



AccuPro 7000-TS™

Operator Manual

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1 Introduction

The AccuPro 7000-TS™ is a weight and volume measurement system offering up to 4-channel support. Its real-time measurement allows for precise monitoring during the process of filling or emptying a chemical substance container. The indicator is designed to be an all-in-one process controller containing features such as feed rate controls, a batch control function, on screen data logging and remote data logging, remote connectivity, and a status check menu consisting of current and data log monitoring capabilities.

1.1 Scope

This operator manual describes the specifications, assembly, and operation for the control panel portion of the AccuPro 7000-TS™ Measurement System.

1.2 Acronyms and Abbreviations

- **PLC** Programmable Logic Controller
- **HMI** Human Machine Interface
- **LCA** Load Cell Amplifier
- **PSU** Power Supply
- **AWG** American Wire Gauge
- **CH** Channel
- **N/O** Normally Open
- **N/C** Normally Closed
- **COM** Common
- **SPDT** Single Pole Double Throw
- **SCADA** Supervisory Control and Data Acquisition
- **AC** Alternating Current
- **DC** Direct Current
- **V** Volts
- **A** Amps
- **mA** Milliamps
- **W** Watts

1.3 Definitions

- **Channel:** a base that can be monitored by the system
- **Gross Weight:** defined as the total weight (real weight) on the scale base. Determined by net weight plus (+) tare weight
- **Load Cell Amplifier:** amplifies the millivolt signal generated from the scale base into a 4-20mA signal for the PLC
- **Measurement System:** describes a complete AccuPro 7000-TS™
- **Net Weight:** the actual weight of material without the presence of a tank or container. Determined by gross weight minus (-) tare weight
- **Scale-Base:** the physical platform where material is weighed and where the load cell(s) is/are located
- **Weight Setpoint:** a user-defined net weight value that when reached (low/high) will trigger a corresponding relay
- **Tare:** a user-adjustable amount of weight subtracted from the gross weight to display the actual weight of material without the presence of a tank or container

2 Hardware and Specifications

System	
Main Power	<u>Supply Voltage:</u> 120/240 VAC +/- 10%, 50/60 Hz <u>Wattage:</u> 35 W (maximum) <u>Fuse:</u> 1.0A (1 1/4" x 1/4", type slow-blow) Connector: Sealed
Power Supply 1	<u>Output:</u> 24 VDC <u>Current:</u> 1.1 Amp <u>Wattage:</u> 27 W
Power Supply 2	<u>Output:</u> 12 VDC <u>Current:</u> 1.1 Amp <u>Wattage:</u> 27 W
Operational Temperature	0 °C to 60 °C (32 °F to 140 °F)

Operational Altitude	2000 meters (maximum)
Operational Relative Humidity	20% to 90% non-condensing
Enclosure	<p><u>Nominal Size:</u> 10 x 8 x 6 Inches (Height, Width, Depth) with hinged cover <u>Weight:</u> 6 lbs. (approx. maximum) <u>Material:</u> Opaque Polycarbonate, UL Listed Type 4X NEMA <u>Location Recommendation:</u> The enclosure should not be in an area with extreme weather conditions or heavy amounts of liquid soaking. If operating the system indoors, it is recommended to mount the enclosure in an area that protects against chemical splashes and wash-down areas, while still being easily accessible. If operating the system outdoors, it is recommended that a covering be used to protect the indicator from the elements.</p>

Channels	Supports single (1), dual (2), triple (3), or quadruple (4) channel operation. Each channel is independently controlled and operated.
Measurement	<p><u>Display Range:</u> 6 digits (maximum). 5 integer / 1 decimal point (user selectable) <u>Working Capacity:</u> determined, in part, by factory limits and scale base specifications. Reference scale base documentation. <u>Units:</u> user-defined units of pounds, kilograms, gallons, and liters. <u>Averaging:</u> user-defined weight averaging. <u>Bar Graph:</u> graphical display of net weight. <u>Performance:</u> 0.1% to 0.25% full scale accuracy.</p>
Display	<p><u>Size:</u> 3.5” <u>Resolution:</u> 320 x 240 pixels <u>Color:</u> 16-bit (65k) <u>Brightness:</u> 640 nits</p>
Alarms	<u>Internal:</u> audible buzzer, 3.4 kHz, 78 dB (maximum)

	<u>External:</u> Support for a user-supplied alarm. An alarm relay is available with SPDT contact configuration (NO-COM-NC). Switching capacity of 3A (maximum) @ 250 VAC or 30 VDC. Inductive loads are not recommended.
Controls	<u>Control Type:</u> touchscreen

2.1 Analog Output Specifications

Analog Output	
Signal	<u>Type:</u> 4-20 mA <u>Connection:</u> self-powered
Configuration	<u>Output Range:</u> user-adjustable 4mA and 20mA net weight ranges. The analog output will scale its 4-20mA output signal based on the configured 4mA and 20mA net weight points.

2.2 Relay Specifications

Relays	
Relay Count (User Selectable)	<u>Weight Setpoints:</u> 2 or 4 relays per channel <u>External Buzzer Relay:</u> 1 <u>Alarm Active Relay:</u> 1 <u>Batch Active Relay:</u> 1 <u>Batch Done Relay:</u> 1
Contact Configuration	Normally Open (NO), Common (COM), Normally Closed (NC)

Maximum Switching Capacity	250VAC/3A, 30VDC/3A
Relay Configuration Options	<u>Trigger Alarm</u> : When weight setpoint setting “trigger alarm” is active, a weight setpoint will trigger an alarm when active

2.3 Modbus Specifications

Modbus	
Communication	<u>Protocol</u> : Modbus TCP through Ethernet <u>Type</u> : Slave
Ch 1 Modbus Address Map	<u>Net Weight</u> : HR: 414000 <u>Gross Weight</u> : HR: 414002 <u>Net Weight Percentage</u> : HR 414004 (outputs 0-100) <u>Gross Weight Percentage</u> : HR: 414006 (outputs 0-100) <u>Display Unit</u> : HR: 414008 <u>Tare</u> : HR: 414010 <u>Error Active</u> : C: 6500 <u>Alarm Active</u> : C: 6501 <u>Weight Setpoint (s) Active</u> : C:6502
Ch 2 Modbus Address Map	<u>Net Weight</u> : HR: 414012 <u>Gross Weight</u> : HR: 414014 <u>Net Weight Percentage</u> : HR 414016 (outputs 0-100) <u>Gross Weight Percentage</u> : HR: 414018 (outputs 0-100) <u>Display Unit</u> : HR: 414020 <u>Tare</u> : HR: 414022 <u>Error Active</u> : C: 6503 <u>Alarm Active</u> : C: 6504 <u>Weight Setpoint (s) Active</u> : C:6505

<p>Ch 3 Modbus Address Map</p>	<p><u>Net Weight:</u> HR: 414024 <u>Gross Weight:</u> HR: 414026 <u>Net Weight Percentage:</u> HR 414028 (outputs 0-100) <u>Gross Weight Percentage:</u> HR: 414030 (outputs 0-100) <u>Display Unit:</u> HR: 414032 <u>Tare:</u> HR: 414034 <u>Error Active:</u> C: 6506 <u>Alarm Active:</u> C: 6507 <u>Weight Setpoint (s) Active:</u> C:6508</p>
<p>Ch 4 Modbus Address Map</p>	<p><u>Net Weight:</u> HR: 414036 <u>Gross Weight:</u> HR: 414038 <u>Net Weight Percentage:</u> HR 414040 (outputs 0-100) <u>Gross Weight Percentage:</u> HR: 414042 (outputs 0-100) <u>Display Unit:</u> HR: 414044 <u>Tare:</u> HR: 414046 <u>Error Active:</u> C: 6509 <u>Alarm Active:</u> C: 6510 <u>Weight Setpoint (s) Active:</u> C:6511</p>
<p>Network Configuration</p>	<p><u>IP Address:</u> User defined <u>Net Mask:</u> User defined <u>Gateway:</u> User defined</p>

3 System Assembly

The AccuPro 7000-TS uses a multi-layered design approach. The bottom main plate contains the power supplies and fuse. The top plate contains all relay modules (dependent on user configuration) and terminal block strip connections to be made by the user. Connections from the PLC are made through shielded cable to aid in EMI shielding.

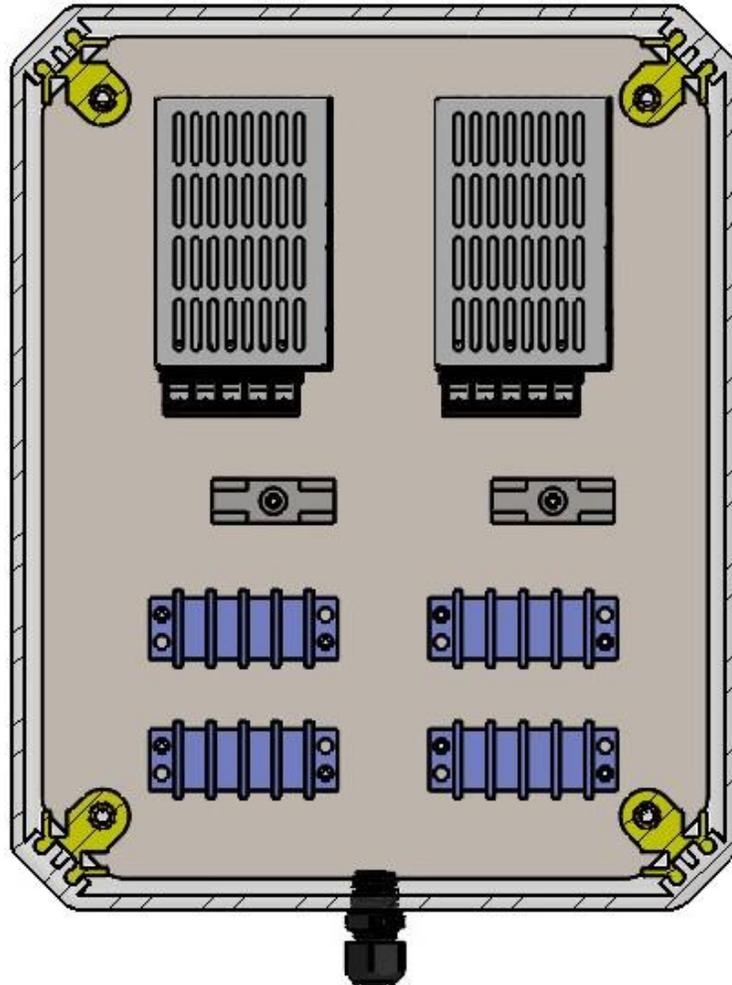


Figure 1: Bottom Main Plate

Contains power supplies, fuses, and terminal strips

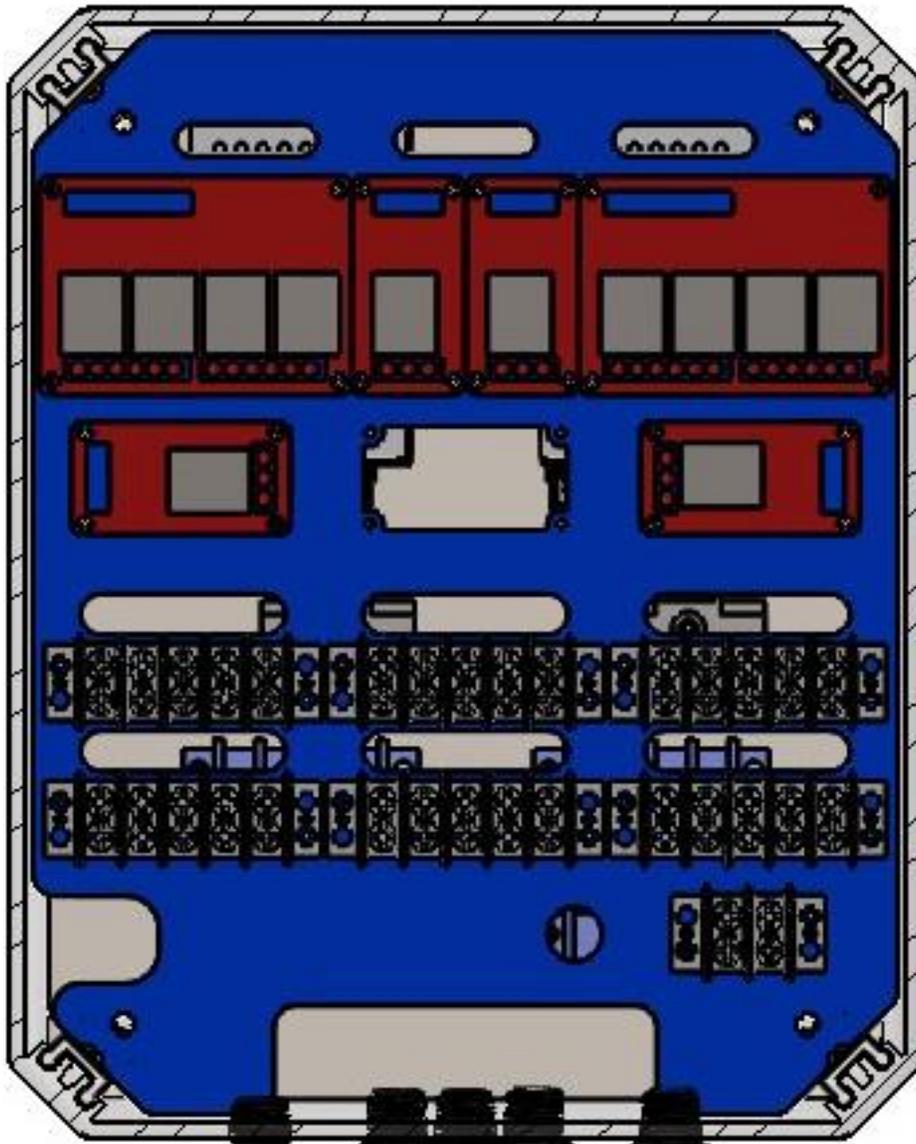


Figure 2: Top Plate (Color)

Contains terminal strip connections and relays. The top plate will vary depending on configuration. This plate is what the user connects to.

It is imperative that you read the instructions in this manual. The Control-Panel is fully tested and programmed to the corresponding Scale-Base at the factory. If you experience a problem with this equipment, please disconnect all accessories to this equipment to isolate the problem. Scaleton has taken great care to be sure the equipment is fully functional within factory specifications before it leaves our facility. It is best to familiarize yourself with this manual for set-up and operation procedures before you begin using this equipment. All safety precautions need to be observed for its safe operation. Failure to operate this equipment as instructed can result in damage to the equipment and can possibly cause injury. Damage caused to equipment due to improper operation will not be considered for warranty coverage.

3.1 Factory Configuration

Before you begin, please notice the configuration sheet that is supplied with this manual. The sheet lists the factory-programmed parameters for the AccuPro 7000-TS™ based on ordering information. If there is a need to change any parameters, please reference this manual for options and instructions on how to proceed. Both the settings and calibration menus must be properly set for correct operation. Please record any configuration changes made before contacting customer assistance for technical help.

3.2 Control Panel Preparation and Mounting

The Control Panel is shipped with a factory-installed power cord which utilizes a liquid-tight fitting. Do not modify nor restrict the ability to disconnect the power cord from an outlet. All other user connections to the Control Panel must be made in the field per specific needs. With power to the Control Panel OFF, access its interior by following the procedure described in section titled Servicing the Control Panel. Take time to identify the optimal location for all additional fittings or conduit. Be careful when drilling holes to avoid any damage to internal components or cabling. All drilled holes MUST be sealed to prevent both liquids and gasses from penetrating the enclosure and damaging the electronics. Avoid using fittings that do not provide a tight seal. It is recommended that all fittings be liquid-tight and 4X NEMA rated. If there is a gap or opening in the enclosure's wall that isn't sealed by the connector design, use a silicon caulk to seal the opening and eliminate exposure. The Control Panel is intended to be mounted to a wall using the four holes in the corner flanges of the enclosure. It should be mounted at operational level and away from the floor. Though the enclosure is 4X NEMA rated, it is not designed to withstand wash-down procedures nor chemical contact beyond accidental exposure. Avoid direct contact with chemicals or regular soaking of water as it may cause substantial damage to the electronics. Any damage resulting from non-adherence to these requirements will not be considered for warranty repair.

3.3 User Connections and Wiring

Before making external connections, it is recommended that the control-panel first be connected to a power source to confirm normal operation. If all is functioning properly, you should see the home screen (see figure 6).

Be sure to disconnect power to the control-panel before making any wiring connections. In addition, anti-static precautions must be followed whenever accessing the control-panel's interior electronics or else permanent damage may result.

Connect all scale bases to input terminals. Scale bases color code is as follows: red = excitation (+), green = signal (+), white = signal (-), black = excitation (-), violet = shield. (SEE FIGURE 3, 4, AND 5 FOR CONNECTION INFORMATION)

Connect applicable wires to terminals for 4-20 mA out signal (if applicable). (SEE FIGURE 3, 4, AND 5 FOR CONNECTION INFORMATION)

Connect applicable wires (20AWG recommended) to relays 1 and 2 (if applicable) for weight setpoints. (SEE FIGURE 3, 4, AND 5 FOR CONNECTION INFORMATION)

Connect applicable wires (20AWG recommended) to relay 3 (if applicable) for external buzzer relay. (SEE FIGURE 3, 4, AND 5 FOR CONNECTION INFORMATION)

Connect applicable wires (20AWG recommended) to relay 4 (if applicable) for alarm active relay. (SEE FIGURE 3, 4, AND 5 FOR CONNECTION INFORMATION)

Connect applicable wires (20AWG recommended) to relay 5 (if applicable) for batch active. (SEE FIGURE 3, 4, AND 5 FOR CONNECTION INFORMATION)

Connect applicable wires (20AWG recommended) to relay 6 (if applicable) for batch done relay. (SEE FIGURE 3, 4, AND 5 FOR CONNECTION INFORMATION)

Connect applicable wires (20AWG recommended) to terminal for for leak detector input. (SEE FIGURE 3, 4, AND 5 FOR CONNECTION INFORMATION)

When all external wire connections are complete, close the panel's door, secure its latch, and re-install the four screws (optional).

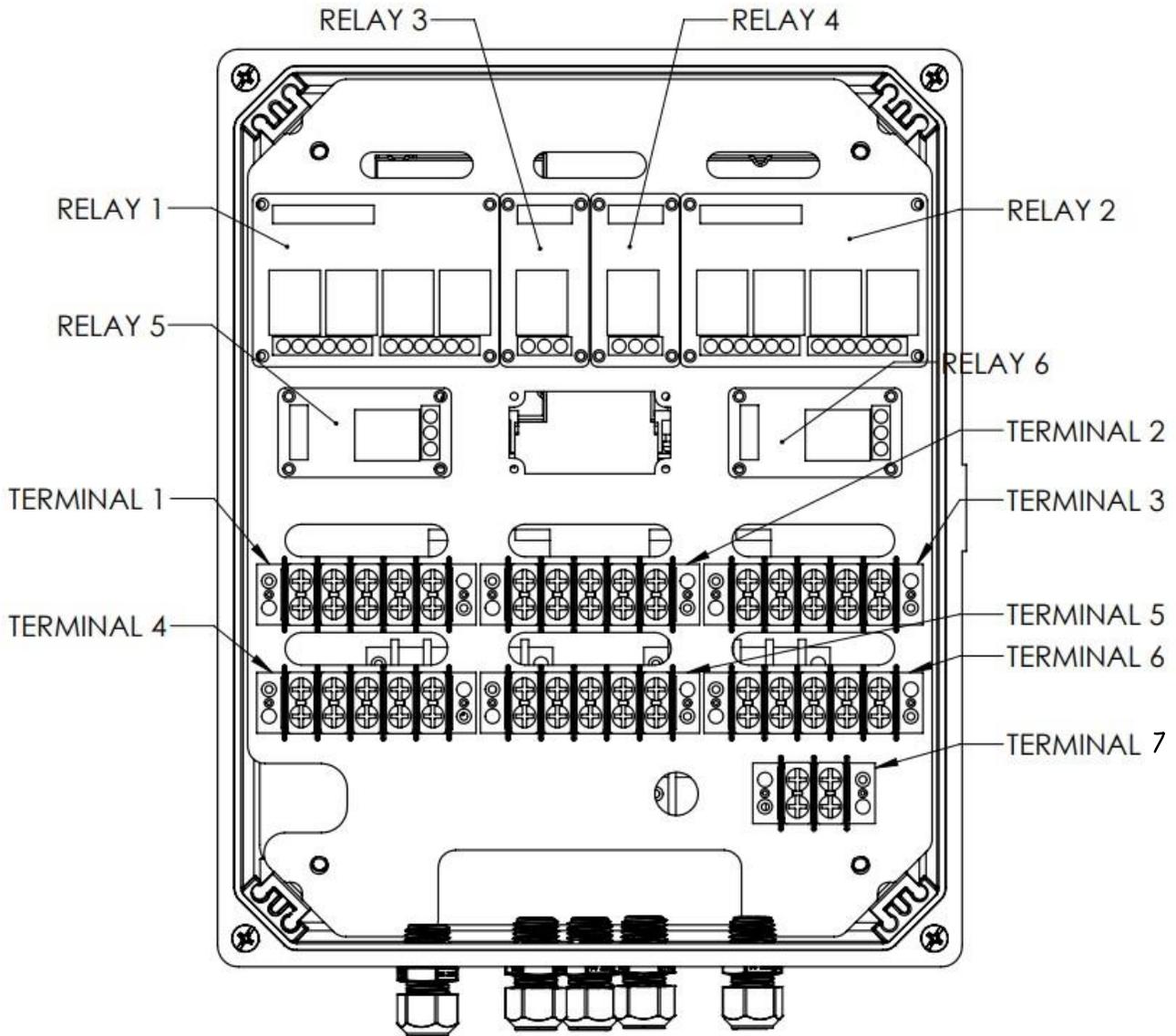


Figure 3: Top Plate (Draft)

Contains the label of all terminal strips and relays for user connections. The top plate will vary depending on configuration. This is the plate the user connects to.

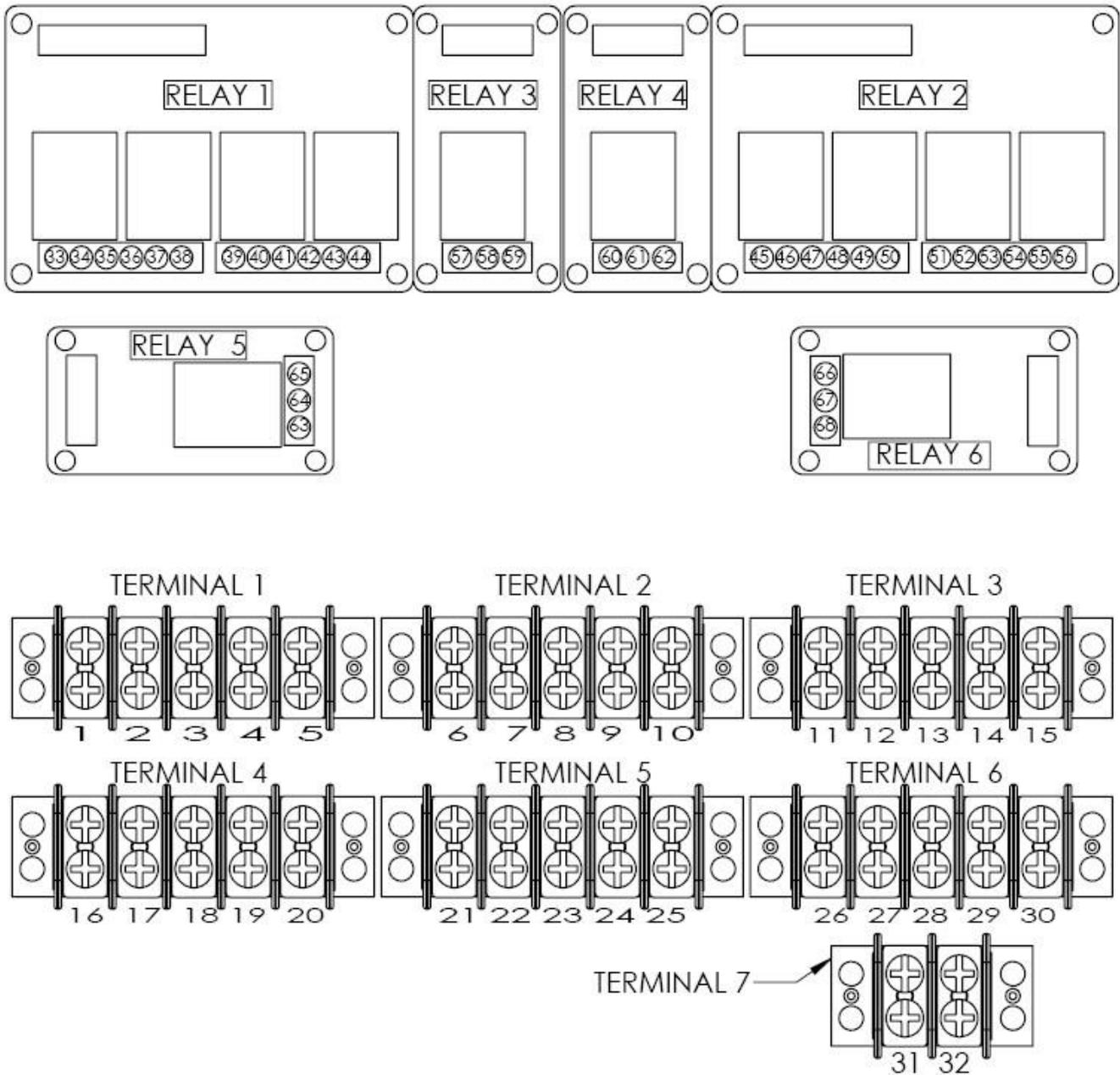


Figure 4: User Connection Diagram

Contains a number for each user connection point. View the user connection numbering legend for more information on connections.

Terminal 1	CH1 Base	Inputs
1	E+	Excitation (+)
2	S+	Signal (+)
3	S-	Signal Return (-)
4	E-	Excitation Return (-)
5	SHD	Shield

Terminal 2	CH2 Base	Inputs
6	E+	Excitation (+)
7	S+	Signal (+)
8	S-	Signal Return (-)
9	E-	Excitation Return (-)
10	SHD	Shield

Terminal 3	CH3 Base	Inputs
11	E+	Excitation (+)
12	S+	Signal (+)
13	S-	Signal Return (-)
14	E-	Excitation Return (-)
15	SHD	Shield

Figure 5: User Connection Numbering Legend Tables

Contains tables for information on each user connection point. All numbers on the left of each table correspond to the numbers given in the user connection diagram. Use the following tables for connection information. The indicator may not have all the available terminal strips or relays depending on configuration.

Terminal 4	CH4 Base	Inputs
16	E+	Excitation (+)
17	S+	Signal (+)
18	S-	Signal Return (-)
19	E-	Excitation Return (-)
20	SHD	Shield

Terminal 5	CH1-2 4-20 mA Out	Outputs
21	CH1 Signal (+)	Net Wt or Feed Rt (+)
22	CH1 Signal Return (-)	Net Wt or Feed Rt (-)
23	CH2 Signal (+)	Net Wt or Feed Rt (+)
24	CH2 Signal Return (-)	Net Wt or Feed Rt (-)
25	NA	

Terminal 6	CH3-4 4-20 mA Out	Outputs
26	CH3 Signal (+)	Net Wt or Feed Rt (+)
27	CH3 Signal Return (-)	Net Wt or Feed Rt (-)
28	CH4 Signal (+)	Net Wt or Feed Rt (+)
29	CH4 Signal Return (-)	Net Wt or Feed Rt (-)
30	NA	

Terminal 7	Leak Detector	Inputs
31	COM	COM
32	NO	NO

1 or 2 Channel Indicator

Relay 1	CH1 SPS	SP#
44	NC1	1
43	COM1	1
42	NO1	1
41	NC2	2
40	COM2	2
39	NO2	2
38	NC3	3
37	COM3	3
36	NO3	3
35	NC4	4
34	COM4	4
33	NO4	4
Relay 2	CH2 SPS	SP#
56	NC1	1
55	COM1	1
54	NO1	1
53	NC2	2
52	COM2	2
51	NO2	2
50	NC3	3
49	COM3	3
48	NO3	3
47	NC4	4
46	COM4	4
45	NO4	4

3 or 4 Channel Indicator

Relay 1	CH1 SPS	SP#
44	NC1	1
43	COM1	1
42	NO1	1
41	NC2	2
40	COM2	2
39	NO2	2
	CH2 SPS	
38	NC3	1
37	COM3	1
36	NO3	1
35	NC4	2
34	COM4	2
33	NO4	2
Relay 2	CH3 SPS	SP#
56	NC1	1
55	COM1	1
54	NO1	1
53	NC2	2
52	COM2	2
51	NO2	2
	CH4 SPS	
50	NC3	1
49	COM3	1
48	NO3	1
47	NC4	2
46	COM4	2
45	NO4	2

Relay 3	External Buzzer
57	NO
58	COM
59	NC

Relay 4	Alarm Active
60	NO
61	COM
62	NC

Relay 5	Weight SP Active
63	NO
64	COM
65	NC

Relay 6	Max Net Weight
66	NO
67	COM
68	NC

4 System Operation

The AccuPro 7000-TS allows the user to monitor and data log chemicals by weight or volume in pounds, kilograms, gallons, or liters. The user is also able to monitor feed rate and operate a batch control function. The indicator can display net weight value, net weight graph, gross weight value, gross weight graph, 4-20mA out signal, tare value, and weight setpoints depending on the display selected. The user can view weight displays, adjust tare value, configure settings, view settings and calibration, check status of indicator, view indicator information, and load factory restore point. System operation varies based on how the indicator is configured. The user will be prompted to select channel when entering a channel-specific screen or configuration menu while the second channel is enabled.

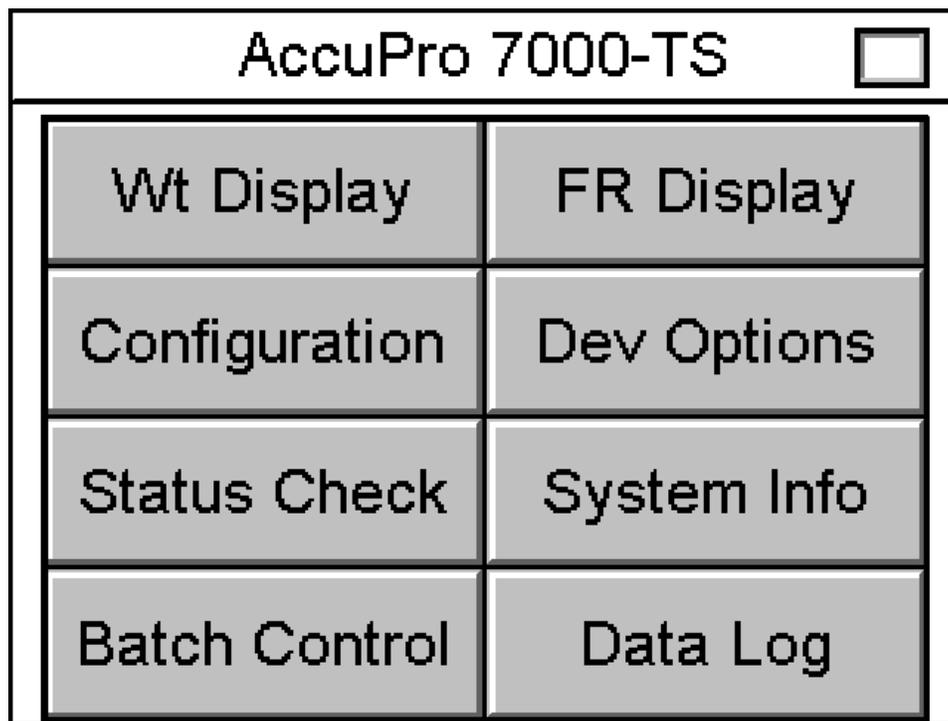


Figure 6: Home Screen

4.1 Weight Display

The user can access the display screens by pressing the “Wt Display” button on the home screen. While in any display, the user can navigate by pressing the "Next" or “Prev" button on any display. While in any display, the user can access tare adjustment by pressing the "Tare" button. While in any display, the user can select the display unit by pressing the "Unit" button.

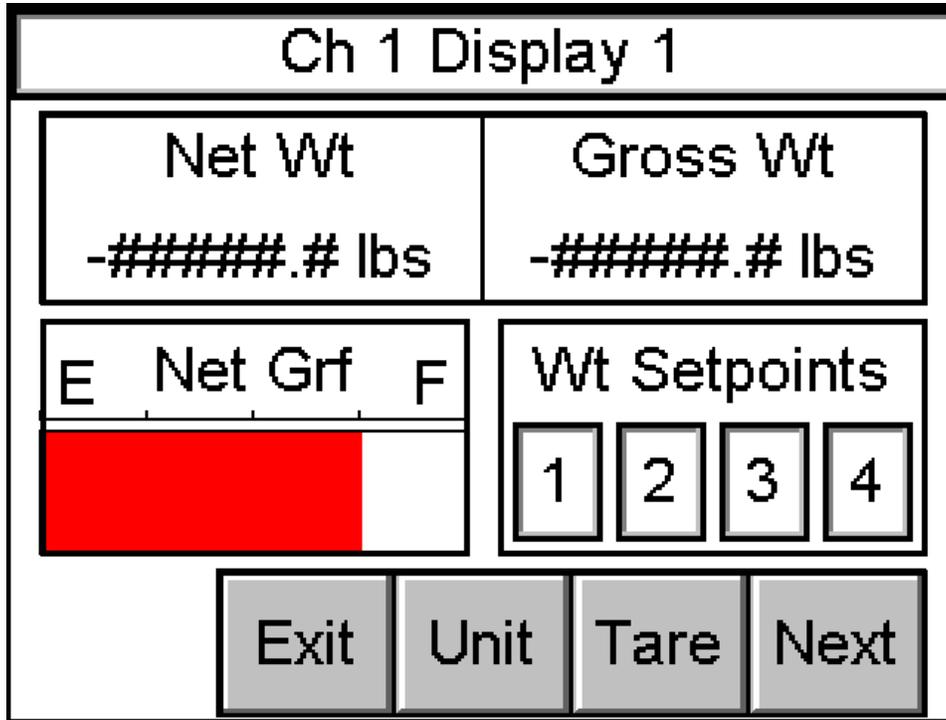


Figure 7: Channel 1 Display 1

Displays net weight, gross weight, net weight graph, and weight setpoints

NOTE: Only available when weight setpoints are enabled

NOTE: The amount of weight setpoints displayed will vary based on configuration

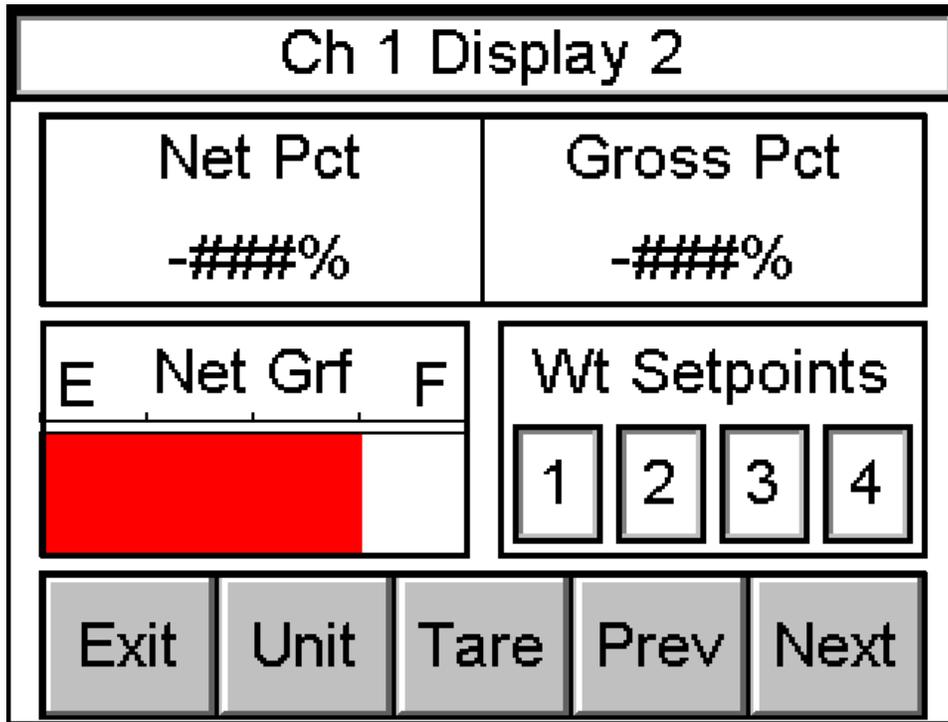


Figure 8: Channel 1 Display 2

Displays net percent, gross percent, net weight graph, and weight setpoints

NOTE: Only available when weight setpoints are enabled

NOTE: The amount of weight setpoints displayed will vary based on configuration

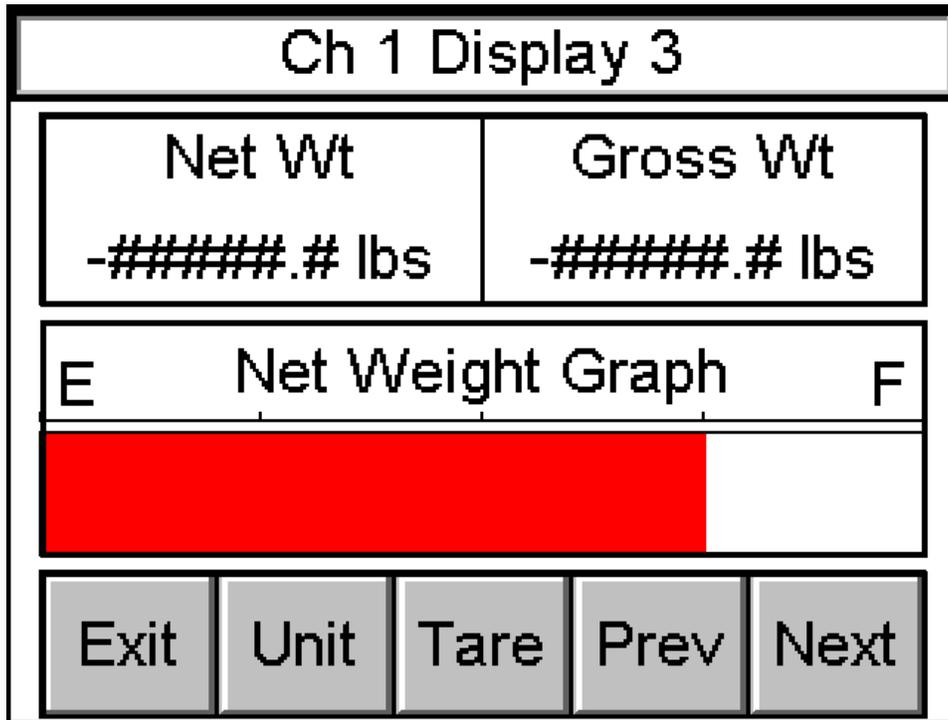


Figure 9: Channel 1 Display 3
 Displays net weight, gross weight, and net weight graph

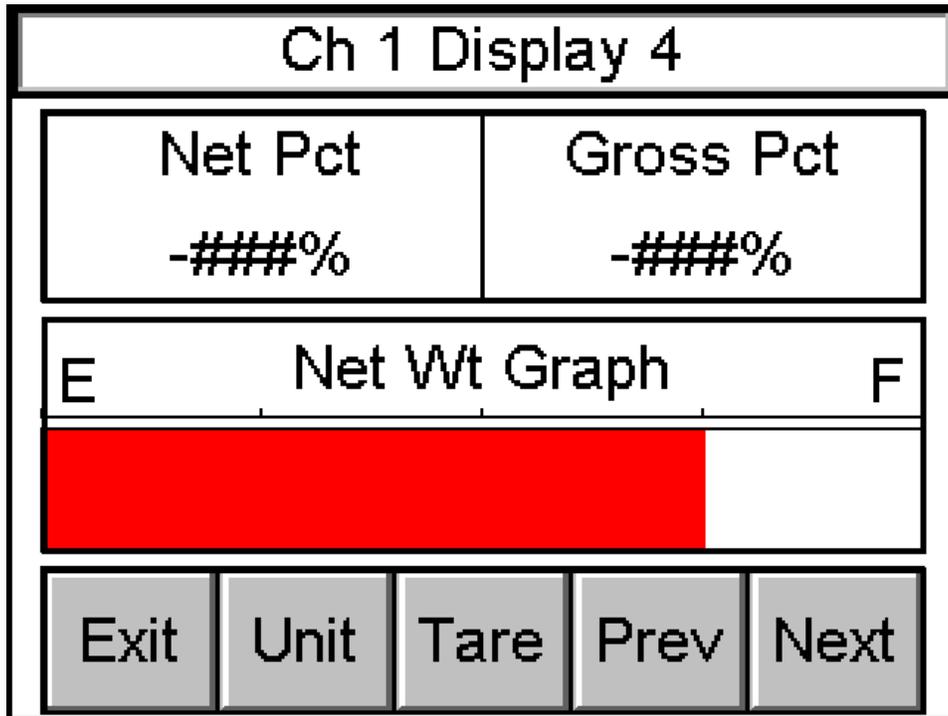


Figure 10: Channel 1 Display 4

Displays net percent, gross percent, and net weight graph

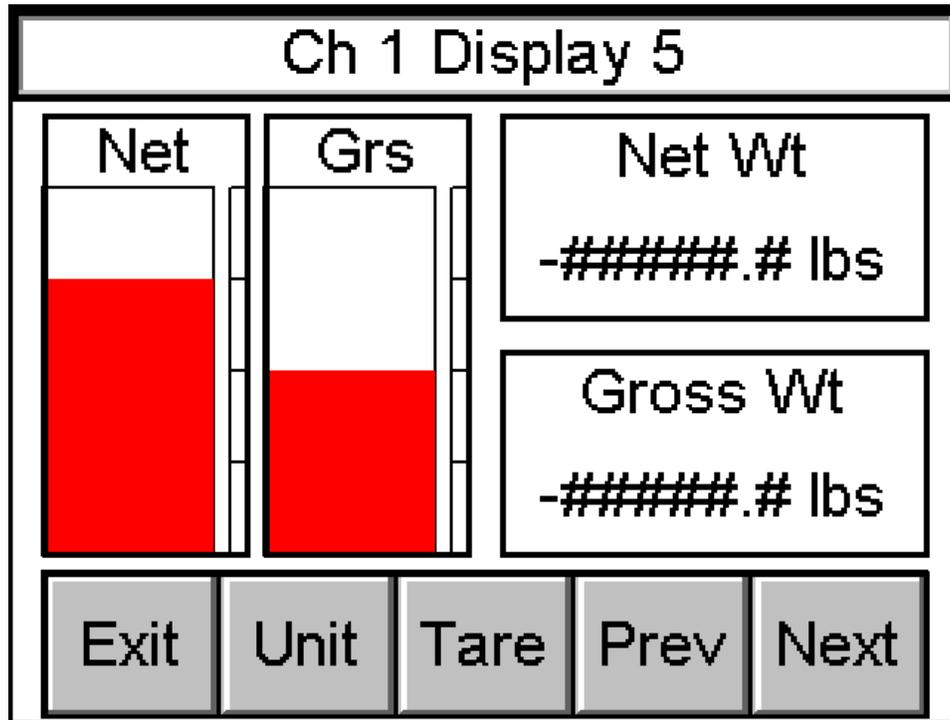


Figure 11: Channel 1 Display 5

Displays net weight graph, gross weight graph, net weight, and gross weight

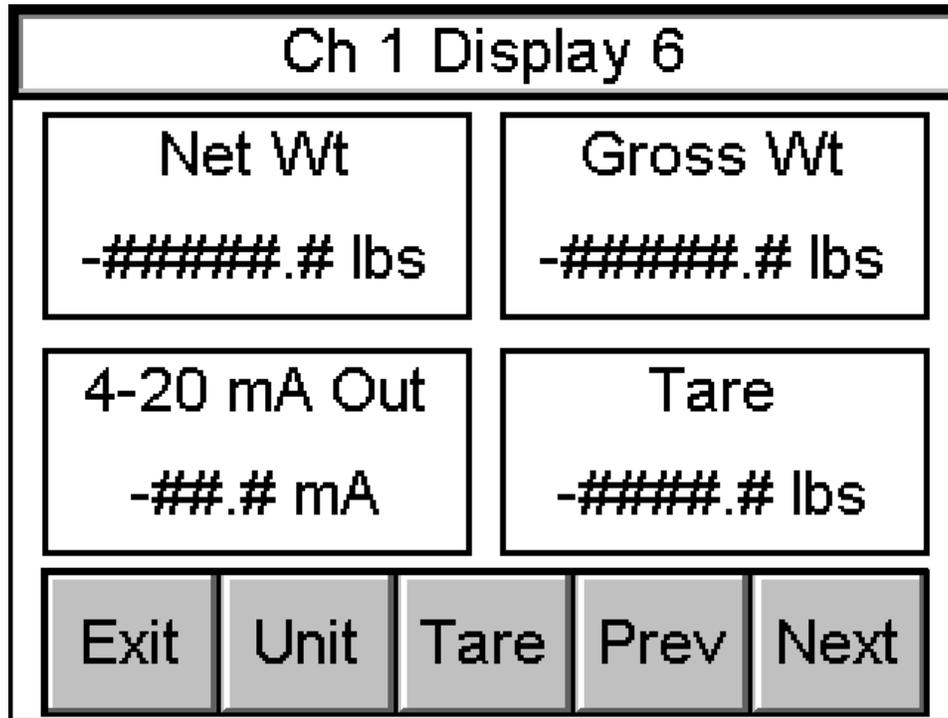


Figure 12: Channel 1 Display 6
 Displays net weight, gross weight, 4-20mA out, and tare

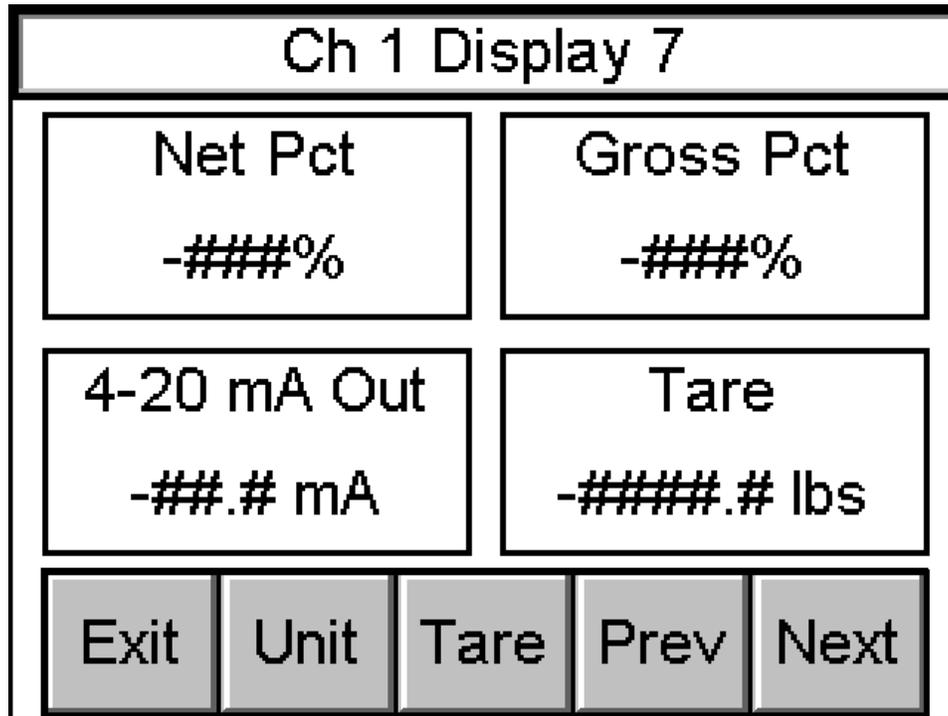


Figure 13: Channel 1 Display 7

Displays net percent, gross percent, 4-20mA out, and tare

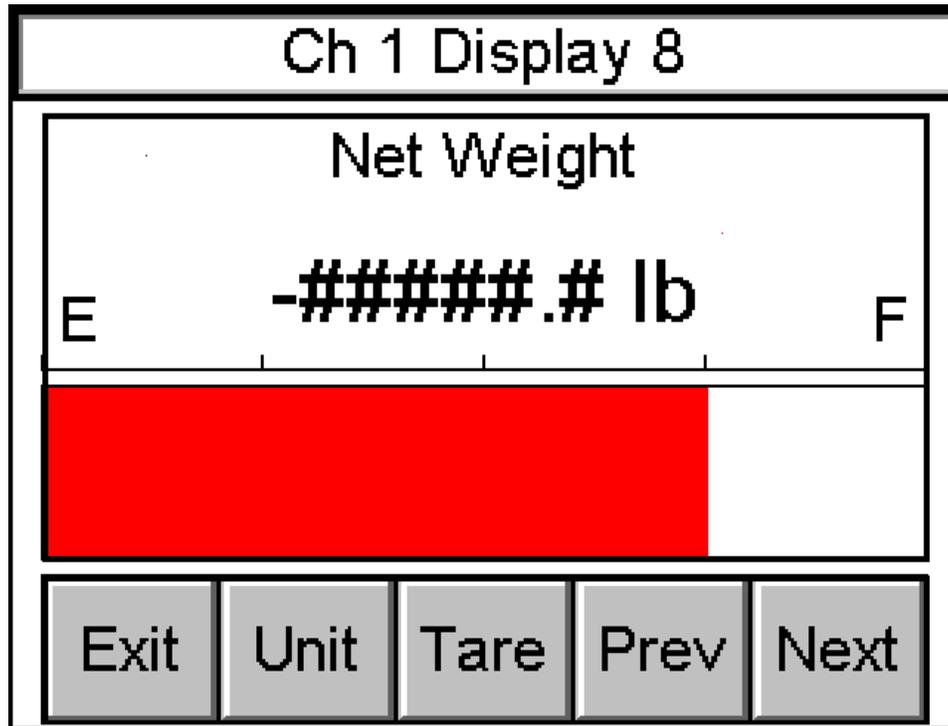


Figure 14: Channel 1 Display 8
Displays net weight and net weight graph

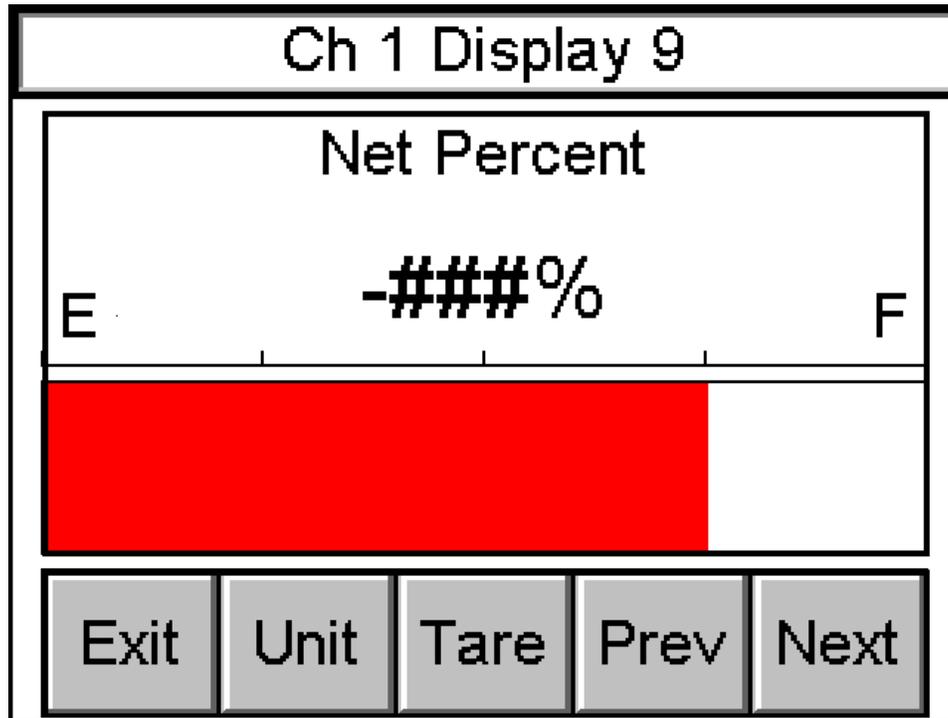


Figure 15: Channel 1 Display 9
Displays net percent and net weight graph

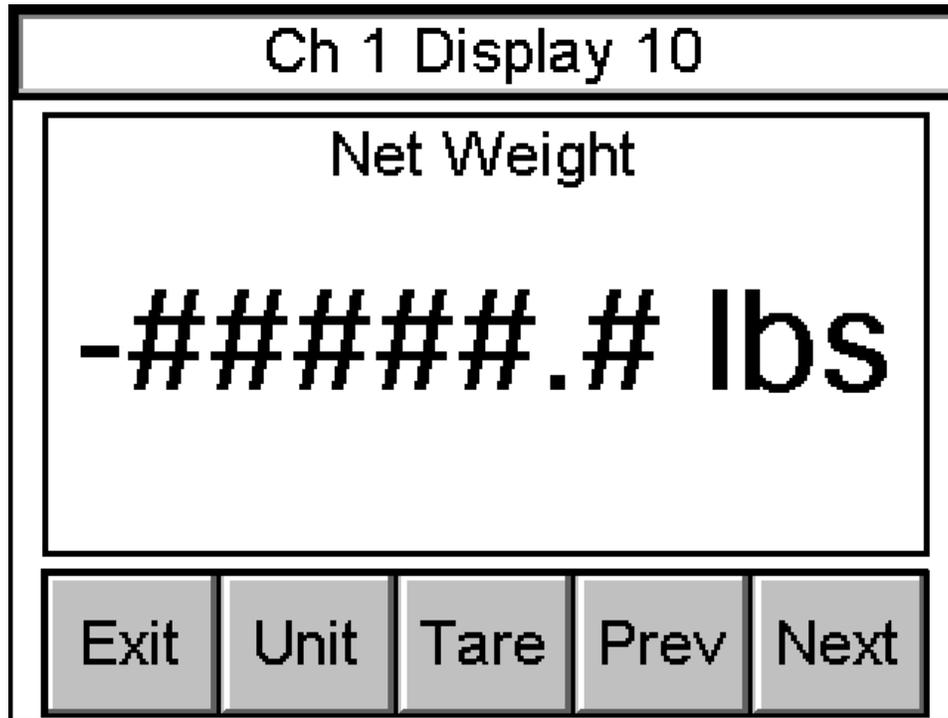


Figure 16: Channel 1 Display 10
Displays net weight

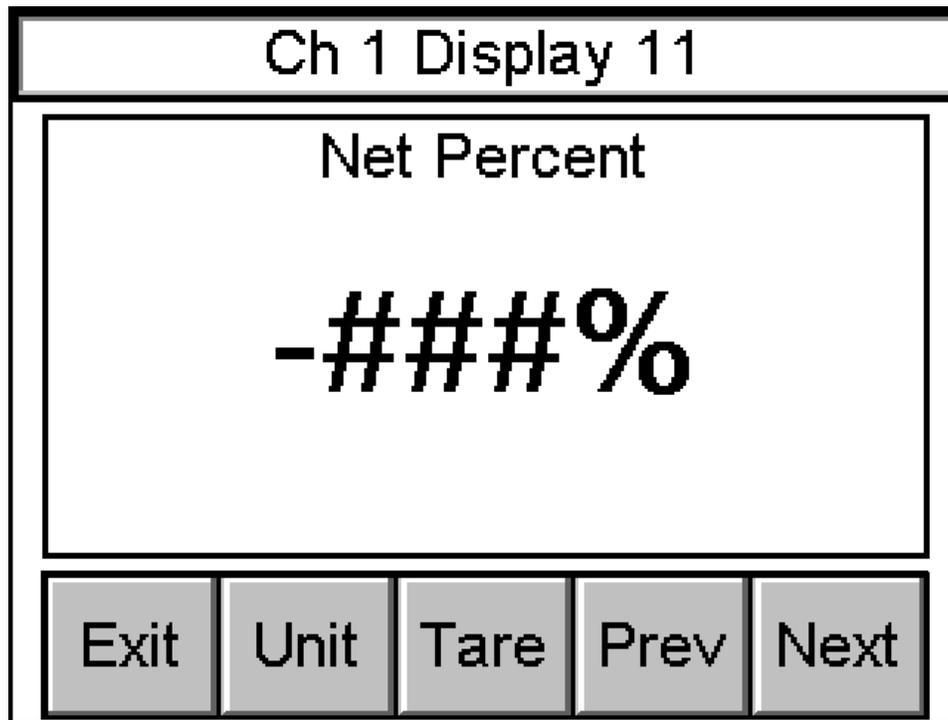


Figure 17: Channel 1 Display 11
Displays net percent

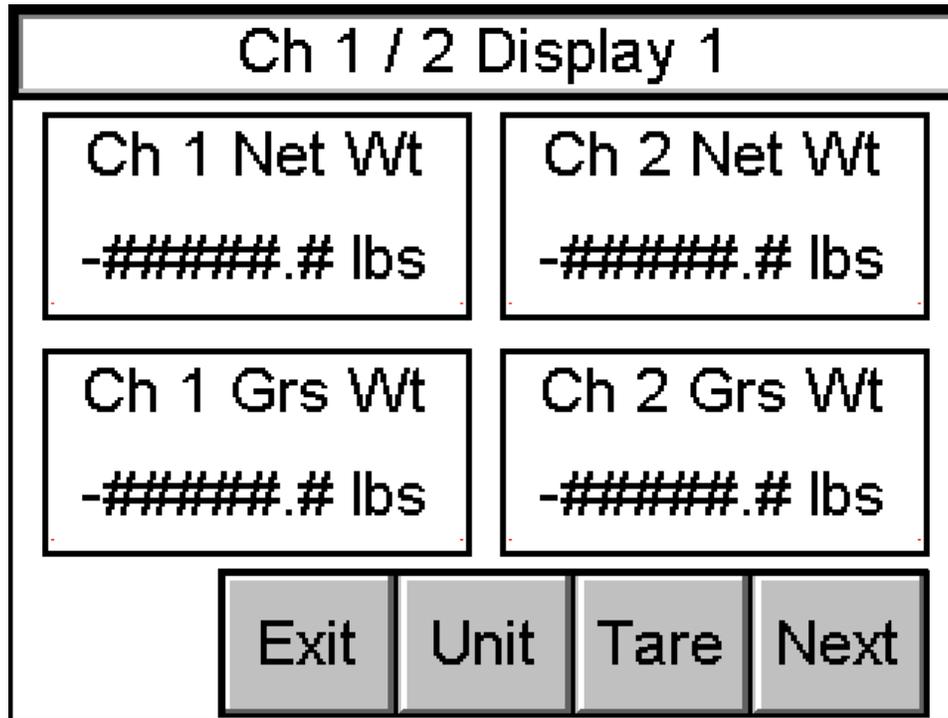


Figure 18: Channel 1 / 2 Display 1

Displays Ch 1 net weight, Ch 1 gross weight, Ch 2 net weight, and Ch 2 gross weight

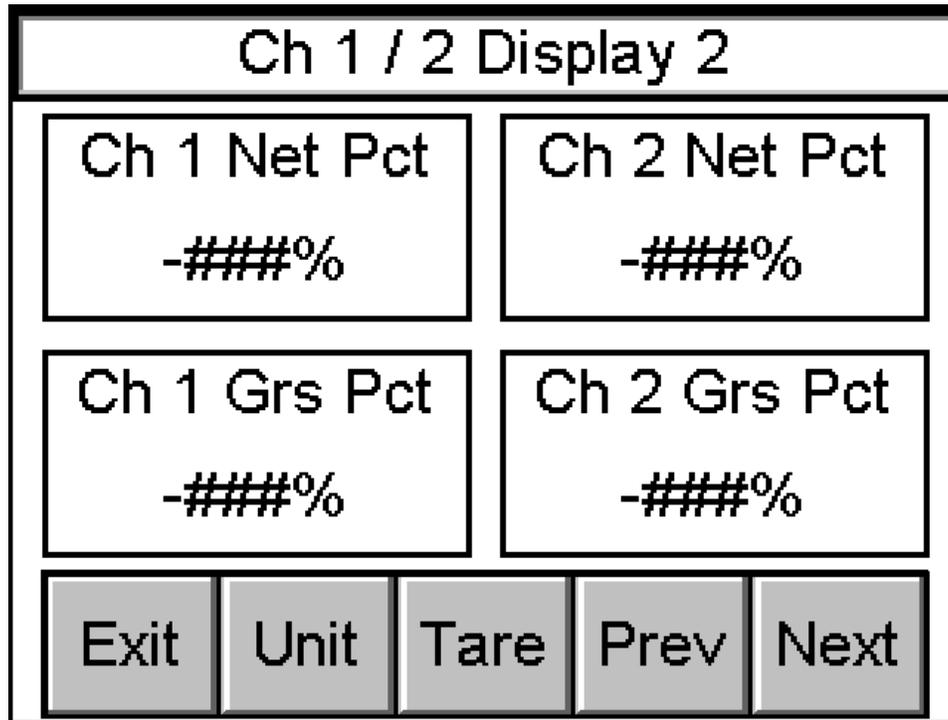


Figure 19: Channel 1 / 2 Display 2

Displays Ch 1 net percent Ch 1 gross percent, Ch 2 net percent, and Ch 2 gross percent

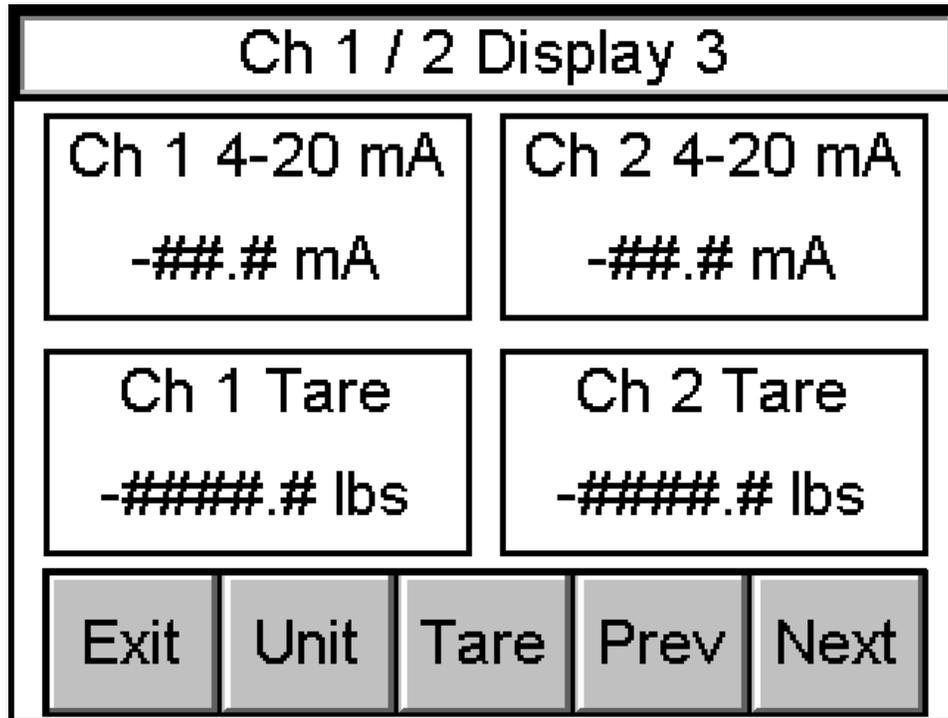


Figure 20: Channel 1 / 2 Display 3

Displays Ch 1 4-20mA out, Ch 1 tare, Ch 2 4-20mA out, and Ch 2 tare

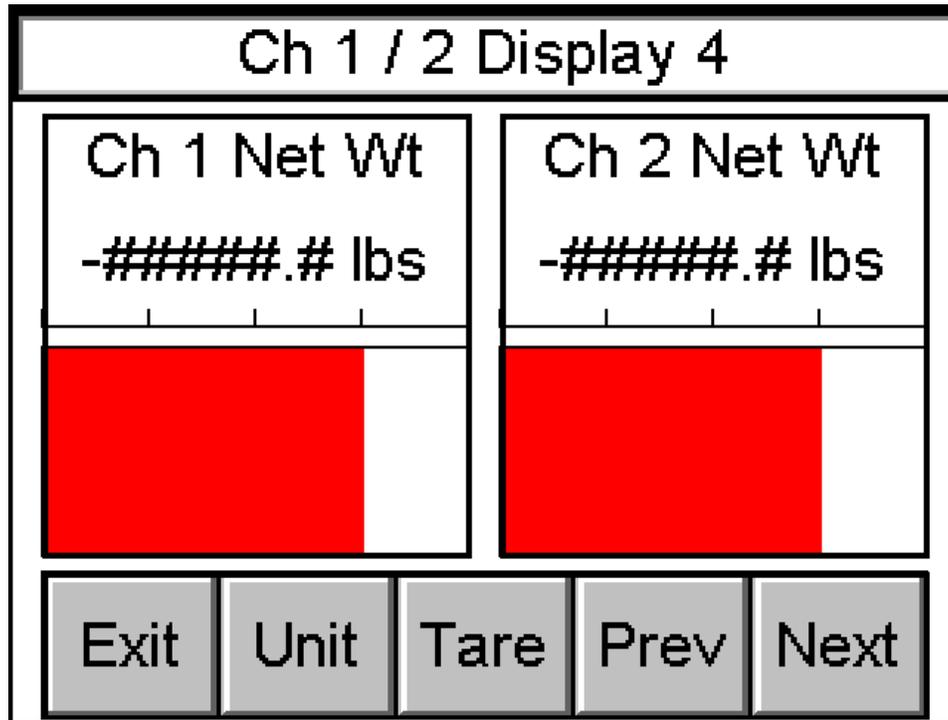


Figure 21: Channel 1 / 2 Display 4

Displays Ch 1 net weight, Ch 1 net weight graph, Ch 2 net weight, and Ch 2 net weight graph

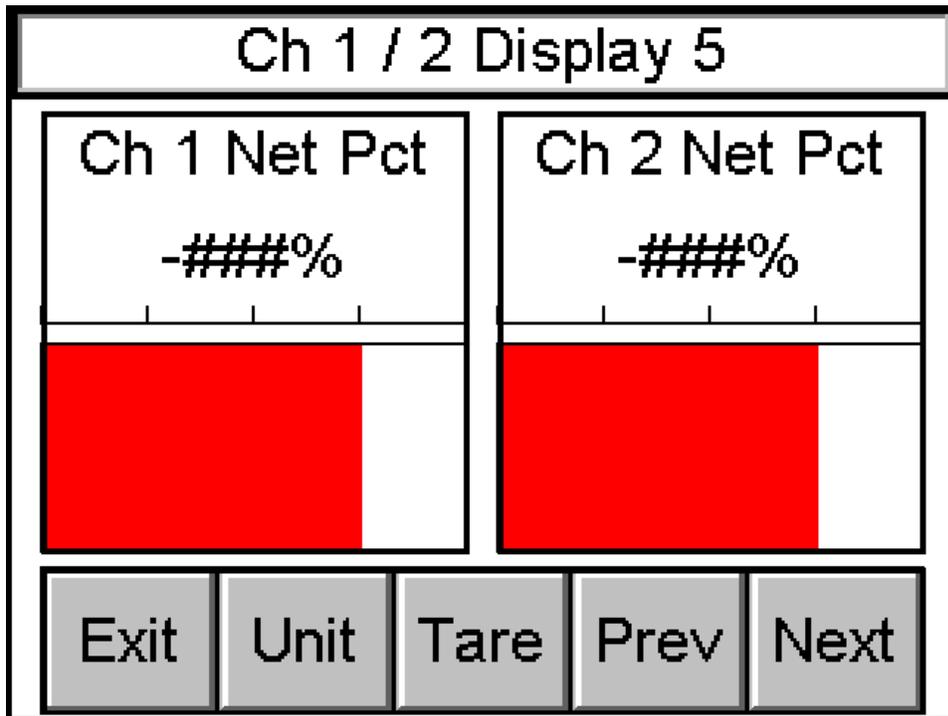


Figure 22: Channel 1 / 2 Display 5

Displays Ch 1 net weight, Ch 1 gross weight graph, Ch 2 net weight graph, and Ch 2 gross weight graph

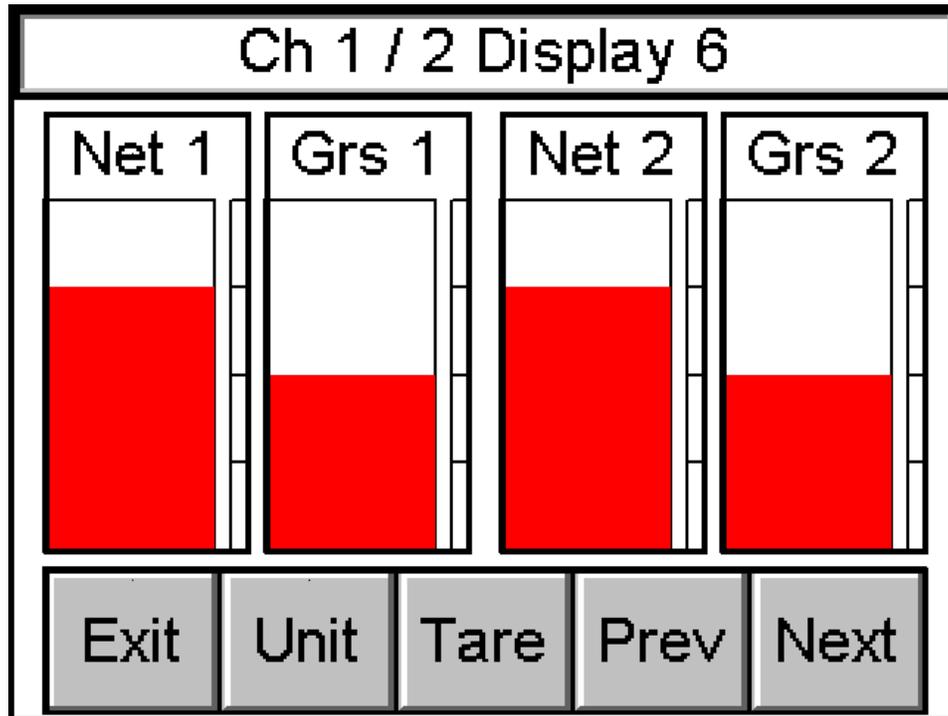


Figure 23: Channel 1 / 2 Display 6

Displays Ch 1 net weight graph, Ch 1 gross weight graph, Ch 2 net weight graph, and Ch 2 gross weight graph

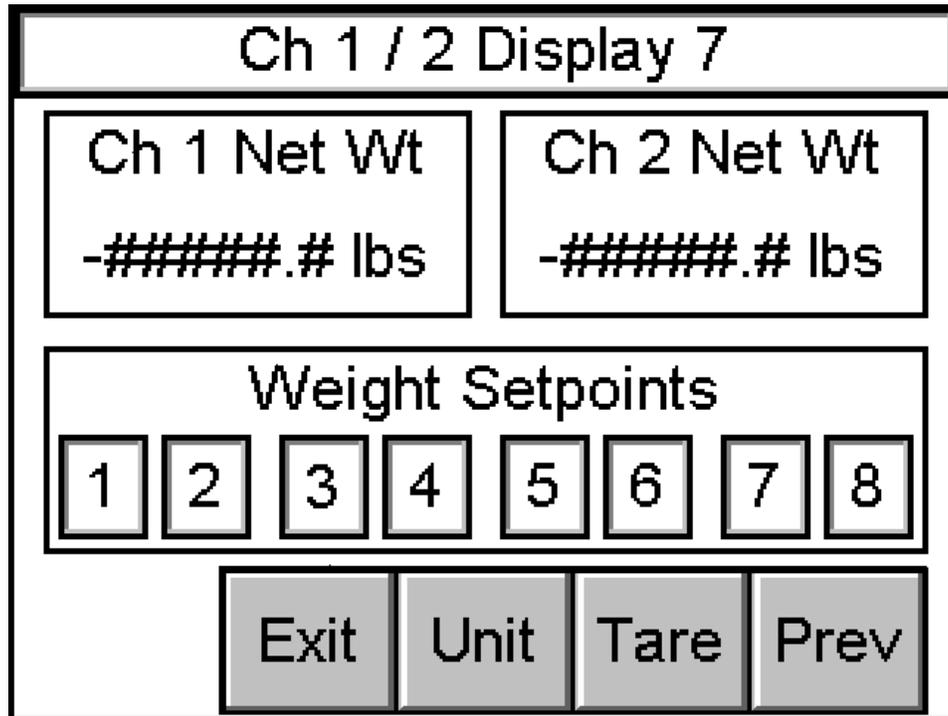


Figure 24: Channel 1 / 2 Display 7

Displays Ch 1 net weight, Ch 2 net weight, and weight setpoints

NOTE: Only available when weight setpoints are enabled

NOTE: The amount of weight setpoints displayed will vary based on configuration

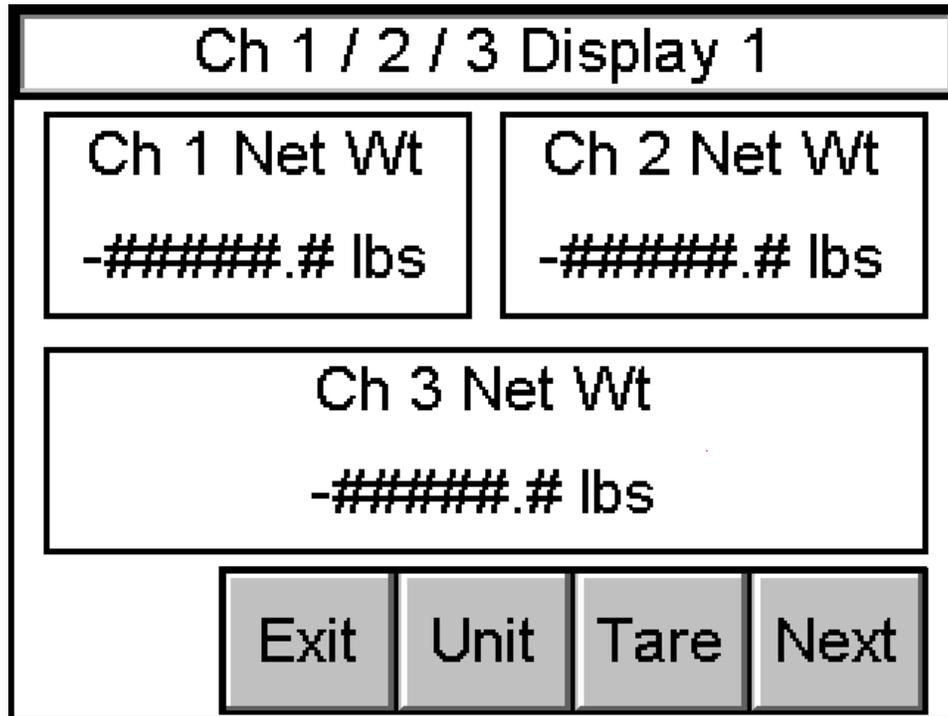


Figure 25: Channel 1 / 2 / 3 Display 1

Displays Ch 1 net weight, Ch 2 net weight, and Ch 3 net weight

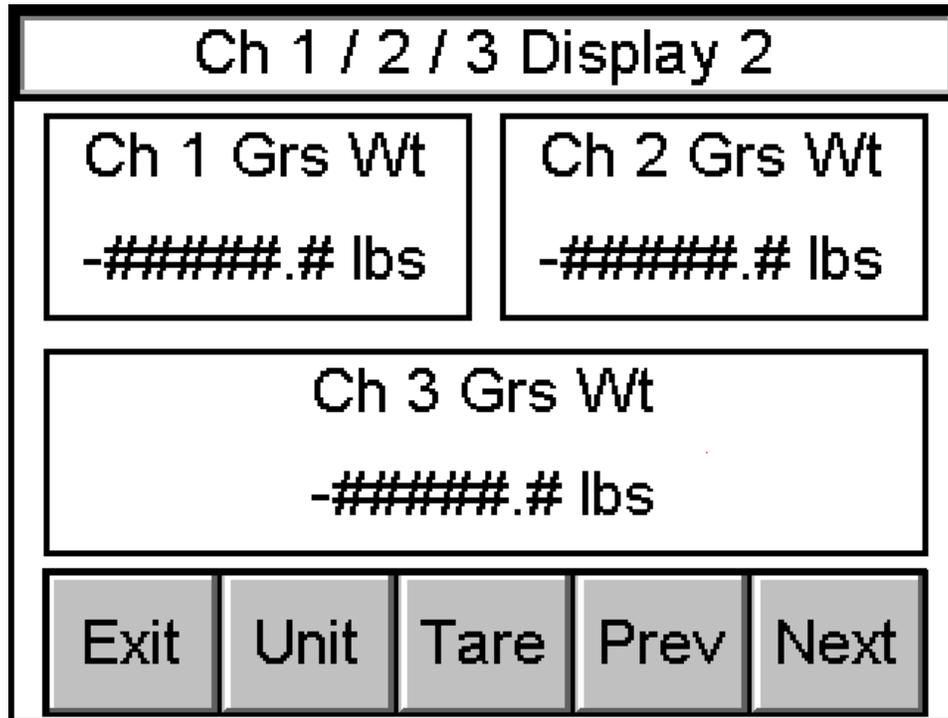


Figure 26: Channel 1 / 2 / 3 Display 2

Displays Ch 1 gross weight, Ch 2 gross weight, and Ch 3 gross weight

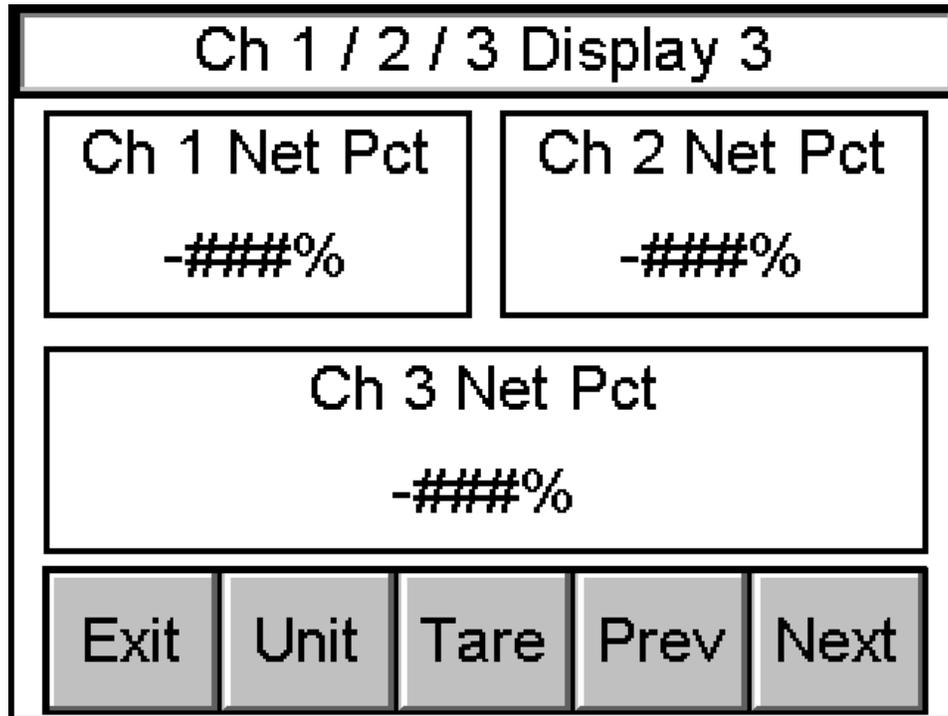


Figure 27: Channel 1 / 2 / 3 Display 3

Displays Ch 1 net percent, Ch 2 net percent, and Ch 3 net percent

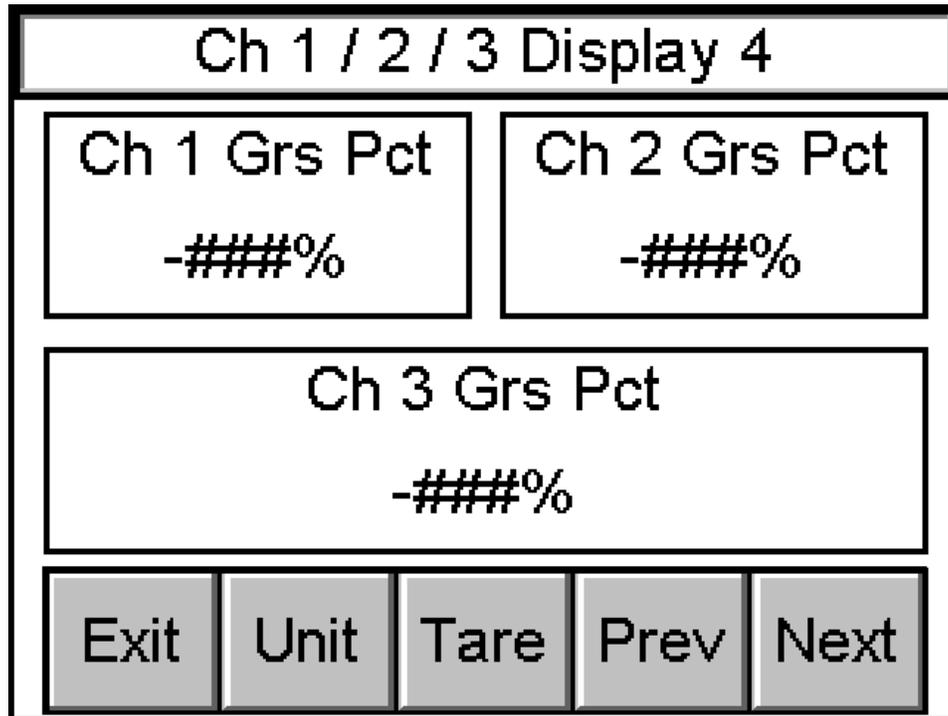


Figure 28: Channel 1 / 2 / 3 Display 4

Displays Ch 1 gross percent, Ch 2 gross percent, and Ch 3 gross percent

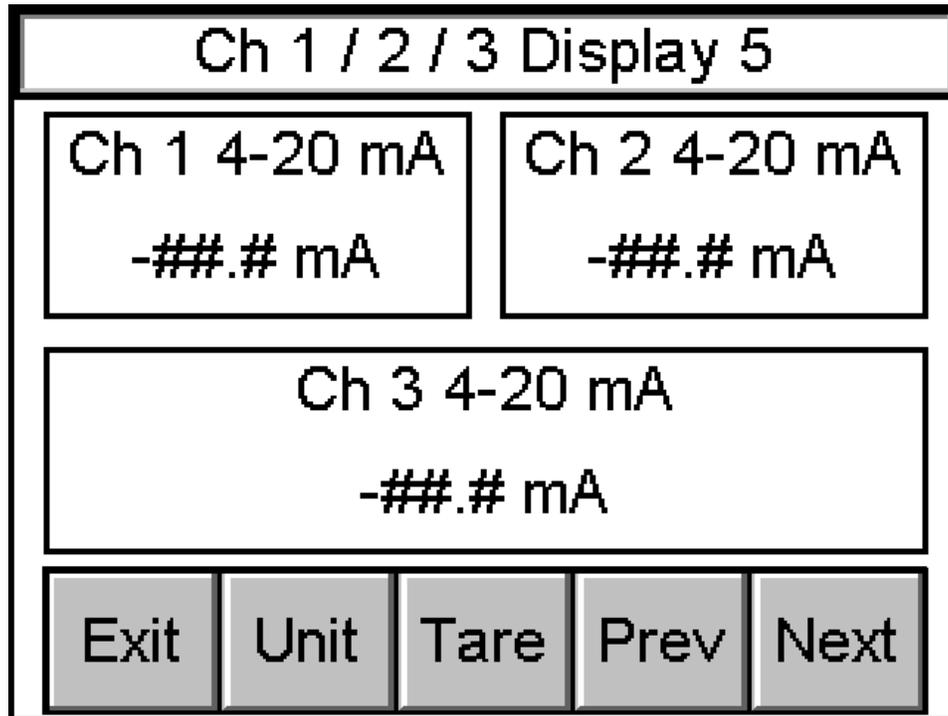


Figure 29: Channel 1 / 2 / 3 Display 5

Displays Ch 1 4-20mA out, Ch 2 4-20mA out, and Ch 3 4-20mA out

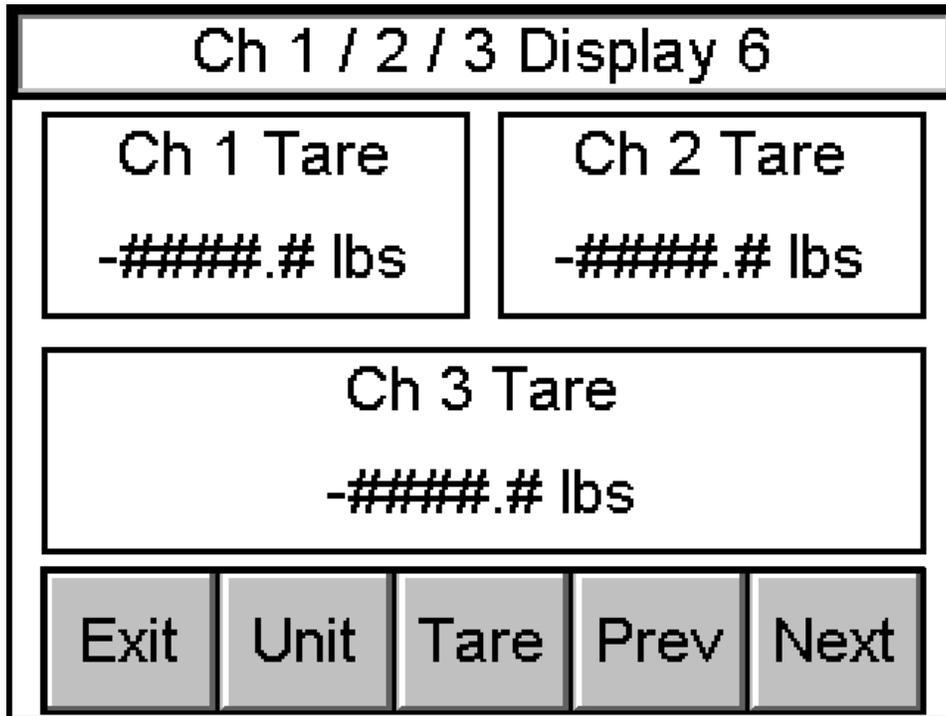


Figure 30: Channel 1 / 2 / 3 Display 6
Displays Ch 1 tare, Ch 2 tare, and Ch 3 tare

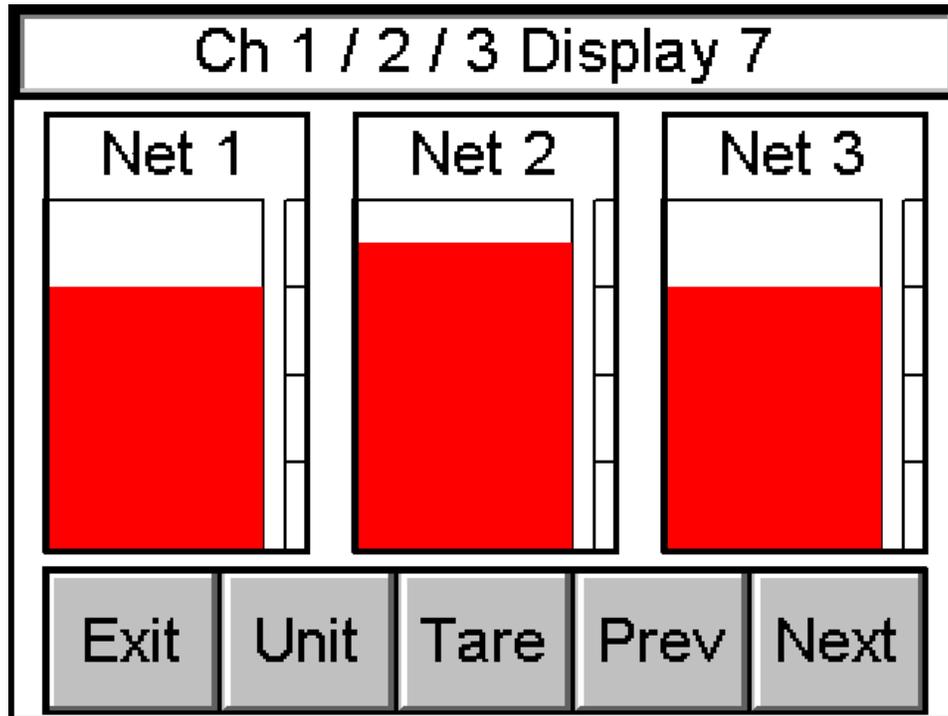


Figure 31: Channel 1 / 2 / 3 Display 7

Displays Ch 1 net weight graph, Ch 2 net weight graph, and Ch 3 net weight graph

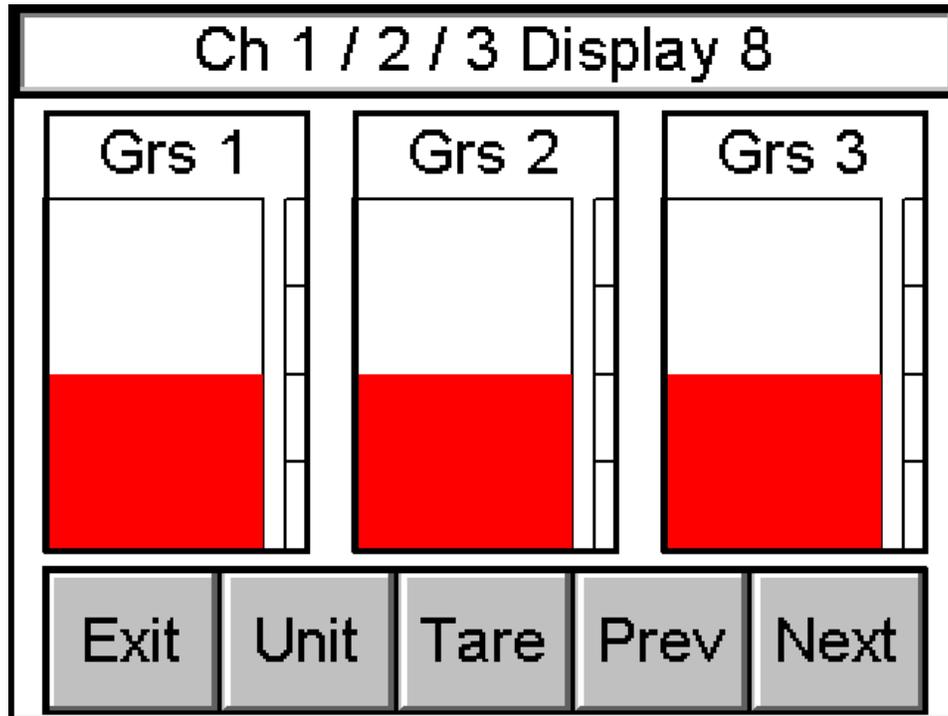


Figure 32: Channel 1 / 2 / 3 Display 8

Displays Ch 1 gross weight graph, Ch 2 gross weight graph, and Ch 3 gross weight graph

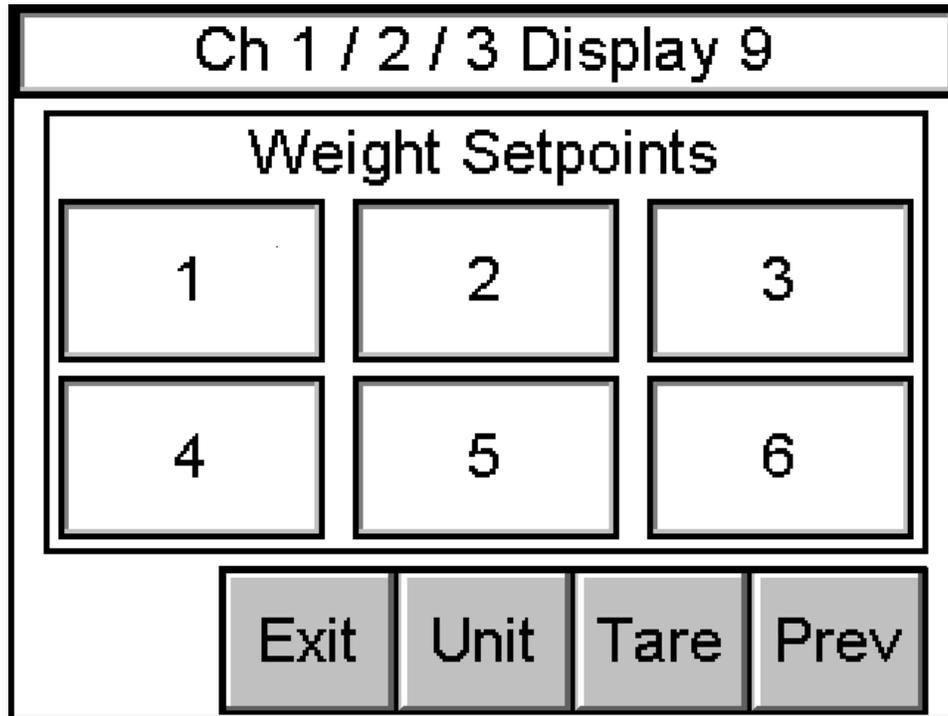


Figure 33: Channel 1 / 2 / 3 Display 9

Displays weight setpoints

NOTE: Only available when weight setpoints are enabled

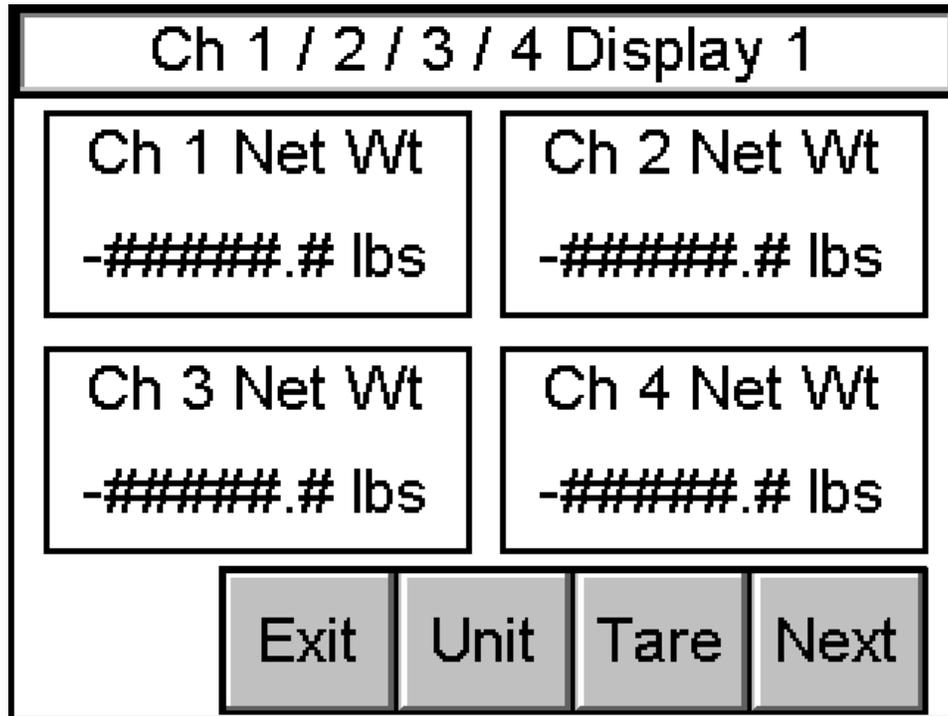


Figure 34: Channel 1 / 2 / 3 / 4 Display 1

Displays Ch 1 net weight, Ch 2 net weight, Ch 3 net weight, and Ch 4 net weight

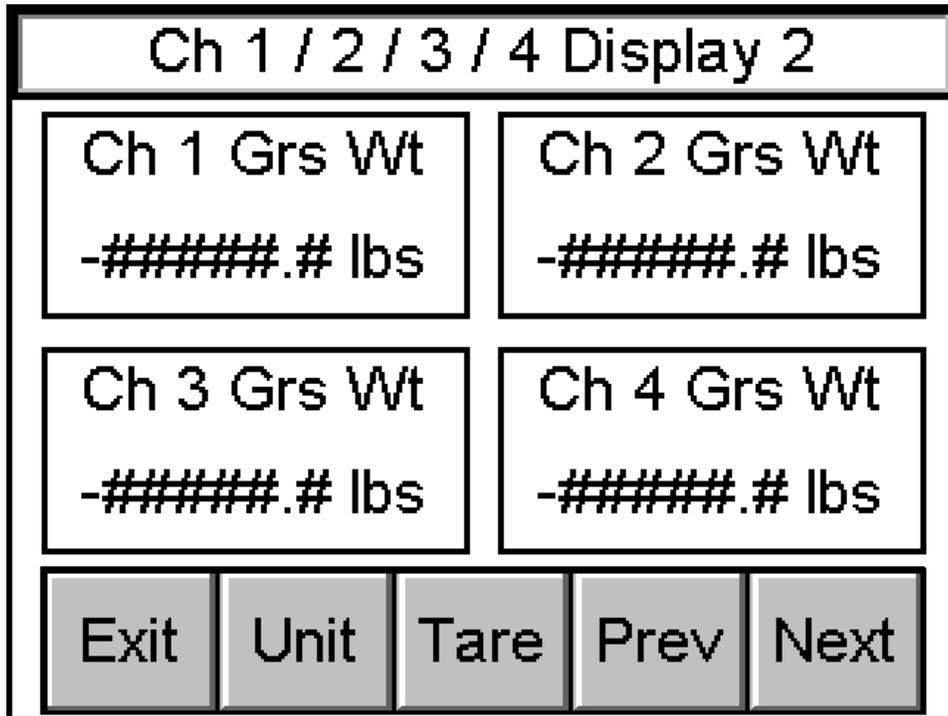


Figure 35: Channel 1 / 2 / 3 / 4 Display 2

Displays Ch 1 gross weight, Ch 2 gross weight, Ch 3 gross weight, and Ch 4 gross weight

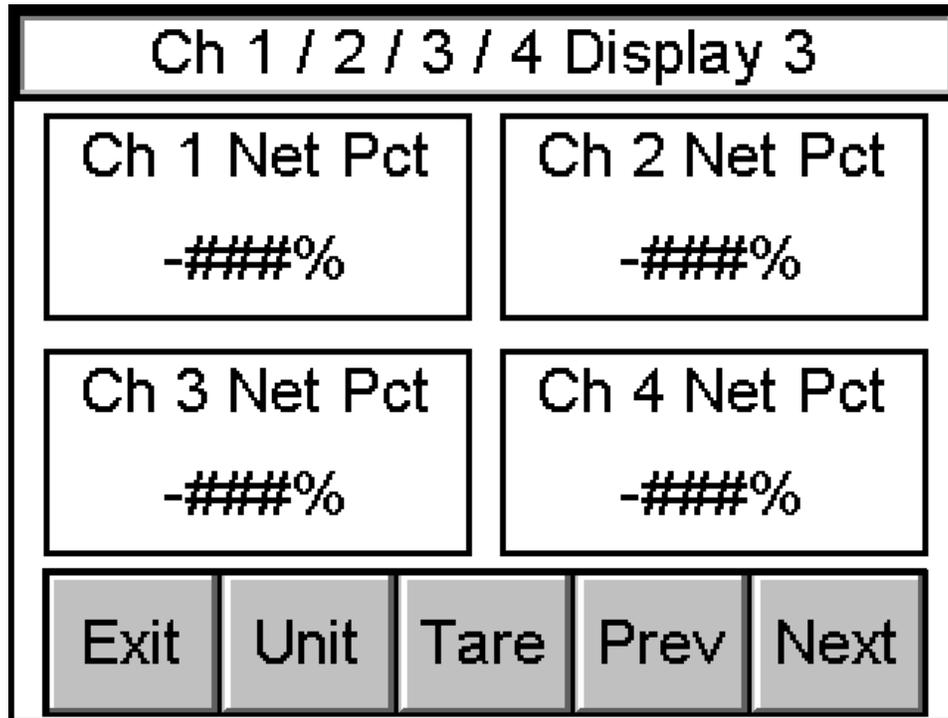


Figure 36: Channel 1 / 2 / 3 / 4 Display 3

Displays Ch 1 net percent, Ch 2 net percent, Ch 3 net percent, and Ch 4 net percent

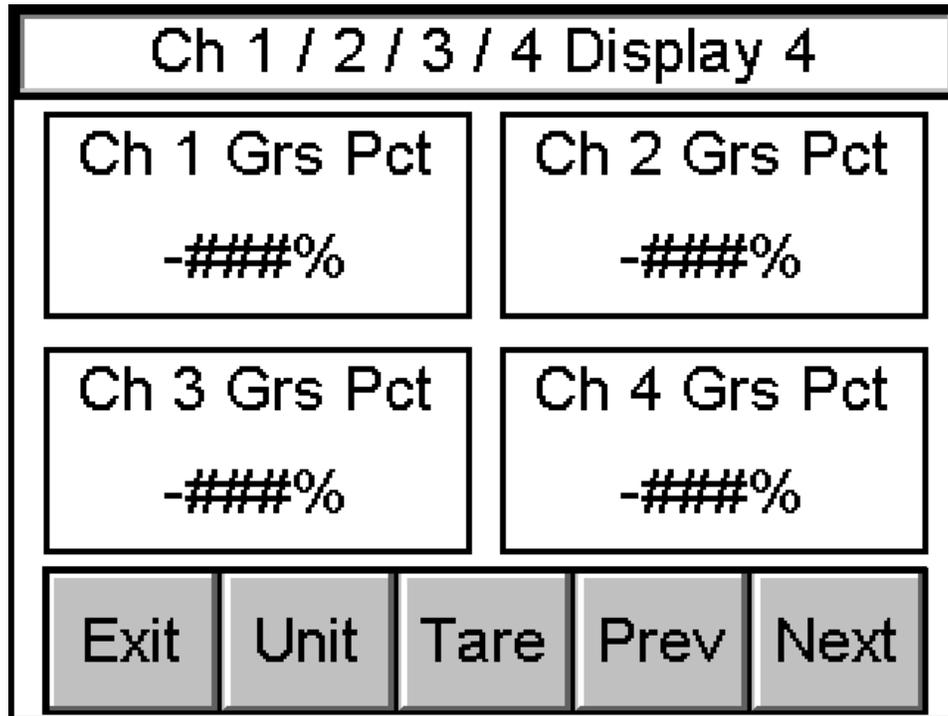


Figure 37: Channel 1 / 2 / 3 / 4 Display 4

Displays Ch 1 gross percent, Ch 2 gross percent, Ch 3 gross percent, and Ch 4 gross percent

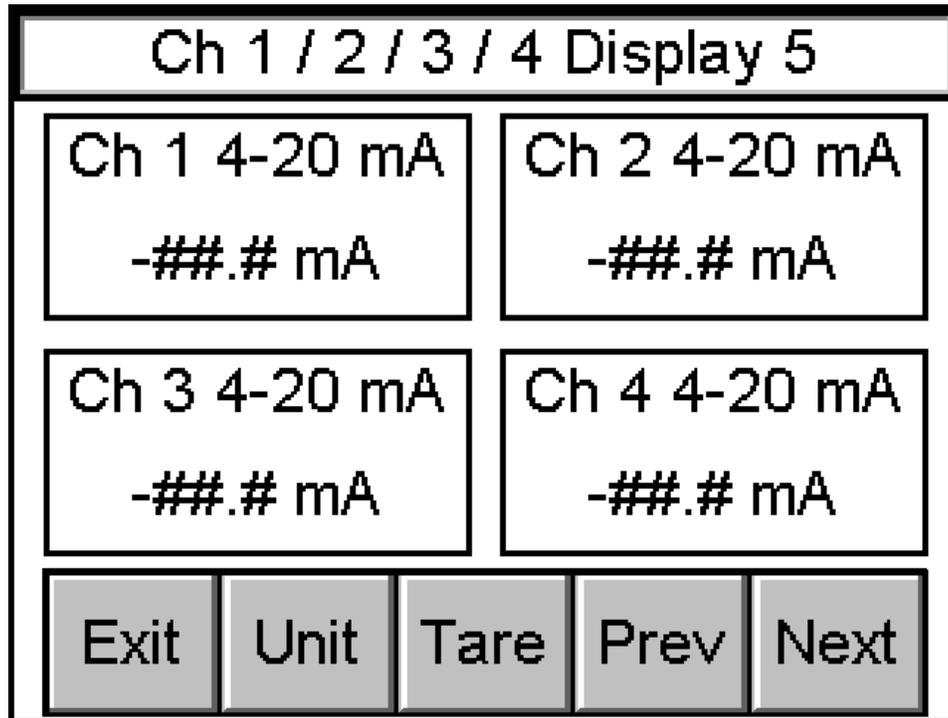


Figure 38: Channel 1 / 2 / 3 / 4 Display 5

Displays Ch 1 4-20 mA out, Ch 2 4-20 mA out, Ch 3 4-20 mA out, and Ch 4 4-20 mA out

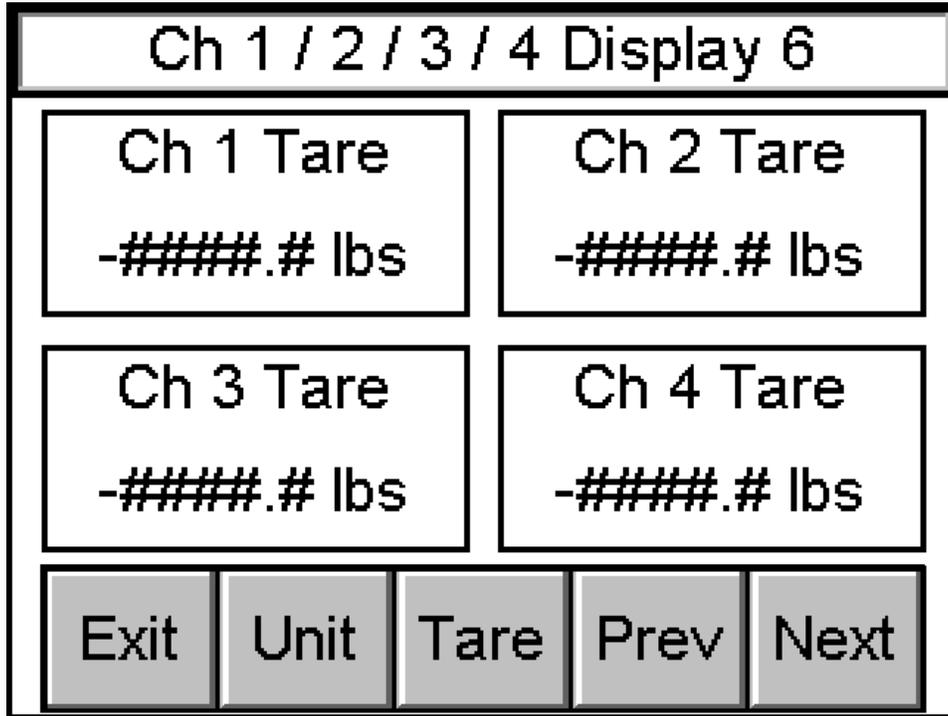


Figure 39: Channel 1 / 2 / 3 / 4 Display 6
 Displays Ch 1 tare, Ch 2 tare, Ch 3 tare, and Ch 4 tare

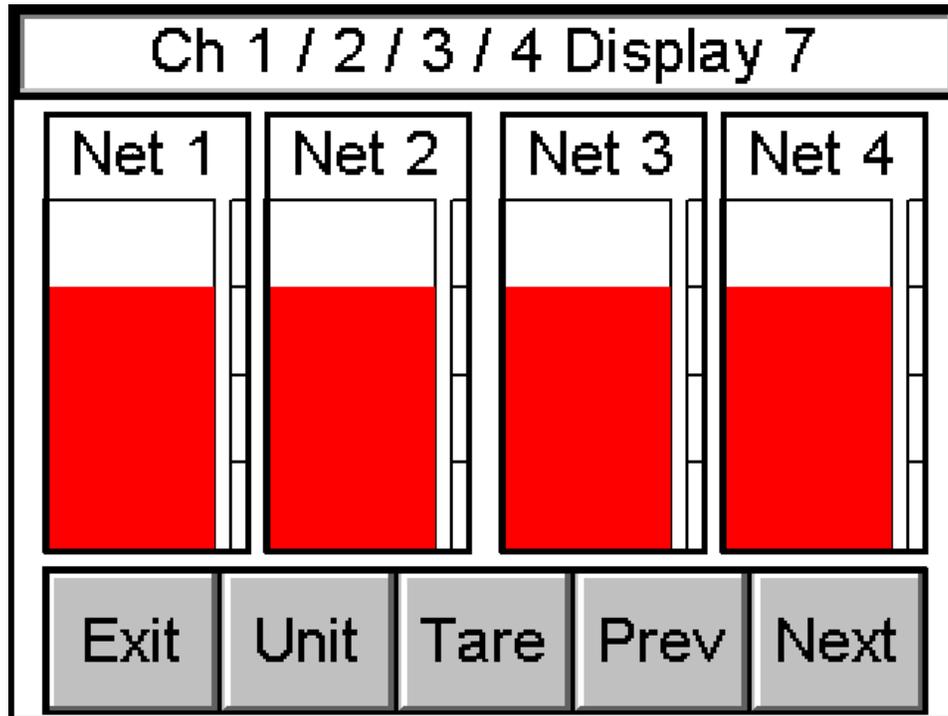


Figure 40: Channel 1 / 2 / 3 / 4 Display 7

Displays Ch 1 net weight graph, Ch 2 net weight graph, Ch 3 net weight graph, and Ch 4 net weight graph

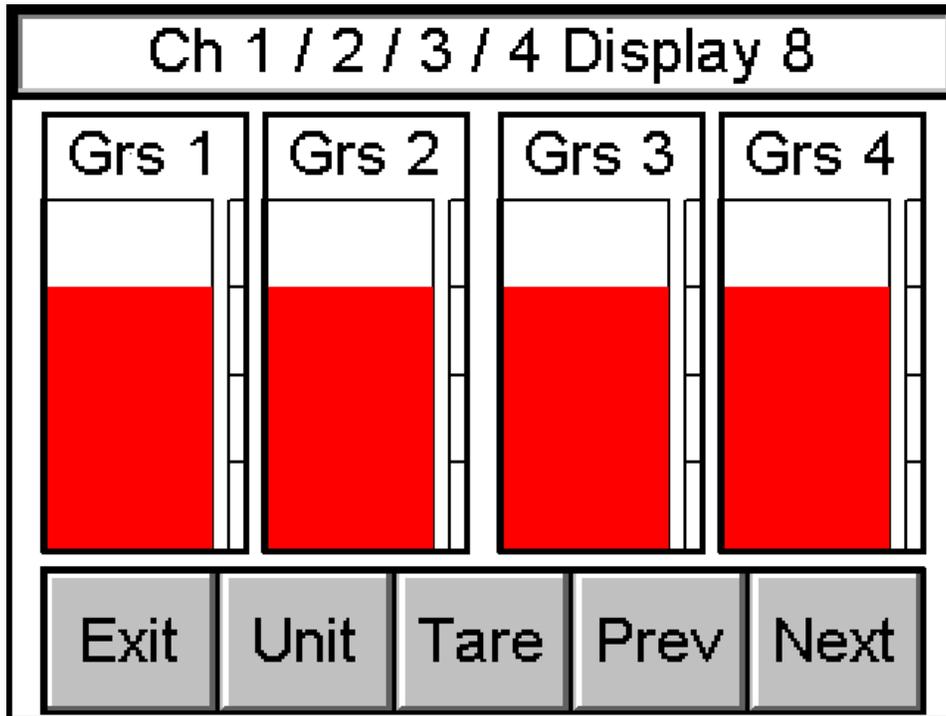


Figure 41: Channel 1 / 2 / 3 / 4 Display 8

Displays Ch 1 gross weight graph, Ch 2 gross weight graph, Ch 3 gross weight graph, and Ch 4 gross weight graph

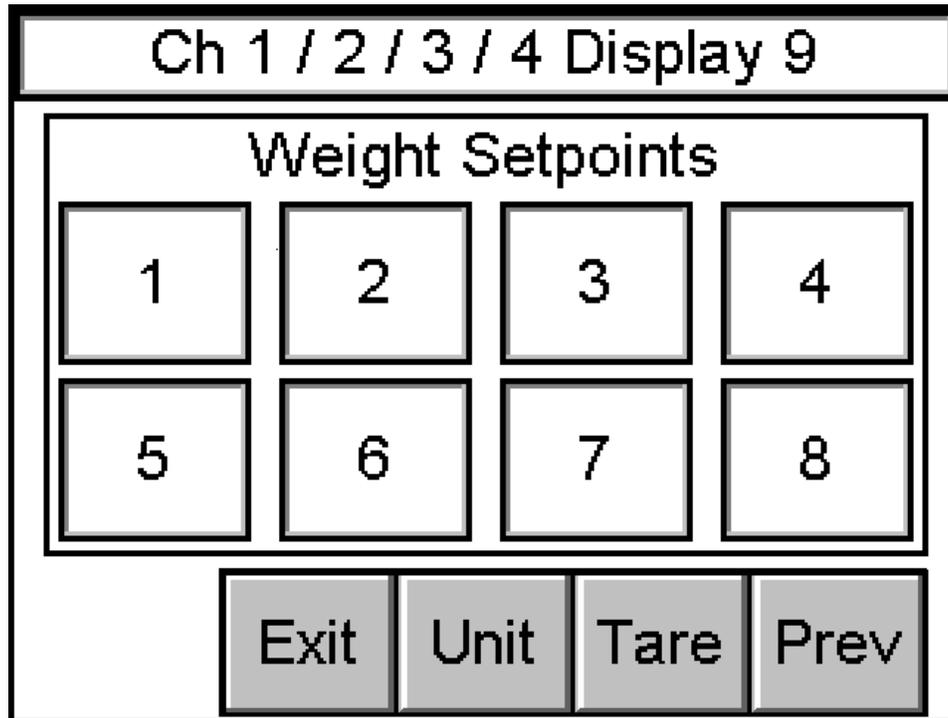


Figure 42: Channel 1 / 2 / 3 / 4 Display 9
Displays weight setpoints

NOTE: Only available when weight setpoints are enabled

4.2 Feed Rate Display

The user can access the display screens by pressing the “FR Display” button on the home screen. The user can reset all feed rate functions by pressing “Reset”. The user can pause all feed rate functions by pressing “Pause”. The user can select the display unit by pressing “Unit”. Current feed rate updates every 2 minutes for a sample of feed rate. Average feed rate contains the average feed rate for the day (time configured in operational time). Previous day feed rate contains the average feed rate of the previous day.

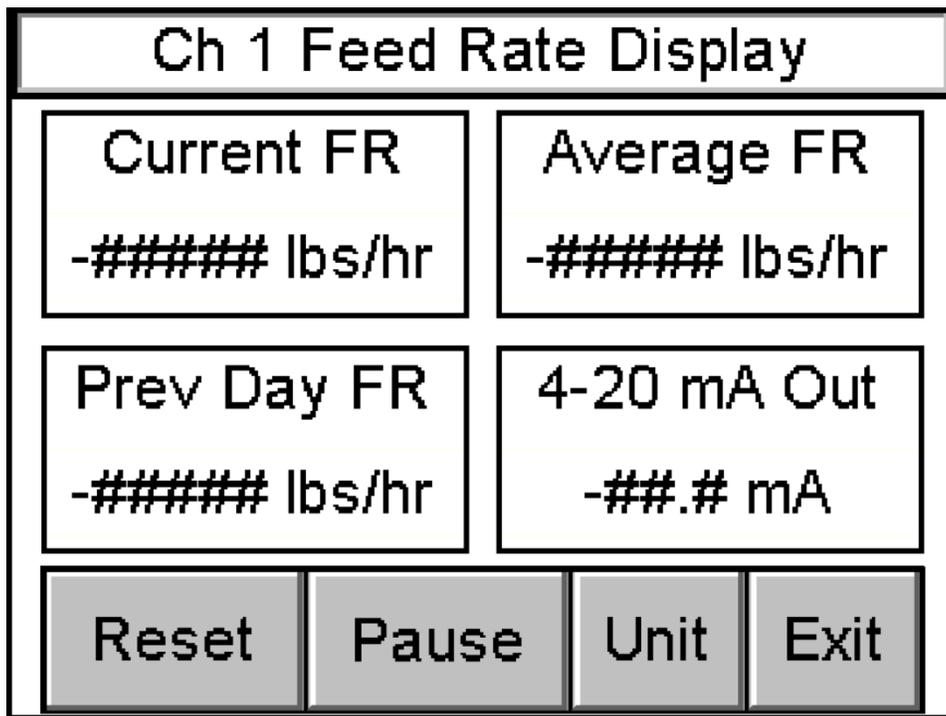


Figure 43: Channel 1 Feed Rate Display

Displays current feed rate, average feed rate, previous day feed rate, and 4-20 mA out

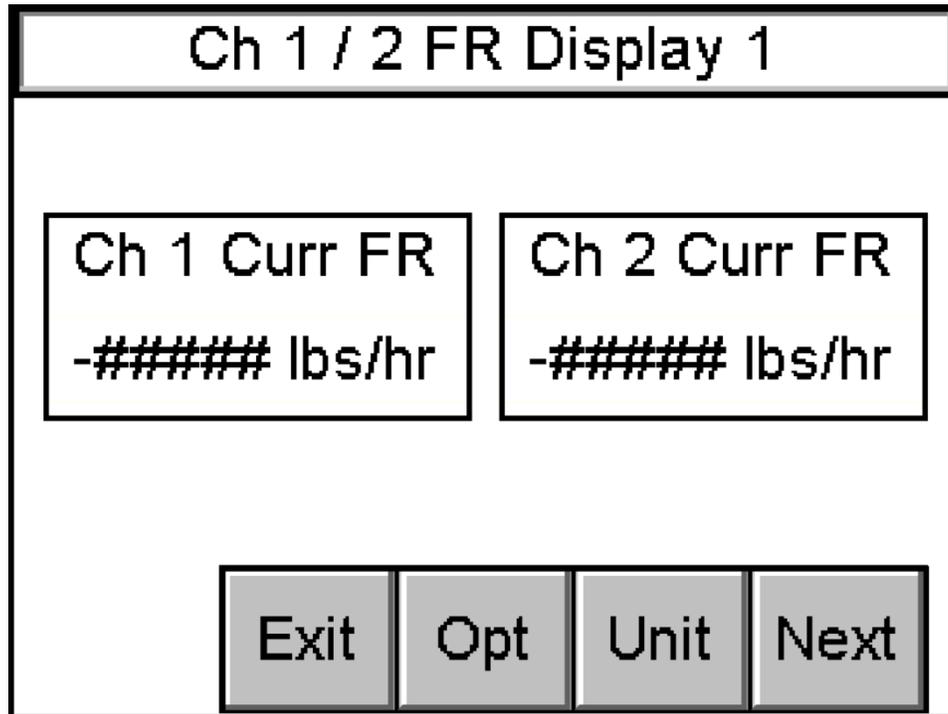


Figure 44: Channel 1 / 2 Feed Rate Display 1

Displays Ch 1 current feed rate and Ch 2 current feed rate

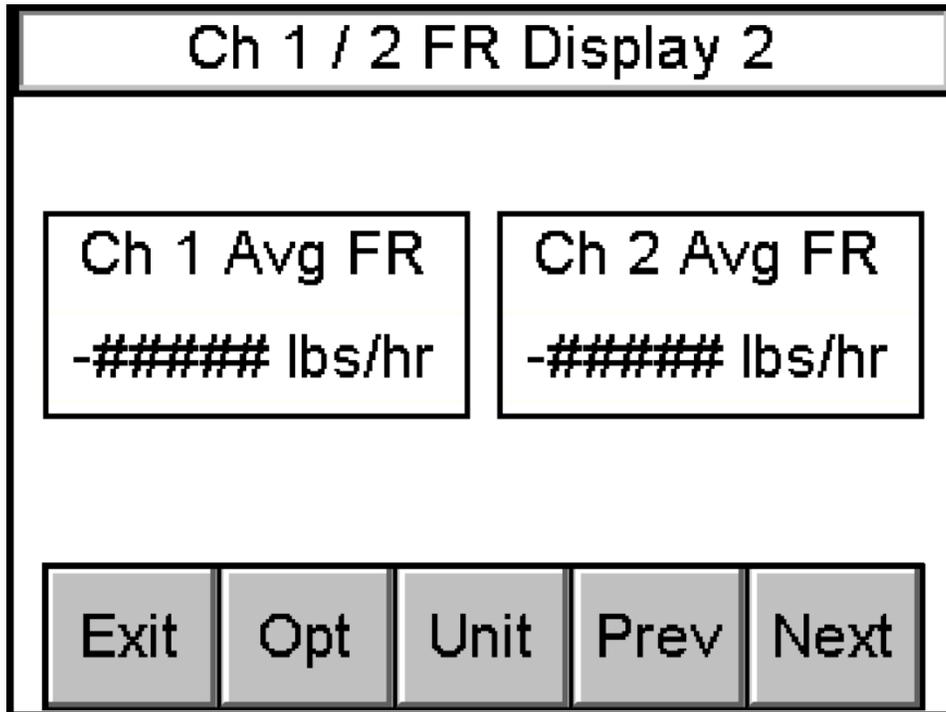


Figure 45: Channel 1 / 2 Feed Rate Display 2

Displays Ch 1 average feed rate and Ch 2 average feed rate

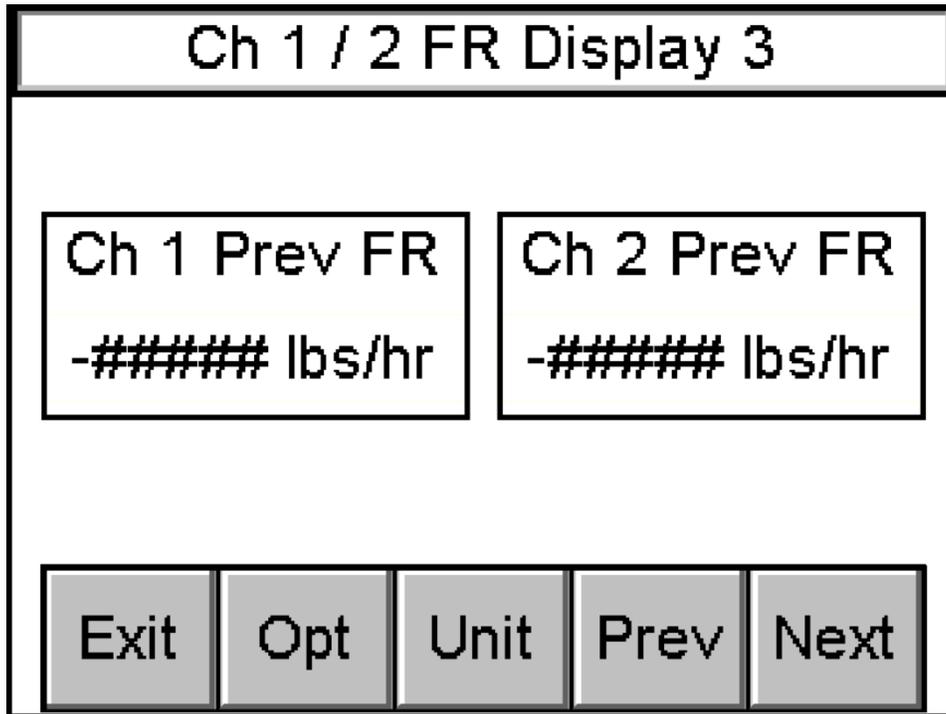


Figure 46: Channel 1 / 2 Feed Rate Display 3

Displays Ch 1 previous day feed rate and Ch 2 previous day feed rate

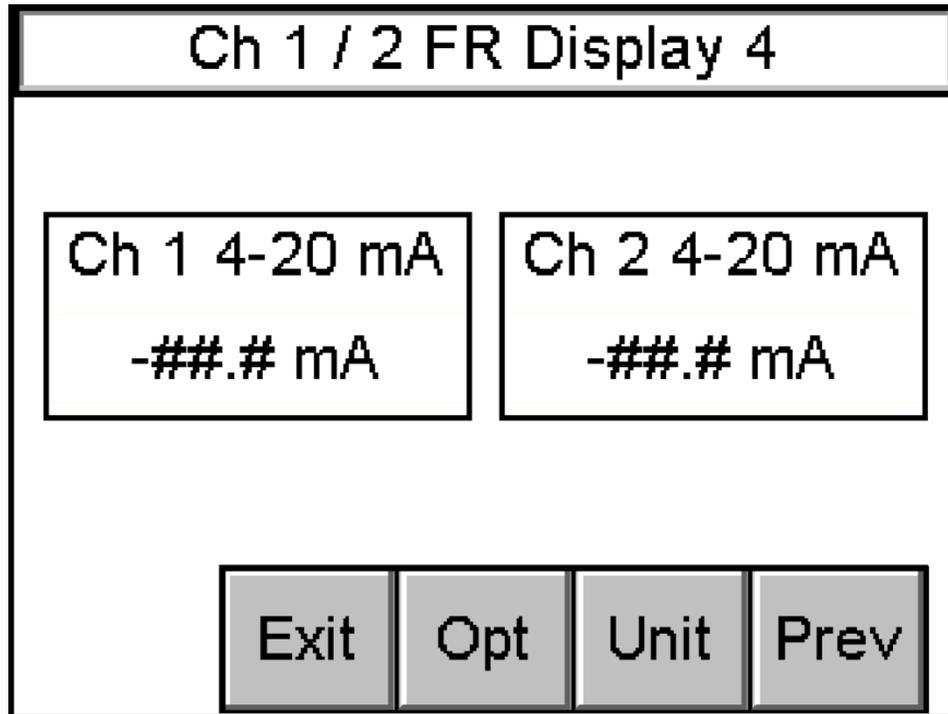


Figure 47: Channel 1 / 2 Feed Rate Display 4
Displays Ch 1 4-20 mA out and Ch 2 4-20 mA out

Ch 1 / 2 FR Options <input type="checkbox"/>		
Ch 1 Feed Rate		
Reset	Pause	
Ch 2 Feed Rate		
Reset	Pause	
Reset All	Exit	Back

Figure 48: Ch 1 / 2 Feed Rate Options

The user can reset or pause Ch 1 or Ch 2 feed rate

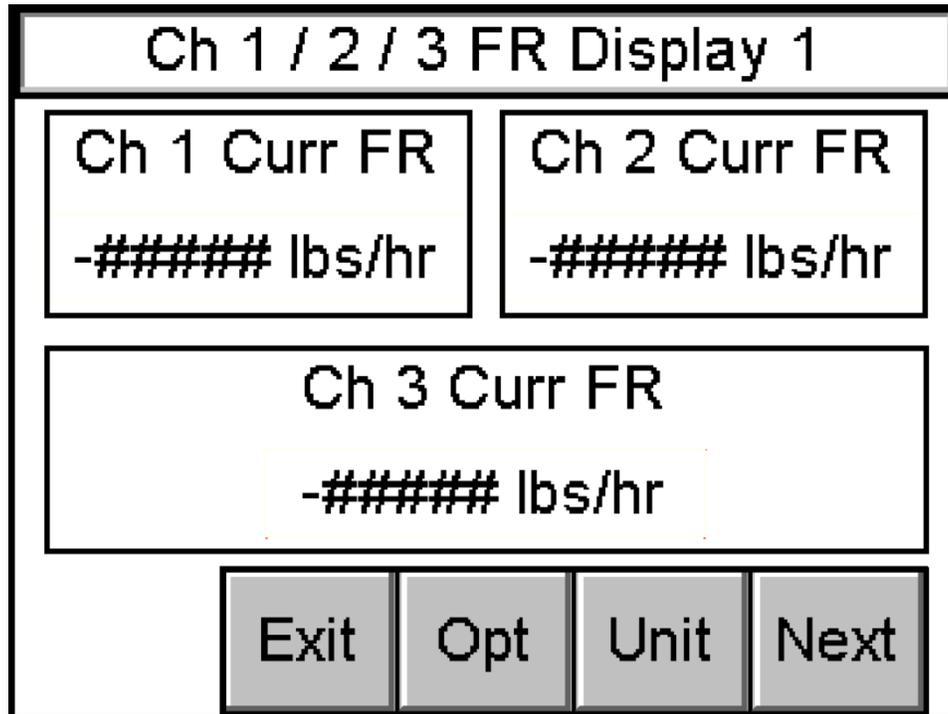


Figure 49: Channel 1 / 2 / 3 Feed Rate Display 1

Displays Ch 1 current feed rate, Ch 2 current feed rate, and Ch 3 current feed rate

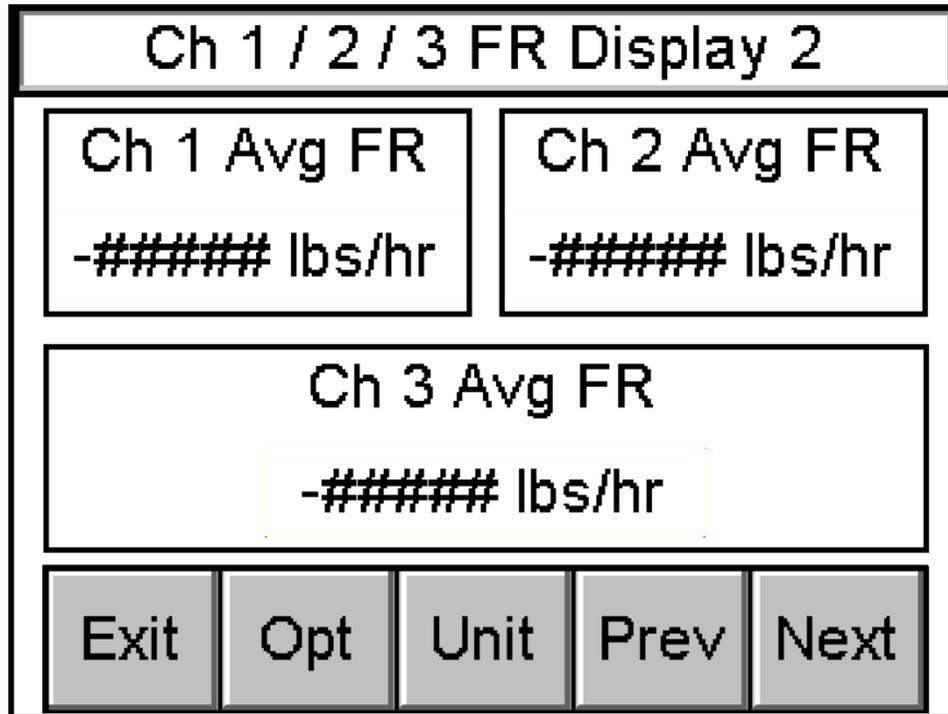


Figure 50: Channel 1 / 2 / 3 Feed Rate Display 2

Displays Ch 1 average feed rate, Ch 2 average feed rate, and Ch 3 average feed rate

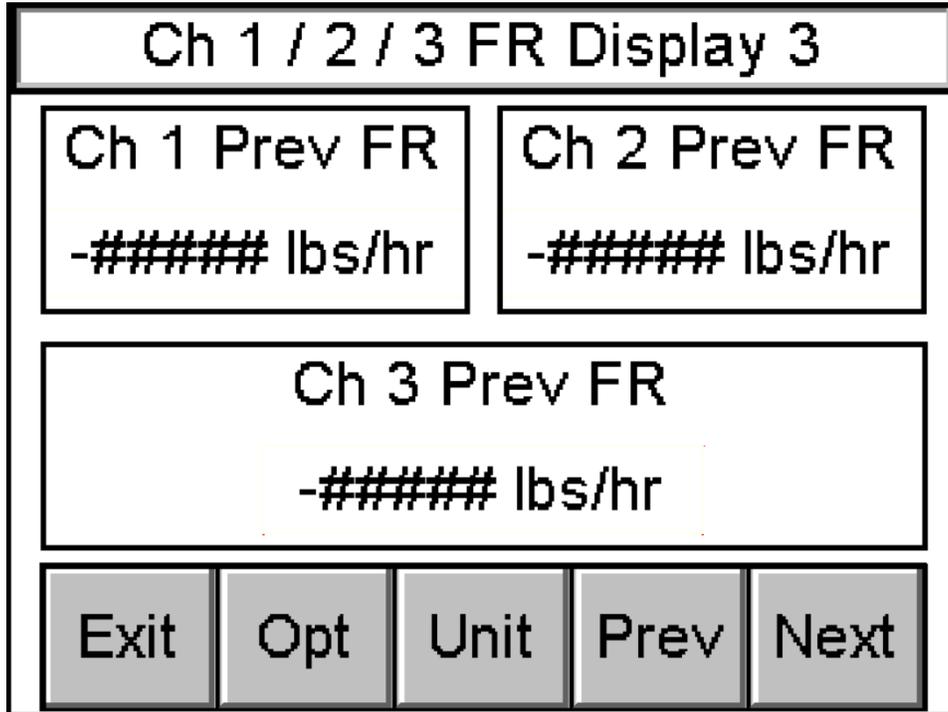


Figure 51: Channel 1 / 2 / 3 Feed Rate Display 3

Displays Ch 1 previous day feed rate, Ch 2 previous day feed rate, and Ch 3 previous day feed rate

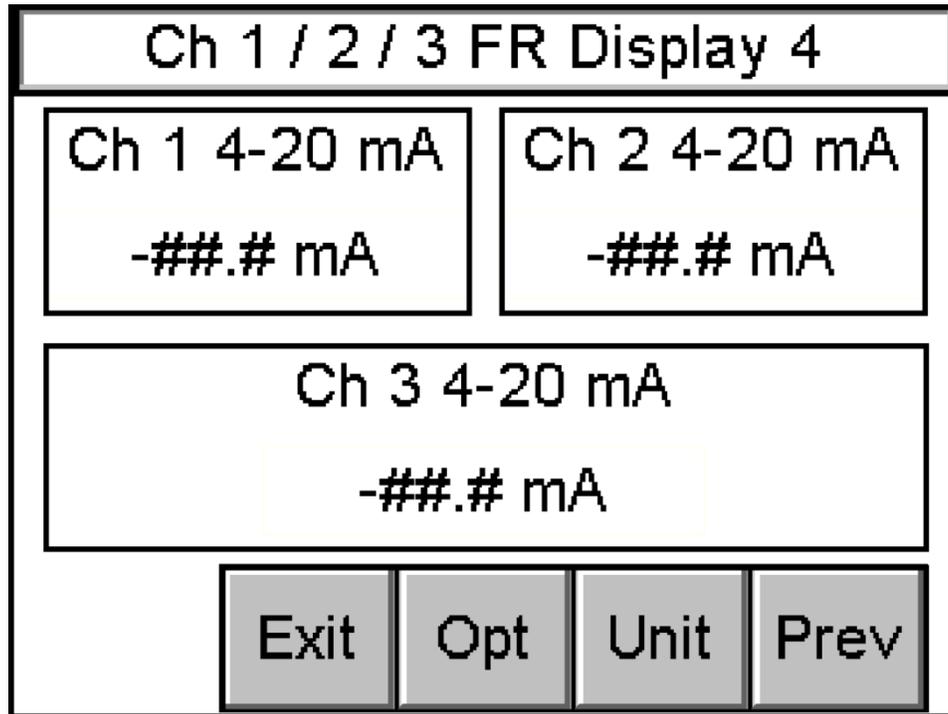


Figure 52: Channel 1 / 2 / 3 Feed Rate Display 4

Displays Ch 1 4-20 mA out, Ch 2 4-20 mA out, and Ch 3 4-20 mA out

Ch 1 / 2 / 3 FR Options <input type="checkbox"/>		
Ch 1 FR	Reset	Pause
Ch 1 FR	Reset	Pause
Ch 1 FR	Reset	Pause
Reset All		Exit Back

Figure 53: Channel 1 / 2 / 3 Feed Rate Options

The user can reset or pause Ch 1, Ch 2, or Ch 3 feed rate

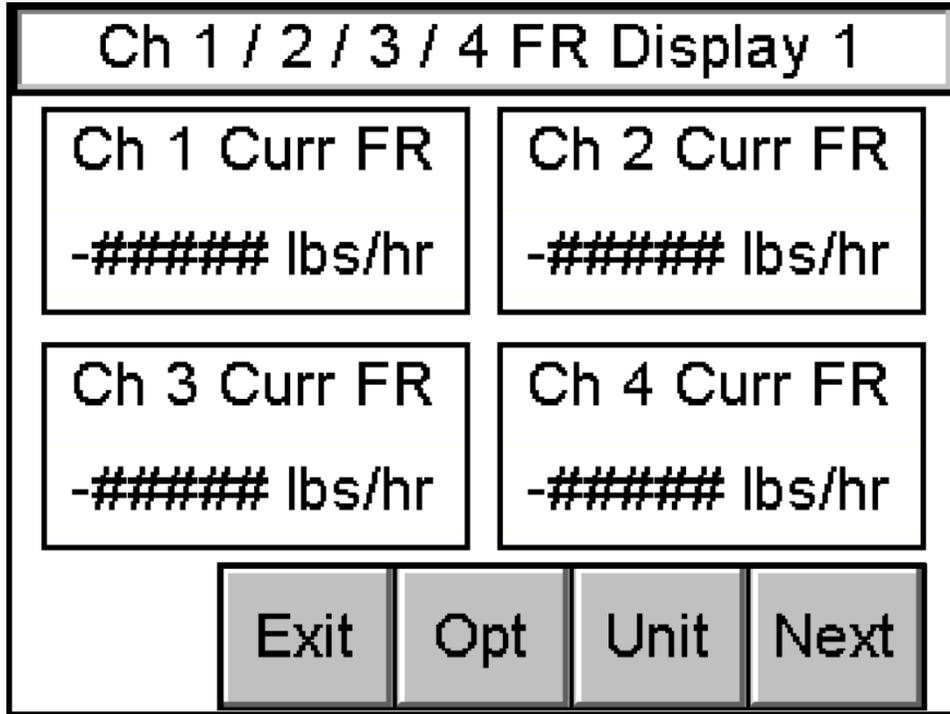


Figure 54: Channel 1 / 2 / 3 / 4 Feed Rate Display 1

Displays Ch 1 current feed rate, Ch 2 current feed rate, Ch 3 current feed rate, and Ch 4 current feed rate

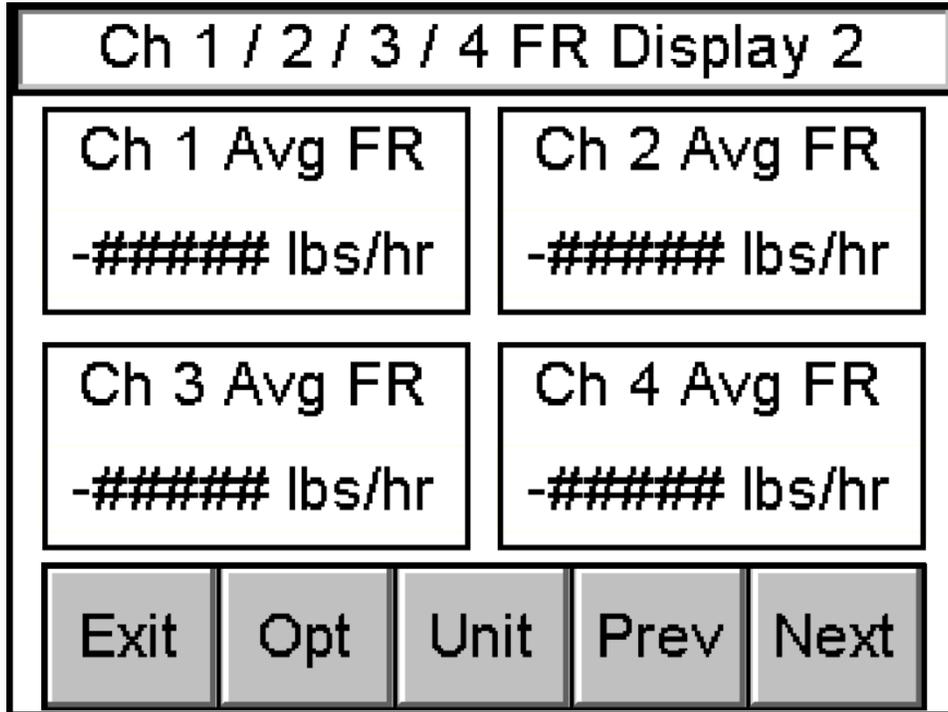


Figure 55: Channel 1 / 2 / 3 / 4 Feed Rate Display 2

Displays Ch 1 average feed rate, Ch 2 average feed rate, Ch 3 average feed rate, and ch 4 average feed rate

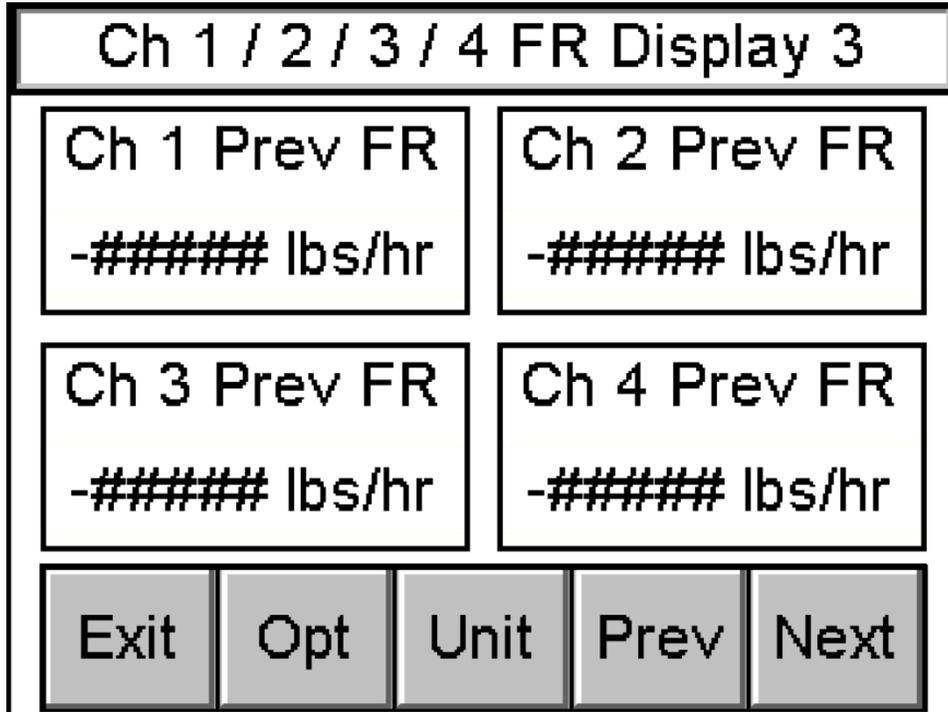


Figure 56: Channel 1 / 2 / 3 / 4 Feed Rate Display 3

Displays Ch 1 previous day feed rate, Ch 2 previous day feed rate, Ch 3 previous day feed rate, and Ch 4 previous day feed rate

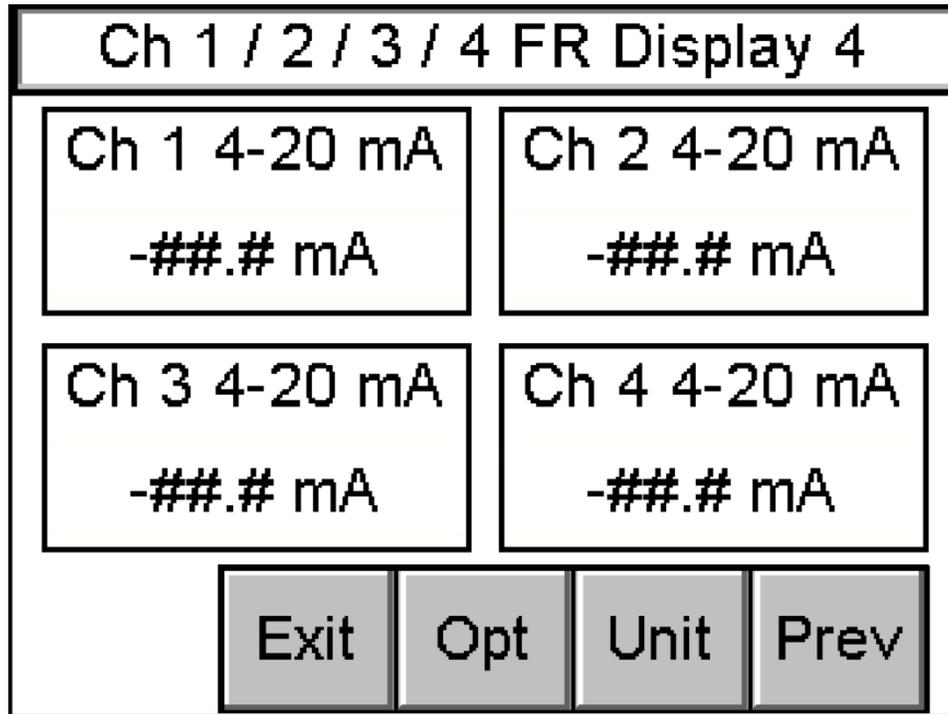


Figure 57: Channel 1 / 2 / 3 / 4 Feed Rate Display 4

Displays Ch 1 4-20 mA out, Ch 2 4-20 mA out, Ch 3 4-20 mA out, and Ch 4 4-20 mA out

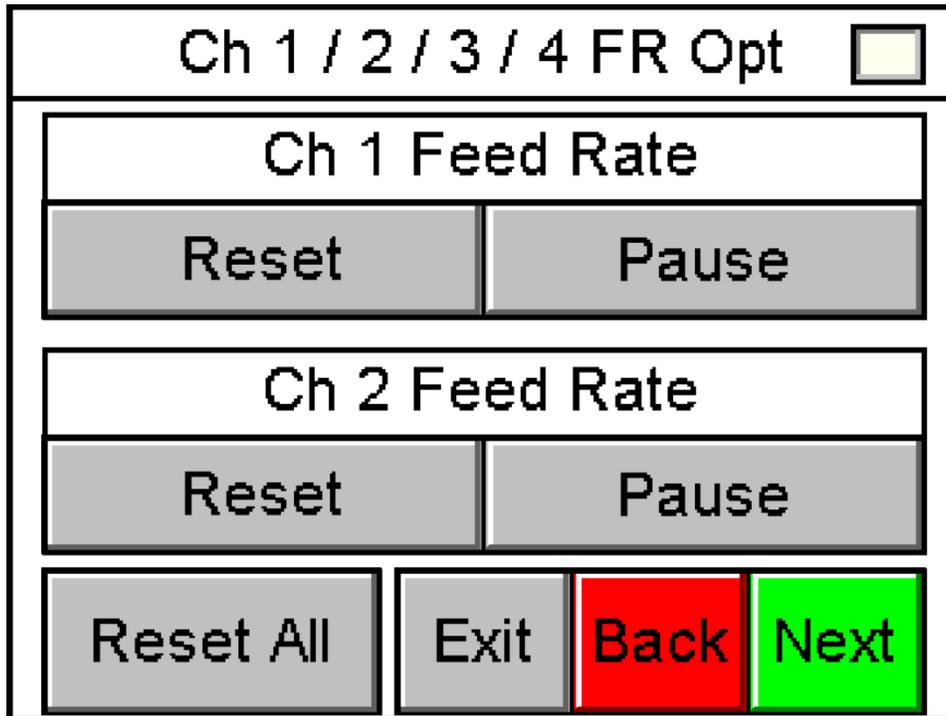


Figure 58: Channel 1 / 2 / 3 / 4 Feed Rate Options 1
The user can reset or pause Ch 1 or Ch 2 feed rate

Ch 1 / 2 / 3 / 4 FR Opt <input type="checkbox"/>		
Ch 3 Feed Rate		
Reset	Pause	
Ch 4 Feed Rate		
Reset	Pause	
Reset All	Exit	Back

Figure 59: Channel 1 / 2 / 3 / 4 Feed Rate Options 2

The user can reset or pause Ch 3 or Ch 4 feed rate

4.3 Data Log Display

The user can access the data log displays by pressing the “Data Log” button on the home screen. The user can view hourly net weight, daily net weight, hourly feed rate, and daily feed rate. The daily data log displays use a time range of 8 hours. If the user has the max feed rate alarm disabled, the feed rate data logs will not update, and a notification will appear on their screens. On screen data log displays will be reset when the indicator is turned off. The Y-axis on the net weight displays is set by the max net weight. The Y-axis on the feed rate displays is set by the max feed rate.

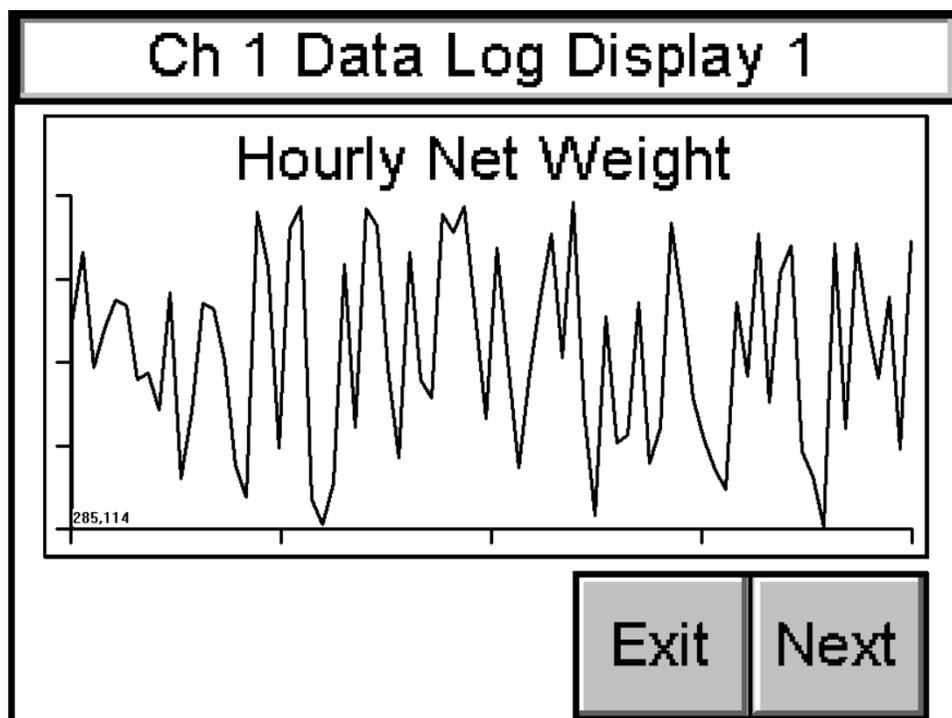


Figure 60: Data Log Display 1

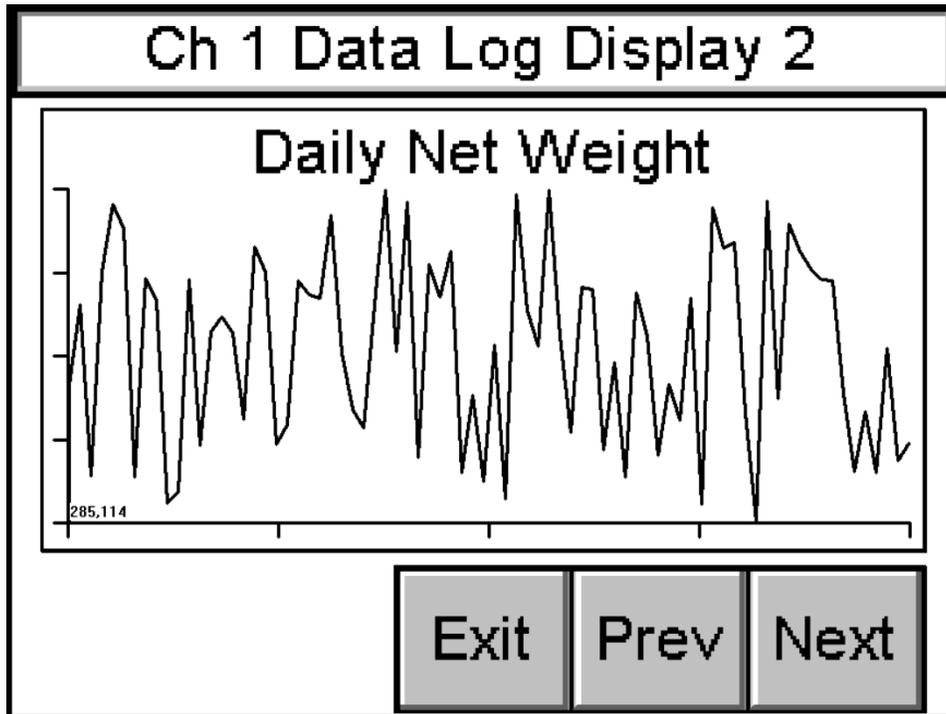


Figure 61: Data Log Display 2

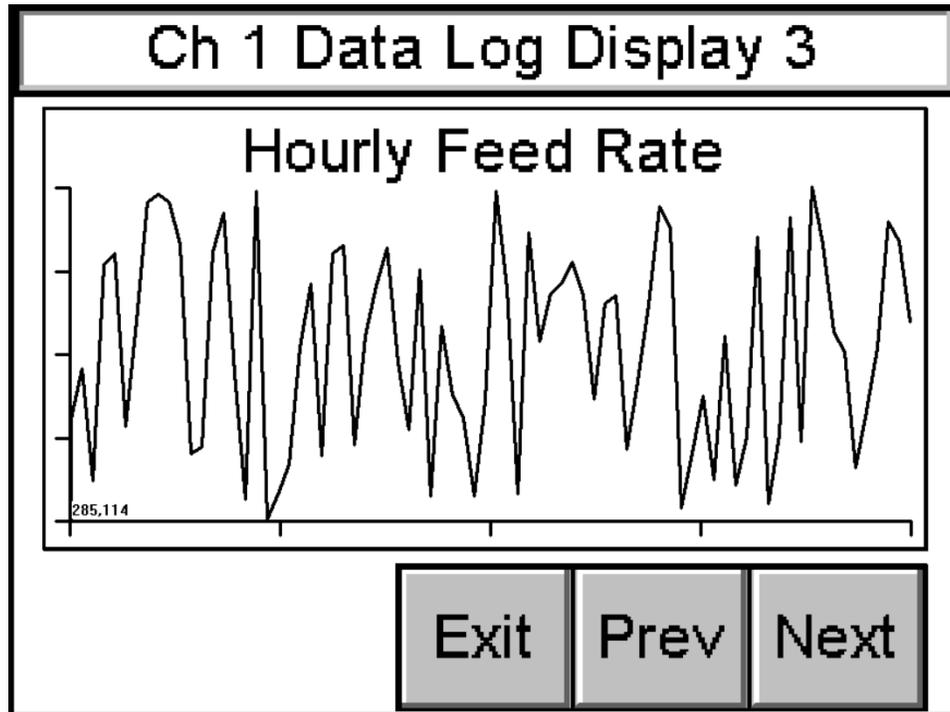


Figure 62: Data Log Display 3

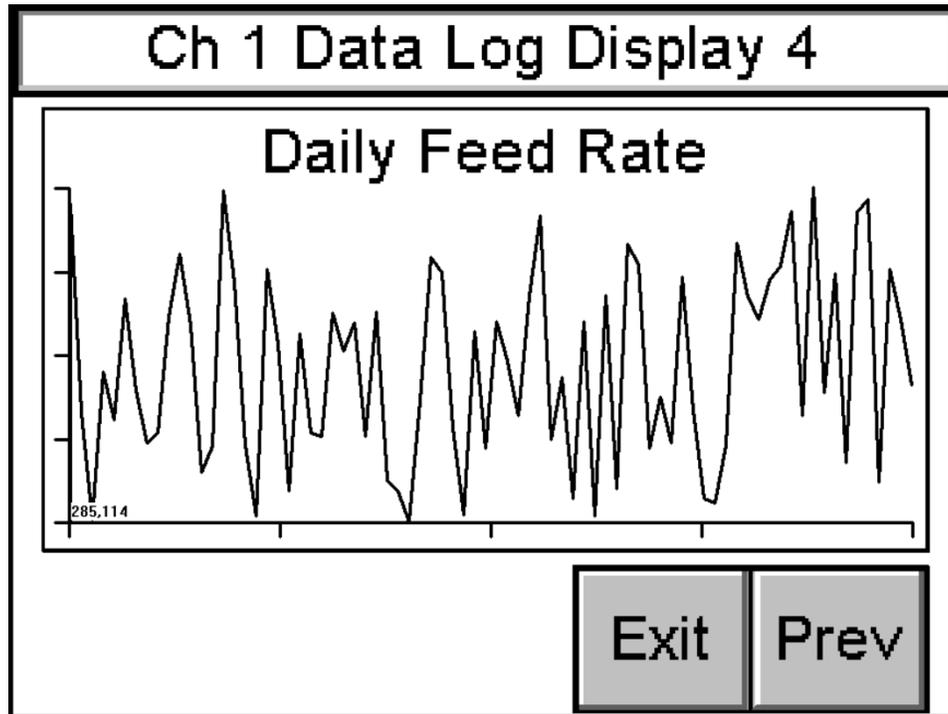


Figure 63: Data Log Display 4

4.4 Unit Selection

The user can access the unit screen by pressing the “Unit” button on any display or tare screen. When gallons or liters are selected, specific gravity will be included in conversion calculations.

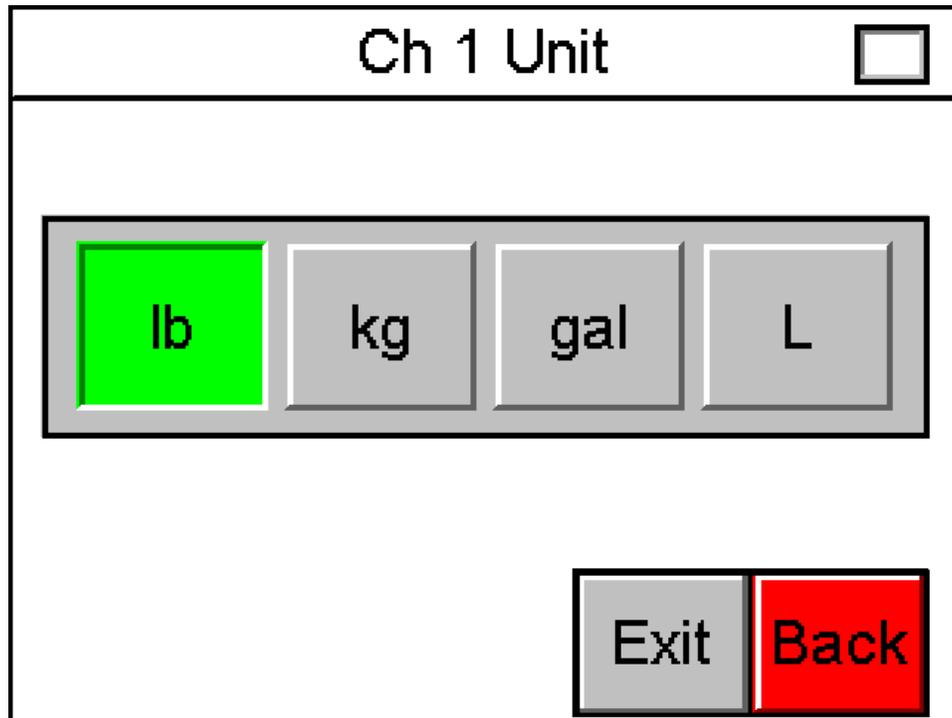


Figure 64: Unit Selection

4.5 Tare Adjustment

The user can access the tare adjustment screen by pressing the “Tare” button on any display. While in the tare adjustment screen, the user can manually adjust tare by using the add and subtract buttons. A single press will add or subtract “0.1” of the value. Holding the button will gradually increase add or subtract speed. By pressing the “Unit” button, the user can select the display and adjustment unit. By pressing the “Auto” button, the user can automatically tare all weight on the base. By pressing the “Reset” button, the user can reset the tare value to zero.

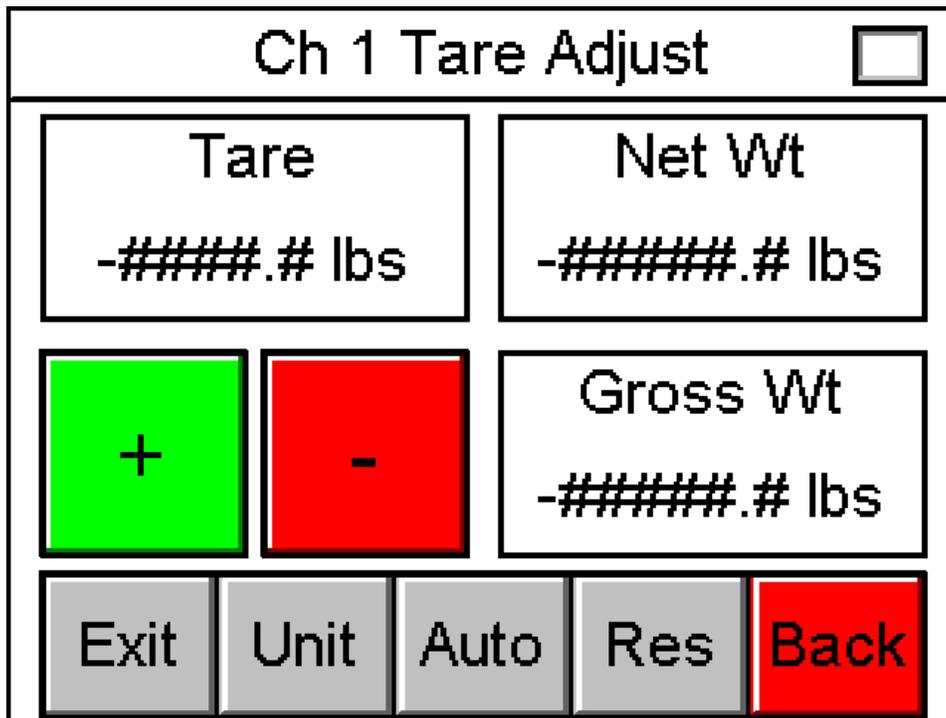


Figure 65: Tare Adjustment

Displays tare, net weight, and gross weight

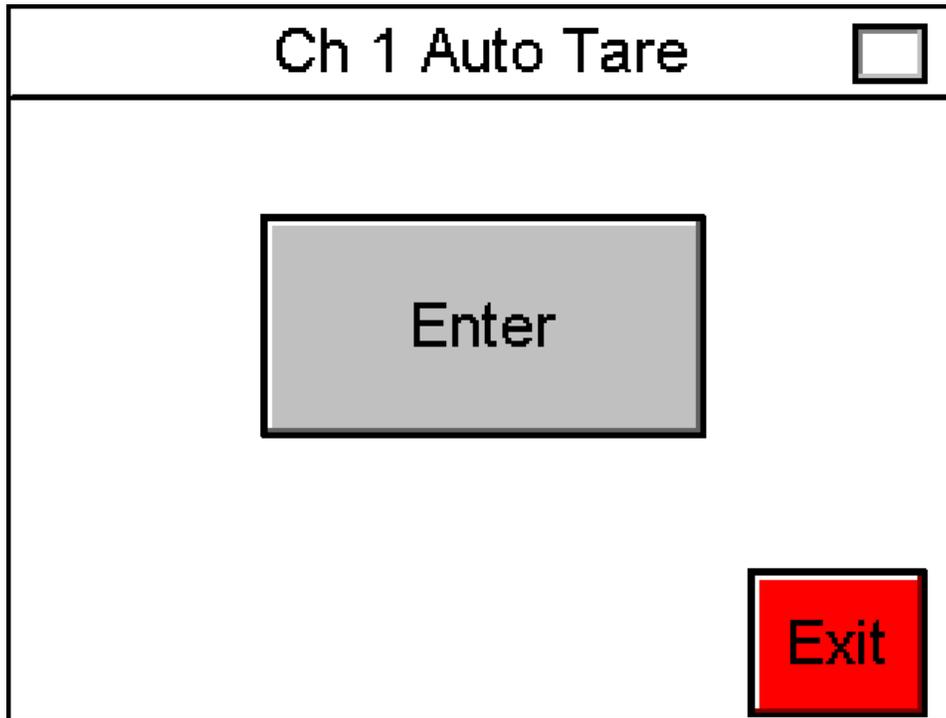


Figure 66: Auto Tare

The user can access this screen by pressing the “Auto” button on the tare adjustment screen. The user can automatically tare all the weight on the base by pressing “Auto Tare”. A confirmation screen will be shown after the user presses “Auto Tare”

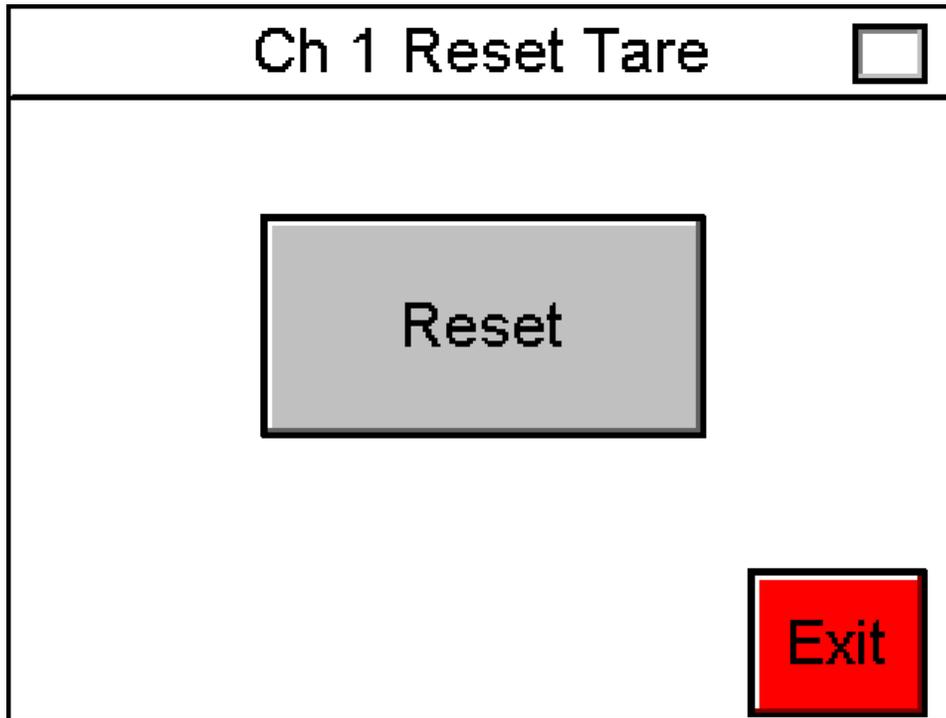


Figure 67: Reset Tare

The user can access this screen by pressing the “Reset” button on the tare adjustment screen. The user can reset the tare value by pressing “Reset Tare”. A confirmation screen will be shown after the user presses “Reset Tare”

5 System Configuration

The user can access the settings by pressing the “Settings” button on the configuration screen. The user can access the configuration screen by pressing the “Configuration” button on the home screen. The user can select decimal, weight averaging, specific gravity, max feed rate, 4-20mA output, weight setpoint trigger value and level, and weight setpoint options. (Settings vary depending on indicator configuration). The user can reset the settings by pressing the “Reset” button under the “Settings” button.

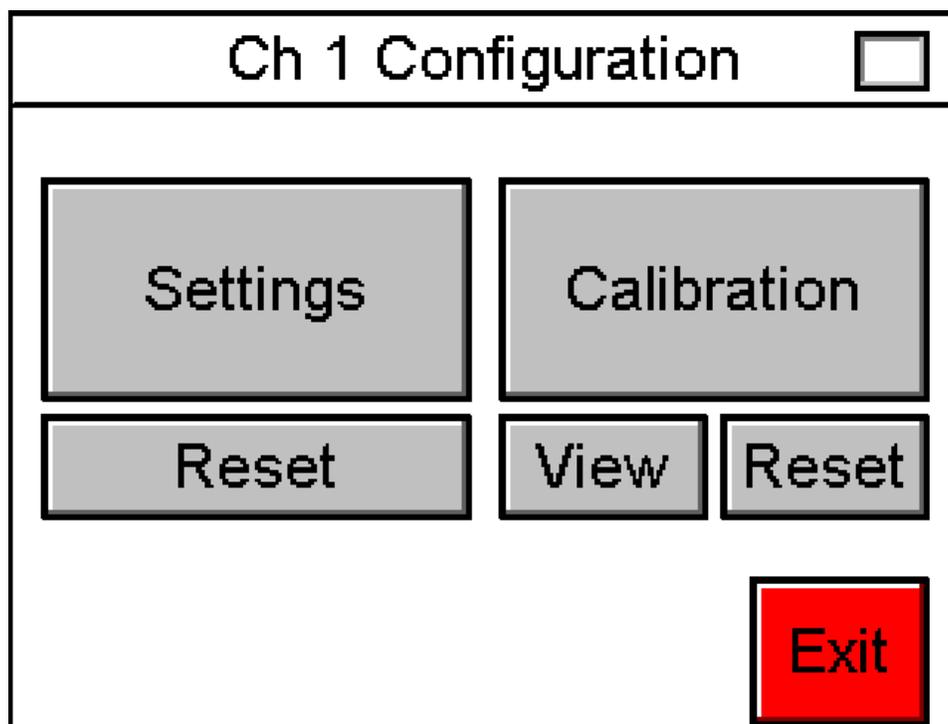
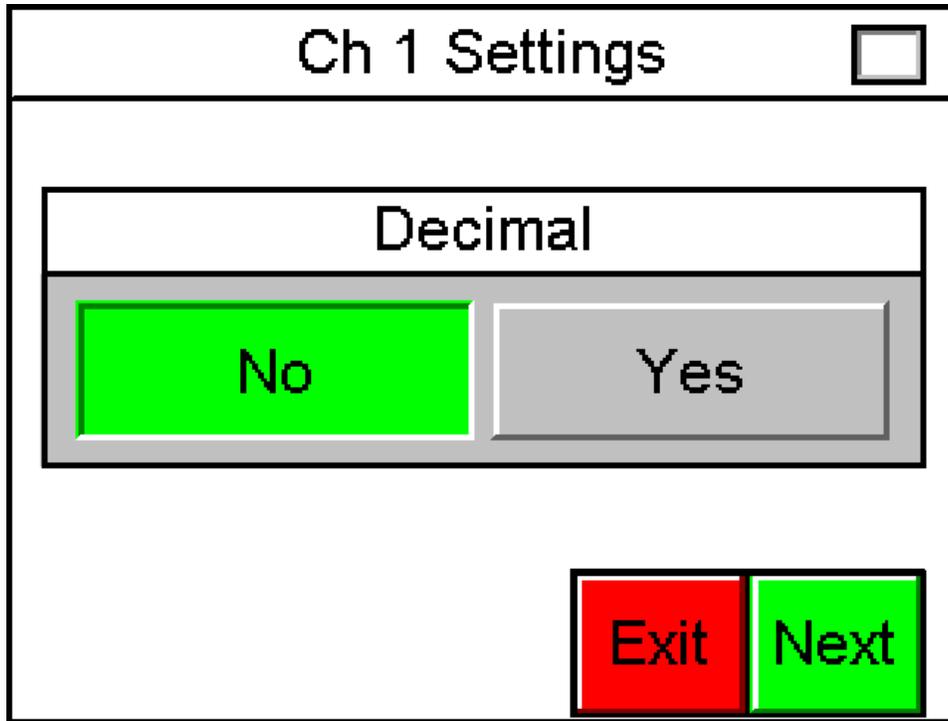


Figure 68: Configuration

NOTE: Calibration configuration and calibration reset require a password when passwords are enabled in developer options

5.1 Settings: Decimal

The decimal selection affects the precision of displays. “No” selection will result in no decimal (1). “Yes” selection will result in a decimal (1.0).



The screenshot shows a menu titled "Ch 1 Settings" with a small square icon in the top right corner. Below the title is a section labeled "Decimal". Inside this section are two buttons: a red button labeled "No" and a grey button labeled "Yes". At the bottom right of the menu are two more buttons: a red button labeled "Exit" and a red button labeled "Next".

Figure 69: Settings: Decimal

5.2 Settings: Weight Averaging

Weight averaging increases the stability while decreasing the sensitivity of the indicator. Larger values are useful for liquid measurements and stability purposes.

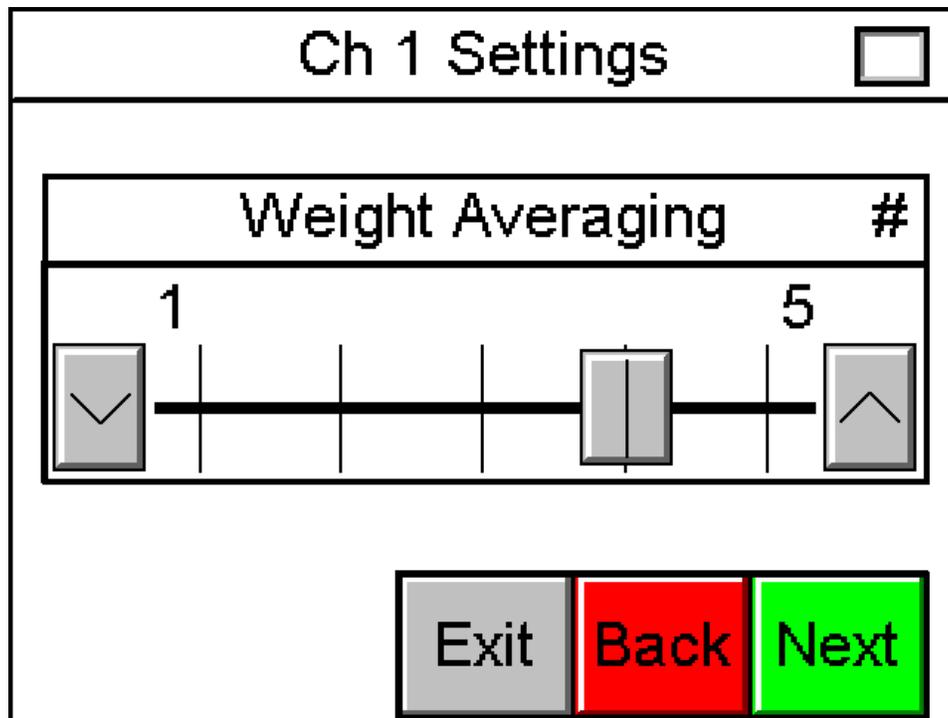
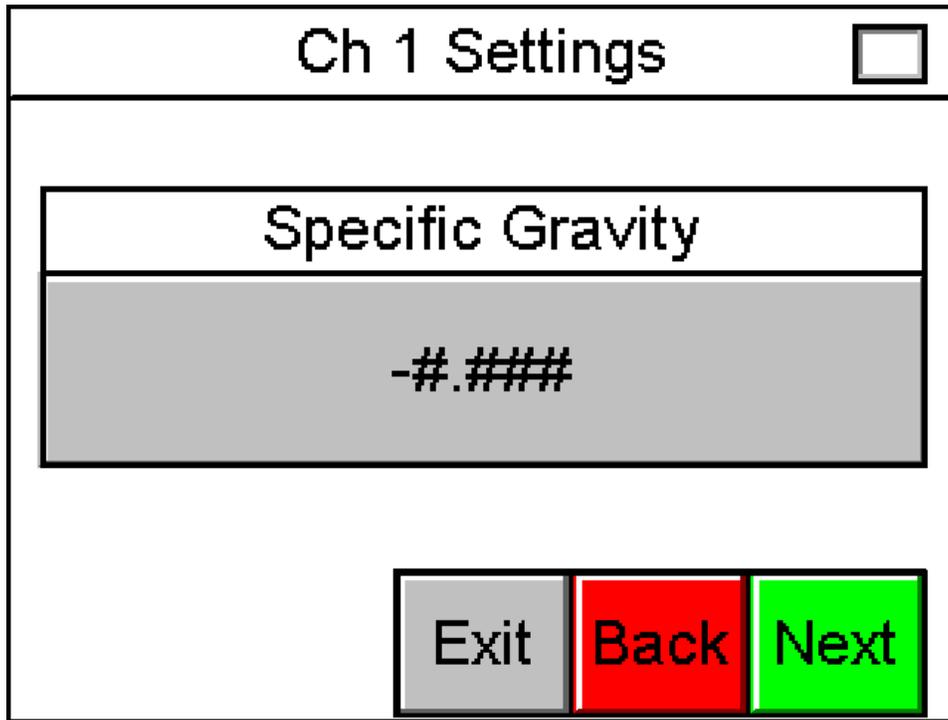


Figure 70: Settings: Weight Averaging

5.3 Settings: Specific Gravity

Specific gravity affects units of volume (gallons and liters). Default specific gravity is 1.000. A gallon of water has a specific gravity of 1.000, which weighs roughly 8.35 lbs. The specific gravity acts as a multiplier to the value 8.35.

EXAMPLE: If the user enters a specific gravity of 1.500, the weight of a gallon would increase to 12.5 lbs ($8.35 * 1.500 = 12.5$).



The screenshot shows a menu titled "Ch 1 Settings" with a small square icon in the top right corner. Below the title is a section labeled "Specific Gravity" with a large grey input field containing the placeholder text "-#.###". At the bottom of the screen are three buttons: "Exit" (grey), "Back" (red), and "Next" (green).

Figure 71: Settings: Specific Gravity

5.4 Settings: 4-20 mA Output Selection

The 4-20 mA output selection is available when the 4-20 mA output is enabled via developer options. The user can select which parameter to output. Any display with a 4-20 mA output will show the parameter selected.

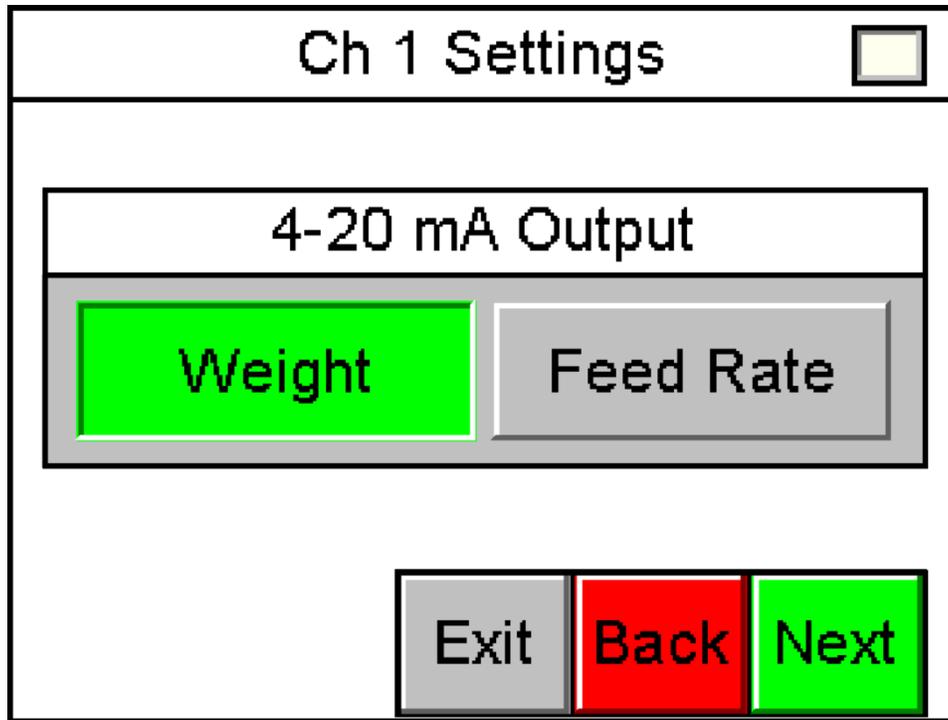


Figure 72: Settings: 4-20 mA Net Weight Output

5.5 Settings: 4-20 mA Net Weight Output

The 4 mA weight is the weight in which the indicator will output 4 mA's. The 20 mA weight is the weight in which the program will output 20 mA's. Any weight value in between the configured 4 mA weight and 20 mA weight will scale the output signal accordingly. The user can use the output signal to remotely determine net weight.

EXAMPLE: If the user enters a 4 mA weight of 0 lbs, and a 20 mA weight of 100 lbs, the indicator will output 8 mA's when net weight is equal to 25 lbs.

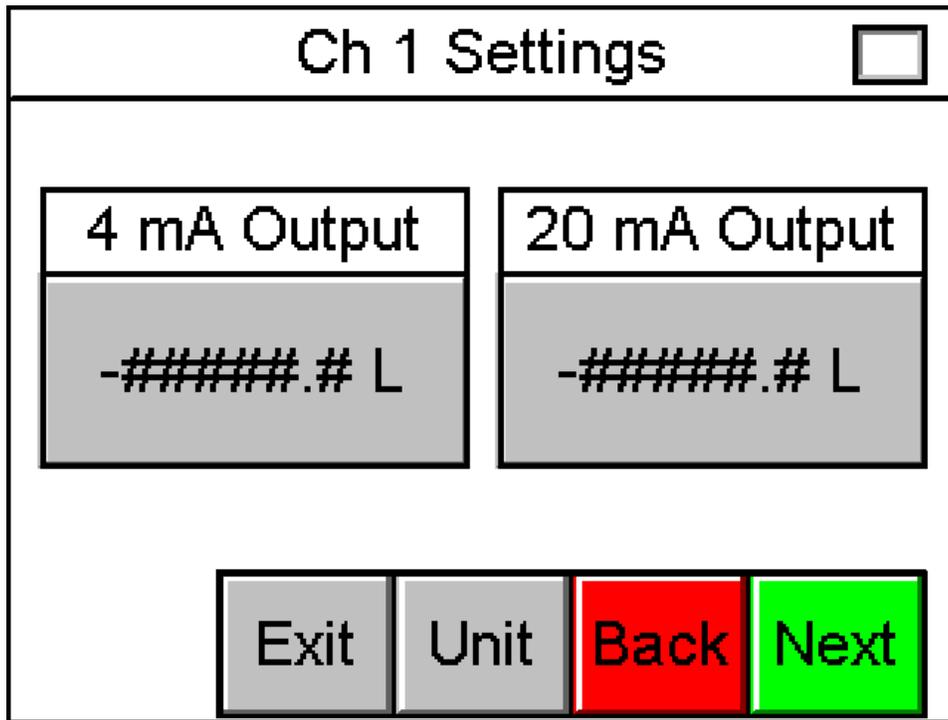


Figure 73: Settings: 4-20 mA Net Weight Output

NOTE: This screen is only available when the 4-20 mA output selection is on “Weight”

5.6 Settings: Max Feed Rate

The max feed rate affects the Y-axis on the feed rate data log display. In addition, the max feed rate will trigger an alarm when the feed rate is above the set value. When the alarm is disabled, no alarm will be present. When the 4-20 mA selection is on “Feed Rate”, the 20 mA output will be the set max feed rate. If the alarm is disabled, a warning will be shown on the data log display and the max feed rate value will be set to zero (0).

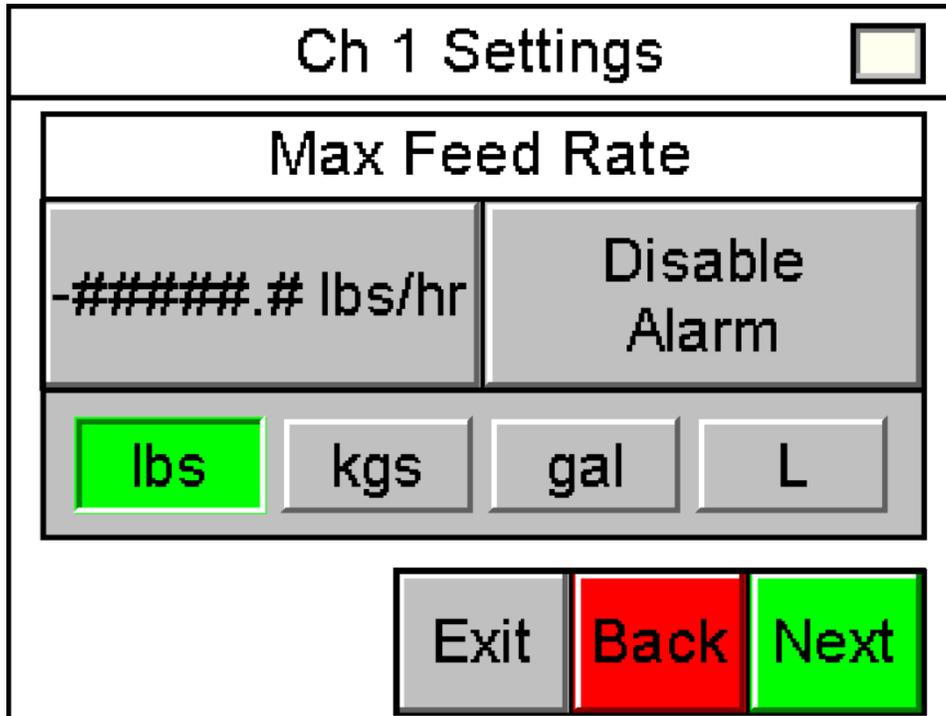


Figure 74: Settings: 4-20 mA Net Weight Output

NOTE: When weight setpoints are not enabled, this screen is the last of the settings. When the user presses the “Next” button when weight setpoints are not enabled, they will be brought to the settings confirmation screen

5.7 Settings: Weight Setpoints

The corresponding setpoint output will turn on when the net weight is above or below (trigger level depends on low/high selection) the setpoint value. The user can select the unit for the setpoint value. The user can exit, go back to the previous screen, or go to the next screen.

SETPOINT CONFIGURATION MAP:

- Single (1) channel with weight setpoints enabled, 2 setpoints total, 2 per channel
- Single (1) channel with extra weight setpoints enabled, 4 setpoints total, 4 per channel
- Dual (2) channel with weight setpoints enabled, 4 setpoints total, 2 per channel
- Dual (2) channel with extra weight setpoints enabled, 8 setpoints total, 4 per channel
- Triple (3) channel with weight setpoints enabled, 6 setpoints total, 2 per channel
- Quadruple (4) channel with weight setpoints enabled, 8 setpoints total, 2 per channel

Ch 1 Settings □			
Setpoint 1	Setpoint 2		
-#####.# lbs	-#####.# lbs		
Low High	Low High		
		Exit	Unit
		Back	Next

Figure 75: Settings: Weight Setpoints

NOTE: Only available when weight setpoints are enabled

5.8 Settings: Weight Setpoints Trigger Alarm

Trigger alarm affects the status level of weight setpoints. When disabled, weight setpoints function as an error and will activate a yellow status light when on. When trigger alarm is enabled, weight setpoints will function as an alarm and will activate a red status light when on. The user can exit, go back to the previous screen, or go to the next screen.

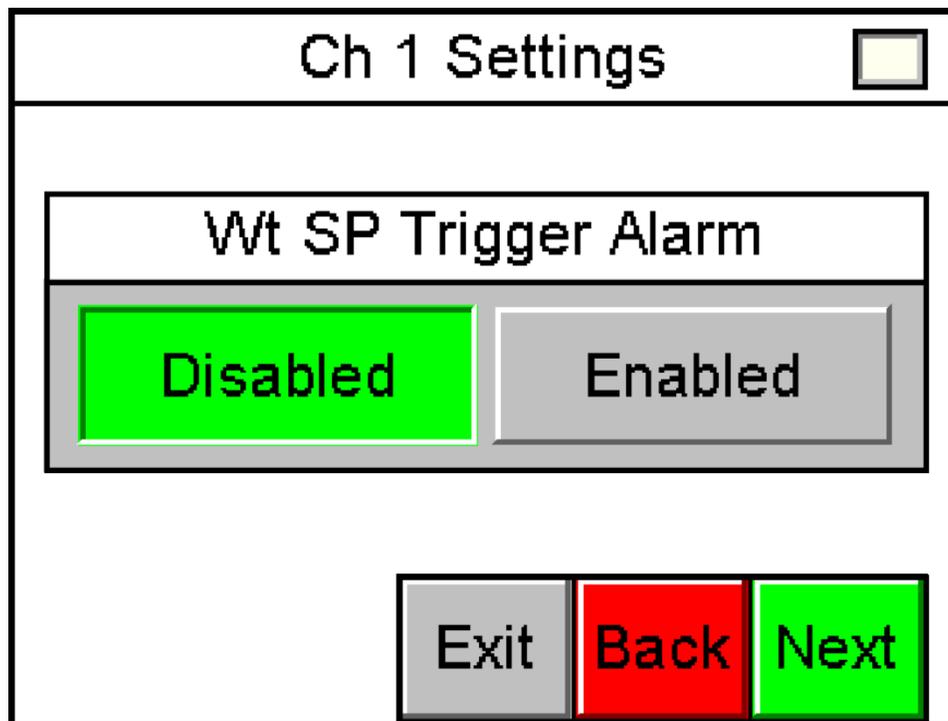


Figure 76: Settings: Weight Setpoints Trigger Alarm

NOTE: Only available when weight setpoints are enabled

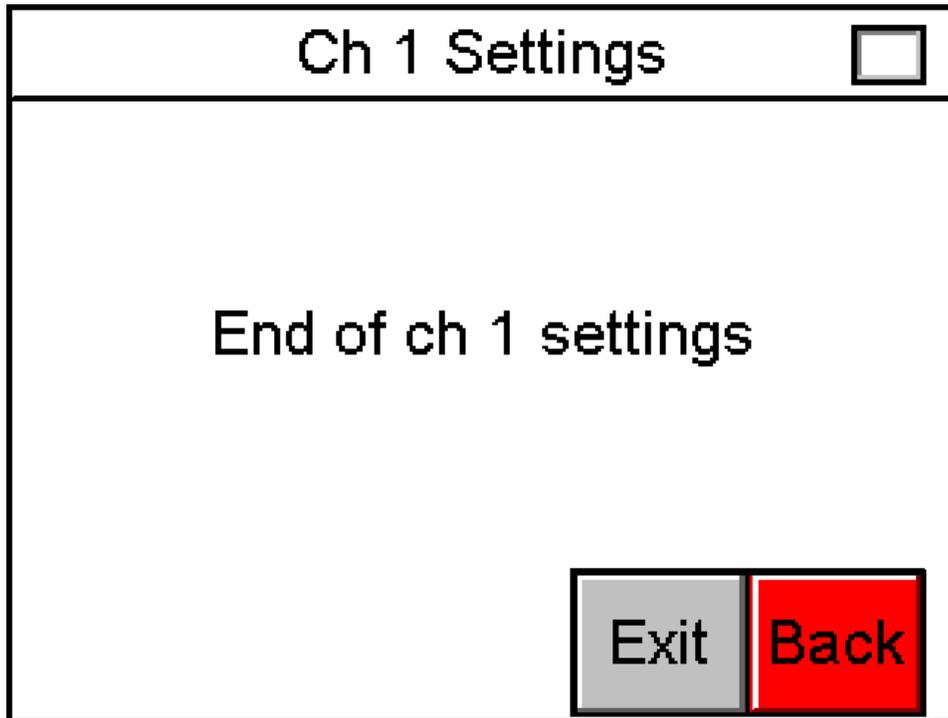


Figure 77: Settings: Ending Confirmation

5.9 Reset Settings

The user can access this screen by pressing the “Reset” button on the configuration screen (see figure 28). The user can reset the settings by pressing “Reset Settings”. A confirmation screen will be shown after the user presses “Reset Settings”.

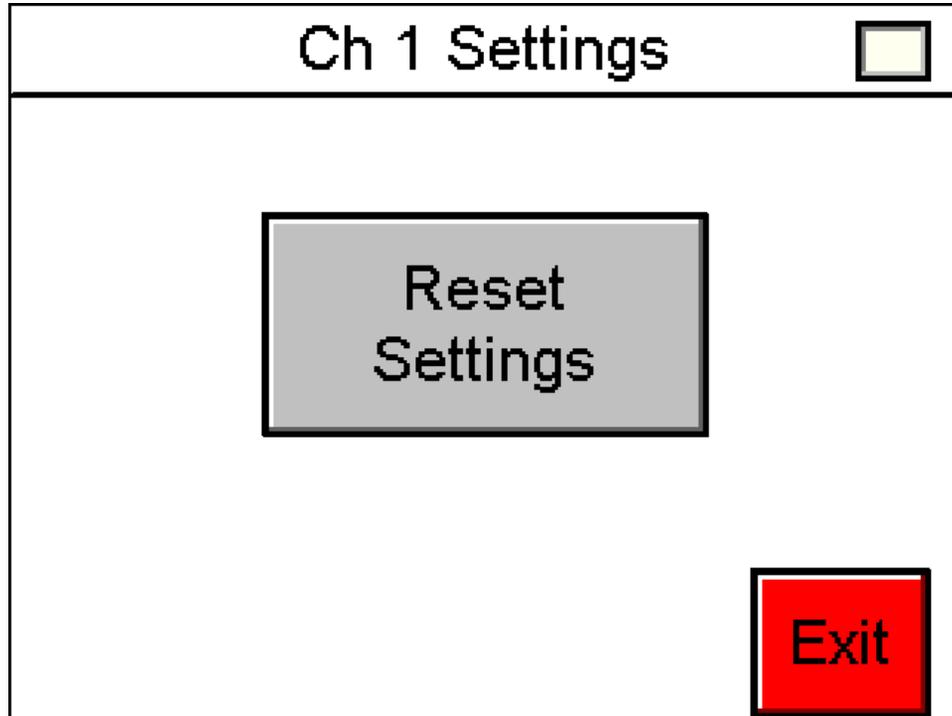


Figure 78: Reset Settings

6 Calibration

The user can access calibration by pressing the “Calibration” button on the configuration screen. The user can select standard or data entry calibration. Standard calibration allows the user to get dead load and calibration weight samples, enter calibration weight value, enter max net weight for indicator, and enter max gross weight for scale base. When taking dead load or calibration weight samples, the program checks to ensure a stable base during calibration. An unstable base during calibration will disregard the calibration value and prompt the user to attempt calibration again. An error will be present whenever a base is unstable during calibration. Data entry calibration allows the user to enter a dead load and weight bit value, enter calibration weight value, enter max net weight for indicator, and enter max gross weight for scale base.

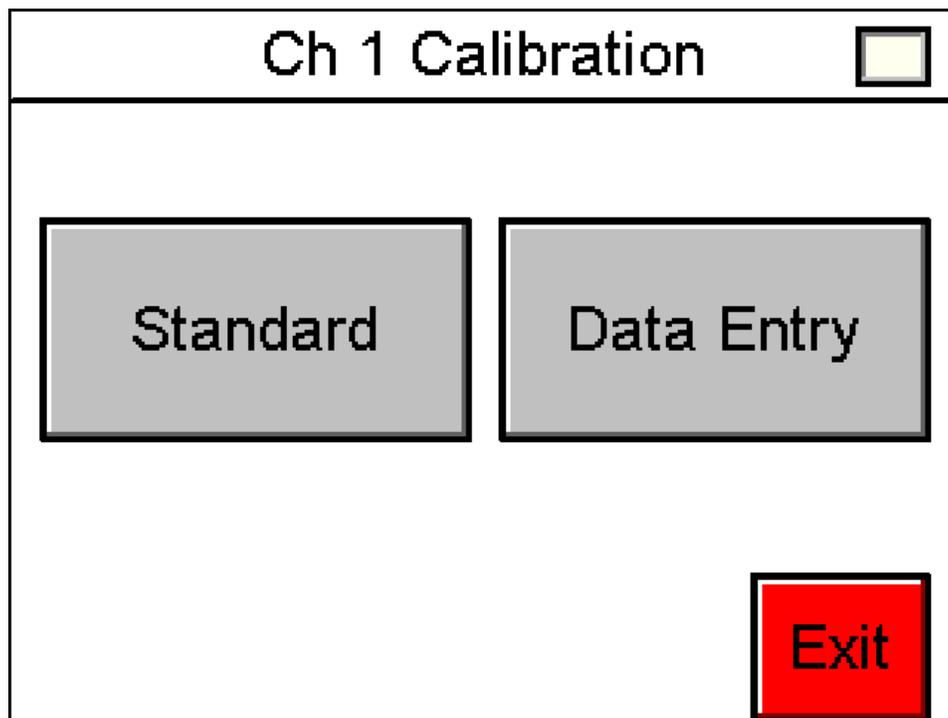
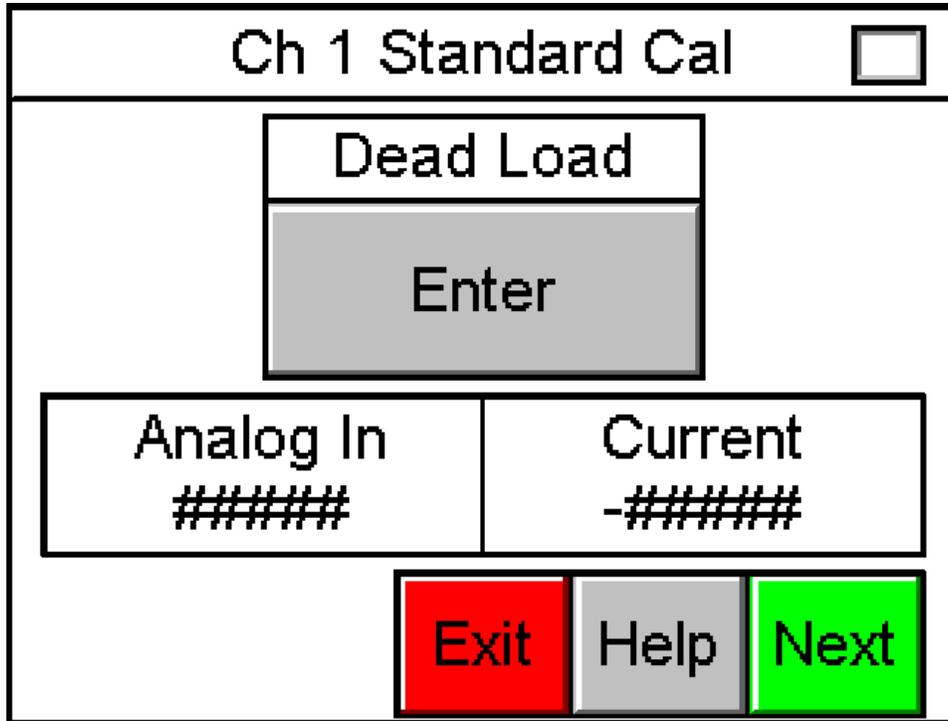


Figure 79: Calibration Type Select

NOTE: Standard and data entry calibration menus require a password when passwords are enabled

6.1 Standard Calibration: Dead Load

The user can access the standard calibration screens by pressing the “standard” button on the calibration type select screen. The user can press “Enter” to start the dead load calibration sample. The user can also view the analog input bit value, and the current dead load bit value.



The screenshot shows a screen titled "Ch 1 Standard Cal" with a small square icon in the top right corner. Below the title is a large button labeled "Dead Load". Underneath this button is a grey button labeled "Enter". Below the "Enter" button are two side-by-side displays: "Analog In" with "#####" below it, and "Current" with "-#####" below it. At the bottom of the screen are three buttons: a red "Exit" button, a grey "Help" button, and a green "Next" button.

Figure 80: Standard Calibration: Dead Load

6.2 Standard Calibration: Dead Load Sample

Shows the time remaining of the dead load sample. Sample total length is 10 seconds. 2 samples are taken each second and are averaged at the end to get the resulting dead load bit. A check is run on the dead load calibration to ensure stability. If the base was unstable during calibration, the user will be brought to an error screen. If no error was detected, the user will be brought to a screen displaying the new dead load bit value. The user can press “Cancel” to stop the dead load sample and return to the previous screen.

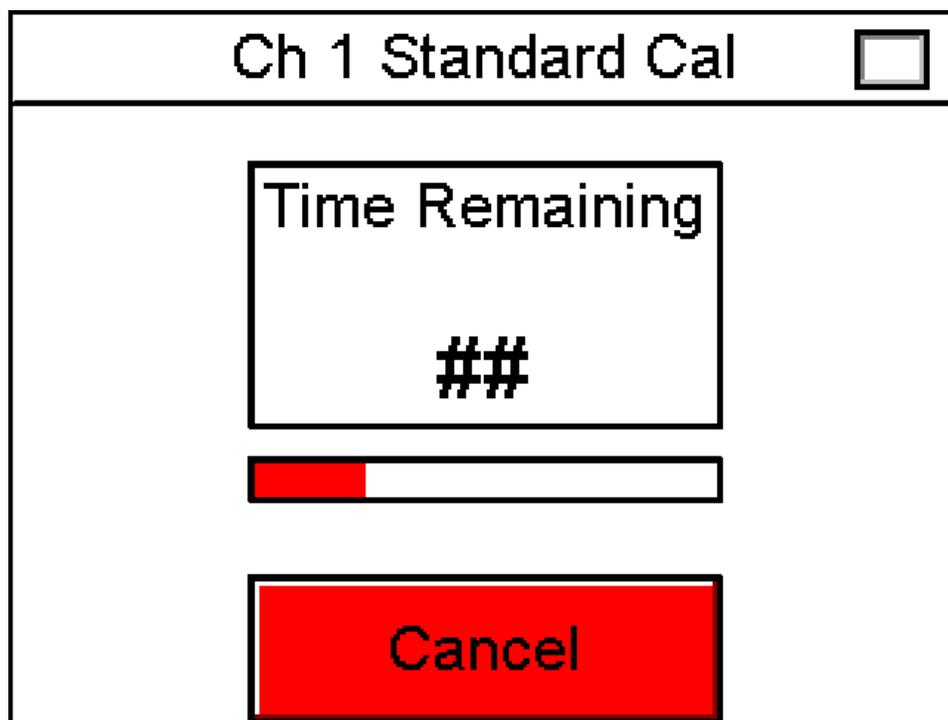


Figure 81: Standard Calibration: Dead Load Sample

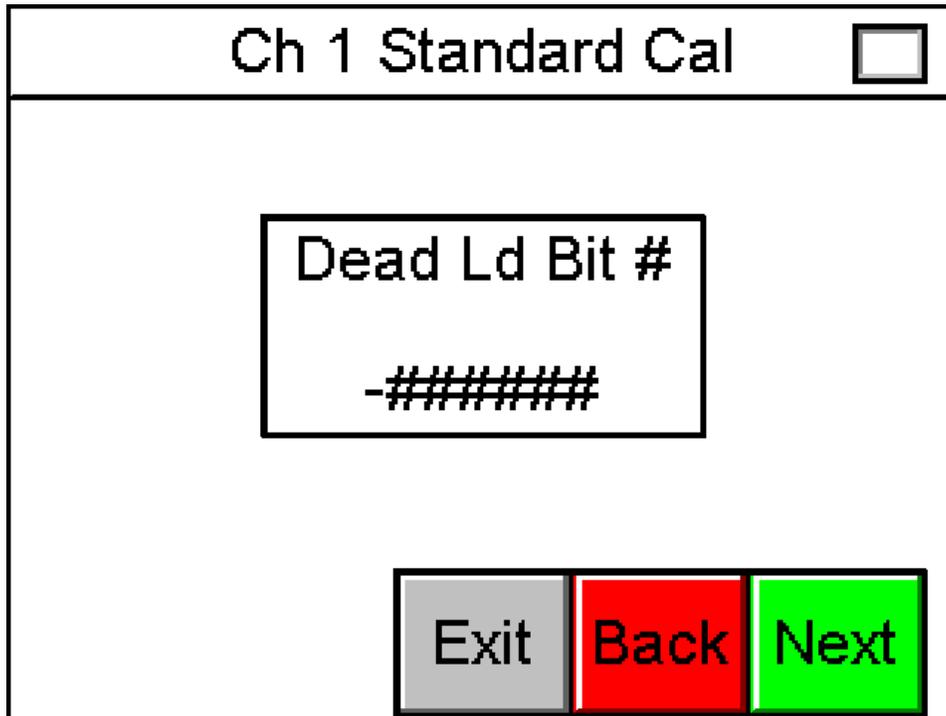


Figure 82: Standard Calibration: Dead Load Sample Success

Displays the resulting dead load bit from the dead load calibration sample

NOTE: Only will display after a stable dead load sample

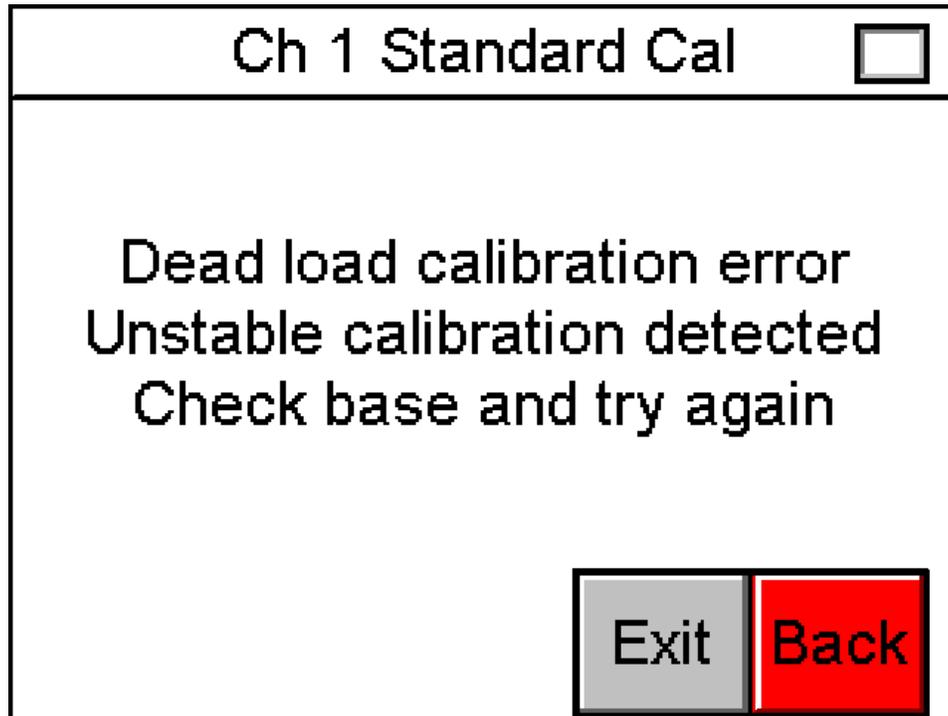


Figure 83: Standard Calibration: Dead Load Sample Error

Displays the dead load calibration error. The dead load calibration error will occur when the analog input varies more than 10 bits during the sample

NOTE: Only will display after an unstable dead load sample

6.3 Standard Calibration: Calibration Weight

The user can press “Enter” to start the calibration weight sample. The user can also view the analog input bit value, and the current calibration weight bit value.

Ch 1 Standard Cal <input type="checkbox"/>			
Weight Cal			
Enter			
Analog In #####	Current -#####		
Exit	Help	Back	Next

Figure 84: Standard Calibration: Calibration Weight

6.4 Standard Calibration: Calibration Weight Sample

Shows the time remaining of the calibration weight sample. Sample total length is 10 seconds. 2 samples are taken each second and are averaged at the end to get the resulting calibration weight sample bit. A check is run on the calibration weight sample to ensure stability. If the base was unstable during calibration, the user will be brought to an error screen. If no error was detected, the user will be brought to a screen displaying the new calibration weight sample bit value. The user can press “Cancel” to stop the calibration weight sample and return to the previous screen.

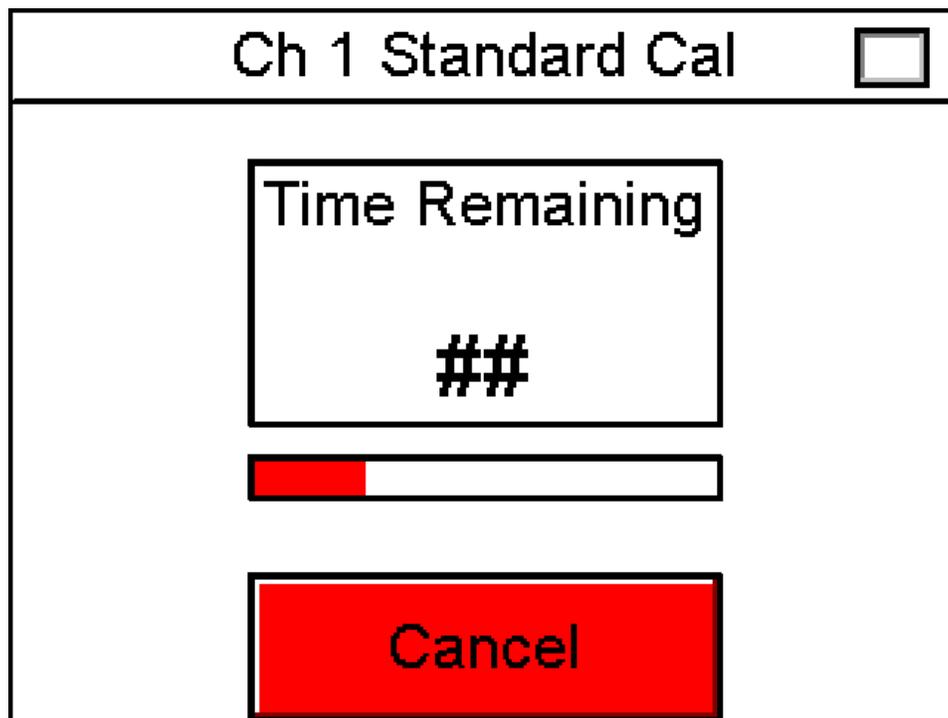


Figure 85: Standard Calibration: Calibration Weight Sample

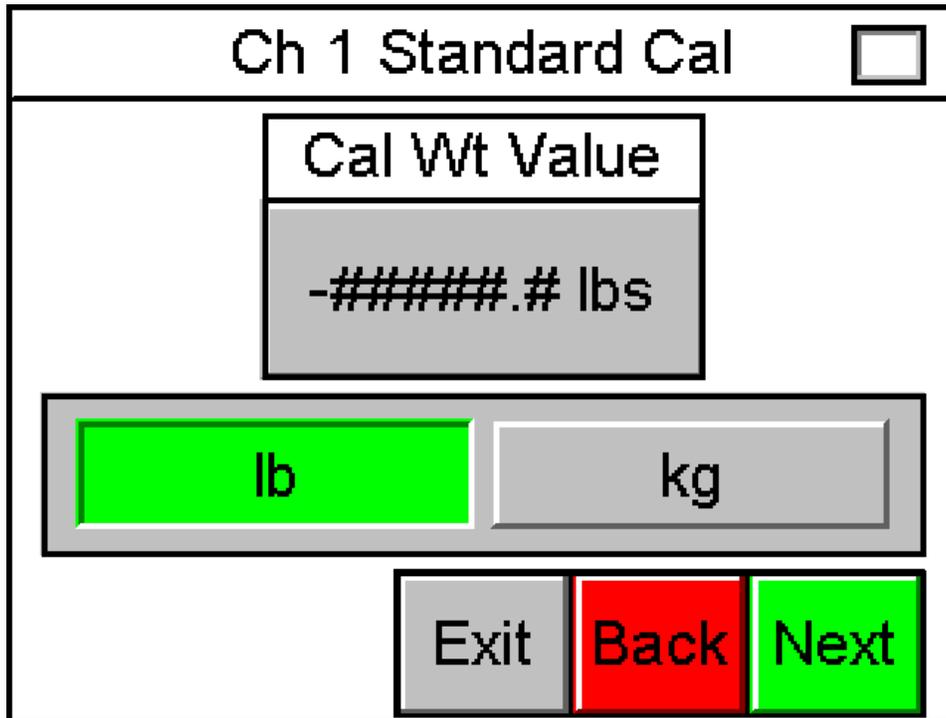


Figure 86: Standard Calibration: Calibration Weight Sample Success

Displays the resulting calibration weight bit from the calibration weight sample

NOTE: Only will display after a stable calibration weight sample

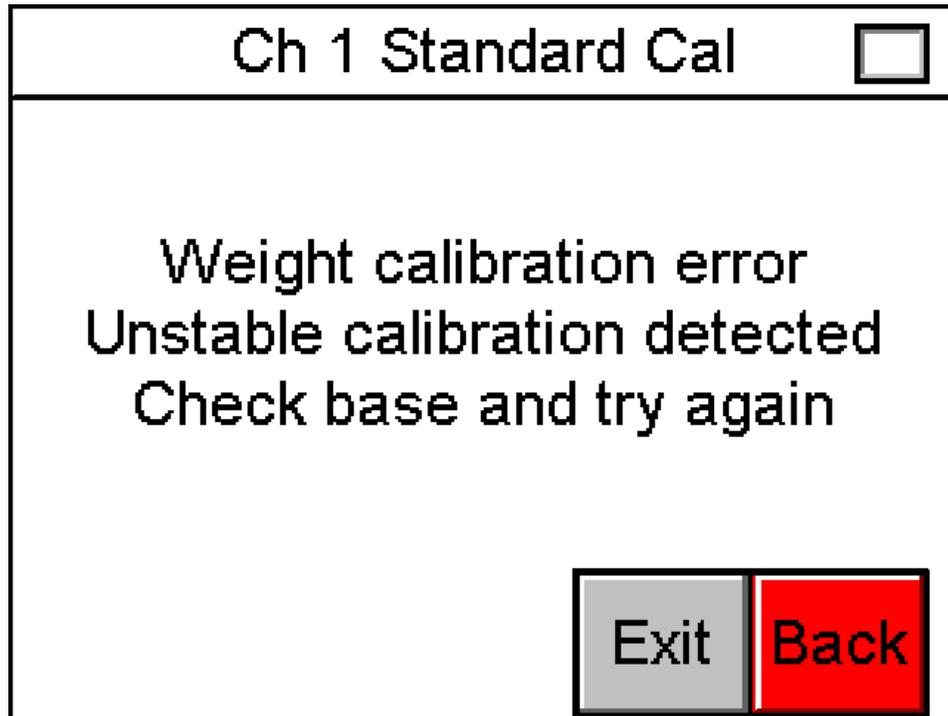


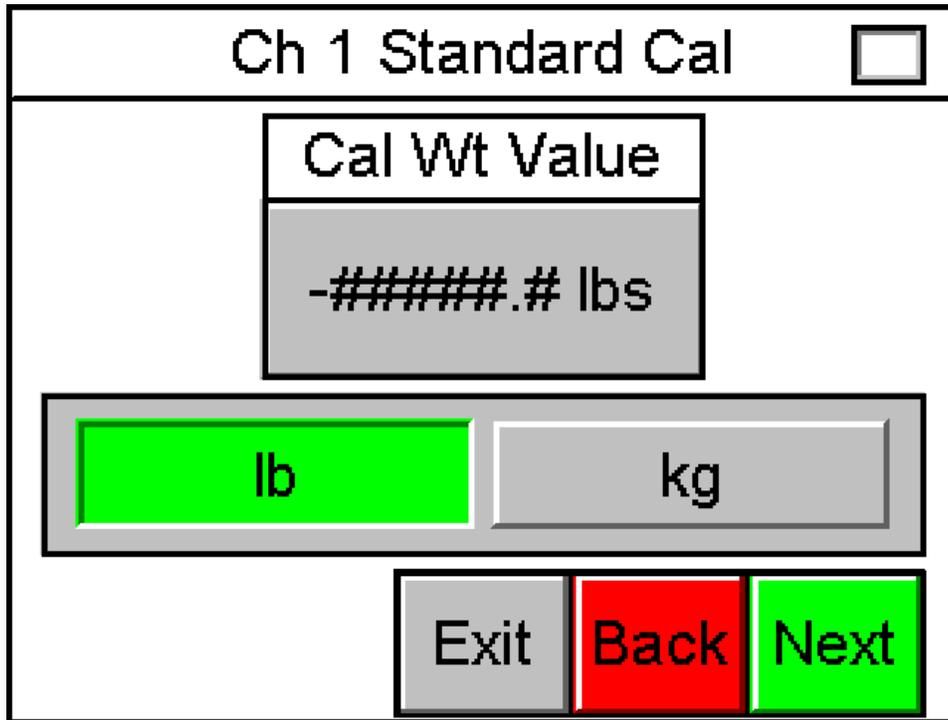
Figure 87: Standard Calibration: Calibration Weight Sample Error

Displays the calibration weight sample error. The calibration weight sample error will occur when the analog input varies more than 10 bits during the sample

NOTE: Only will display after an unstable calibration weight sample

6.5 Standard Calibration: Calibration Weight Value

Prompts the user to enter the weight value used for calibration. The user can exit, go back to the previous display, or go to the next display.



Ch 1 Standard Cal

Cal Wt Value

-#####.# lbs

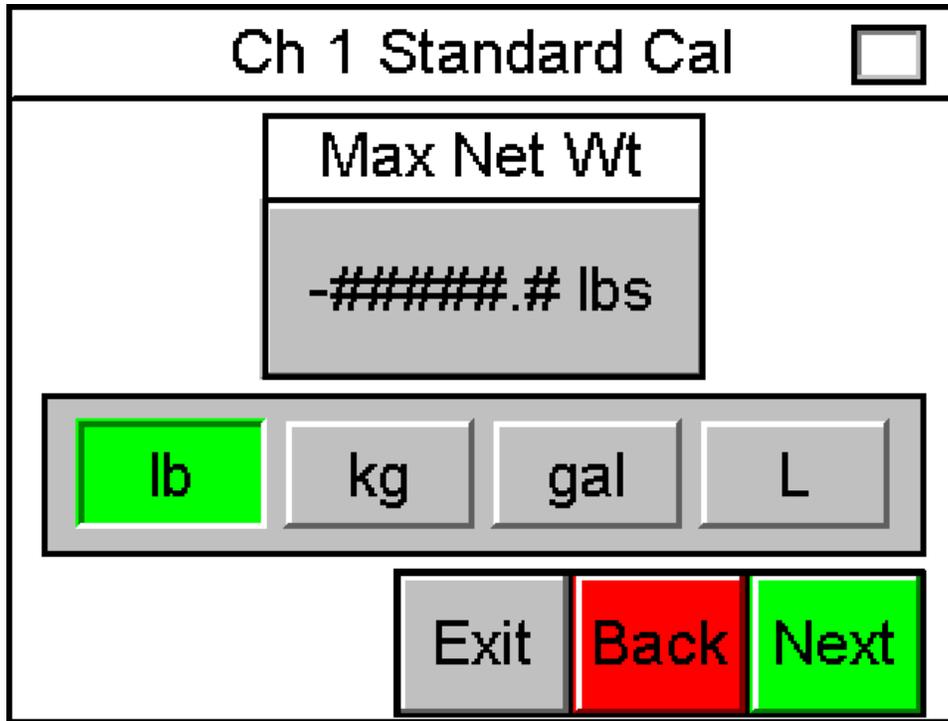
lb kg

Exit Back Next

Figure 88: Standard Calibration: Calibration Weight Value

6.6 Standard Calibration: Max Net Weight

Prompts the user to enter the max net weight for indicator. The max net weight will be used for scaling functions and alarms.

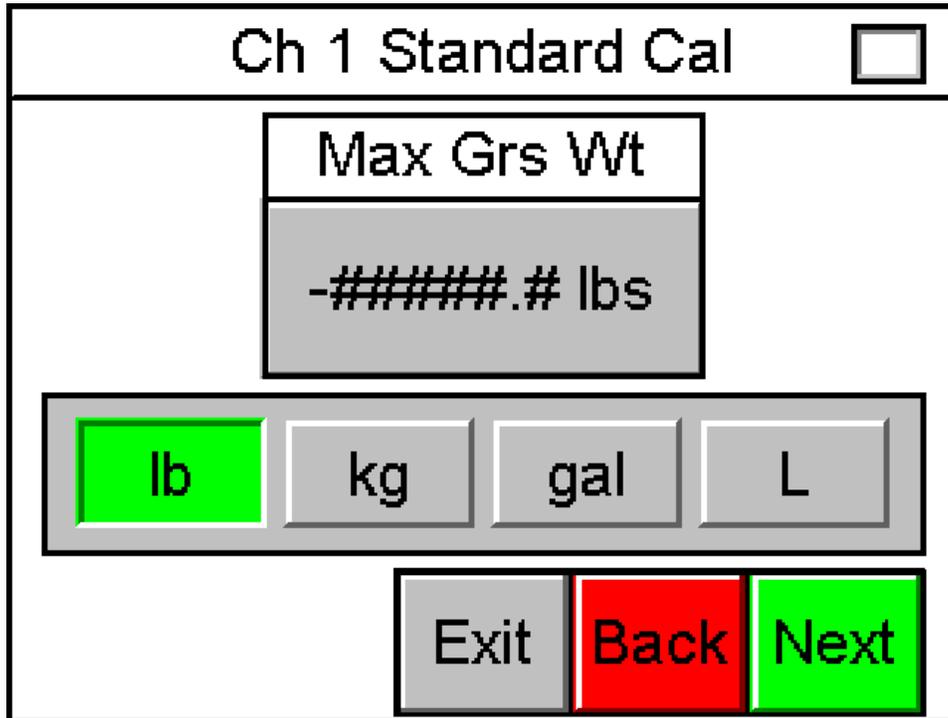


The screenshot displays the 'Ch 1 Standard Cal' screen. At the top, the title 'Ch 1 Standard Cal' is centered, with a small square icon to its right. Below the title is a large input field labeled 'Max Net Wt' containing the placeholder text '-#####.# lbs'. Underneath the input field is a row of four buttons: 'lb' (highlighted in green), 'kg', 'gal', and 'L'. At the bottom of the screen is a row of three buttons: 'Exit', 'Back' (highlighted in red), and 'Next' (highlighted in green).

Figure 89: Standard Calibration: Max Net Weight

6.7 Standard Calibration: Max Gross Weight

Prompts the user to enter the max gross weight for scale base. The max gross weight will be used for scaling functions and alarms.



The screenshot shows a screen titled "Ch 1 Standard Cal" with a small square icon in the top right corner. Below the title is a box labeled "Max Grs Wt" containing a grey input field with the placeholder text "-#####.# lbs". Below this is a row of four unit selection buttons: "lb" (highlighted in green), "kg", "gal", and "L". At the bottom of the screen are three buttons: "Exit" (grey), "Back" (red), and "Next" (green).

Figure 90: Standard Calibration: Max Gross Weight

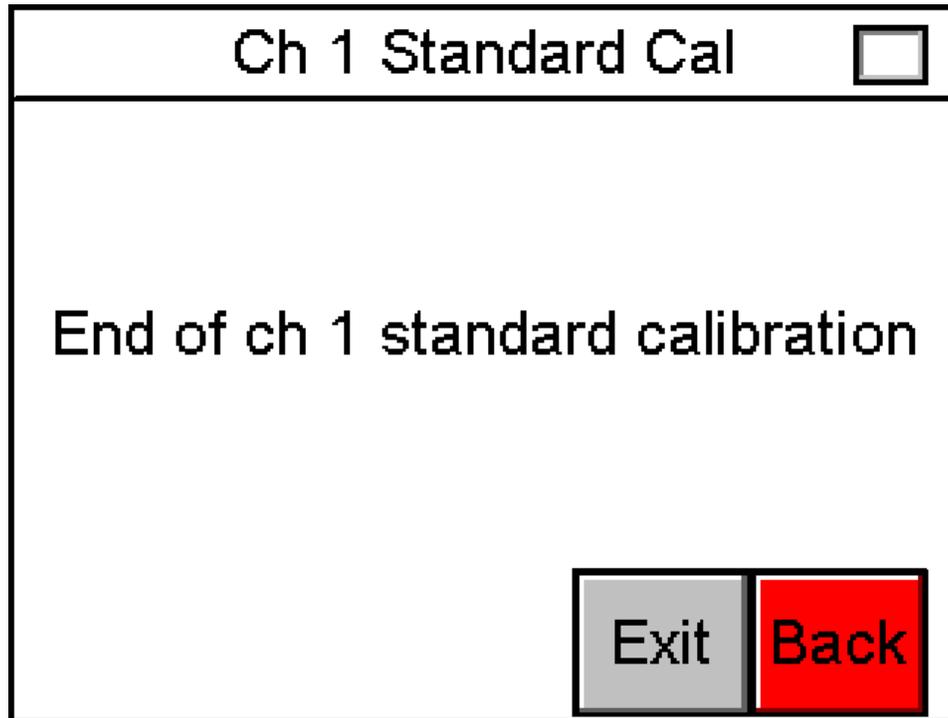
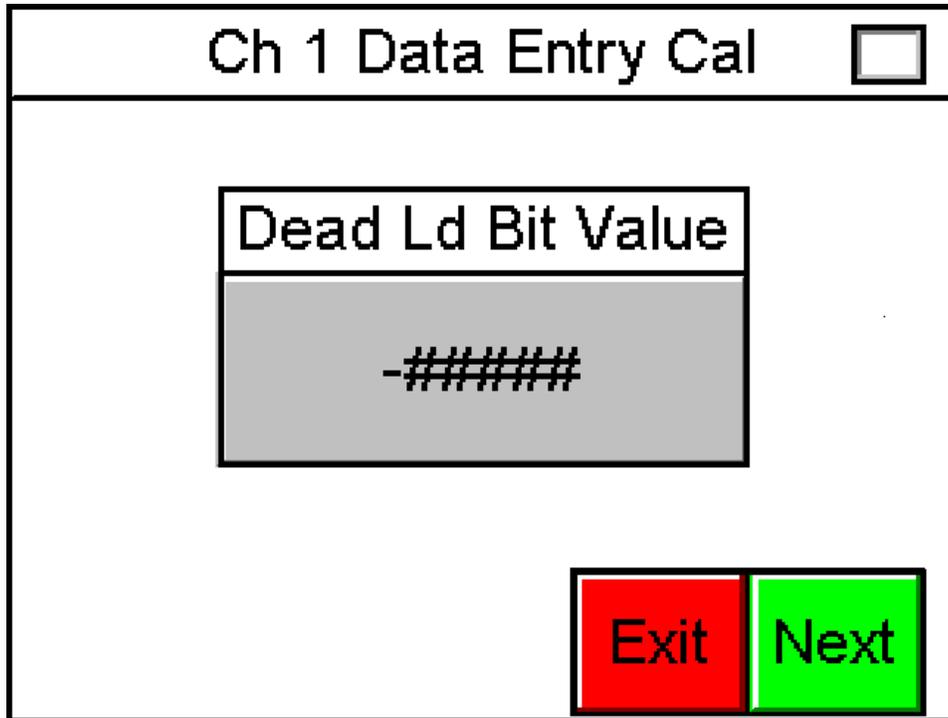


Figure 91: Standard Calibration: Ending Confirmation

6.8 Data Entry Calibration: Dead Load

The user can access the data entry calibration screens by pressing the “Data Entry” button on the calibration type select screen. Prompts the user to enter the dead load bit value. The program will use this bit value as 0 pounds.



Ch 1 Data Entry Cal

Dead Ld Bit Value

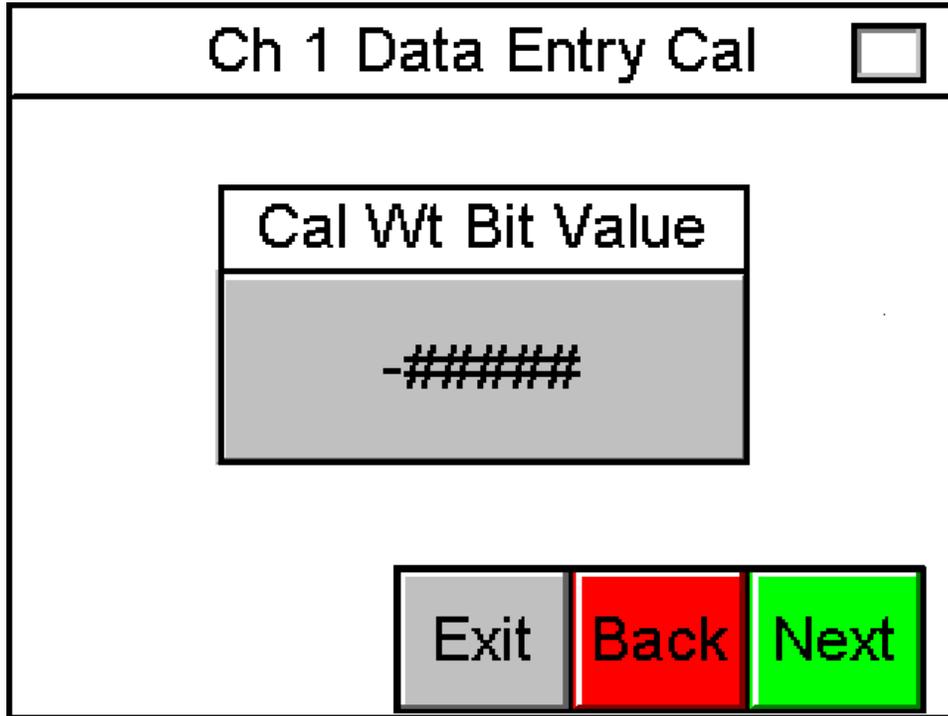
-#####

Exit Next

Figure 92: Data Entry Calibration: Dead Load

6.9 Data Entry Calibration: Calibration Weight

Prompts the user to enter the calibration weight bit value



Ch 1 Data Entry Cal

Cal Wt Bit Value

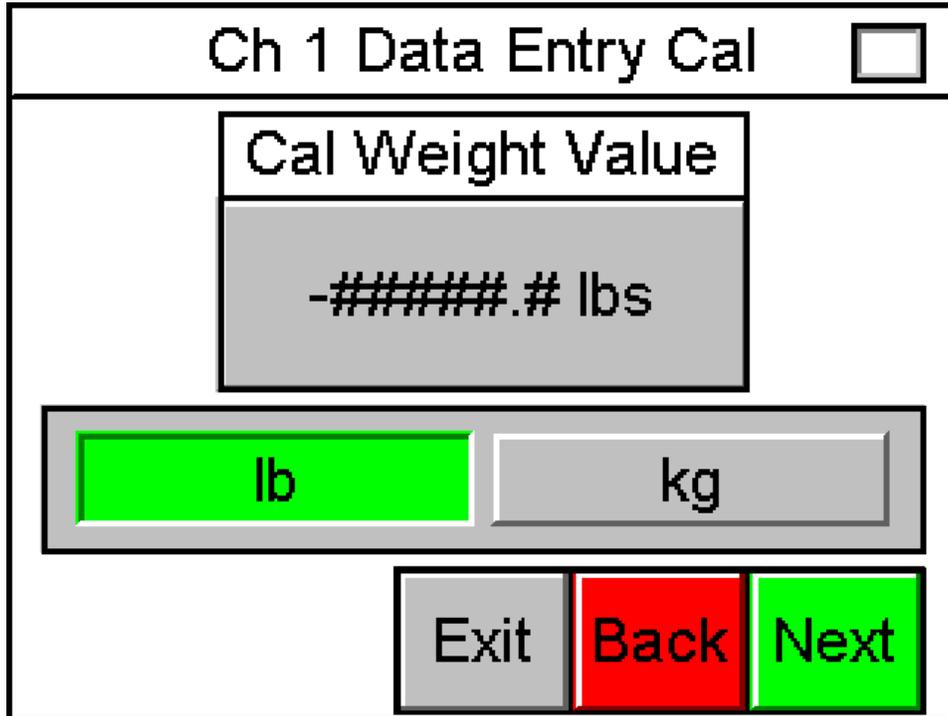
-#####

Exit Back Next

Figure 93: Data Entry Calibration: Dead Load

6.10 Data Entry Calibration: Calibration Weight Value

Prompts the user to enter the weight value used for calibration.



Ch 1 Data Entry Cal

Cal Weight Value

-#####.# lbs

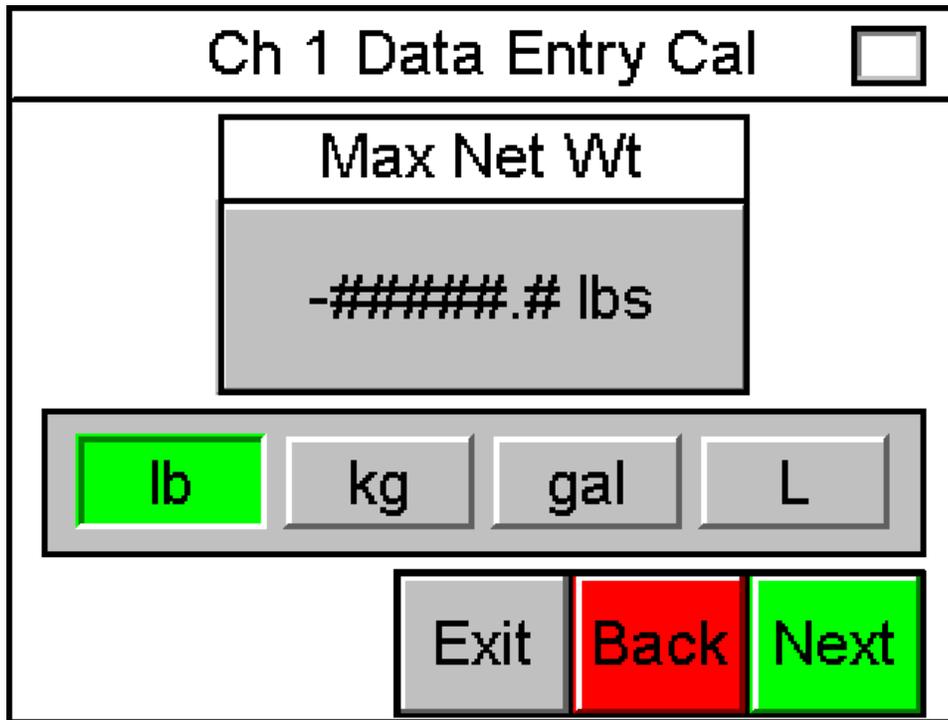
lb kg

Exit Back Next

Figure 94: Data Entry Calibration: Calibration Weight Value

6.11 Data Entry Calibration: Max Net Weight

Prompts the user to enter the max net weight for indicator. The max net weight will be used for scaling functions and alarms.

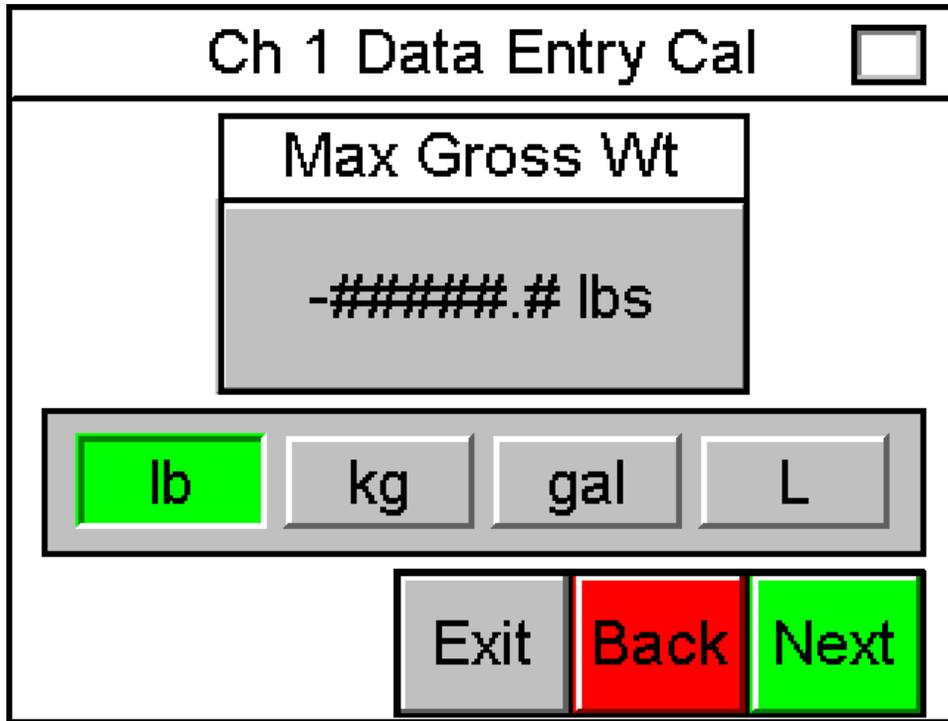


The screenshot shows a calibration screen titled "Ch 1 Data Entry Cal" with a small square icon in the top right corner. Below the title is a box labeled "Max Net Wt" containing a grey input field with the placeholder text "-#####.# lbs". Below this is a row of four unit selection buttons: "lb" (highlighted in green), "kg", "gal", and "L". At the bottom right, there are three navigation buttons: "Exit" (grey), "Back" (red), and "Next" (green).

Figure 95: Data Entry Calibration: Max Net Weight

6.12 Data Entry Calibration: Max Gross Weight

Prompts the user to enter the max gross weight for scale base. The max gross weight will be used for scaling functions and alarms.



The screenshot shows a calibration screen titled "Ch 1 Data Entry Cal" with a small square icon in the top right corner. Below the title is a large input field labeled "Max Gross Wt" containing the placeholder text "-#####.# lbs". Below the input field is a row of four unit selection buttons: "lb" (highlighted in green), "kg", "gal", and "L". At the bottom of the screen are three navigation buttons: "Exit" (grey), "Back" (red), and "Next" (green).

Figure 96: Data Entry Calibration: Max Gross Weight

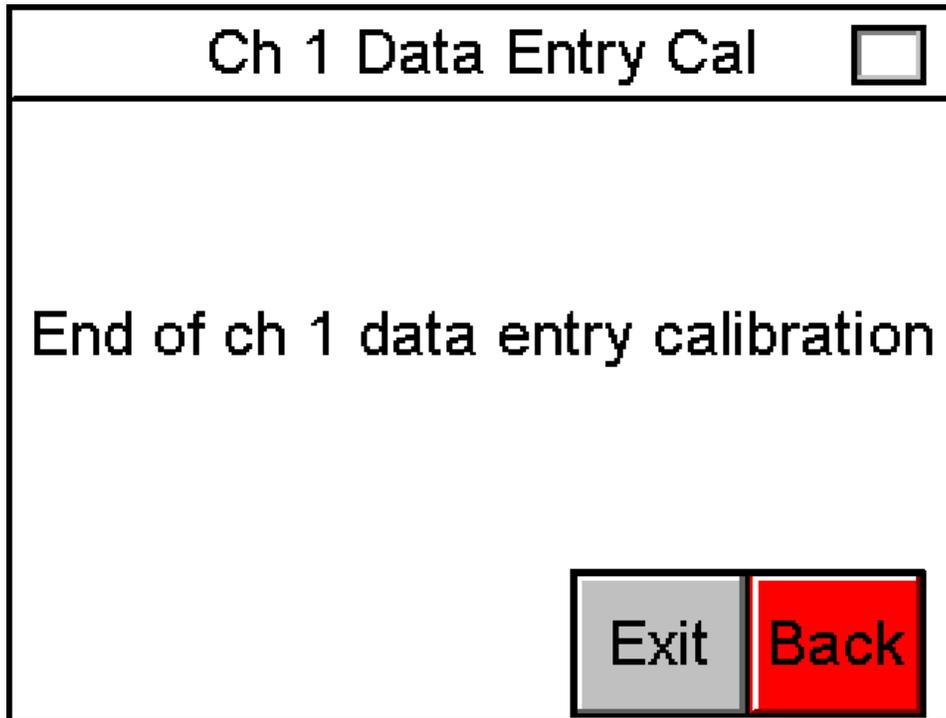


Figure 97: Data Entry Calibration: Ending Confirmation

6.13 Calibration View

The user can access calibration view by pressing the “View” button under the “Calibration” button on the configuration screen. The user can view dead load bit, weight calibration bit, calibration weight value, max net weight, and max gross weight.

Ch 1 Calibration View <input type="checkbox"/>	
Dead Load # -#####	Weight Cal # -#####
Cal Wt Value -##### lbs	Max Net Wt -##### lbs
Max Grs Wt -##### lbs	Exit

Figure 98: Calibration View

6.14 Reset Calibration

The user can access this screen by pressing the “Reset” button under the “Calibration” button on the configuration screen. The user can reset the calibration by pressing “Reset Calibration”. A confirmation screen will be shown after the user presses “Reset Calibration”.

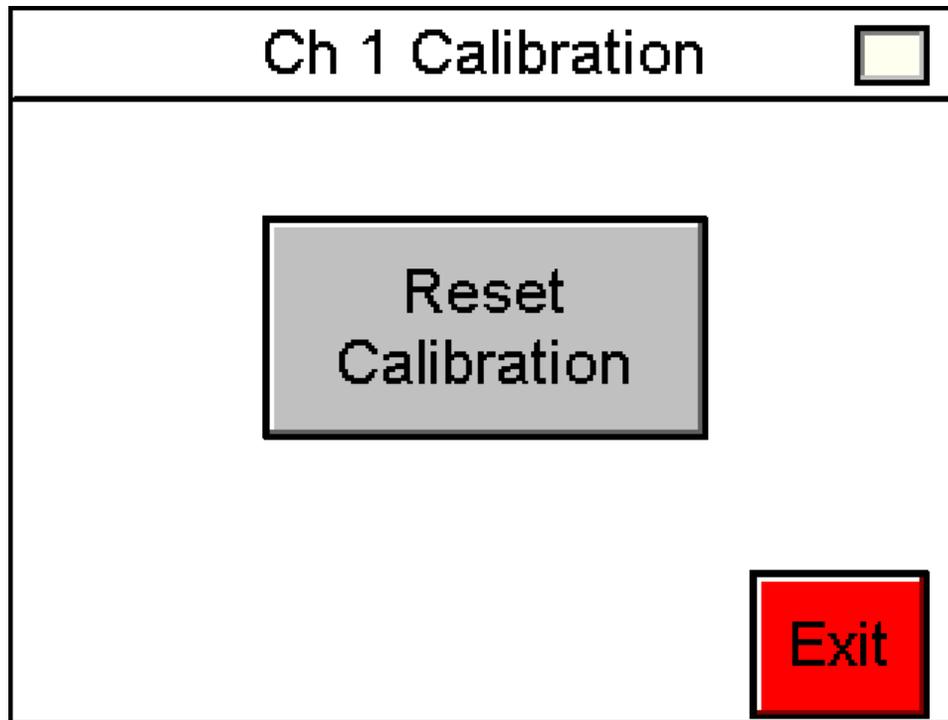


Figure 99: Reset Calibration

NOTE: Requires a password when passwords are enabled

7 Developer Options

The user can access the developer options by pressing the “Developer Options” button on the home screen. The user can enable channels, enable 4-20 mA for channels, enable weight setpoints, enable internal and external alarm buzzer, enable Modbus, set a calibration password, enable passwords, enter a serial number, create a restore point, and erase all memory. The user will be required to enter a password to access the developer options menu even when passwords are disabled.

7.1 Developer Options: Channel Amount

The user can enable channels. When multiple channels are selected, the user will be required to select which channel before entering menus.

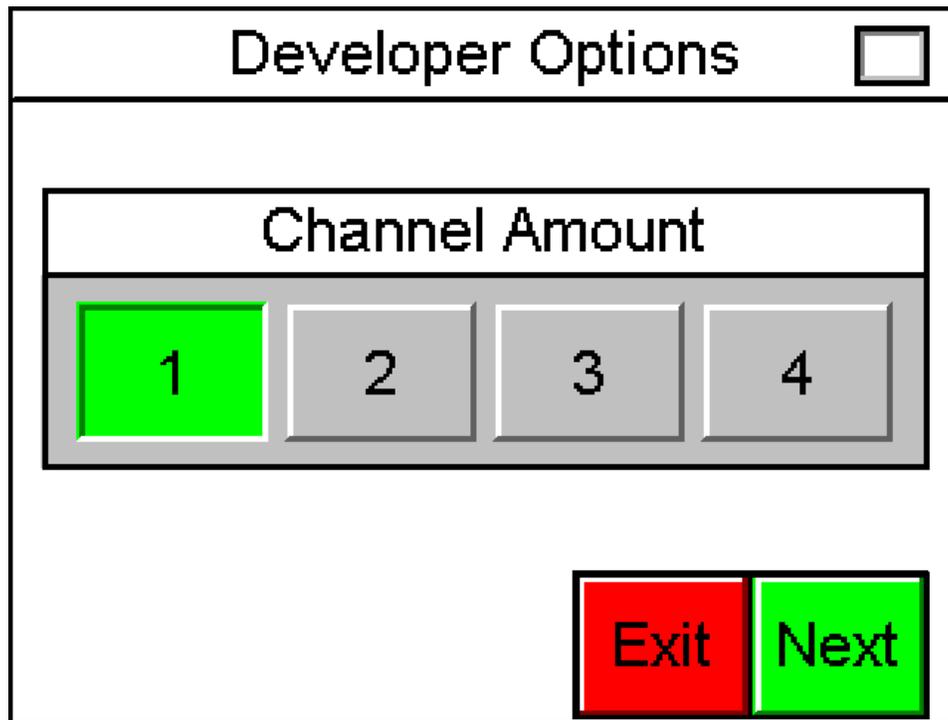


Figure 100: Developer Options: Channel Amount

7.2 Developer Options: 4-20 mA

The user can enable the 4-20 mA output for channels.

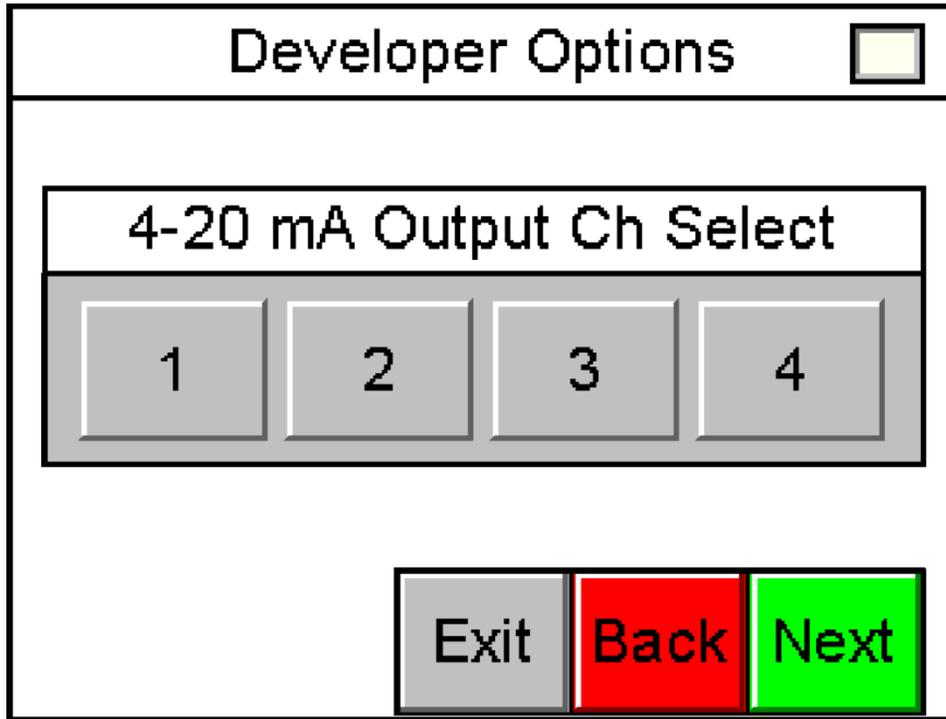


Figure 101: Developer Options: Weight Setpoints

7.3 Developer Options: Weight Setpoints

The user can enable or disable weight setpoints. When enabled, if 2 or less channels are activated the extra weight setpoints selector will appear.

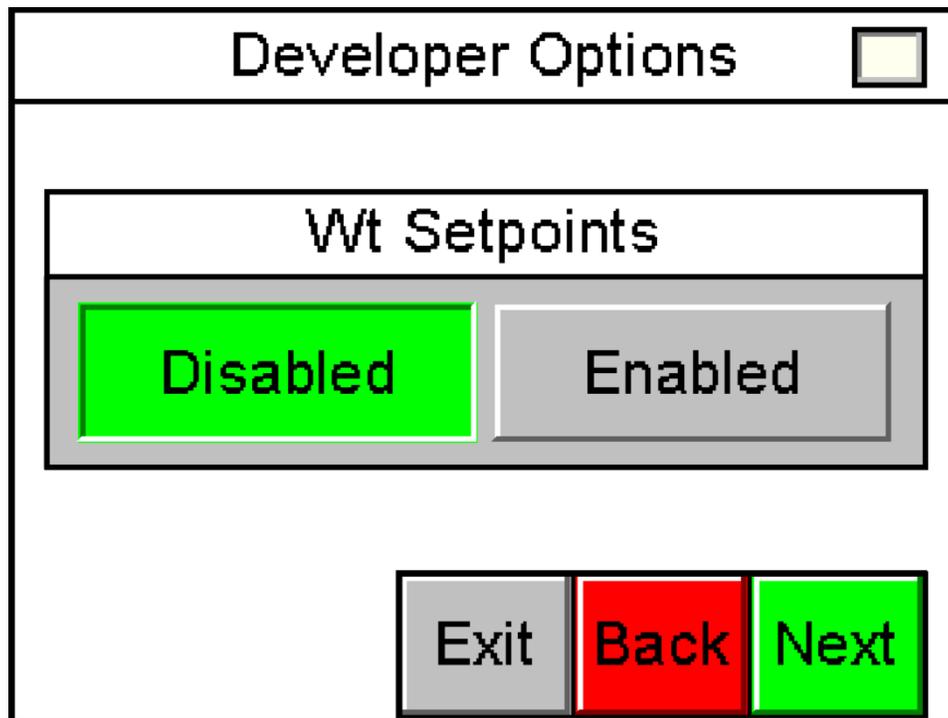


Figure 102: Developer Options: Weight Setpoints

7.4 Developer Options: Alarm Buzzer

The user can enable or disable the internal alarm buzzer and external alarm buzzer. When the internal alarm buzzer is enabled, an internal buzzer will sound whenever an alarm is active. When the external alarm buzzer is enabled, a relay will activate whenever an alarm is active.

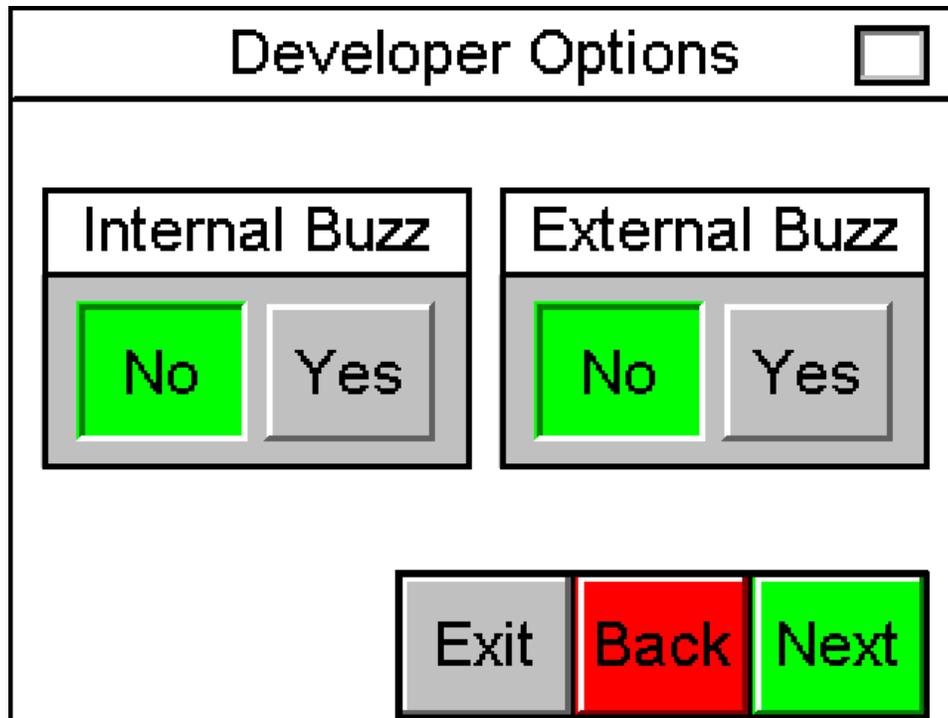


Figure 103: Developer Options: Alarm Buzzer

7.5 Developer Options: Modbus

The user can enable or disable Modbus operations. When Modbus is enabled, the network port will be live and Modbus configuration will be available in the about menu.

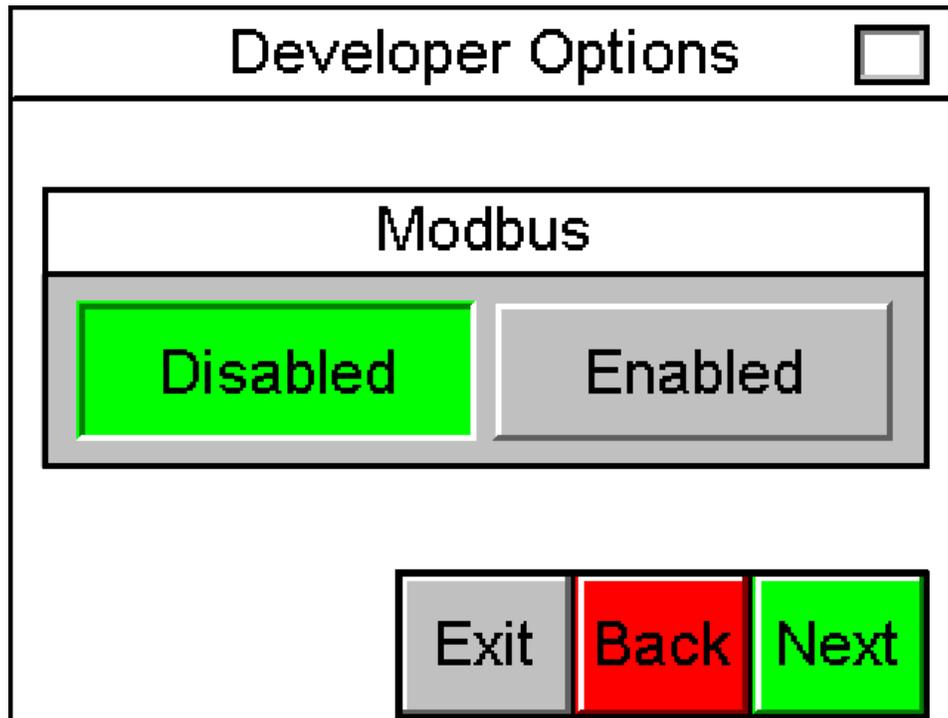
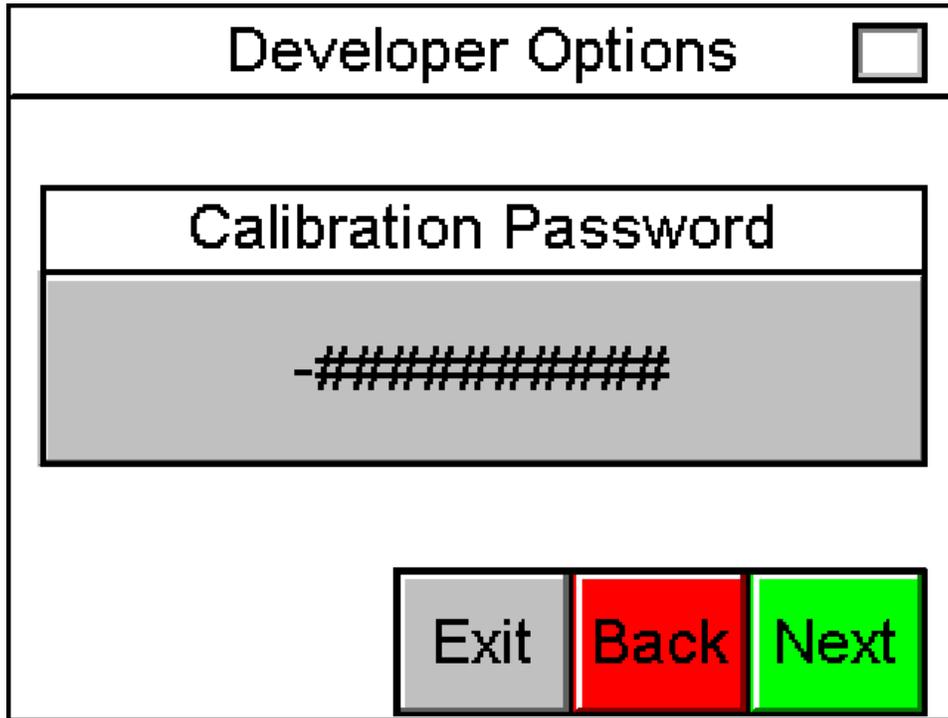


Figure 104: Developer Options: Modbus

7.6 Developer Options: Calibration Password

The user can enter a calibration password for the indicator. This password will be required when passwords are enabled for access into calibration menus or when attempting to reset calibration.



The screenshot shows a screen titled "Developer Options" with a small square icon in the top right corner. Below the title is a section titled "Calibration Password" which contains a grey rectangular input field with the text "-#####". At the bottom of the screen are three buttons: "Exit" (grey), "Back" (red), and "Next" (green).

Figure 105: Developer Options: Calibration Password

7.7 Developer Options: Passwords

The user can enable or disable passwords for the indicator.

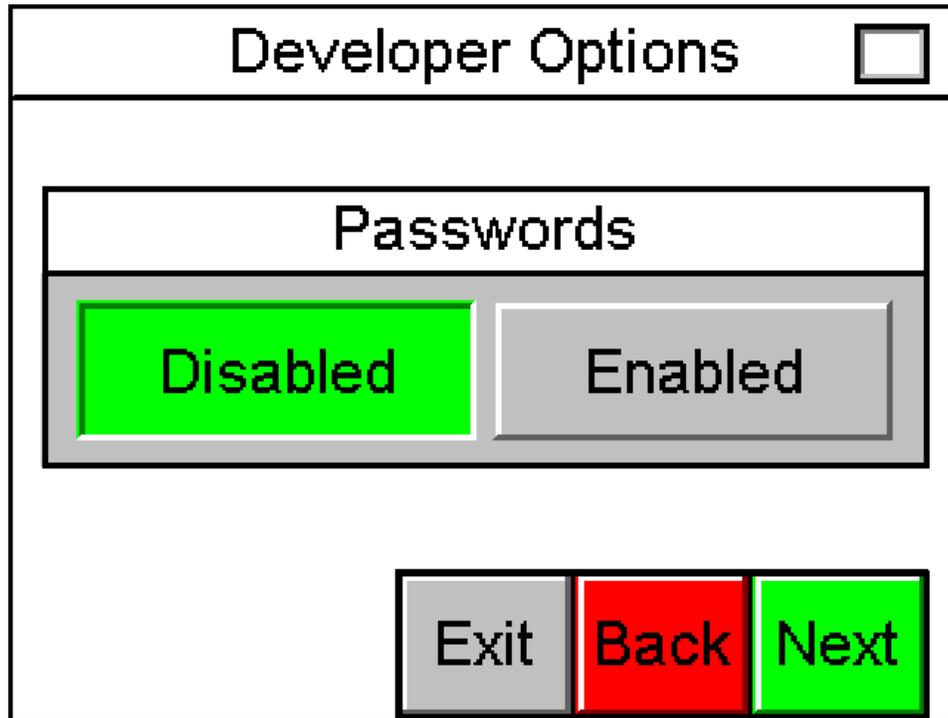
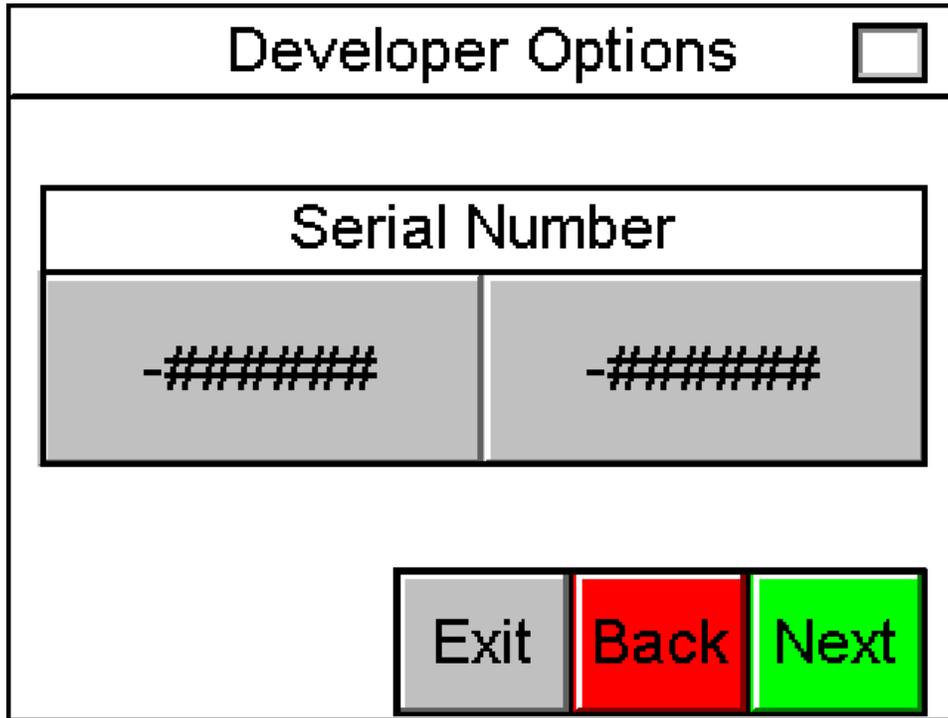


Figure 106: Developer Options: Passwords

7.8 Developer Options: Serial Number

The user can enter a serial number for the indicator.

The screenshot shows a software interface titled "Developer Options" in a window with a standard title bar. Below the title bar is a sub-header "Serial Number". Underneath this header are two grey rectangular input fields, each containing a series of seven hash symbols (#) preceded by a hyphen (-). At the bottom of the screen, there are three buttons: a grey "Exit" button, a red "Back" button, and a green "Next" button.

Developer Options		
Serial Number		
-#####	-#####	
Exit	Back	Next

Figure 107: Developer Options: Serial Number

7.9 Developer Options: Restore Point

The user can create (overwrite) a restore point, load the restore point, or delete the current restore point. A restore point writes all the indicator's data in memory.

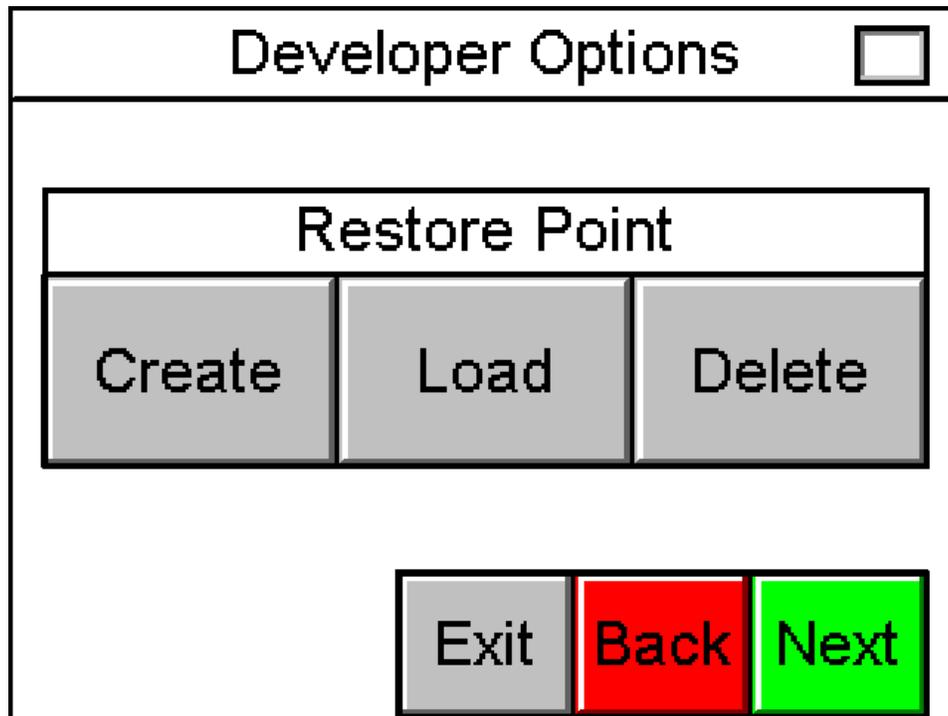


Figure 108: Developer Options: Restore Point

NOTE: When no restore point has been created, the user will only see the option to create a restore point

7.10 Developer Options: Erase Memory

The user can erase indicator memory. When the user presses “Erase Memory” they will be brought to an acknowledgement screen. Once the user acknowledges a warning, they will be brought to a screen where you must hold “Erase Memory” for 1 second for the operation to be carried out. Erasing the indicator’s memory will reset any configuration and selection done by the user. Erase memory function will not erase the restore point.

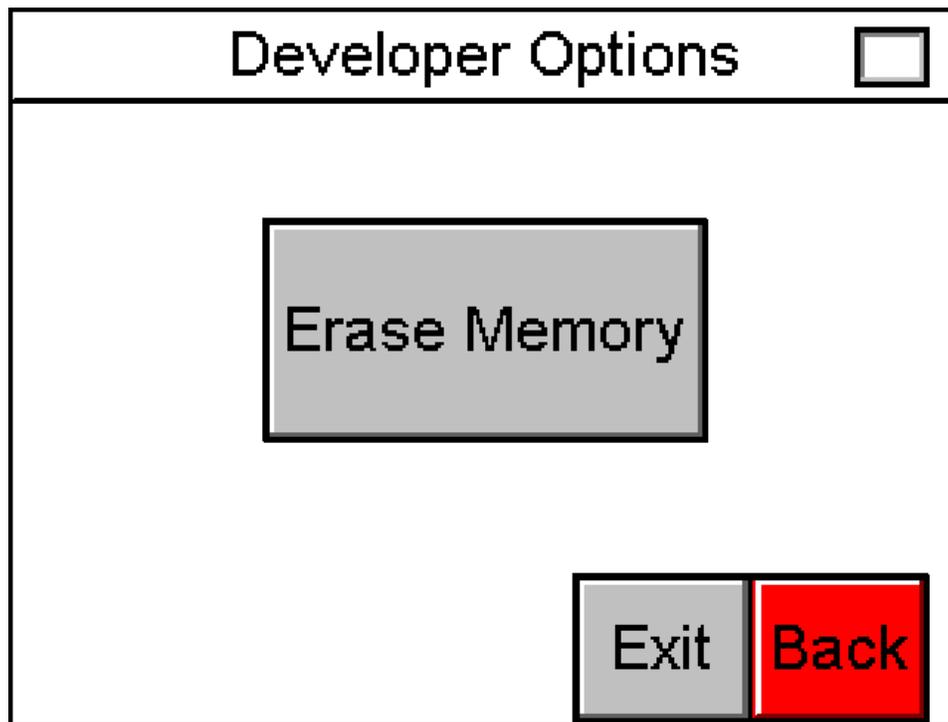


Figure 109: Developer Options: Erase Memory

8 Status Check

The user can access the status check menu by pressing the “Status Check” button on the home screen. The user can view current and past errors, current and past alarms, perform a load cell (s) check, test outputs, view the channel analog inputs, and view weight setpoints (if applicable). The user can only perform the load cell (s) check when the channel is calibrated, and no alarms are present.

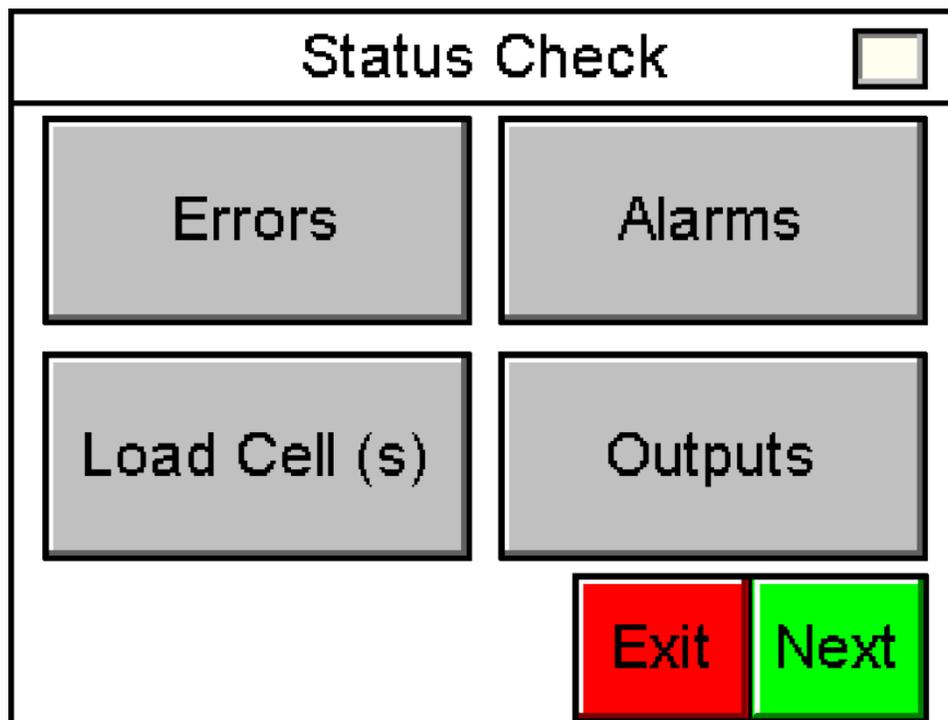


Figure 110: Status Check Home 1

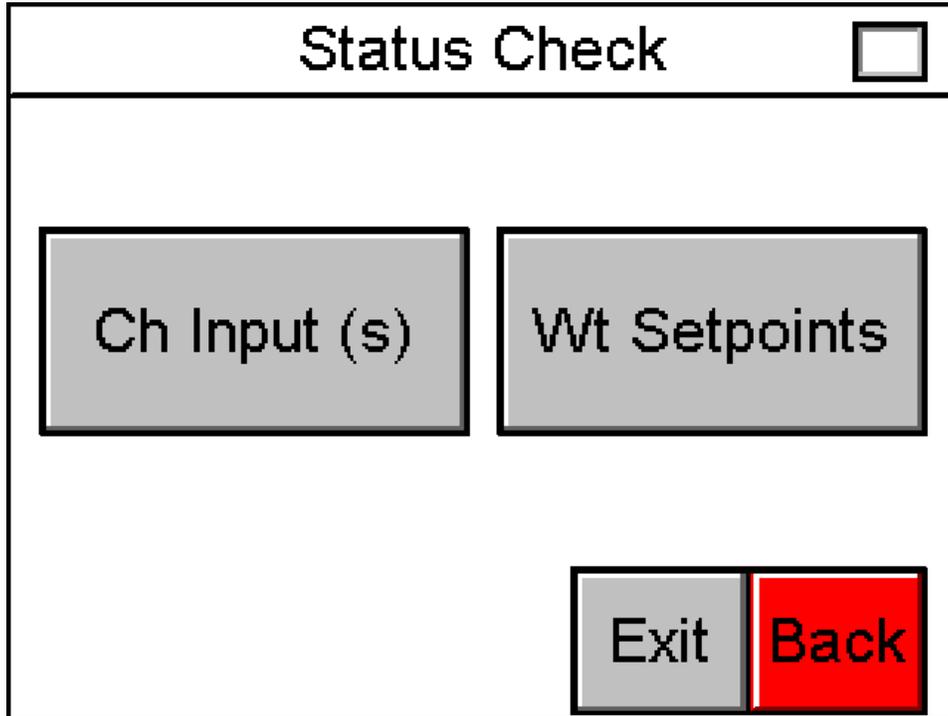


Figure 111: Status Check Home 2

8.1 Indicator Light

The AccuPro 7000-TS has a tri-colored status light located in the top right of every screen. For any display screen, the indicator light is located across the entire title portion of the screen for greater visibility. A solid green light means that there are no errors or alarms present in any channels. A blinking yellow light is called an error. An error is active whenever there is a problem with the configuration of at least one channel or a weight setpoint is active. A blinking red light is called an alarm. An alarm is active whenever there is a critical status present in at least one channel. A blinking green light means that there is an error or alarm present, but that the user has acknowledged it through the current errors or alarms status check screen.

Green (Steady)	Green (Flashing)
No errors or alarms are active in any channel. The indicator is functioning normally.	An error or alarm is currently active and is acknowledged by the user.

Red (Alarm)	Yellow (Error)
<ul style="list-style-type: none"> • Analog Input Limit • Max Net Weight • Max Gross Weight • Leak Detected • Weight Setpoint Active (Optional Configuration) • Max Feed Rate (Optional Configuration) 	<ul style="list-style-type: none"> • Settings Not Configured • Calibration Not Complete • Dead Load Calibration Unstable • Weight Calibration Unstable • Improper Calibration (1) • Improper Calibration (2) • Weight Setpoint Active (Optional Configuration) • Invalid Operational Time • Operational Time Not Set • Clock Not Set

Figure 112: Indicator Light Table

8.2 Errors

An error is present where there is a problem with the configuration of the indicator, or when a setpoint is active (depending on configuration). The user can access the error select screen by pressing the “Errors” button on status check home screen 1. The user can view current errors or the error log.

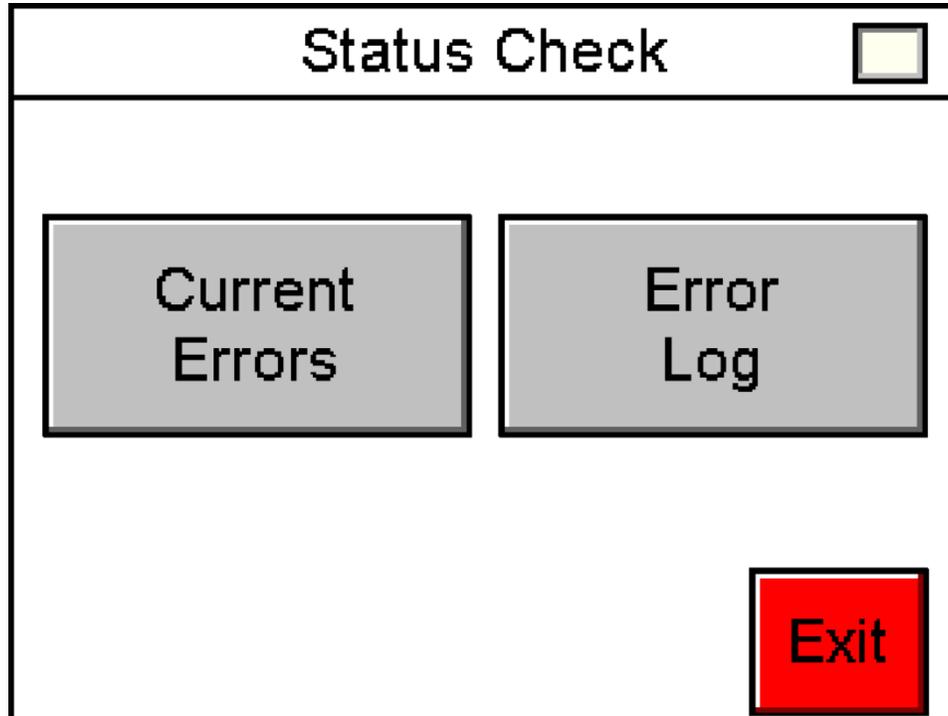


Figure 113: Status Check: Errors

8.3 Current Errors

The user can view all current errors. Any error in red means that it is currently active, and that the user has not acknowledged it. Any error that is blue means that it is currently active, and that the user has acknowledged it. Any error that is green means that while the error was active and was not acknowledged, the error condition was no longer present. If an error was active and was acknowledged while the error condition was no longer present, the error would disappear without turning green. Each status notification has the time when it was triggered. The user can acknowledge all errors by pressing the “Acknowledge” button.

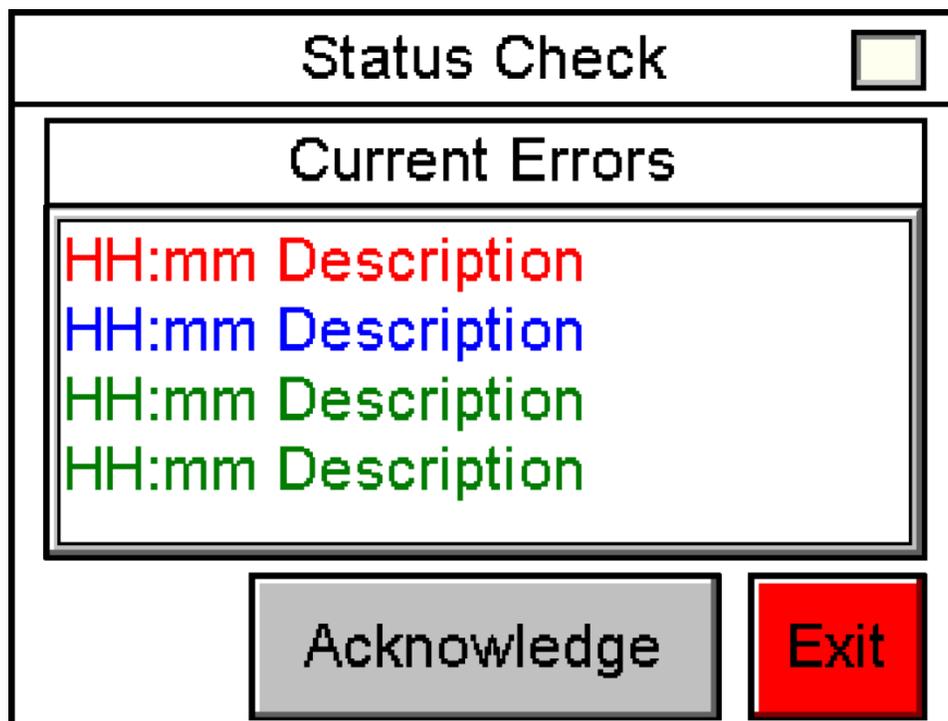


Figure 114: Status Check: Current Errors

8.4 Error Log

The user can view the log of all errors. When an error is triggered, it will appear in red with the time and date next to it. When an error is no longer present, the error will appear in green with the time and date next to it.

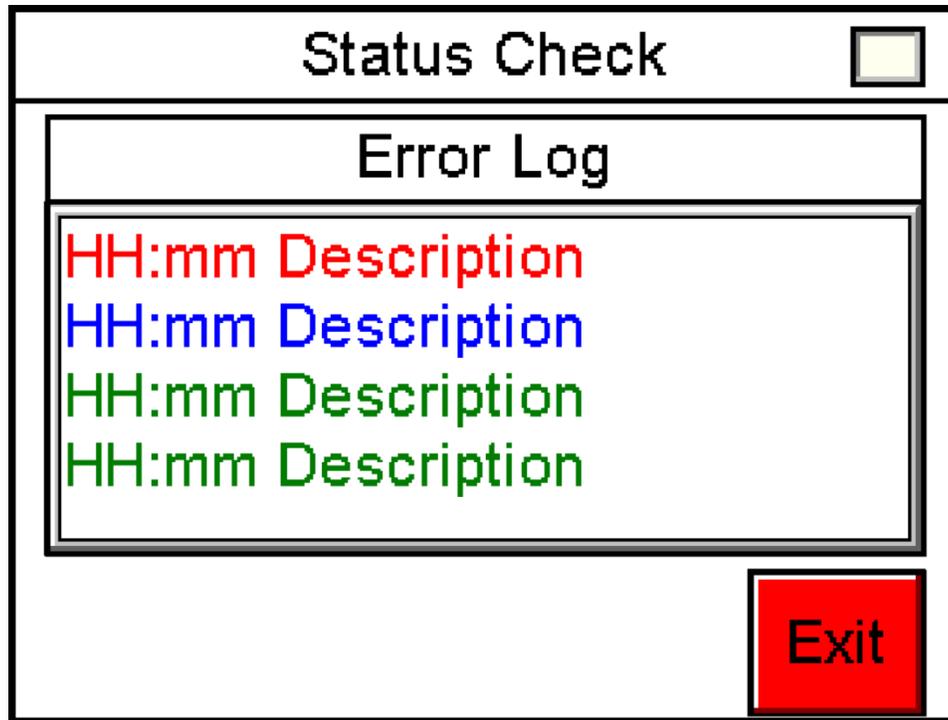


Figure 115: Status Check: Error Log

8.5 Alarms

An alarm is present when there is a critical problem with the base or indicator, or when a setpoint is active (depending on configuration). The user can access the alarm select screen by pressing the “Alarms” button on status check home screen 1. The user can view current alarms or the alarm log.

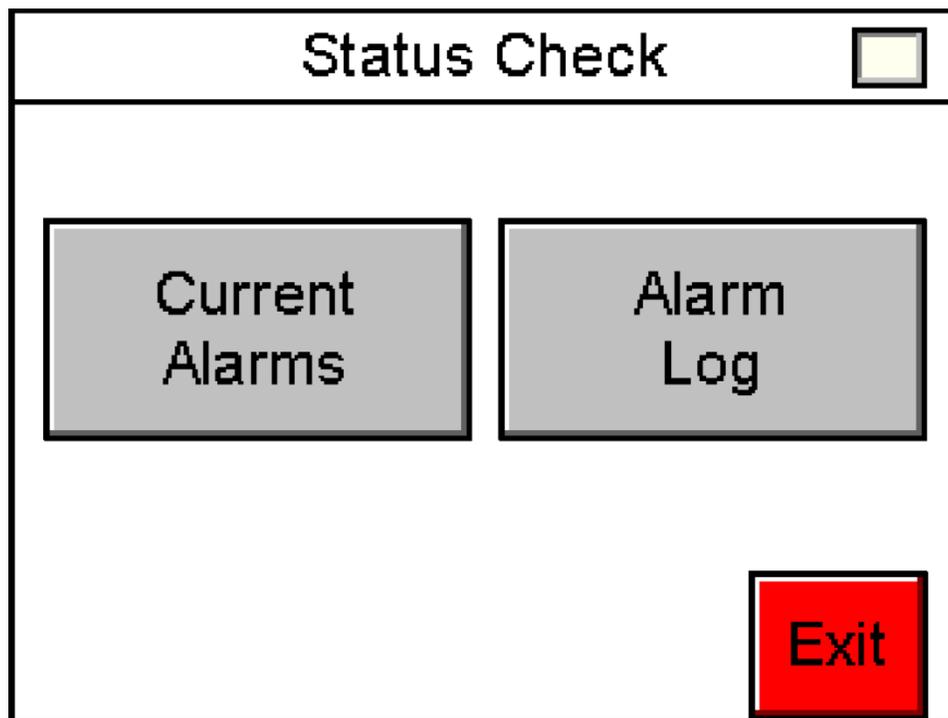


Figure 116: Status Check: Alarms

8.6 Current Alarms

The user can view all current alarms. Any alarm in red means that it is currently active, and that the user has not acknowledged it. Any alarm that is blue means that it is currently active, and that the user has acknowledged it. Any alarm that is green means that while the alarm was active and was not acknowledged, the alarm condition was no longer present. If an alarm was active and was acknowledged while the alarm condition was no longer present, the alarm would disappear without turning green. Each status notification has the time when it was triggered. The user can acknowledge all alarms by pressing the “acknowledge” button.

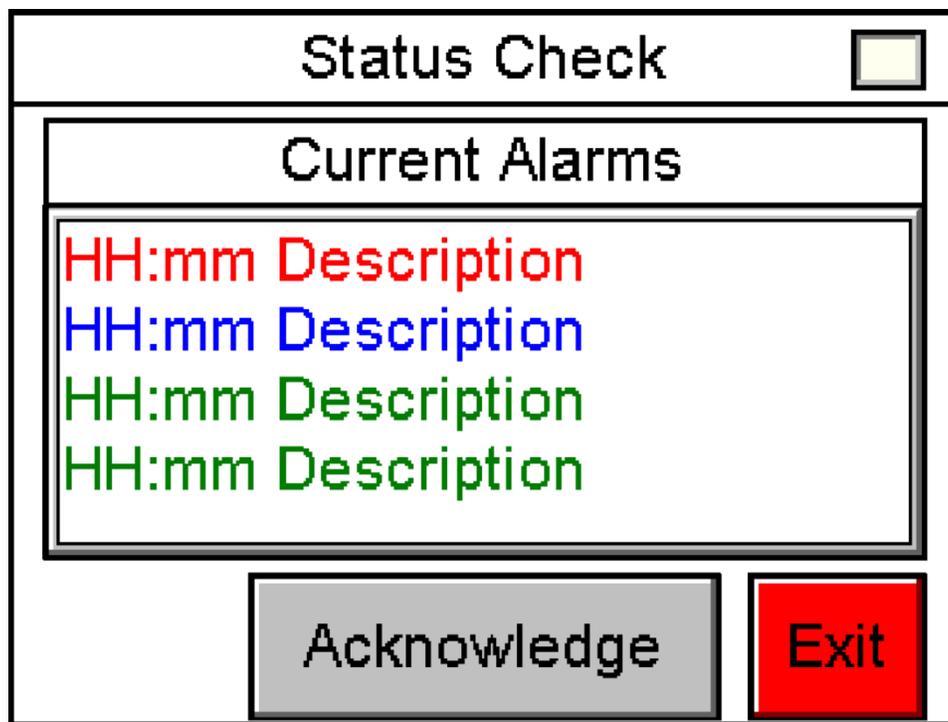


Figure 117: Status Check: Current Alarms

8.7 Alarm Log

The user can view the log of all alarms. When an alarm is triggered, it will appear in red with the time and date next to it. When an alarm is no longer present, the alarm will appear in green with the time and date next to it.

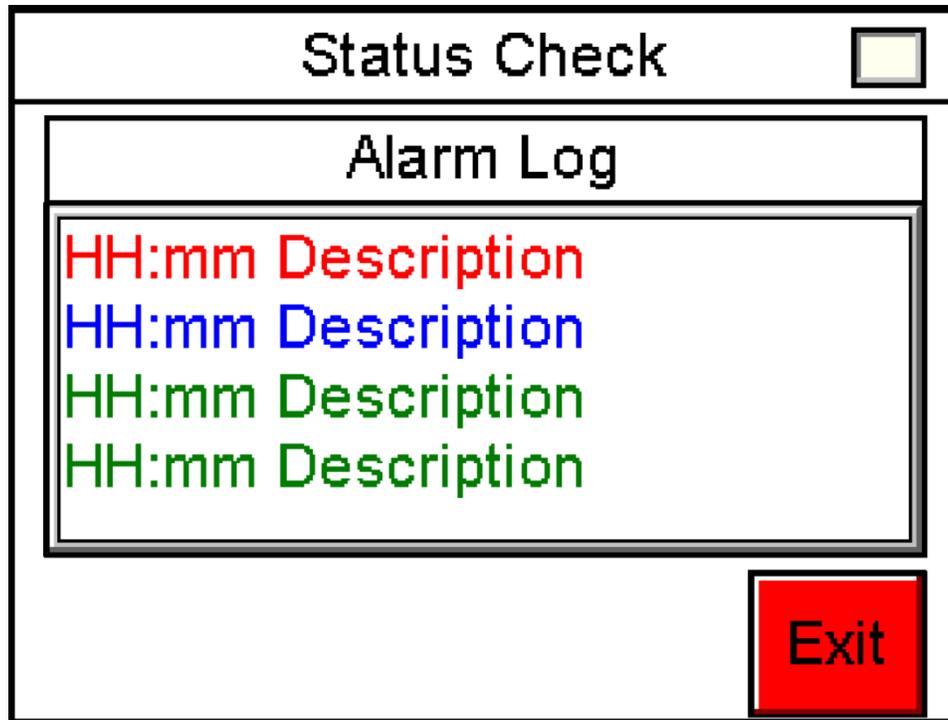


Figure 118: Status Check: Alarm Log

8.8 Status Check: Load Cell (s)

The user can access this screen by pressing “Load Cell (s)” on the status check screen. The user can check status of the load cell (s) by comparing the factory set dead load bit value to the current dead load bit value. The channel must be calibrated, and no alarms must be present to perform the load cell (s) check. When the user presses “Enter” they will be brought to a status screen (see figure 116 and 117) which displays the status of the load cells.

Ch 1 Load Cell (s) Check <input type="checkbox"/>
Remove all weight from base and press "Enter" to check cell (s)
Enter
Exit Back

Figure 119: Status Check: Load Cell (s)

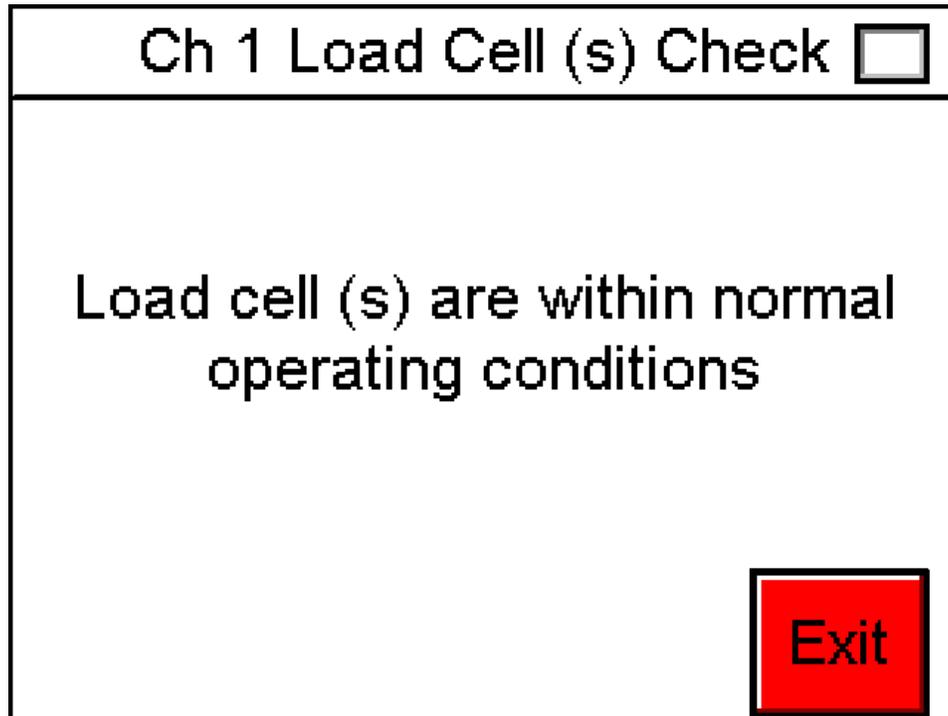


Figure 120: Status Check: Load Cell (s) Normal

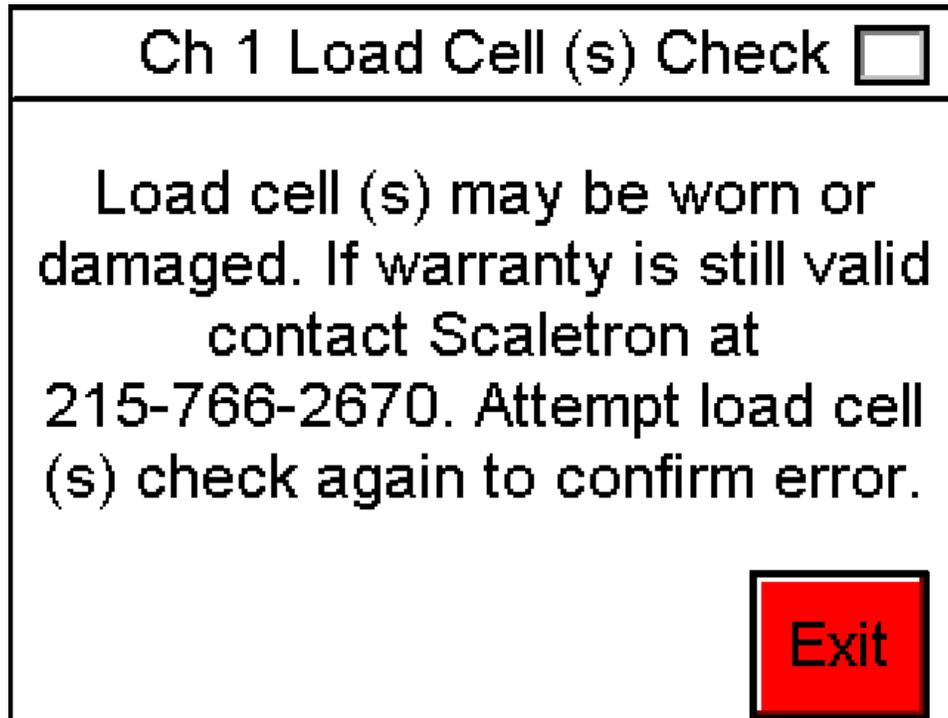


Figure 121: Status Check: Load Cell (s) Error

8.9 Status Check: Outputs

The user can access this screen by pressing “Outputs” on the status check screen. The user can turn on all output setpoints for testing. When all setpoints are active, the indicator will be green.

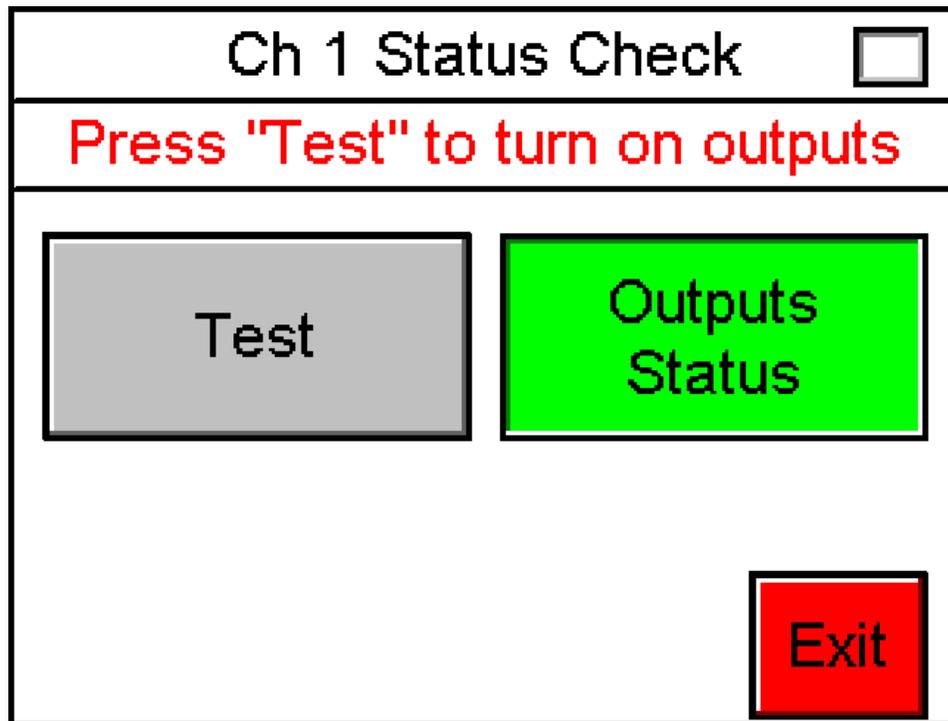


Figure 122: Status Check: Outputs

NOTE: All indicators are shown active

8.10 Status Check: Channel Inputs

The user can access this screen by pressing “Weight Setpoints” on the status check screen. The user can view all weight setpoints per channel. Any setpoint that is active will blink red. The user can acknowledge latched weight setpoints by pressing the “Acknowledge” button.

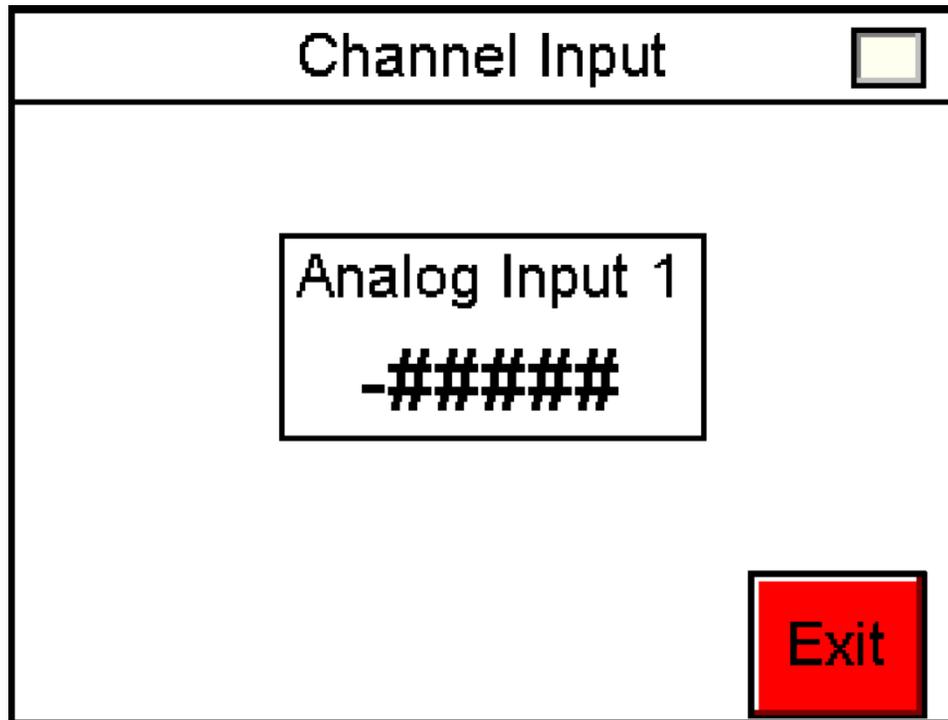


Figure 123: Status Check: Channel Inputs

NOTE: Display will vary based on the amount of channels active

8.11 Status Check: Weight Setpoints

The user can access this screen by pressing “Weight Setpoints” on the status check screen. The user can view all weight setpoints per channel.

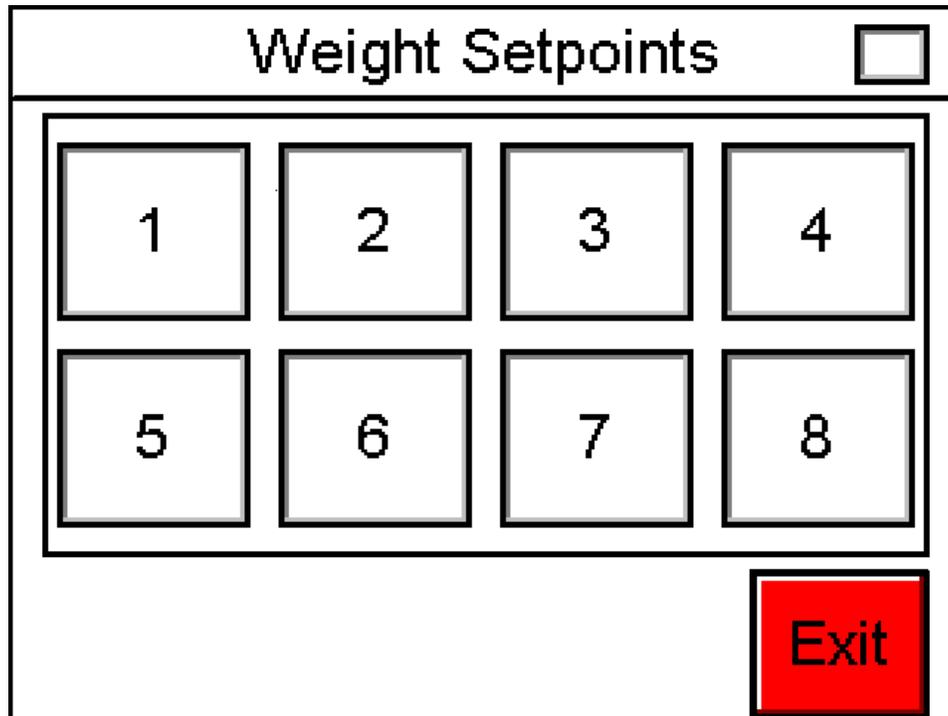


Figure 124: Status Check: Weight Setpoints

9 System Info

The user can access system info by pressing the “System Info” button on the home screen. The user can view information about the F-Keys, adjust display brightness, view and adjust Modbus configuration, view temperature adjustment parameters, view and set the system clock, view and set the operational time for the indicator, adjust data log parameters, view contact information, restore factory configuration, view software version, and view the serial number.

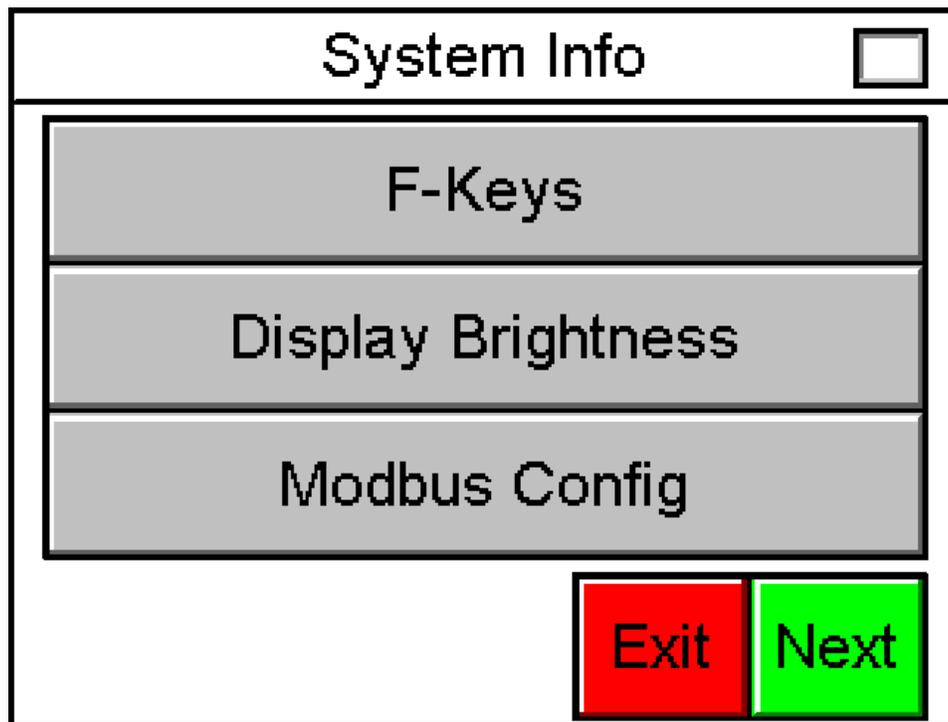


Figure 125: System Info 1

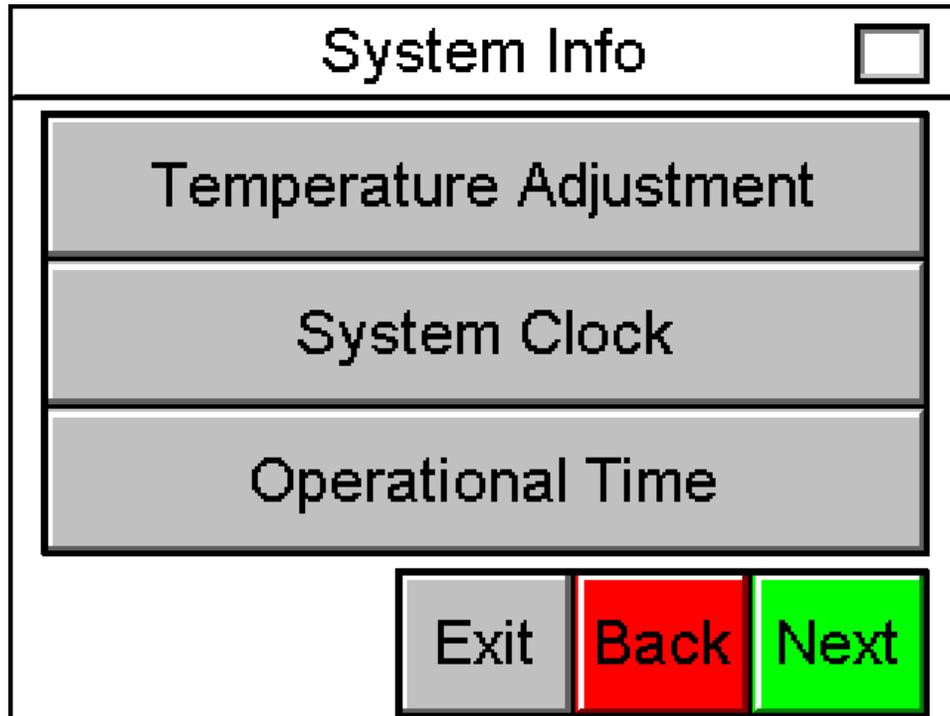


Figure 126: System Info 2

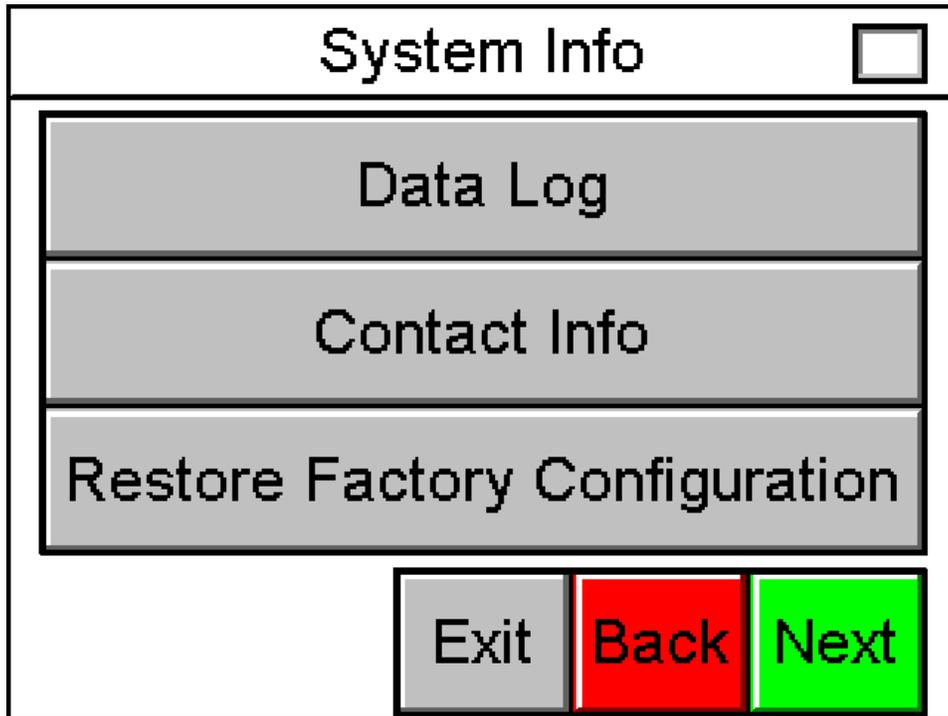


Figure 127: System Info 3

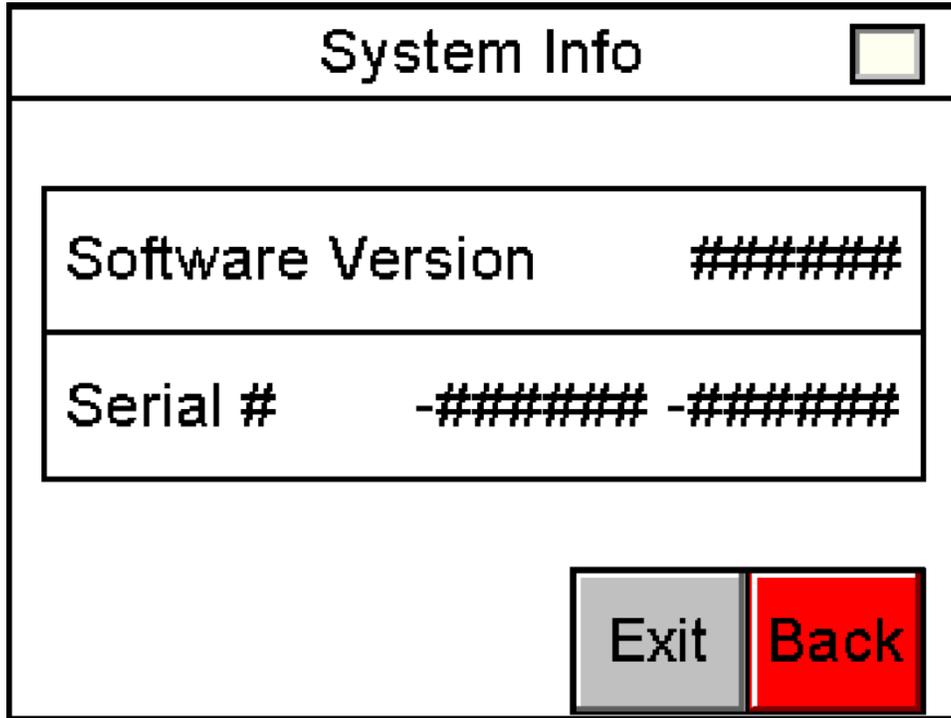


Figure 128: System Info 4

9.1 System Info: F-Keys

The user can view the function of the F-Keys (the physical buttons on the bottom of the indicator display). F1: go to home screen F2: go to status check F3: go to system info F4: toggle weight display lock (view figure 126)

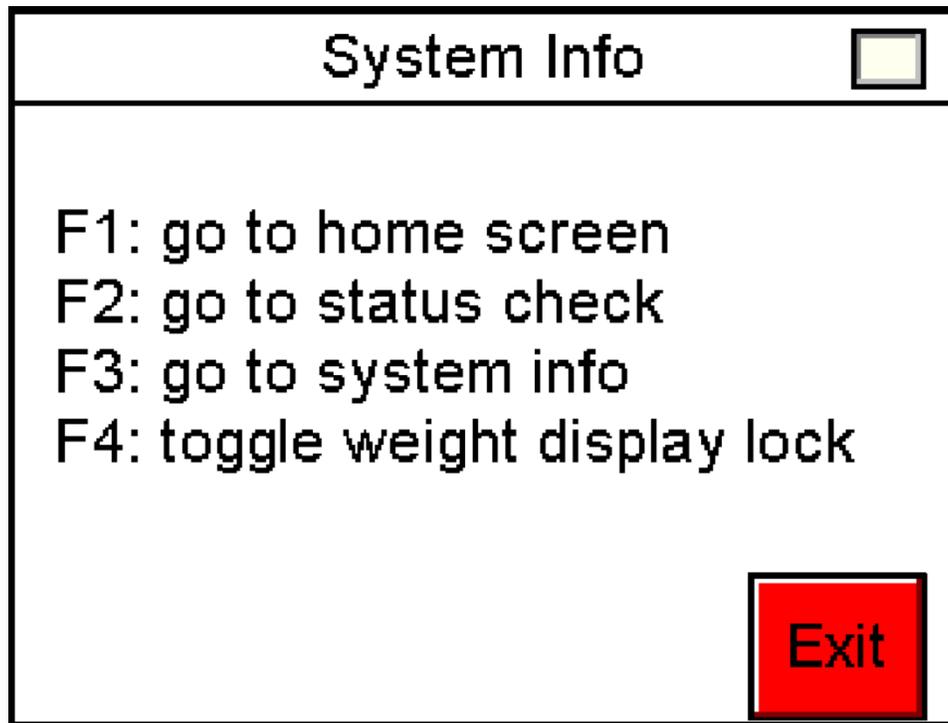


Figure 129: System Info: F-Keys

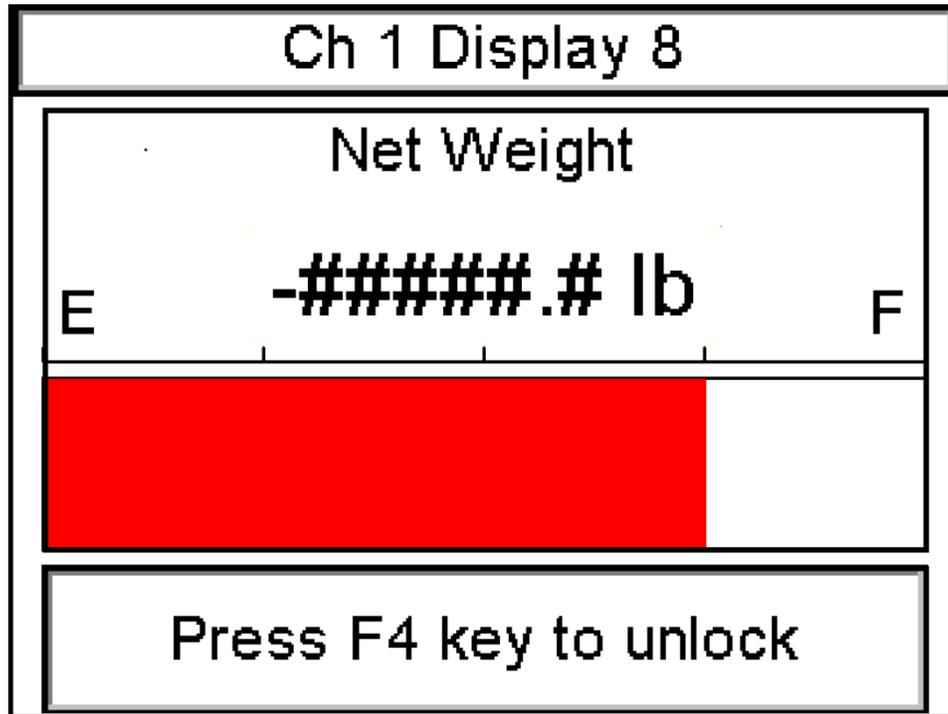


Figure 130: Display Lock

The user can toggle the display lock by pressing the F4 key. Only available on display screens

9.2 System Info: Display Brightness

The user can access display brightness by pressing the “Display Brightness” button on the system info menu screen. The user can adjust the display brightness from a range of 20% to 100%.

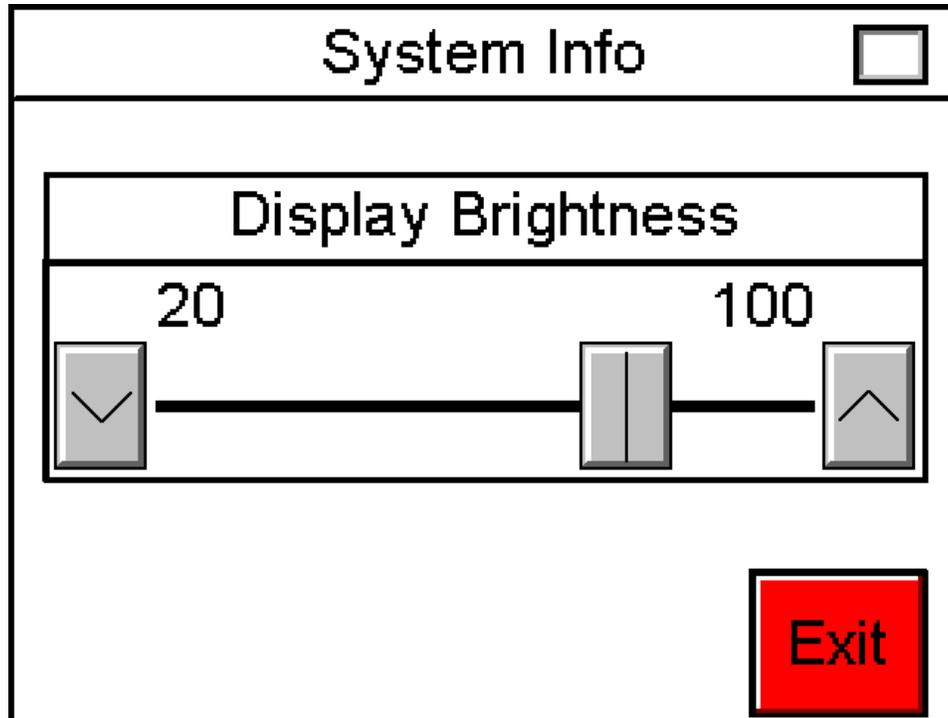


Figure 131: System Info: Display Brightness

9.3 System Info: Modbus

The user can access Modbus by pressing the “Modbus Config” button on the system info menu screen. The user can configure the indicator’s network addresses by pressing “Network Configuration”. The user can also view the Modbus address map by pressing “Address Map”. The user can configure the indicator’s IP address, net mask, and gateway through the network configuration. The user can view all reserved outputs for Modbus through the address map.

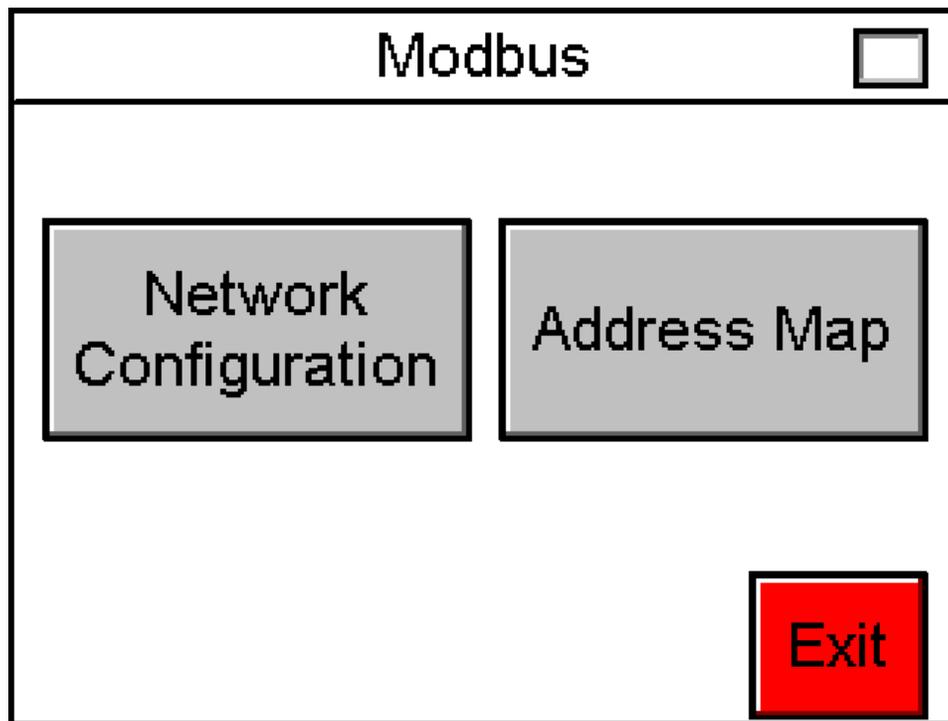
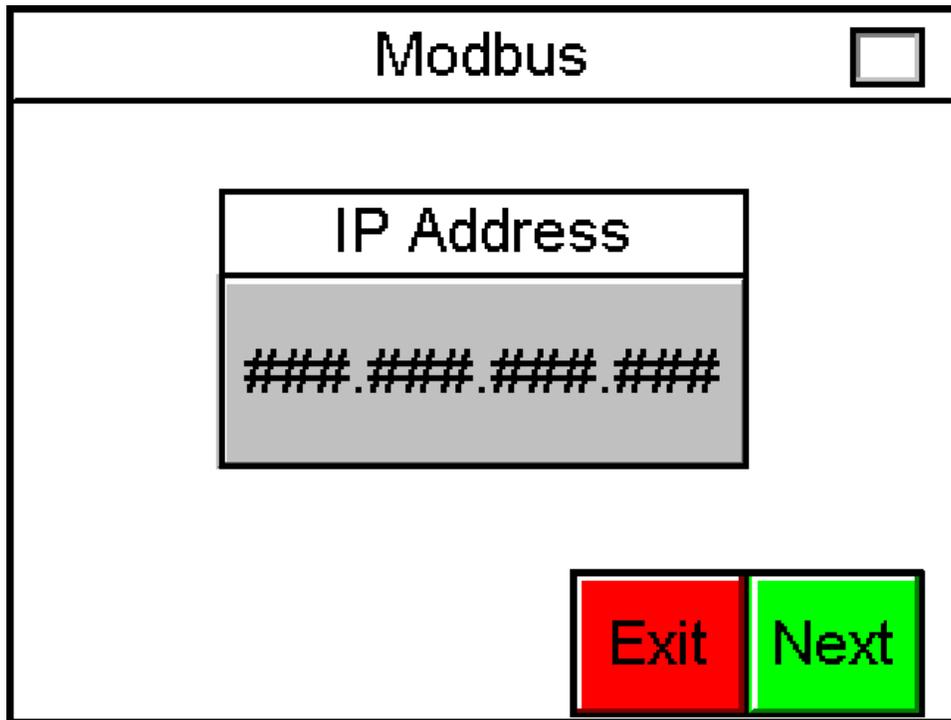


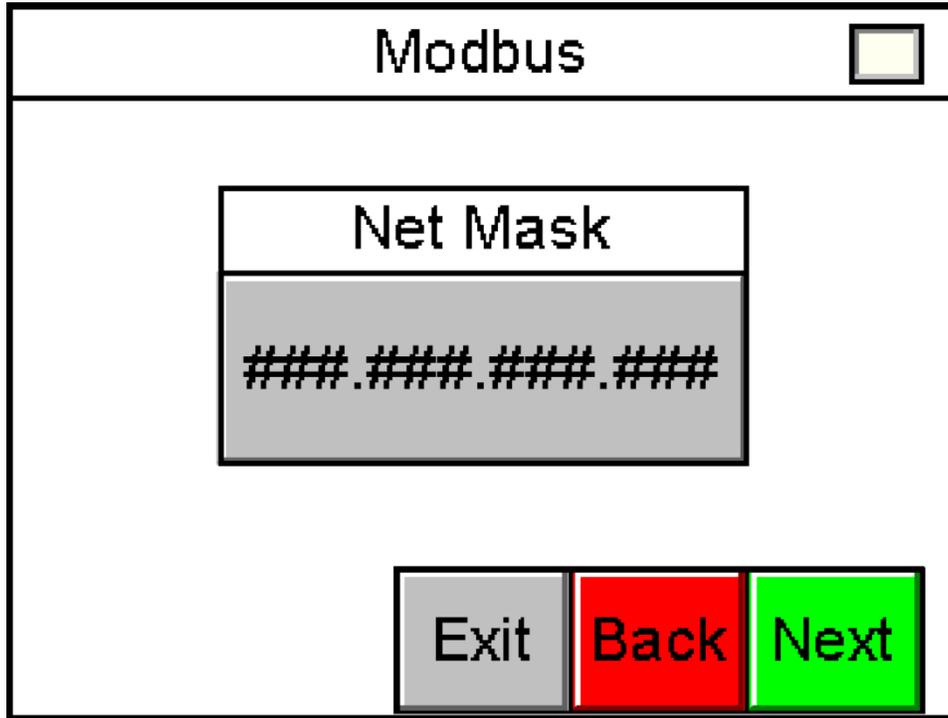
Figure 132: System Info: Modbus

NOTE: Only available when Modbus is enabled



The screenshot shows a window titled "Modbus" with a close button in the top right corner. Inside the window, there is a sub-window titled "IP Address" containing a text field with the placeholder "###.###.###.###". At the bottom right of the main window, there are two buttons: a red "Exit" button and a green "Next" button.

Figure 133: System Info: Modbus IP Address



The screenshot shows a graphical user interface for configuring the Modbus Net Mask. The main window is titled "Modbus" and contains a sub-window titled "Net Mask". Inside the "Net Mask" sub-window, there is a text input field containing the placeholder "###.###.###.###". At the bottom of the main window, there are three buttons: "Exit" (grey), "Back" (red), and "Next" (green).

Figure 134: System Info: Modbus Net Mask

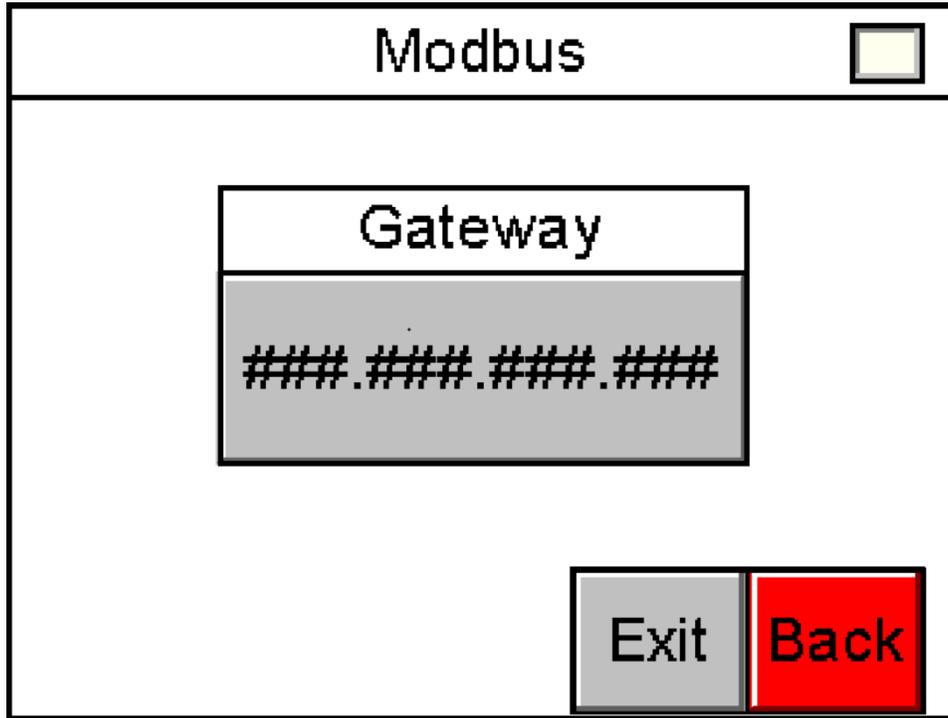


Figure 135: System Info: Modbus Gateway

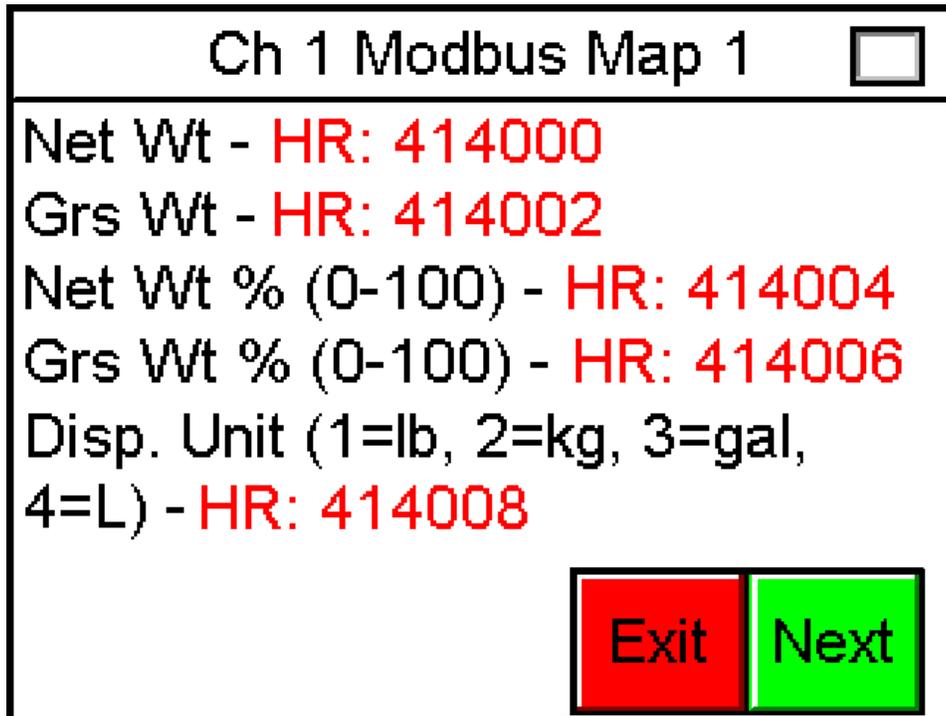


Figure 136: System Info: Modbus Address Map 1

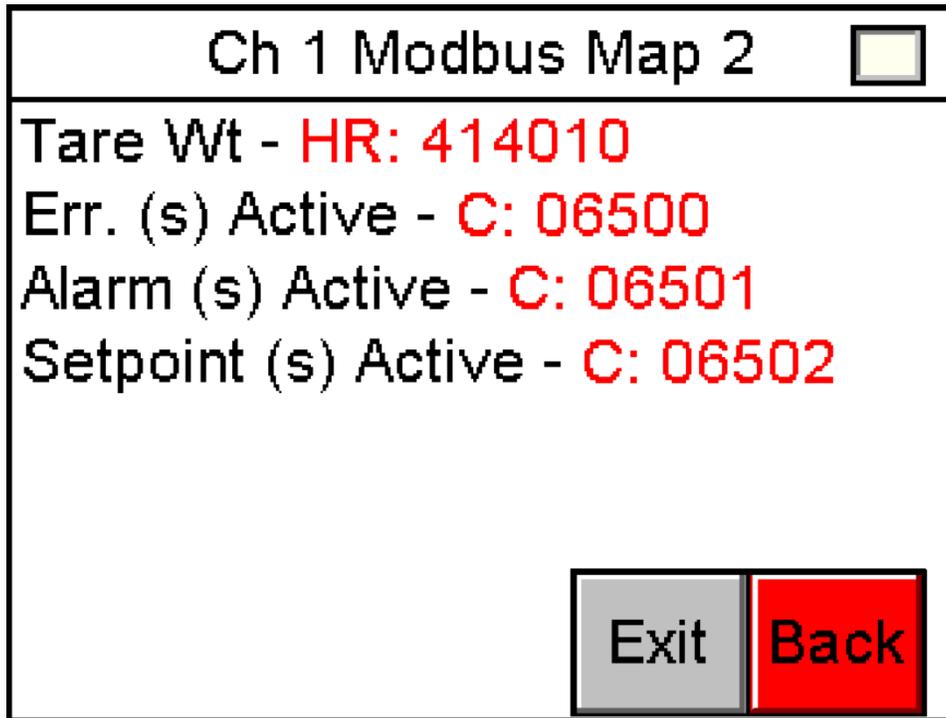


Figure 137: System Info: Modbus Address Map 2

9.4 System Info: Temperature Adjustment

The user can access temperature adjustment by pressing the “Temperature Adjustment” button on the system info menu screen. The user can add or subtract bits from the analog input to offset the difference caused by temperature fluctuations.

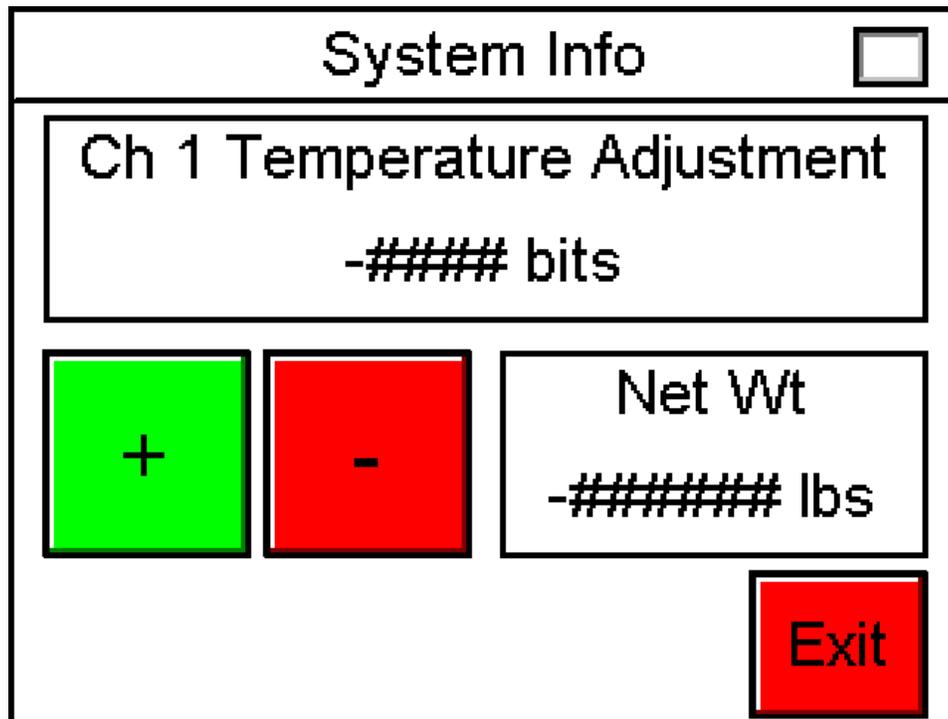


Figure 138: System Info: Temperature Adjustment

9.5 System Info: System Clock

The user can view the system time and date. The user can also set the time and date.

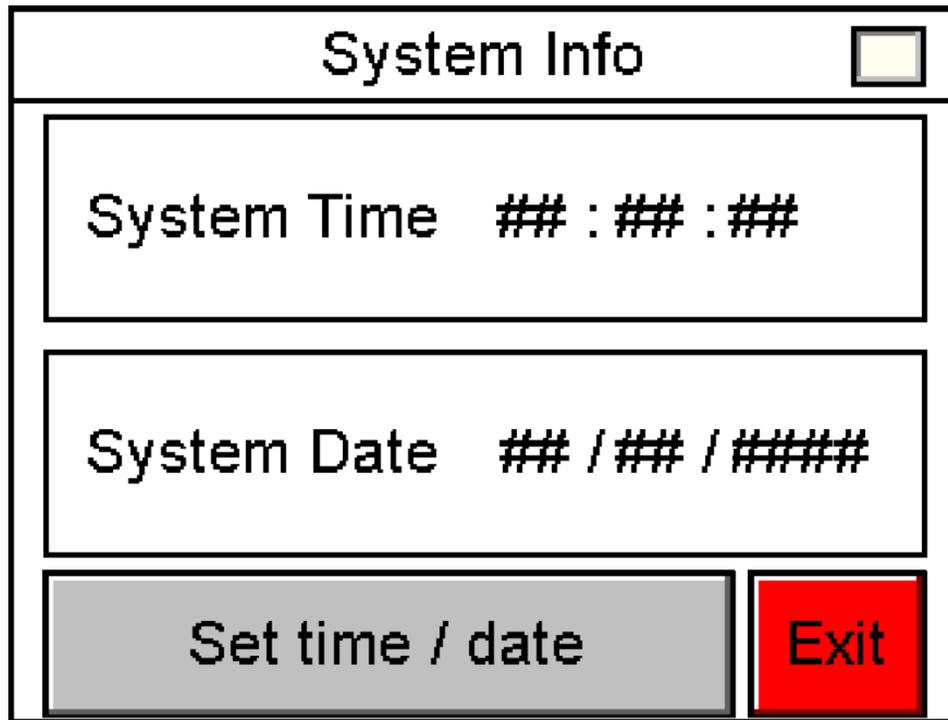


Figure 139: System Info: System Clock

System Info		
Hr (24Hr Time) ##	Minute ##	
Month ##	Day ##	Year ####
Set		Exit

Figure 140: System Info: Set Time and Date

9.6 System Info: Operational Time

The operational time is used for feed rate functions and data log functions. For correct system operation, enter the start and end time for the system in 24-hour time.

System Info	
System Operation Start	
Hour ## (24h)	Minute ##
System Operation End	
Hour ## (24h)	Minute ##
Exit	

Figure 141: System Info: Operational Time

9.7 System Info: Data Log

The user can enable or disable micro-SD card logging. The user can also adjust the interval of logging. User configuration only affects the micro-SD card logging, not the local data log graphs.

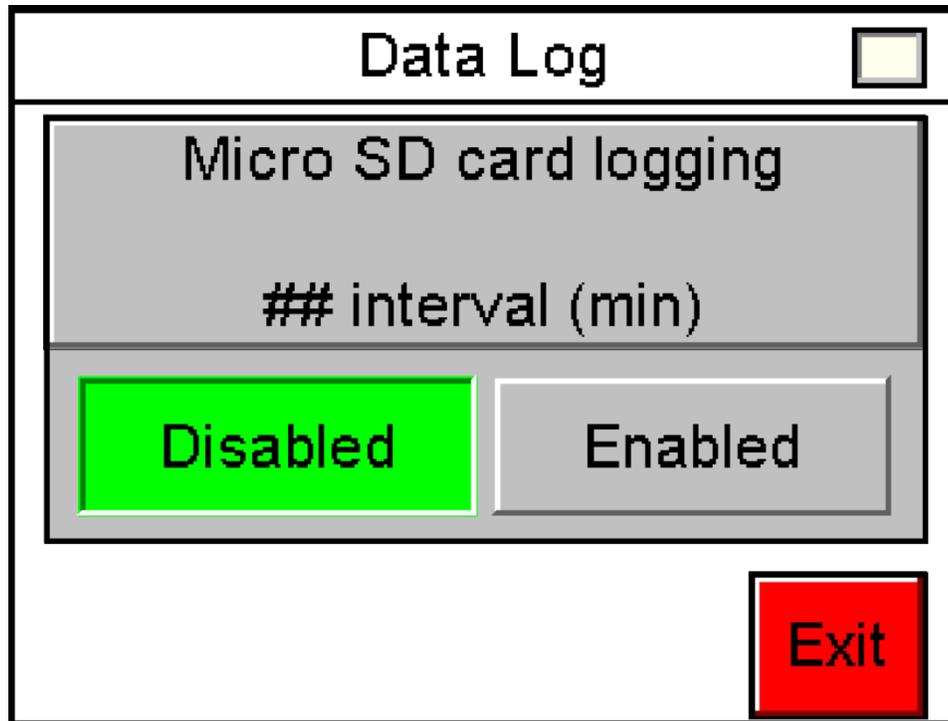


Figure 142: System Info: Data Log

9.8 Data Log Folders

When data log micro SD card logging is enabled in system info, files will be written to the micro SD card. The user can view the micro SD card contents on a computer. Any active channel will have a folder for net weight and a folder for feed rate. In addition, a status folder contains a log of any errors or alarms that were present.

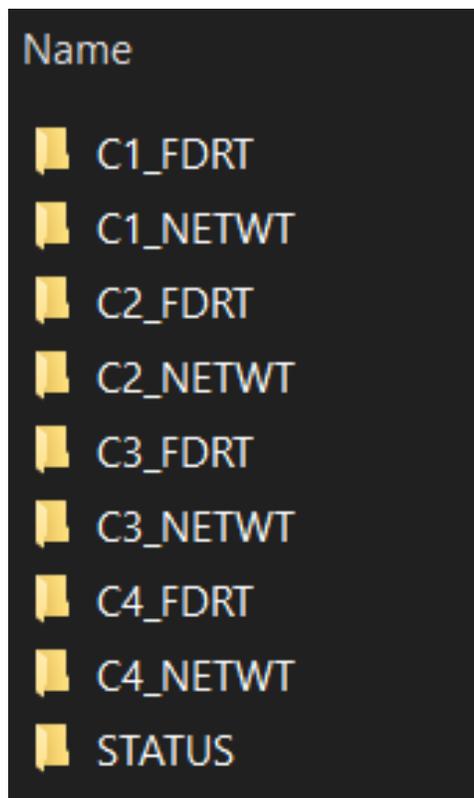


Figure 143: Data Log Folders on Computer

9.9 Data Log Files

When the user selects a net weight or feed rate folder, any excel files will appear with a date given as a name. The first 2 numbers are the year, the next 2 numbers are the month, and the final 2 numbers are the day of the month.

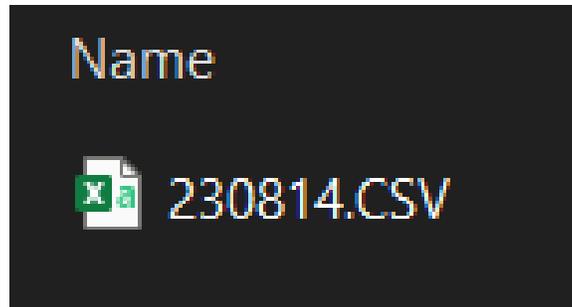


Figure 144: Data Log File on Computer

9.10 Net Weight Data Log File

The excel file is formatted: date, time, and net weight.

Date	Time	Ch2_Net_Weight
8/14/2023	8:50:23	42
8/14/2023	8:51:23	42
8/14/2023	8:52:23	39.55
8/14/2023	8:53:23	39.55
8/14/2023	8:54:23	39.55
8/14/2023	8:55:23	38.3
8/14/2023	8:56:23	35.8
8/14/2023	8:57:23	35.8
8/14/2023	8:58:23	35.8
8/14/2023	8:59:23	35.8
8/14/2023	9:00:23	35.8
8/14/2023	9:01:23	32.2
8/14/2023	9:02:23	32.2
8/14/2023	9:03:23	21.7
8/14/2023	9:04:23	21.7
8/14/2023	9:05:23	42.25
8/14/2023	9:06:23	42.4

Figure 145: Net Weight Data Log File on Computer

NOTE: Data log interval is set to one minute

9.11 Feed Rate Data Log File

The excel file is formatted: date, time, average feed rate, and current feed rate.

Date	Time	Ch2_Average_FR	Ch2_Current_FR
8/14/2023	8:50:23	180	180
8/14/2023	8:51:23	90	0
8/14/2023	8:52:23	109	147
8/14/2023	8:53:23	81.75	0
8/14/2023	8:54:23	65.4	0
8/14/2023	8:55:23	67	75
8/14/2023	8:56:23	78.8572	150
8/14/2023	8:57:23	69	0
8/14/2023	8:58:23	61.3333	0
8/14/2023	8:59:23	56.1	9.00009
8/14/2023	9:00:23	51	0
8/14/2023	9:01:23	64.75	216
8/14/2023	9:02:23	60.4615	9.00009
8/14/2023	9:03:23	100.5	621
8/14/2023	9:04:23	93.8	0
8/14/2023	9:05:23	87.9375	0
8/14/2023	9:06:23	82.7647	0

Figure 146: Feed Rate Data Log File on Computer

NOTE: Data log interval is set to one minute

9.12 Status Data Log File

The excel file is formatted: date, time, event, group #, and error/alarm name. An event is either “ALM” or “RTN”. An “ALM” is when the error or alarm is first triggered active. A “RTN” is triggered when the error or alarm becomes unactive. Group #1 is linked to errors, group #2 is linked to alarms.

Date	Time	Event	Group	Alarm Name
14-Aug	8:39	ALM	1	C2 Cal Incomplete
14-Aug	8:39	ALM	1	C2 Settings not Conf
14-Aug	8:39	ALM	1	C3 Cal Incomplete
14-Aug	8:39	ALM	1	C3 Settings not Conf
14-Aug	8:39	ALM	1	C4 Cal Incomplete
14-Aug	8:39	ALM	1	C4 Settings not Conf
14-Aug	8:39	RTN	1	C2 Cal Incomplete
14-Aug	8:40	RTN	1	C2 Settings not Conf
14-Aug	8:40	RTN	1	C3 Settings not Conf
14-Aug	8:40	RTN	1	C3 Cal Incomplete
14-Aug	8:41	RTN	1	C4 Cal Incomplete
14-Aug	8:41	ALM	1	Wt SP 7
14-Aug	8:41	RTN	1	C4 Settings not Conf
14-Aug	8:41	ALM	1	Wt SP 8
14-Aug	8:41	RTN	1	Wt SP 8
14-Aug	8:42	ALM	1	Wt SP 2
14-Aug	8:42	ALM	2	C1 Max Net Wt
14-Aug	8:42	ALM	2	C2 Max Net Wt
14-Aug	8:42	ALM	1	Wt SP 4
14-Aug	8:42	RTN	2	C2 Max Net Wt
14-Aug	8:42	ALM	2	C3 Max Net Wt
14-Aug	8:42	ALM	1	Wt SP 6
14-Aug	8:42	RTN	2	C3 Max Net Wt

Figure 147: Status Data Log File on Computer

NOTE: Data log interval is set to one minute

9.13 System Info: Contact Information

The user can access contact information by pressing the “Contact Info” button on the system info menu screen (see figure 91). The user can view Scaletron’s website, toll free, international, fax, email, and address.

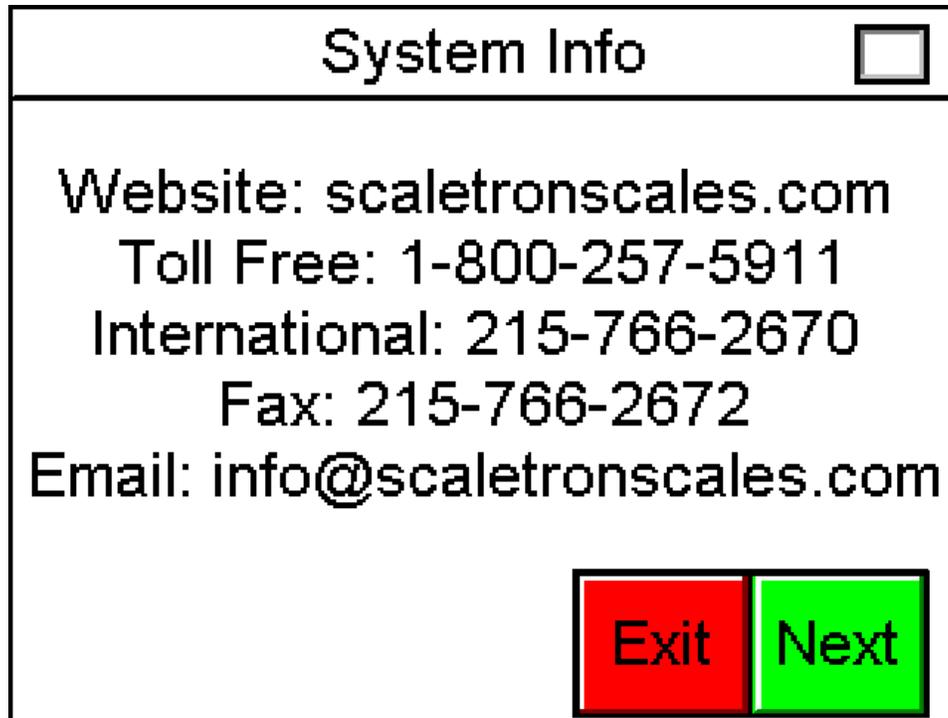


Figure 148: System Info: Contact Information 1

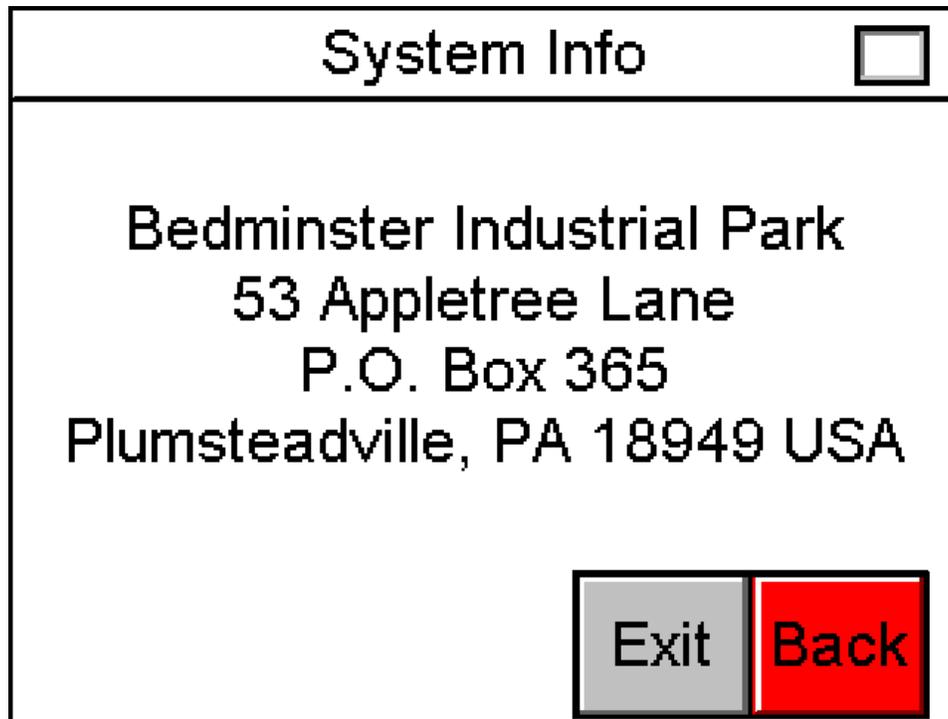


Figure 149: System Info: Contact Information 2

9.14 System Info: Restore Factory Configuration

The user can access factory restore by pressing the “Restore Factory Configuration” button on the system info menu screen. The user can restore the indicator to the default configuration setup by pressing the “Restore” button. Any changes made to the indicator outside of the factory will be lost.

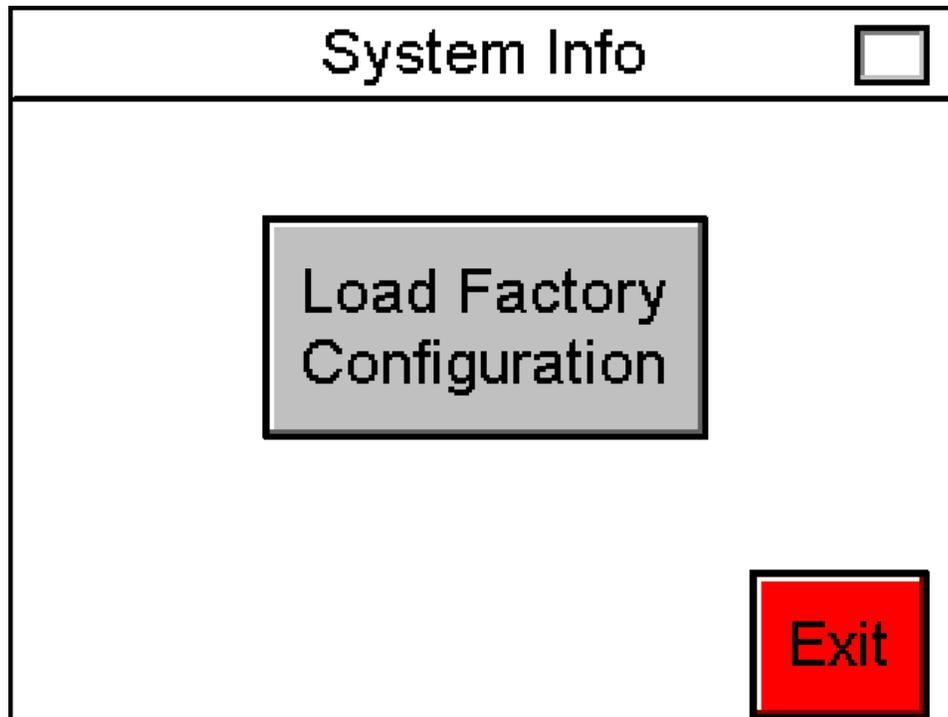


Figure 150: System Info: Restore Factory Configuration

NOTE: Only available when a restore point has been made

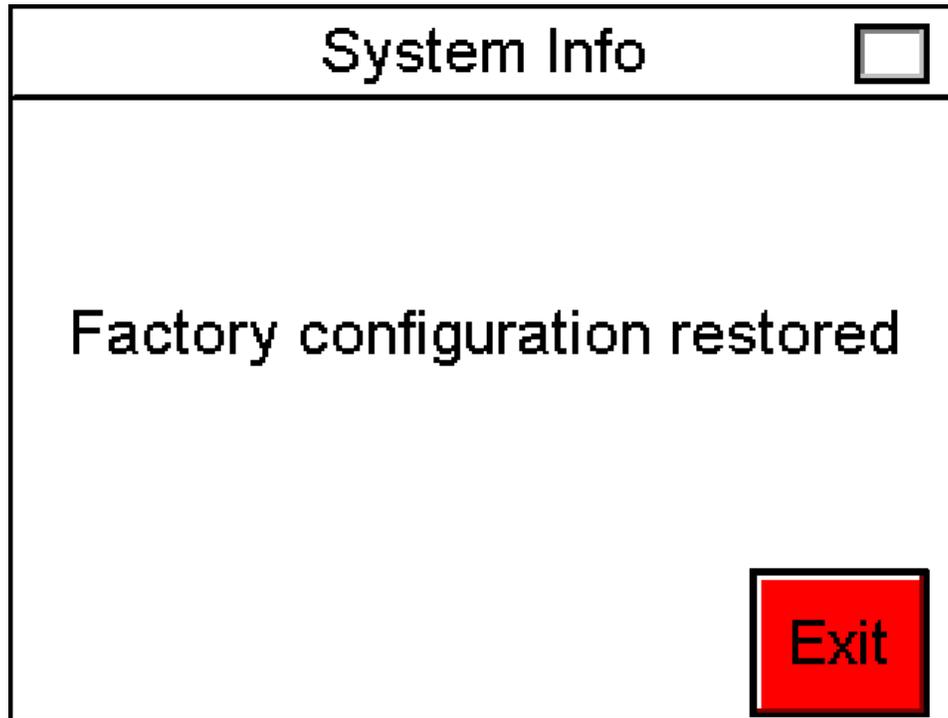


Figure 151: System Info: Restore Factory Configuration Confirmation

10 Batch Control

The user can access batch control by pressing the “Batch Control” button on the home screen. The user can set a batch amount value and unit. While the batch process is active, the user can stop the batch, pause the batch, change the display unit, or exit the batch control display screen. While in the batch control display screen, the user can view net weight, the set batch amount, the total amount batched, and the time to complete estimate. Only channel 1 controls the batch function. Relay outputs for “batch active” and “batch done” are available.

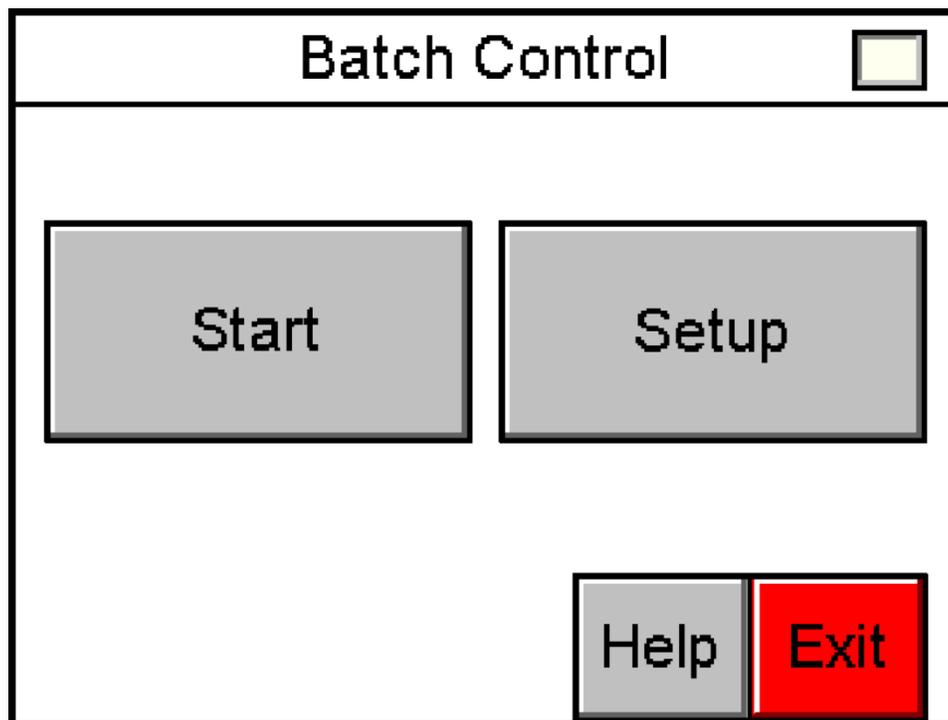


Figure 152: Batch Control

10.1 Batch Control: Setup

The user can access the batch control setup by pressing the “Setup” button on the batch control screen. The user can enter the desired batch amount and unit. The user cannot enter a value that is greater than the current net weight.

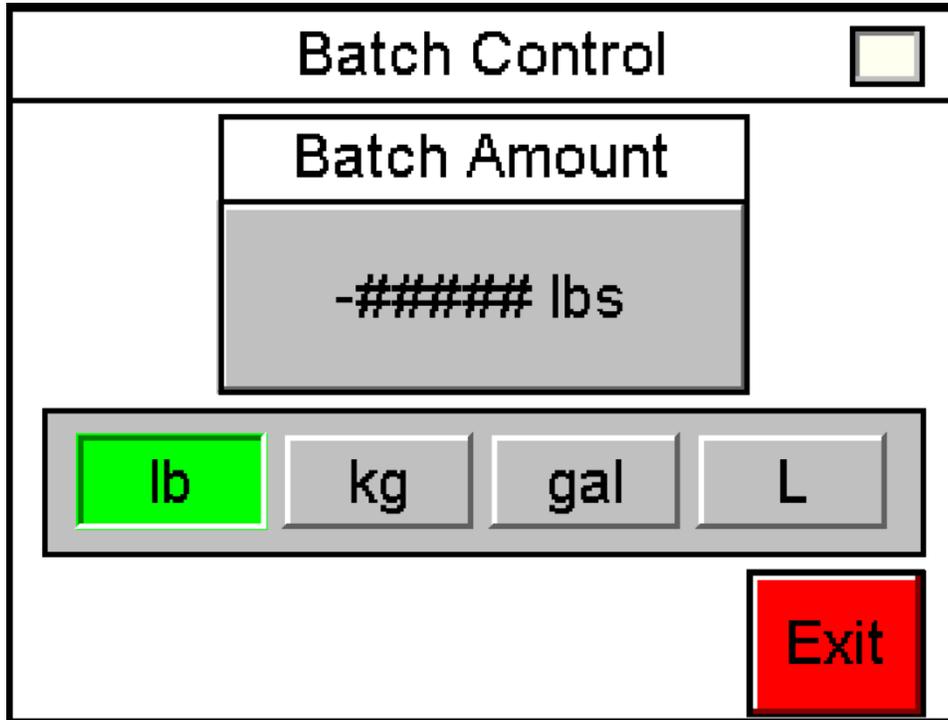
The screenshot shows a graphical user interface for "Batch Control". At the top, the title "Batch Control" is displayed in a large black font, with a small yellow square icon to its right. Below the title is a section labeled "Batch Amount" in a white box. Underneath this label is a grey rectangular input field containing the text "-##### lbs". Below the input field is a horizontal row of four buttons: "lb" (highlighted in green), "kg", "gal", and "L". At the bottom right of the screen is a prominent red button labeled "Exit".

Figure 153: Batch Control Setup

NOTE: The batch control cannot be setup while a batch process is active

10.2 Batch Control: Display

The user can access the batch control display by pressing the “Start” button on the batch control screen. The user can view net weight, the set batch amount, total amount batched, and the time to complete estimate. The user can stop the batch control, pause the batch control, change the display unit, or exit the batch control display screen.

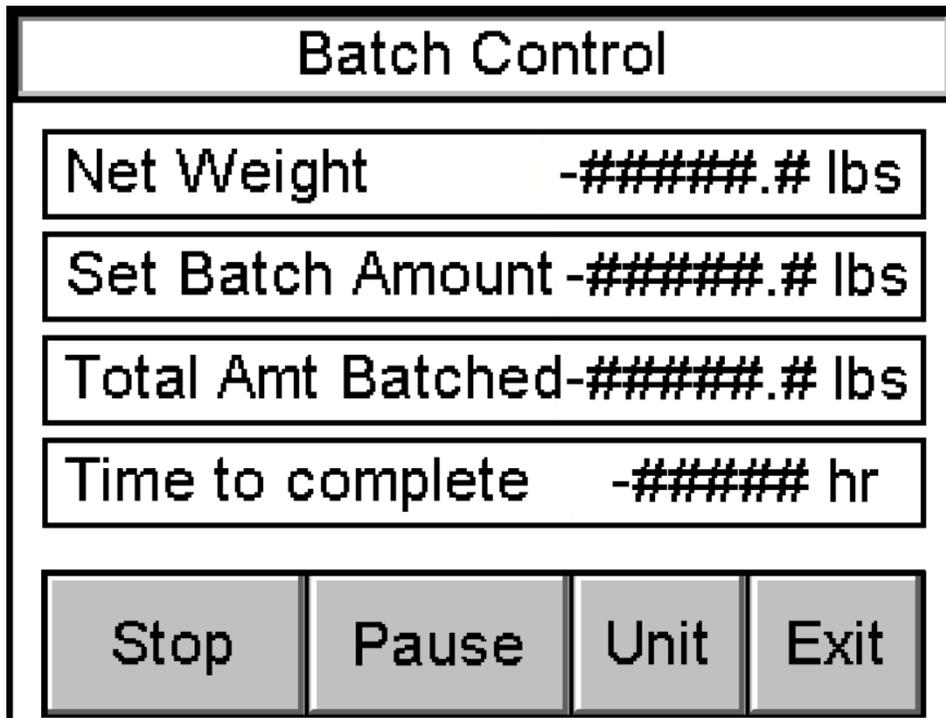


Figure 154: Batch Control Display

NOTE: The batch control cannot be setup while a batch process is active

10.3 Batch Control: Confirmation

Once the total amount batched is equal to the set batch amount, the batch process will stop and will display a confirmation screen.

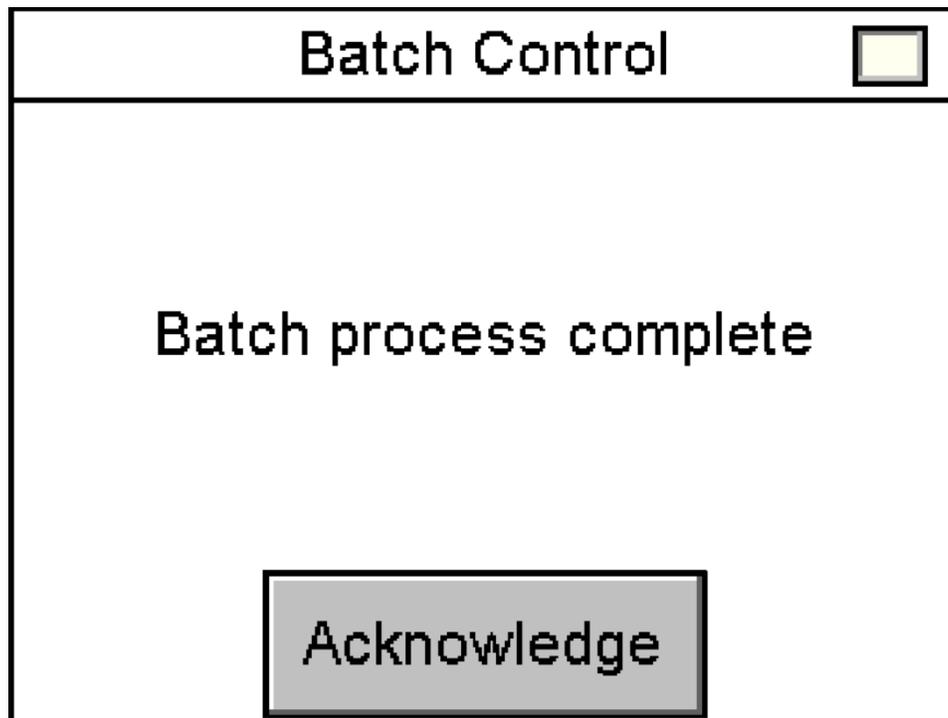


Figure 155: Batch Control Confirmation