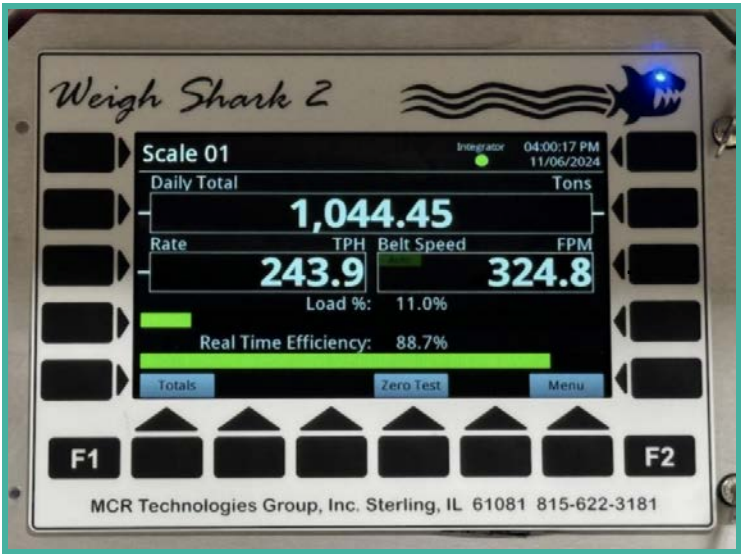




WEIGH SHARK BELT SCALE

Weigh Shark 2 Belt
Scale Installation and
Calibration Manual



July 14, 2026

MCR TECHNOLOGIES GROUP INC.

Your *Weigh Shark®* **Belt Scale** has been carefully designed to provide you with many years of operation and accuracy. We have designed features to allow simple installation, calibration, and operation of your scale. Our standard features should provide you with the tools to monitor and record your important production data.

The software was designed and written with you in mind. Operation is simple with the use of minimal buttons. No formulas must be calculated, and no switches must be set for operation. Everything needed to calibrate your scale is accomplished by our software and high-speed processor. You simply enter your calibration data, perform a couple simple steps and your scale is calibrated.

Sincerely,

Mark Humphreys

President, CEO, Founder

Weigh Shark Warranty

MCR TECHNOLOGIES GROUP, INC. manufactures the Weigh Shark Conveyor belt Scale and the Weigh Shark SI Dry Solids Impact Flow Meter.

MCR TECHNOLOGIES GROUP, INC. offers a 2 Year Limited Warranty on parts against defective workmanship and failure. MCR TECHNOLOGIES GROUP, INC. will replace any defective part within the 2 Years of Purchase Date by either sending the replacement part to the customer or sending a complete assembly to be exchanged with the defective assembly. MCR will pay Ground Freight expenses to the customer. It will be the responsibility of the customer to return their part to MCR TECHNOLOGIES GROUP, INC for testing.

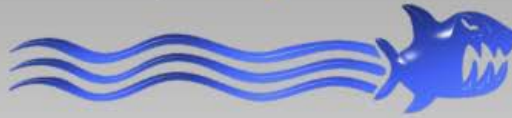
If MCR TECHNOLOGIES GROUP, INC. determines that the returned part or assembly is not covered under the warranty due to neglect, abuse or misapplication, the customer will be charged to repair or replace the damaged part or assembly. If the customer fails to return their part or assembly, MCR TECHNOLOGIES GROUP, INC. may charge the customer.



This is not a Legal for Trade Scale.

MCR Technologies Group, Inc.

Home of the *Weigh Shark*, not just another scale company!



Weigh Shark Belt Scales:



Dry Solid Impact Flow Meter: For Dry, Flowable Products.



EAB Metal Detectors (Analog): Protect equipment and prevent metal objects from damaging equipment.



CASSEL Metal Detectors (Digital): Protect equipment and prevent small metal objects from damaging equipment.



Magnets: Permanent and Electromagnet manual and self clean.



Kiepe: Monitoring Devices for Conveying Systems.



- ♦ 2-Year limited warranty on parts and labor against defective workmanship and failure
- ♦ Free call in technical support
- ♦ Nationwide Distributors

www.weighshark.com sales@weighshark.com 815-622-3181

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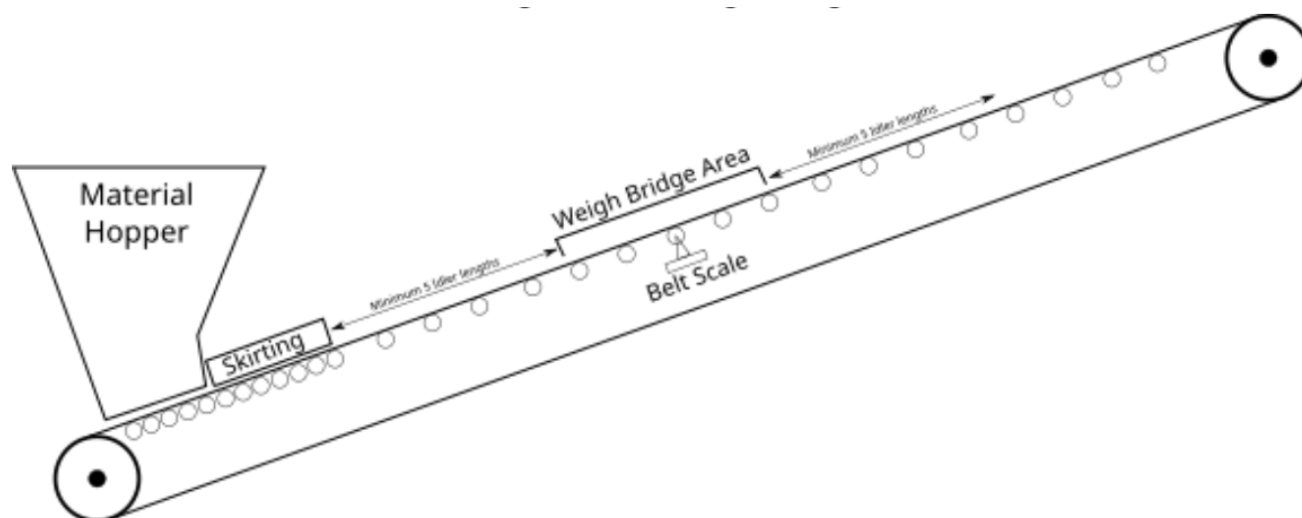
1.0 Mechanical Installation

1.1 Installation Location

NOTE: This is NOT a Legal for Trade Scale. If you have questions regarding accuracy, please contact MCR Technologies Group, Inc.

The location on the conveyor where the scale is installed is critical to accuracy and reliability of the scale. The following are guidelines that should be followed when considering the location. In some cases, the “ideal” location isn’t an option. Some compromises might be necessary. However, each compromise from the ideal location could lead to additional inaccuracies.

- For a single idler scale, the weighing bridge area is made up of 5 idlers, the scale idler, plus the 2 idlers before the scale idler, and 2 idlers after the scale idler. If it is a multi-idler scale the weight bridge would comprise the 2 idlers before, the number of scale idlers, and the 2 idlers after the scale idlers. For example, a 4 idler scale’s weigh bridge would consist of 8 idlers.
- The weigh bridge should start at least 5 idlers up from the drop zone and 5 idlers back from the head pulley.
- All of the idlers in the weigh bridge must be the same make, model, can size, and troughing angle. Scale duty idlers should be used. This is critical to the accuracy of the scale.
- There should be no skirting over the weigh bridge area.





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1.1 Installation Location Cont'd

- Straight conveyors are preferable to curved conveyors.
- Convex or concave conveyors can be used. In this case, the weigh bridge should be installed on a straight section **at least** 5 idler spaces away from the convex or concave. **The belt must be in full contact with all Weigh Bridge idlers when running empty.**
- If possible, the weigh bridge assembly should be installed in a location where it can be accessed for regular calibration, maintenance, and cleaning.
- Electrical power should be available nearby to power the integrator. The load cells and speed sensor are provided from the factory with 50' length of cable. The scale integrator (i.e. control box) should be able to be installed within approximately 40' of the weigh bridge. (Be sure to consider how much cable is needed to route the cable to the control box. Don't forget that at least one load cell is located on the opposite side of the conveyor.)

We recommend that you **DO NOT** extend the load cell cables unless it is absolutely necessary. If it is necessary to extend the cables the Weigh Shark Junction box or soldered connection **MUST** be used when extending the cable.



Before starting the installation, be sure the power to the conveyor is locked out and the conveyor is safe to work on.

1.2 Load Cell Installation

- Completely remove the idler that has been chosen for the scale installation.
- Using a torch or cutoff wheel, remove the idler mounting pad or mounting feet. (see photo below)
- Install both load cell assemblies so that the end with the cable is facing towards the direction of the pulley. (see photo below) The load cell assembly bolt holes should line up with the existing idler mounting holes in the conveyor frame.
- Bolt the load cell assembly tight to the conveyor frame.
- Carefully install the modified idler on top of the load cell assemblies.
- Align the idler so that it is square with the conveyor frame and centered on the load cell assemblies.
- Using the V-Blocks secure the idler to the load cell assemblies. The hole in the V-Block should be on the Head Pulley side of the idler.
- **The Maximum Torque for the V-block bolts is 5 ft/lbs.**
- The idler should be completely supported by the load cell assemblies. The idler should not be making any contact with the conveyor frame.

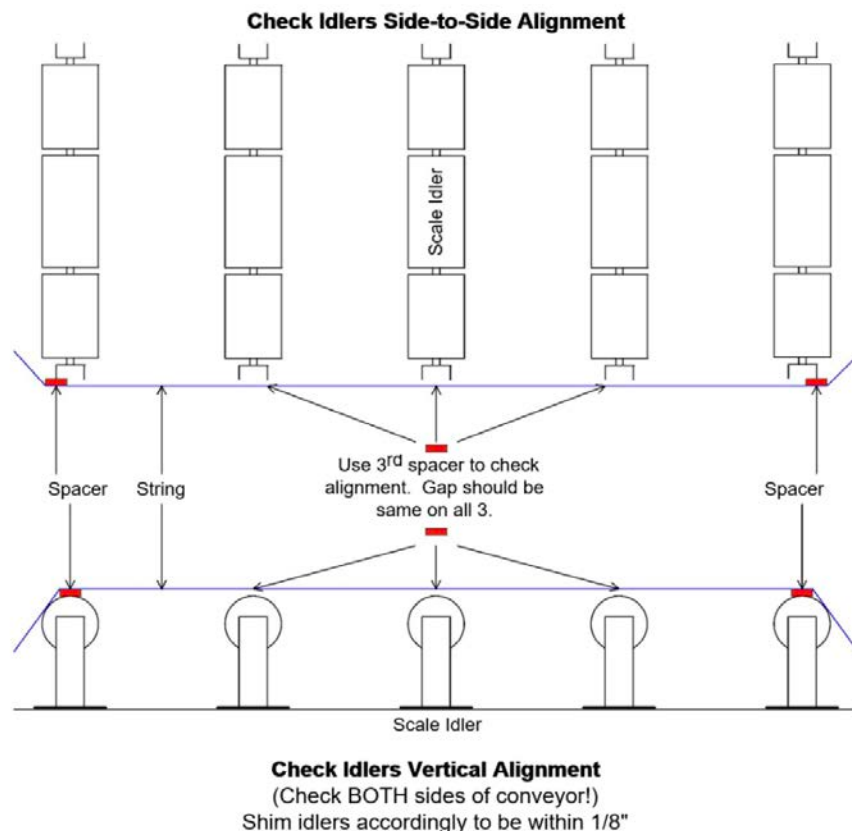




To avoid damage to the load cells, the scale idler *MUST* be removed if the conveyor is transported over the road.

1.3 Idler Alignment - DO NOT SKIP THIS STEP

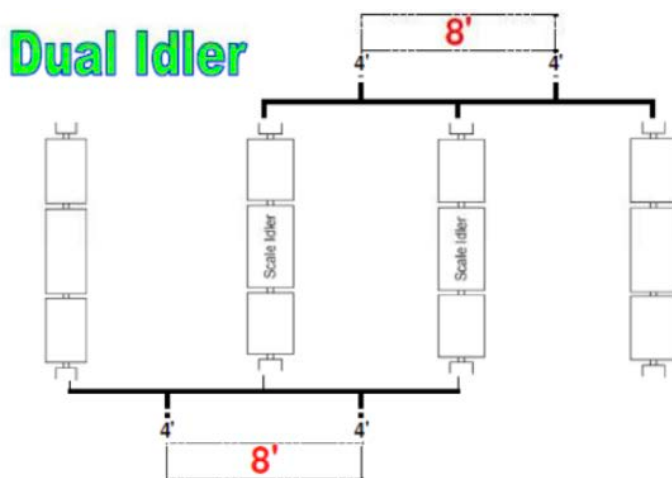
- Proper alignment is critical to proper scale operation. If this alignment procedure is not followed the scale will not be accurate.
- A string should be used to align the 5 idlers in the weigh bridge area. (The 2 before the scale idler, the scale idler, and the 2 after the scale idler.)
- The idlers should be aligned horizontally along the length frame of the conveyor.
- Both sides of the idler should be aligned vertically within $\pm 1/8"$.
- Spacers should be placed under the string to see the height of the idlers to each other. Two $1/2"$ bolts can be used as spacers. A third $1/2"$ bolt can be used as a gauge to check the gap under the string. Use the provided shims to align the idlers.



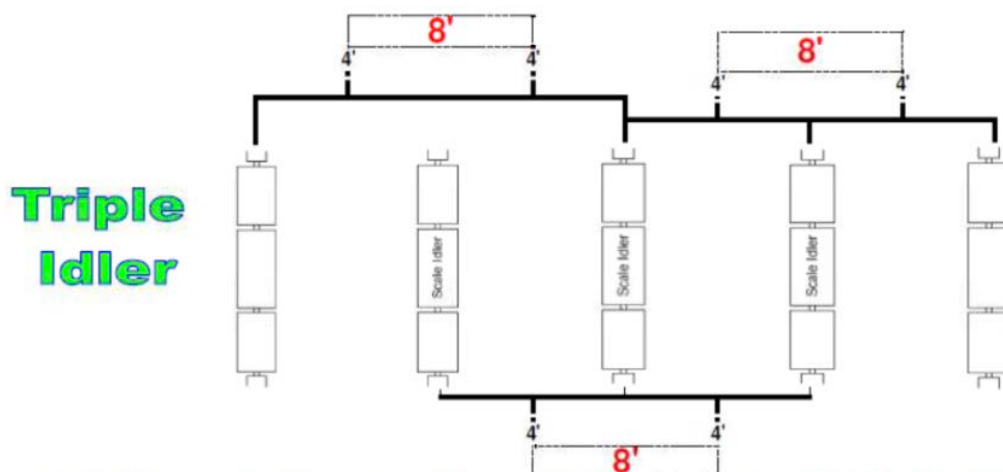


1.3 Idler Alignment Cont'd

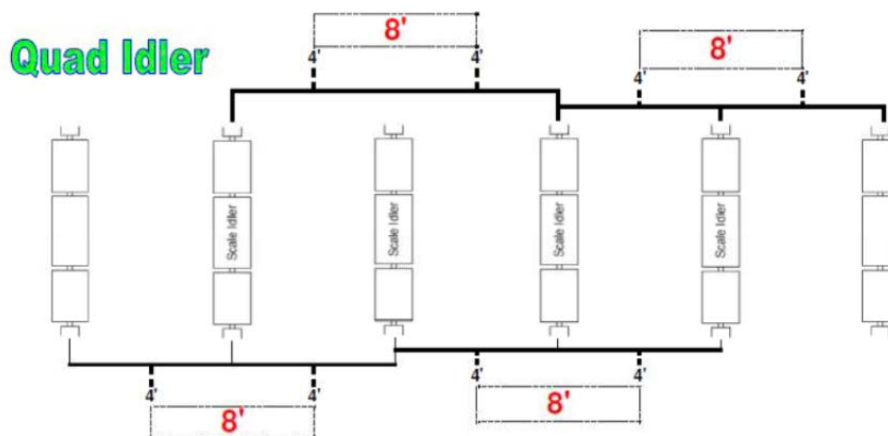
Dual Idler: A Multi Scale Idler with 1 extra idler would have a span of 16' ($8' + 8' = 16'$)



Triple Idler: A Multi Scale Idler with 2 extra idlers would have a span of 24' ($8' + 8' + 8' = 24'$)



Quad Idler: A Multi Scale Idler with 3 extra idlers would have a span of 32' ($8' + 8' + 8' + 8' = 32'$)





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1.4 Standard Speed Sensor Installation

- If a shaft mounted speed sensor is being used, please reference Section 4.7 of this manual for installation instructions.
- Select an idler for the speed sensor. It is helpful to use an idler closer to where the control box will be installed.
- **DO NOT MOUNT TO THE SCALE IDLER!**
- Using the tri-fold bolt provided, secure the speed sensor to the center of the idler.
- The speed sensor should be angled in the direction of the return belt travel so that it is being “dragged” with the belt. (See Photo)

NOTE: If the belt speed is less than 40fpm, please contact Weigh Shark for alternative speed sensor options.





1.5 Integrator Installation

- The integrator should be installed in a location away from vibration. **Mounting in a high vibration environment will void the warranty.**
- Avoid installing near Variable Frequency Drives (VFD) or any device that could emit large amounts of EMI/RFI. (2-way radios, CB's, vibratory feeder drivers)
- Do not mount the integrator in direct sunlight to avoid heat build-up.
- If the integrator is mounted in an area with large amounts of dust or debris it is advisable to install the integrator inside a large enclosure for protection.

1.6 Routing Wires

- The load cell and speed sensor cables should be routed along the conveyor frame and away from any area where the cables might be damaged from falling debris.
- **DO NOT ROUTE** any cables along high voltage power cables or near VFD's or cables running VFD power.
- We recommend that you **DO NOT** extend the load cell cables unless it is absolutely necessary. If it is necessary to extend the cables the Weigh Shark Junction box or soldered connection **MUST** be used when extending the cable. Use Belden 8723 or equivalent twisted shielded pair cable if it is necessary to extend the cable.

1.7 Electrical Wiring

- The load cell and speed sensor cables should be installed into the integrator through the 4-hole cable grip.
- The power cable should be routed through the single hole cord grip on the left side of the integrator.
- The AC power connects to the far-left terminal. The scale can be powered from a voltage between 85-264VAC. Optionally, the scale can be powered with 12-24Vdc. Do not power from both terminals at the same time.

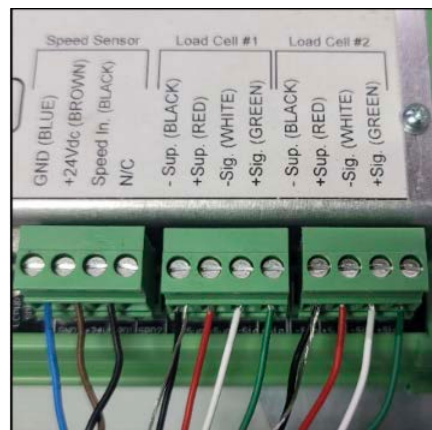


Weigh Shark 2® Belt Scale Installation and Calibration Manual

1.7 Electrical Wiring Cont'd



- The Speed Sensor and Load Cells are wired to the 3 terminals to the right. The color code is labeled on the terminals.



1.8 Multi - Idler Scale Wiring

- When wiring scales with more than 2 load cells a Weigh Shark junction box should be used to make wiring easier.
- The Weigh Shark integrator can support up to 8 load cells.



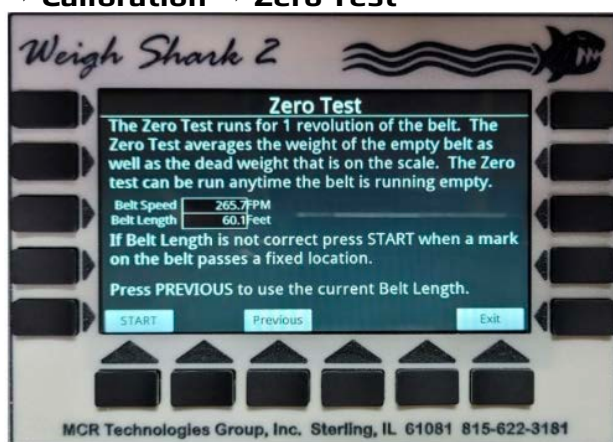
2.0 Calibration Overview

The Weigh Shark 2 integrator user interface can be navigated using either the hardware push buttons or the touchscreen. All critical functions can be accessed using the hardware push buttons. More detailed or less used functions rely on the touchscreen interface for navigation.

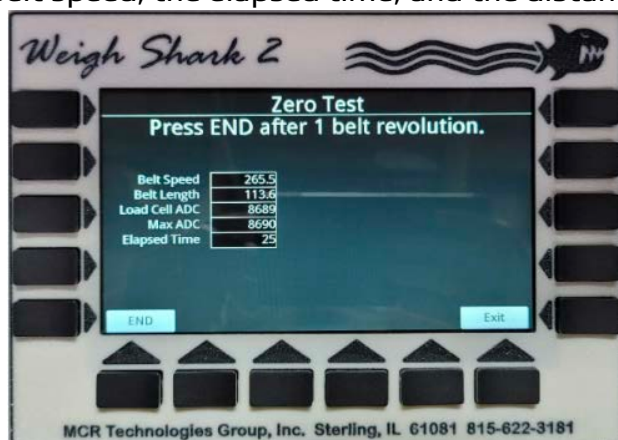
The calibration is divided into two steps, Zero Calibration, and Span Test.

2.1 Zero Calibration

- The Zero Calibration zeroes the dead weight of the idler and the belt.
- The Zero Test is run for 1 revolution of the belt running empty. Be sure the belt is completely empty and running at normal speed.
- To start go to **MENU → Calibration → Zero Test**



- Mark the belt with paint or use the belt splice as reference.
- When the mark or splice passes a fixed point on the conveyor, press **START** to begin the test. The screen will show the belt speed, the elapsed time, and the distance traveled.

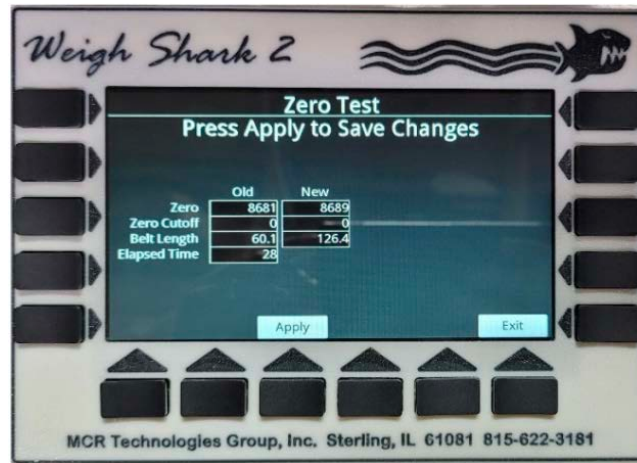




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2.1 Zero Calibration Cont'd

- When the mark or splice returns to the fixed point press **END**.
- The display will now show the Old and New values for the Zero Calibration.

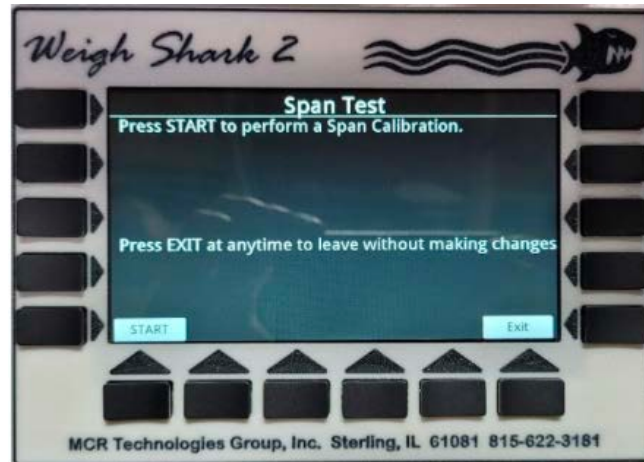


- Press **Apply** to accept the new values.
- The above steps established the new Zero value but also measured the length of the belt. When future Zero Tests are performed the Previous option can be used. Using the previous option, the test can be started without waiting for the mark or splice. The test will use the stored belt length and end the test automatically.
- A Zero Test should be run frequently. At the minimum it should be run weekly.
- Running a Zero Test daily is the best choice.



2.2 Span Calibration

- The Span Calibration establishes the calibration of the scale. The Span value is based on the idler span distance, load cells, and the number of load cells.
- To start the calibration go to **Menu → Calibration → Span Test**.



- Press **START** to begin the test.



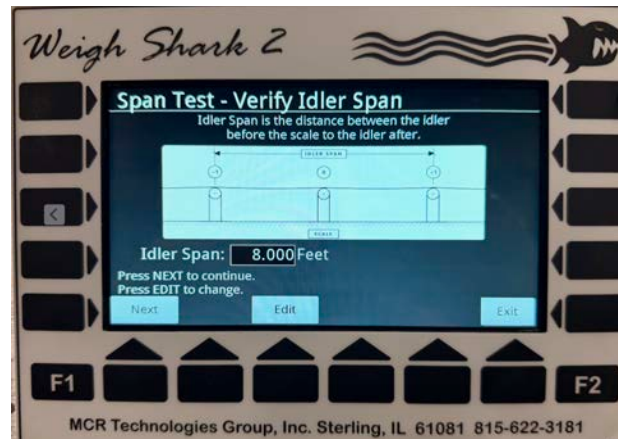
- Verify the Idler Span. The Idler Span for a single idler span is the distance between the idler before the scale to the idler after the scale.
- To change the Idler Span press **Edit** to go to the edit screen.
- When the edit screen is visible press the **Edit** button



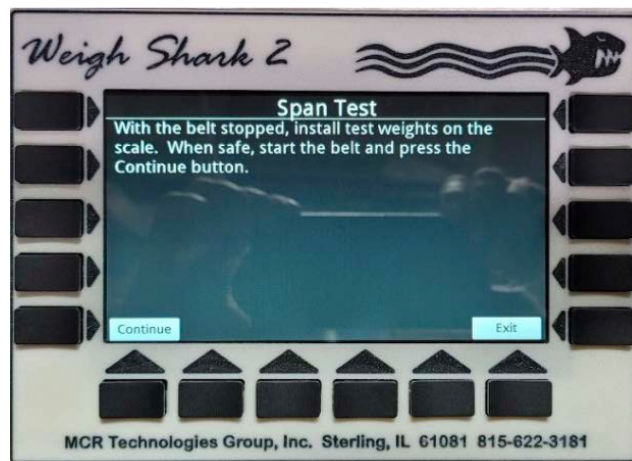
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2.2 Span Calibration Cont'd

- Use the < and > buttons to adjust the cursor position.
- Use the + and - buttons to adjust the value.
- Press **Apply** to accept the new value. Press **Exit** to cancel any changes.
- For multi-idler scale refer to the diagram xxx:
- If the Idler Span is correct, press **Next**.
- Verify the Test Weight value. The Test Weight value should be the exact amount of weight that will be put on the scale for the calibration. Any error in the Test Weight value will result in an inaccurate scale.



- Press **Next** to move to the next step.
- Following the instructions on the screen. With the belt stopped and in a safe condition, install the test weights on the scale.





2.2 Span Calibration Cont'd

- If using Weigh Shark test weights and bracket, the weight plates can be hung on the bracket at this time.



- If using a bar, slide the bar through the holes in the V-Blocks that hold the idler to the load cell assemblies. The weights can be hung from the bar.



- Once the weights are installed, start the belt.
- The recommended minimum test weight value is as follows:

Model:	150	250	500	HD
Weight:	72lbs	120lbs	168lbs	Contact MCR



Weigh Shark 2® Belt Scale Installation and Calibration Manual

2.2 Span Calibration Cont'd

- With the belt running press **Continue**.



- The test will run for 3 belt revolutions. When the test is complete, the screen will change and show the new Span Calibration value.



- Press **Apply** to accept the new Span value.
- The Span Calibration should be run 2 or 3 times to verify the Span calibration remains consistent. If there are large changes in the Span value from test to test, this may indicate an issue with the test or with the hardware installation.



2.3 Verifying the Calibration – Material Test/Truck Test

- The best way to verify the calibration is by doing a material test comparing the belt scale value with a legal for trade scale.
- Start by doing a Zero Calibration to verify that the dead weight is properly zeroed from the scale. See section 2.1 of this manual.
- Write down the value of the totalizer or clear the total to 0.
- Catch material into a truck or a container that can be weighed on a legal for trade scale
- Go to **Menu** → **Calibration** and take note of the Span value.
- Use the following formula to calculate a new Span value:

$$\text{New Span} = \frac{\text{Truck Scale Weight}}{\text{Belt Scale Weight}} \times \text{Old Span}$$

Example:

Belt Scale Weight: 6.35tons

Truck Scale Weight: 6.95tons

Old Span: 7135

$$\text{New Span: } 7809 = \frac{6.95\text{tons}}{6.35\text{tons}} \times 7135$$

- To update the Span value, go to **Menu** → **Calibration** → **Span**
- Press **Edit**.
- Use the < and > buttons to adjust the cursor position
- Use the + and - buttons to adjust the value.
- Press **Apply** to accept the new value.

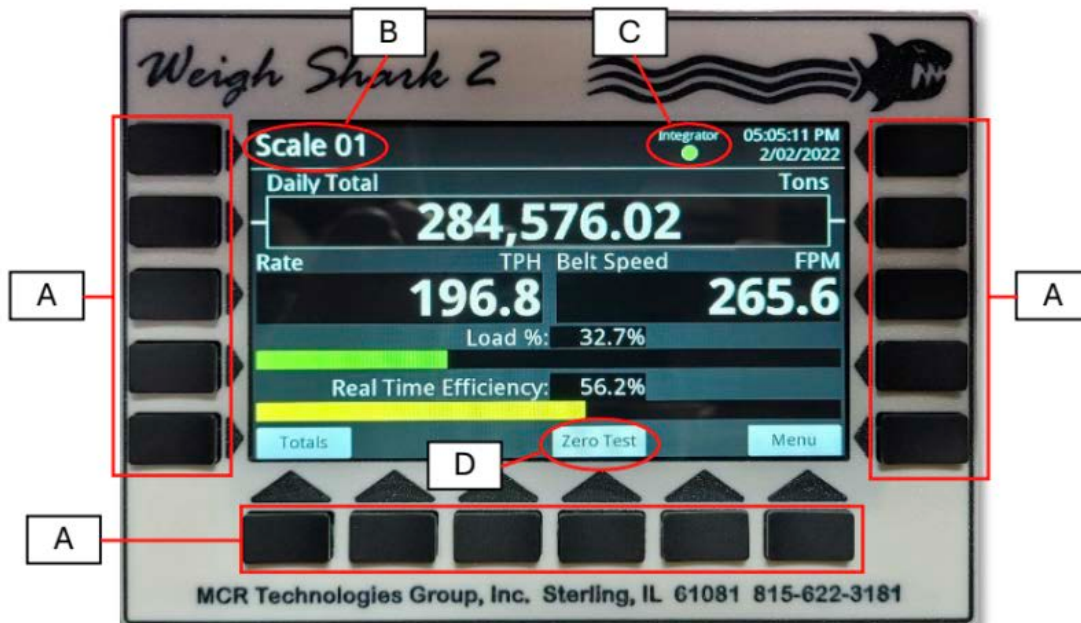


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3.0 Integrator Settings

3.1 Overview

- Main View Screen



A	Hardware Buttons
B	Scale Name
C	Integrator Connection Status
D	Quick Zero Test button

- The *Weigh Shark 2* integrator user interface can be navigated using either the hardware buttons (A) or the touch screen. All major day-to-day functions can be carried out using the hardware buttons.



3.2 Totalizers

- There are 12 totalizers available in the integrator. The list of totalizers can be found by pressing the **Totals** button, or the hardware buttons to the left or below.



- Click on the Total name or the hardware button across from the total you would like to view.



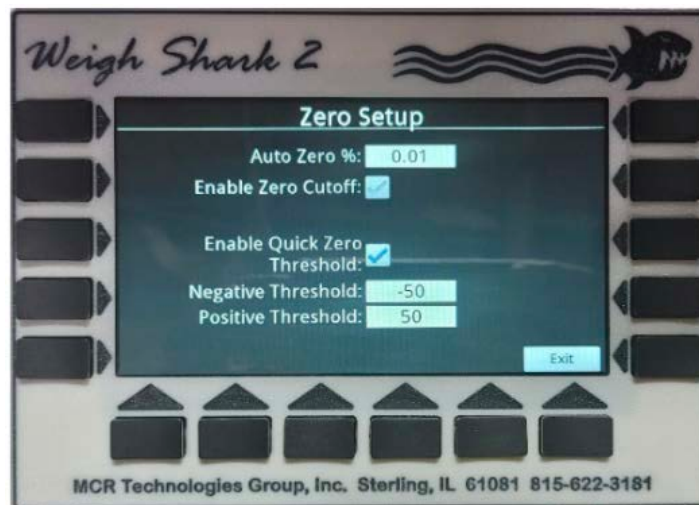
- To clear the total press the button or the hardware buttons next to the screen.
- If a printer is enabled, the button will be visible. Pressing will print a ticket for that total.
- The **QR Code** button will generate a QR Code with the total information that can be read with the camera on an android device, or an iPhone using a QR code scanner app.



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3.3 Quick Zero Test

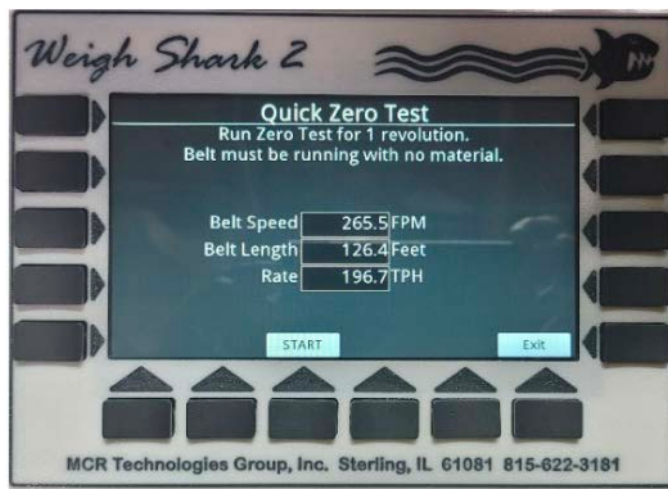
- The Quick Zero Test function is designed to allow the user to quickly perform a Zero Test with minimal number of button presses.
- Before the Quick Zero Test can be performed it will verify that the belt is running.
- If Quick Zero Threshold is enabled, it will only run the Quick Zero Test if the Rate is within the threshold values.
- To enable the Threshold, go to **Menu** → **Scale SetUp** → **Zero SetUp** and select **Enable Quick Zero Threshold** check box. The Threshold values can then be set by click on the value boxes.



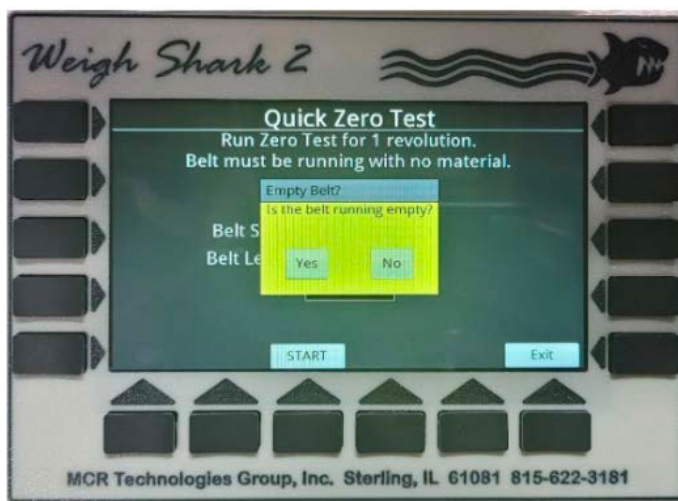


3.3 Quick Zero Test Cont'd

- To start the Quick Zero test, press the **Zero Test** button on the Main Screen. This will show the overview screen showing the belt speed, belt length, and rate.



- Press **START** to start the test or **Exit** to cancel the test.
- The test will verify that the belt is running empty. If the belt is running empty, press **Yes**.



- If the Quick Zero Test Threshold is enabled, and the Rate is outside the threshold values the test will cancel with an error screen.

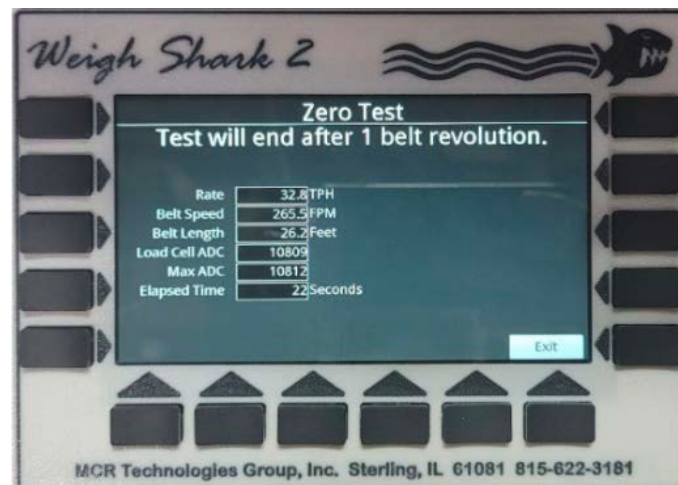


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3.3 Quick Zero Test Cont'd



- If the belt is running and the rate is within the threshold values, the test will run.



- After 1 revolution of the belt the test will end, and the screen will change. Press **Apply** to accept the new values, or press **Exit** to leave without making any changes.



3.4 Calibration Menu

Zero test	This will start the Zero Test function. For more details about the Zero Test see Section 2.1 of this manual.
Zero	This is the current Zero value. Pressing the Zero:##### button, or the hardware button to the left will go to the Zero edit screen.
Span	This is the current Span value. Pressing the Span: ##### button, or the hardware button to the right will go to the Span edit screen.
Idler Span	The distance from the idler before the scale to the idler after the scale. This value should be within $\pm \frac{1}{4}$ ".
Belt Length	the length of the belt. This value is set during the initial Zero Test. See Section 2.1 Zero Calibration for more information.
Zero Cutoff	If Enable Zero Cutoff is enabled in Menu → Scale Setup → Zero Setup this will show a value greater than 0. The Zero Cutoff value is set during the Zero Test function. For more information about the Zero Cutoff see section.
Angle	If an Angle Sensor is installed this will show the current angle. See section 4.3 Angle Sensor .
Summary	The Calibration Summary screen shows all the calibration values.



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3.4 Calibration Menu Cont'd

Additional Information:

- The Span value is set during the Span Test. The Span value is a value used to adjust the calibration of the scale to match the scale to a known weight. The Span value is unique based on the size of the load cells, number of load cells, angle of the conveyor, and the Idler Span. If none of those items have changed there should be very little change in the Span value from test to test. Raising the Span value will cause the scale to read heavier. Lowering the Span value will cause the scale to read less. The Span value can be adjusted to match a truck scale by doing a materials test. See section **2.3 Verifying the Calibration** located on page

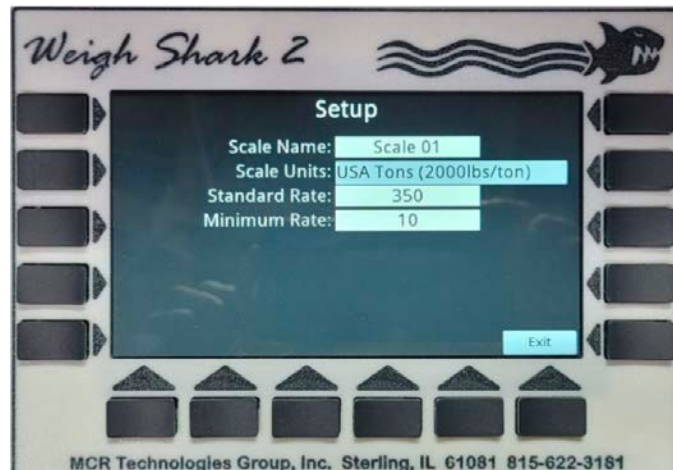


- The QR Code button will generate a QR Code that can be read by Android devices, or with an Apple device via a QR code scanning app.



3.5 Scale Setup

- Setup Menu



Scale Name	The name of the scale on the main display, as well as the Remote Display.
Scale Units	The units of measure for the scale.
Standard Rate	The Standard Rate is used for Real Time Efficiency calculations.
Minimum Rate	When the Rate is running above the Minimum Rate the scale starts the Run Time timer.

- Speed Setup



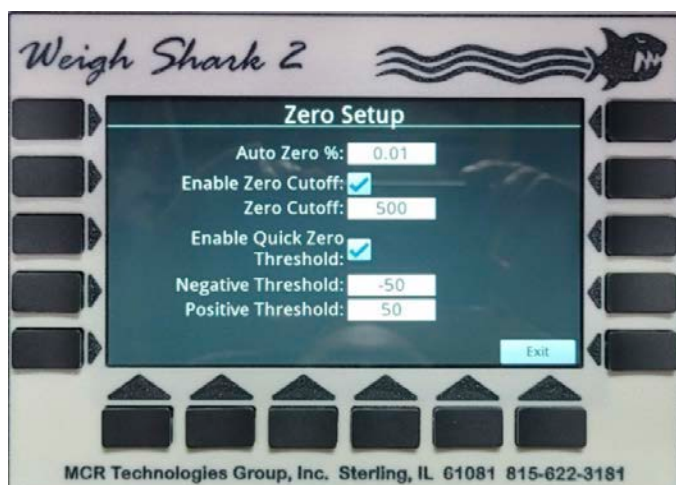
Pulley Diameter	Set the diameter of the wheel or pulley that is driving the speed sensor. Default: 7.471"
Pulse per Revolution	Sets the pulses per revolution of the speed sensor. Default: 53
Enable Auto Speed	See section 4.7 Auto Speed for details.



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3.5 Scale Setup Cont'd

- Zero Setup



Auto Zero %	If the Load Cell signal is within .01% of the Zero value, the Auto Zero function will be active.
Enable Zero Cutoff	Check box to enable Zero Cutoff. For more information see section 4.1 Zero Cutoff .
Zero Cutoff Adder	The Zero Cutoff Adder value is added to the Load Cell AD value of the heaviest section of belt, which becomes the Zero Cutoff value.

- Load Cell Input – see section 4.8 Load Cell Input for more information.

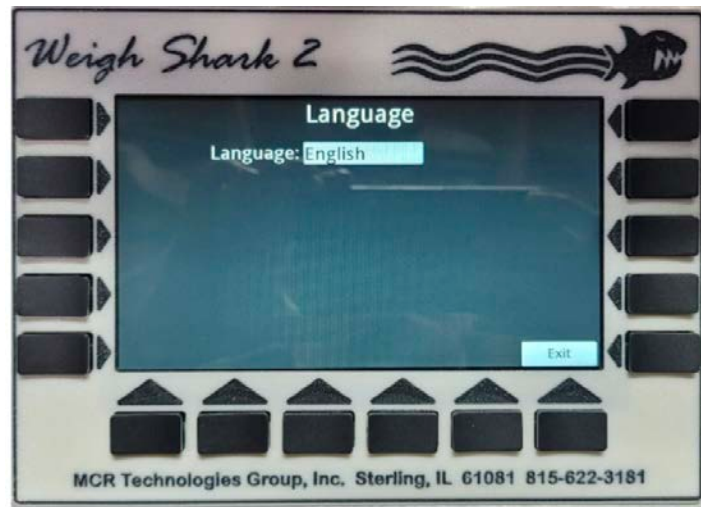
3.6 I/O Settings

- Analog Output
- Digital Inputs
- Digital Outputs
- Serial Ports
- Serial Sign
- Ticket Printer Setup



3.7 Display Setup

- Language



- Select the Language from the drop-down menu.
- Press **Exit** to leave.

- **Date/Time Setup**



- Click on the number for the hour, minute, sec or month, day, year.
- Use the **Up** and **Down** buttons to scroll through the Time Zones.
- Click on the Time Zone of the area the scale is located in.
- Click the check box to enable Daylight Savings time.



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3.7 Display Setup Cont'd

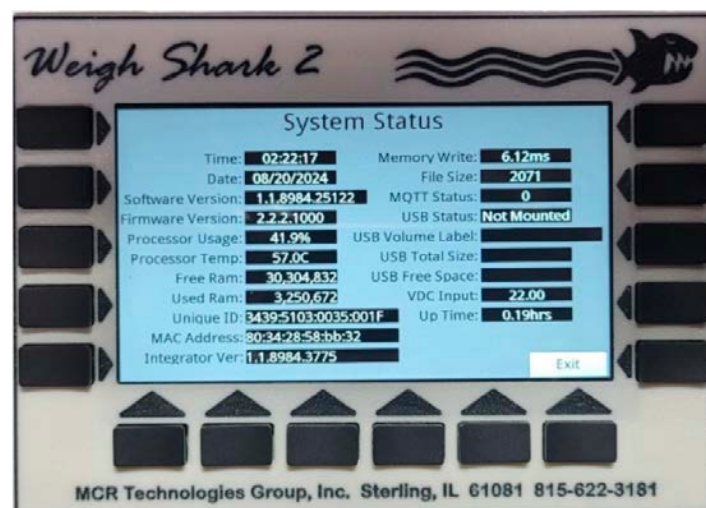
- **Screen Settings**



- Click on the **Brightness** slider to set the brightness of the screen backlight.
- Click the **Enable Screen Saver** check box to enable the screen saver.
- **Wait Minutes** is the number of minutes to elapse before the screen backlight switches to the Screen Saver Brightness level.
- Use the **Screen Saver Brightness** slider to set the brightness of the screen saver.

- **Status**

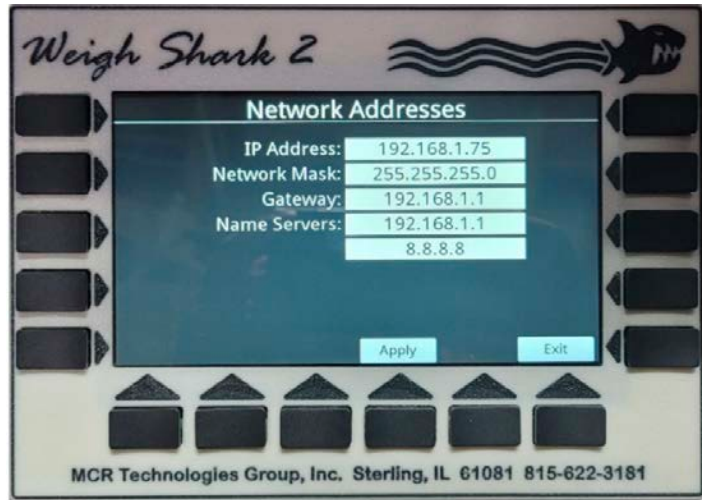
- The status screen shows details regarding the scale.





3.8 Network

- Addressing



- Click on the address to edit. The edit screen will appear.



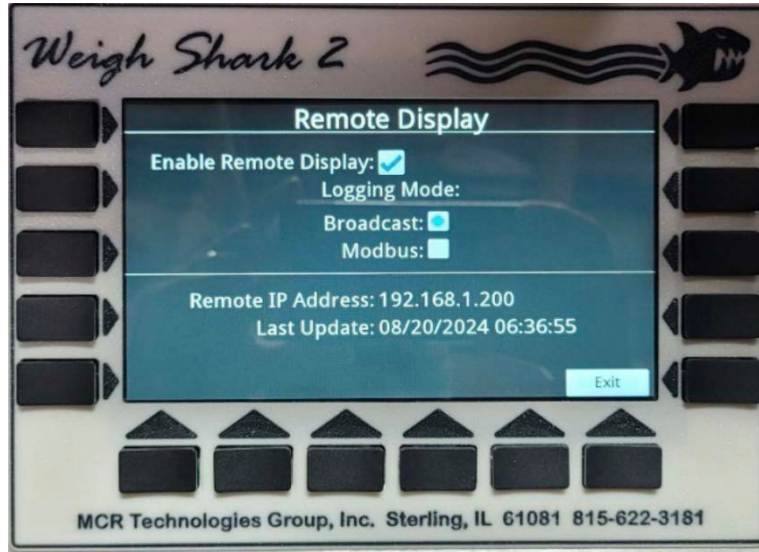
- Enter the new address value, then click **Apply** . Click **Cancel** to exit without making changes.
- After the edits are made, click **Apply** to save the new settings



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3.8 Network Cont'd

- Remote Display

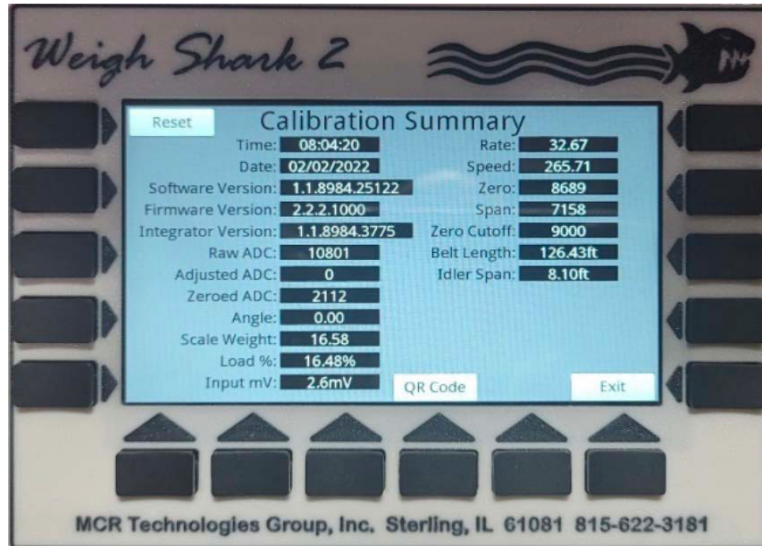


- Click the **Enable Remote Display** check box to enable communication with a Remote Display.
- As a default when using a standard Remote Display 3 the **Logging Mode** should be **Broadcast** If using a Single Scale Cellular.
- **Gateway Logging Mode** should be set to **Modbus**.

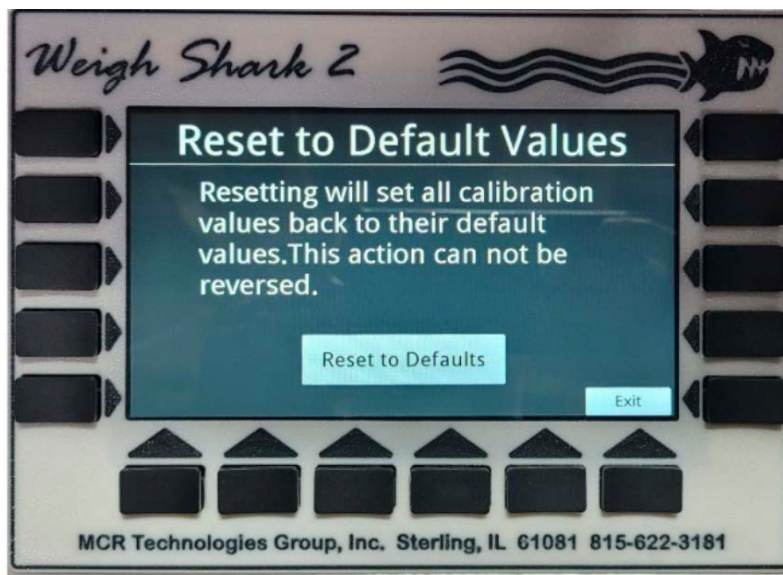


3.9 Reset Integrator to Default settings

- Resetting the Integrator to defaults will reset all the calibration data and will clear all the totals to zero.
- To reset to default values, go to **Menu** → **Calibration** → **Summary**.



- Press the **Reset** button on the top left of the screen.
- The Reset to Default Values screen will be displayed.



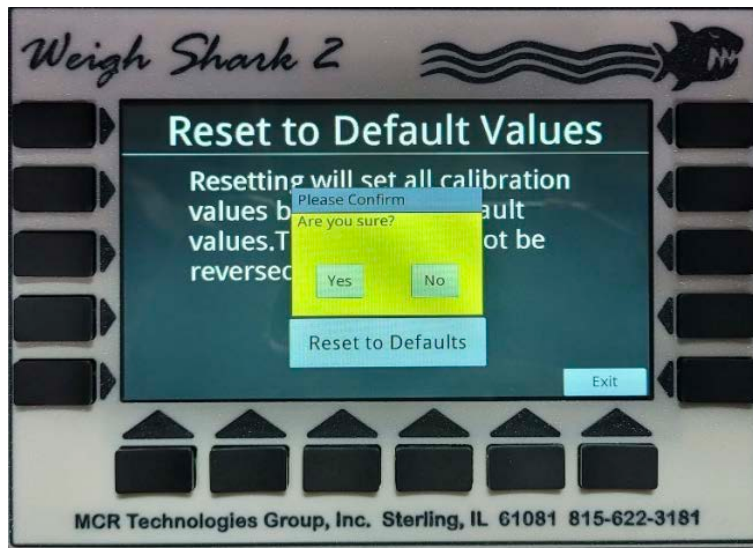
- Press the **Reset to Defaults** button.



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3.9 Reset Integrator to Default settings Cont'd

- Confirm that you are sure you want to reset the scale to defaults. Click **Yes** to reset the scale. Press **No** to cancel.



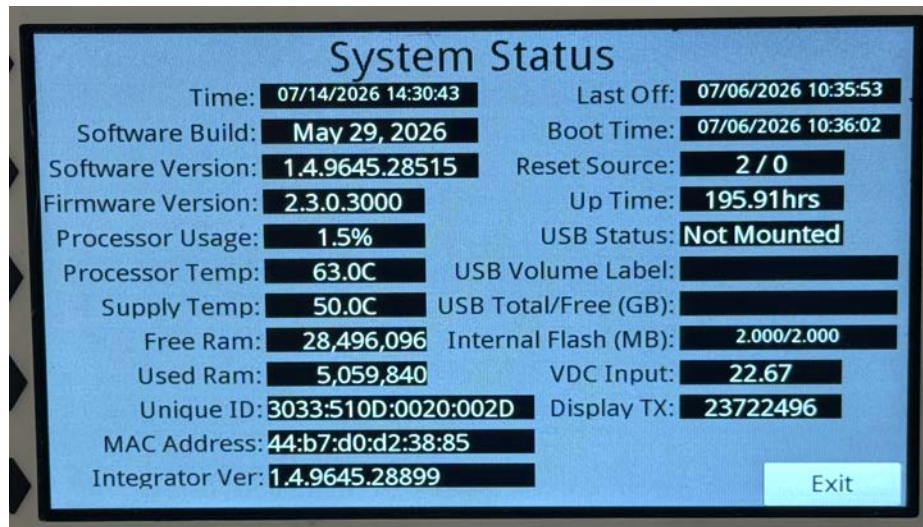
- After a few seconds the scale will reboot.

3.10 Update Software

- **Updating the Display Software**
 - The update files can be requested from MCR Technologies.
 - Copy all the files in the "USBFiles" directory to a blank USB stick.
 - Go to Menu Display Setup Status and take note of the **Software Version** and the **Scale Software** values. These should change after the update.
 - Insert the USB drive into the back of the display.
 - After a few seconds USB Status should change to **Mounted** and an **Update Software** button should appear in the top left corner.



3.10 Update Software Cont'd - Display



- Press the **Update Software** Button
- The **Software Update** screen should show the current and new version info.



- Press the **Update Display Software** button at the center left of the screen.

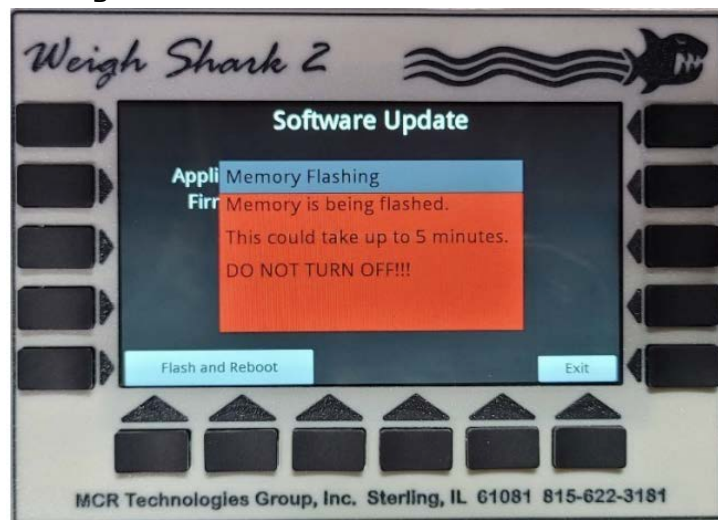


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3.10 Update Software Cont'd - Display



- The files should start to validate.
- Once the yellow box goes away, press the **Flash and Reboot** button. **Do not power off during this step** or you can brick the display. On the back of the display, you should see the Red LED flash showing that it is doing something.



- Once the display update is completed it should reboot itself.
- Check the **Menu** → **Display** → **Setup Status** screen to see if the **Software Version** has changed.
- Press the Software Update button.



3.10 Update Software - Integrator

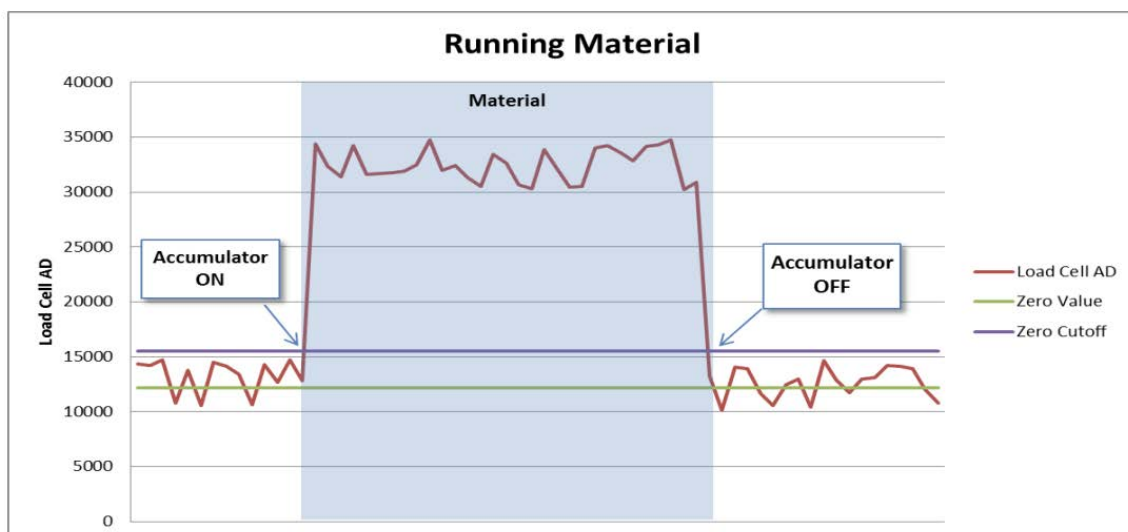
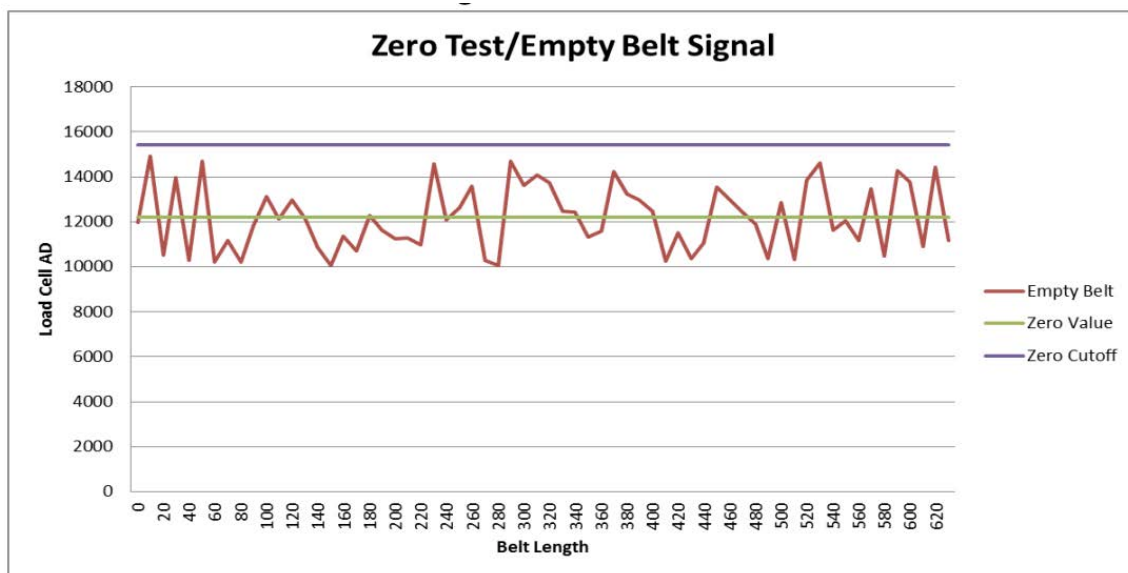
- **Updating integrator Software**
 - Power Off the scale.
 - Wait 10 seconds.
 - Insert the USB drive into the integrator USB.
 - Power ON the Scale
 - Within a few seconds you should see the Red and Blue LEDs flashing. This indicates that the software is being updated. The update should take up to 60 seconds.
 - Once the flashing is done the module will reboot and the LEDs will show their normal status
 - **Menu → Display → Setup Status** screen will show the new scale software version information.



4.0 Integrator Functions

4.1 Zero Cutoff

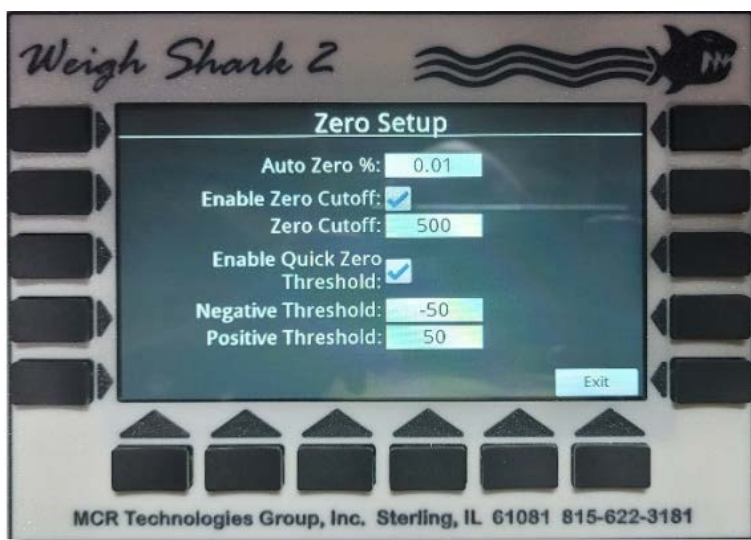
- The Zero Cutoff (ZC) is designed to keep the Rate display at 0.00 TPH when the belt is running empty. The ZC value controls when the accumulator is turned ON and OFF. When the Load Cell AD is below the ZC value the accumulator is OFF. When the Load Cell AD value is above the ZC value the accumulator is turned ON. The status of the accumulator is indicated by a '*' in front of the Rate value on the Main View screen. If the '*' is showing the accumulator is OFF.





4.1 Zero Cutoff Cont'd

- Zero Cutoff can be enabled in the **Menu** → **Scale Setup** → **Zero Setup** menu. To enable Zero Cutoff, check the box next to **Enable Zero Cutoff**.



- Zero Cutoff Adder Value: When the Zero Test function is run, the heaviest portion of the belt is measured. The Zero Cutoff Adder value is added to the Load Cell AD value of the heaviest section of the belt, which becomes the Zero Cutoff value.

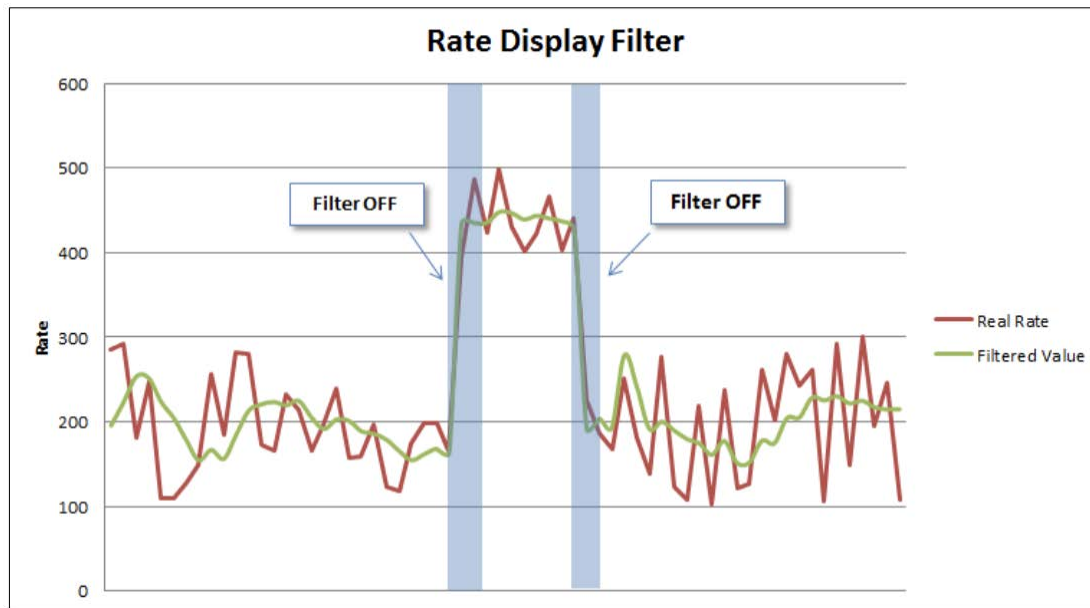
4.2 Rate Filter

- The Rate Display Filter allows the display of the Rate number on the main view screen to be filtered so that it has slower transitions and is easier to read. The filter has various settings that control how much smoothing there is and when the filter resets to allow quick transitions to be seen when the rate changes quickly. If the rate changes by more than the Filter Threshold value, the filter turns OFF to allow the rate value to change to the new value. After the Filter Delay time expires the filter turns back ON. When the '~' is visible by the Rate display the Filter is turned OFF.



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4.2 Rate Filter Cont'd



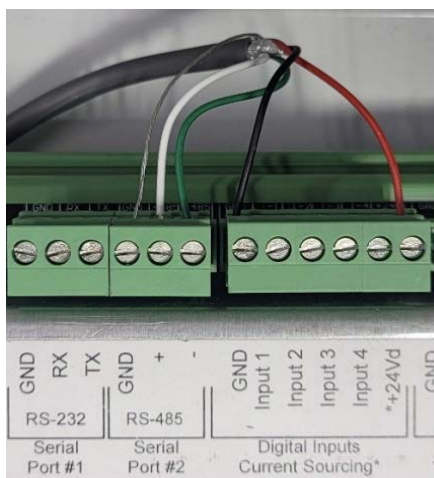
- All the settings that affect the Filter are found in **Menu** → **Scale Setup** → **Filter Setup**.

Filter Value	The higher the value the more filtering there will be and the smoother the display will read.
Filter Threshold	The amount the Rate must change for the Filter to turn OFF.
Filter Delay	The amount of time (in milliseconds) that the filter will be OFF after it exceeds the Filter Threshold.



4.3 Angle Sensor

- An Automatic Angle Compensator option is used if you have a stacker conveyor that elevation changes or moves side to side. The Automatic Angle Compensator is bolted to your conveyor frame. It measures the angle incline changes. The scale automatically adjusts for the angle change and the scale remains in calibration.
- **Installation**
 - Bolt the Angle Sensor to the side of the conveyor. Either side is fine.
 - Route the wires to the Integrator. Avoid routing cabling along high voltage wiring. The wires should not be routed where material could fall on the wire or build up.
- **Wiring**
 - By default, the Angle Sensor should be wired to Serial Port #2 / RS 485.



- **Setup**
 - To enable, go to Menu → **I/O Settings** → **Serial Ports** → **Port 2 RS-485**.
 - Click on the Function drop down and select Angle Sensor.
 - Click **Exit**.

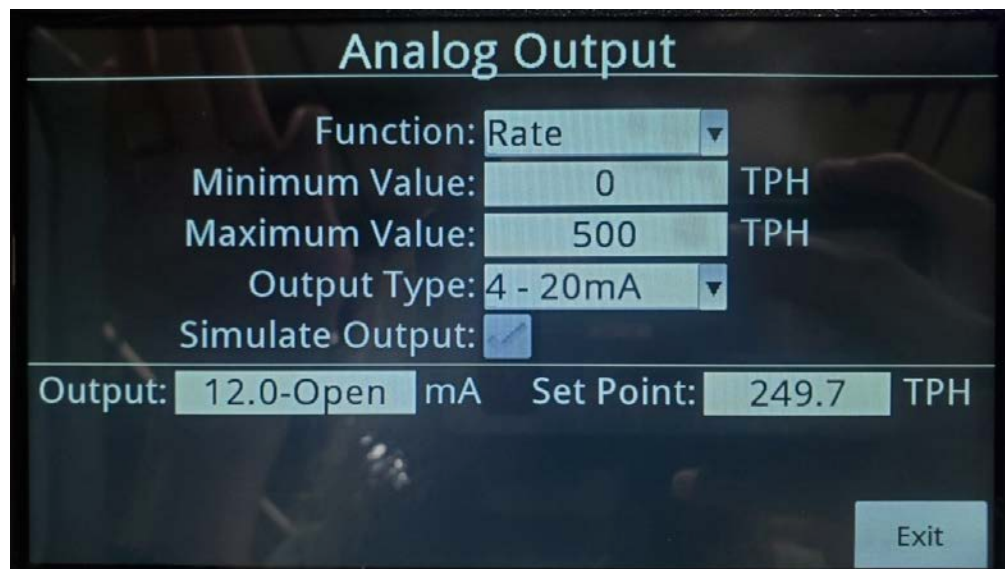


4.4 Turning on Angle Compensator

- Wire in as per diagram
- From the main screen, select **Menu** → **I/O Settings** → **Serial Ports** → **Port 2 RS-485**.
- Click on the Function drop down and select Angle Compensator.
- Exit back to the main screen.
- To verify that the AAC is working, view your angle from the calibration screen. The number must be any number other than 0.0.

4.5 Analog Output Function

- To locate select **Menu** → **I/O Settings** → **Analog Output**
- **Function Options** Rate, Belt Speed, Load % Total 1, Total 2, Total 3, Total 4, MODBUS



4.6 Digital Output Function

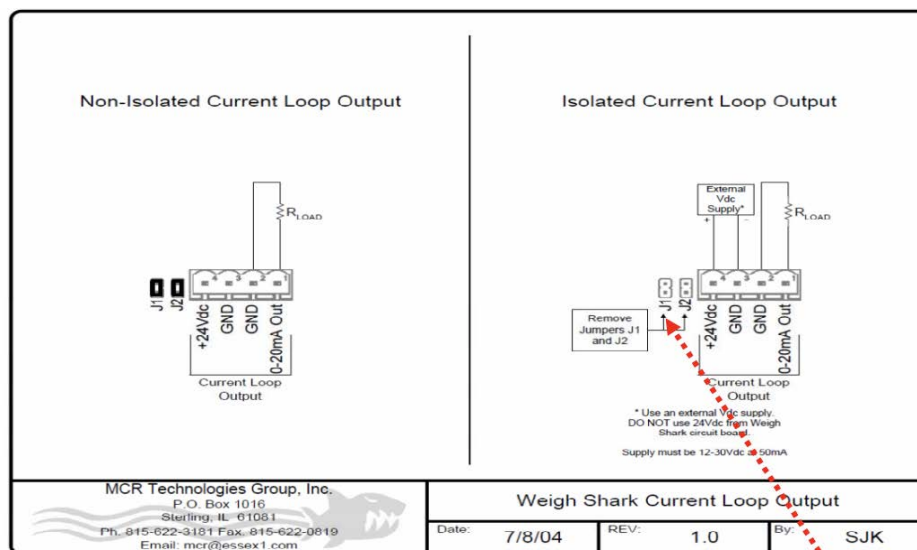
- **Menu** → **I/O Settings** → **Digital Outputs**
- **Select From** Pulse Per Ton, Pulse Per Tenth, Pulse Per Hundredth, Accumulation Direction, Rate Set Point, Total Set Point, Speed Set Point, MODBUS.



4.7 Digital Input Function

- **Menu → I/O Settings → Digital Inputs**
- Select From: Clear Total, Print Ticket
- When you have selected your desired functions; press the arrow under APPLY or EXIT to leave without saving the changes.

4.8 Isolating Current Loop Output



To Isolate Current Loop Output Remove Jumpers J1 & J2

Current Loop Examples

Output current Rate (TPH)

Desired output: 500tph = 20mA 10tph = 4mA

Set the following:

Function: **Rate**

Direction: **Forward**

Minimum: 10 TPH

Maximum: 500 TPH

Range: **4 to 20mA**

Output current Belt Speed (fpm)

Desired output: 250fpm = 0mA 0fpm = 20mA

Set the following:

Function: **Belt Speed**

Direction: **Reverse**

Minimum: 0 fpm

Maximum: 250 fpm

Range: **0 to 20mA**

Output current Total 4

Desired output: 10,000tons = 20mA 0tph = 0mA

Set the following:

Function: **Total 4**

Direction: **Forward**

Minimum: 0 tons

Maximum: 10000 tons

Range: **0 to 20mA**



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4.9 Auto Speed and Input Setting

- **Menu → Scale Setup → Speed Setup**
- Enable Auto Speed, Use this feature to use the Auto Speed Function if your speed sensor is damaged or fails to temporarily allow the belt scale to function while you repair, or replace your speed sensor.
- Enter in your actual Speed Set Point value.
- **WARNING: If you stop your belt with material on the belt we will continue to accumulate weight.**
- Mag Encoder (use this feature to enter in your pulley diameter and the pulse per revolution of the Magnetic Encoder if you are not using our standard speed sensor.
- Enter in pulley diameter
- Enter in the pulses per revolution of the encoder. This value is listed on the Encoder. (Most encoders are 80 pulses per revolution.)

The screenshot shows the 'Speed Setup' menu with the following settings:

Setting	Value	Unit
Pulley Diameter:	7.471	Inches
Pulses Per Revolution:	53	
Enable Auto Speed:	☒	
Speed Set Point:	325.00	FPM
Require Input:	☒	
Use Load Percent:	☒	
On Delay:	5	Seconds
Off Delay:	5	Seconds

An 'Exit' button is located at the bottom right of the screen.



4.10 Changing from Belt Driven to 80 or 400 Pulse Magnetic Encoder or Shaft Mounted Encoder

- After installing the Encoder you will need to go to the **Control Box**.
- Press **Menu Scale Setup Speed Setup**.
- Adjust pulsed per revolution to 80 or 400 depending on the Mag Encoder's PPR.
- Adjust **Pulley Diameter** to size of the pulley that the Mag Encoder is attached to.

Note: You must recalibrate the scale, performing both the Zero and the Span Test.

4.11 Light Load Application

The screenshot shows the 'Load Cell Input Setup' screen with the following settings:

Parameter	Value	-	+
Digital Gain:	10		
PGA Gain:	16		
Samples Per Second:	480		
Offset:	0.0mV		

mV values are approximate

Load Cell ADC:	6830	Min mVDC Input:	0.0mV
Input mVDC:	1.63mV	Max mVDC Input:	15.6mV

Buttons: Defaults, Exit

- **Menu → Scale Setup → Load Cell Input.**
- To increase your load cell %, you will increase your Digital Gain.
- This is done after the scale has been calibrated using weights or doing a material test.
- With a gain of 10 (default) you are at 100%.
- For every increment of 5, you will increase your load by 50%.
- With a Load % of 10 Increasing the Digital Gain from 10 to 15 will give you a Load% of 15%.
- Increasing the Digital Gain again to 20 will give you a Load % of 20.
- Make this change with the belt running fully loaded so you know where you want to set your digital gain.
- You can find your LOAD % on your view screen underneath Rate & Belt Speed.
- **WE WANT 70% LOAD CELL COMPASITY WHEN LOADED.**
- **SCALE WILL NEED RECALIBRATED AFTER DIGITAL GAIN IS CHANGED.**