

TWI Technical Reference Manual Version 1.00

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Features

-Large 11” Color Touch Screen.

-Displayed resolution of 1:60,000.

-Internal resolution in excess of 1:600,000.

-Optional 8-hour rechargeable battery.

-Weighing Units: lb, kg, oz, g, toz.

-IP65 Washdown Rating.

-Three user selectable applications: Simple Weigh Scale, Counting Scale or Check Weigh Scale.

Connectivity

-RS232 Serial Port, Bluetooth, Wi-Fi, HDMI out for remote television display.

-Easily print label formats complete with barcodes via Bluetooth or RS232 Serial Port.

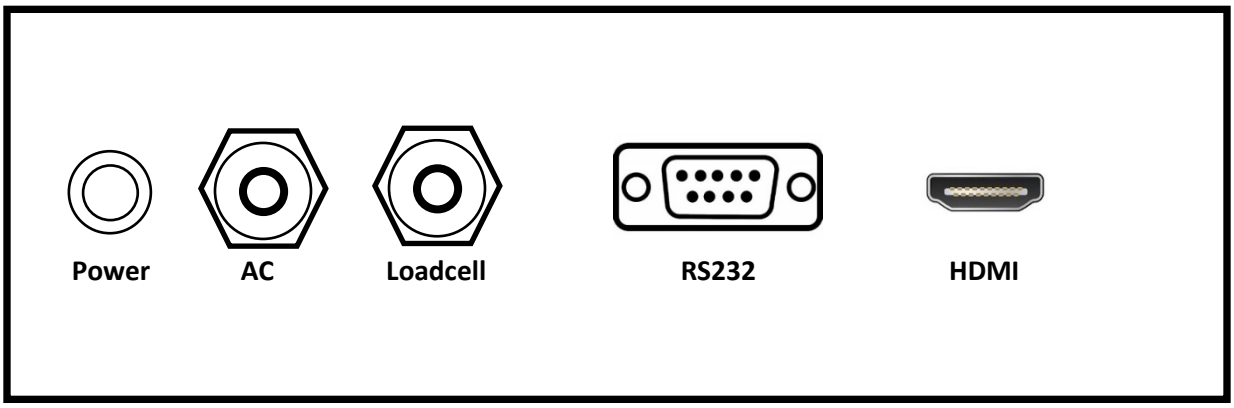


Figure 1. TWI Connectivity

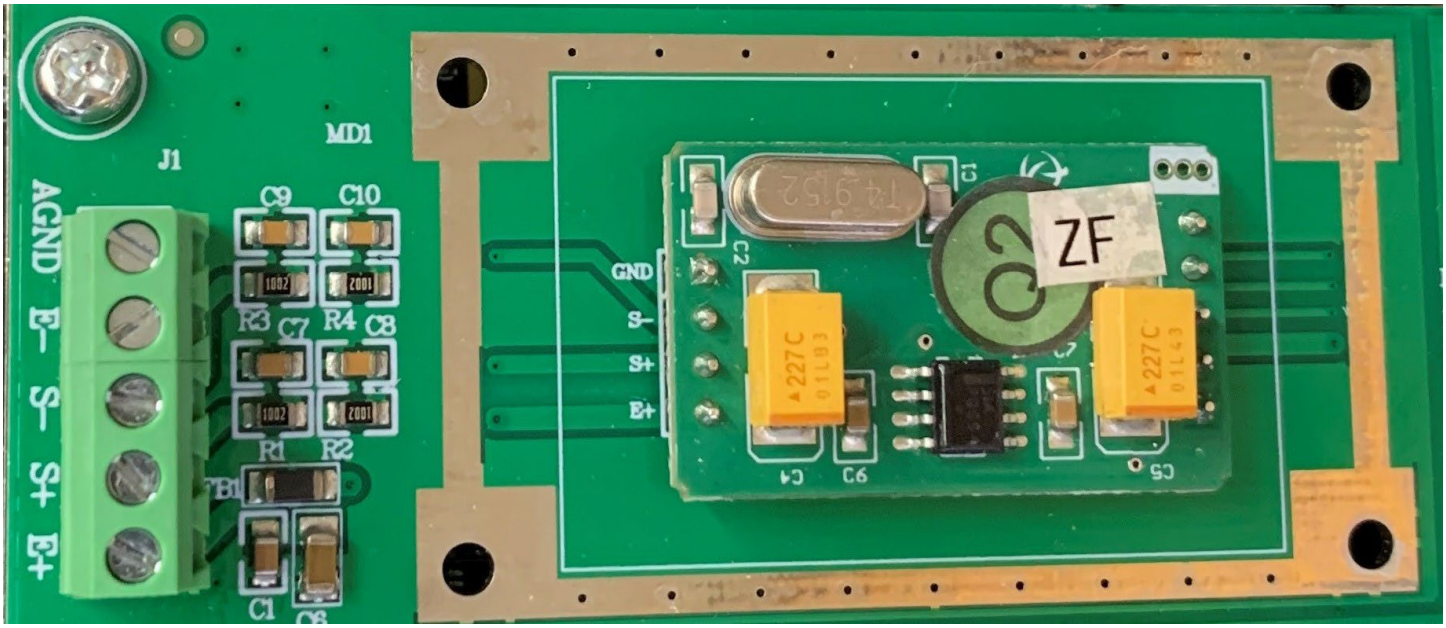
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Loadcell J1 Terminal:

J1 5 Pin	Function
1	Analog Ground
2	- Excitation
3	- Signal
4	+ Signal
5	+ Excitation +5 VDC

RS232 Serial Port:

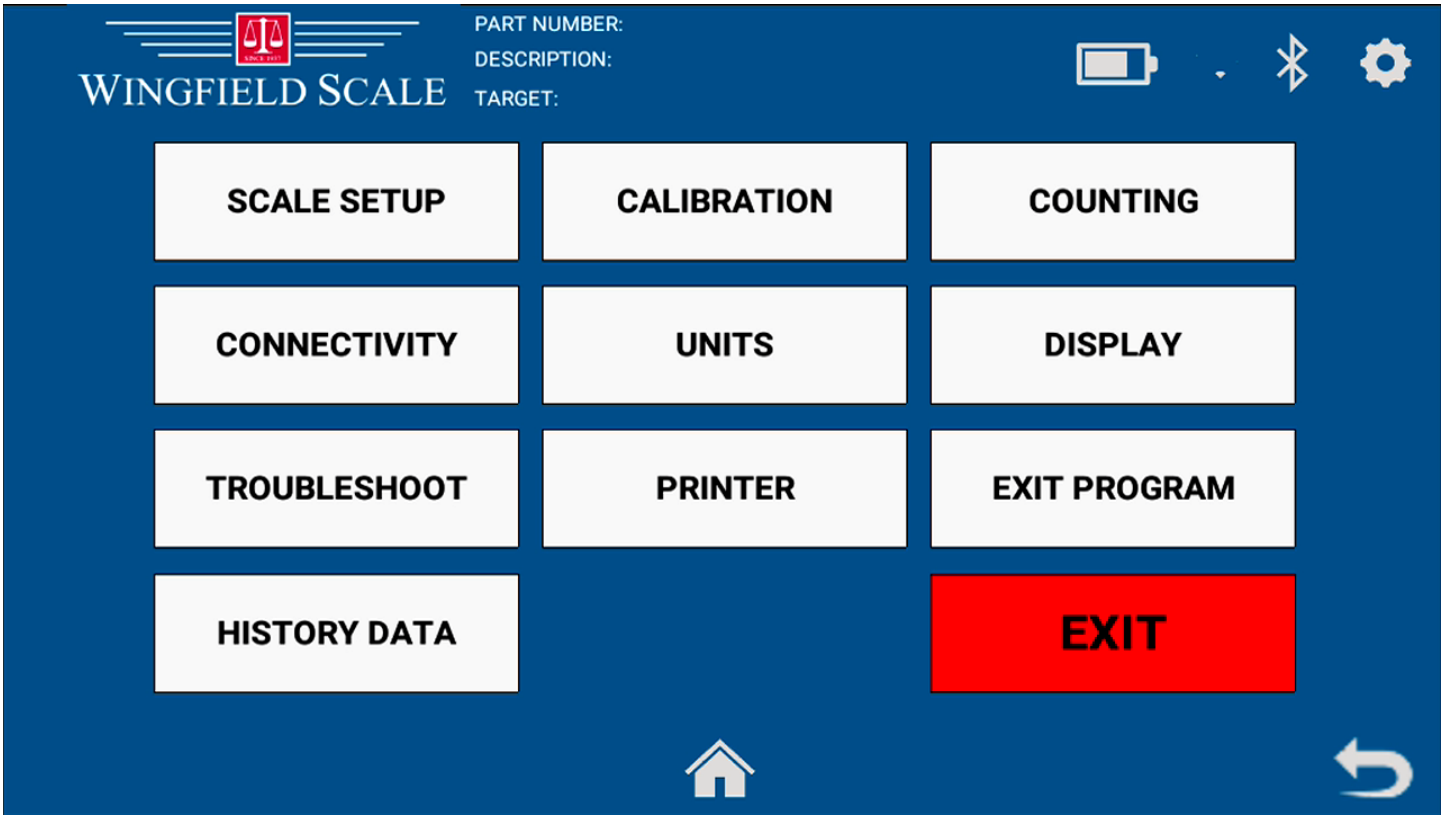
DB9	Comm 1
1	No Connection
2	RXD
3	TXD
4	No Connection
5	Ground
6	No Connection
7	No Connection
8	No Connection
9	No Connection



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TWI Color Touch Screen Indicator

Setup Menu



Accessing and entering the setup menu . The password for the menu is **23640**.

Menu selections:

SCALE SETUP: Configure Capacity, Resolution, Zero Tracking, Filtering, Motion Divisions, Motion Delay, Percent Zero, Scale Mode (Application Selection).

CALIBRATION: Perform Linear Calibration, Span Calibration.

COUNTING: Default Sample Size, Auto Zero Scale.

CONNECTIVITY: Configure Wi-Fi, Bluetooth, Ethernet Port, Date-Time.

UNITS: Choose Calibration Unit, Select Units to display.

DISPLAY: Sleep Timer, Color Theme, Print Button, Brightness, Mode Button, Language.

TROUBLESHOOT: View Battery Status, mV/V Output, Last Calibrated Date, Software Revision.

PRINTER: Select Printer Port, Turn On/Off Auto-print (Check Weigh), Label Data, Variables

EXIT PROGRAM: Exit to Android OS. Note: TWI program must be re-launched by touching the logo.

HISTORY DATA: Data Collected from Check Weigher.

EXIT: Return to main scale.

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Scale Setup

Before initial use the scale needs to be configured by entering SCALE SETUP. Refer to Figure 2 for specific settings.

Set the appropriate capacity and resolution.

Set divisions for zero tracking (0 by default = OFF). If any number is selected above 0 then the scale will automatically track back to zero based on that number which is in lowest divisions above zero.

Set filtering: There are 10 levels of filtering to choose from. The higher the number the more filtering. 0 = OFF. Select type of filtering (3 by default).

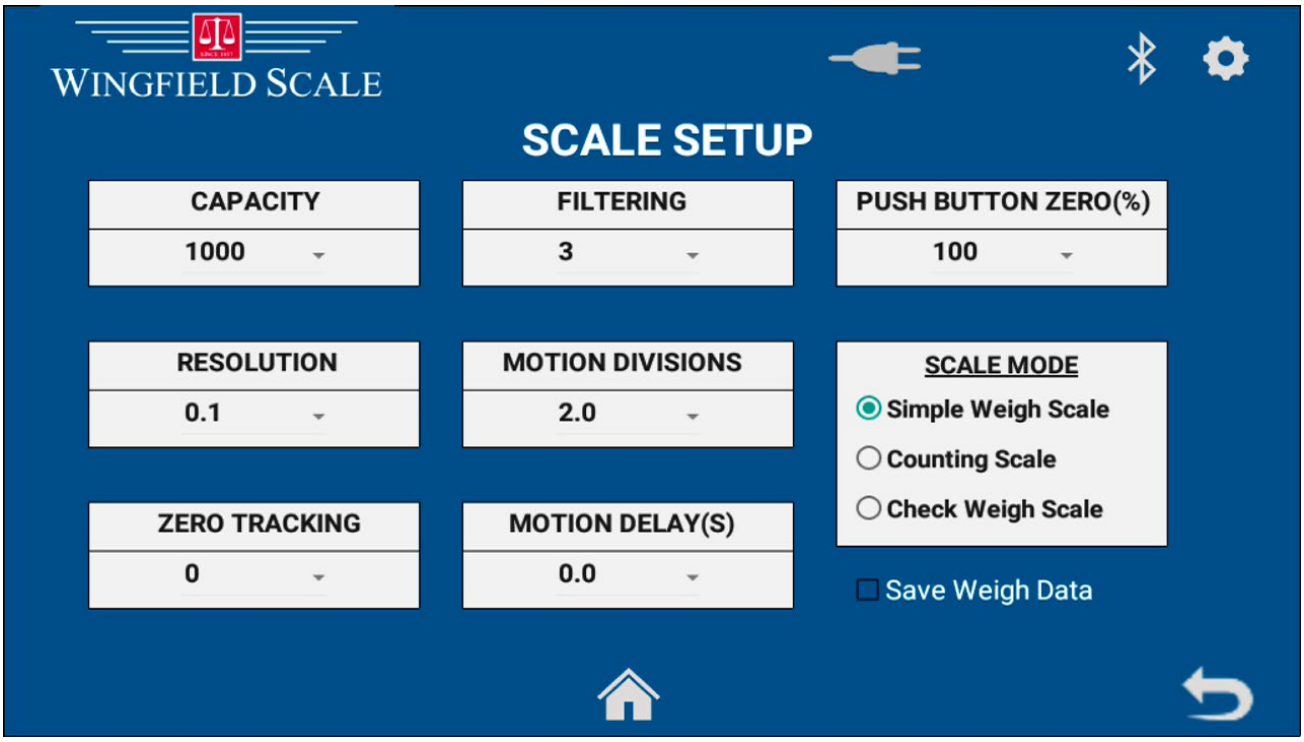
Set the number of divisions for motion (2.0 by default). If the weight is within the divisions selected, then it is considered stable and will allow a print job to occur.

Set the motion delay in seconds (0 by default). The greater the number the longer it takes to perform a print job after a stable weight reading.

Set Push Button Zero(%). (100 by default) This will inhibit the zero button. If the weight in the vessel is greater than the % value, then the operator cannot zero the scale. This keeps the operator from accidentally zeroing the vessel while there is product in the vessel.

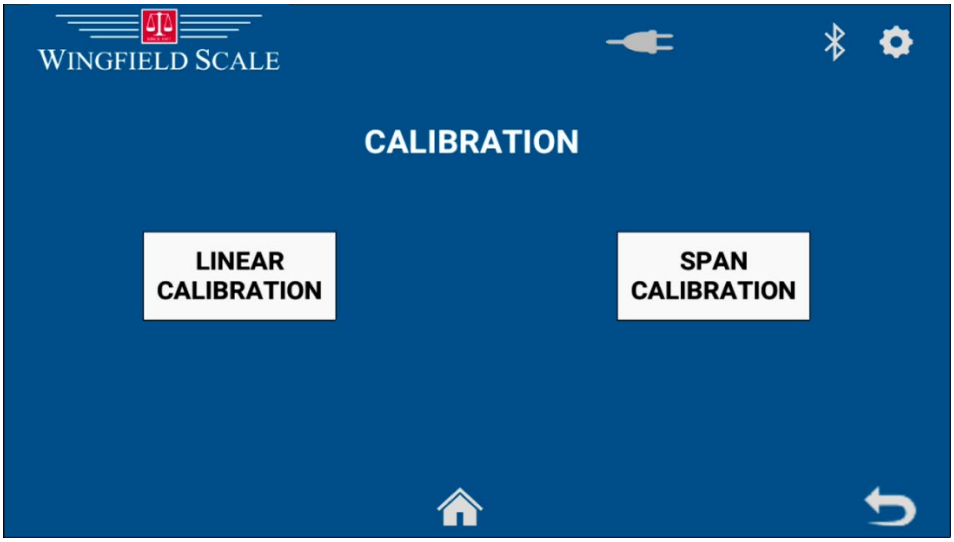
Select Scale Mode: The choices are: Simple Weigh Scale, Counting Scale or Check Weigh Scale. This is the default application used on power-up.

Save Weigh Data: Used along with the check weigh scale application to log transactions.



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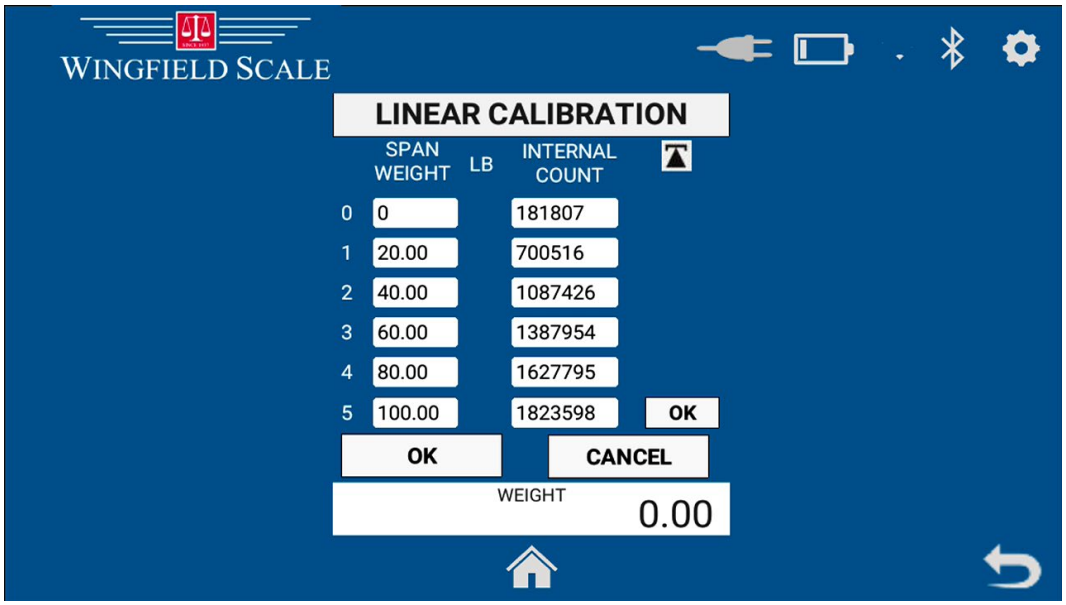
Calibration



There are two different calibration procedures that can be performed on the TWI, linear calibration, or span calibration.

Linear calibration offers 6 points of calibration including zero. Use this method of calibration if the test weights applied to the scale between zero and span calibration points are showing slight inaccuracies.

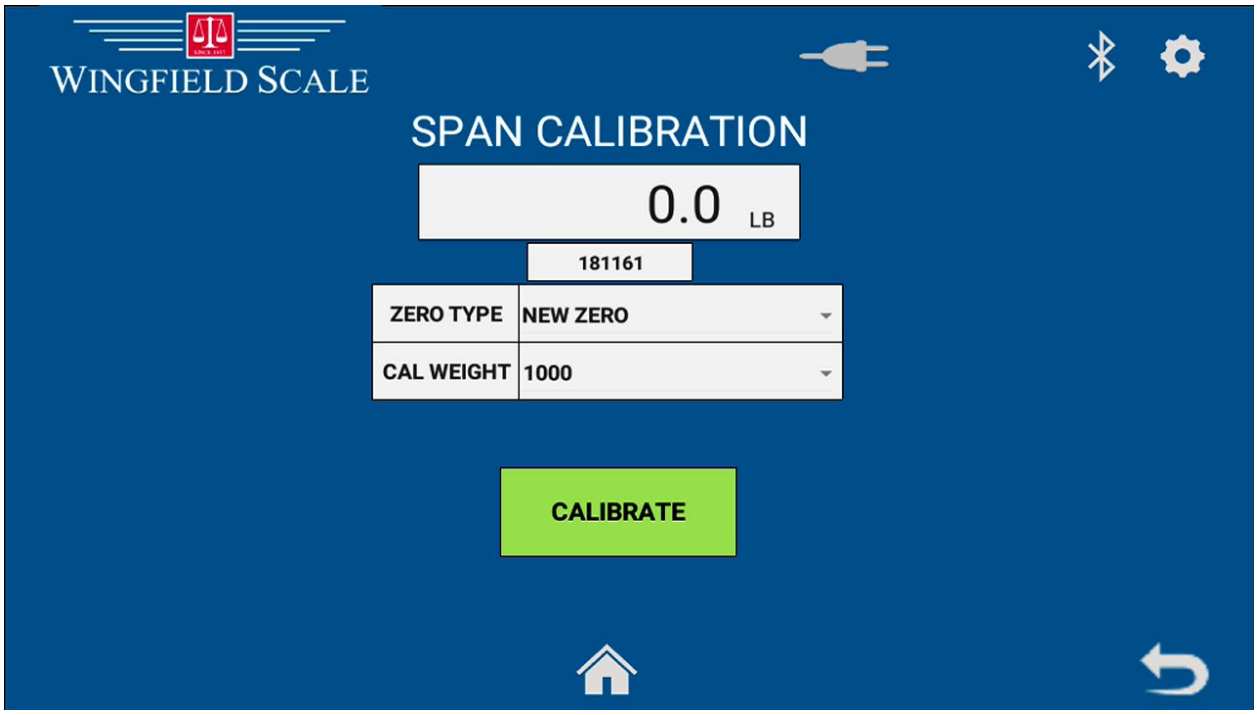
1. Upon entering the linear calibration mode, the linear calibration screen appears.
2. Confirm the capacity and divisions and press OK.
3. The linear calibration screen appears with 6 calibration points, 0 – 5.
4. Calibration point 0 is for the zero-reference calibration. Confirm that the scale is empty and press OK.
5. Calibration point 1 is the first test weight. Place the first weight on the scale and press OK.
6. Repeat step 5 for calibration points 2 through 5.
7. Press final OK after last point OK to save.



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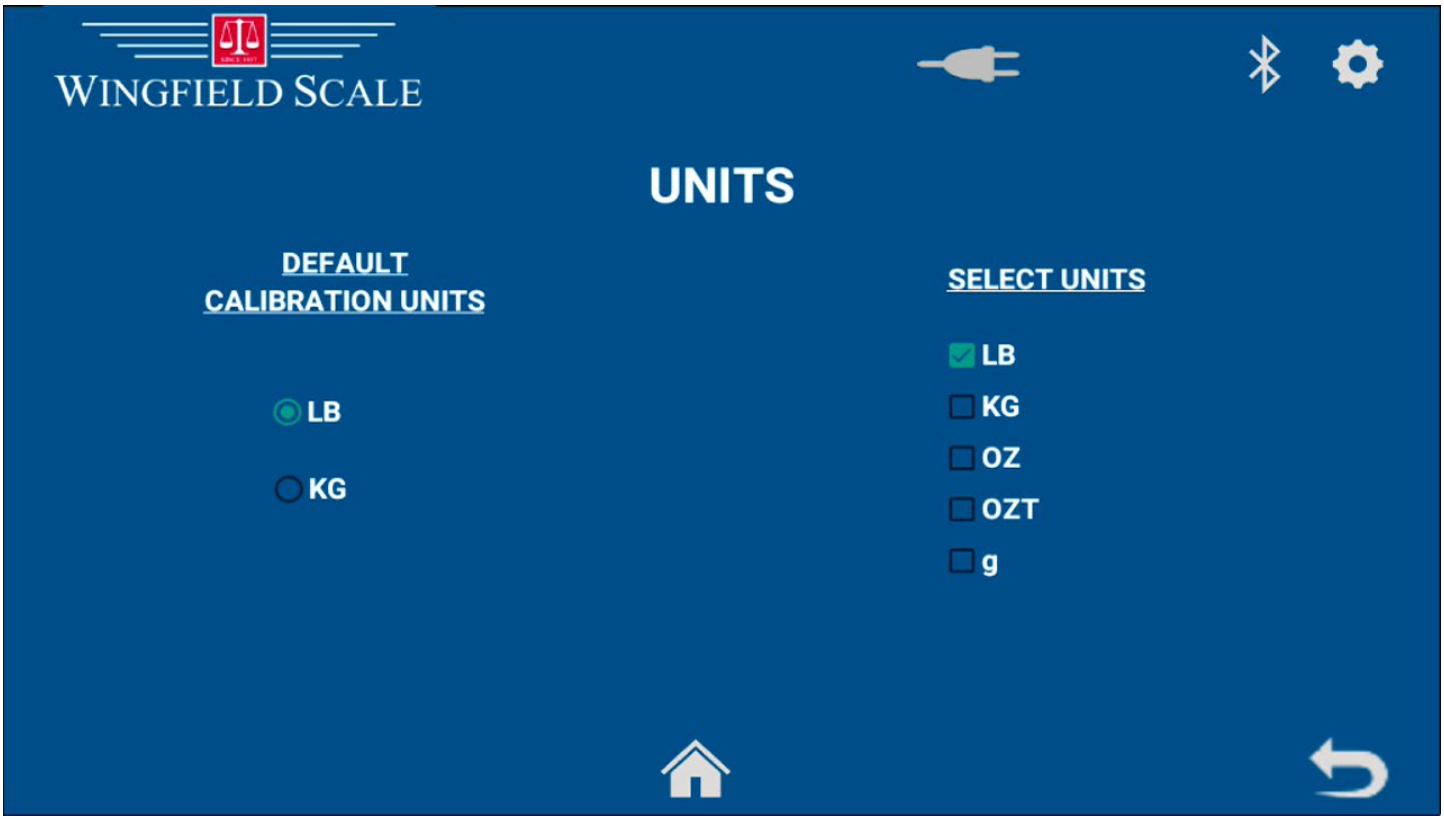
Span calibration is a single point calibration using a single test weight as a reference.

1. Upon entering the span calibration mode, the span calibration screen appears.
2. Under ZERO TYPE there are 4 selections.
    a. NEW ZERO – Performs a new zero reference followed by a span reference.
    b. LAST ZERO – Recalls last zero reference stored followed by a span reference.
    c. ONLY ZERO – Performs a new zero reference only. Does not require a span reference.
    d. TEMPORARY ZERO – Will zero off existing weight in vessel and allow for a span weight to be calibrated. Note: After the vessel is empty it is good practice to go back and do an ONLY ZERO.
3. Under CAL WEIGHT enter the desired calibration reference weight to be used.
4. Press CALIBRATE
5. Make sure scale is empty - Press OK
6. Add Calibration Weight. Press OK
7. Calibration Successful! Press OK



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The UNITS screen allows you to select the default calibration units and also to select the units of measure that will be displayed by pressing the UNITS key in the weigh mode. The choices for default calibration units are LB and KG. The choices for the weigh mode units are LB, KG, OZ, OZT, g.



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The TWI printer screen has multiple setup screens that allow for custom formats to a verity of printers and peripherals. The printer port choices are:

1. OFF
2. RS232 (Serial Port) Default is 9600 baud, no parity, 8 data bits, 1 stop bit.
3. TCP (TCP/IP)
4. BLE (Bluetooth)

DATA OUT Option

DATA OUT SETUP

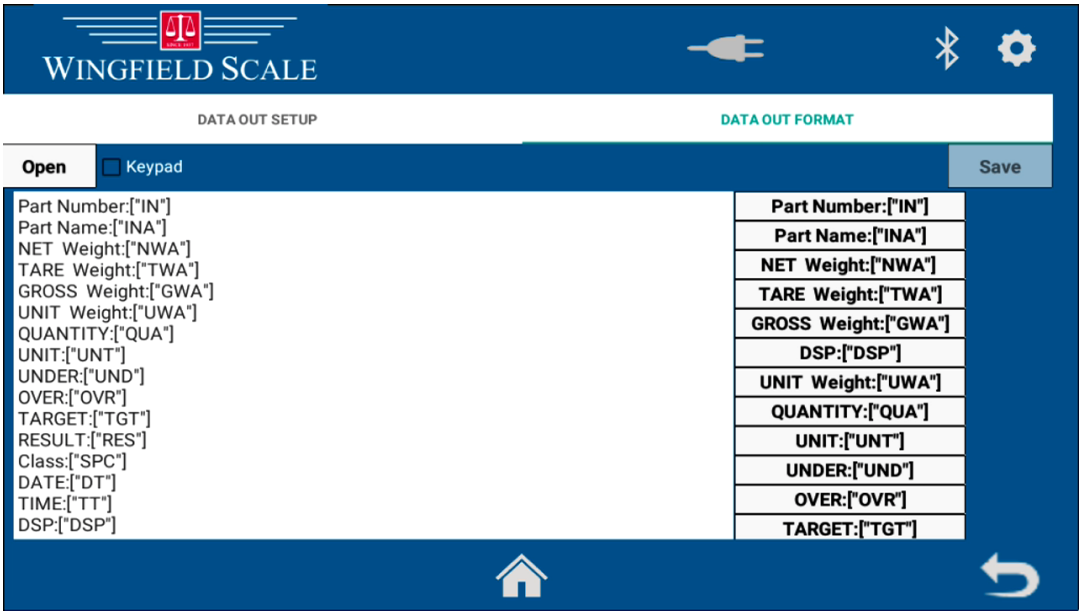
The TWI can be configured to send a data string out of the serial port or the Ethernet port using the DATA OUT option. When selected, DATA OUT SETUP options appear. Under SETUP there are choices between RS232 or TCP with the following additional options:

1. OFF
2. Stable Transmit
3. Continuous Transmit
4. Transmit by pressing the PRINT key.

After selecting one of the above options the SAVE button appears. If Continuous Transmit was selected, then an additional setting will appear. Speed (ms). This is the rate at which the continuous transmit will send the data. Press SAVE to update your choices.

DATA OUT FORMAT

Select this tab to write a custom format for the DATA OUT option. You can select the “Keypad” option to pull up an Alpha-Numeric keypad to edit the default transmit. Press SAVE after any edits.



Printer

AUTO.PRINT (Check Weigh Scale Mode)

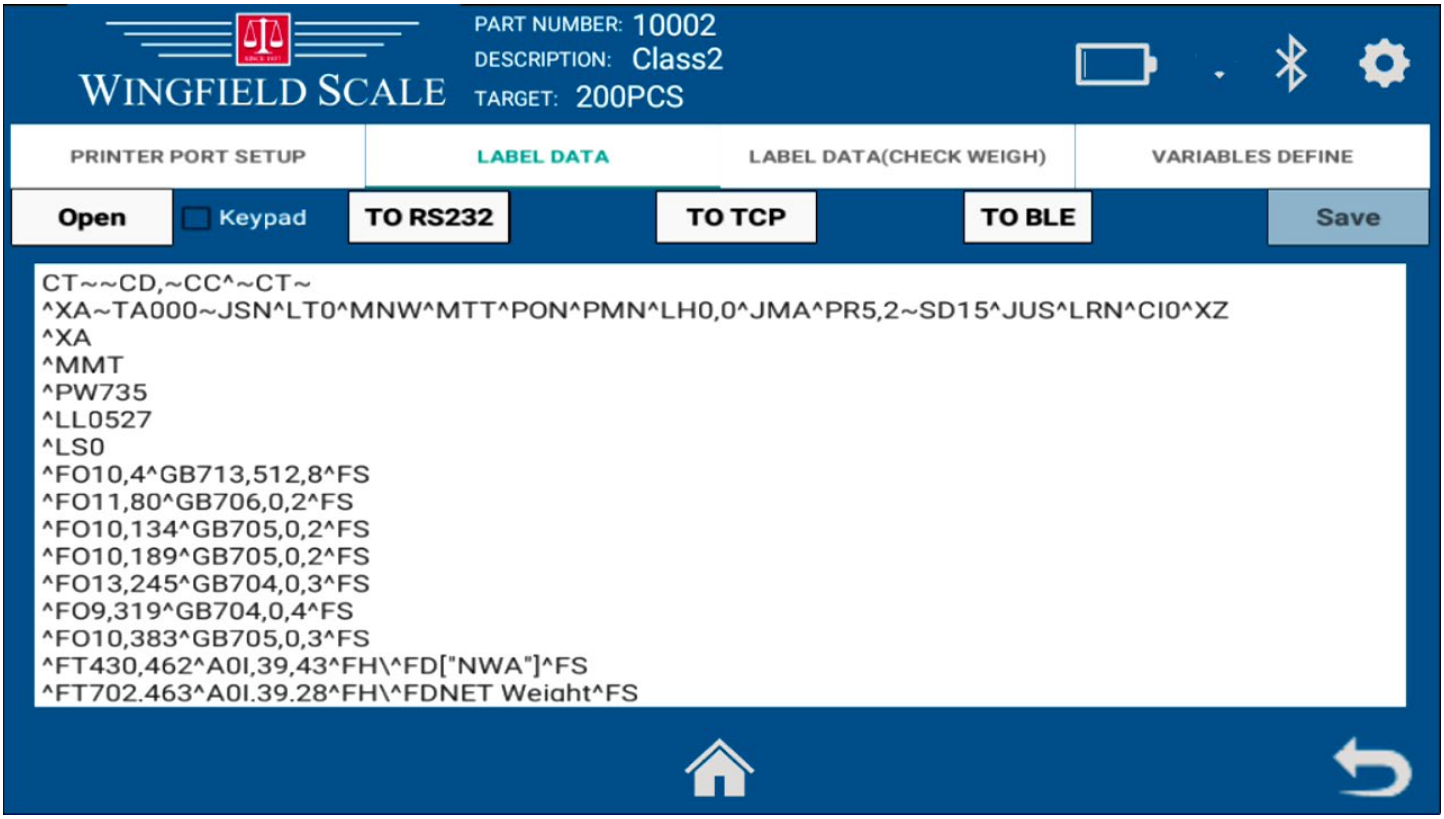
This arms the check weigher application to automatically print a label and save a transaction whenever a target weight or count is reached. After selecting this option, a sub-menu will appear that delivers a tighter layer of qualification called “Arm Print With Tare”. When enabled, the operator must perform a tare before the check weigher can arm again to print a label for the next item.

Print speed: This is a delay between each line (in milli-seconds) in the transmitted label data. The default is 5.

LABEL DATA

In this tab label data can be modified for the type of application needed by using tools such as Zebra Designer. The label data is sent by pressing the PRINT key in the simple weigh and counting scale applications. You can also select the “Keypad” option to pull up an Alpha-Numeric keypad to edit the default transmit. Press SAVE after any edits.

Label data can also be imported by creating a text file with the label data stored in it. Create a label using Zebra Designer: Click on "File" and choose "Print", make sure "Print to File" is selected, when the save dialogue comes up be sure to save the file as .zpl. Save or copy the .zpl file to a USB jump drive. To import the .zpl file: Press “OPEN” then choose “USB”. Choose the .zpl file and press “OK”. The label data will be replaced with the new label data. ***Note: To access the internal USB port, you will need to purchase a right-angle USB extension cable P/N MRFS-0104W [1ft. White USB 2.0 Extension Cable A male Right Angle to A Female (usbgear.com)]***.



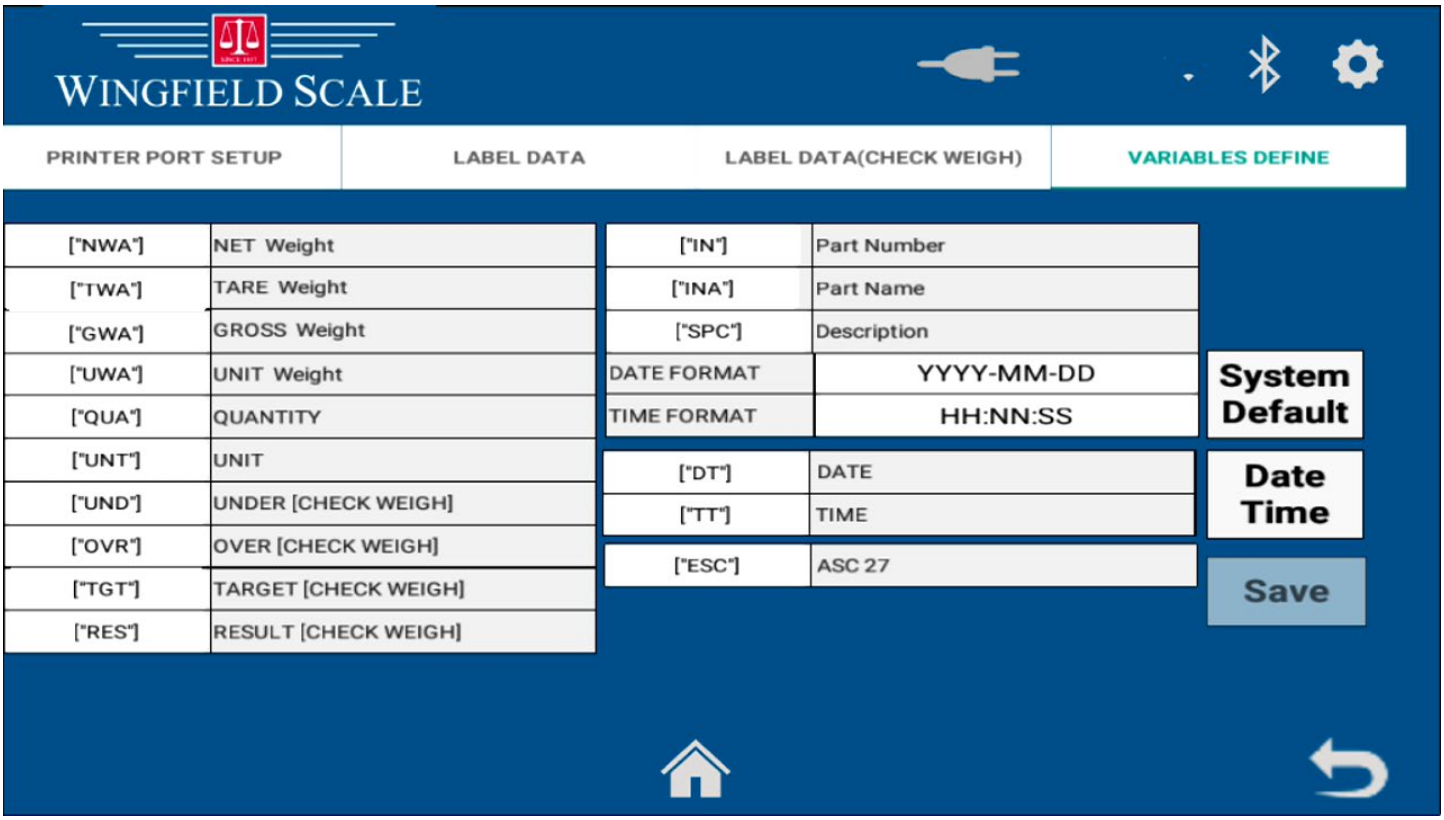
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LABEL DATA (CHECK WEIGH)

This tab contains label data specifically for the check weigher application. This is the label that prints when AUTO.PRINT is armed, and the target weight is reached.

VARIABLES DEFINE

This tab contains the active application variables that are used within the label data. The variables are as follows:



Example: The NET Weight is [“NWA”]

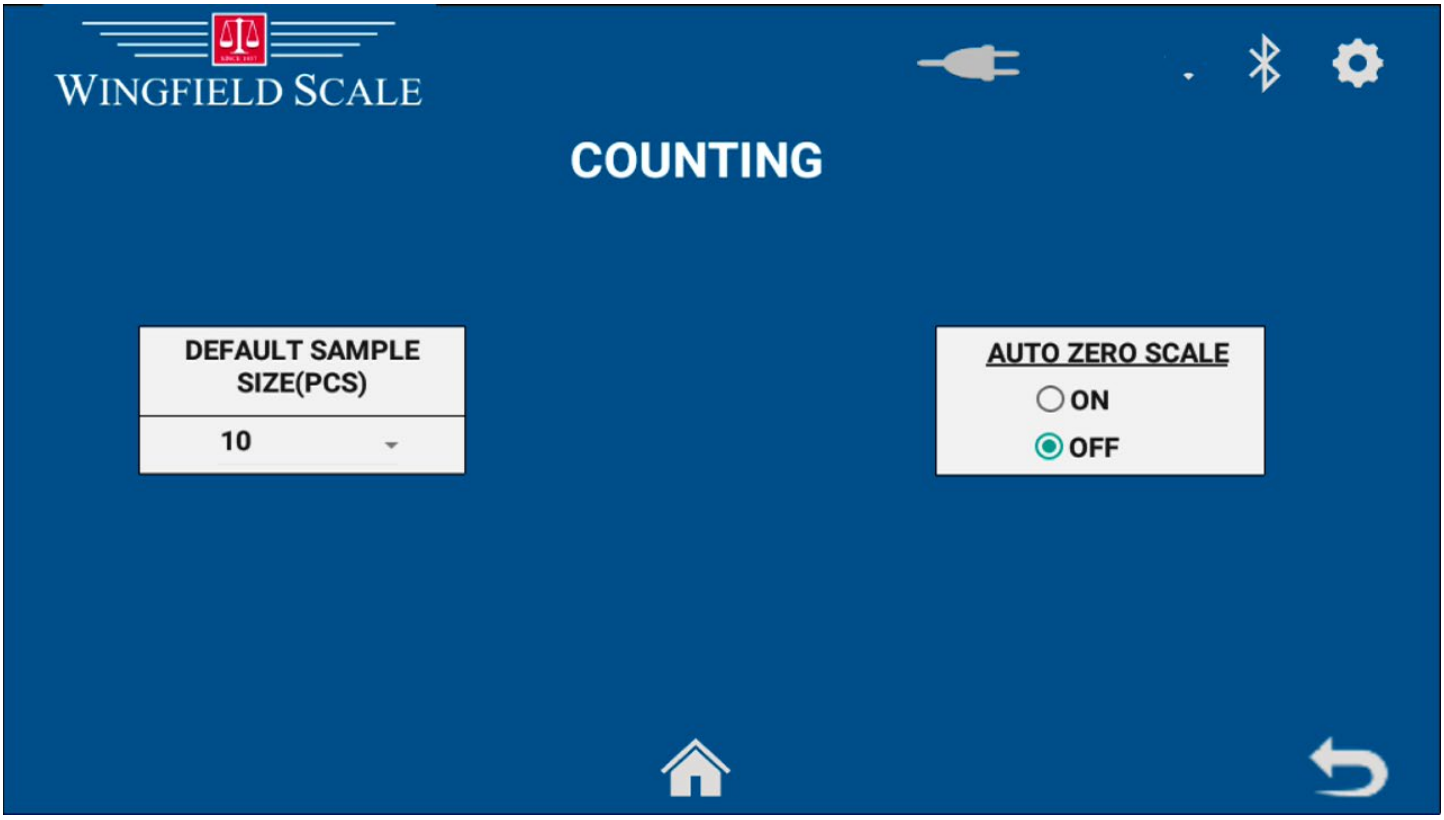
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DEFAULT SAMPLE SIZE(PCS)

The default sample size can be changed here. The default is 10 but can be set to any size. This is what is displayed when the “SAMPLE” button is pressed on the counting scale application.

AUTO ZERO SCALE

If enabled, the quantity will automatically be tracked to zero based on the zero tracking settings under SCALE SETUP. This is set to OFF by default.



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SLEEP TIMER(MIN)

This enables the screen saver which is recommended when the optional battery is installed. Setting this to zero (default) disables the screen saver.

COLOR THEME

There are two options: GREEN ON BLACK DISPLAY or BLACK ON WHATE DISPLAY (Default). When enabled, GREEN ON BLACK DISPLAY offers an inverted display.

PRINT BUTTON

This enables or disables the PRINT button on the Simple Weigh Scale and Counting Scale screens.

BRIGHTNESS

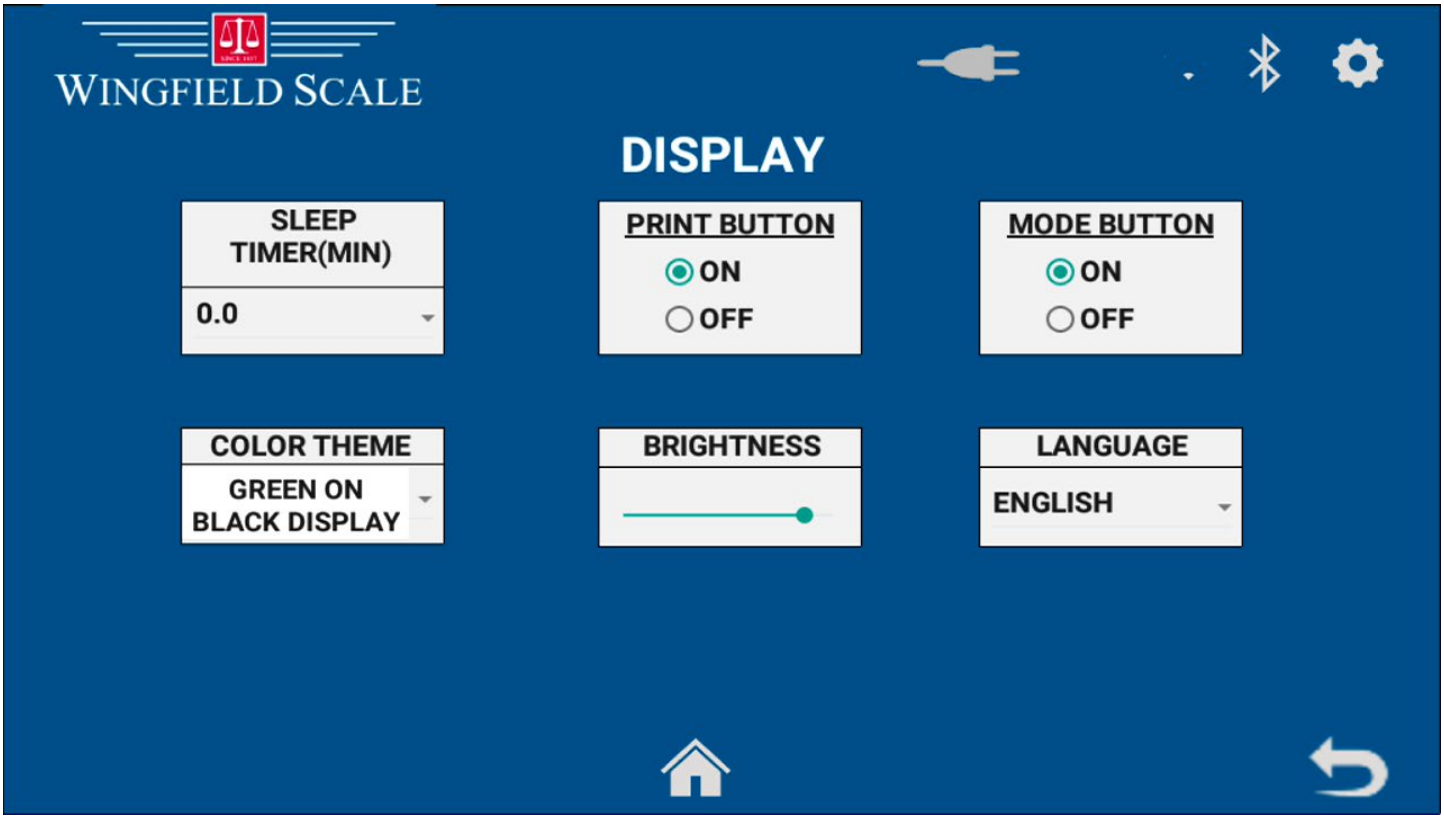
This adjusts the back light intensity of the screen.

MODE BUTTON

This enables or disables the MODE button on the Simple Weigh Scale and Counting Scale screens.

LANGUAGE

ENGLISH is currently the only option.



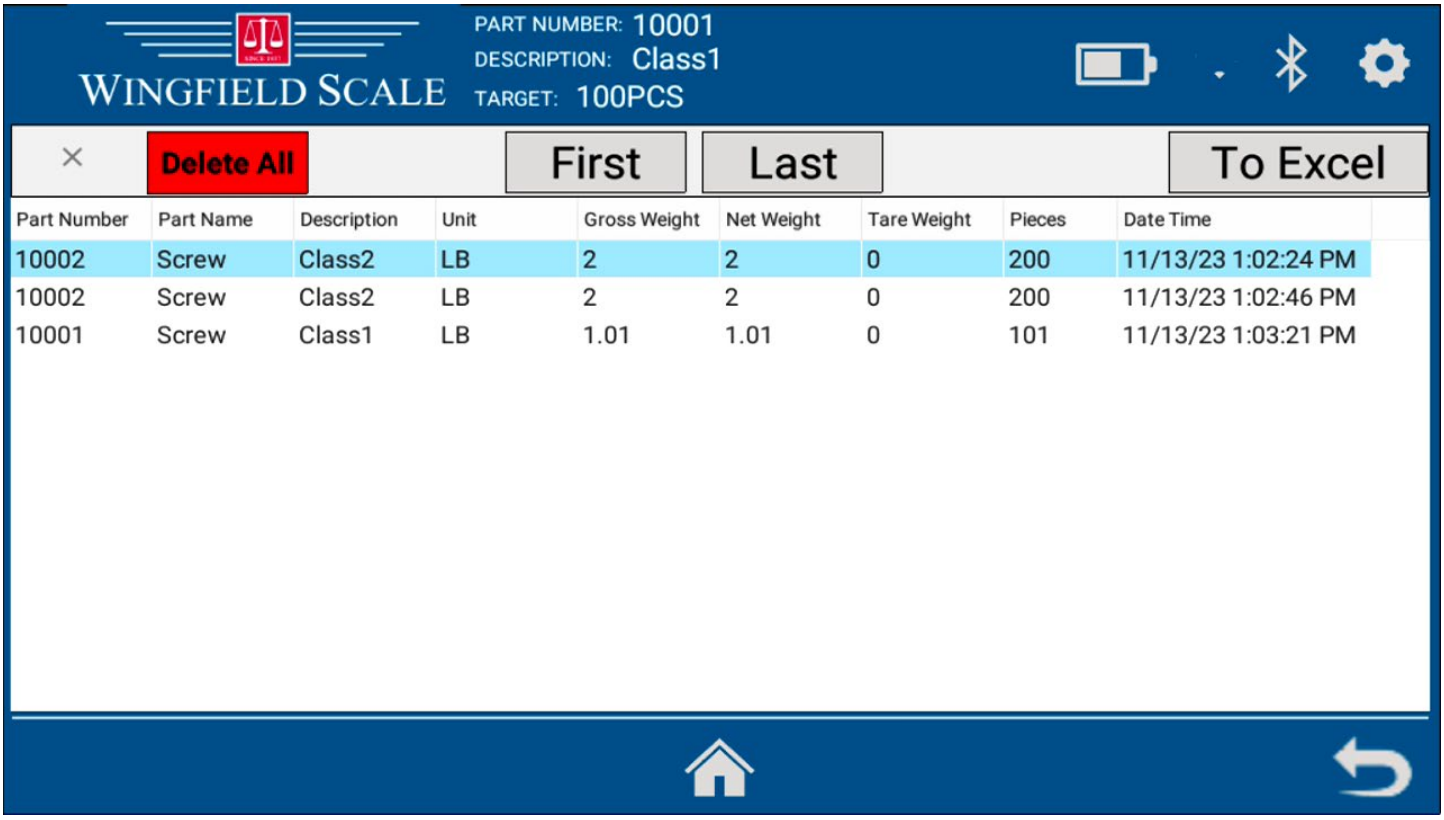
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This screen displays all the transactions from the Check Weigh application.

Operation:

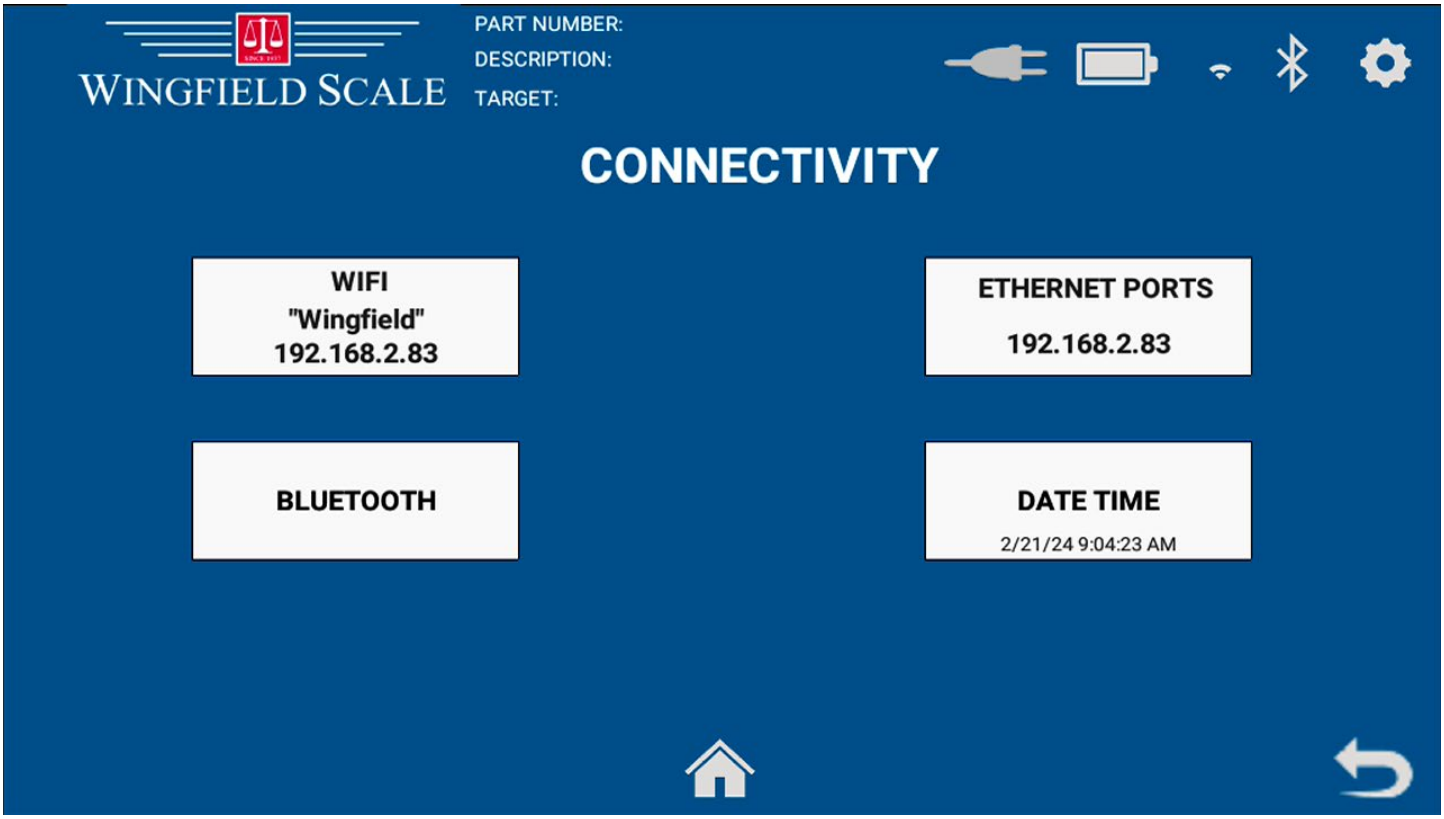
1. “X” deletes the highlighted record.
2. “Delete All” deletes all records.
3. “First” moves to the top record.
4. “Last” moves to the bottom record.
5. “To Excel” will send data to a Microsoft Excel spreadsheet. Give the file a name and press “OK”.

Note: “Save Weigh Data” must be checked in the SCALE SETUP screen before transactions will be logged.



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Connectivity setup screen.



Wi-Fi: Configure or connect to a Wi-Fi network. See figure 2a.

Bluetooth: Configure or connect to a Bluetooth printer. See figure 2b.

Ethernet Ports: Configure or connect to Ethernet. See figure 2c.

Date Time: Set the date and time. See figure 2d.

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Connectivity

Wi-Fi

Connectivity Wi-Fi setup screen.

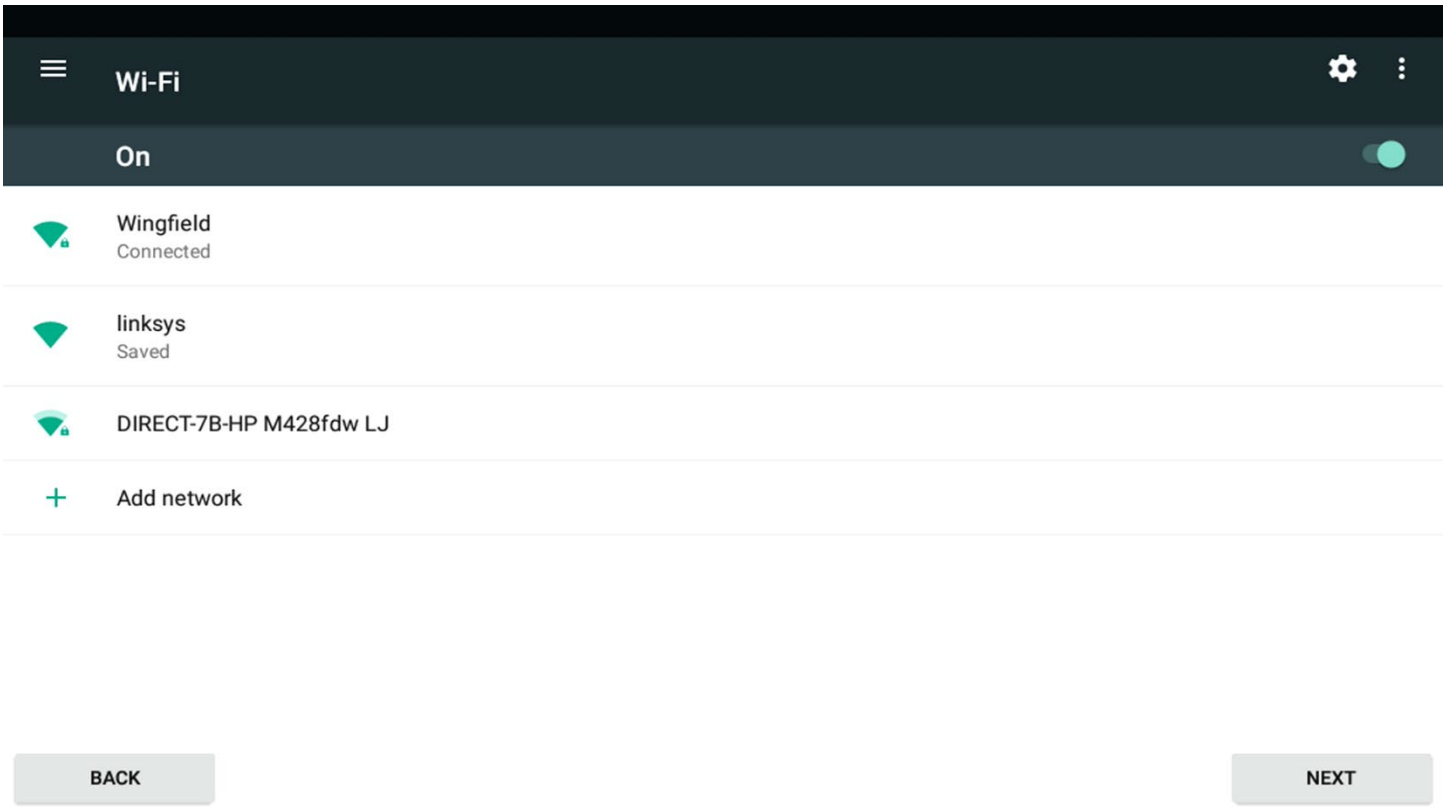


Figure 2a.

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Connectivity

Bluetooth

Connectivity Bluetooth setup screen.

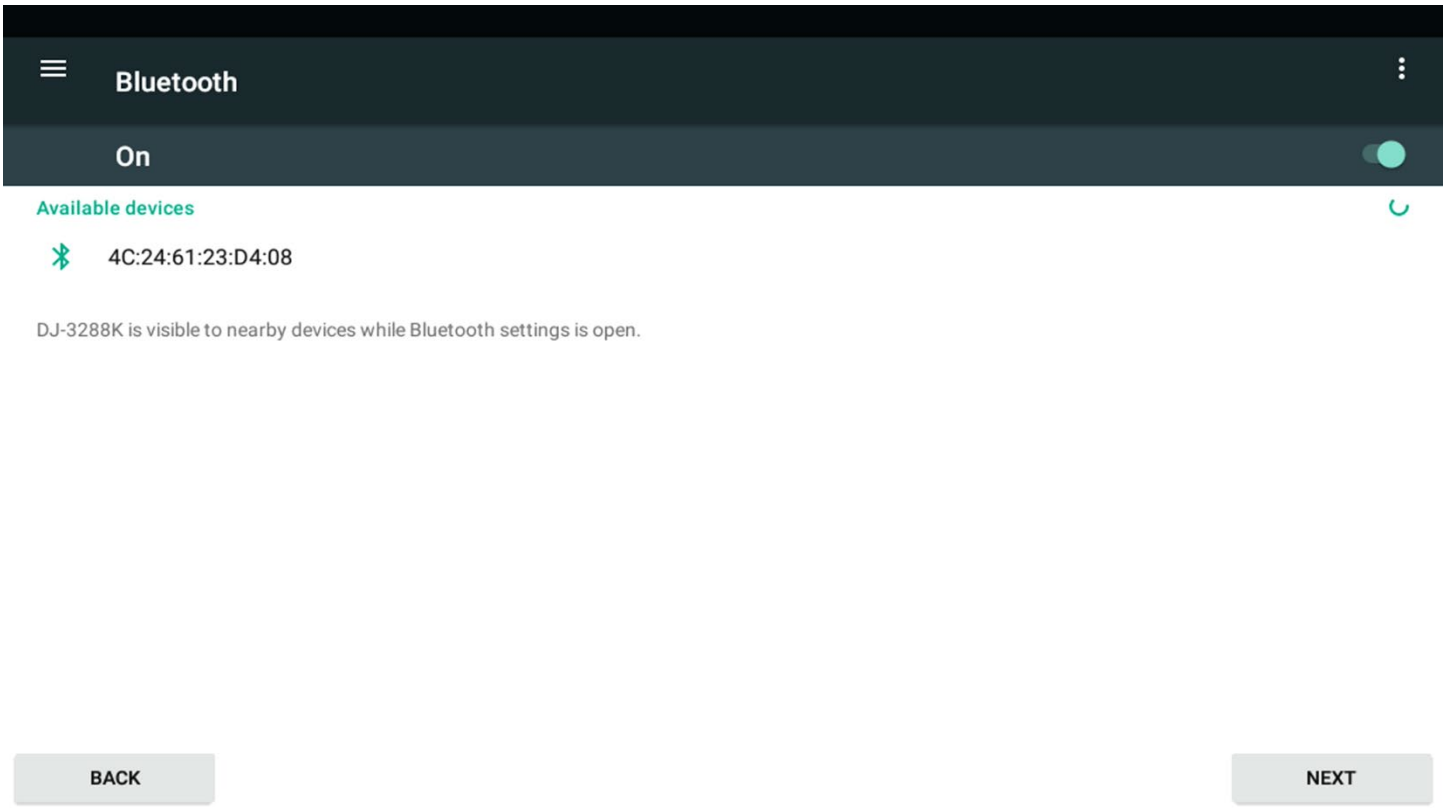


Figure 2b.

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Connectivity

Ethernet

Connectivity Ethernet setup screen.

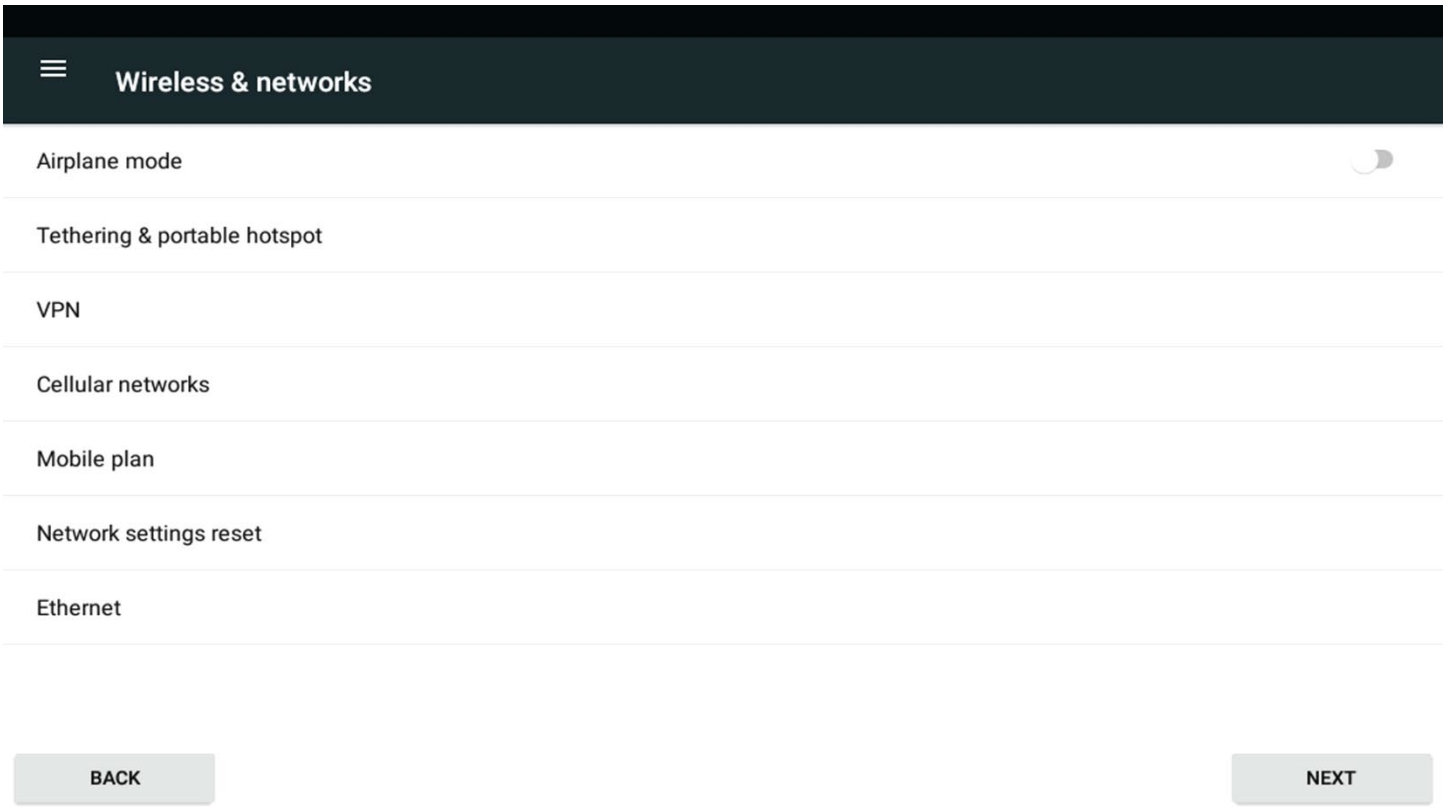


Figure 2c.

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Connectivity

Date Time

Connectivity Date Time setup screen.

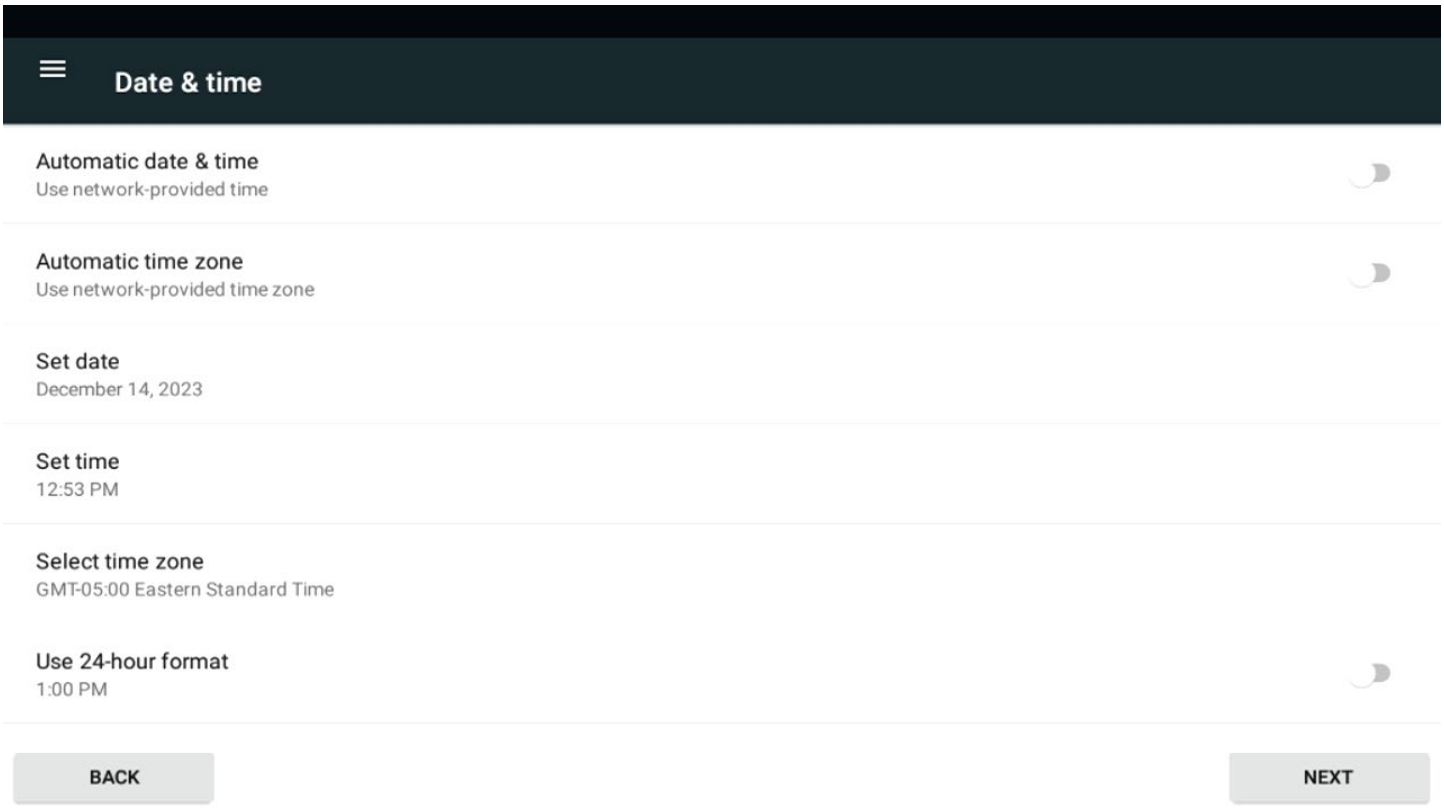
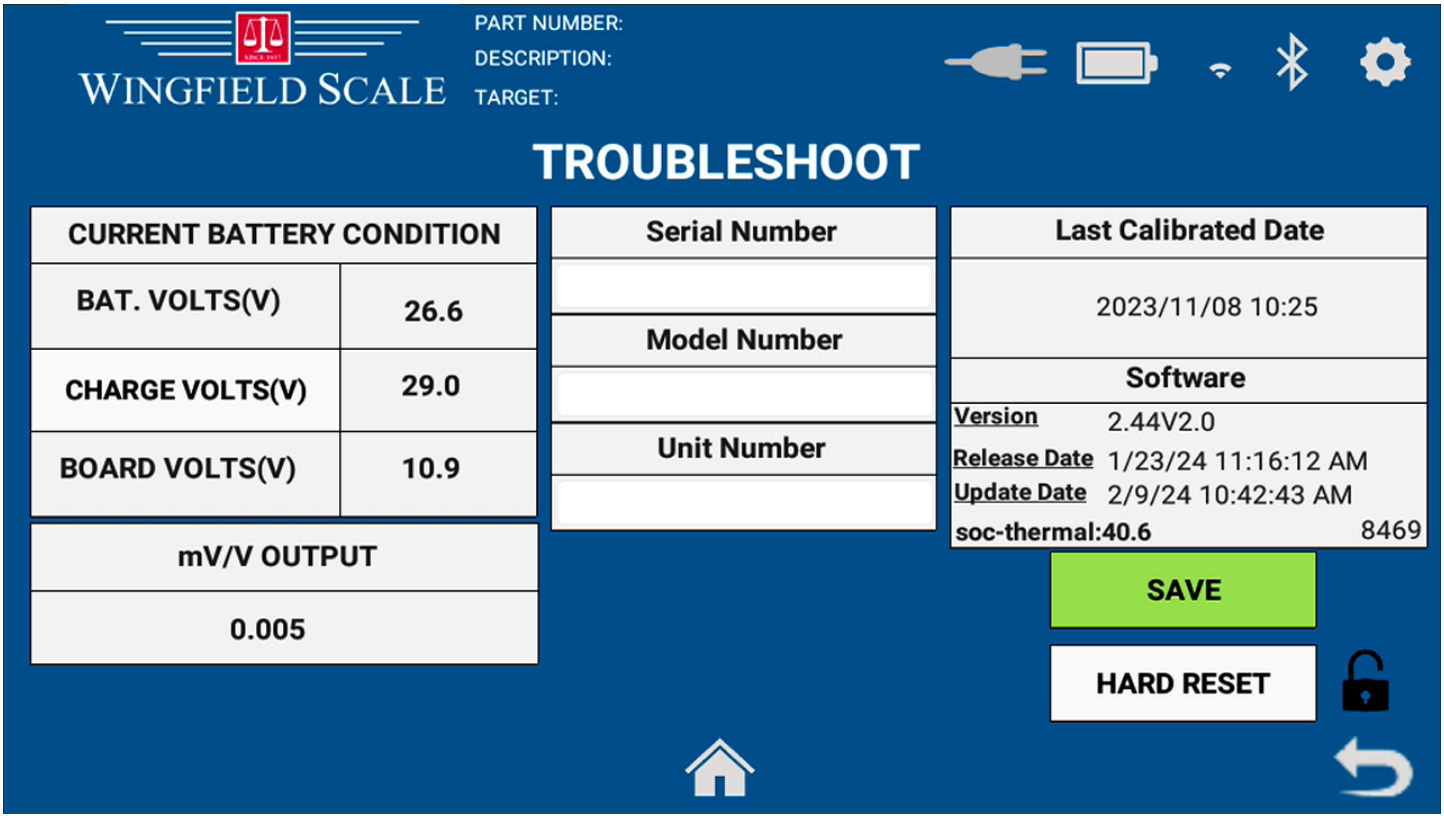


Figure 2d.

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This screen gives information about battery and main board voltages, battery charge volt status, and mV/V output of loadcells. A serial number, model number, and unit number can be assigned for reference. Hard Reset re-loads factory defaults.

By pressing the icon all modifications will be locked out.

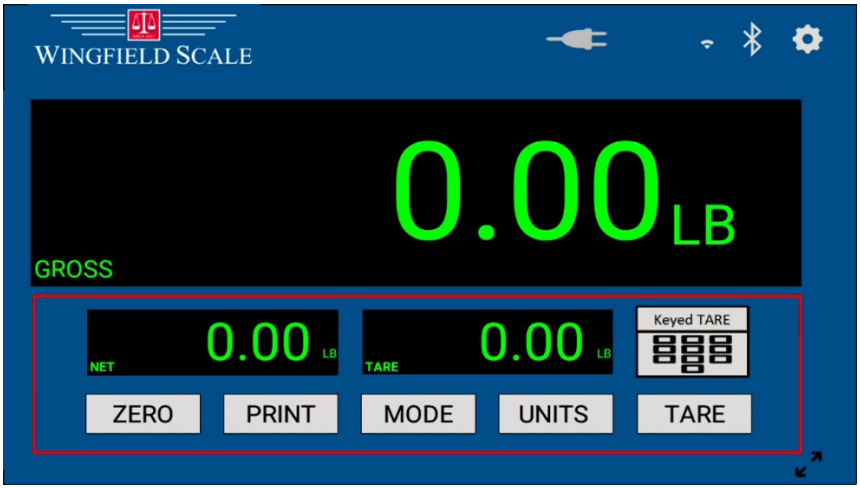
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TWI Color Touch Screen Indicator

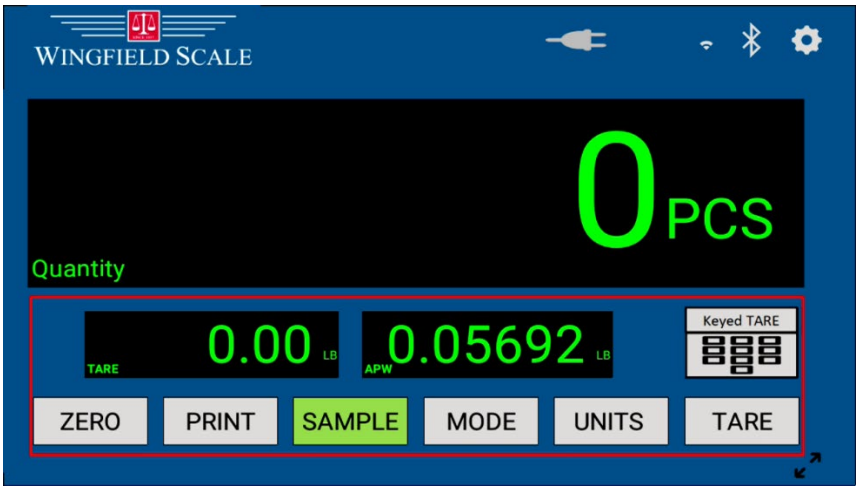
Scale Modes

The TWI has 3 built in scale modes that are selectable in the Scale Setup menu.

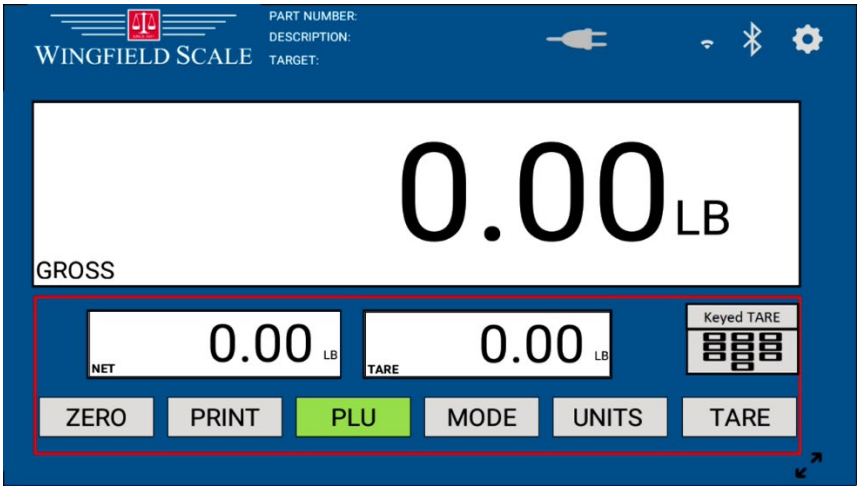
Simple Weigh Scale



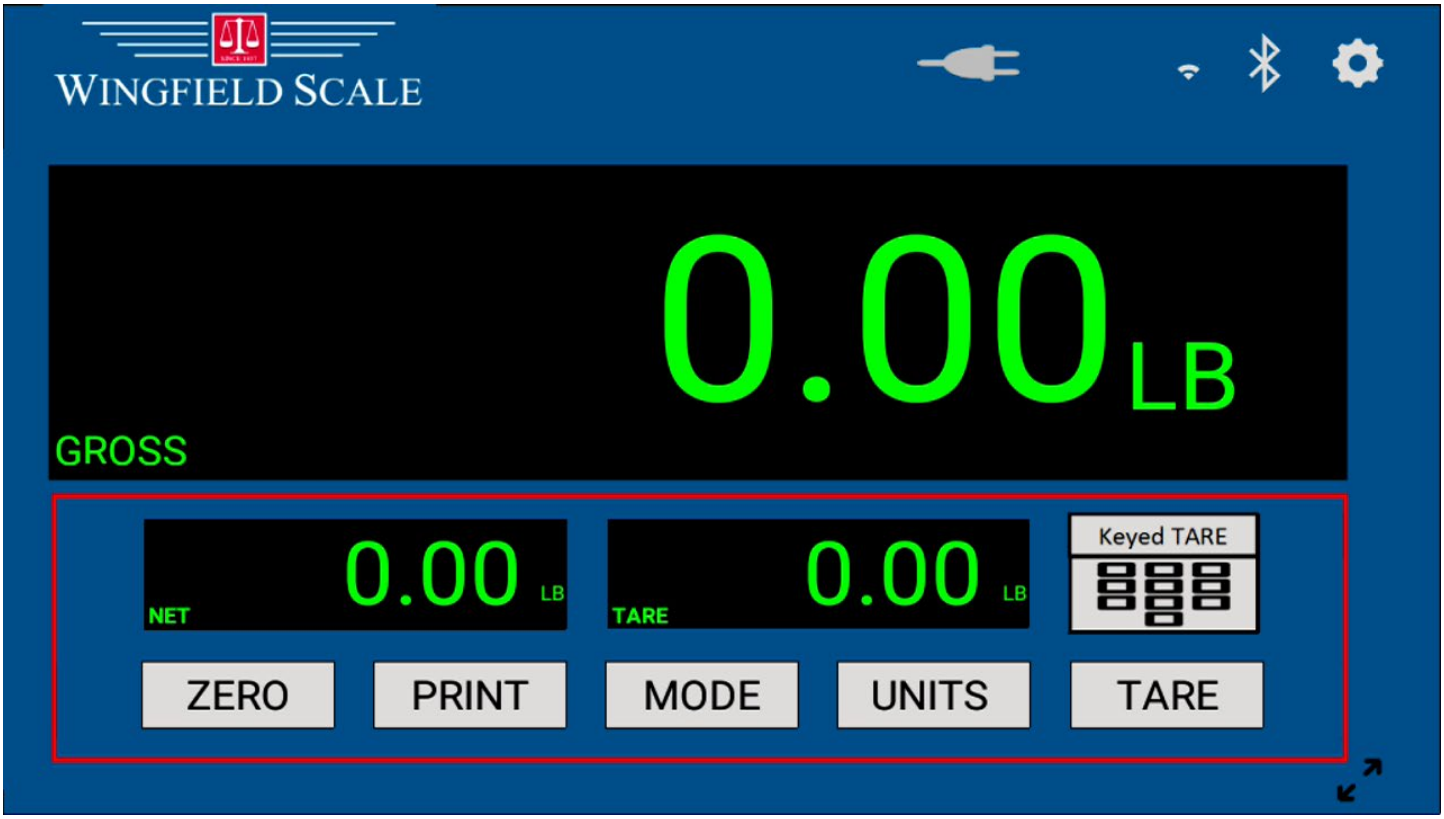
Counting Scale



Check Weigh Scale



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This is a basic everyday all-purpose weigh indicator.

ZERO push button can set the base zero value based on the percentage selected in the SCALE SETUP screen in the setup menu.

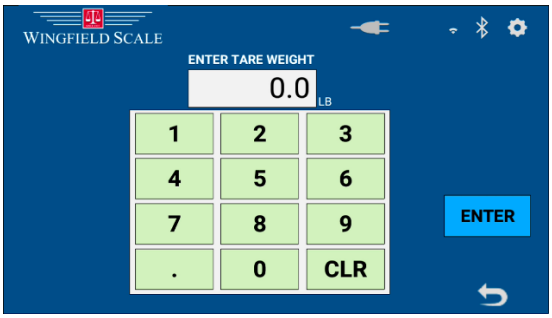
PRINT will print a label based on the label data created in the PRINTER, LABEL DATA screen in the setup menu.

MODE selects between GROSS, TARE, and NET weights.

UNITS selects between units defined in the UNITS screen in the setup menu.

TARE will store the gross weight to the tare register and display 0 net weight.

Keyboard TARE allows a tare weight to be keyed in and subtracted from the gross weight.



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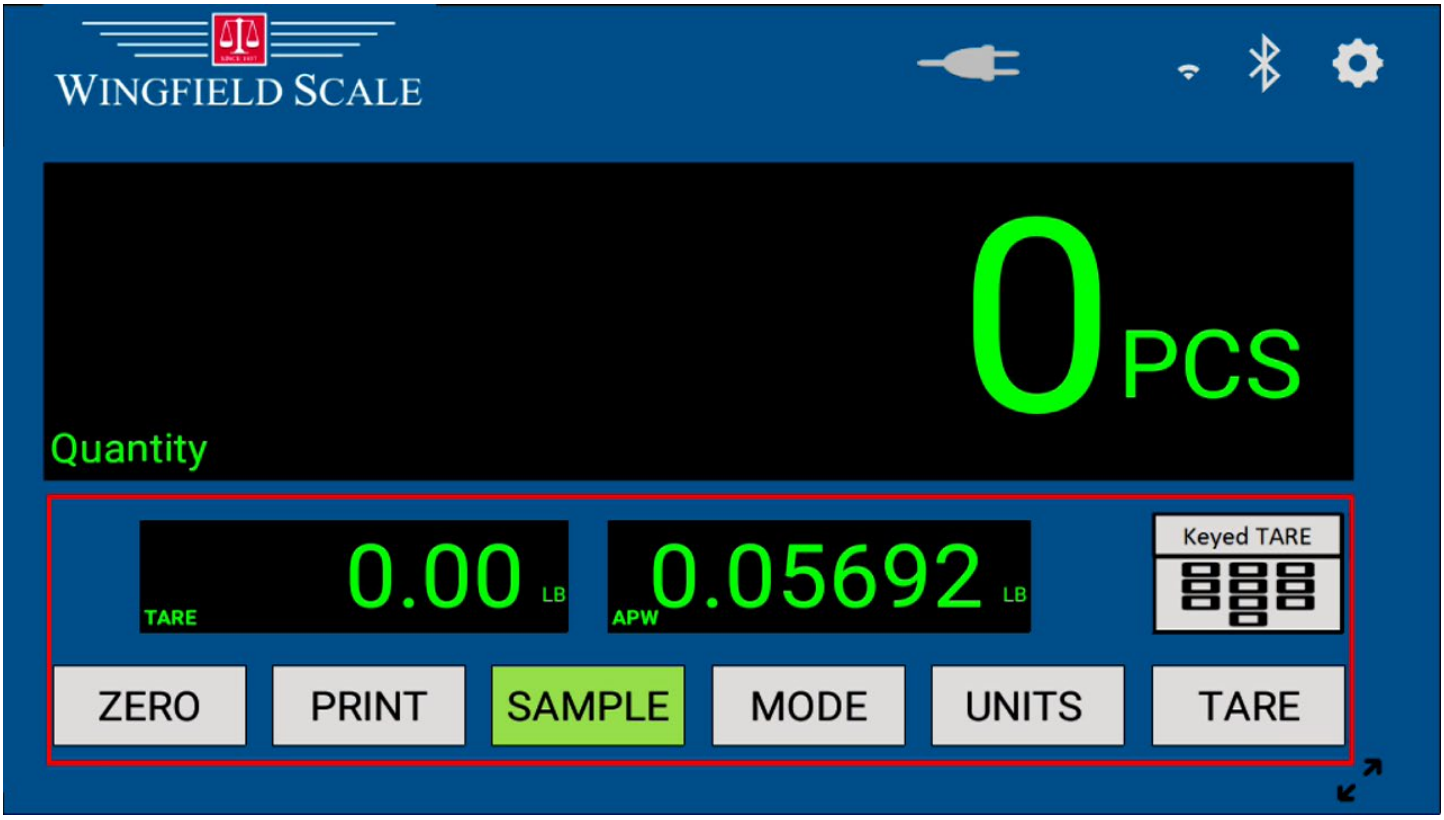
Expanded weight window:

The expanded weight window located on the bottom right of the screen, will turn the display into a full weight display.



This allows for viewing at a longer distance. Attaching a television to the HDMI interface will achieve a much larger remote display.

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This is a basic counting scale that can be used to count the quantity of items such as nuts, bolts, etc.

ZERO push button can set the base zero value based on the percentage selected in the SCALE SETUP screen in the setup menu.

PRINT will print a label based on the label data created in the PRINTER, LABEL DATA screen in the setup menu.

SAMPLE is used to calculate an average piece weight that will provide a quantity. See below for details.

MODE selects between GROSS, TARE, NET, APW (Average Piece Weight), and Quantity.

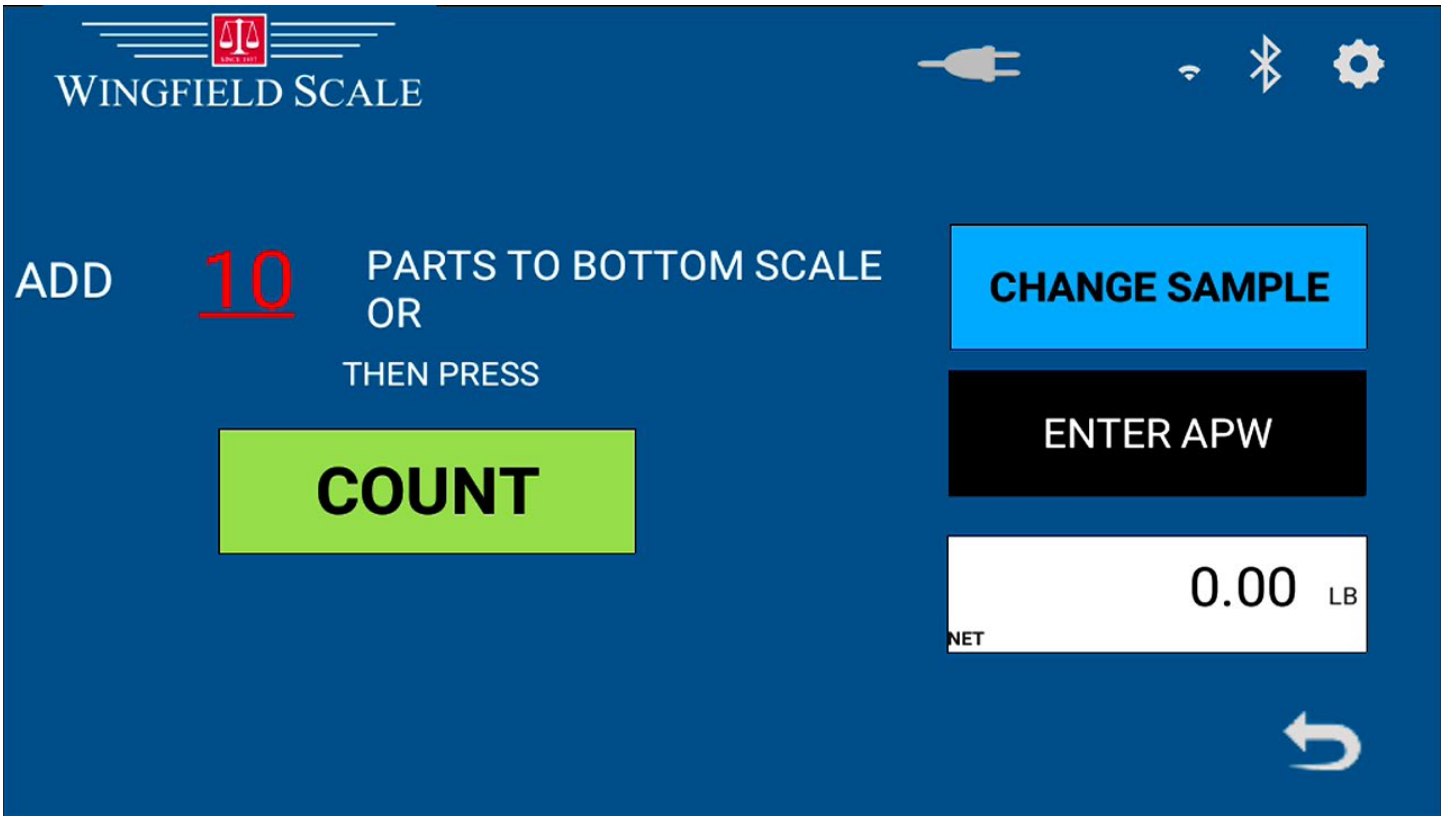
UNITS selects between units defined in the UNITS screen in the setup menu.

TARE will store the empty container weight to the tare register and display 0 net weight or 0 quantity.

Keyboard TARE allows an empty container weight to be keyed in and subtracted from the gross weight or quantity.

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When pressing the SAMPLE button, the following screen appears.



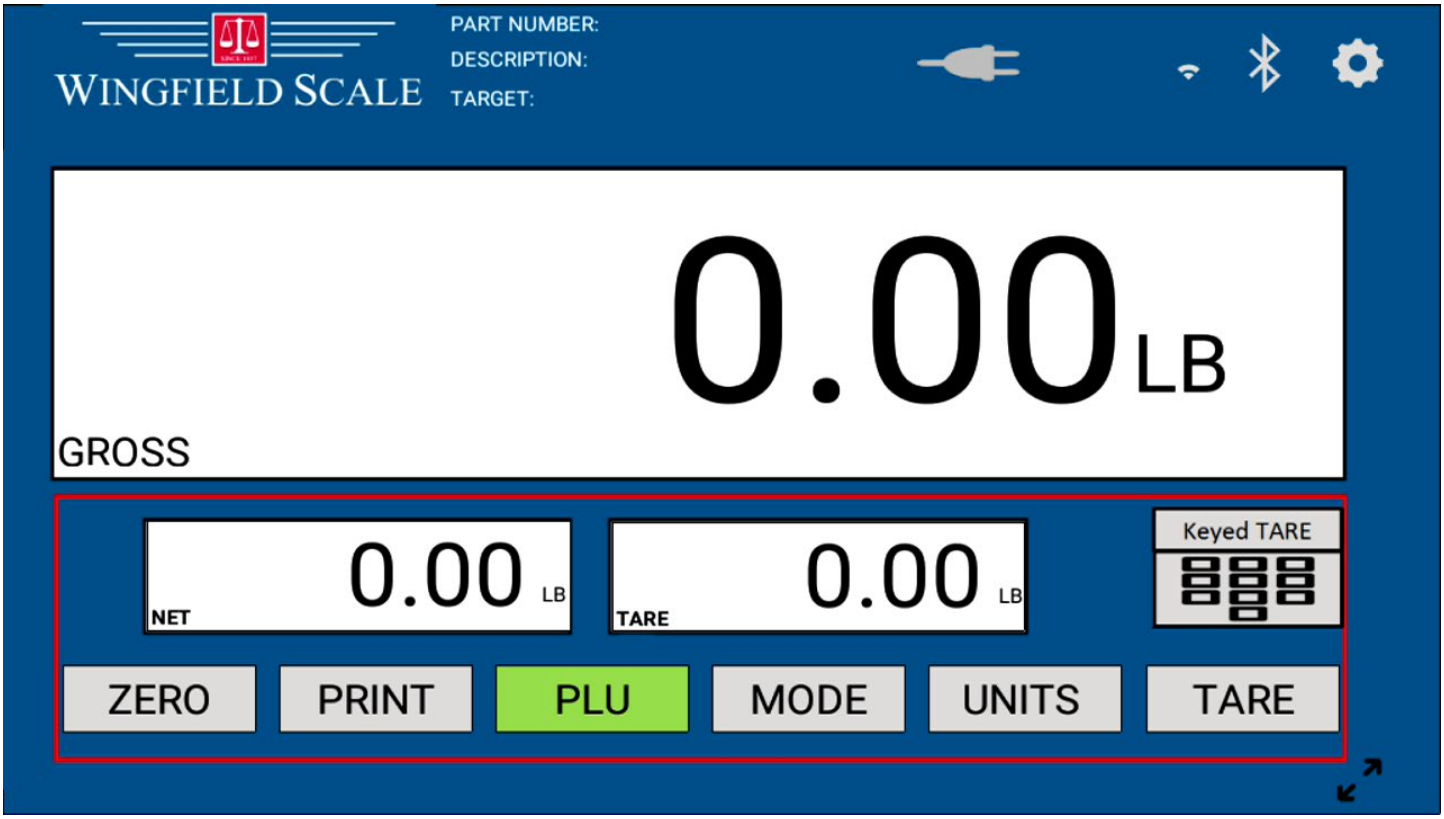
The default sample size is 10. This size can be modified under the COUNTING screen in the setup menu.

The sample size can be temporarily changed by pressing the CHANGE SAMPLE button.

There is also an option to key-in a known average piece weight by pressing the ENTER APW button.

To perform a sample, place the amount shown after ADD and press the COUNT button. The scale will return to the counting screen. Place the balance of items to be counted on the platform scale.

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This is a check weigh scale that can be used to store parts such as nuts, bolts, washers, etc. in a database table. Parts can then be recalled, and check weighed based on a target value.

ZERO push button can set the base zero value based on the percentage selected in the SCALE SETUP screen in the setup menu.

PRINT will print a label based on the label data created in the PRINTER, LABEL DATA (CHECK WEIGH) screen in the setup menu.

PLU is used to access a database of parts with stored APW, TARE, and targets. See below for details.

MODE selects between GROSS, TARE, NET, APW, and Quantity.

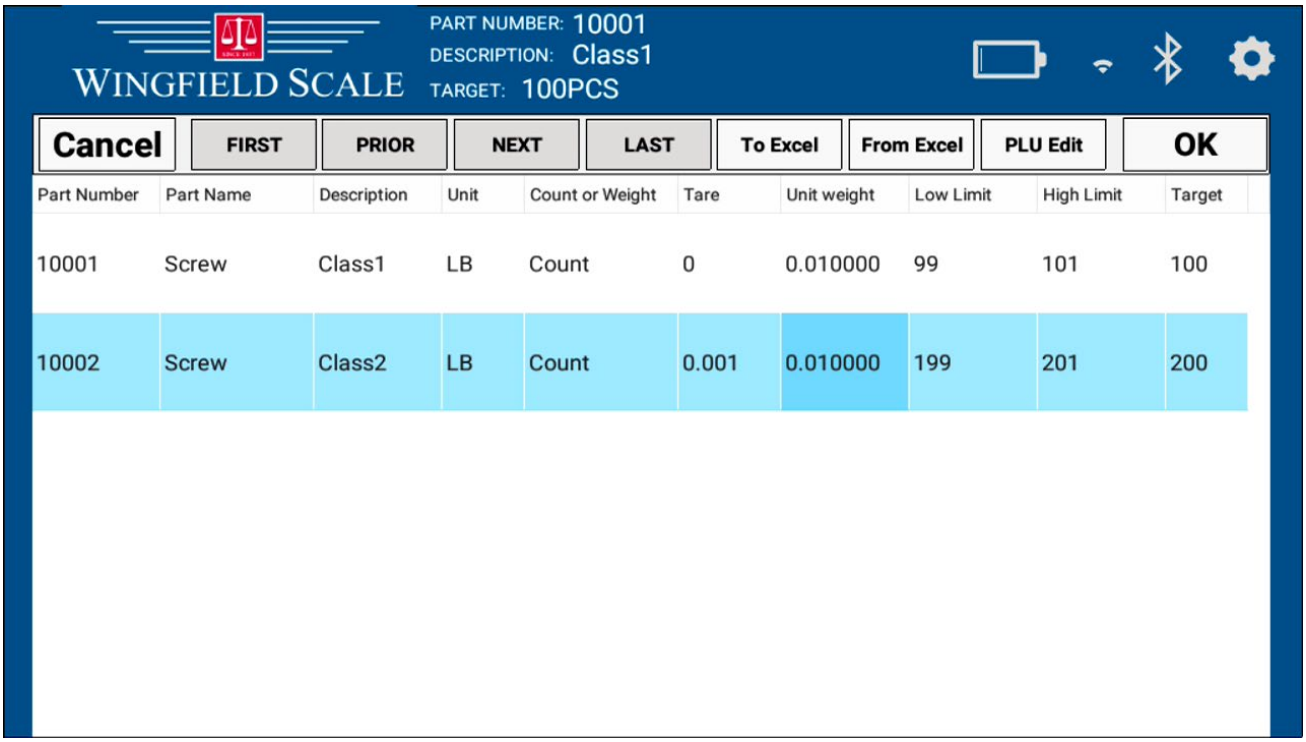
UNITS selects between units defined in the UNITS screen in the setup menu.

TARE will store the empty container weight to the tare register and display 0 net weight or 0 quantity.

Keyboard TARE allows an empty container weight to be keyed in and subtracted from the gross weight or quantity.

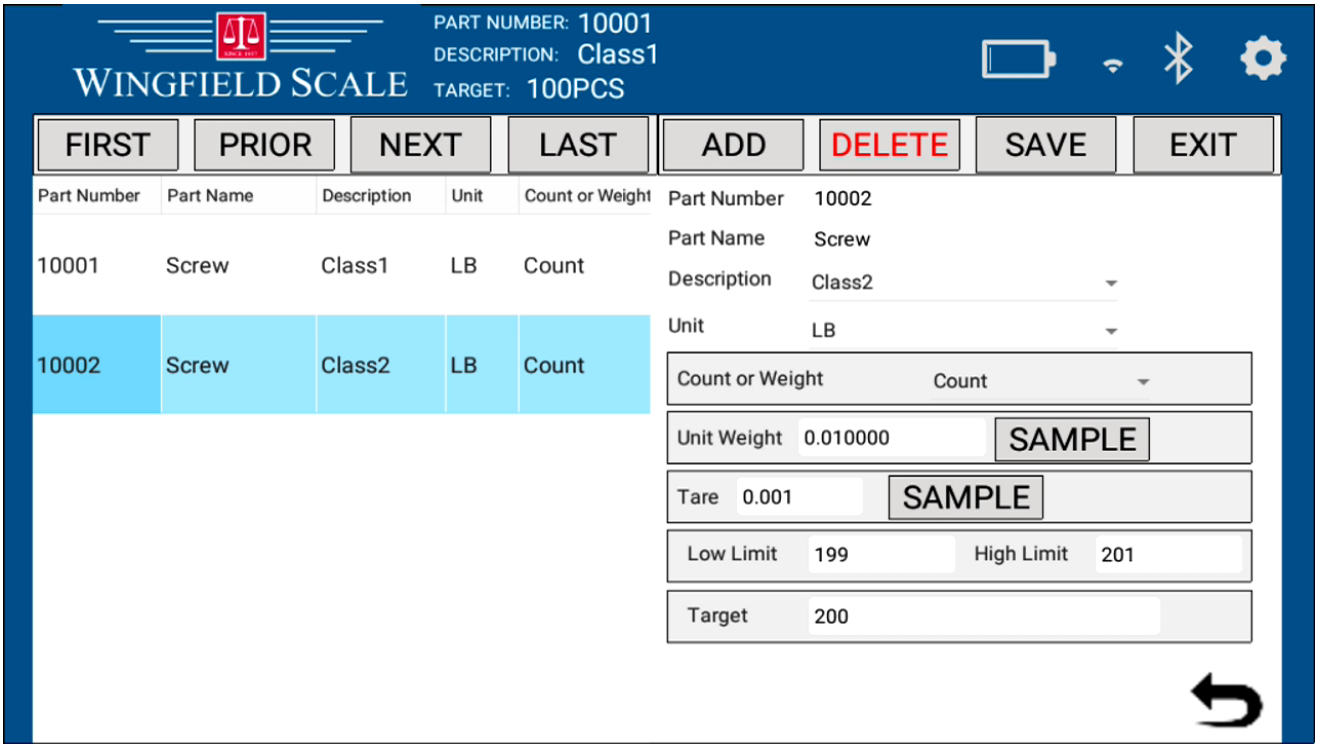
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When pressing the PLU button, the following screen appears.



This screen allows for the selection of the PLU that will be check-weighed. Select the item to be check-weighed and choose OK.

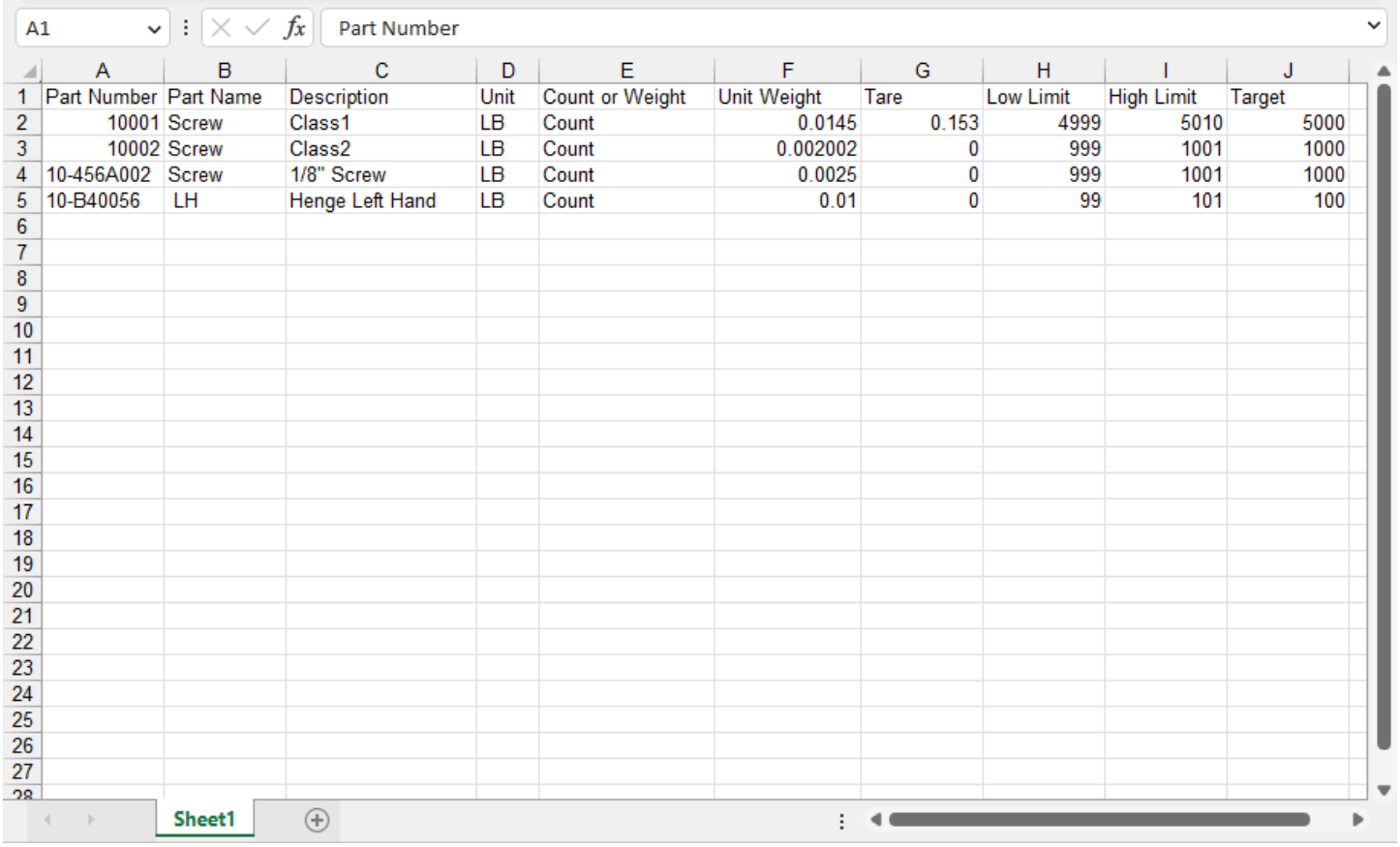
PLU Edit allows for adding, editing, or deleting of a PLU. See below:



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Importing PLU's

Excel spreadsheet of items to import.



	A	B	C	D	E	F	G	H	I	J
1	Part Number	Part Name	Description	Unit	Count or Weight	Unit Weight	Tare	Low Limit	High Limit	Target
2	10001	Screw	Class1	LB	Count	0.0145	0.153	4999	5010	5000
3	10002	Screw	Class2	LB	Count	0.002002	0	999	1001	1000
4	10-456A002	Screw	1/8" Screw	LB	Count	0.0025	0	999	1001	1000
5	10-B40056	LH	Henge Left Hand	LB	Count	0.01	0	99	101	100

PLU's can be imported by creating an Excel spreadsheet. Each column MUST correspond in the following order:

1. Part Number
2. Part Name
3. Description
4. Unit
5. Count or Weight
6. Unit Weight
7. Tare
8. Low Limit
9. High Limit
10. Target

After creating the import file, copy the file to a USB drive and insert it into one of the TWI internal USB ports. Press From Excel and choose USB on the top left of the screen, select a file, then press OK.

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