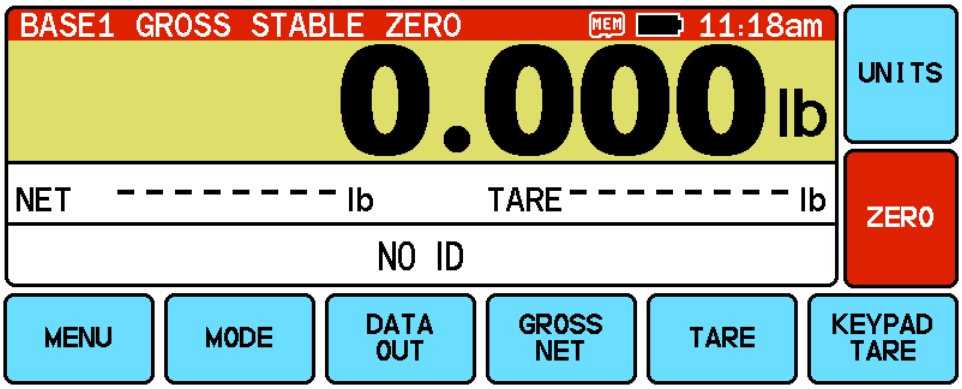
User Configuration Menu

PARAMETER (PARM)	NAME	VALUE/SELECTIONS	UNIT
990	BACKLIGHT LEVEL	• Control the amount of display back light • Select the EDIT button to cycle through available selections.	%
991	BACKLIGHT TIMER	• Control the back light sleep timer • Select the EDIT button to cycle through available selections.	Min
992	SCREEN SAVER	• Enable or Disable Screen Saver • Select the EDIT button to cycle through available selections.	
993	TOUCH SCREEN BEEP DUR	• Control the amount of display back light • Selections are OFF, SHORT, MEDIUM, LONG • Select the EDIT button to cycle through available selections	

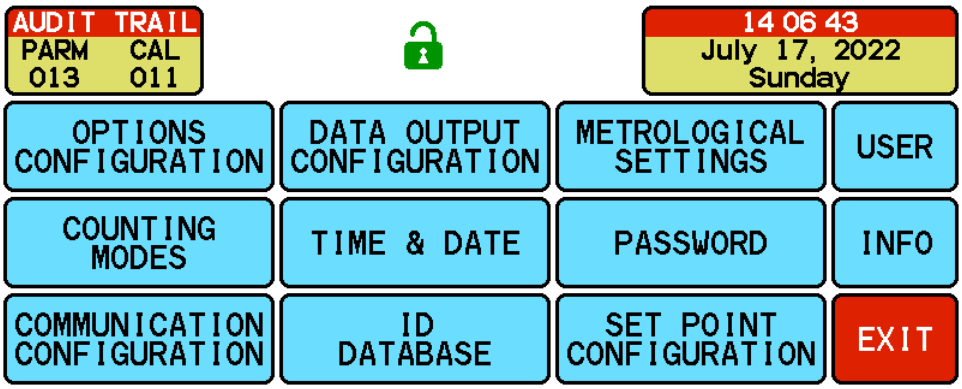
SET POINT Configuration Menu

From any of the main operating screens:

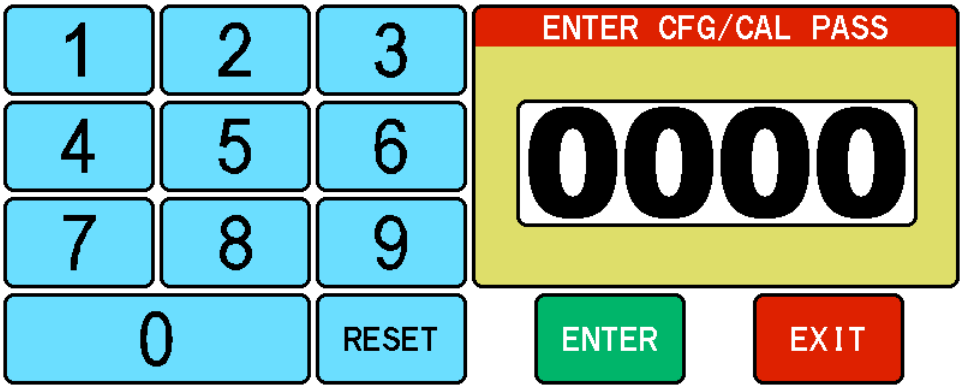
Select the MENU button



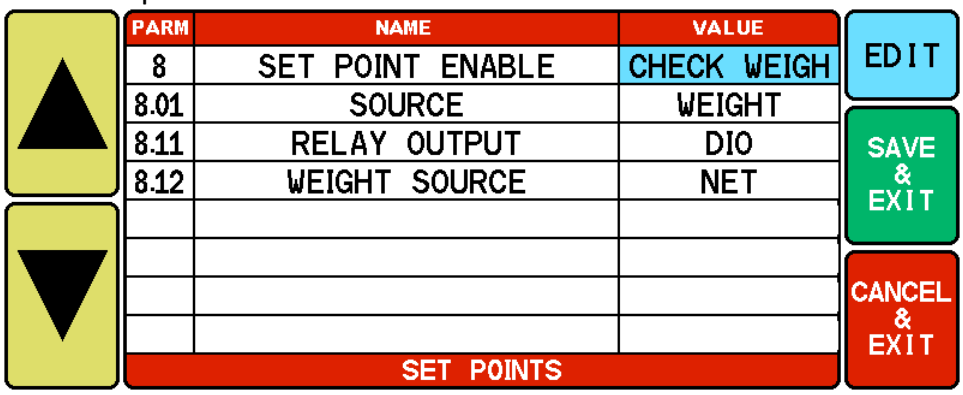
In the main menu select the USER



Enter Password if prompted. Default password in 0000



This will open the SET POINT CONFIGURATION Menu.



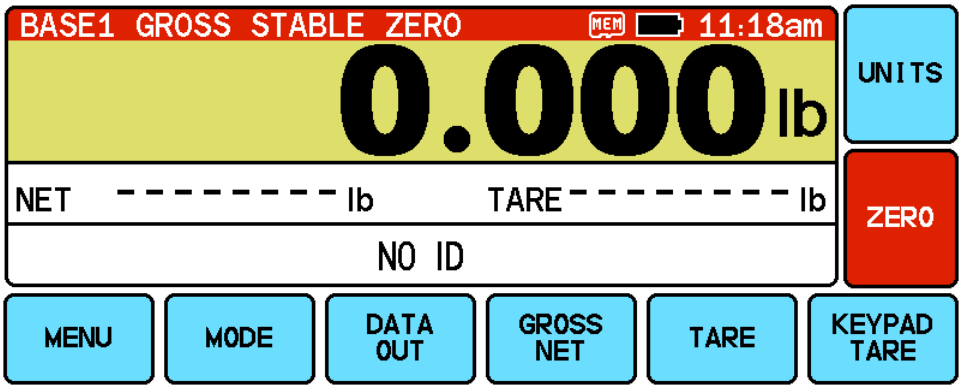
Set Point Configuration Menu

PARAMETER (PARM)	NAME	VALUE/SELECTIONS
8	SET POINT ENABLE	• Enable or disable the battery option • Selections are OFF, CHECK WEIGH or SINGLE SET PT • Select the EDIT button to cycle through available selections.
8.01	SOURCE	• Select source for set point • Selections are WEIGHT or COUNT • Select the EDIT button to cycle through available selections.
8.11	RELAY OUTPUT	• Select relay output • Selections are NONE, DIO, CHARGE or CHARGE-NC • Select the EDIT button to cycle through available selections.
8.02	TARGET MODE	• Only available when SINGLE SET PT is enabled • Selections are + NONE, + PREACT, +DRIBBLE or +DRIBBLE/TRICKLE • Select the EDIT button to cycle through available selections.
8.12	WEIGHT SOURCE	• Only available when SOURCE is set to WEIGHT • Selections are NET, GROSS or DISPLAY

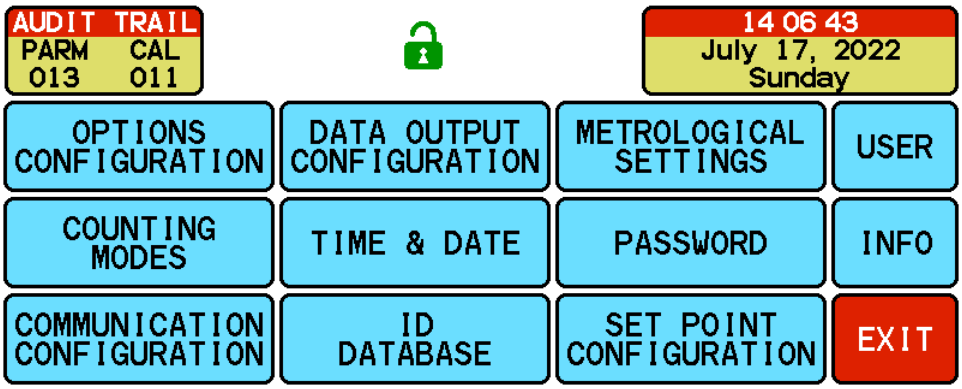
PASSWORD Configuration Menu

From any of the main operating screens:

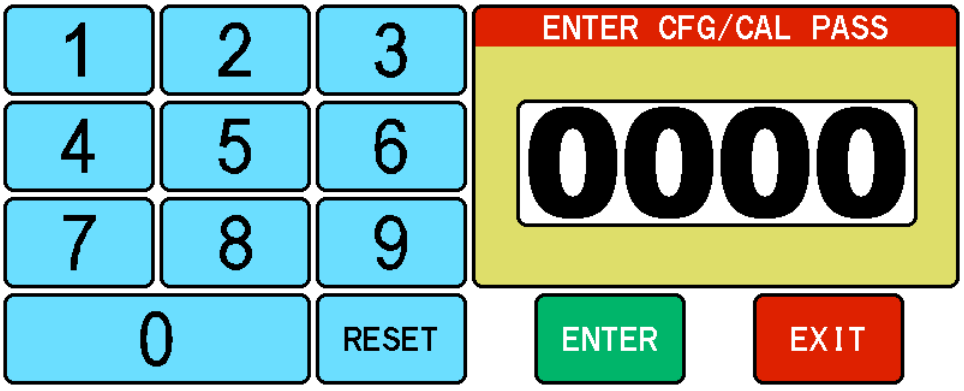
Select the MENU button



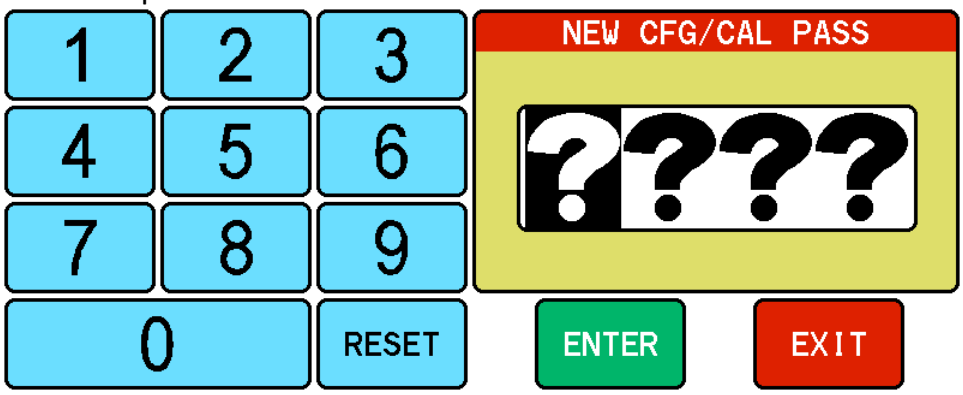
In the main menu select the PASSWORD



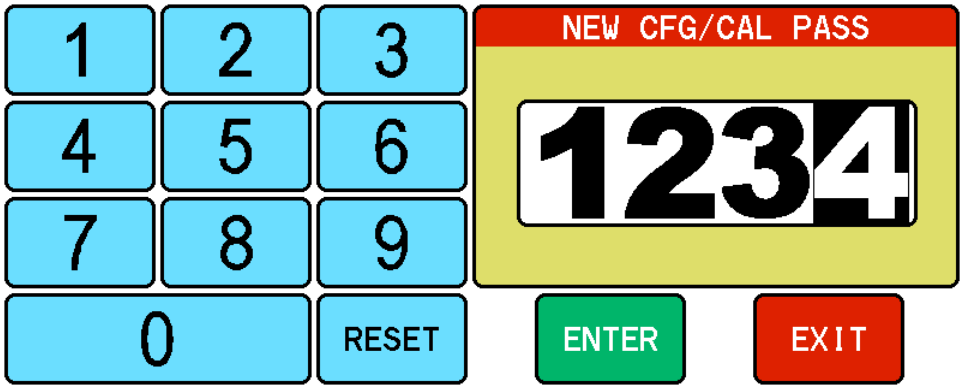
Enter Password if prompted. Default password in 0000



This will open the PASSWORD Menu.



Key in the new password and ENTER.



Scale External Command Formats

Pennsylvania Scale Bench Weighing and Counting Scales or Indicators can be controlled from an external device (such as a computer, terminal or barcode scanning) by various commands, each three letters long sending with a Carriage Return or Enter (cr)

Examples:

- ZERO the scale: ZRO(cr)
- Send programmed data: SRP(cr)
- Acquire a TARE WEIGHT: ATW(cr)

Remote Scale Commands <XXX>(cr) XXX = Command

Command	Description	Command	Description
ATW	Acquire Tare Weight	**CHK**	Initiate self-diagnostics Check
LCK	Lock Out Keypad	**RES**	Reset, clears tare weight and count information
SCM	Selects Count Mode	**SCI**	Output Configuration
SSS	Selects Sample Size	**SWM**	Selects Weigh Mode
UCK	Unlocks Keypad	**UNP**	Select Primary Weighing Unit
UNS	Select Secondary Weighing Unit	**ZRO**	Zero the Scale

Remote Scale Commands to Enter Data into Scale

Command	Description	Format
IBA	Input Base Number 1 or 2. With installed remote base option.	**IBA(sp)X(cr) X= 1 or 2**
IPW	Input Piece Weight and Enter Count Mode.	**IPW(sp)XXXXX(cr) XXXXX = Piece Weight Value, Example: .00015**
ITW	Input Tare Weight and Enter Net Weight Mode.	**ITW(sp)XXXX(cr) XXXX = Tare Weight Value, Example: 10.5**
IID	Input Product ID, up to 15 Alphanumeric Characters and Hyphen (-).	**IID(sp)XXXXXXXXXX(cr) XXXXXXXXXX = Product ID, Example: 123456-ABC**
IUS(X)	Input User Defined Data String, 1-9 these correspond to data output codes 40 – 49 up to 22 alphanumeric characters. **X = 1-9**	**IUS1(sp)XXXXXXXXXX(cr) = XXXXXXXXXX = User defined Data String, Example: 456-DEF-12**

Remote Scale Commands Which Request Information

Command	Description	Response Format
SBA	Send Base in use with second base option,	**Base(sp)1(cr)(lf)** **Base(sp)1(cr)(lf)**
SCO	Send Count	**Count(sp)XXXXXXX Pieces(cr)(lf)**
SDT	Send Date	**XX/XX/XX(cr)(lf)**
SGW	Send Gross Weight	**Gross(sp)XXXXXXX(cr)(lf)**
SID	Send Product ID	**ID(sp)XXXXXXXXXXXXXXX(Cr)(lf)**
SMI	Send Metrological or Load Cell Calibration Information	
SNW	Send Net Weight	**Net(sp)XXXXXXX(cr)(lf)**
SPC	Send Data Output Codes	
SPR	Send Percentage of Error or Accuracy	**Error(sp)XXXXXXX(cr)(lf)** **Accuracy(sp)XXXXXXX(cr)(lf)**
SPW	Send Piece Weight	**Piece Weight(sp)XXXXXXX(cr)(lf)**
SRP	Send Formatted Data Output	
SSZ	Send Sample Size	**Sample Size(sp)XXXXXXX(cr)(lf)**
STM	Send Time	**XX:XX:XX(cr)(lf)**
STW	Send Tare Weight	**Tare(sp)XXXXXXX(cr)(lf)**
SVN	Send Firmware Version	**V(sp)X.XX.X(cr)(lf)**

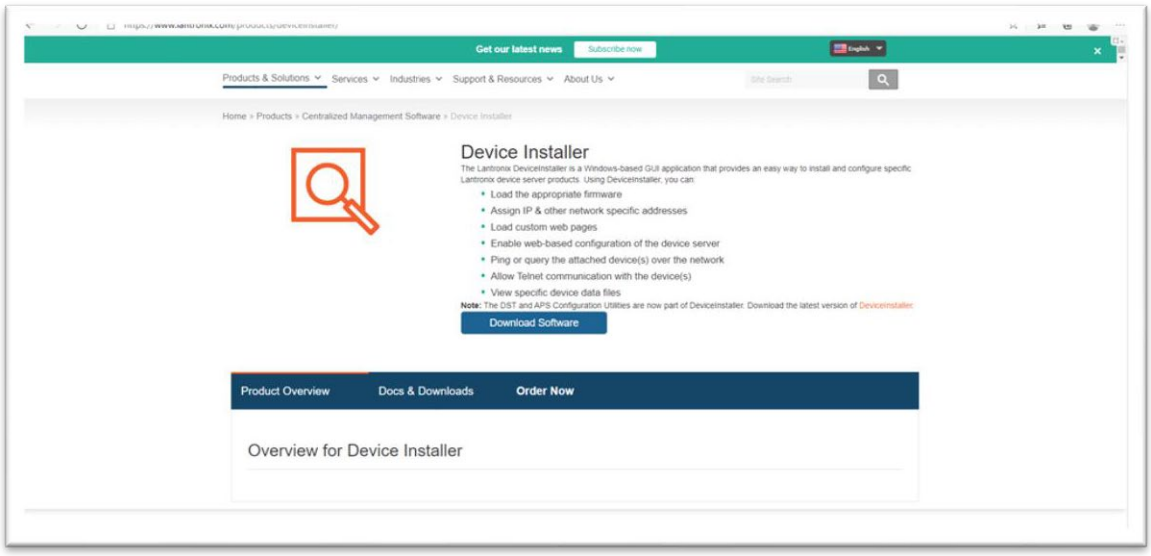
Wired Ethernet Option

Configuring the Pennsylvania Scale Wired Ethernet Option

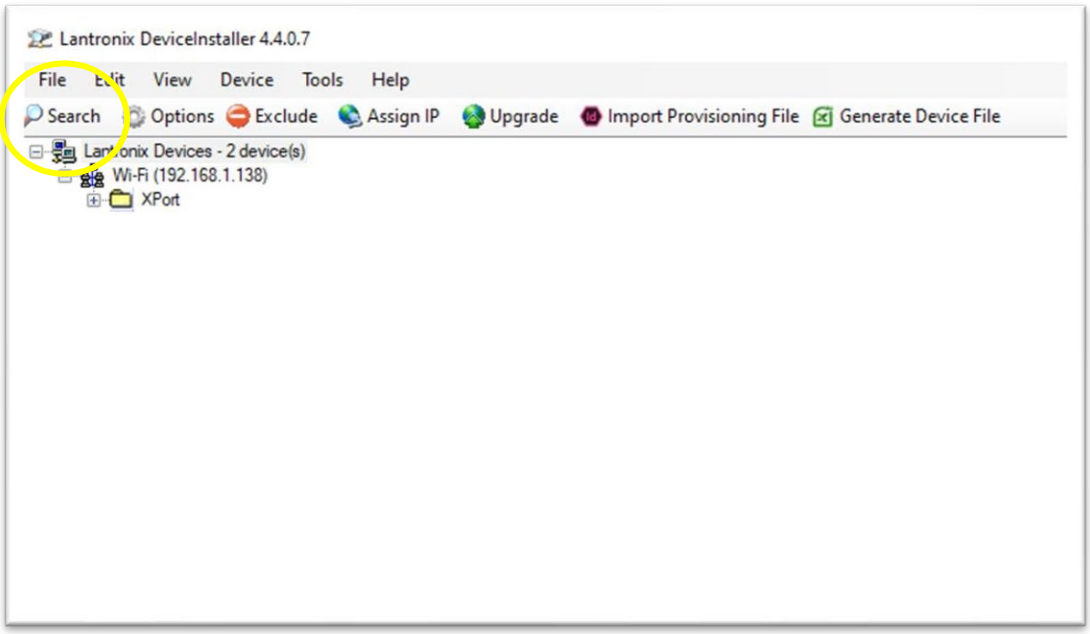
Note: Please consult with IT or Network administrator to determine the network protocols required for connection on the local area network and/or interface to software programs.

The Default Port number for the Pennsylvania Scale Wired Ethernet Option is 10001

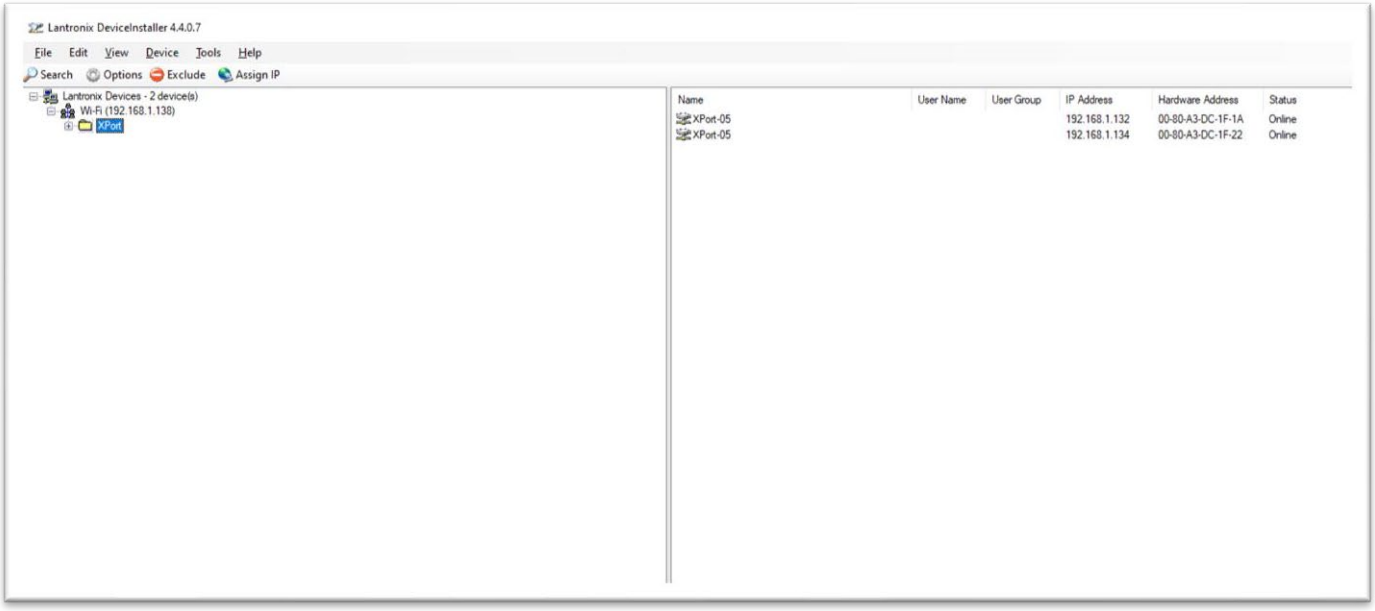
Go to https://www.lantronix.com/products/deviceinstaller/ and download the device installer application.



Install and run the Device Installer program and connect the scale and PC to the network. Click on the SEARCH function to discover Pennsylvania Scale Ethernet options that are on the network.

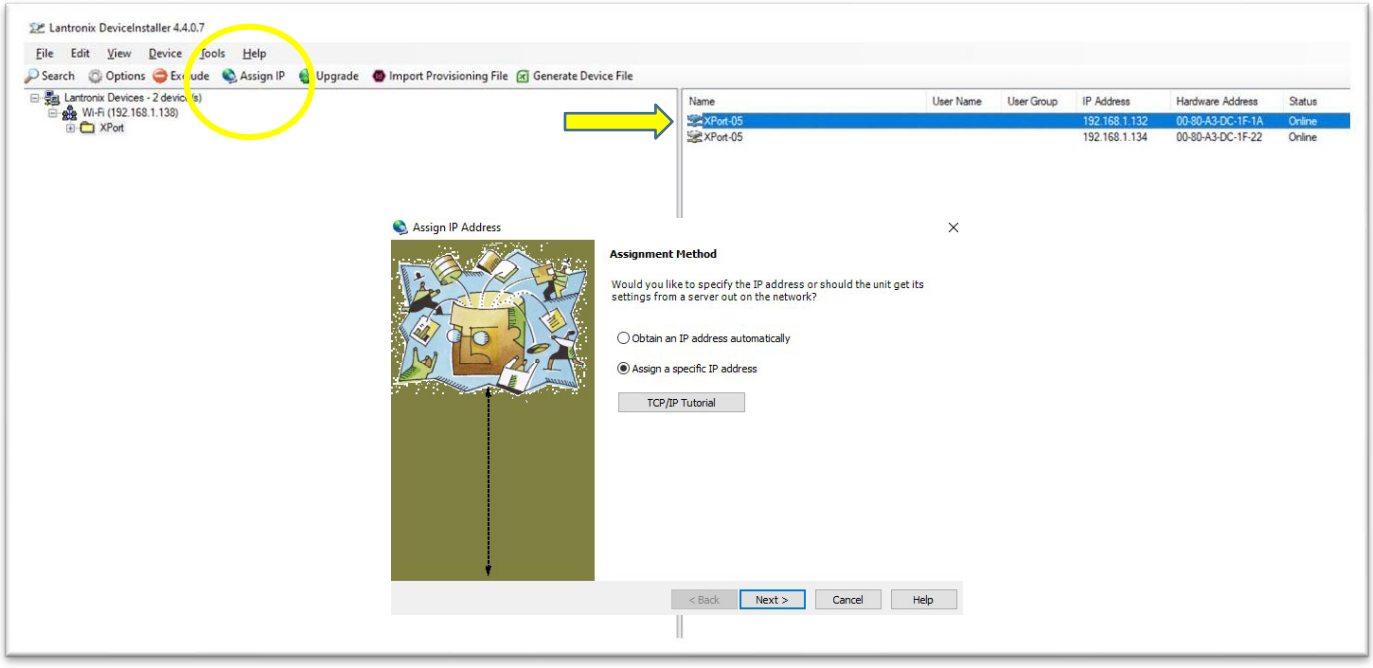


Any Pennsylvania Scale Ethernet Options that are reachable on the network will be shown on the Device Installer program.

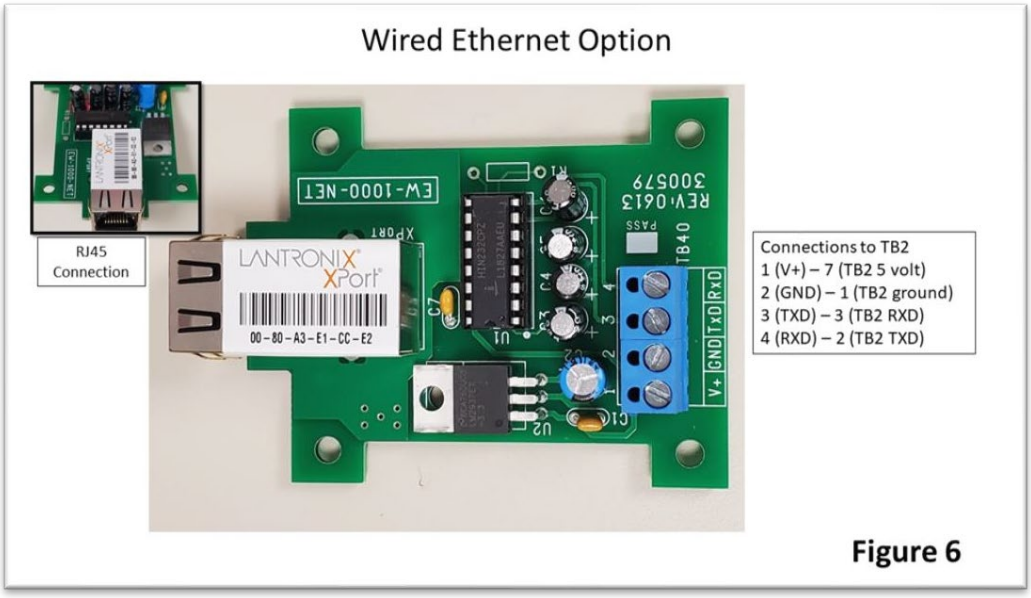


Note the factory default network protocol is DHCP, IP Address, Subnet and Default Gateway are assigned by the server. The Default port is 10001

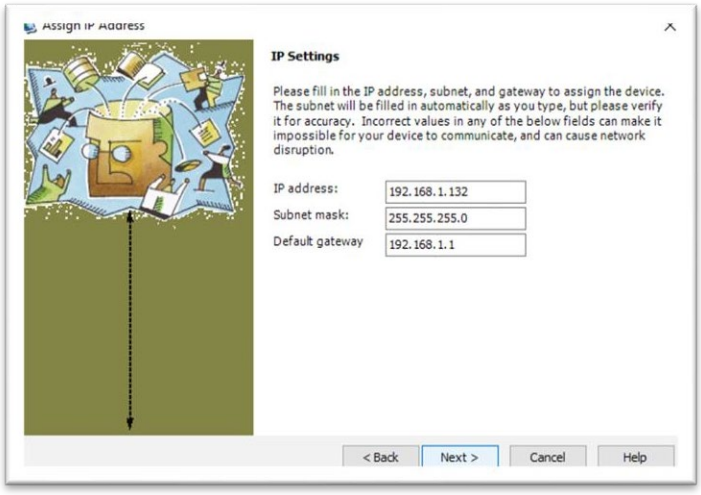
To change from DHCP to a Static IP, Subnet and Default gateway click on the connection to configure, then click on ASSIGN IP. Select ASSIGN A SPECIFIC IP ADDRESS and NEXT

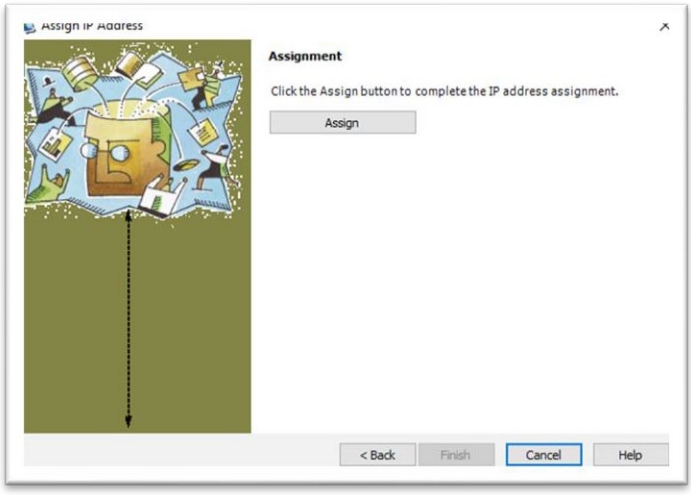


Wired Ethernet Board



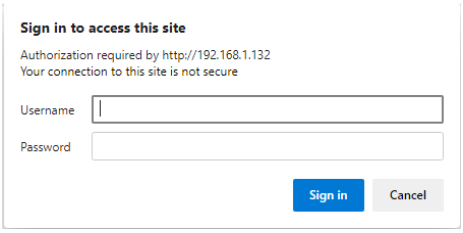
Enter the static IP Address, Subnet Mask and Default Gateway, then click NEXT, then ASSIGN.



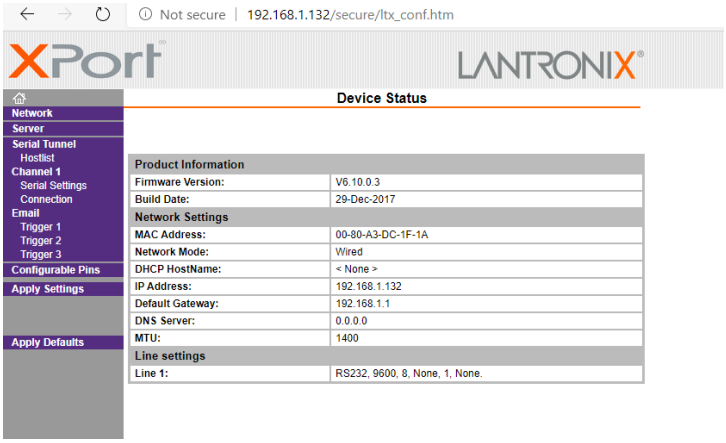


The Pennsylvania Scale Ethernet Option will be configured with these IP Settings and reboot.

If the IP address is known you can also login into the device and configure through a web browser. Key in the IP into the web browser address bar. The Lantronix log in window appears, factory default is no user name and password, leave blank and click on SIGN IN



The Lantronix Xport program will open and more advanced settings can be accessed for configuring the Pennsylvania Scale ethernet option.



Wireless Ethernet Option - Wi-Fi

Configuring the Pennsylvania Scale Wireless Ethernet Option

Note: Please consult with IT or Network administrator to determine the network protocols required for connection on the local area network and/or interface to software programs.

The Default Port number for the Pennsylvania Scale Wi-Fi Ethernet Option is 2000

Scale/Indicator communications that must be configured for Wi-Fi operation:

In COMMUNICATION CONFIGURATION set to

- (Baud Rate) 9600
- (Data bits) 8
- (Stop Bits) 1
- (Parity) None
- (Echo) No
- (Com address) 0

Initial configuration and soft AP usage

The quickest way to configure the module dynamically or in the field is to use its built-in webserver (soft AP mode). After powering on the module press and hold for 1 second the J1/adhoc button on the wireless board.

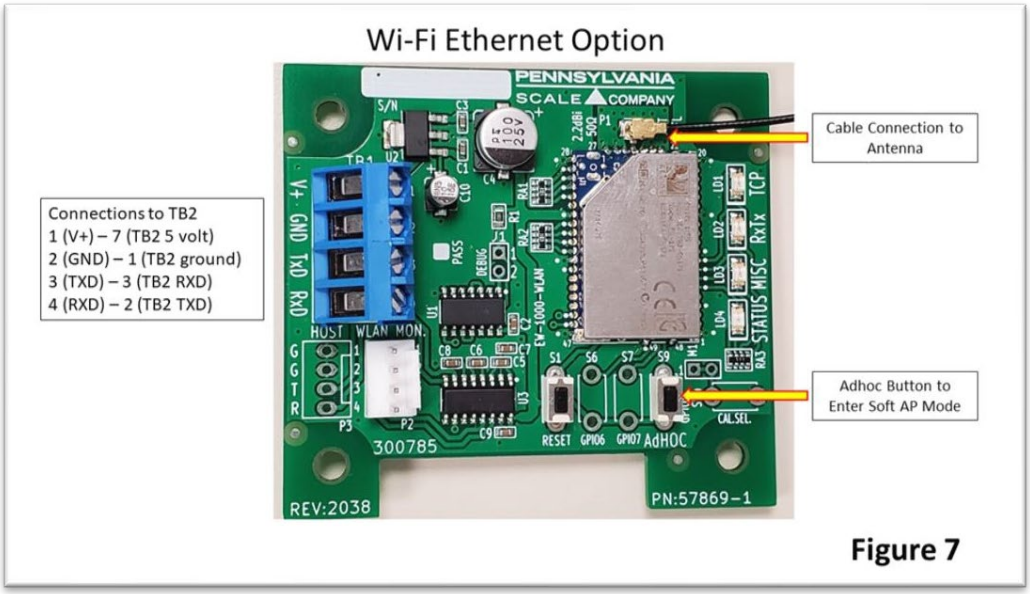
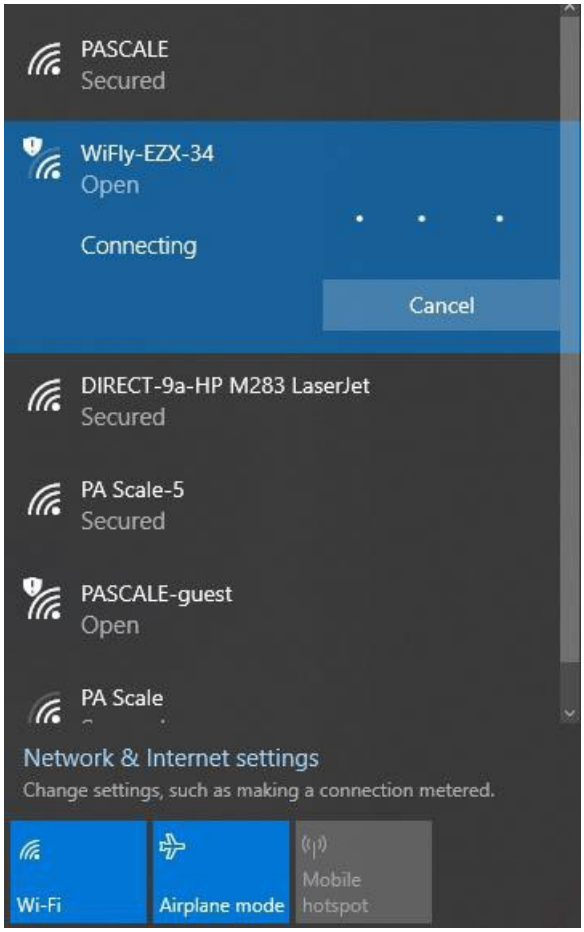
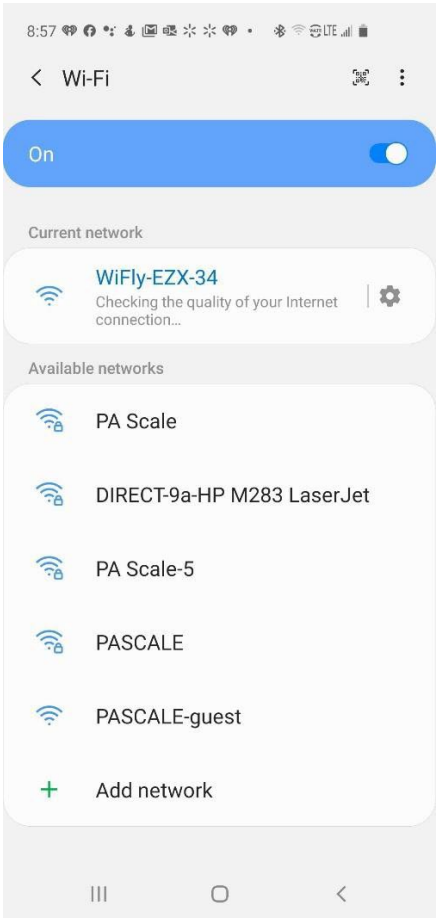


Figure 7

This will start the web app program on the module itself and create a standalone wireless network. This network can then be joined by any computer or device (Tablets, Cell Phones Etc.) that have a wireless connection by the standard methods of joining any normal wireless network.

For a PC running Windows, Open the wireless network selection in the system tray (lower right of the screen) and selecting WiFly-EZX-(XX) where the last two characters are the mac address of the module. With Android devices swipe down and press and hold the Wireless icon to view available networks.

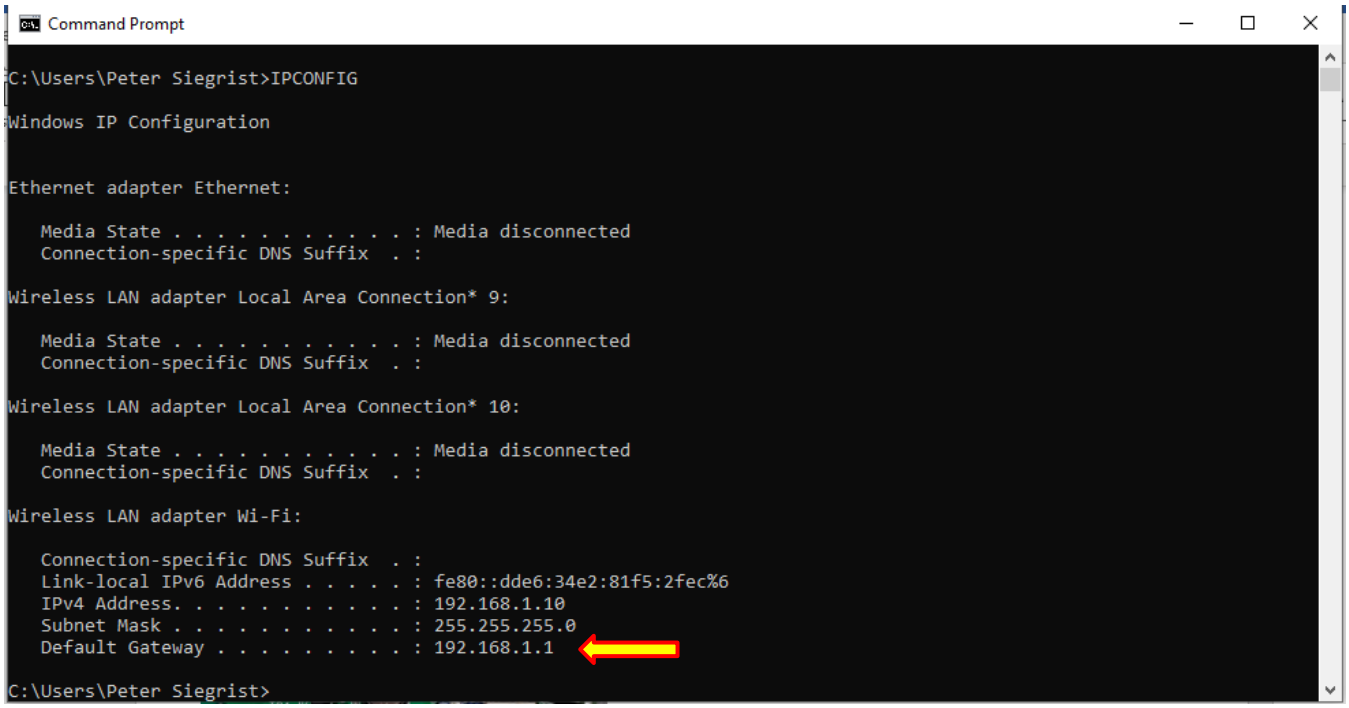




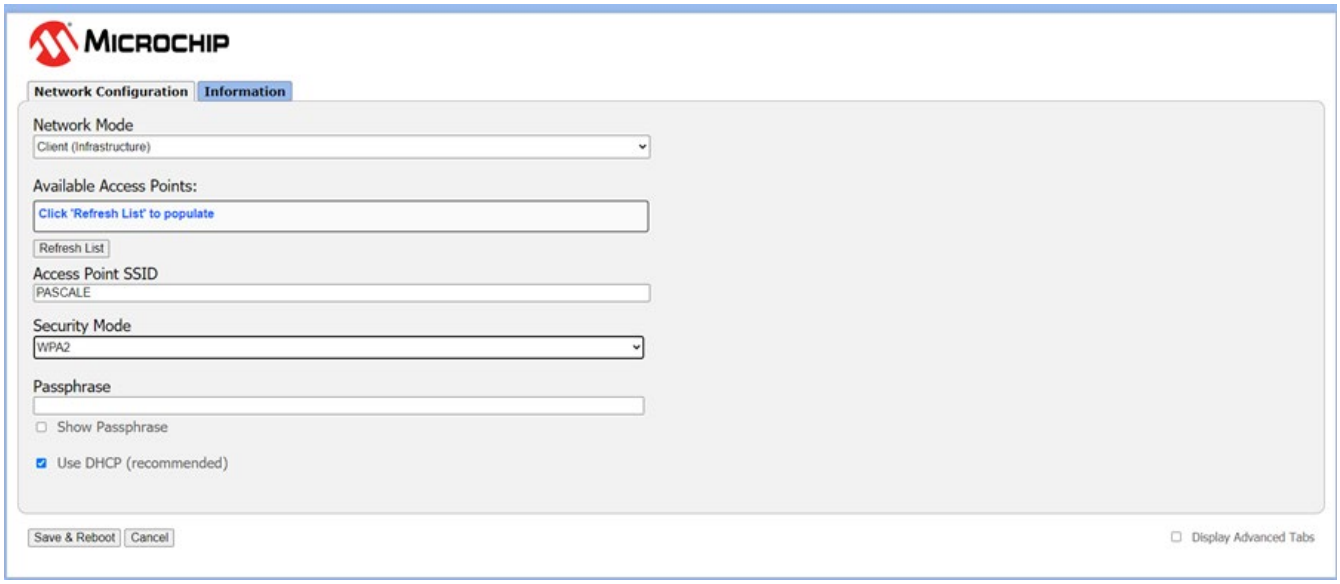
When the connection has been made the configuration webpage of the module can be opened by any web browser using the following methods.

- It is possible to directly type in http://config to navigate to the configuration app, however this is not always reliable depending on network and browser configurations.
- The more reliable way is to access the configuration webpage requires the following steps:
    - Check what the actual IP address of the gateway (AP) is for the device being used to connect with the scale Wi-Fi.

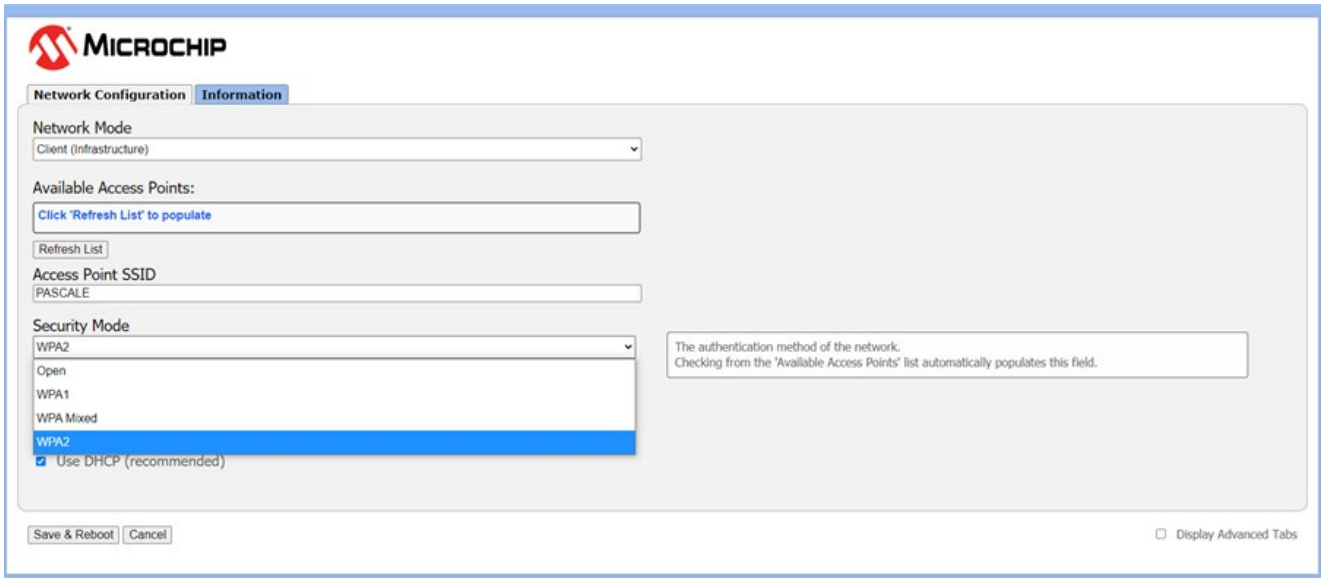
- In windows open a command prompt and type ipconfig to record the gateway IP address. Currently the default is 192.168.1.1.



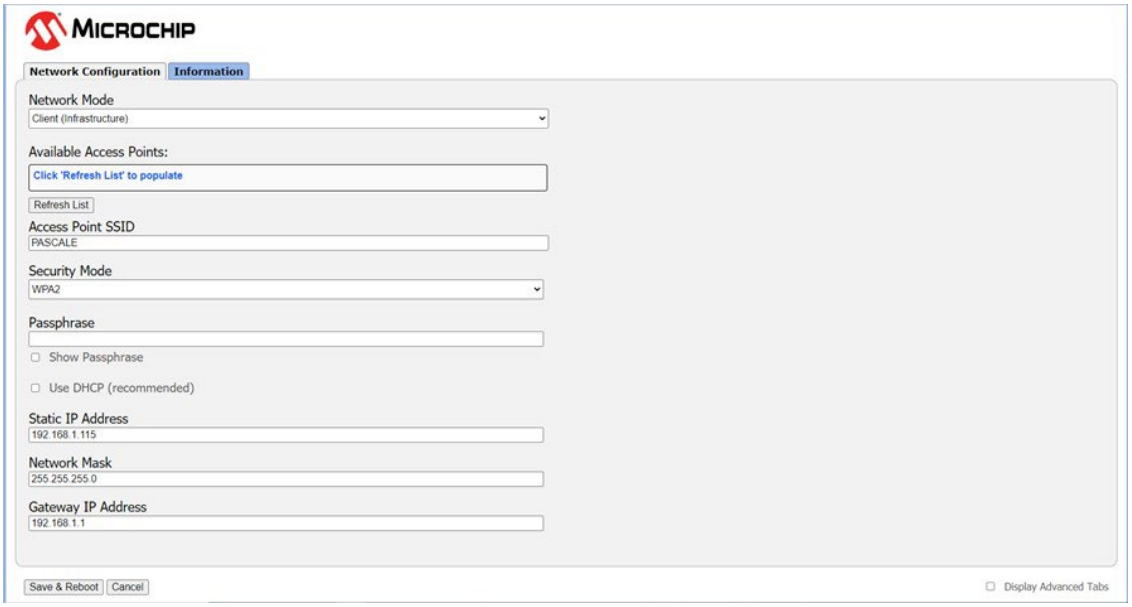
- Then type into the web browser address the gateway IP followed by80, as an example: 192.168.1.1:80. This will open the configuration webpage:



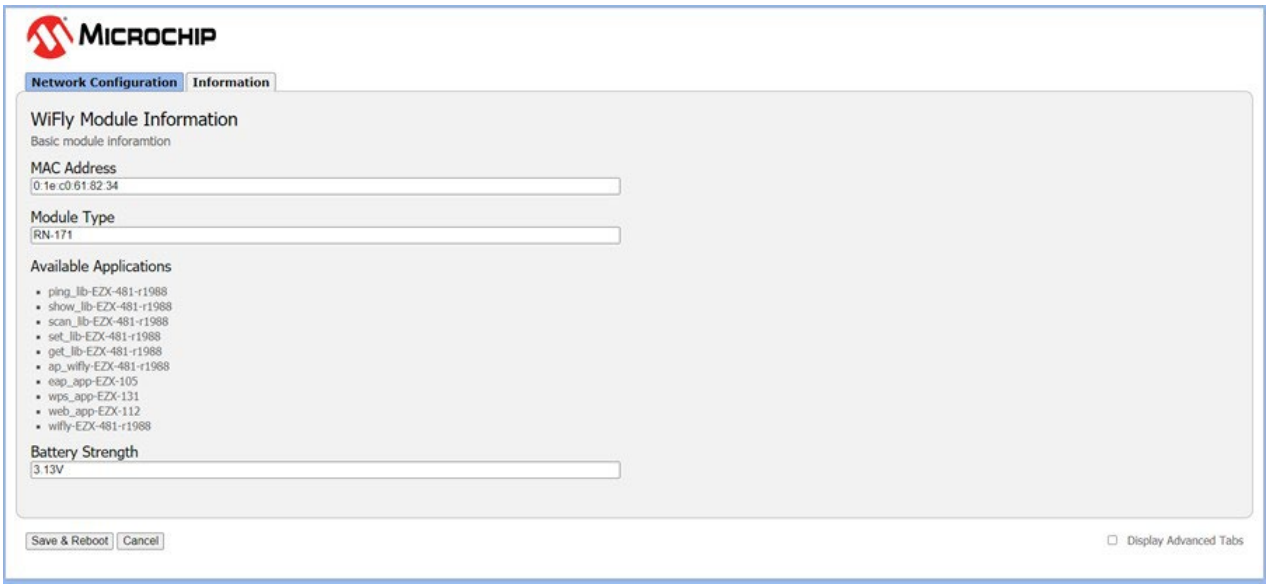
- In the “NETWORK CONFIGURATION” tab you can configure Access Point SSID, Security Mode



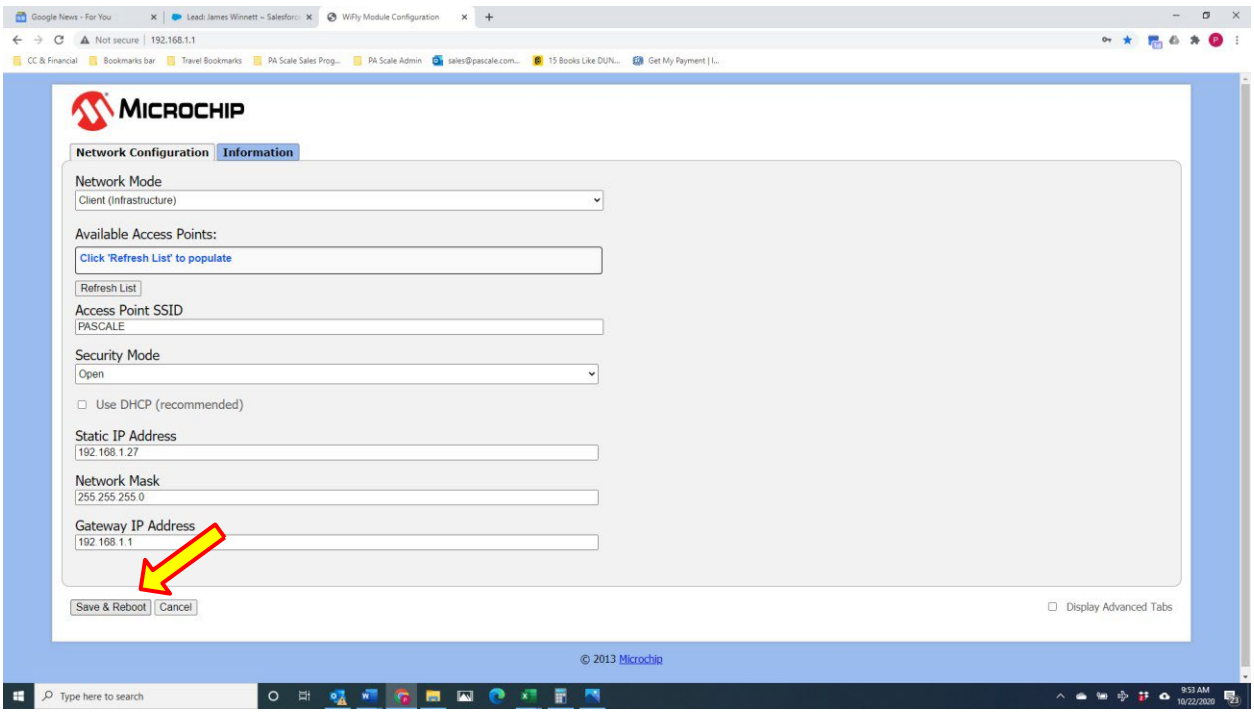
- DHCP or Static IP Address



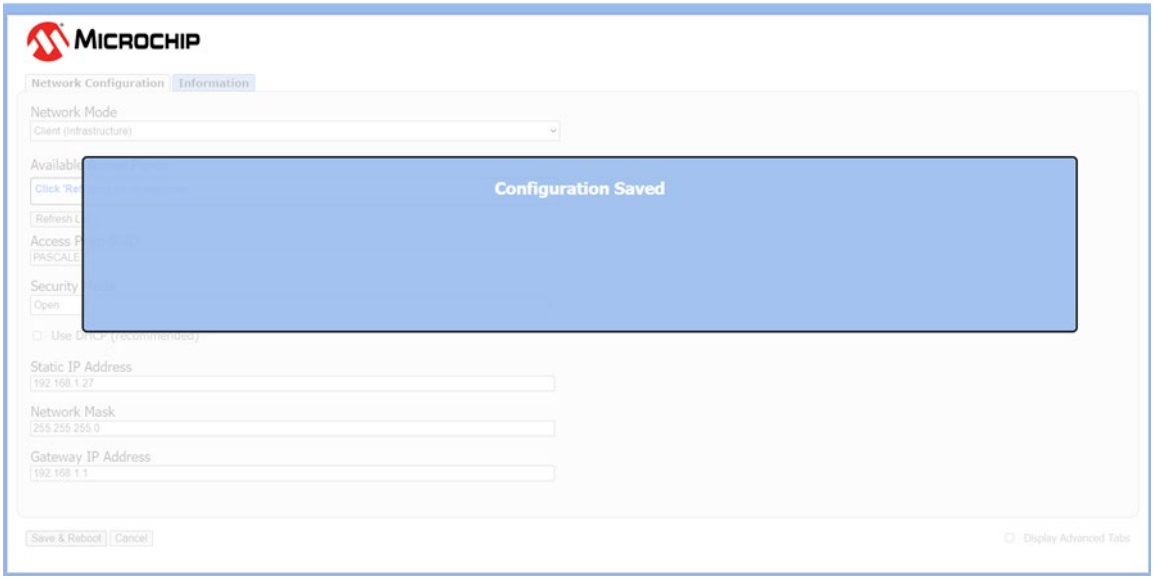
- Selecting the INFORMATION tab will show the unit's MAC address, Module Type and Battery Strength



- When configuration and setup is complete click on the SAVE & REBOOT button



- Then Wi-Fi option will save the changes, reboot, and attempt to connect to the Network SSID programmed.



Led Status codes

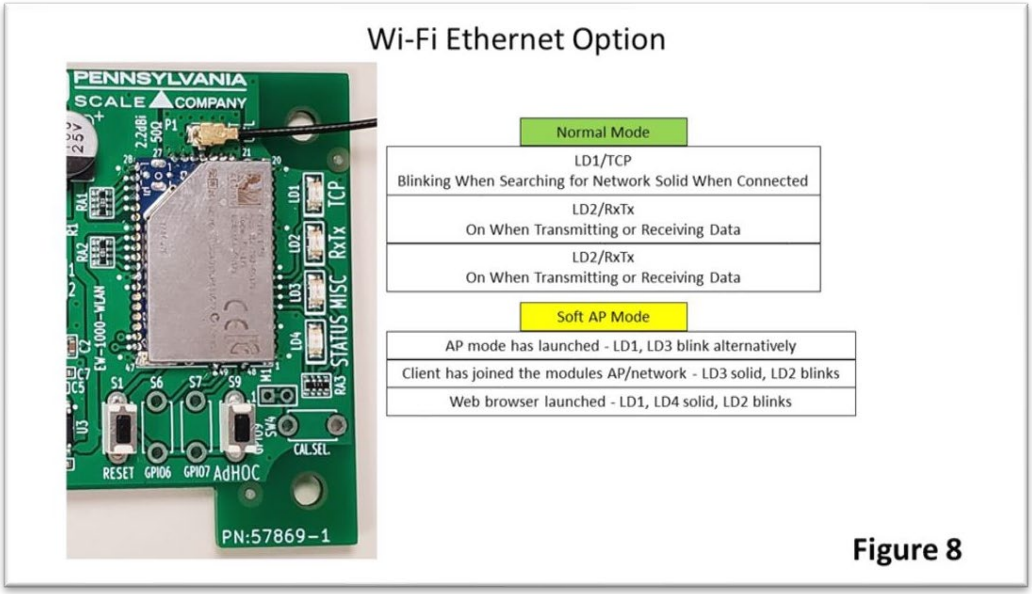


Figure 8