Operator Manual

FB2558 Series Instrument
In/Out Application
Network Application

51415
Rev. 5 03/19

AMENDMENT RECORD

FB2558 Series Instrument
Document 51415

Manufactured by **Fairbanks Scales Inc**.
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Created	08/2017	
Revision 1	08/2017	Released document
Revision 2	10/2017	Updated trademark information and Specifications
Revision 3	03/2018	Updated Weighing Operations > Inbound/Outbound Weighing
Revision 4	05/2018	Added note regarding Sleep Mode; Removed discontinued parts 31282 and 31283
Revision 5	03/2019	Updated Specifications; Formatting

Disclaimer

Every effort has been made to provide complete and accurate information in this manual. However, although this manual may include a specifically identified warranty notice for the product, Fairbanks Scales makes no representations or warranties with respect to the contents of this manual, and reserves the right to make changes to this manual without notice when and as improvements are made.

It is the responsibility of the requesting party to develop, maintain, install, and connect networking devices and general network connectivity as it applies to the originating party's network. No warranty or guarantee, expressed or implied, concerning the network, its design, its installation, or operational characteristics has been offered by Fairbanks Scales. Fairbanks Scales shall not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether or not based on express or implied warranty, contract, negligence, or strict liability arising in connection with the design, development, installation, or use of an intended network.

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Table of Contents

Section 1: General Information

1.1. Introduction

The **FB2558** is a modular designed Instrument, configurable and upgradable using **Printed Circuit Modules.**

- Each module provides a specific scale or I/O functionality to the weighing system.

- The FB2558 Instrument has four enclosure styles.
  - **DESKTOP**
  - **PANEL MOUNT**
  - **RACK MOUNT**
  - **NEMA 4 MODEL**

- A seven-inch (7") color graphic display with touchscreen operation and easy-to-understand prompts.
- The FB2558 Instrument is designed to function with **Intalogix® Technology,** Analog Load Cells, or Mettler Toledo DigiTol® Load Cells.
- An integrated e-mail client is configurable to alert a service organization or individual of a problem prior to total failure.
  - These error notifications include such warnings as load cell failure, and calibration changes.
  - Several other notifications are available inform the proper individuals of the scale's operating condition. This system uses the customer's existing email infrastructures.
  - Requires a connection to the customer's PC Network.
- The Instrument provides many connectivity and data acquisition capabilities with the following protocol types.
  - **RS232**
  - **RS422 SERIAL PORTS**
  - **USB**
  - **PCI 10/100 MBS ETHERNET INTERFACE**

The Desktop FB2558 Instrument has three (3) fully programmable RS-232 DB9 Serial COM Ports, three (3) USB Ports, a HDMI Port and an Ethernet Port.

1.1.1. FB2558 Standard Features

- **7” full-color display**
- **Ethernet**
- **SQL database**
- **Touch screen operation**
- **Integrated web server**
- **Multiple/ Expandable serial ports**
- **Built-in reporting functions**
- **IP camera interface with onscreen image**
- **Stainless steel construction**

1.1.2. Internal Instrument Components

- **Single Board Computer (SBC)**
- **Flash Module**
- **Multi-Function Board**
- **Expansion Board**
- **Power Supply**
- **7” Display, WVGA LED**
- **Expansion Modules**

NOTE: *Any combination of up to **seven (7) Interface Modules** can be installed. This number could be less, depending on the module kit type.*

1.1.3. Two Interface Types

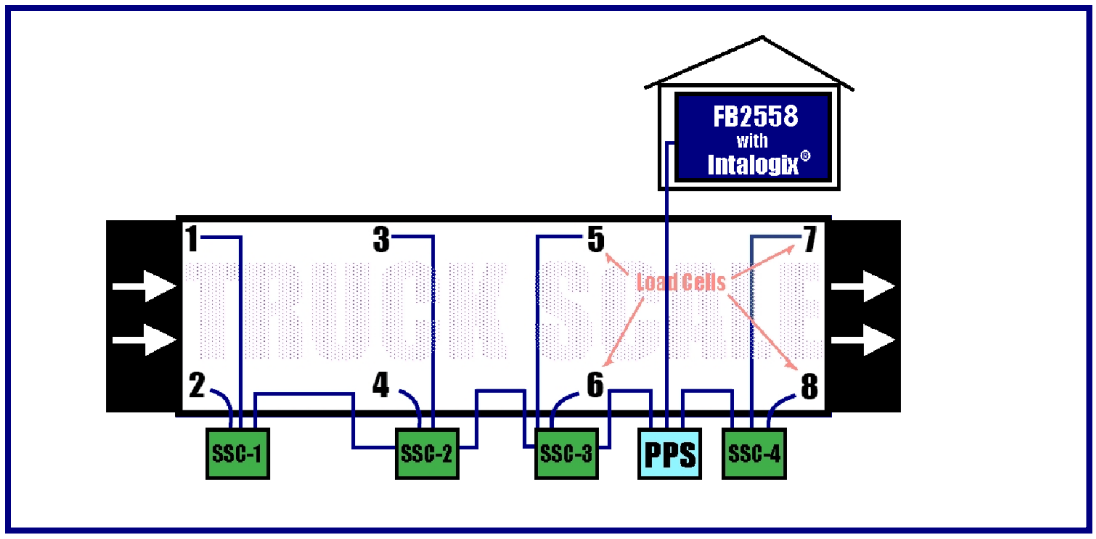
The **FB2558** interfaces to a single scale using one of two different types of technology hardware interfaces.

- **Intalogix® Technology**
- **Analog Technology**

1.1.4. External Scale Components

PART NO.	DESCRIPTION	MAX PER INSTRUMENT
33476	External Intalogix® Interface	7
31281	Dual External Intalogix® Interface	7
31284	External QMB Interface	7

1.1.5. Scale Components



When facing the scale, **Load Cell No. 1** *is located on the far-left.*

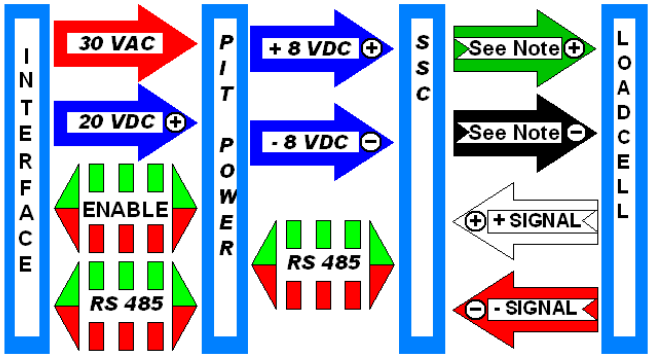
1.2. Specifications

Enclosure	Desktop (**35138**), Panel Mount (**35249**), Rack Mount (**35251**), NEMA 4 (**35243**)
BIOS	Award™ Software
Memory	2 GB RAM
Data Storage	8 GB PCIe Memory Device
Operating System	Windows 8.1 Embedded, 32 GB SATA Flash Disk Module
Serial Outputs	Up to 12 serial ports and 4 built-in USB ports. – *THE USB PORT ON THE MULTI-FUNCTION BOARD IS DEDICATED FOR A KEYBOARD ONLY.*
Digital I/O	Up to 28 I/O Components
Ethernet Interface	PCI 10/100/1000 Mbs Ethernet Complies with IEEE 802.3x Standards
Display	Seven inch (7”) Diagonal Touchscreen LCD Color
Scale Interface Options	• **Intalogix Technology** — Intalogix Power Supply and Communications (**30916**) — Scale Interface Controller (**30918**) — External QMB Interface (**30433**) • **Analog Technology.** — Internal Analog Load Cell Interface (**5v excitation**) (**31079**) ▪ *Up to sixteen (16) 1000 Ω or eight (8) 350 Ω cells*
Power Requirements	**100 - 130 VAC @ 12A @ 60 Hz +/- 2 Hz** – *SEPARATE AND DEDICATED CIRCUIT.* – *NEUTRAL TO GROUND VOLTAGE SHOULD BE < 0.2 VAC* – *ONE AMP (1A) IS TYPICAL. TWELVE AMPS (12A) IS A FULLY EQUIPPED MODEL.*
ETL Listed	• Conforms to UL STD 60950-1. • CAN/CSA C 22.2 NO.60950-1-03.
Approvals	• CC# 10-089 • MC# AM-5805

1.3. What is Intalogix Technology?

Intalogix® Technology is a unique method of individual load cell communication, providing outstanding resolution, performance and diagnostic capabilities.

It is the most advanced technology available for processing Analog Load Cells or Strain Gauge Outputs.



- The Interface supplies **30VAC** and **20VDC** to the Pit Power Supply (PPS), located at the scale platform.
- The “Enable” line controls the direction of the RS 485 half-duplex data weight communications from the Interface to the Smart Sectional Controller (SSC), and vice-versa.
- The PPS converts the AC to DC voltage, partially regulates it, and supplies it to the SSC, where it is further regulated and used to provide the **Excitation Voltage** to the Load Cells.
- The 20VDC is regulated in the PPS and is used to supply the RS 485 Serial Communication Circuit.
- A switch setting in the SSC assigns it a Digital Address.
    - In the SSC, the Load Cell converts Analog signals into Digital signals, and then converts the Digital signals into RS 485.
    - The RS 485 Serial Communication from each SSC is then returned through the Pit Power Supply to the Instrument, where it is displayed as both Counts, and as Weight information, according to the programming parameters entered in the Instrument.

Older model SSC’s furnished **(+/–) 5 VDC Excitation**.

Newer model SSC’s furnish **(+) 3.3 VDC and (-) 3.0 VDC Excitation**.

Section 2: Company Service Information

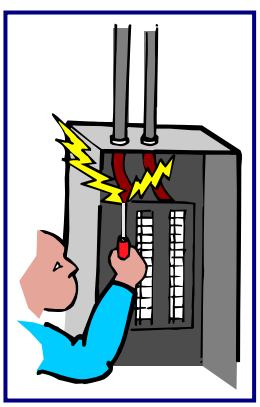
2.1. General Service Policy

Prior to installation, always verify that the equipment satisfies the customer's requirements as supplied, and as described in this manual.

- If the equipment cannot satisfy the application and the application cannot be modified to meet the design parameters of the equipment, **the installation should *NOT* be attempted.**
- Instructions within this manual apply to the instrument and its specific accessories. Installation procedures for printers and other peripherals are given in manuals specifically provided for those units. The instructions include a pre-installation checkout which must be performed either at the service center before the technician goes to the site, or at the site before he places the equipment in service.
- All electronic and mechanical calibrations and/or adjustments required to make this equipment perform to accuracy and operational specifications are considered to be part of the installation, and are included in the installation charge. **Only those charges which are incurred as a result of the equipment's inability to be adjusted or calibrated to performance specifications may be charged to warranty.**
- Absolutely no physical, electrical, or program modifications other than selection of standard options and accessories are to be made to this equipment. Electrical connections other than those specified may not be performed, and no physical alterations (mounting holes, etc.) are allowed and will immediately void warranty

All load cells, load cell cables, and all interconnecting cables used for the scale components must be located a minimum of thirty-six inches (36") away from all single and multiple phase high energy circuits and electric current-carrying conductors.

- This includes, but is not limited to **digital weight instruments, junction boxes, sectional controllers**, and **power supplies**.
- This includes any peripheral devices, such as **printers, remote displays, relay boxes, remote terminals, card readers**, and **auxiliary data entry devices**.
- Scale components themselves must also be at least **thirty-six inches (36") away** from other high energy components, including the following devices.
  - Any machinery with outputs of **120, 240**, or **480 volts AC**.
  - High voltage wiring runs and stations, AC power transformers, overhead or buried cables, electric distribution panels, electric motors, florescent and high intensity lighting which utilize ballast assemblies, electric heating equipment, traffic light wiring and power, and all relay boxes.
- Scale components are not designed to operate on internal combustion engine driven electric generators and other similar equipment.
  - This includes all digital weight Instruments and peripheral devices.
- Electric arc welding can severely damage scale components, such as digital weight Instruments, junction boxes, sectional controllers, power supplies, and load cells.



2.2. Users' Responsibilities

WARNING!

Absolutely no physical, electrical or program modifications other than selection of standard options and accessories can be made by customers to this equipment

Repairs are performed by Fairbanks Scales Service Technicians and Authorized Distributor Personnel ONLY!

Failure to comply with this policy voids all implied and/or written warranties

- ✓ **All electronic and mechanical calibrations and/or adjustments required for making this equipment perform to accuracy and operational specifications should be performed by *trained service personnel*.**
- ✓ **Absolutely no physical, electrical or program modifications other than selection of standard options and accessories are to be made to this equipment.**

- **Electrical connections other than those specified may not be performed**
- **Physical alterations, such as holes, etc., are not allowed.**

Please call your local

Fairbanks Scales Representative

for any questions, problems, or comments.

Section 3: Security, Logins & Passwords

3.1. Levels of Security

The following describes all the security levels for accessing the FB2558 DAT programs.

1. STANDARD USER *or* WEIGHTS & MEASURES OFFICIAL ACCESS

- **No password** is required with limited programming access.
- First Level Users can access these menus.
  - **HOME**
  - **AUDIT TRAIL**
  - **OPERATOR MENU**
  - **RETURN TO WEIGHING**

2. WRITE CUSTOMER LOGIN

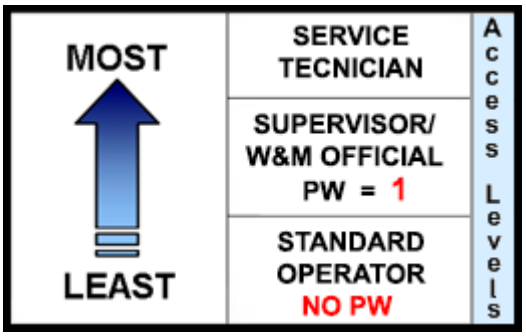
- *Allows all of the* **Standard User** *privileges.*
- **Supervisor Users** can also access the **CONFIGURATION MENU.**
- The first-time-use **WRITE CUSTOMER Password** is **1,** suggested to be changed upon login.

3. REPORTS LOGIN (FOR SUPERVISORS ONLY)

- Used for programming and printing reports ***from a remote location***.
- The **PASSWORD** must be **eight (8) characters**, and entered in the FB2558 Instrument.

4. SERVICE ACCESS

- *All installation and programming responsibilities.*

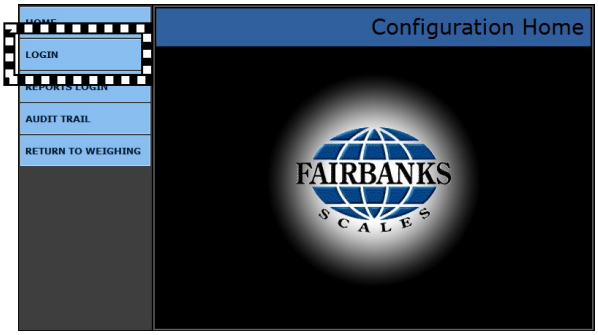


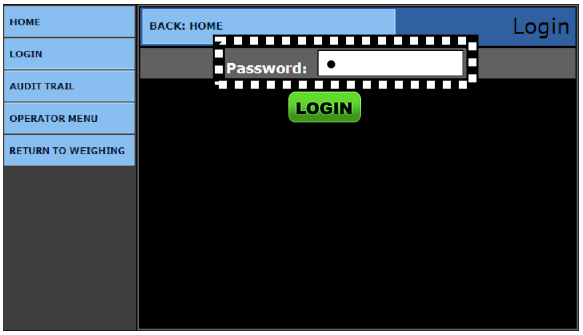
3.2. Login

Follow these steps to **LOGIN**.

1. While in the **WEIGHT SCREEN**, press the **MENU button** on the external keyboard to open the **Configuration Home Page**.
2. Select **LOGIN.**
3. Enter the **Write Customer** or **Service Password**.
4. Press the **LOGIN** button.

✓ **WRITE CUSTOMER PASSWORD = 1**





These are ***first-time-use-only passwords***.

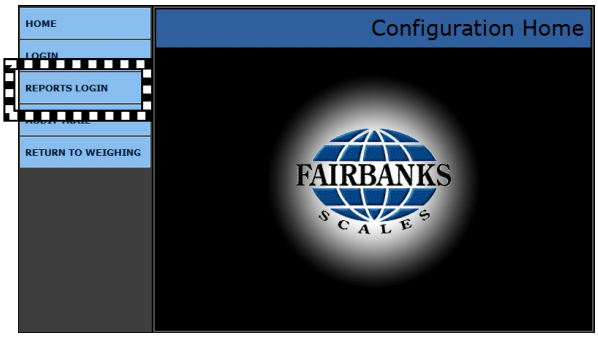
- Change the passwords to ones which are office-related and use ***both alpha and numeric characters.***
- Store the password(s) in a safe place ***known by more than one manager***.
- It is recommended to change passwords ***at least once a year***.
- Passwords are normally case-sensitive.
- The **REMOTE PASSWORD** is eight (8) characters.

IMPORTANT NOTE: *An* **External Keyboard Accessory (31036** *or* **25498)** *is necessary for inputting tares, editing customers and products, and entering alphabetic text.*

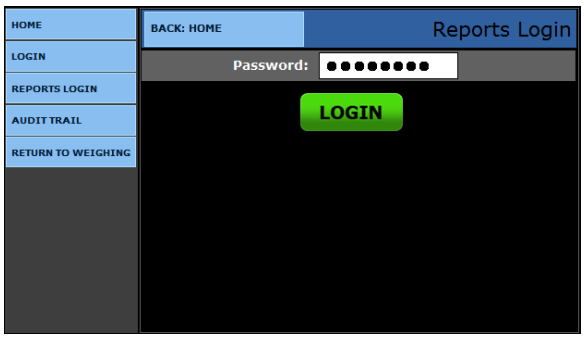
3.3. Reports Login

The **REPORTS LOGIN** *is used for programming and printing Reports from a* ***remote location only****.*

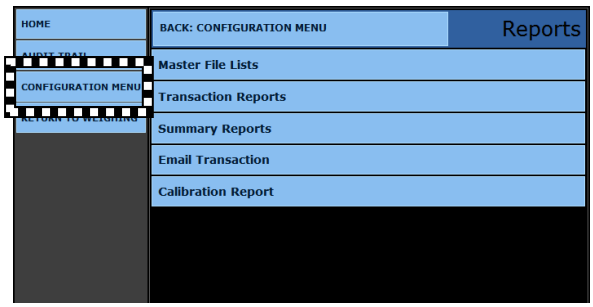
1. **Login remotely.**
2. While in the **WEIGH SCREEN**, press the **MENU** button.
3. Select **REPORTS LOGIN.**
4. Enter the **eight (8) character REMOTE PASSWORD.**
5. Press the **LOGIN** button.



The **REPORTS LOGIN** *option is only available when accessing the Instrument remotely.*



The **REMOTE PASSWORD** *is* **eight (8) alphanumeric characters** *long.*



Remote Reports Menu

3.4. Changing Passwords

Noted below are suggestions for setting the **first-time-use passwords**.

- Passwords should be changed right after installation, and then stored in a safe place.
- Password characters are case-sensitive.
- Whenever possible, the password should use both alpha and numeric characters.
- These passwords should be known by more than one manager.
- It is recommended to change these passwords at least once a year.
- **REMOTE PASSWORDS** use *eight (8) characters.*

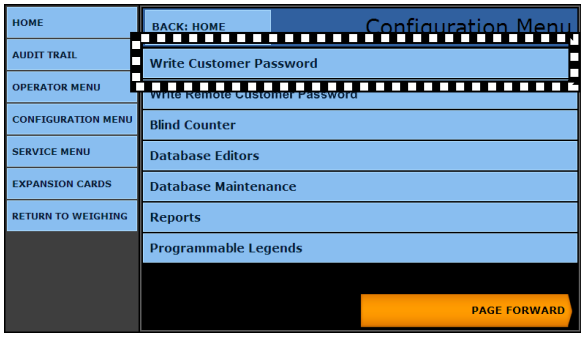
3.4.1. Write Customer Password

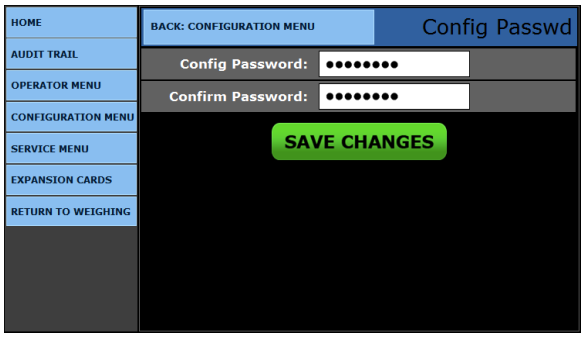
The **Write Customer Password** allows full-access to the **CONFIGURATION MENU** and all the lesser menus *when the supervisor is programming from a remote location*.

- The password can be any length
- This password is case-sensitive.

Follow these steps to change the **WRITE CUSTOMER PASSWORD.**

1. While in the **WEIGHT SCREEN**, press the **MENU button** on the external keyboard to open the **Configuration Home Page**.
2. Press **LOGIN.**
3. Enter the **WRITE CUSTOMER PASSWORD**.
4. Press the **LOGIN** button.
5. Open the **CONFIGURATION MENU**.
6. Select **WRITE CUSTOMER PASSWORD**.
7. Enter the **new password** in the **CONFIG PASSWORD** field, and again in the **CONFIRM PASSWORD** field.





- Press the **SAVE CHANGES** button.

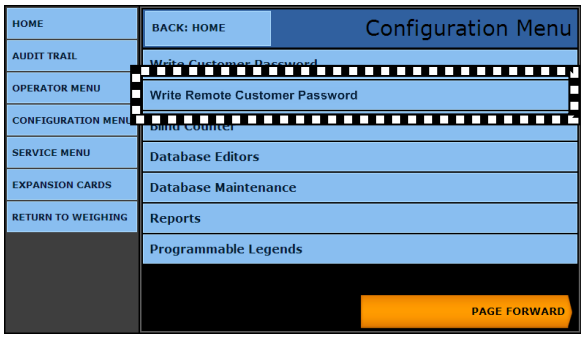
3.4.2. Write Remote Customer Password

The **REMOTE CUSTOMER** must be programmed on the Instrument before it can be accessed with a web browser. The supervisor can then program the Instrument from ***any remote location*** using a pc or laptop.

- The password is case sensitive and must be eight (8) characters.

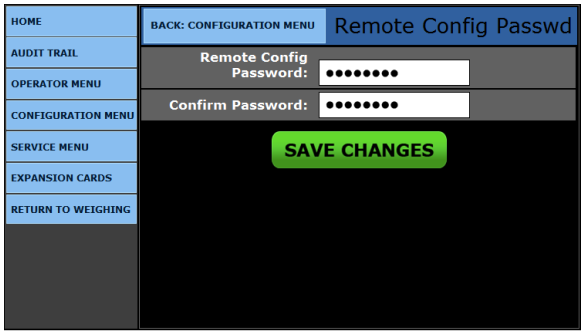
Follow these steps to change the **WRITE REMOTE CUSTOMER PASSWORD.**

1. While in the **WEIGHT SCREEN**, press the MENU button to open the Configuration Home Page.
2. Press **LOGIN.**
3. Enter the **WRITE CUSTOMER** or **SERVICE PASSWORD**.
4. Press the **LOGIN** button.
5. Open the **CONFIGURATION MENU**.
6. Select **WRITE REMOTE CUSTOMER PASSWORD**.



7. Enter an eight (8) character password in the **REMOTE CONFIG PASSWORD** field.

   Reenter it in the **CONFIRM PASSWORD** field.



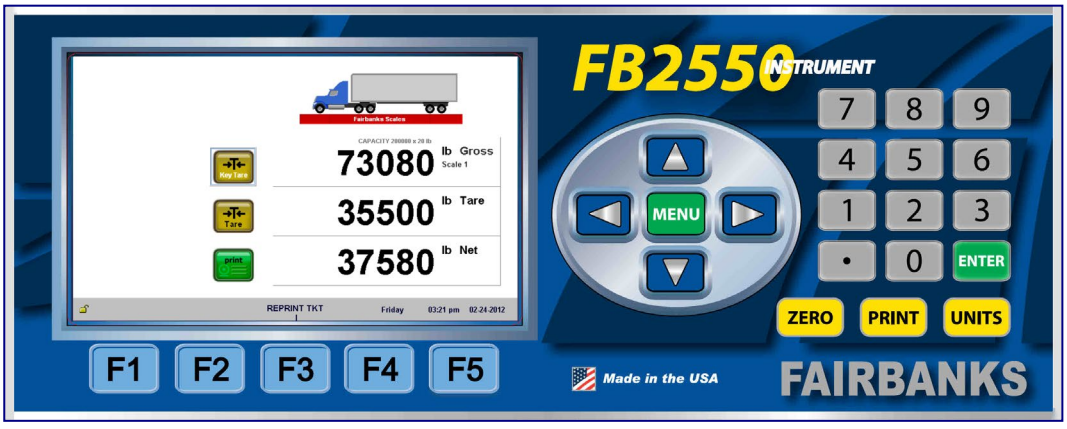
- Press the **SAVE CHANGES** button.

Section 4: Standard User Operations

4.1. Introduction

4.1.1. Keypad Functions

KEY(S)	FUNCTION
Numeric Keys	These keys enter any **NUMERIC DATA**.
F1	**Turns on Camera** *(if enabled)*
F2	**Expands Camera image** to full screen (*if enabled*).
F3	**REPRINT TICKET –** Reprints the previously printed ticket. • When pressed while in the **Weigh screen**, it also displays a list of items, such as **Loop, Customer**, or **Product** during the weighing process..
F4	**VOIDS –** Permanently deletes the **TICKET** from the database.
F5	**SHUTS DOWN** the Instrument, *displays only when the scale is unloaded*. • See also *Proper Shutdown Procedure* section
Enter	**ACCEPTS/ STORES** a data entry item.
Zero	**ZEROs** the scale.
Units	Toggles the **UNITS** option.
Print	Initiates a **PRINT CYCLE**.
Menu	Opens the **CONFIGURATION HOME MENU**, allowing the **programming** functions**.**
Arrow Keys	**NAVIGATES** through the programming choices.



IMPORTANT NOTE: *An* **External Keyboard Accessory (31036** *or* **25498)** *is necessary for inputting tares, editing customers and products, entering alphabetic text, and for navigating thru program options.*

4.1.2. External Keyboard Functions

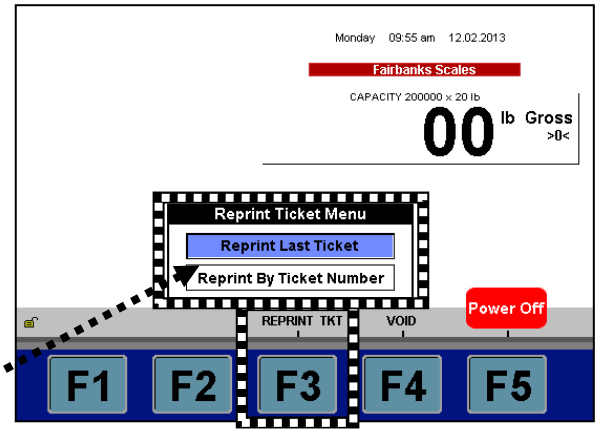
KEY	FUNCTION
F1	**Turns on Camera** *(if enabled)*
F2	**Expands Camera image** to full screen (*if enabled*).
F3	**REPRINT TICKET –** Reprints the previously printed ticket. • When pressed while in the **Weigh screen**, it also displays a list of items, such as **Loop, Customer**, or **Product** during the weighing process.
F4	**VOIDS –** Permanently deletes a **TICKET** from the database.
F5	**SHUTS DOWN** the Instrument, *displays only when the scale is unloaded*. • See also *Proper Shutdown Procedure* section.
Alphabetic Keys	Enters all **ALPHABETIC TEXT.**
Numeric Keys/ Keypad	Enters **NUMERIC DATA.**
Arrow Keys	**NAVIGATES** through the programming choices.
Esc	**CLEAR, RESET**, or **RESTART** the Instrument, if in the **SLEEP Mode**.
HOME	Opens the **CONFIGURATION HOME MENU**, allowing the **programming** functions**.**
PAUSE	**ZERO**s the scale.
SCROLL	Enters the **UNITS.**
PRINT SCREEN	**PRINTS** the ticket.

SHORTCUT KEYS	FUNCTION
Ctrl + Shift + H	Displays the **SYSTEM INFORMATION.**
Ctrl + Shift + S	Displays the installed **EXPANSION MODULES**.

4.2. Weighing Operations

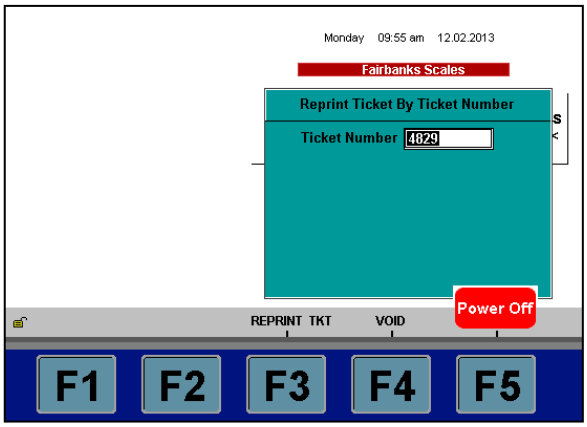
4.2.1. Unloaded Scale Functions

*When the scale is **unloaded**, the FB2558 Instrument activates these options by using the* **Function Keys.**



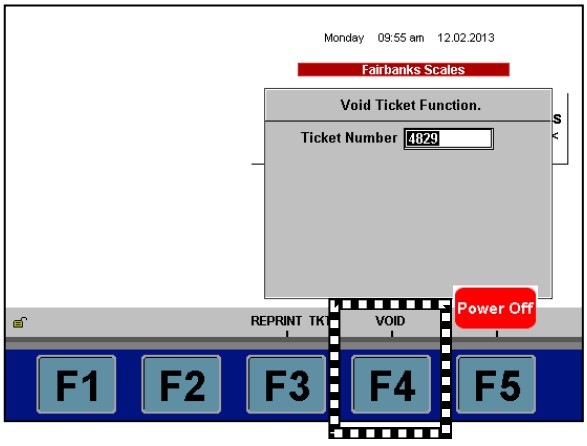
F3 – REPRINT TKT

1. Press the **(F3) REPRINT TKT** function button.
2. Select from one of these two options.
   a. **Reprint Last Ticket.**
   b. **Reprint By Ticket Number.**
   – ***THIS OPTION APPEARS ONLY WHEN A TICKET WAS PRINTED PREVIOUSLY.***
3. Press the **ENTER** button.



F4 – VOID *(a ticket)*

1. Press the (F4) VOID function button.
2. Input the TICKET NUMBER.
3. Press the **ENTER** button.
4. When the **WARNING!** message appears, press the **VOID** button.



F5 – POWER OFF

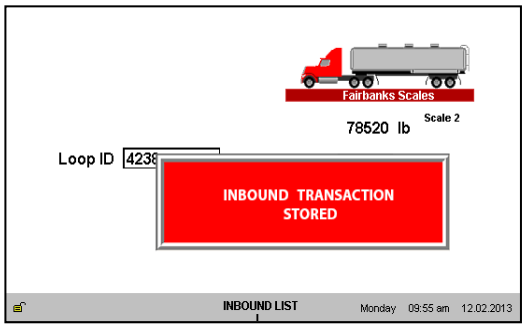
- *For complete details, see* Section 4.4. Proper Shutdown Procedure.

C A U T I O N

All VOIDED TICKETS are deleted, and *cannot be recovered*.

4.2.2. Inbound/Outbound Weighing

INBOUND / OUTBOUND MODE weighing consists of weighing a vehicle, inbound, either full or empty, then weighing the same vehicle outbound, full or empty, and printing a ticket with the two weights shown.

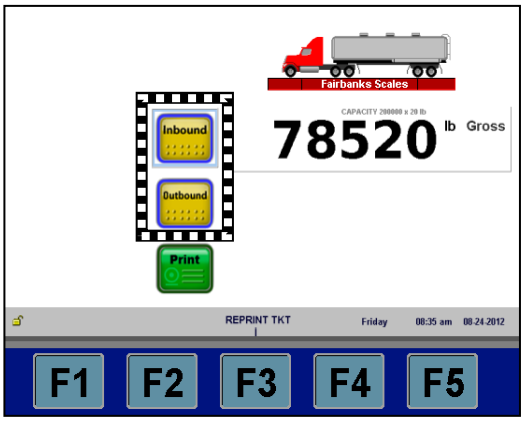


Follow these steps to weigh using the **INBOUND/ OUTBOUND Mode**.

1. The truck pulls onto the scale. Once the display stabilizes, press the **INBOUND** key.

   – **The weight and new action buttons appear on the Instrument display window.**

   – **The Function Key options change.**



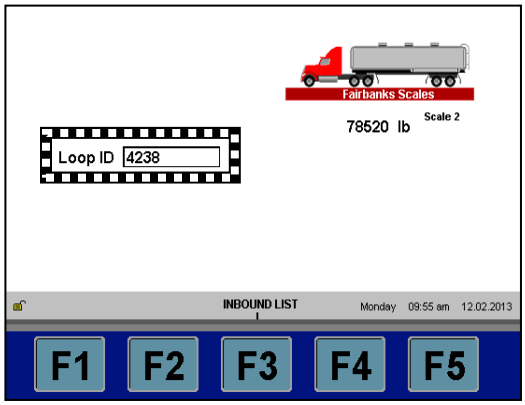
2. **OPTION A**

   Either the **Tag Reader *** identifies the vehicle and automatically generates the **LOOP ID NUMBER**,

   OR

   OPTION B

   Input the **LOOP ID** OR **TARE ID** number.



   – The Loop ID Number entered for an **INBOUND** transaction can be a stored Tare ID or a new Loop ID number.

   – **A stored Tare ID generates an OUTBOUND formatted Ticket;**

   – A new Loop ID number generates an **INBOUND** ticket and stores the Loop ID for future transactions.

   Press **ENTER**

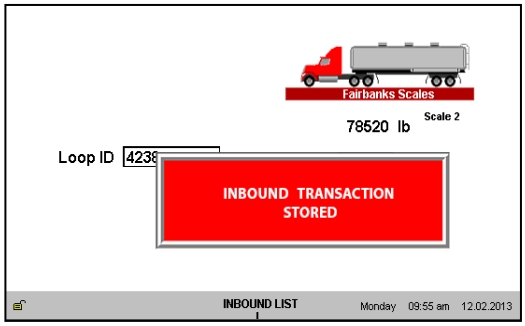
   OR

4.2.2. Inbound/Outbound Weighing, Continued

OPTION C

Press **ENTER** or have the instrument auto-assign a **Loop ID number**.

- A "PROCESSING TRANSACTION" message displays first, followed by an "INBOUND TRANSACTION STORED" message.



3. Driver drives off the scale and processes the trailer, by either filling or emptying it.
   - The same vehicle returns to the scale, either full or empty.
   - Once the display stabilizes, press the **OUTBOUND** key.

4. **OPTION A**

   When the **Loop ID legend text** displays, enter the **LOOP ID Number** from an Inbound Transaction or saved TARE ID number, then press **ENTER**.

   OR

   OPTION B

   With the scale unloaded, press the **ZERO** key.
   - Drive the loaded vehicle to be weighed on the platform.
   - When the display stabilizes, press the **PRINT** key.
   - When display, using the enter a known **TARE amount** from an earlier weighment, then press **ENTER.**
   - **A GTN Ticket will print.**

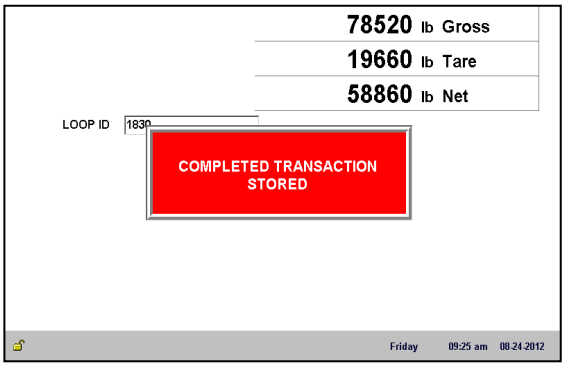
NOTE: *For* **Gross Weight** *only to be printed, enter* **ZERO (0)** *when prompted to enter a Tare amount.*

OR

OPTION C

With the scale unloaded, press the **ZERO** key.

- Driver drivers the loaded vehicle to be weighed on the platform.
- When the display stabilizes, press the **INBOUND** or **OUTBOUND** key.
- When the **Loop ID legend text** displays, enter a **Tare ID number** from a stored **NEW TARE** or stored **NEW KEYBOARD TARE**, then press **ENTER.**



The transaction is processed and an* Outbound *ticket prints

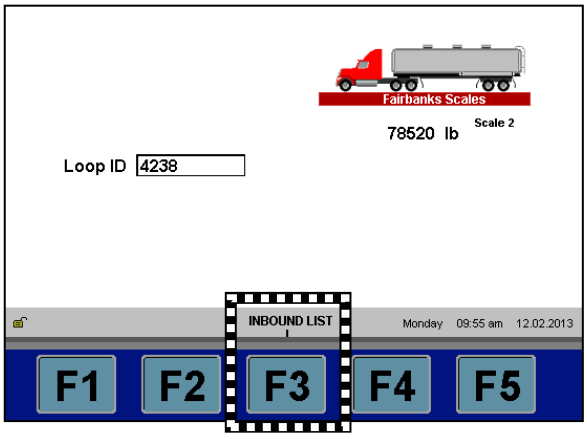
- **A "Completed Transaction stored" message displays**

* *The Tag Reader* **(TransCore RFID Reader – 10-4002-009)** *is an optional accessory.*

INBOUND LIST (F3)

1. To see all the incomplete transactions, press the **INBOUND LIST (F3)** button.

- This function key option shows the details of an incoming truck on the scale.



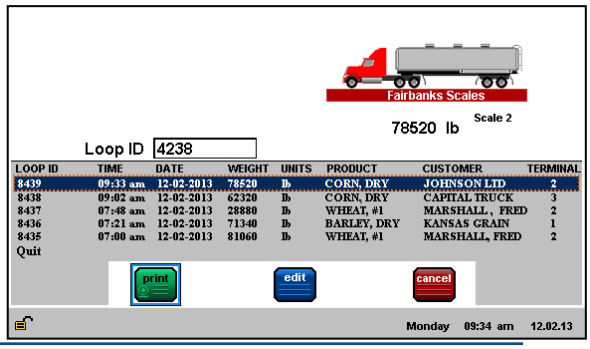
2. Press the **UP** and **DOWN ARROW** button to select the correct transaction.

3. **OPTION A**

Either press the **ENTER** button on the keypad to save and process the transaction,

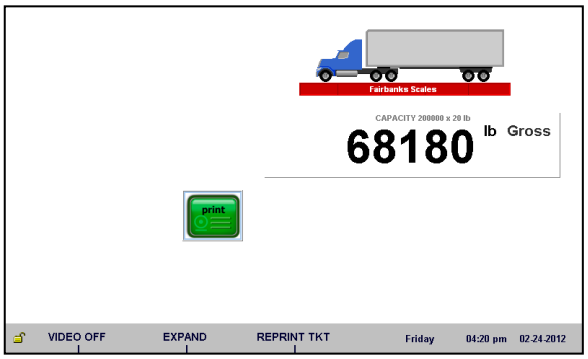
OR

OPTION B



Press the **PRINT** button and deliver the ticket copy to the driver.

4.2.3. Gross Weighing

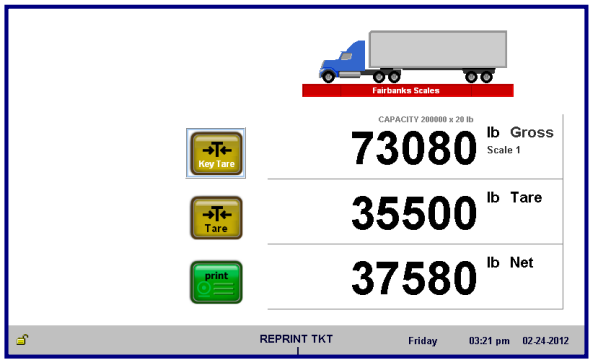


Drive the vehicle to be weighed on the platform.

Once the display stabilizes, press the **PRINT** key.

– A **Gross Weight** ticket prints.

4.2.4. Gross/Tare/Net Weighing



1. Drive the vehicle to be weighed on the platform.
   - Press either the **KEY TARE** or **TARE** button.
   - If **KEY TARE** is selected, enter the known **Tare Weight** on the keypad.
   - If **TARE** is selected, the weight on the display is captured as a **Tare Weight**.
2. Press the **ENTER** button on the keypad.
3. Load the vehicle with product.
4. Press the **PRINT** key, and a **Gross-Tare-Net Ticket** is printed.
   - **Mode Change** – When a **KEY TARE** or **TARE** button is pressed, the scale automatically switches from the **Gross Weighing Mode** to the **Gross-Tare-Net Mode**.
5. To change the scale from the **Gross-Tare-Net Mode** back to the **Gross Weighing Mode**, press the **KEY TARE** button.

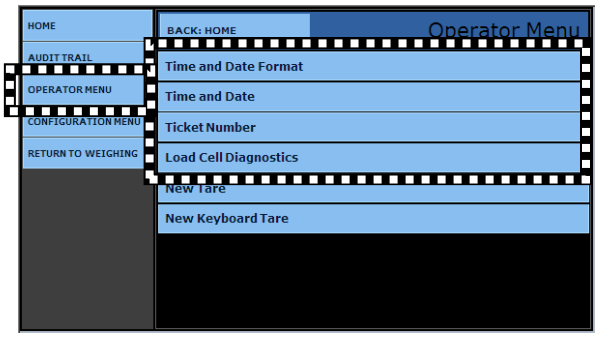
NOTE: *If the display shows cell(s) failure, this indicates an error on the platform.*

Check the platform for equipment, debris, or other materials and remove them. If this does not resolve the condition, call for service.

4.3. Operator Menu Programming

The **OPERATOR MENU** allows user programming operations to the instrument.

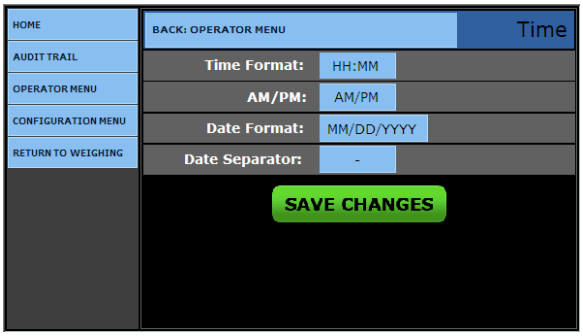
- Allows access to change the **TIME AND DATE, TICKET NUMBER**, and **LOAD CELL DIAGNOSTICS** (*read only view*).
- **No password** is required for these options.



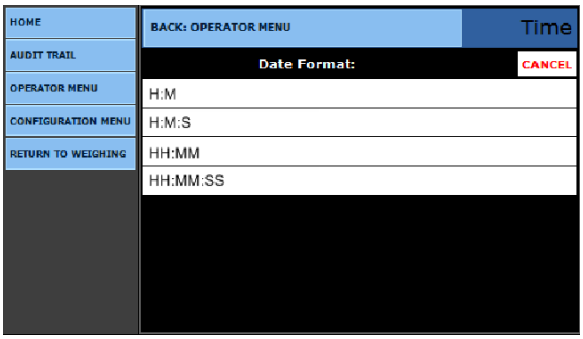
4.3.1. Time and Date Format

This function programs how the Time and Date will display on the Instrument screen.

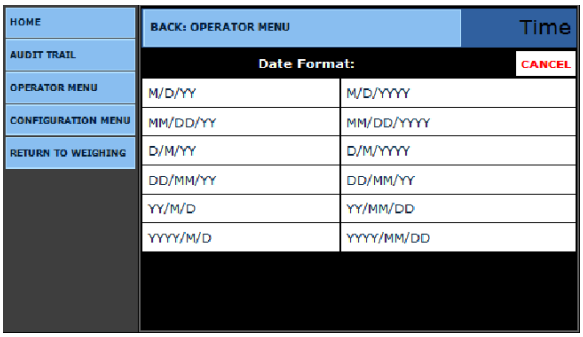
1. Press the **MENU** button.
2. Open the OPERATOR MENU.
3. Select the best **TIME FORMAT**.
4. Open the **AM/PM** option, then select either the **12 HOUR** or **24 HOUR** format.



5. Select the **DATE FORMAT**.
   - **H** = Hour • **M** = Minute • **S** = Second



6. Select the best **DATE SEPARATOR** formats, which include a (**SPACE**), **/**, and **–.**

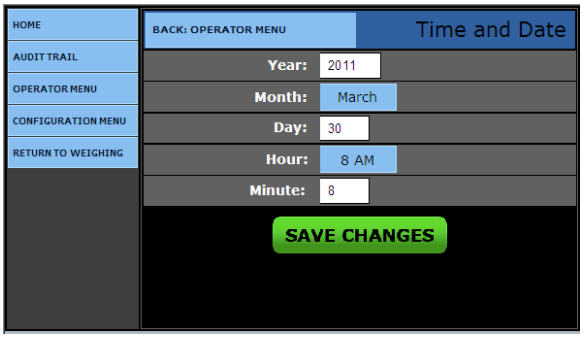


- **Press the SAVE CHANGES button when any changes are made, or they will be lost.**
- **Select BACK: OPERATOR MENU to return to the previous menu.**

4.3.2. Time and Date

This function sets the **Time** *and* **Date** *for the Instrument.*

1. Enter the **YEAR, MONTH, DAY, HOUR,** and **MINUTE options** into the box next to the legend.
2. Press the **SAVE CHANGES** button when any changes are made, or they **will be lost**.

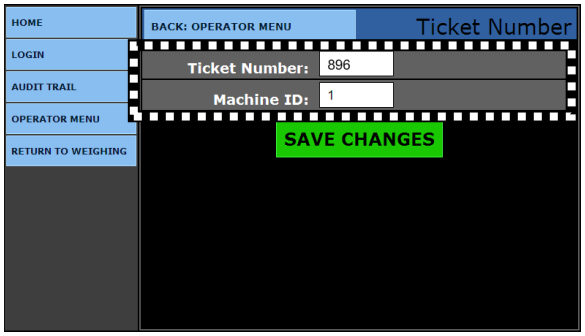


4.3.3. Ticket Number

This function opens a ticket for viewing and editing.

1. Enter the **TICKET NUMBER** by typing the correct value into the box next to the legend.
   – Allows a maximum entry of **six (6) digits**.
2. Enter the **MACHINE ID** by typing the correct value into the box next to the legend.
   – This resets the **Loop ID Value.**

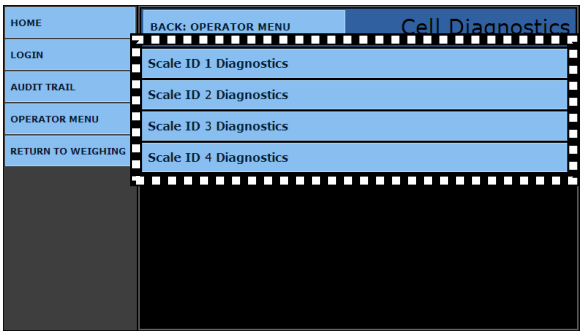
   ✓ **DEFAULT = 1**



- **Press the SAVE CHANGES button, or they will be lost.**
- **Select BACK: OPERATOR MENU to return to the previous menu.**

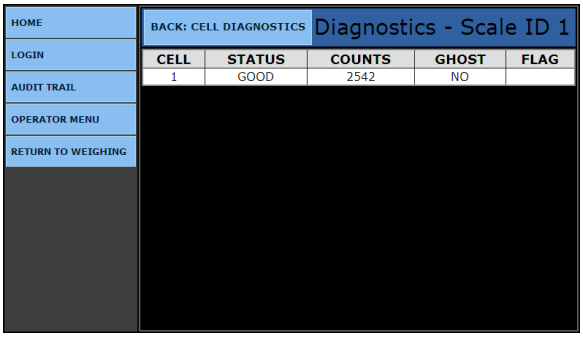
4.3.4. Load Cell Diagnostics

Instruments equipped with Intalogix® technology have **Load Cell Diagnostics** features for easier troubleshooting capabilities.



- **To view LOAD CELL DIAGNOSTICS, select the correct scale.**

The **DIAGNOSTICS** screen gives a quick snapshot of how each load cell is performing.



- **CELL – Identifies the load cell in the scale platform.**
- **STATUS –** Compares the load cell output to stored calibration values and posts a **GOOD** or **BAD** condition.
- **COUNTS –** Displays the load cell's current counts.
- **GHOST –** When the load cell communications uses Intalogix™ Interface, the system electronically duplicates the load cell in the same section.

  This is mostly used for troublshooting faulty load cells.
- **FLAG –** Visual flags **(*)** are used to identify problem load cell(s) on the diagnostic screen until the flag is manually cleared.

  This improves the ability to identify intermittent issues.

4.4. Proper Shutdown Procedure

C A U T I O N

FB2558 must be shut down properly!

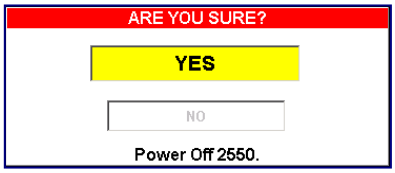
Failure to shut down properly can result in corrupting essential software files necessary for proper operation.

- When there is no weight on the scale, the **POWER OFF (F5)** notification displays.
- Whenever there is weight on the scale, the **F5** button is still active, but the legend is hidden.
- A **Shut Off Warning** appears whenever **F5** is pushed and there is weight on the scale.
- The **POWER OFF (F5)** is inactive during any programming activities.

Follow these steps to properly shutdown the FB2558 Instrument.

1. While in the Weigh Screen and with nothing on the scale platform, press the **F5** key.
   - A Shut Off Warning appears.
2. Press **ENTER** or touch the **YES.**
3. After proper shut-down is complete, ***ALWAYS*** **UNPLUG THE INSTRUMENT** from AC power.
   - Until the FB2558 is unplugged from AC power, it will continue to supply operating voltage to the instrument circuits.

Plug back in the Instrument to reboot it.



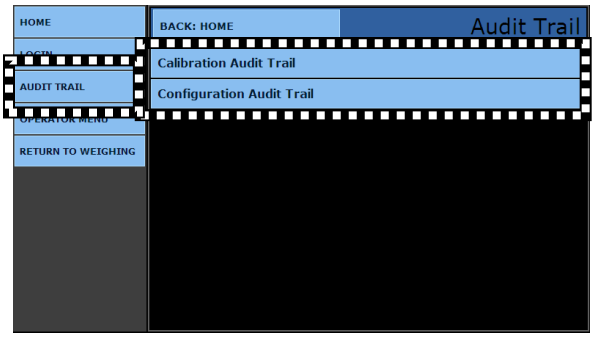
NOTE: If the display on the FB2558 changes to an all-white screen, it is in in **Sleep Mode**. Press any key or touch the display to “wake up” the instrument.

SECTION 5: AUDIT TRAIL

5.1. Login

The **AUDIT TRAIL** used primarily used by the **Weights & Measures Officials** to make scheduled site inspections.

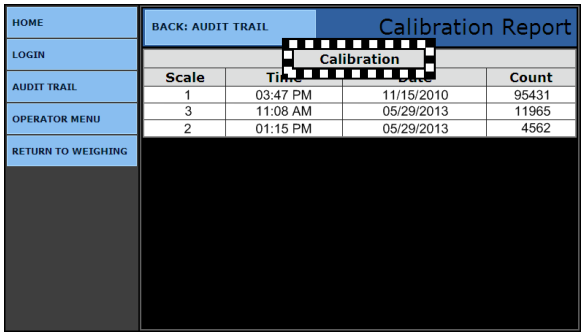
1. While in the **WEIGH SCREEN**, press the **MENU** button.
2. Press **LOGIN.**
3. Enter the **Write Customer Password .**
4. Press the **LOGIN** button.
5. Select **AUDIT TRAIL**.
6. Choose either **CALIBRATION AUDIT TRAIL**, or **CONFIGURATION AUDIT TRAIL**.



5.2. Calibration Audit Trail

The **CALIBRATION REPORT** denotes exactly when the scale calibrates.

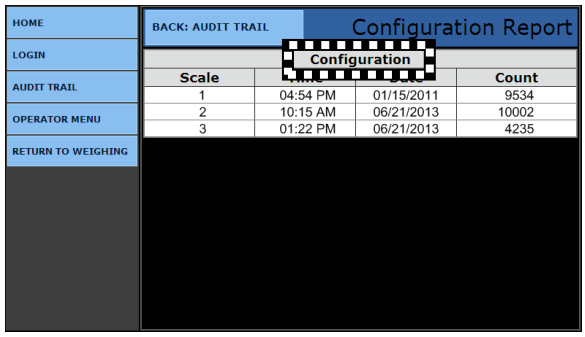
- This option has ***view-only access*** and cannot be edited.
- It displays the **Time(s), Date(s)** and a random **Count**, which is incremented to each of up to eight (8) displayed scales.
  - The ***Count*** is a numeral of up to six (6) digits, determined randomly by the Instrument as an identifier.



5.3. Configuration Audit Trail

The **CONFIGURATION REPORT** displays all configuration changes.

This option has **view-*only access*** and cannot be edited.

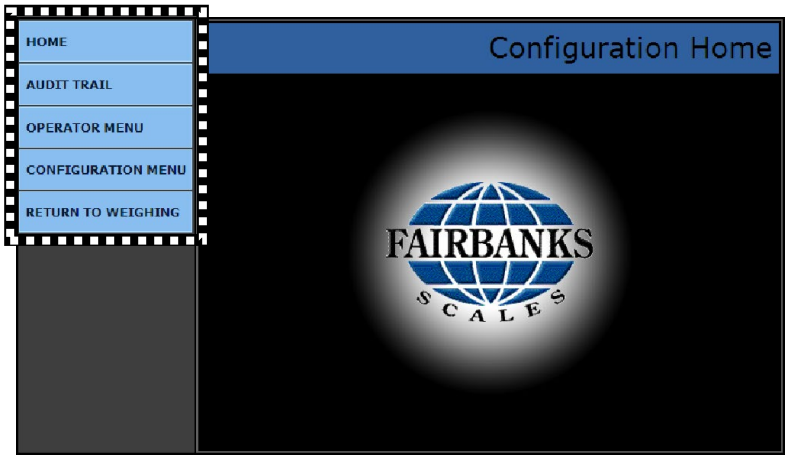


- It displays the **Time(s), Date(s)** and the random **Count.**

Section 6: Programming

6.1. Introduction

While in the **Weigh Screen**, *press the* **MENU** *button on the keypad to access the* **CONFIGURATION HOME** *window.*



HOME	Returns the user to the **Configuration Home Page.**
AUDIT TRAIL	Identifies how many times and when changes are made to the scale's **Calibration** or **Configuration** settings. • *See* **SECTION 5: AUDIT TRAIL** *for more information.*
OPERATOR MENU	User access for **Time/Date, Ticket Number, Load Cell Diagnostics**, and **Keyboard Tare** entries. • *See* **SECTION 7.2: OPERATOR MENU** *for more information.*
CONFIGURATION MENU	Accesses communications programming and functions, ticket formats, programmable legends and prompts, camera inputs and weight threshold. • *See* **SECTION 7.3: CONFIGURATION MENU** *for more information.*
RETURN TO WEIGHING	Returns the user to the **Weight Display Screen**.

IMPORTANT NOTE: *An* **External Keyboard Accessory (31036** *or* **25498)** *is necessary for inputting tares, editing customers and products, and entering alphabetic text.*

6.2. Shortcut Keys

Described below are the shortcut programming keys. The **Weigh Screen** *must first be displaying before any of these Shortcuts will function.*

KEYS	FUNCTION(S)
MENU Button	Opens the **PROGRAMMING** menus.
CTRL + Shift + C	Opens the **TOUCH SCREEN CALIBRATION**.
CTRL + Shift + H	Displays the **SYSTEM INFORMATION**.
CTRL + ALT + Shift + R	Opens the **DATABASE RECOVERY MENU.** – *INCLUDED ARE REBOOT INSTRUMENT, ATTEMPT RECOVERY, AND RESTORE TO FACTORY SETTINGS BUTTONS.*
CTRL + Shift + S	Displays all the installed **EXPANSION MODULES**. – *INCLUDED ARE CHECK FOR UPDATES AND RESCAN BUTTONS.*
Ctrl + Alt + F12	Opens the **DUAL DISPLAY MENU**.
F5	Initiates the system **SHUTDOWN**. – SEE ALSO *PROPER SHUTDOWN PROCEDURE* SECTION ***FOR COMPLETE DETAILS.***

IMPORTANT NOTE: *An* **External Keyboard Accessory (31036** *or* **25498)** *is necessary for inputting tares, editing customers and products, and entering alphabetic text.*

While in the **Weigh Screen,** *press the* **MENU** *button access the programming menus.*

C A U T I O N !

FB2558 Instrument must be shut down properly!

Failure to shut down properly can result in corrupting essential software files necessary for proper operation, and lead to the replacement of the 8Gb Flash Drive.

ALWAYS press the F5 key to start the Shutdown Process.

***NEVER* unplug the FB2558 Instrument to reboot it!**

See **4.4. PROPER SHUTDOWN PROCEDURE** *for complete details.*

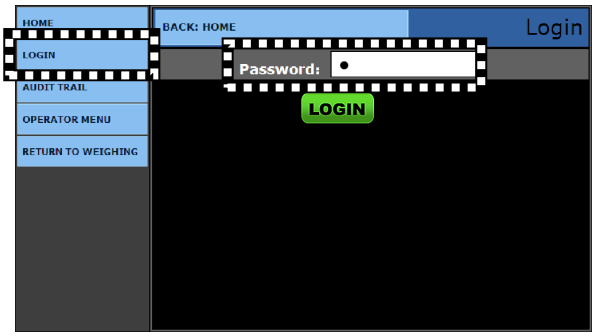
6.3. Customized Instrument Configurations

Configure FB2558 Instrument with the following menu functions.

- **Programmable Legends**
- **Programmable Prompts**
- **Vehicle Images**
- **Threshold Weights**
- **Entry Sequence Prompts**
- **Blind Counter**

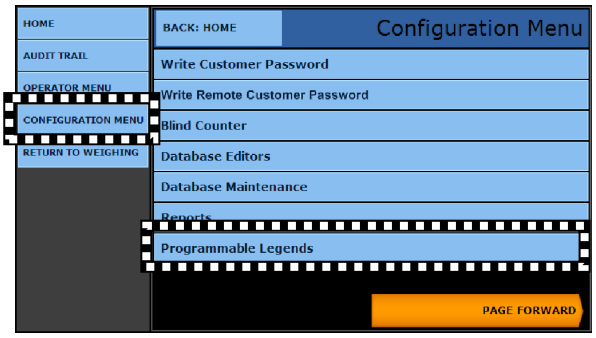
6.4. Programmable Legends

Follow these steps to customize the FB2558 Instrument legends.

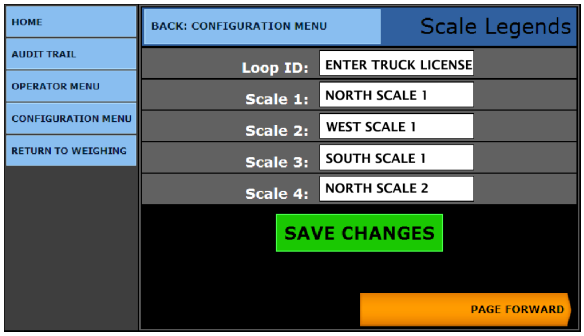


1. While in the **WEIGH SCREEN**, press **MENU** on the external keyboard.
2. Select **LOGIN**.
3. Enter the **Write Customer Password** or **Service Password**.

   Press **LOGIN**.



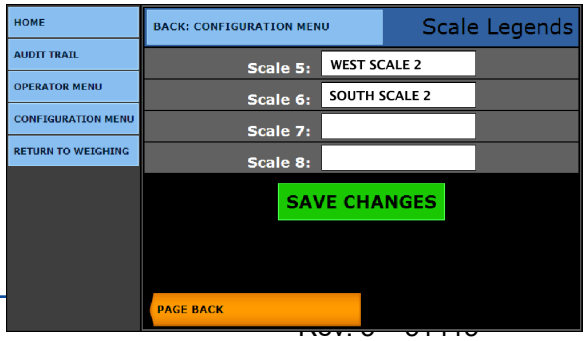
4. Select the **CONFIGURATION MENU**.
5. Press select **PROGRAMMABLE LEGENDS**.
6. The data entry boxes accept keyboard alphanumeric entries to customize the legends the users will view when operating the instrument.
   - *Twenty (20) characters maximum.*



EXAMPLE

Loop ID: **ENTER TRUCK LICENSE NUMBER**
Scale 1: **NORTH SCALE 1**

7. Press **PAGE FORWARD**.
8. Program the **Legends** for **SCALES 5** thru **8.**



- Press **SAVE CHANGES** button, or they will be lost.

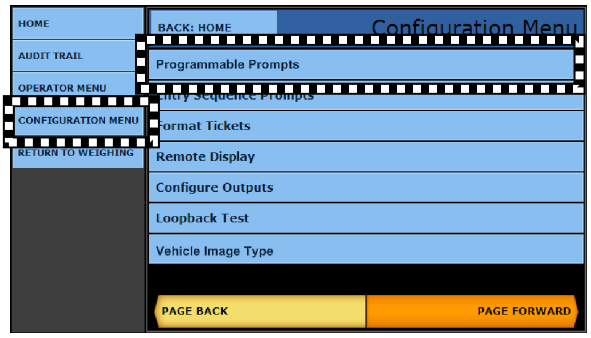
- Select **BACK: CONFIGURATION MENU** to return to the previous menu.

6.5. Programmable Prompts

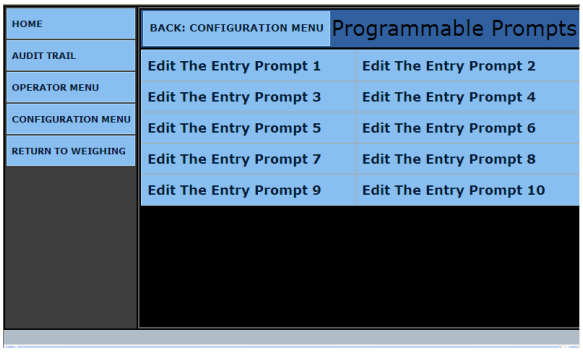
Follow these steps to customize the **Programmable Prompts**.

– There are **ten (10) prompts** available.

1. While in the Configuration Menu, press **PAGE FORWARD.**
2. Select **PROGRAMMABLE PROMPTS**.

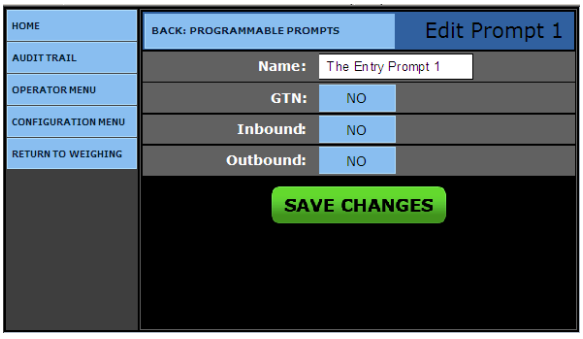


3. Touch the **EDIT THE ENTRY PROMPT X** to access the data entry screen for the custom prompt.
4. In the data entry box to the right of the **Name:** legend, enter the **PROMPTS NAME** or **DESCRIPTION.**
5. The data boxes to the right of the legends **GTN:, Inbound:, and Outbound:** will enable or disable the prompt for a combination of Inbound, Outbound or GTN operations.



✓ **NO = DISABLE**

✓ **YES = ENABLE**



EXAMPLES

Name: TRAILER NO.
Name: BILL OF LOADING NO.

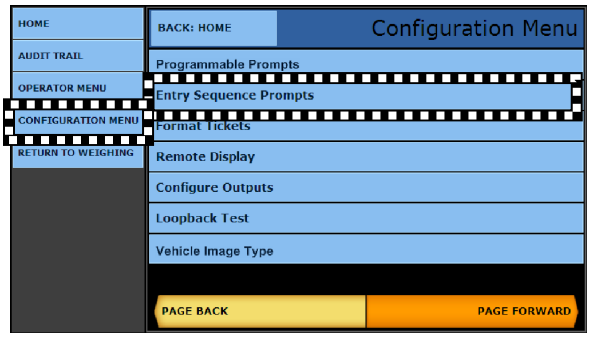
- Press the **SAVE CHANGES** button, or they **will be lost**.
- Select **BACK: CONFIGURATION MENU** to return to the previous menu.

6.6. Entry Sequence Prompts

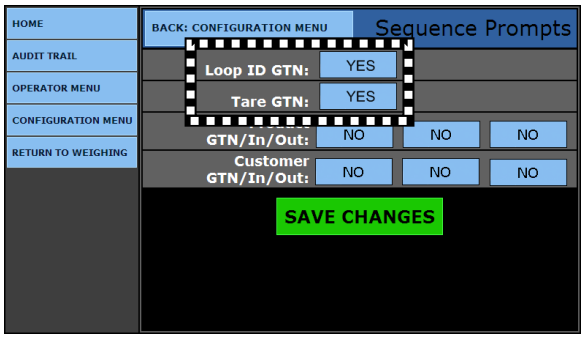
The **ENTRY SEQUENCE PROMPTS MENU** enables the built-in **customer and product prompts** for a combination of the **Inbound, Outbound,** or **GTN** operation sequences

The **Loop ID GTN** and **Tare GTN prompts** are enabled or disabled with this window.

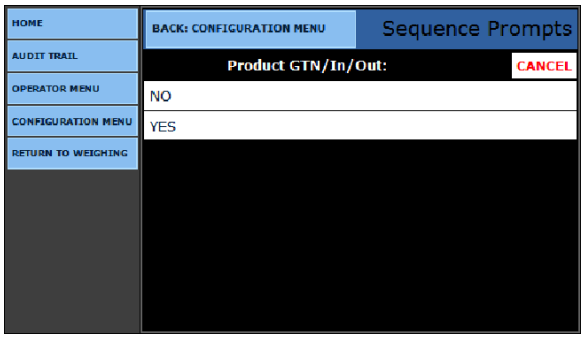
1. While in **CONFIGURATION MENU**, press the **PAGE FORWARD** button once.
2. Select **ENTRY SEQUENCE PROMPTS**.
3. In the **LOOP ID GTN** menu, enter **YES** to ***enable*** or **NO** to ***disable*** the **LOOP ID PROMPT** when a GTN operation is performed.
4. In the **TARE GTN** menu, enter **YES** to enable or **NO** to disable the **TARE PROMPT** when a GTN operation is performed.



✓ *The* **Loop ID GTN** *and* **Tare GTN** *must both be set to* **YES** *to perform the* **IN/OUT** *operation.*



5. In the **PRODUCT** and **CUSTOMER menus**, enter **YES** to enable or **NO** to disable the prompt when a **GTN** operation is performed.

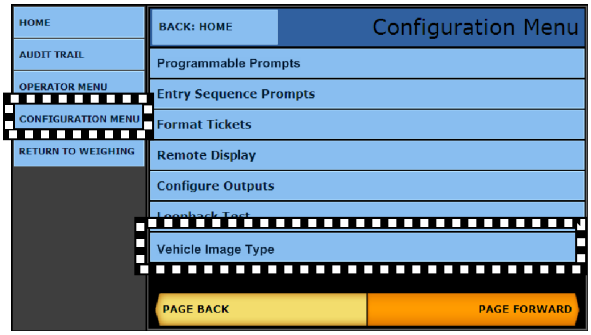


- Press the **SAVE CHANGES** button, or they **will be lost**.
- Select **BACK: CONFIGURATION MENU** to return to the previous menu.

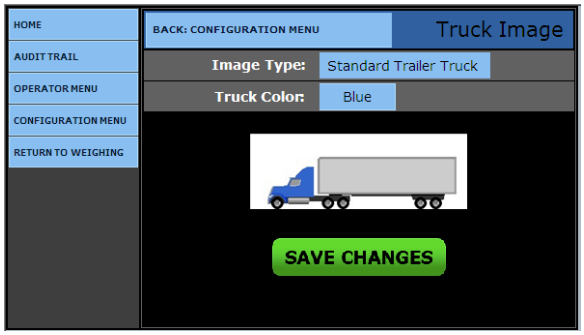
6.7. Vehicle Image Type

Follow these steps to customize the FB2558 Instrument truck image.

1. While in the **CONFIGURATION MENU**, press the **PAGE FORWARD** button once.



2. Select vehicle **IMAGE TYPE**.
3. Select the **IMAGE TYPE BOX** to access the available truck images.



• **Standard Trailer Truck** 	• **Flatbed Trailer Truck** 	• **Tanker Trailer Truck** 
• **Dump Truck** 	• **Waste Truck** 	• **Tanker Car** 
• **Lumber Car** 	• **Grain Car** 	• **Flat Car** 
• **Coal Car** 	• **Box Car** 	• **No Image**

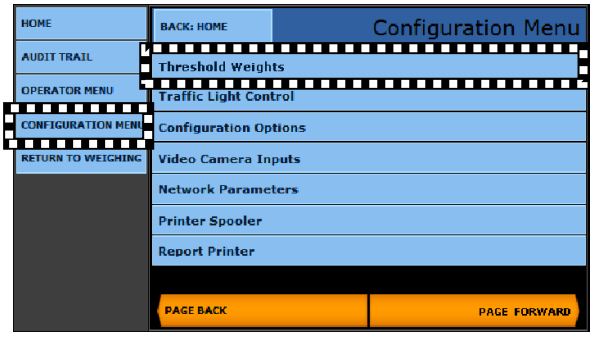
4. Select the **TRUCK COLOR** Option.

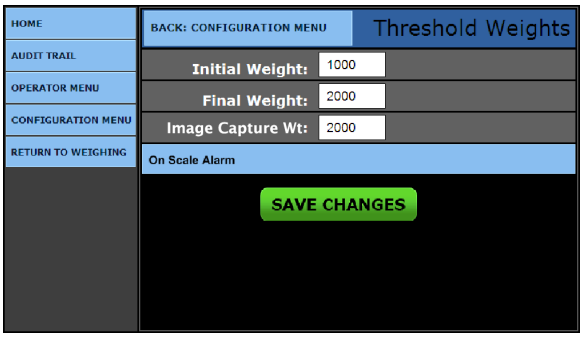
- **Red**
- **Green**
- **Black**
- **Orange**
- **Blue**
- **Brown**
- **Yellow**
- **Purple**
- **Gray**

- Press the **SAVE CHANGES** button when any changes are made, or they will be lost.

6.8. Threshold Weights

1. While in the **CONFIGURATION MENU**, press **PAGE FORWARD** once.
2. Select **THRESHOLD WEIGHTS**.





INITIAL WEIGHT sets the minimum amount the truck must weigh to initiate a weighment.

FINAL WEIGHT triggers an alert when the weight on the last section scale meets or exceeds the value entered.

- Used on a full electronic truck scale.
- *Not used* in the **MANUAL MODE OF OPERATION.**
- The data entry boxes to the right of the legend identifiers will accept keyboard numeric entries to enter the values required.

✓ **Default INBOUND WEIGHT = 1,000 lbs.**

✓ **Default FINAL WEIGHT = 2,000 lbs.**

IMAGE CAPTURE WEIGHT sets the amount when a truck on the scale has a picture taken of it as it weighs, stored within that transaction and used for identification.

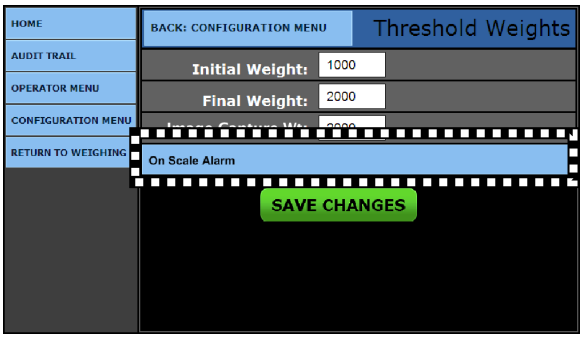
- Press the **SAVE CHANGES** button when any changes are made, or they will be lost.

6.9. On Scale Alarm

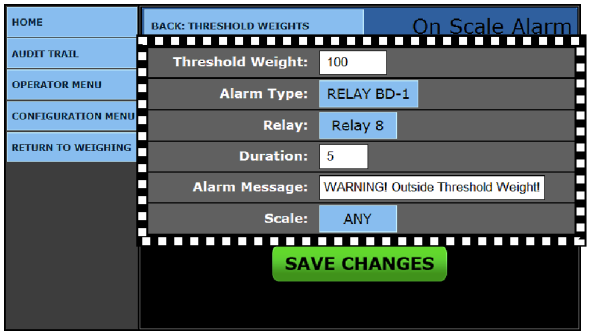
The **ON SCALE ALARM** gives an audio and visual alert whenever the **Threshold Weight** meets or exceeds the **Initial Weight**.

Follow these steps to set the parameters of the **On Scale Alarm**.

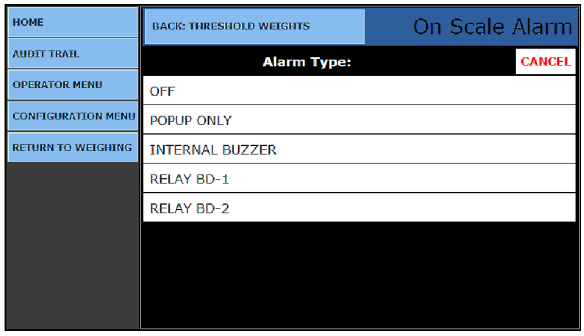
3. In the **THRESHOLD MENU**, press the **ON SCALE ALARM** button.



4. Enter the **THRESHOLD WEIGHT** amount.
5. Open **Alarm Type** and select the correct one.



OFF	No alarm.
POPUP ONLY	Visual **Alarm Message** popup window, written by supervisor.
INTERNAL BUZZER	Audio alarm made by the Instrument.
RELAY BD-1 / RELAY BD-2 (*Relay Boards 1 & 2*)	Trips a relay that activates a device, which sounds an alarm, turns on a light, or activates another signal to alert users. • Each board can control up to **eight (8) relays**.

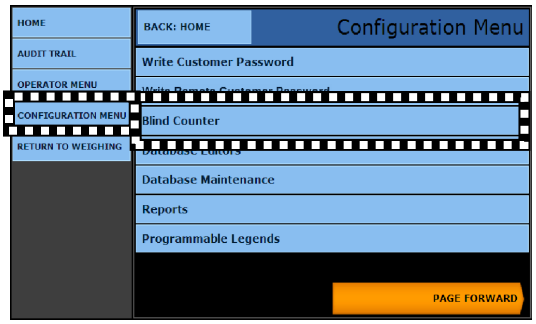


6. Select **RELAY 1** thru **8**.
7. Set the alarm **DURATION** (in minutes).
   – **1** to **99** minutes.
8. Input the visual **ALARM MESSAGE** for the popup message.
9. Enter either one specific scale, or ANY.

- Press the **SAVE CHANGES** button when any changes are made or they will be lost.
- Select **BACK: CONFIGURATION MENU** to return to the previous menu.

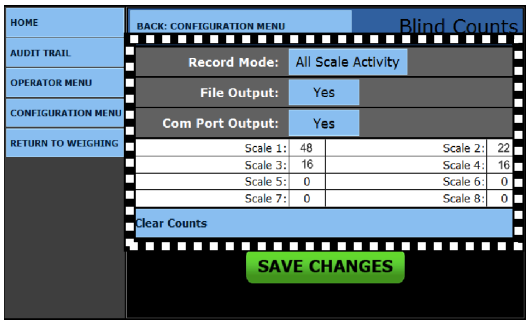
6.10. Blind Counter

1. While in the Configuration Menu, select **BLIND COUNTER.**



The **BLIND COUNTER** monitors all activity on the scale and triggers an event whenever any active scale exceeds the **Initial Weight Threshold.**

- The **BLIND COUNTER** does not generate a print.
- This records all activities that do not result in a print, as long as, the Initial Weight Threshold is met and stable for **ten (10) seconds**.

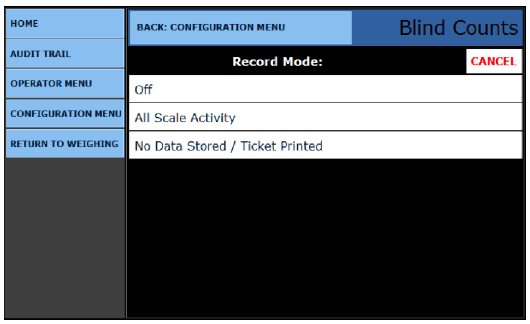


Output may be directed to **FILE OUTPUT, COM PORT OUTPUT**, ***or both***.

If the unit uses cameras, an image can be captured, depending on the configuration.

- The system supports up to **two (2) cameras**.

Open the **RECORD MODE** window to select how the data is stored, if at all.



- OFF disables the Blind Counter.
- **ALL SCALE ACTIVITY** records all the weighments.
- **NO DATA STORED/TICKET PRINTED** records data if it is not stored on a weighment or a printed ticket.

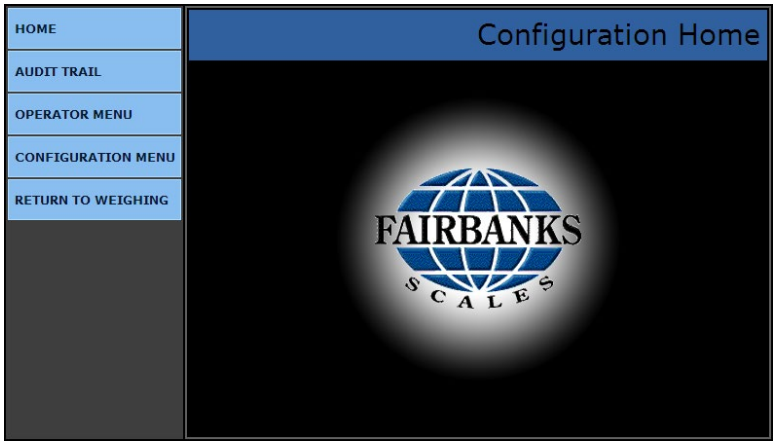
2. Click the **FILE OUTPUT** button, and then select **YES** or **NO.**
   - Sends the weighment data to a specific application folder.
3. Click the **COM PORT OUTPUT** button, then select **YES** or **NO.**
4. Answer **YES** to send the transaction through one of the **Configured Output** serial ports.
   - These must be configured for this purpose.
   - **Blind Counter Transaction data** will begin with a **BLIND COUNTER** legend for identification.
5. Click the **CLEAR COUNTS** button to reset the **BLIND COUNTER** to zero (0).

- Press the **SAVE CHANGES** button when any changes are made or they will be lost.

Section 7: Supervisor Programming

7.1. Introduction

CONFIGURATION HOME is the first menu that appears after the **Write Customer Login**.



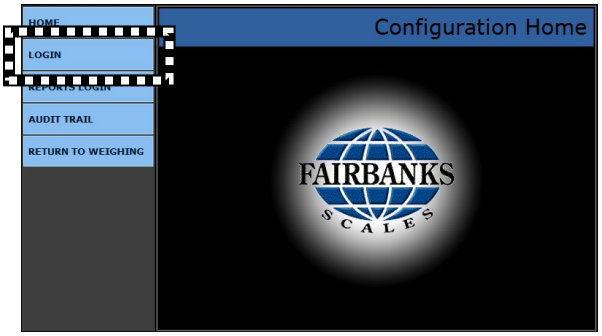
HOME	Returns the operator to the Configuration Home page
AUDIT TRAIL	Identifies how many times and when changes have been made to the scale's Calibration or Configuration settings.
OPERATOR MENU	User access for Time/Date, Ticket Number, Load Cell Diagnostics, and Keyboard Tare entries.
CONFIGURATION MENU	Write Customer access to communications programming and functions, ticket formats, programmable legends and prompts, camera inputs and weight threshold.
RETURN TO WEIGHING	Returns the user to the Weighing Display Screen.

IMPORTANT NOTE: *An* **External Keyboard Accessory (31036** *or* **25498)** *is necessary for inputting tares, entering all alphabetic characters, such as editing customers and products.*

7.2. Operator Menu

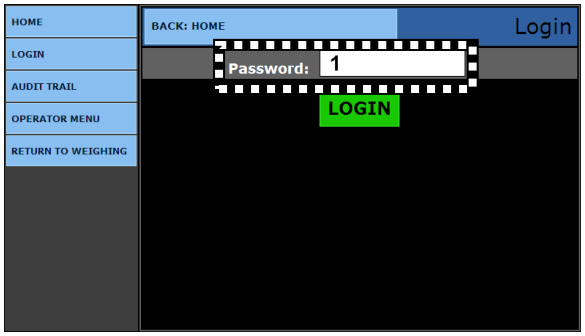
7.2.1. Entering a New Tare Automatically

It is necessary to **LOGIN** with the **Write Customer Password** when programing the **TARE** functions in the **OPERATOR MENU**.



1. While in the **WEIGH SCREEN,** press the **MENU** button.
2. Select **LOGIN**.
3. Enter the Write Customer Password.

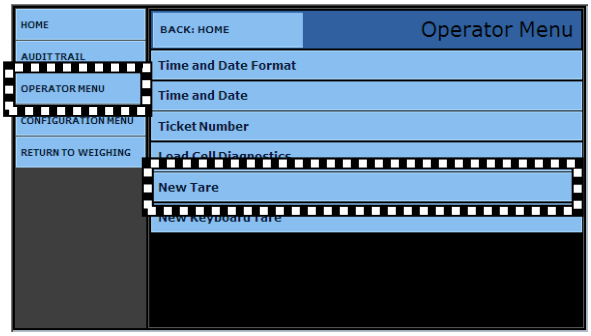
   ✓ **First-time-use default = 1**



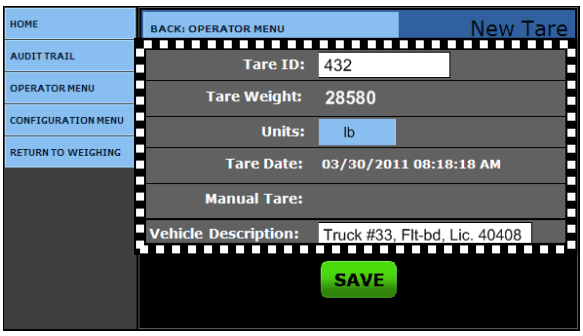
4. Press the **LOGIN** button.
5. Select the **OPERATOR MENU**.
6. Open the **NEW TARE** option.
7. Enter the **TARE ID** numeric value to store and recall a tare weight saved.
   - The **Tare Weight** value is what is currently on the scale.
   - This value cannot be edited.
8. Select the correct **UNITS** value.

   A **Tare Date** generates automatically when the Tare is entered.

   The **Manual Tare** option is not used in this programming menu.

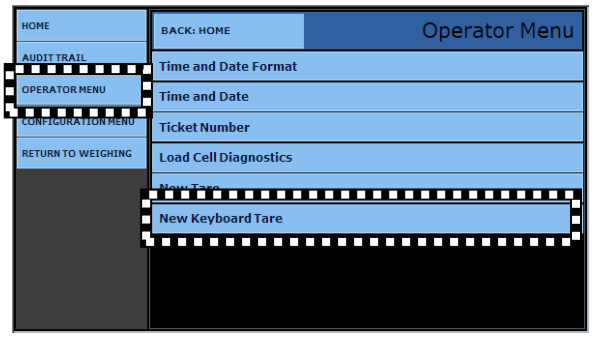


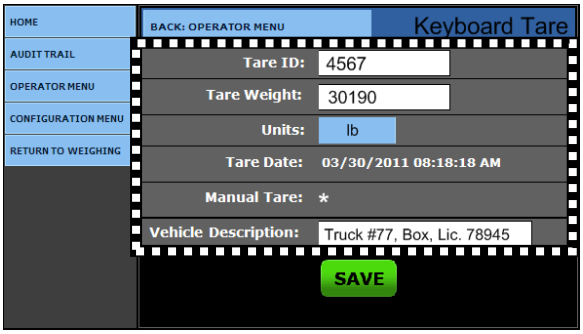
9. Enter the Vehicle Description.
   - This is a unique description or label for the tare weight.



7.2.2. Entering a New Keyboard Tare

1. While in the **OPERATOR MENU**, open the **NEW KEYBOARD TARE** option.
2. Using the Keyboard, enter a new **TARE ID** numeric value to save and recall the **tare Weight**.
3. Enter the **TARE WEIGHT** manually using the keyboard.
4. Select the **UNITS** for the new Tare.
   - The **Tare Date** records the date and time the tare generates automatically.
   - The **Manual Tare** is a flag designating the tare is manually entered.
5. Enter the **Vehicle Description**.
   - This is a unique description or label for the tare weight, and how it is associated.

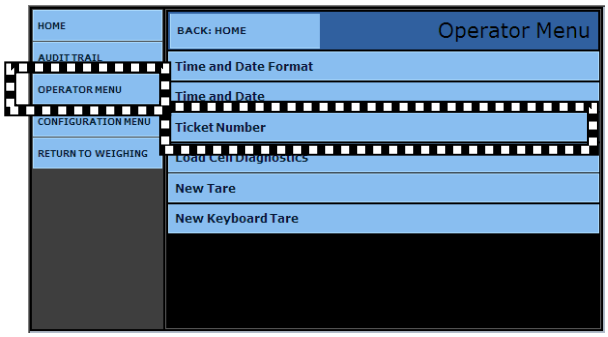




7.2.3. Resetting the Ticket Number

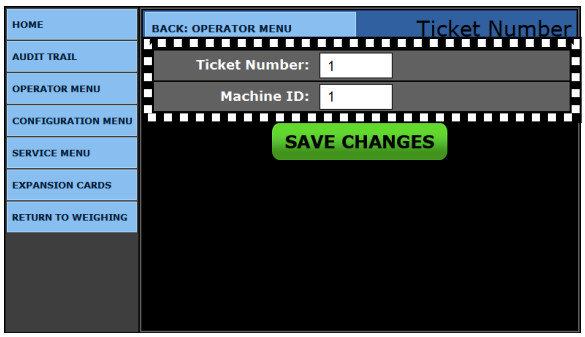
Follow these steps to reset the **Ticket Number.**

1. While in the OPERATOR MENU, select **TICKET NUMBER**.



2. Set the Machine ID to ONE (1).
   - This window also resets the **Ticket Number**, as needed.

- Press the **SAVE CHANGES** button, or they will be lost.
- Press **BACK: EXIT** to return to the previous menu.



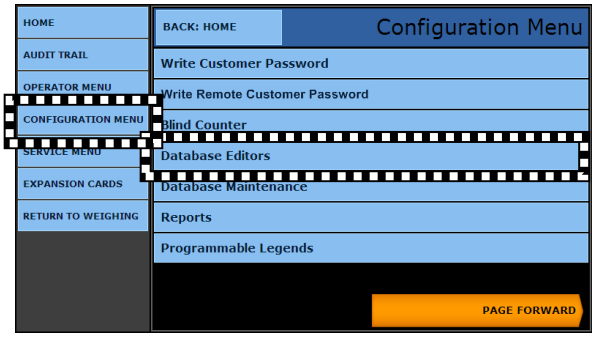
7.3. Configuration Menu

These functions add, update and delete all the data input needed for scale system.

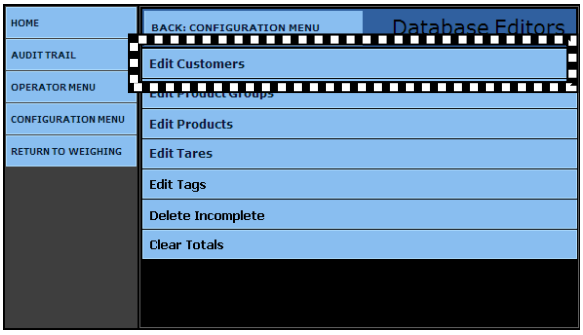
7.3.1. Edit Customers

The FB2558 Instrument stores customer's name and address, as well as, information used for reporting accumulated weights.

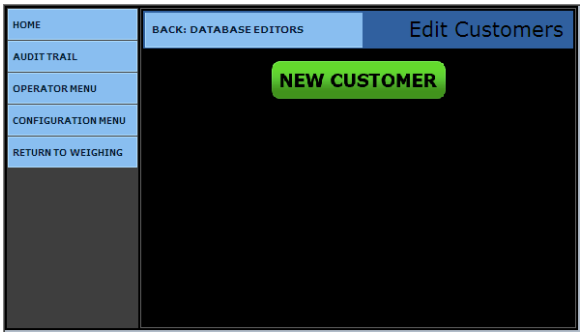
1. While in the Configuration Menu, press **DATABASE EDITORS**.



2. Select **EDIT CUSTOMERS**.



The first time a customer will be entered, the screen will appear as shown.



3. **OPTION A**

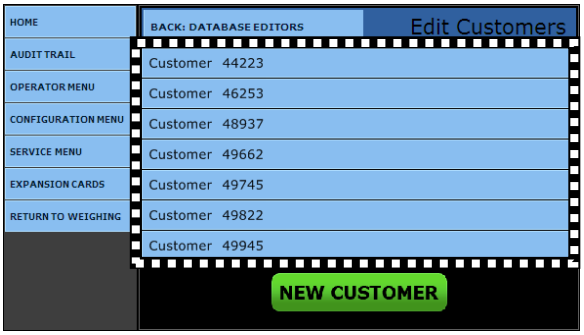
   Press the **NEW CUSTOMER** button.

   Enter the **NEW CUSTOMER** information.

OR

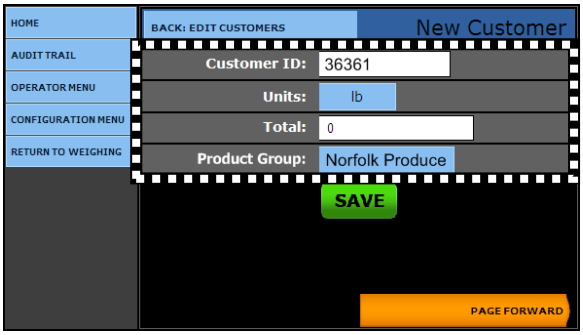
OPTION B

Open the existing **customer record** which needs editing or updating.

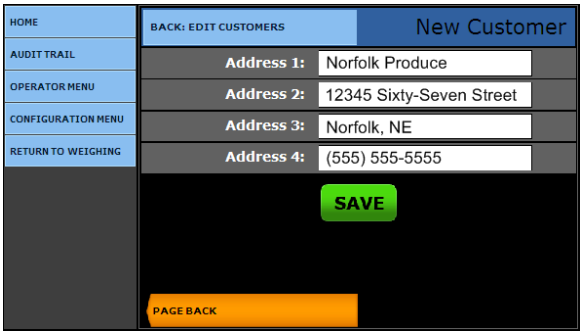


7.3.1. Edit Customers, Continued

4. Enter the unique customer number in the **CUSTOMER ID** data entry box.
   - When selecting a pre-existing Customer, the **CUSTOMER ID** will generate automatically.
   - The customer must be previously created before the truck's data will populate automatically.
   - The **TOTAL** data entry box is automatically populated and updated at every weighment that uses the **CUSTOMER ID** value.
   - This provides a running total of **NET WEIGHT** for each customer.

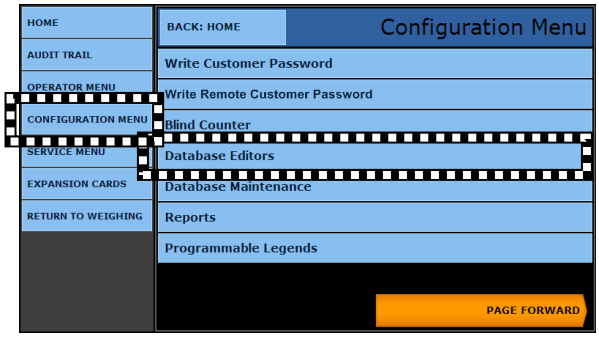


5. Select the **PRODUCT GROUP** from the list.
   - The **PRODUCTS** must first be created before they can apply to the **PRODUCT GROUPS.**

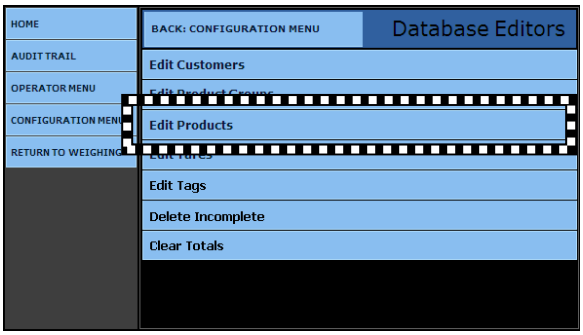


6. Input any pertinent company information in the **ADDRESS ONE** thru **FOUR** (**1 – 4)** data entry boxes.
   - **Include the business name, address(es), phone numbers, and point-of-contact names.**
   - Press the **SAVE CHANGES** button, or they will be lost.

7.3.2. Edit Products



1. Enter new and edit existing products in **EDIT PRODUCTS** menu.
   - The FB2558 Instrument stores up to 250,000 product and customer files.
   - They are used for calculations and reporting.

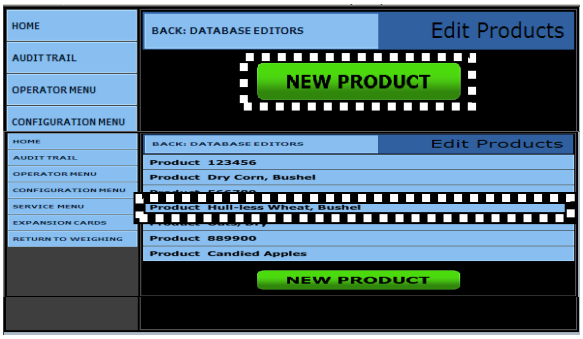


2. While in the Configuration Menu, select the Database Editors button.

3. Select Edit Products.

4. **OPTION A**

   Press the **NEW PRODUCT** button to generate a new one.



   OPTION B

   Enter the new **PRODUCT ID.**

   - This number is usually from a product inventory list.

   OR

   OPTION C

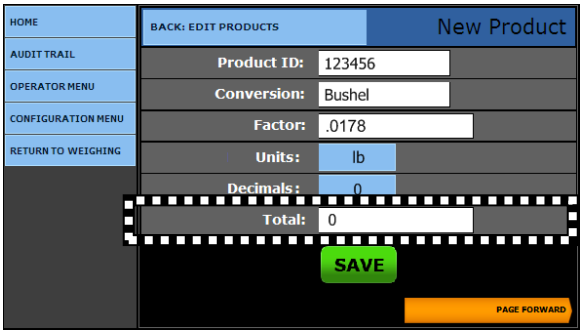
   Highlight the correct **PRODUCT**, then press the **NEW PRODUCT** button to edit an existing product.

   OR

   OPTION D

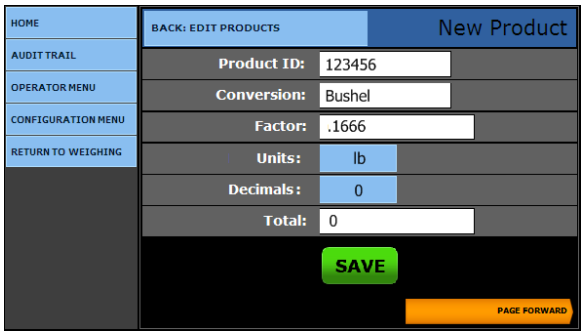
Enter the **PRODUCT ID** in the data entry box. Each product entered has an identification value for recalling it in the weighing process.

7.3.2. Edit Products, Continued



5. Enter **TONS, METRIC TONS, TONNES**, or **BUSHELS** in the Conversion field.
6. Set the **Total** input field.
   - This is an accumulated ***net*** weight value.
   - Enter a value of an existing amount, such as **"1960"**, **"0"** as the starting reference.

✓ **Total Default = 0**



7. Enter the **FACTOR** value in the entry field.
   - **This value converts the weight to another unit's value.**
   - **The Factor is multiplied by the Net Weight of a transaction.**
   - **To obtain the Factor, divide the conversion value of the unit into ONE (1).**

EXAMPLES

2000 lbs = 1 ton

Deriving
Factor: = 1/2000

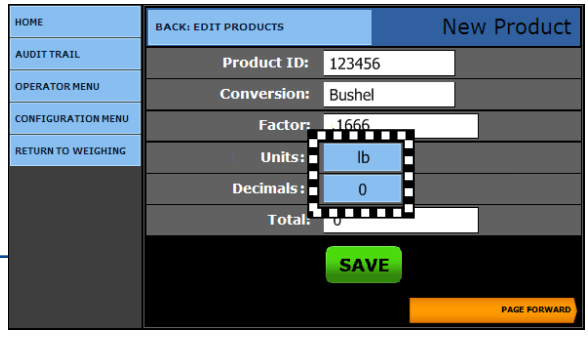
Factor: = **.0005**

56 lb = 1 bushel of shelled corn

Deriving
Factor: = 1/56

Factor: = **0.017857**

8. Press the **UNITS** button to select the measurement unit processed and displayed for each Product.



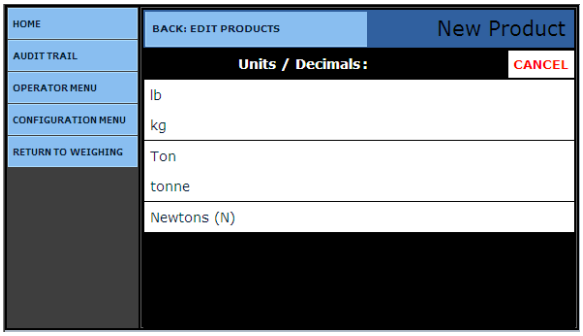
9. Press the **DECIMALS** button to select the number of places to the right of the decimal for the conversion result.

7.3.2. Edit Products, Continued

The **Total** data entry box is automatically populated and updated upon every weighment which utilizes the **Product ID value**.

- **This provides a running total of Net Weight for each product.**
- **Manually enter a ZERO to reset the accumulator.**

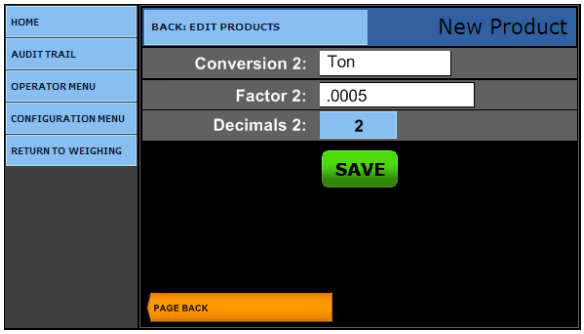
✓ **New Product Default = 0**



- Press the **PAGE FORWARD** button.
- Press the **SAVE** button, or they will be lost.
- Select **BACK: EDIT PRODUCTS** to return to the previous menu.

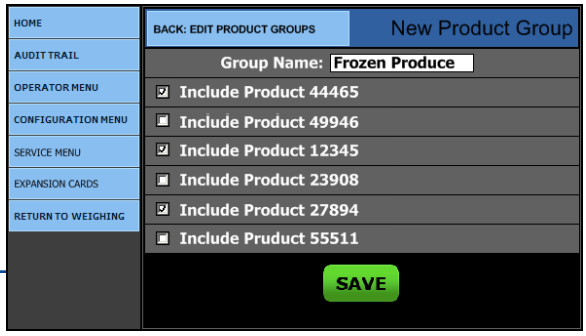
10. Select the **CONVERSION 2** option if a second one is used by the customer.

- Press the **SAVE** button, or they will be lost



7.3.3. Edit Product Groups

A **PRODUCT GROUP** is a filter to permit only specifically selected products to be used by a customer.



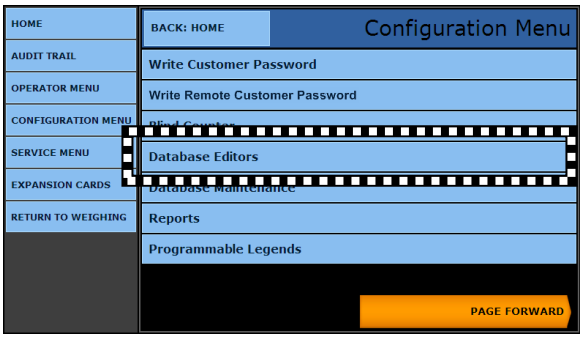
– **These groups are assigned to a customer from the Edit Customers menu.**

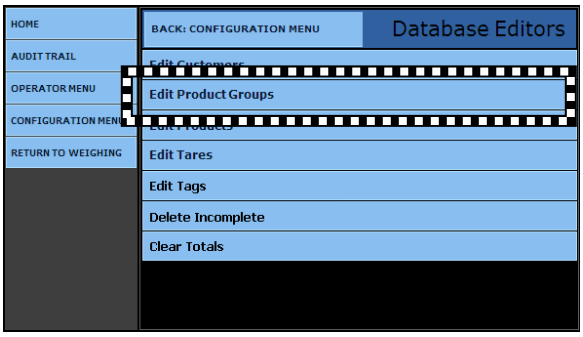
WORKING EXAMPLE

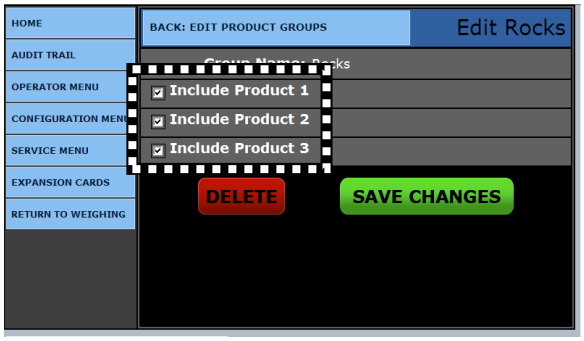
A vehicle weighs Inbound on the scale. The scale operator is prompted for **Loop ID, Customer ID**, and **Product ID**. When the **Product ID** is selected, a drop-down menu appears with the products the customer is limited to use.

Product IDs must be created first, before a **Product Group** is created.

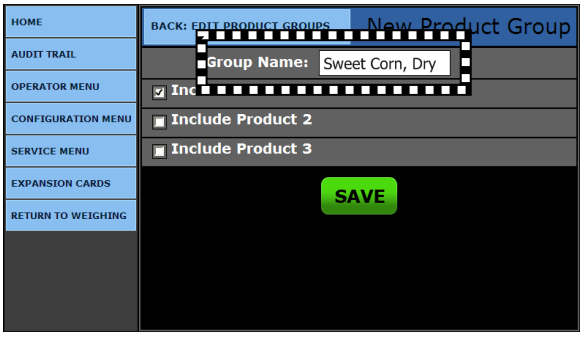
1. While in the **WEIGH SCREEN**, press the **MENU** button.
2. Select **LOGIN,** then enter the **Service Password**.
3. Press the **LOGIN** button.
4. Select the **CONFIGURATION MENU**.
5. Select **DATABASE EDITORS**.
6. Select **EDIT PRODUCT GROUPS**.







7. Assign a **GROUP NAME** for the new Product Group.



8. Place a check besides the **PRODUCT(S)** to be included in the group.
9. Press the **SAVE CHANGES** button when any changes are made, or they will be lost.

10. Check any of the Products, then press the **DELETE** button to remove the **Product Group.**

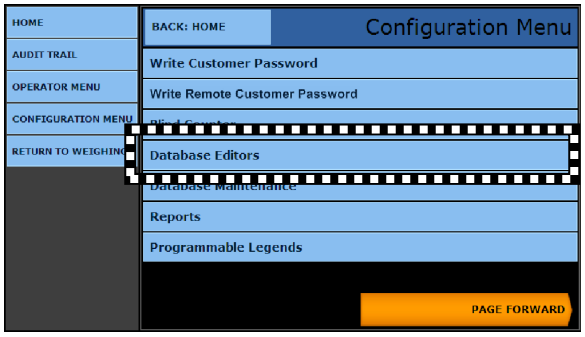
C A U T I O N

Deleting the Product Group will affect the operation of the FB2558 Instrument with many customers that use the group.

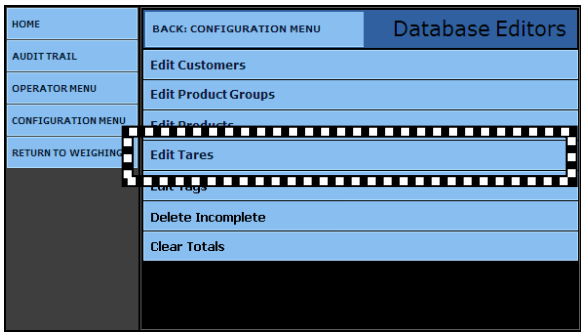
7.3.4. Edit Tares

The **EDIT TARES** option provides a quick access to all the active stored tares.

1. While in the **CONFIGURATION MENU**, press the **DATABASE EDITORS** button.



2. Select Edit Tares.



3. **OPTION A**

   Press an existing **TARE** to edit it,

   OR

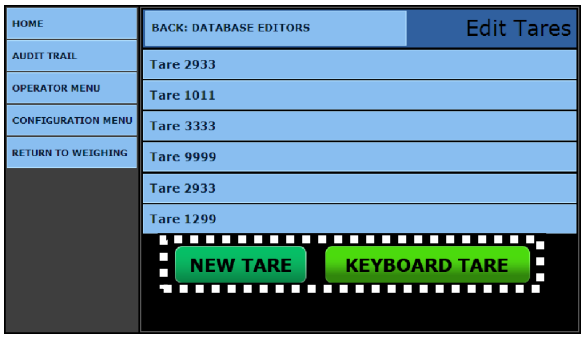
   OPTION B

   Press the **NEW TARE** button create one,

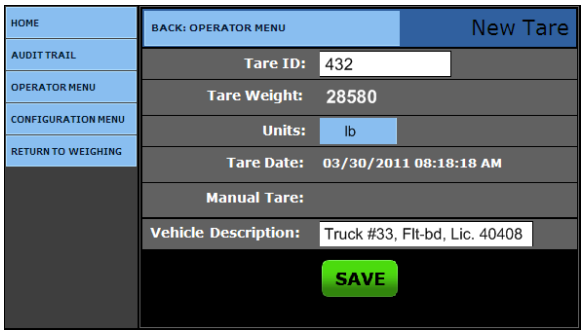
   OR

   OPTION C

   Press the **KEYBOARD TARE** button to add one using the keyboard.



7.3.4. Edit Tares, Continued

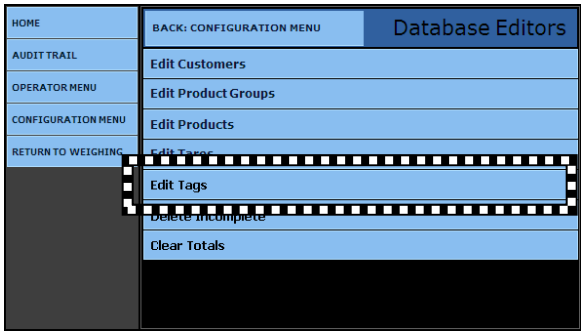


4. Enter the **TARE ID.**
   – This is a numeric value entered to store and recall the tare weight saved.
5. Enter the **TARE WEIGHT** from the scale.
   – This value cannot be edited.
6. Enter the **UNITS** from the available choices.
7. The **Tare Date** records the date and time the tare generates automatically.
8. The **Manual Tare** is a flag designating the tare is manually entered.
9. Enter the Vehicle Description.
   – This is a unique description or label for the tare weight and how it is associated.
10. Press the **SAVE** button when any changes are made, or they will be lost.
    – This exits to the **Edit Tares Menu**

- Select **BACK: OPERATOR MENU** to return to the previous menu.

7.3.5. Edit Tags

TAG ID FILES are used only with the **FB2558 DAT Instrument**, and ***do not apply to the FB2558 Inbound/Outbound unit.***

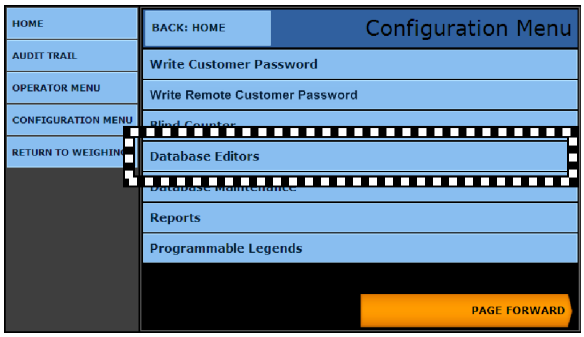


7.3.6. Deleting Incomplete Transactions

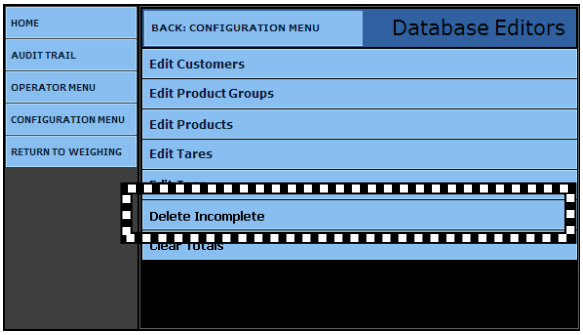
Through the course of normal operation of the FB2558 Instrument, an error may occur. An **Incomplete Transaction** is then created.

Follow the steps below to remove and delete **Incomplete Transactions** from the database.

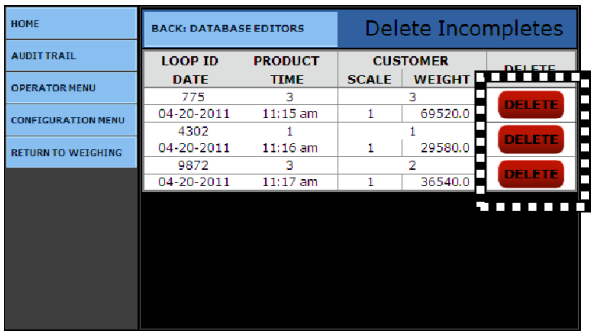
1. While in the Configuration Menu, select **DATABASE EDITORS**.



2. Select **DELETE INCOMPLETE**.



3. Select the **Incomplete Transaction** which is to be deleted by pressing the ***correct*** **DELETE** button.



- Select **BACK: DATABASE EDITORS** to return to the previous menu.

NOTE: *It is recommended to perform the* **Vacuum Database** *operation after deleting the transaction records.*

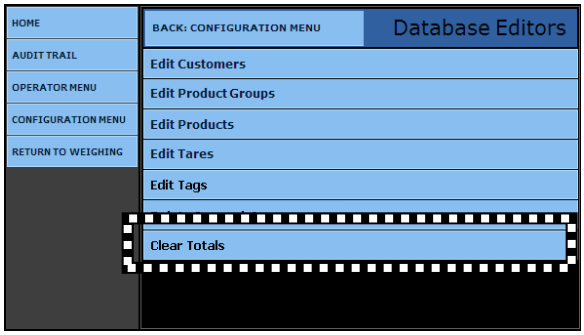
W A R N I N G

Once deleted, the record cannot be recovered.

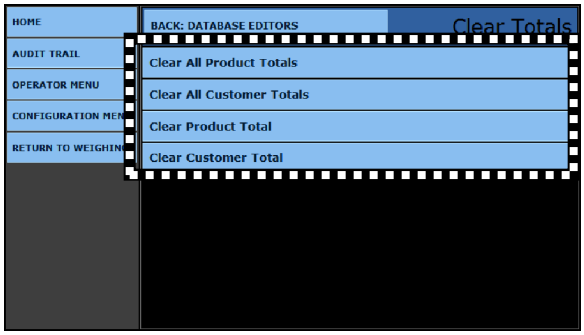
USE THIS OPERATION CAREFULLY!

7.3.7. Clear Totals

1. In the Configuration Menu, open the Database Editors option.
2. Select the **CLEAR TOTALS** menu.

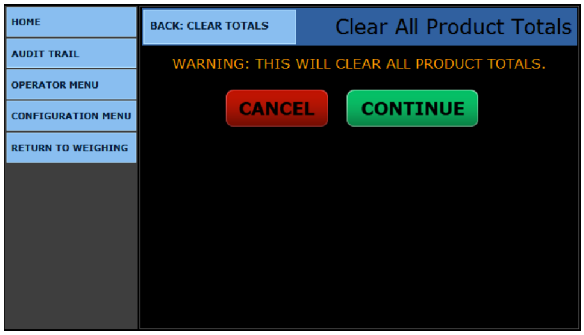


3. Click on one of the four options described below.



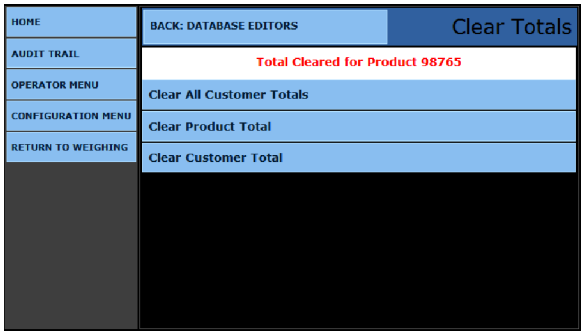
The **CLEAR ALL PRODUCT TOTALS** **or** **CLEAR ALL CUSTOMER TOTALS** options completely remove this transaction data.

- Doing this frees the stored memory space, making it available for new transaction data.
- *Most often used to update the entire database.*
- Because these options affects the entire system, including the **REPORTS function**, a **WARNING** message appears.



CLEAR PRODUCT TOTALS or **CLEAR CUSTOMER TOTALS** removes only one (1) data file per action.

- *Resets the accummulator for a single product file.*
- No warning displays for this action, as deleting an entry affects only the data associated to it.



W A R N I N G

Once deleted, the record cannot be recovered.

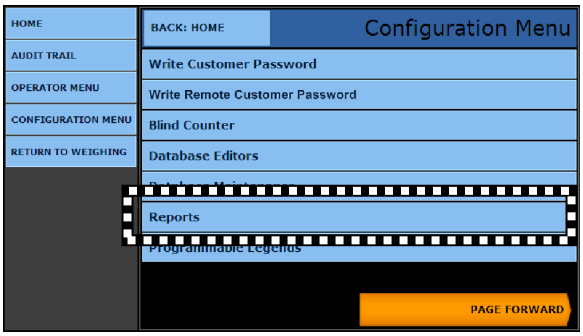
USE THIS OPERATION CAREFULLY!

7.4. Reports

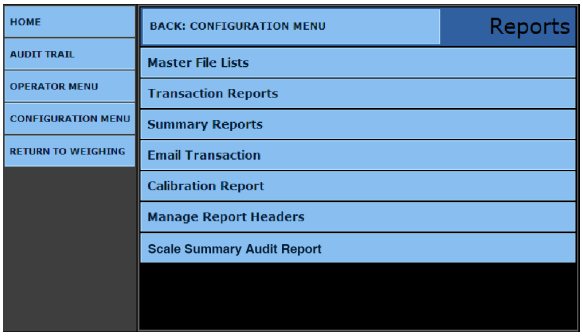
The FB2558 Instrument generates multiple built in reports that vary from **Master Lists** of customers, products, tares, and operators.

– These includes Transaction Reports and Summary Reports.

1. While in the **CONFIGURATION MENU**, select **REPORTS** to access the report list.



2. Select the type of report from the report list.



7.4.1. Master File Reports

The **MASTER FILE** reports are listings of all the data stored under each category available.

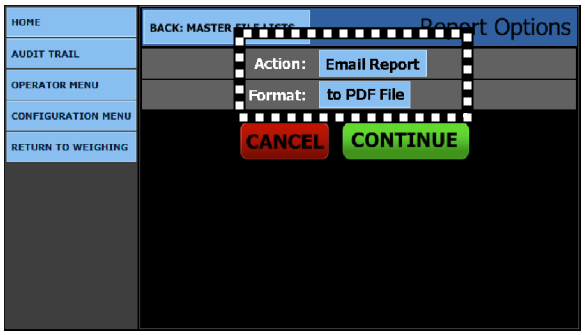
- **Customer List**
- **Product List**
- **Product Group List**
- **Stored Tare List**

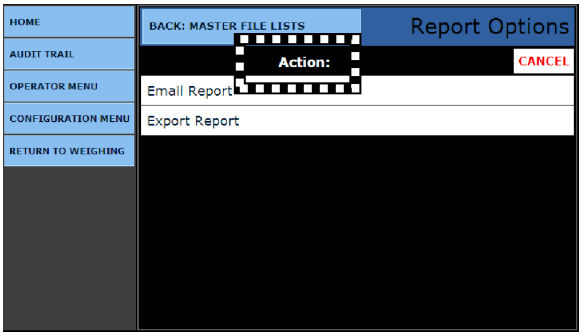
1. Select the correct **Report** from the **MASTER FILE** lists.

7.4.1. Master File Reports, Continued

2. Press the **ACTION** button, then select the correct one.

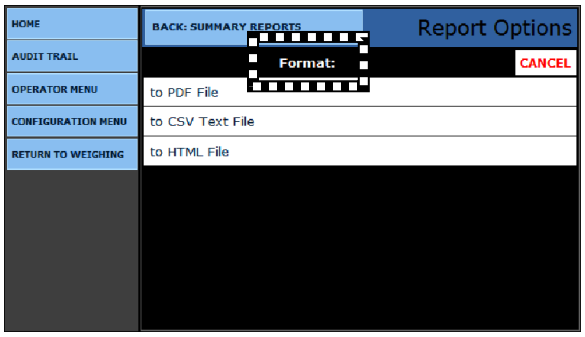
   - **Email Report**
   - **Export Report**





3. Press the **FORMAT** button, then select the correct one.

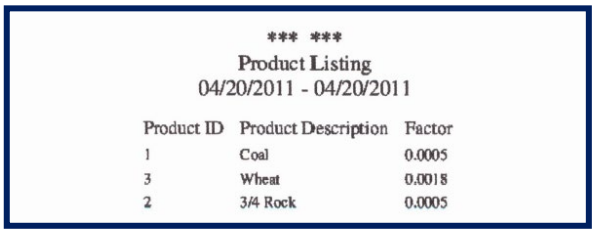
   - **To PDF File**
   - **To CSV Test File**
   - **To HTML File**



- Press the **CANCEL** button at any time to cancel the report operation.
- Press the **CONTINUE** button to begin the print operation.

*** ***
Customer Listing
04/20/2011 - 04/20/2011

Customer ID	Address 1	Address 2	Address 3	Address 4
1	ABC Company	123 ABC Road	Abcville, MT 09876	908-223-7765
2	Acme Consolidated Goods	7601 Plantation Ave	Plaunch, NE 76854	455-667-6521
3	XYZ Specialties	10109 NE 61st Street	Richmond, MO 64018	913-234-4260



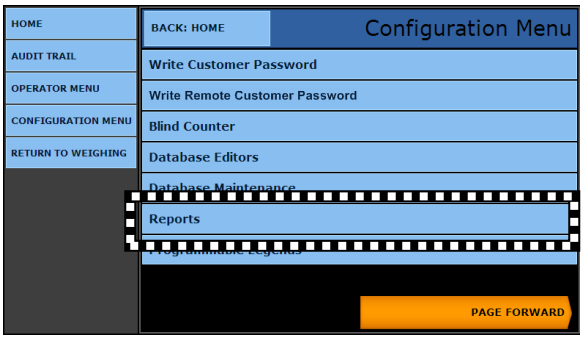
*** ***
Product Listing
04/20/2011 - 04/20/2011

Product ID	Product Description	Factor
1	Coal	0.0005
3	Wheat	0.0018
2	3/4 Rock	0.0005

Shown above are two examples of **Master File Reports.**

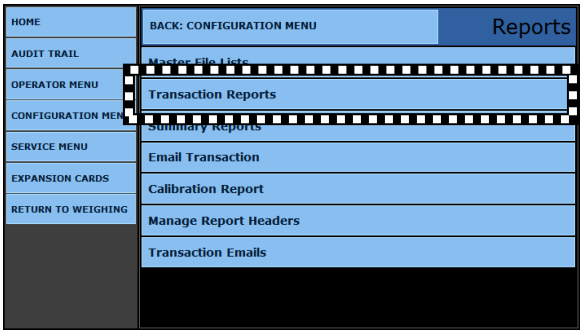
7.4.2. Transaction Reports

4. While in the **WEIGH SCREEN**, press the **MENU** button.
5. Select **LOGIN,** then enter the **Service Password**.
6. Press the **LOGIN** button.
7. Select Configuration Menu.
8. Press **REPORTS** to access the report list.



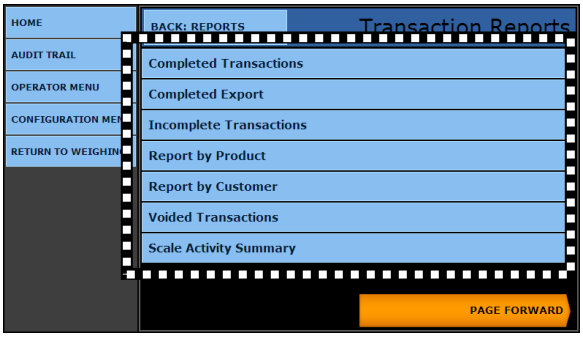
9. Select the **TRANSACTION REPORTS Menu** to choose from several reports.

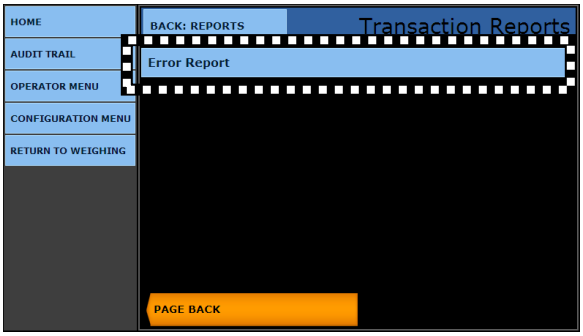
– **These process and use the transaction weighment data.**



10. Select a **TRANSACTION REPORT** option from the list below.

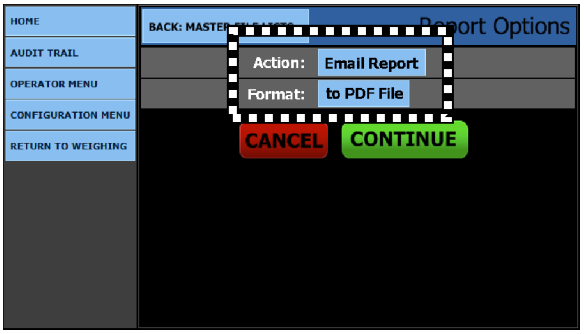
- **Completed Transactions**
- **Completed Export**
- **Incomplete Transactions**
- **Report by Product**
- **Report by Customer**
- **Voided Transactions**
- **Scale Activity Summary**
- **Error Report**





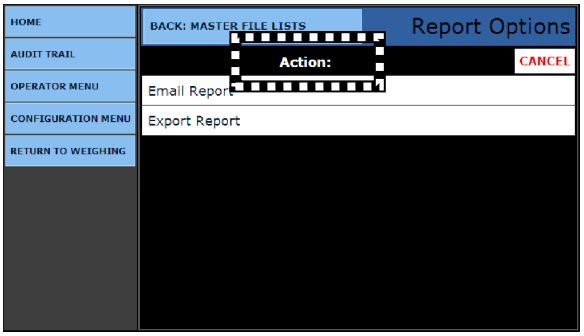
7.4.2. Transaction Reports, Continued

11. Select from the **REPORT OPTIONS MENU** for the method of printing the report.
12. Select the correct button In the **ACTION** window.

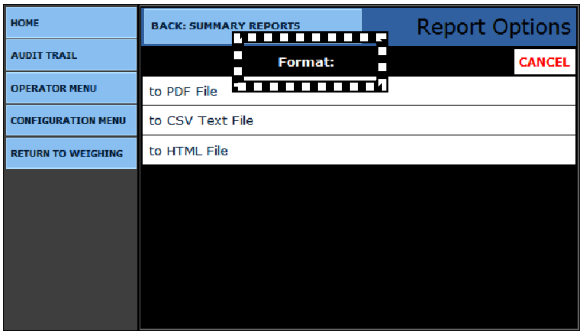


13. Select Email Report.
14. Select the correct button In the **FORMAT** window.

- **To PDF File**
- **To CSV Text File**
- **To HTML File**

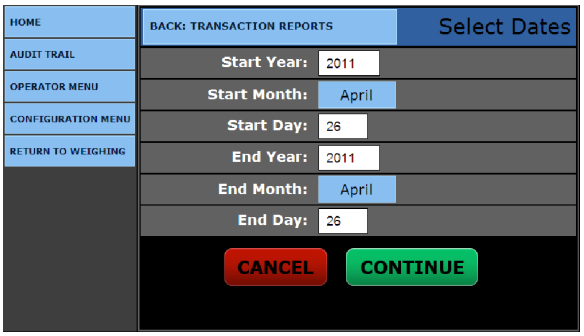


15. Press the **CONTINUE** button to begin the print operation.
16. Press the **CANCEL** button at any time to cancel the report operation.



17. In the Date Selection Menu, set the **START YEAR**, **MONTH** and **DAY**.
18. Set the End **YEAR**, **MONTH** and **DAY**.

✓ **Default = Current date**

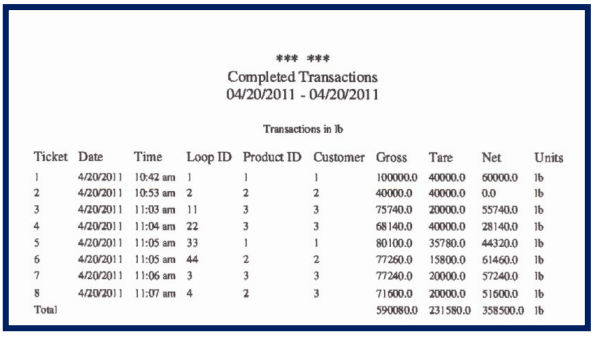


- Press the **CONTINUE** button to begin the print operation.
- Press the **CANCEL** button at any time to cancel the report operation.
- Select **BACK: TRANSACTION REPORTS** to return to the previous menu.

7.4.2. Transaction Reports, Continued

The **Completed Transaction Report** includes some or all of the following items.

- **Date Ranges**
- **Times and Dates of Transactions**
- **Ticket Numbers**
- **Weight Totals**



*** ***
Completed Transactions
04/20/2011 - 04/20/2011

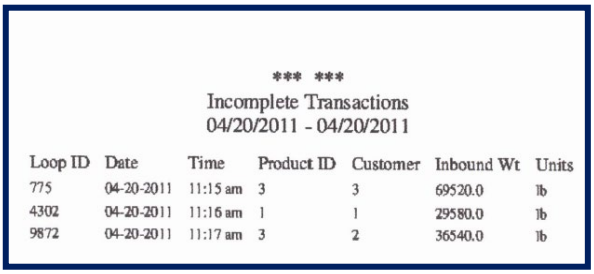
Transactions in lb

Ticket	Date	Time	Loop ID	Product ID	Customer	Gross	Tare	Net	Units
1	4/20/2011	10:42 am	1	1	1	100000.0	40000.0	60000.0	lb
2	4/20/2011	10:53 am	2	2	2	40000.0	40000.0	0.0	lb
3	4/20/2011	11:03 am	11	3	3	75740.0	20000.0	55740.0	lb
4	4/20/2011	11:04 am	22	3	3	68140.0	40000.0	28140.0	lb
5	4/20/2011	11:05 am	33	1	1	80100.0	35780.0	44320.0	lb
6	4/20/2011	11:05 am	44	2	2	77260.0	15800.0	61460.0	lb
7	4/20/2011	11:06 am	3	3	3	77240.0	20000.0	57240.0	lb
8	4/20/2011	11:07 am	4	2	3	71600.0	20000.0	51600.0	lb
Total						590080.0	231580.0	358500.0	lb

Shown above is an example of a **Complete Transaction Report.**

Shown to the right is an example of an **Incomplete Report**.

- **Incoming Weight**
- **Product IDs**
- **Loop Numbers**
- **Customer IDs**

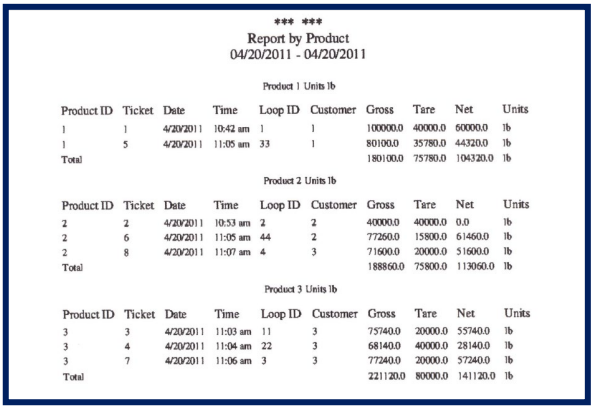


*** ***
Incomplete Transactions
04/20/2011 - 04/20/2011

Loop ID	Date	Time	Product ID	Customer	Inbound Wt	Units
775	04-20-2011	11:15 am	3	3	69520.0	lb
4302	04-20-2011	11:16 am	1	1	29580.0	lb
9872	04-20-2011	11:17 am	3	2	36540.0	lb

Shown above is an example of an **Incomplete Transaction Report.**

The **Report by Product** groups like products together and provides total weights for each product, which has been processed over the date range entered.



*** ***
Report by Product
04/20/2011 - 04/20/2011

Product 1 Units lb

Product ID	Ticket	Date	Time	Loop ID	Customer	Gross	Tare	Net	Units
1	1	4/20/2011	10:42 am	1	1	100000.0	40000.0	60000.0	lb
1	5	4/20/2011	11:05 am	33	1	80100.0	35780.0	44320.0	lb
Total						180100.0	75780.0	104320.0	lb

Product 2 Units lb

Product ID	Ticket	Date	Time	Loop ID	Customer	Gross	Tare	Net	Units
2	2	4/20/2011	10:53 am	2	2	40000.0	40000.0	0.0	lb
2	6	4/20/2011	11:05 am	44	2	77260.0	15800.0	61460.0	lb
2	8	4/20/2011	11:07 am	4	3	71600.0	20000.0	51600.0	lb
Total						188860.0	75800.0	113060.0	lb

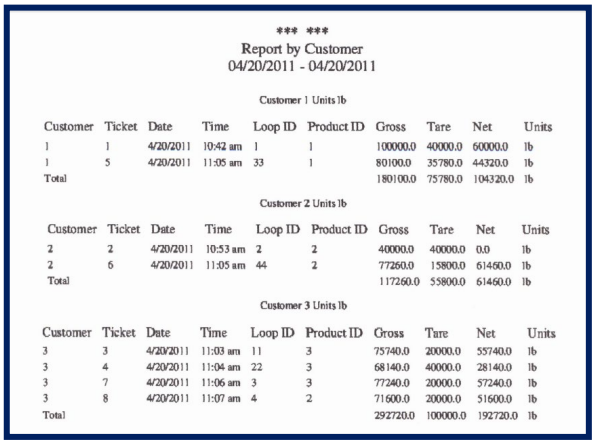
Product 3 Units lb

Product ID	Ticket	Date	Time	Loop ID	Customer	Gross	Tare	Net	Units
3	3	4/20/2011	11:03 am	11	3	75740.0	20000.0	55740.0	lb
3	4	4/20/2011	11:04 am	22	3	68140.0	40000.0	28140.0	lb
3	7	4/20/2011	11:06 am	3	3	77240.0	20000.0	57240.0	lb
Total						221120.0	80000.0	141120.0	lb

Shown above is an example of a **Report by Product.**

7.4.2. Transaction Reports, Continued

Like the report above, the **Report by Customer** will group like customers together and provides total weights for each customer which has been processed over the date range entered.



*** ***
Report by Customer
04/20/2011 - 04/20/2011

Customer 1 Units lb

Customer	Ticket	Date	Time	Loop ID	Product ID	Gross	Tare	Net	Units
1	1	4/20/2011	10:42 am	1	1	100000.0	40000.0	60000.0	lb
1	5	4/20/2011	11:05 am	33	1	80100.0	35780.0	44320.0	lb
Total						180100.0	75780.0	104320.0	lb

Customer 2 Units lb

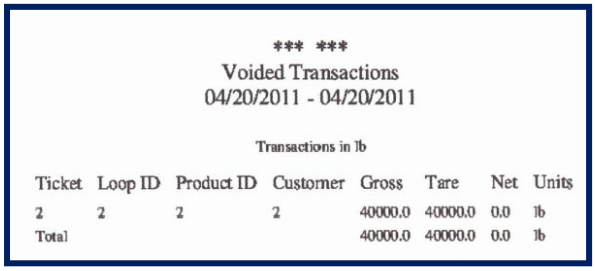
Customer	Ticket	Date	Time	Loop ID	Product ID	Gross	Tare	Net	Units
2	2	4/20/2011	10:53 am	2	2	40000.0	40000.0	0.0	lb
2	6	4/20/2011	11:05 am	44	2	77260.0	15800.0	61460.0	lb
Total						117260.0	55800.0	61460.0	lb

Customer 3 Units lb

Customer	Ticket	Date	Time	Loop ID	Product ID	Gross	Tare	Net	Units
3	3	4/20/2011	11:03 am	11	3	75740.0	20000.0	55740.0	lb
3	4	4/20/2011	11:04 am	22	3	68140.0	40000.0	28140.0	lb
3	7	4/20/2011	11:06 am	3	3	77240.0	20000.0	57240.0	lb
3	8	4/20/2011	11:07 am	4	2	71600.0	20000.0	51600.0	lb
Total						292720.0	100000.0	192720.0	lb

Shown above is an example of a **Report by Customer.**

The **Voided Transactions** report lists all transactions which have been voided over the date range entered.



*** ***
Voided Transactions
04/20/2011 - 04/20/2011

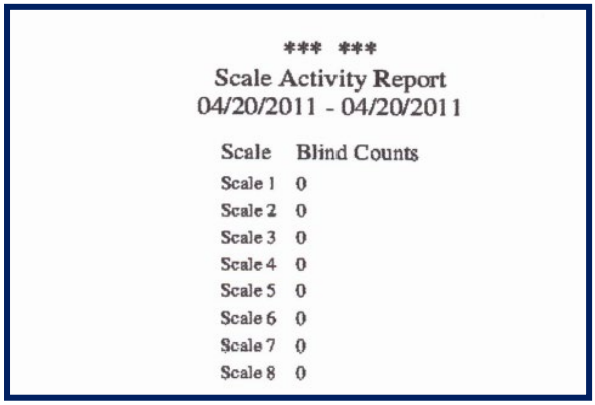
Transactions in lb

Ticket	Loop ID	Product ID	Customer	Gross	Tare	Net	Units
2	2	2	2	40000.0	40000.0	0.0	lb
Total				40000.0	40000.0	0.0	lb

Shown above is an example of a **Voided Transactions.**

The **Scale Activity Summary,** or **Blind Counter Report** lists the number of weighments which have exceeded the Threshold setting.

- **No tickets are produced, and the transaction is not stored or saved.**



*** ***
Scale Activity Report
04/20/2011 - 04/20/2011

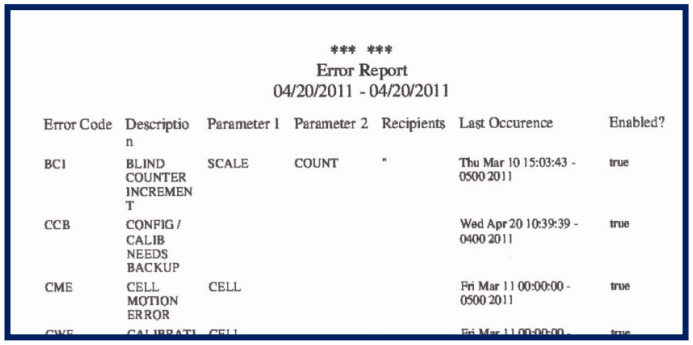
Scale	Blind Counts
Scale 1	0
Scale 2	0
Scale 3	0
Scale 4	0
Scale 5	0
Scale 6	0
Scale 7	0
Scale 8	0

Shown above is an example of a **Scale Activity Report.**

7.4.2. Transaction Reports, Continued

The **Error Report** lists all the errors which have occurred in the operation of the instrument.

- It details the specifics of each error code and the error parameters.
- The report also details if the error is enabled for reporting. The last occurrence details the time and date the error occurred.



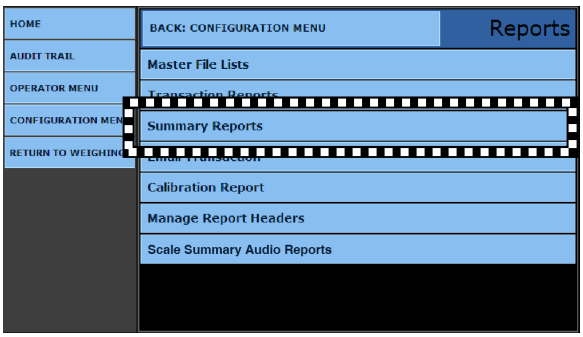
*** ***
Error Report
04/20/2011 - 04/20/2011

Error Code	Description	Parameter 1	Parameter 2	Recipients	Last Occurence	Enabled?
BCI	BLIND COUNTER INCREMENT	SCALE	COUNT	"	Thu Mar 10 15:03:43 - 0500 2011	true
CCB	CONFIG / CALIB NEEDS BACKUP				Wed Apr 20 10:39:39 - 0400 2011	true
CME	CELL MOTION ERROR	CELL			Fri Mar 11 00:00:00 - 0500 2011	true

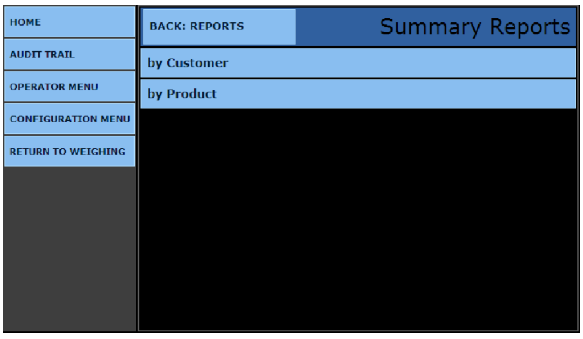
Shown above is an example of an **Error Report.**

7.4.3. Summary Reports

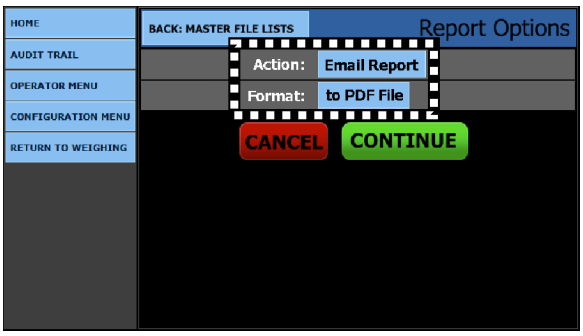
1. While in the **CONFIGURATION MENU**, select the **SUMMARY REPORTS** for a general summary of transaction activities for customers or products.



2. Select whether the Report is **BY CUSTOMER** or **BY PRODUCT.**



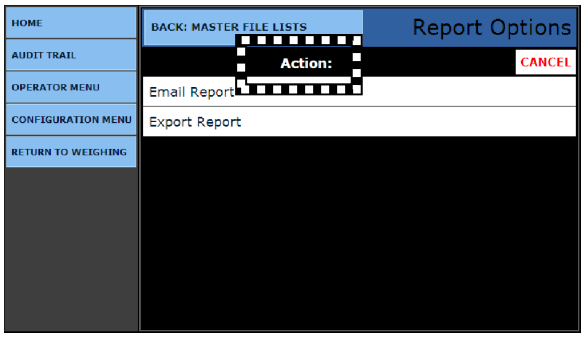
3. Select from the **REPORT OPTIONS MENU** for the method of printing the report.



7.4.3. Summary Reports, Continued

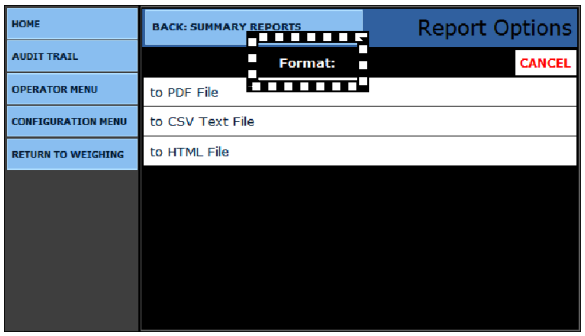
4. Select the correct button In the **ACTION** window.

- **Email Report**
- **Export Report**

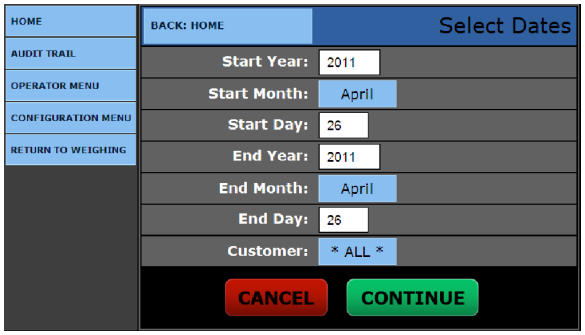


5. Select the correct button In the **FORMAT** window.

- **To PDF File**
- **To CSV Text File**
- **To HTML File**



6. Select the appropriate **Date Range** for the report.
   – The default values will be the current date.
7. Press the **CONTINUE** button to process the report.
8. Selecting the **CANCEL** button will abort the process.



Select **BACK: HOME** to return to the **Home Menu**.

*** ***
Summary Customer
04/20/2011 - 04/20/2011

Customer	Total Transactions	Total Weight	Units
1	2	180100.0	lb
2	1	77260.0	lb
3	4	292720.0	lb

Shown above is an example of a **Customer Summary Report.**

*** ***
Summary Product
04/20/2011 - 04/20/2011

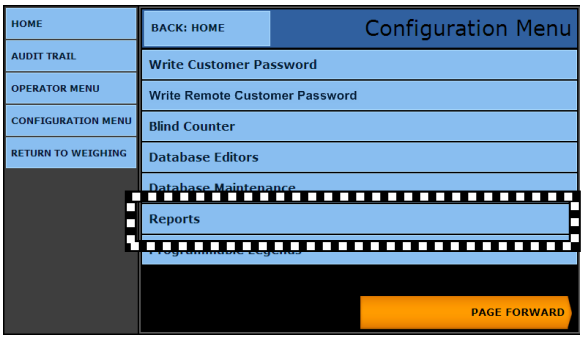
Product ID	Total Transactions	Total Weight	Units
1	2	180100.0	lb
2	2	148860.0	lb
3	3	221120.0	lb

Shown above is an example of a **Product Summary Report.**

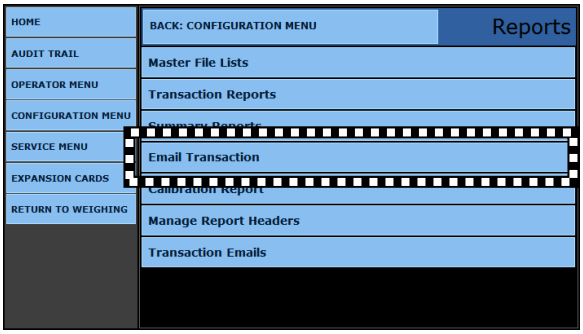
7.4.4. Email Transaction

The **EMAIL TRANSACTION** sends an email to a **maximum of three (3) recipients,** which contains **one (1) Transaction Record**.

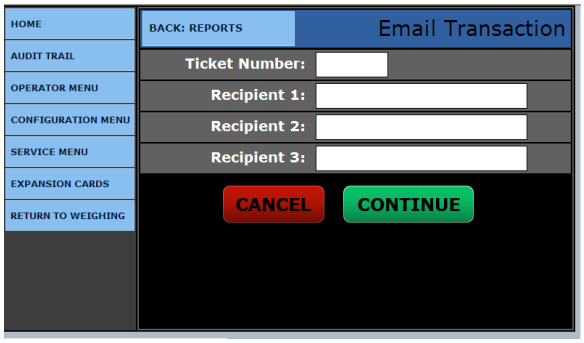
1. While in the **WEIGH SCREEN**, press the **MENU** button.
2. Select **LOGIN,** then enter the **Service Password**.
3. Press the **LOGIN** button.
4. Open the **CONFIGURATION MENU**.
5. Press **REPORTS**.



6. Select the **EMAIL TRANSACTION**.



7. Enter the valid **Ticket Number** to open a Transaction Record.
8. In the **Recipient 1, 2** and **3** fields, enter the correct **EMAIL ADDRESSES**.

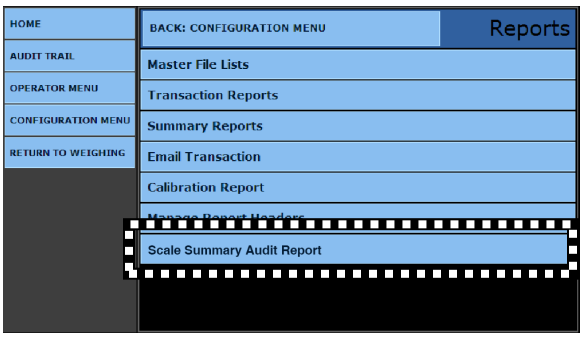


- Press the **CANCEL** button to abort the process
- Press the **CONTINUE** button to process the report.
- Select **BACK: REPORTS** to return to the **Reports Menu**.

7.4.5. Scale Summary Audit Report

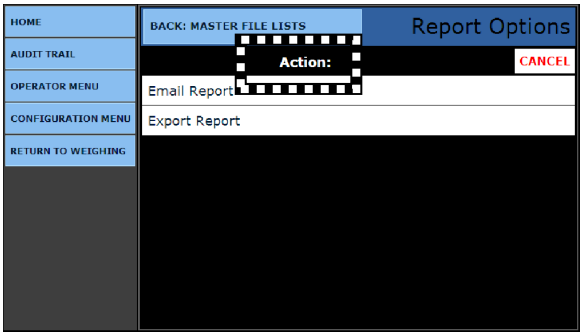
The **Scale Summary Audit Report** lists all the transactions individually for each type of weighment.

1. While in the **CONFIGURATION MENU**, select the Scale Summary Audit Report.



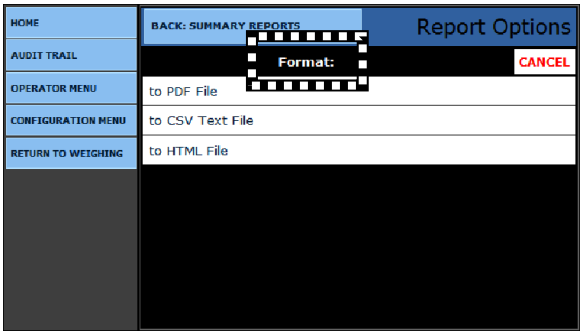
2. Select the correct button In the **ACTION** window.

- **Email Report**
- **Export Report**

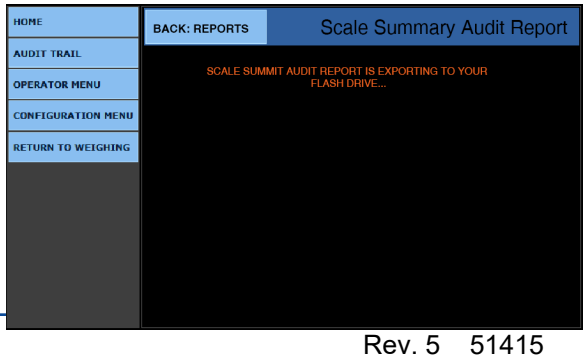


3. Select the correct button In the **FORMAT** window.

- **To PDF File**
- **To CSV Text File**
- **To HTML File**

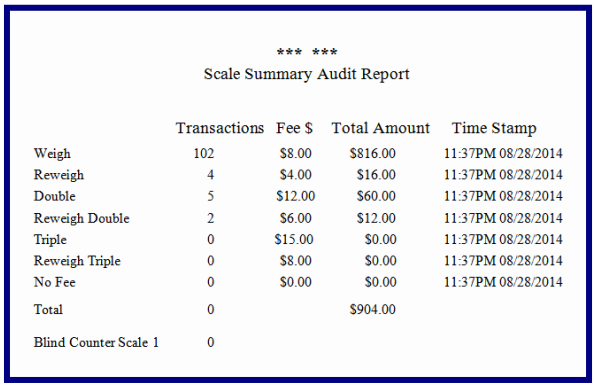


A processing message appears.



7.4.5. Scale Summary Audit Report, Continued

Shown below is an example of a **Scale Summary Audit Report** *for one day's weighments.*



*** ***

Scale Summary Audit Report

	Transactions	Fee $	Total Amount	Time Stamp
Weigh	102	$8.00	$816.00	11:37PM 08/28/2014
Reweigh	4	$4.00	$16.00	11:37PM 08/28/2014
Double	5	$12.00	$60.00	11:37PM 08/28/2014
Reweigh Double	2	$6.00	$12.00	11:37PM 08/28/2014
Triple	0	$15.00	$0.00	11:37PM 08/28/2014
Reweigh Triple	0	$8.00	$0.00	11:37PM 08/28/2014
No Fee	0	$0.00	$0.00	11:37PM 08/28/2014
Total	0		$904.00	
Blind Counter Scale 1	0			

Section 8: Input/Output

8.1. Printers

The FB2558 instrument has **three (3) standard Serial Output Ports** which are configured for RS-232 communications.

– Additional serial outputs such as **RS-232, 20mA**, and **RS-485** are available as optional accessories.

NOTE: *For solutions, see* **Section 10.2. Printer Troubleshooting.**

8.1.1. Printer Switch Settings

TAPE PRINTER	SW 1 ON	SW 2 ON	SW 3 ON	SWITCH SETTINGS
iDP3550 (SER)	**2, 3, 4, 8**	**1, 2, 3, 5, 6**	—	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit
* TM-U220 (WhITE) (SER)	**All OFF**	**All OFF**	**—**	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit
TM-U230/U220 (Dk GRay) DAT (SER)	**All OFF**	**2, 5, 8**	**—**	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit
SP700 (SER)	**1 thru 7**	**1 thru 6**	**1, 5**	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit

REPORT PRINTER	SW 1 ON	SW 2 ON	SW 3 ON	SWITCH SETTINGS
OKI ML420 (USB)	—	—	—	**N/A**
XEROX 3040 (USB)	—	—	—	**N/A**

TICKET PRINTER	SW 1 ON	SW 2 ON	SW 3 ON	SWITCH SETTINGS
TM-U590 (SER)	**1, 3, 7**	**All OFF**	**—**	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit
TM-U295 (SER)	**1, 3**	**All OFF**	**—**	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit
SP298 (SER)	**All OFF**	**3**	**1, 5**	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit
SP2000 (SER)	**All OFF**	**3**	**1, 5**	**2400** Baud, **Even** Parity, **7** Data and **2** Stop Bit
SP2200 (SER)	**2, 3, 8**	**All OFF**	**All OFF**	**2400** Baud, **No** Parity, **7** Data and **2** Stop Bit
OKI ML420 (SER)	**—**	**—**	**—**	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit

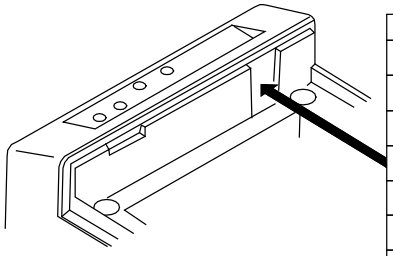
***** *Replaces the* **IDP 3550**.

Fairbanks printer **default settings** are noted in the chart to the right.

- Use **USB Cable** (**29827C**), as needed.
- FB2558 Desktop and NEMA 4X use **Serial Cable** (**25932**).

BAUD	9600
PARITY	None
DATA BITS	8
STOP BIT	1

8.1.2. iDP3550 Tape Printer



DS2	ON	OFF
1	X	
2	X	
3	X	
4		X
5	X	
6	X	
7		X
8		X

DS1	ON	OFF
1		X
2	X	
3	X	
4	X	
5		X
6		X
7		X
8	X	
9		X
10		X

BAUD	9600
PARITY	No
DATA BITS	8
STOP BIT	1

Cable 25932 Wiring for COM 1-3

DB-9 INSTRUMENT	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
2	RxD	BR	2	TxD
3	TxD	R	3	RxD
4	DRT	O	6	DSR
5	SG	Y	7	SG
6	DSR	G	20	DTR
7	RTS	BL	5	CTS
8	CTS	BK	4	RTS

Cable 25932 Wiring for Serial Expansion Module*

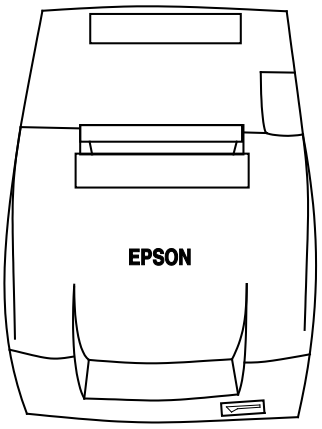
RS232 PORT 1: COM XX	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
TB1a-2	RxD	BR	2	TxD
TB1a-3	TxD	R	3	RxD
TB1a-4	DRT	O	6	DSR
TB1a-5	SG	Y	7	SG
TB1b-6	DSR	G	20	DTR
TB1b-7	RTS	BL	5	CTS
TB1b-8	CTS	BK	4	RTS

* *Must remove the* **9-pin connector**.

8.1.3. TM-U220 Tape Printer

The **TM-U220 Tape Printer** is the primary default printer for standard configurations with the FB2558 Instrument.

- It uses **SERIAL** communication.
- Necessary cable used is **25932**.



BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**

WIRING

Cable 25932 Wiring for COM 1-3

DB-9 INSTRUMENT	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
2	RxD	BR	2	TxD
3	TxD	R	3	RxD
4	DRT	O	6	DSR
5	SG	Y	7	SG
6	DSR	G	20	DTR
7	RTS	BL	5	CTS
8	CTS	BK	4	RTS

Cable 25932 Wiring for Serial Expansion Module*

RS232 PORT 1: COM7 XX	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
TB1**a**-2	RxD	BR	2	TxD
TB1**a**-3	TxD	R	3	RxD
TB1**a**-4	DRT	O	6	DSR
TB1**a**-5	SG	Y	7	SG
TB1**b**-6	DSR	G	20	DTR
TB1**b**-7	RTS	BL	5	CTS
TB1**b**-8	CTS	BK	4	RTS

* *Must remove the* **9-pin connector**.

8.1.3. TM-U220 Tape Printers, Continued

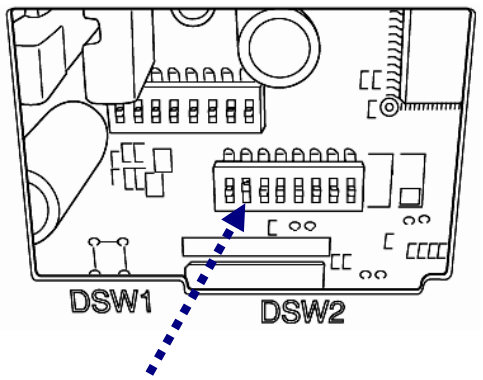
DIP SWITCH 1 (Serial Interface)

SWITCH	FUNCTION	ON	OFF
1	Data receive error	Ignored	**Prints "?"**
2	Receive buffer capacity	40 byes	**4KB**
3	Handshaking	XON/XOFF	**DTR/DSR**
4	Work length	7 bits	**8 bits**
5	Parity check	Yes	**No**
6	Parity selection	Even	**Odd**
7	Transmission speed	4800 bps	**9600 bps**
8	BUSY condition	Receive buffer full	**Receive buffer full or Offline**

DIP SWITCH 2 (Serial Interface)

SWITCH	FUNCTION	ON	OFF
1	Print Column	42/35	**40/33**
2	For internal use only (auto-cutter) (do not change)	**Enabled**	Disabled
3	Pin 6 reset signal	Used	**Not used**
4	Pin 25 reset signal	Used	**Not used**
5	Undefined	**--**	**--**
6	Internal use only (flash memory rewriting) (Do not change)	Enabled	**Disabled**
7	Undefined	--	**--**
8	Serial Interface section	Memory Switch	**Dip Switch**

Access the **Dip Switches** by unfastening the screw and removing the cover plate, found on the bottom of the printer.



For standard use, dip switches are factory-set correctly. **DSW2–2** *is the only one* **ON**.

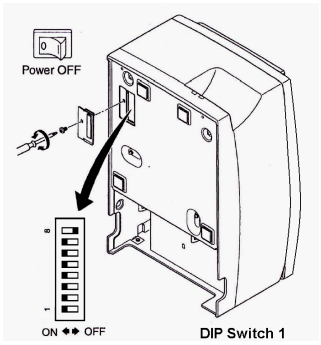
8.1.4. SP700 Tape Printer

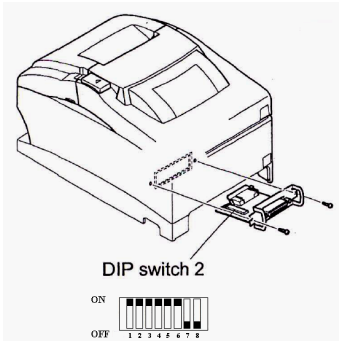
BAUD	9600
PARITY	No
DATA BITS	8
STOP BIT	1

For FB2558 Instrument communications, use cable **25932**.

There are two (2) dip switch locations on the **Star SP700 Printer**.

- Underneath the printer, behind a protective cover is **DIP SWITCH 1.**
- **DIP SWITCH 2** is on the **Serial Inteface Board**.





DIP Switch 1

SWITCH	FUNCTION	ON	OFF
1-1	Always ON	**Should be set ON**	
1-2	Auto Cutter *	**Invalid**	Valid
1-3	Always ON	**Should be set ON**	
1-4	Command Emulation	**Star**	ESC/POS
1-5	USB mode **	**Printer Class**	Vendor Class
1-6	2 Colors Printing	**Valid**	Invalid
1-7	Reserved		
1-8	Print head model ***	18-pin wire	**9-pin wire**

* The factory settings for enabling/disabling the **Auto Cutter** are as listed below.

- Models without Auto Cutter: Invalid (**Switch 1-2 = ON**).
- Models with Auto Cutter: Valid (**Switch 1-2 = OFF**)

NOTE: *Do not enable the* **AUTO CUTTER** *for models without this feature.*

A mechanical error will occur.

** **USB Interface** model only.

*** Do not change the default setting (**Switch 1-8** = **OFF**).

8.1.4. SP700 Tape Printer, Continued

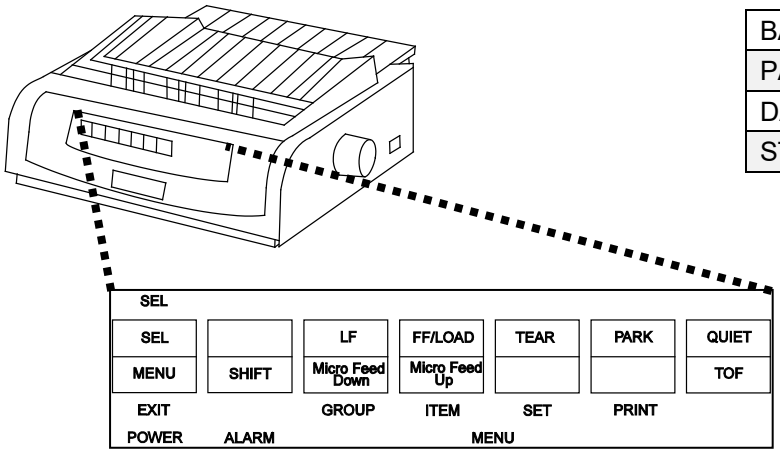
DIP Switch 2

SWITCH	FUNCTION	ON	OFF
2-1	Baud Rate	*See table below.*	
2-2			
2-3	Data Length	**8 bits**	7 bits
2-4	Parity Check	**Disabled**	Enabled
2-5	Parity	**Odd**	Even
2-6	Handshake	DTR/DSR	**XON/XOFF**
2-7	Pin #6 (DSR) reset signal	Valid	**Invalid**
2-8	Pin #25 (INIT) reset signal	Valid	**Invalid**

Baud Rate Settings Table

BAUD RATE	SWITCH 2-1	SWITCH 2-2
4800 bps	OFF	ON
9600 bps	**ON**	**ON**
1920 bps	ON	OFF
3840 bps	OFF	OFF

8.1.5. OKI ML420 Report Printer



BAUD	**9600**
PARITY	**None**
DATA BITS	**8**
STOP BIT	**1**

- For FB2558 Instrument communications, use cable **25932** or **14807.**
- For **USB** input, use cable **29827C**.

CABLE 26041 WIRING for Serial Expansion Module *

RS232 Port 1: COM XX	RS232 Port 2: COM XX	RS232 Port 3: COM XX	Description	DB-25 Printer
TB1a-3	TB1b-5	TB1d-2	Transmit (Tx)	3
TB1a-2	TB1c-1	TB1d-3	Receive (Rx)	2
TB1a-5	TB1c-2	TB1d-4	Ground (GND)	7

- ***All*** printer settings apply to both the **Serial** and **USB** models.

Cable 25932 Wiring for Serial Expansion Module*

RS232 PORT 1: COM7 XX	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
TB1**a**-2	RxD	BR	2	TxD
TB1**a**-3	TxD	R	3	RxD
TB1**a**-4	DRT	O	6	DSR
TB1**a**-5	SG	Y	7	SG
TB1**b**-6	DSR	G	20	DTR
TB1**b**-7	RTS	BL	5	CTS
TB1**b**-8	CTS	BK	4	RTS

* *Must remove the* **9-pin connector**.

NOTE: The **Okidata ML420** is used as both a Report Printer and a Ticket Printer.

- As a **USB Printer**, there is no need to adjust the Switch Settings.

8.1.5. OKI ML420 Report Printer, Continued

Follow these steps to change **MENU** *settings on the Printer.*

1. **To enter MENU MODE, press and hold the SHIFT key while pressing the SELECT key**.
   – The "**MENU**" legend will be illuminated.
2. With the printer in the **MENU MODE**, press the **PRINT** key
   – This prints all the programming options in the **MENU MODE**, as well as the current default settings.
   – It is recommended to use tractor fed paper.
   – ***The printed menu selections are different for each Emulation Mode.***
3. Press the **GROUP** key to select the relevant **Group** that needs to be changed.
4. Press the **ITEM** key to select the relevant **Item** within the selected group.
5. Press the **SET** key to cycle through all the **Settings** available
6. Press and hold the **SHIFT** + **SELECT** keys to exit the **MENU MODE.**

NOTE: *Turning off the printer before exiting the* **MENU MODE** *will lose any changes made.*

PRINTER SETTINGS

GROUP (Press **LINE FEED** to change)	**ITEM** (Press **FORM FEED** to change)	**SET** (Press **TOF SET** to change)
Printer Control	**Emulation Mode**	**IBM PPR**
Font	Print Mode	Utility
Font	DRAFT Mode	HSD
Font	Pitch	10 CPI
Font	Proportional Spacing	No
Font	Style	Normal
Font	Size	Single
Symbol Sets	Character Set	Set 1
Symbol Sets	Language Set	American
Symbol Sets	Zero Character	Slashed
Symbol Sets	Code Page	USA

8.1.5. OKI ML420 Report Printer, Continued

GROUP (Press **LINE FEED** to change)	ITEM (Press **FORM FEED** to change)	SET (Press **TOF SET** to change)
Printer Control	**Emulation Mode**	**IBM PPR**
Rear Feed	Line Spacing	6 LPI
Rear Feed	Form Tear-off	Off
Rear Feed	Skip Over Perforation	No
Rear Feed	Page Length	11”
Bottom Feed	Line Spacing	6 LPI
Bottom Feed	Form Tear-off	Off
Bottom Feed	Skip Over Perforation	No
Bottom Feed	Page Length	11”
Top Feed	Line Spacing	6 LPI
Top Feed	Form Tear-off	Off
Top Feed	Skip Over Perforation	No
Top Feed	Page Length	11”
Set-Up	Graphics	Bi-directional
Set-Up	Receive Buffer Size	64K
Set-Up	Paper Out Override	No
Set-Up	Print Registration	0
Set-Up	Operator Panel Function	Full Operation
Set-Up	Reset Inhibit	No
Set-Up	Print Suppress Effective	Yes
Set-Up	Auto LF	No
Set-Up	Auto Select	No
Set-Up	SI Select Pitch (10CP)	17.1 CPI
Set-Up	SI Select Pitch (12CPI)	12 CPI
Set-Up	Time Out Print	Valid
Set-Up	Auto Select	No
Set-Up	Centering Position	DEFAULT
Set-Up	ESC SI Pitch	17.1 CPI
Set-Up	Power Saving	Disable
Set-Up	Power Save Time	5 Min
Parallel I/F	I-Prime	Buffer Print
Parallel I/F	Pin 18	+5v
Parallel I/F	Bi-Direction	Enable

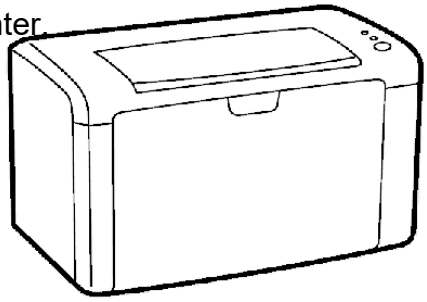
8.1.5. OKI ML420 Report Printer, Continued

GROUP (Press **LINE FEED** to change)	ITEM (Press **FORM FEED** to change)	SET (Press **TOF SET** to change)
Printer Control	**Emulation Mode**	**IBM PPR**
Serial I/F	Parity	None
Serial I/F	Serial Data 7/8 Bits	8 Bits
Serial I/F	Protocol	X-On/X-Off
Serial I/F	Diagnostic Test	No
Serial I/F	Busy Line	SSD-
Serial I/F	Baud Rate	9600 BPS
Serial I/F	DSR Signal	Invalid
Serial I/F	DTR Signal	Ready on Pwr up
Serial I/F	Busy Time	200 ms

8.1.6. XEROX® Phaser 3040 Report Printer

The **XEROX® Phaser 3040** is a ***USB only*** Report Printer.

- Plug-and-play device.
- Use **USB Cable** (**29827C**).



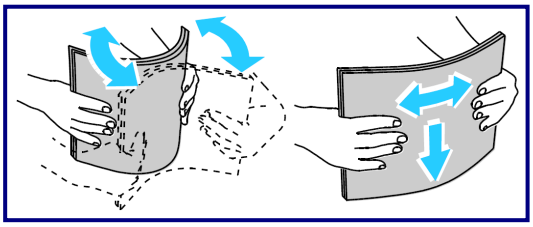
PRINTER SPECIFICATIONS

Print Speed	Up to 24 ppm
Resolution	• **600 x 600 dpi** • **1200 x 1200 dpi**
Paper Capacity	• **150-sheet main tray** • **100-sheet output tray**
Maximum Print Size	8.5 x 14 in.
Connectivity	USB 2.0
Dimensions	22”(w) x 32.6”(d) x 15.1”(h)
Optimum Temperature	50-90° F
Optimum Humidity Range *	15-85%
Power Supply Voltage and Frequency	• **110-127 VAC; 50/60 Hz (+/- 3 Hz)** • **220-240 VAC, 50/60 Hz (+/- 3 Hz)**
Printer Warm-up Time	• **Power on in 25 seconds or less.** • **Recovery from Sleep Mode in 25 seconds or less.**
Processor	150 MHz 4305 Processor
Memory	64MB Standard Memory

* *Defects can occur due to condensation.*

8.1.6. XEROX® 3040 Report Printer, Continued

LOADING PAPER IN THE MAIN TRAY



1. Open the front cover.

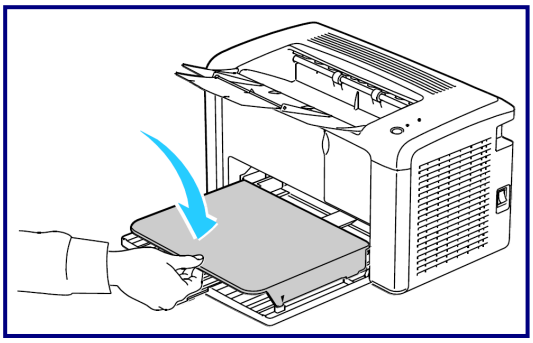
Pull the slide bar forward until it stops.

Pull the length guide forward until it stops.

Move the width guides to the edges of the tray.

Flex the paper sheets back and forth and fan them, then align the edges of the stack on a level surface.

– Doing this reduces the possibility of jams.



Load the paper into the tray, top edge toward the printer and the print side up.

Adjust the width guides until they touch the edges of the paper.

Push in the length guides and slide bar until they stop.

Place the paper cover on the main tray and align the tabs with the marks on the tray.

TONER/PAPER OUT WARNINGS

It is time to order supplies when the printer Control Panel displays a message.

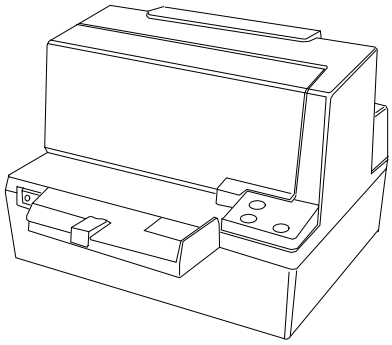
– To avoid interruptions of printing, order replacement supplies when the messages first appears as a warning.

– When the toner cartridge needs replacing, the control panel Instruments light up and display a message.

8.1.7. TM-U590 Ticket Printer

- For FB2558 Instrument communications, use cable **25932.**

BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**



Set the printer **dip switche**s as listed below.

DSW 1: 1, 3, and 7 = **ON** only.

DSW 2: All Switches = **OFF**

Cable 25932 Wiring for COM 1-3

DB-9 INSTRUMENT	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
2	RxD	BR	2	TxD
3	TxD	R	3	RxD
4	DRT	O	6	DSR
5	SG	Y	7	SG
6	DSR	G	20	DTR
7	RTS	BL	5	CTS
8	CTS	BK	4	RTS

Cable 25932 Wiring for Serial Expansion Module*

RS232 PORT 1: COM7 XX	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
TB1**a**-2	RxD	BR	2	TxD
TB1**a**-3	TxD	R	3	RxD
TB1**a**-4	DRT	O	6	DSR
TB1**a**-5	SG	Y	7	SG
TB1**b**-6	DSR	G	20	DTR
TB1**b**-7	RTS	BL	5	CTS
TB1**b**-8	CTS	BK	4	RTS

* *Must remove the* **9-pin connector**.

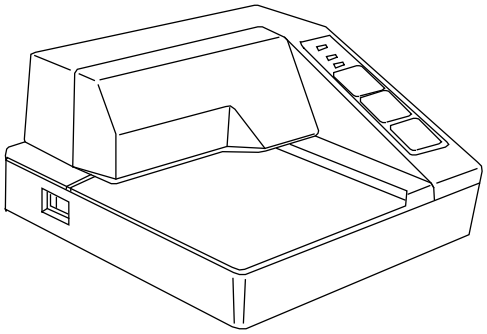
8.1.8. TM-U295 Ticket Printer

- For FB2558 Instrument communications, use cable **25932**.

BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**

Set the printer **dip switche**s as listed below.

- **SW1: 1 and 3 = ON**
- **Remainder = OFF**



Cable 25932 Wiring for COM 1-3

DB-9 INSTRUMENT	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
2	RxD	BR	2	TxD
3	TxD	R	3	RxD
4	DRT	O	6	DSR
5	SG	Y	7	SG
6	DSR	G	20	DTR
7	RTS	BL	5	CTS
8	CTS	BK	4	RTS

Cable 25932 Wiring for Serial Expansion Module*

RS232 PORT 1: COM7 XX	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
TB1**a**-2	RxD	BR	2	TxD
TB1**a**-3	TxD	R	3	RxD
TB1**a**-4	DRT	O	6	DSR
TB1**a**-5	SG	Y	7	SG
TB1**b**-6	DSR	G	20	DTR
TB1**b**-7	RTS	BL	5	CTS
TB1**b**-8	CTS	BK	4	RTS

* *Must remove the* **9-pin connector**.

8.1.9. SP298 Ticket Printer

- For FB2558 Instrument communications, use cable **25932**.

BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**

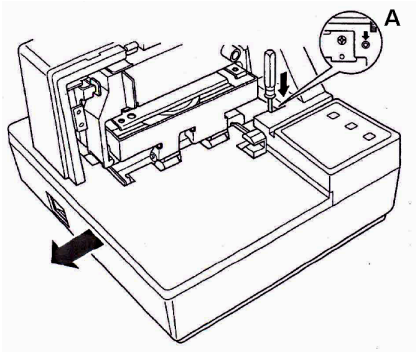
ACCESSING THE DIP SWITCHES

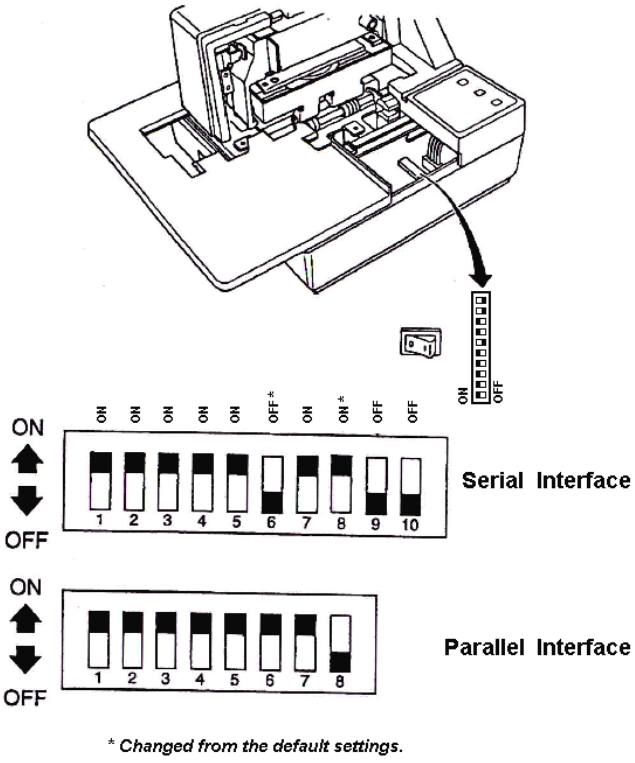
1. ***Remove all power from the printer*, as well as all Network cables from between the printer and the Instrument.**
2. Remove the **PRINTER COVER**.
3. Press down with a screwdriver at **LOCATION "A"** marked in the illustration below, and carefully slide the **Document Table** in the direction indicated by the arrow until it is out of the way.
   – It is not necessary to remove the document table completely. Just move it enough to access the DIP Switches inside.

Set the **DIP SWITCHES** into their correct positions.

Slide the Document Table back into place while pressing down at **LOCATION "A".**

Replace the **PRINT COVER**.





8.1.9. SP298 Ticket Printer, Continued

DIP Switch Settings (SERIAL INTERFACE)

SWITCH	FUNCTION	ON	OFF
1	Baud Rate	*See table below.*	
2			
3	Data Length	**8 bits**	7 bits
4	Parity Check	**Disabled**	Enabled
5	Parity	**Odd**	Even
6	Handshake	DTR/DSR	**XON/XOFF**
7	Command Emulation	*See table below*	
8			
9	Pin #6 (DSR) reset signal	Enabled	**Disabled**
10	Pin #25 (INIT) reset signal	Enabled	**Disabled**

Baud Rate Settings Table

BAUD RATE	SWITCH 1	SWITCH 2-2
4800 bps	OFF	ON
9600 bps	**ON**	**ON**
1920 bps	ON	OFF
3840 bps	OFF	OFF

Command Emulation Table

COMMAND EMULATION	SWITCH 7	SWITCH 8
Star Mode	**ON**	**ON**
ESC/POS (TM-295)	ON	OFF
ESC/POS (TM-290)	OFF	OFF
Not used (*)	OFF	ON

* *Never set* **Switch 7** *to* **OFF** *at the same time that* **Switch 8 is** *set to* **ON**.

8.1.10. SP2000 Ticket Printer

The SP2000 is a Dot Matrix ticket printer. The following switch settings and cable requirements will work with the default format.

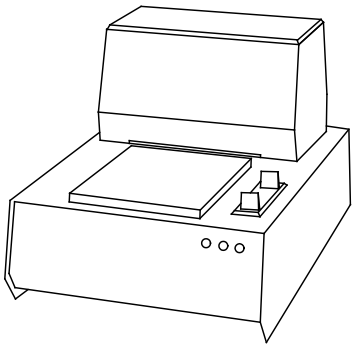
- For FB2558 Instrument communications, use cable **25932**.

Noted below are the **dip switch** and **default settings.**

- **DSW 1:** All **OFF.**
- **DSW 2:** **Three (3) ON** only.
- **DSW 3**: **One (1),** and **five (5) ON** only.

BAUD	**2400**
PARITY	**EVEN**
DATA BITS	**7**
STOP BIT	**1**

8.1.11. SP2200 Ticket Printer



The SP2200 is a Dot Matrix ticket printer. The following switch settings and cable requirements will work with the default format.

- For FB2558 Instrument communications, use cable **25932**.

STANDARD TICKET CONFIGURATIONS

Noted below are the **dip switch** and **default settings.**

- **DSW 1:** **Two (2), three (3),** and **eight (8) ON** only.
- **DSW 2** and **3:** All **OFF**.

BAUD	**2400**
PARITY	**NO**
DATA BITS	**7**
STOP BIT	**2**

INVERTED TICKET CONFIGURATIONS

To invert the print on an SP2200, switch settings are different, and must be changed.

– The printer does not invert using the software command, like with some other printers.

Set the printer's dip switches **DSW 1 four (4), five (5)** and **six (6)** according this chart.

Normal Print	Off	Off	Off
Inverted	Off	Off	ON
2x Width	Off	ON	Off
2xHeight	Off	ON	ON
2x Height Inverted	ON	Off	Off
2x Width Inverted	ON	Off	ON
2x Width and 2x Height	ON	ON	Off
2x Width and 2x Height Inverted	ON	ON	ON

8.1.12. Programming the Printers

The two printer interface types on the FB2558 are **USB** and **Serial**.

Serial Printers must be configured manually.

- Dip switches must be set up correctly or they will not transmit and print the data.
- Print drivers are sometimes needed to set up communications.

USB Printers are considered "plug-and-play", as the parameter defaults are automatically programmed.

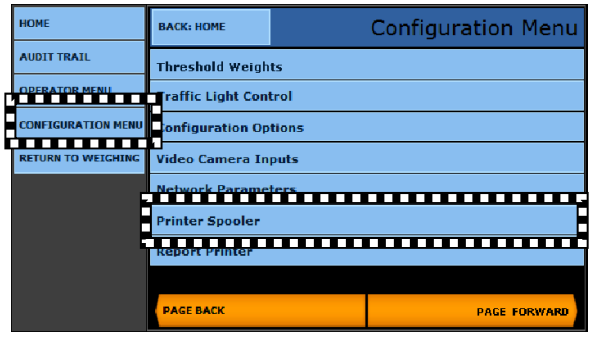
- There are no dip switches or drivers needed for these printers.

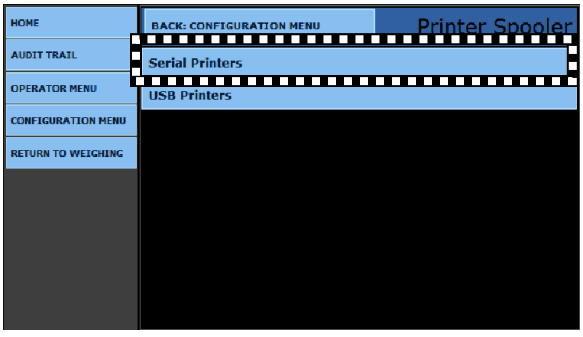
IMPORTANT NOTE: *For* **SERIAL PRINTERS**, *do not plug the printer into the Instrument if either is powered-up and running.* ***This can damage the I/O Board.***

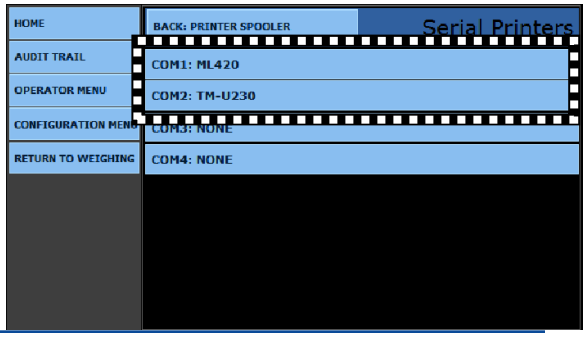
8.1.13. Serial Printer Programming

Follow these steps to configure the **Serial Printer** *connected to the FB2558 Instrument.*

1. **Plug the printer into one of the Instrument's Serial Ports.**
2. Turn on both components.
3. Press the **MENU** Button.
4. Press **LOGIN**, then enter the **Write Customer** or **Service Password**.
5. Press the **LOGIN** button.
6. Open the Configuration Menu.
7. **PAGE FORWARD** *twice*.
8. Select **PRINTER SPOOLER**.
9. Select **SERIAL PRINTERS**.
10. Select the correct **COM PORT** for the printer.



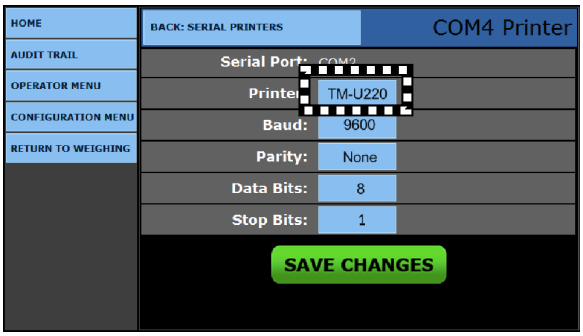




8.1.13. Serial Printer Programming, Continued

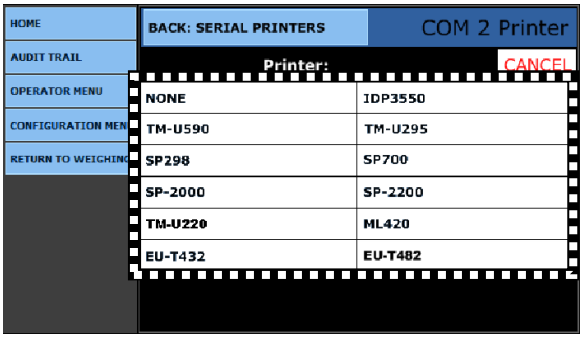
11. Open the **PRINTER** option, then select the **correct printer**.

CONNECTION TYPE	PRINTER
USB Only	• **Xerox Phaser 3040** • **ML420** • **HP P2055D**
Serial	• **iDP3550** • **TM-U590** • **TM-U295** • **SP298** • **SP700** • **SP-2000** • **SP-2200** • **TM-U230** • **ML420** • **EU-T432**

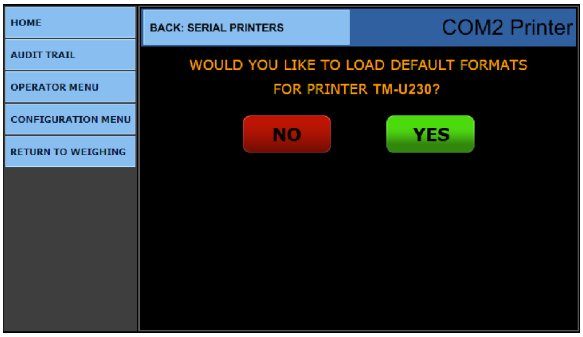


12. Program the parameters for the COM Port to the default printer as noted below.

BAUD RATE	**9600**
PARITY	**None**
DATA BIT(S)	**8**
STOP BIT(S)	**1**



13. If this is the first time the printer is installed on the Instrument, load the **PRINTER DEFAULT FORMATS** by pressing the **YES** button.

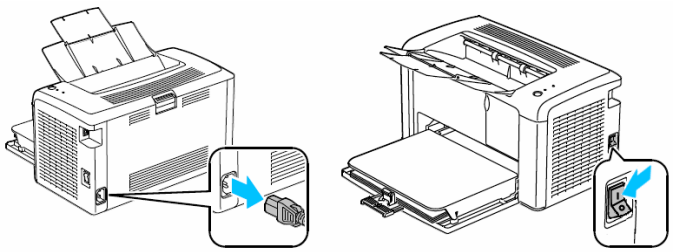


- Press the **SAVE CHANGES** button to complete the **Printer Configuration**.

8.1.14. USB Printer Programming

USB Printers are considered "***plug-and-play***" which means with the FB2558 Instrument is loaded with the standard drivers. There is no need to adjust the communication parameters or dip-switches.

Follow these steps to install a **USB Printer**.

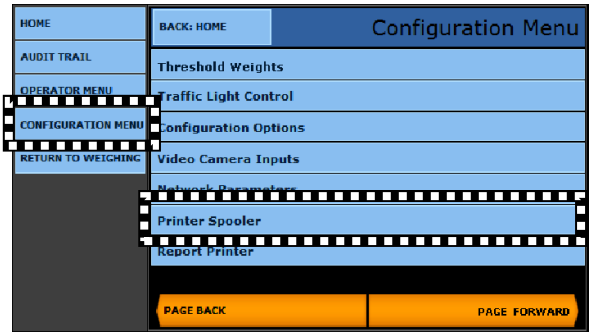


1. **Plug the printer into the Instrument's USB Port.**

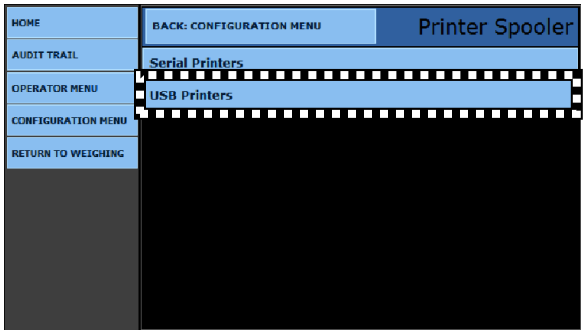
   Turn on the switch.

NOTE: USB Printers *are typically used for reporting.*

2. While in the **Configuration Menu**, press Page Forward *twice*.
3. Select PRINTER SPOOLER.

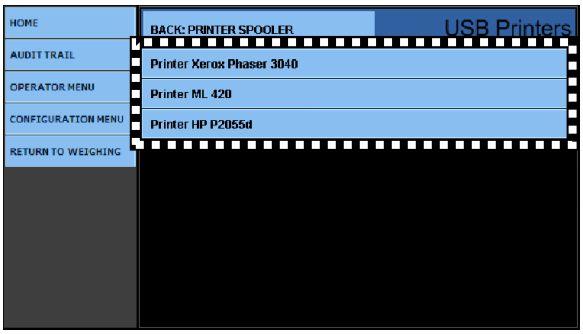


4. Select USB PRINTERS.



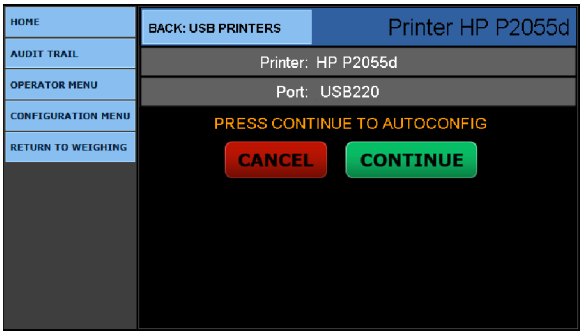
8.1.14. USB Printer Programming, Continued

5. Select the correct **Printer** from the list.



If this is the first-time installation to this Instrument, load the **PRINTER DEFAULT FORMATS** by pressing the **CONTINUE** button.

– A notice window will appear, stating that the process was positive.



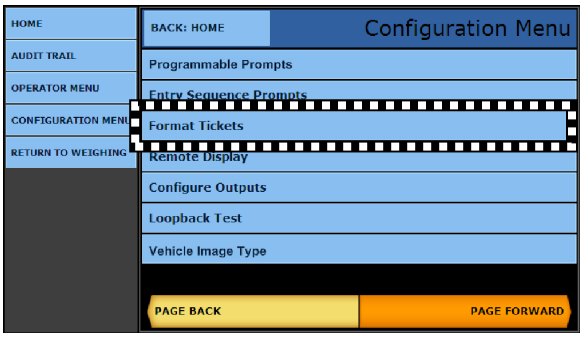
- Press the **SAVE CHANGES** button.

8.2. Format Tickets

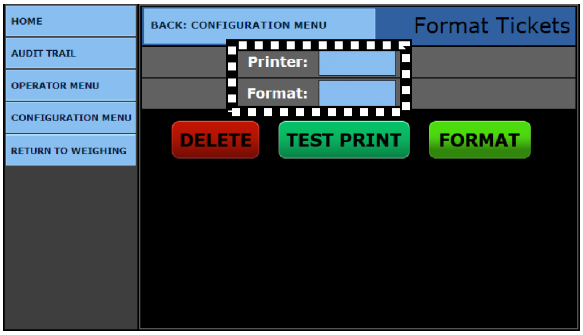
Follow these steps to format the tickets for the printers.

NOTE: *For additional information, see* **Appendix III: Ticket Data Fields.**

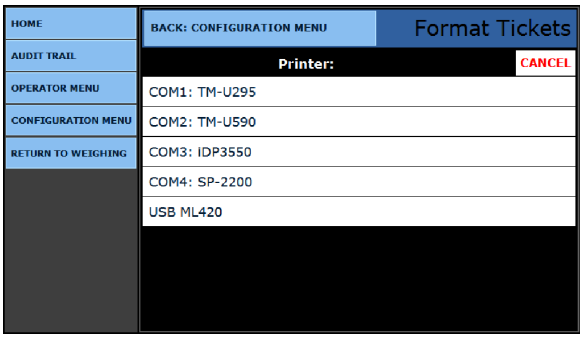
1. While in the **CONFIGURATION MENU**, press **PAGE FORWARD**.
2. Select Format Tickets.



3. Press the **PRINTER** button.

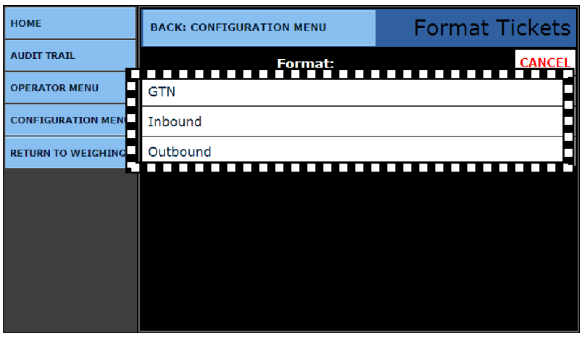


4. Select the correct **printer**.



5. Press the **FORMAT** button.

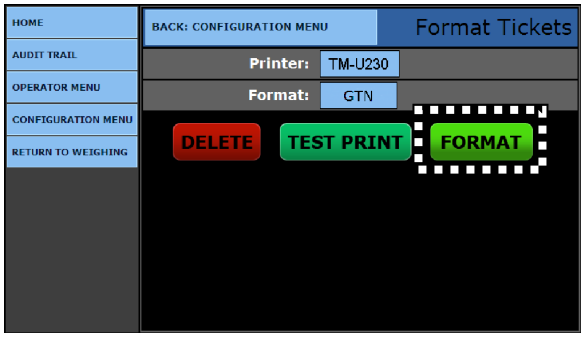
   Select the **ticket format** to edit or configure.



8.2. Format Tickets, Continued

6. Press the **FORMAT** button to access the format item menu.

   The **FORMAT TICKETS** menu has **nineteen (19) windows** of configurable data windows for each printers ticket format.

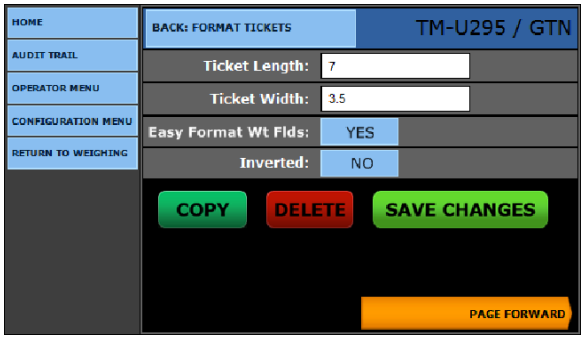


   TICKET LENGTH and **TICKET WIDTH** configures its size.

   EASY FORMAT WT FLDS combines the **Weight**, **Unit** of measure, and **Legend** data fields, so they automatically group together as one field on the ticket.

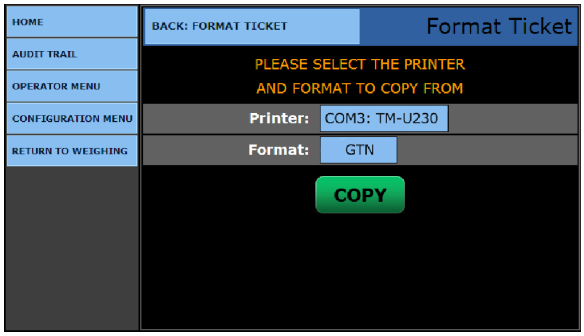
   – Using this option saves the time of manually moving these three data fields individually, and then configuring their placement on the ticket.

   ✓ **Default = YES**



   INVERTED feature prints the ticket from the bottom first, up to the top.

7. Press the **PAGE FORWARD** button to advance to the next page of ticket options.



   Press the **SAVE CHANGES** button, or they will be lost.

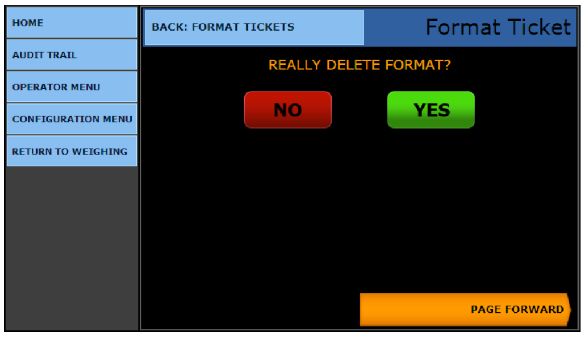
   Press the **COPY** button to save this ticket format, then posts it to another printer's selected ticket format.

NOTE: *Formatting all the parameter windows will determine how the ticket prints.*

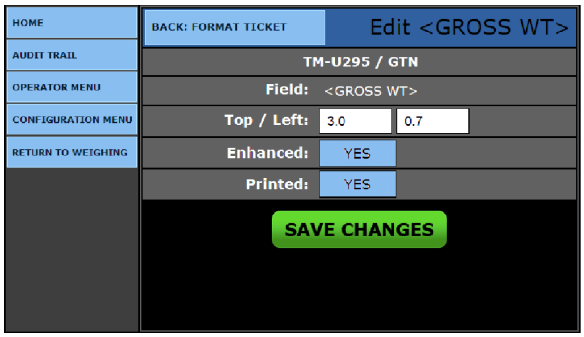
8.2. Format Tickets, Continued

The **DELETE** button function eliminates the ticket format.

– A prompt appears to confirm the operation.



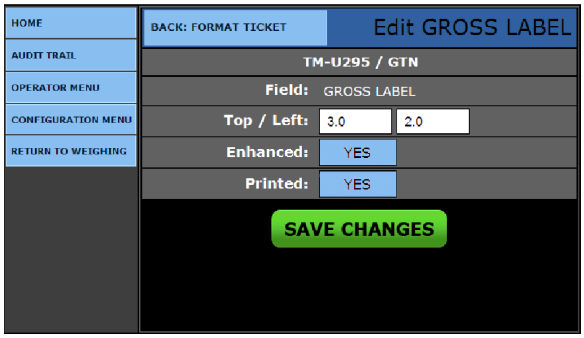
Described below are the three different types of **FIELD:** identifiers within the **FORMAT TICKET** windows.



DATA FIELD –Data which is emphasized within **greater than** and **less than symbols** is derived from the FB2558 and the vehicle which is being weighed.

Example: **<Gross WT>**

- *This is the actual weight value which was weighed on the scale.*



LABEL FIELD – Data which is **text only,** and describes the data field that it is beside.

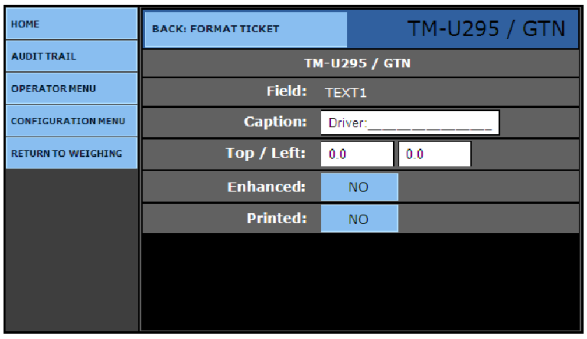
Example: **GROSS LABEL**

- *This label describes the label as a* **GROSS** *weight value.*

TEXT FIELD – C**ustom text** entered to provide required information on the ticket.

Example:
Driver: _____

- *This gives driver a place to sign a ticket.*

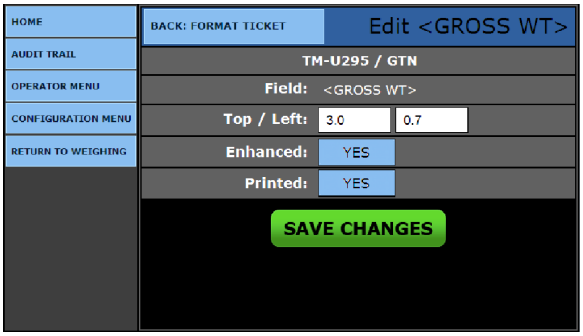


8.2. Format Tickets, Continued

TOP / LEFT: Plots the **x-y coordinates** of where the fields are located.

- **TOP** field moves the data field in an **up and down** position.
  - *This value is incremented in **tenths (0.1) of an inch**.*
- **LEFT** field moves the data field in a left to right direction.
  - *This value is incremented in **tenths (0.1) of an inch**.*

- In the **ENHANCED FIELD**, select **YES** to ***enable*** emphasized print, or **NO** to ***disable*** it.
- In the **PRINTED** field, select **YES** to ***enable*** printing the data item, or **NO** to ***disable*** it.



- Press the **SAVE CHANGES** button, or they will be lost.
- Selecting **BACK: FORMAT TICKET** returns to the previous menu.

8.3. Web Ticket Layout

8.3.1. Overview

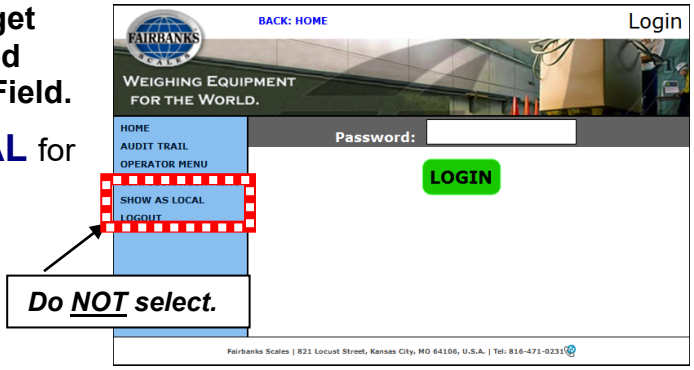
Web Ticket Layout configures the fields on a scale ticket in a **WYSIWYG** format (**W**hat **Y**ou **S**ee **I**s **W**hat **Y**ou **G**et).

- This allows a user to create and modify ticket layouts by drag-and-drop fields from a list onto the ticket.
- The printed ticket will look like what is laid-out on the web page.
- This is only accessible using a computer web browser, and not available on the screen of the instrument.
- The original ticket format capability still remains available using a web browser or directly on the instrument.

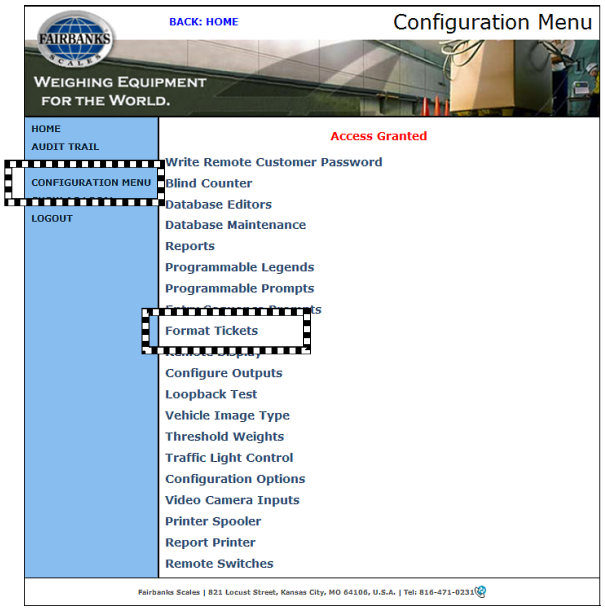
8.3.2. Programming a Web Ticket

Follow these steps to **Program a Web Ticket**.

1. **Enter the IP ADDRESS of the target FB2558 Instrument into a Networked computer's web browser Address Field.**
   - ***Do NOT*** select **SHOW AS LOCAL** for the web-based applications.
2. Input the Remote Service Password.
3. Press **ENTER**.
4. In the **FB2558** Instrument window, select **LOGIN**.

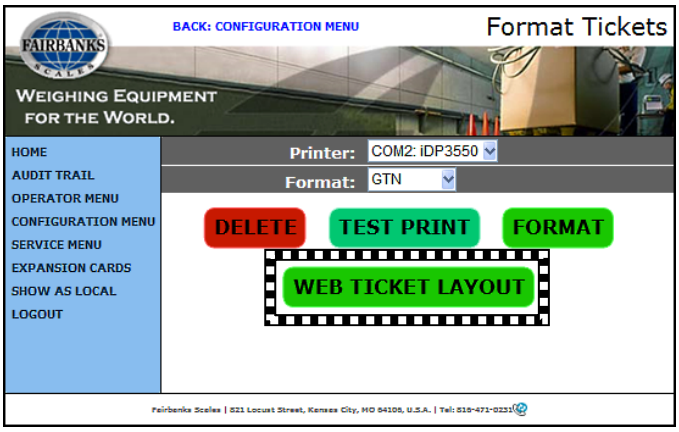


5. Open the **CONFIGURATION MENU**.
6. Click on the **FORMAT TICKETS** option.



8.3.2. Programming a Web Ticket, Continued

7. Click the **WEB TICKET LAYOUT** button.
   – Opening this loads (or create) the parameters for this specified ticket.

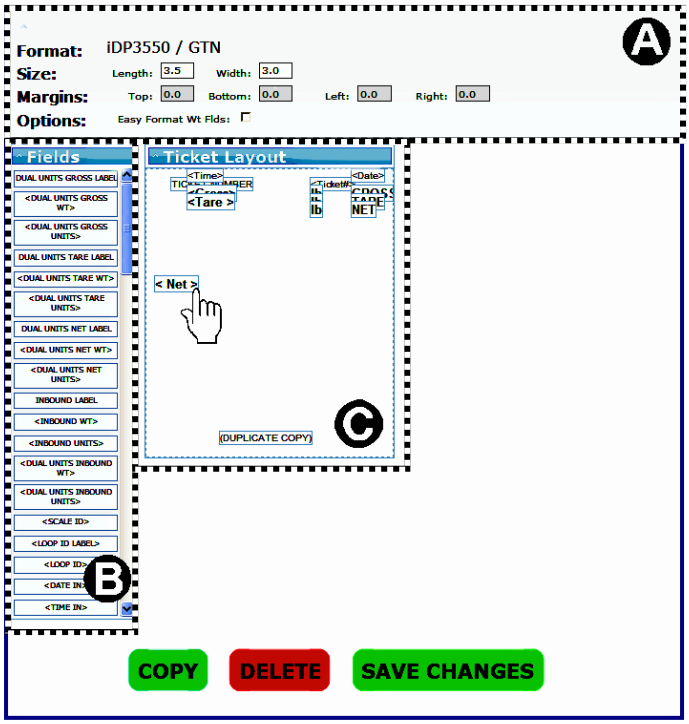


The three sections of the **Web Ticket Programming** *are listed below.*

A. General Layout Options are settings that apply to the entire ticket, or that control significant behavior of the printed ticket layout.

B. Fields list contains an alphabetical list of available fields that can be printed on a ticket.
   – Each field can be dragged-and-dropped into place.

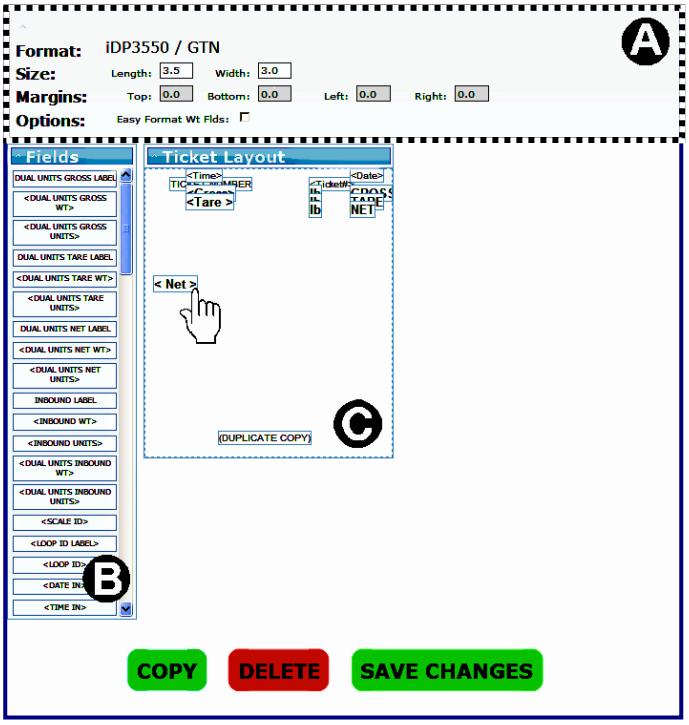
C. Ticket Layout field is a visual representation of the scale ticket.
   – Each **Fields** option can be dragged-and-dropped into place.



This image displays the ticket format setup of a ***Citizen iDP3550 Printer****.*
   – *The ticket size is* **3.5" x 3".**

- Pressing the **COPY** button saves this ticket to RAM memory to format a similar ticket.
- Highlight a **Field,** then press **DELETE** to remove it.
- Press the **SAVE CHANGES** button.

8.3.2. Programming a Web Ticket, Continued



A. GENERAL LAYOUT OPTIONS

GENERAL LAYOUT OPTIONS are settings that apply to the entire ticket, or that control significant behavior of the ticket printing or layout.

- Not all options are available for all printers, and ones which don't apply are disabled.

- **Size** sets the dimensions of the data field boxes (*in inches)*.
  - If the field box is set smaller than the text size, it enlarges to fit.
  - For **serial printers**, *the print size cannot be changed*.
  - Once changed, click out of the field and the layout will update.
- **Margins** places the location of the data field box on the ticket.
  - Data field boxes are placed on the ticket according to the **TOP, BOTTOM, LEFT** and **RIGHT** page coordfinates in inches.
  - A light dashed line represents the margins.
  - These values are rounded to the nearest tenth of an inch ($^1/_{10}$").
- **Easy Format Weight Fields** is *not recommended* when using the Web Ticket Layout.
- **Inverted** prints the ticket inverted.
  - This option may not be available on all printers.

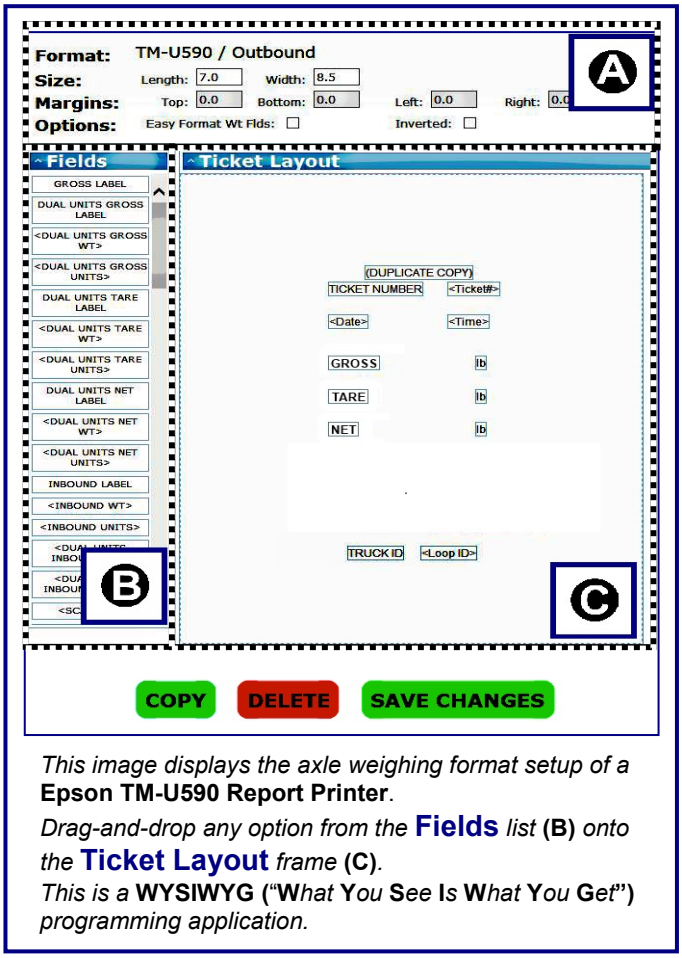
NOTE: *For* **serial printers**, *the margin values are disabled and set to* **ZERO.**

8.3.2. Programming a Web Ticket, Continued

B. FIELDS LIST

The field list contains an alphabetical list of available fields to be printed on a ticket.

- Each field can be dragged onto the **Ticket Layout** area and dropped in place.
- Only fields in the **Ticket Layout** are printed.
- Once on the ticket, a **Field** can be removed from the ticket by dragging it back to the **Field List** and dropping it.
  - The **Field** will be placed back in its original order.
- While in the **Ticket Layout** area, the **Fields** can be formatted by double-clicking on it.



This image displays the axle weighing format setup of a **Epson TM-U590 Report Printer**.
Drag-and-drop any option from the **Fields** *list* **(B)** *onto the* **Ticket Layout** *frame* **(C)**.
This is a **WYSIWYG** *(“***W***hat* **Y***ou* **S***ee* **I***s* **W***hat* **Y***ou* **G***et”) programming application.*

C. TICKET LAYOUT

The **TICKET LAYOUT** area is a visual representation of the scale ticket.

- Printable fields can be dragged from the field list and dropped on to the ticket layout.
- Fields already on the ticket can also be dragged to different positions on the ticket.
- The fields are displayed with any formatting, and the text is the field caption.
  - If there is no caption, the **Field Name** is used.

Field Positions are saved (on submit), and are printed in that position.

Field Sizes for *serial printers* adjust automatically to fit the text size, and cannot be changed

Only fields in the **TICKET LAYOUT** area are printed.

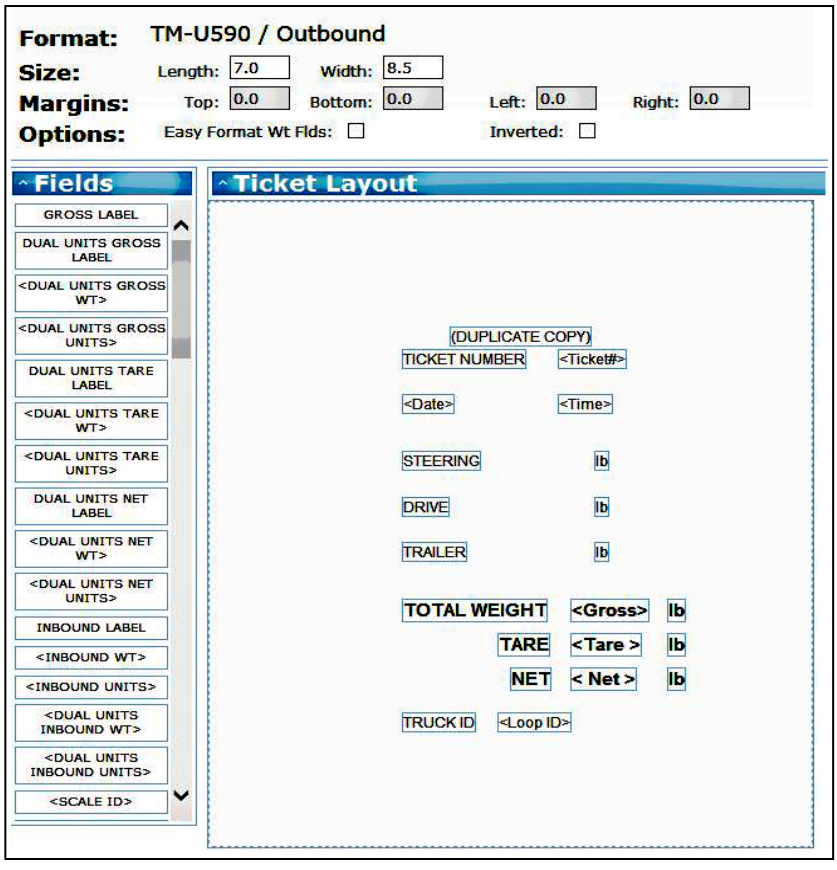
- To remove a field, drag it back to the **Field List**.
- The **Ticket Layout** area is close to the actual physical size to the ticket.
  - It may not be exactly.
  - The size and position of the fields are proportional to the size of the ticket.
  - The dashed line represents the printer margins set in the **General Layout Options**.
- All fields in the **Ticket Layout** adjust automatically to fit the text.

- The field can be made larger if desired, but not smaller than the given text.
- Placement of the fields will snap to the nearest tenth of an inch.
- When dragging a field less than this distance, the field returns to its original position.

D. SCALE SUMMING FORMAT

This example displays the **SCALE SUMMING format**.

- Tickets can be formatted to print all platform weights, as well as the calculated total.
- Use the **TEXT FIELDS** in the print format settings print the individual platform weights.
- Use **TEXT FIELDS 1, 2** and **3** for the **STEERING, DRIVE** and **TRAILER** platforms.
- The total of the weighments will be the **GROSS WEIGHT** field.

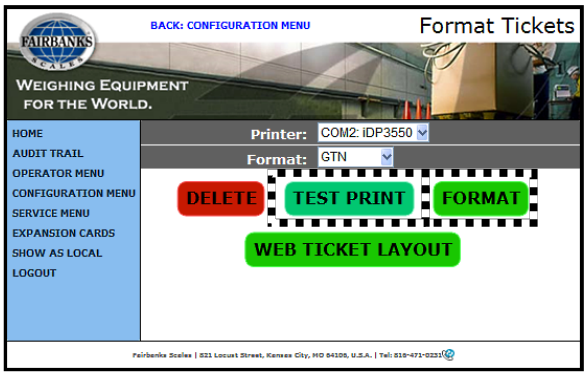


This shows the basic elements of the **SCALE SUMMING format**.

8.3.2. Programming a Web Ticket, Continued

E. FORMAT OPTION

The **FORMAT** window is an advanced view of the **WEB TICKET LAYOUT.**



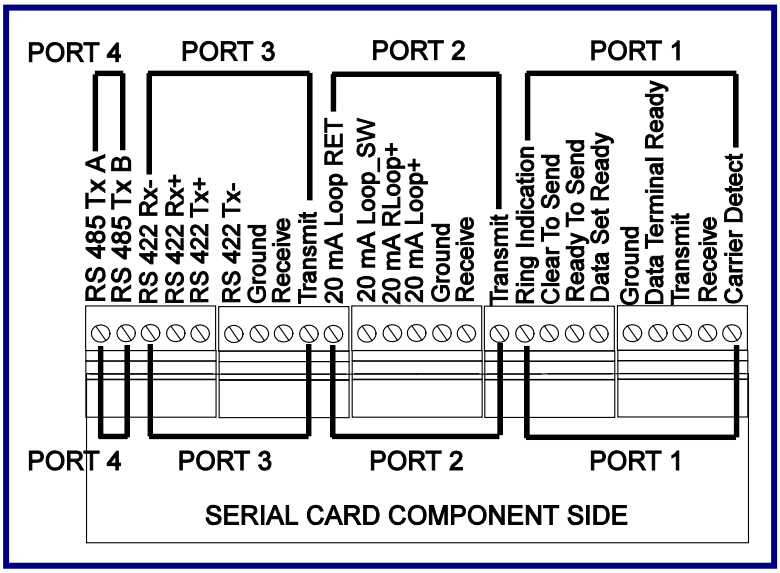
1. After formatting the ticket, press the **TEST PRINT** button. Study the ticket to confirm that it is formatted correctly.
2. Press the **FORMAT** button to move, remove or add an element on the ticket.

- Press the **BACK: FORMAT TICKETS** button to return to the previous menu.
  - Doing this does not save any changes.
- Press the **COPY** button to save these ticket formatting parameters into RAM memory for another similar ticket.
- Press **DELETE** to remove the ticket completely.
- Press the **SAVE CHANGES** button, or they will be lost.

- The top frame of this window gives the same formatting options of the **Web Ticket Layout**.
- The bottom frame lists all of the formatting options, the input field coordinates (*in inches*), and any associated link.
- Any field(s) already placed on the ticket structure is highlighted in dark gray.

3. Double-click on any of the formatting options to add this field onto the Ticket.
   - Once selected, the top frame displays all of the choices from this fomatting option, according to its parameter needs.

8.4. Serial Card



The **SERIAL CARD** (**30921**) provides **four (4) outputs** with a maximum of **two (2) cards** per Instrument. See the Port Assignments listed below.

– A bus cable is provided, connecting the Multi-function Board to the Expansion Card.

PORT 1	RS-232 (Full Duplex 9 Pin Port)
PORT 2	RS-232 OR 20mA *
PORT 3	RS-232 OR RS-422 *
PORT 4	RS-485

* *Only one (1) may be selected at a time, and not both.*

8.5. Serial 20mA Interfaces

Described below are the two **Serial 20mA Interfaces** *typically used for a* **Remote Display.**

– A FB2558 Instrument can use **only one** of these two interfaces.

SERIAL 20mA MULTI-FUNCTION BOARD (29970)

Communicates with the **Remote Display**

- One-way output only.
- An **ACTIVE 18VDC POWER SUPPLY SETUP** is recommended.
- The Remote Display is configured for the **20mA Interface**.

SERIAL 20mA EXPANSION BOARD

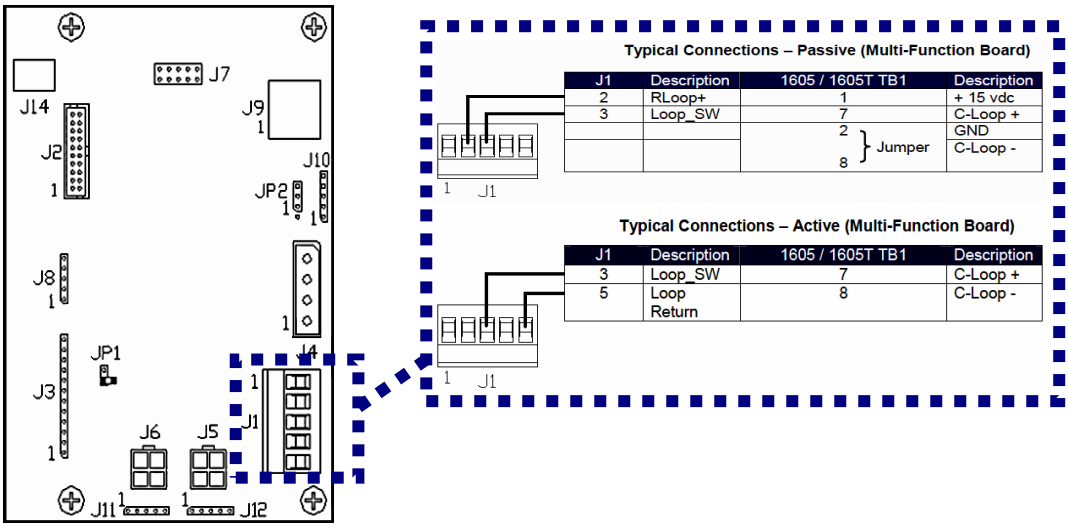
Provides additional COM Ports for the Instrument.

- Supplies **Serial 20mA, RS-232** or **RS-485 Output**.
- An **ACTIVE 18VDC POWER SUPPLY SETUP** is recommended.

8.5.1. Multi-Function Board

Below are images showing the Multi-function Board connections.

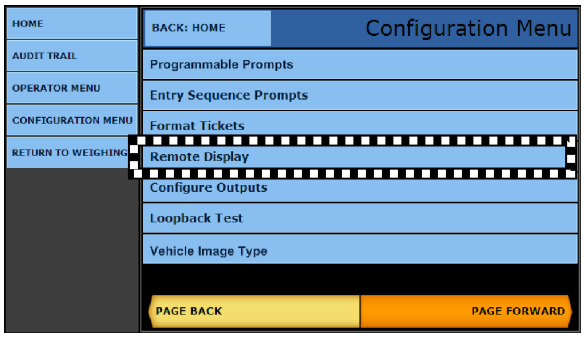
- Use a **20mA CURRENT LOOP CONNECTION** for the **Remote Display**.

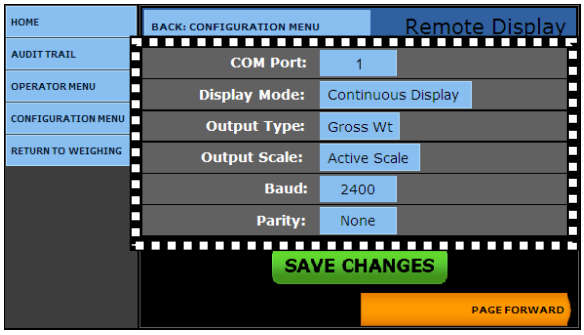


8.5.1. Multi-Function Board, Continued

These following steps to configure the FB2558 for use with the serial 20mA to a remote display.

1. **While in the Configuration Menu, press Page Forward.**
2. Select Remote Display.





Select from the following options as appropriate for the application. Format the communication settings according to the default parameters on the right.

APPLICATION SETTINGS	
COM Port	**OFF, COM1 – COM4, COM25 – 28*, COM25 – 32***
Display Mode	**Continuous Display, Display on Print**
Output Type	**Gross Wt, Net Wt, Ticket Number**
Output Scales	**Active Scales, Scale 1 *thru* 8, All Scales**

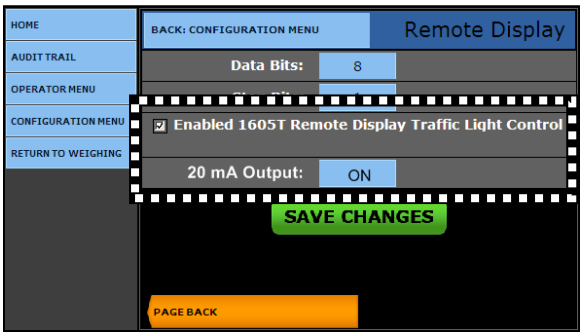
PARAMETERS	
Baud	**2400**
Parity	**None**
Data Bits	**8**
Stop Bits	**1**

* *Dependent upon number of **Serial Expansion Cards**.*

8.5.1. Multi-Function Board, Continued

3. Press **PAGE FORWARD** once.

Check the **Enabled 1605T Remote Display Traffic Light Control** if this accessory is installed.

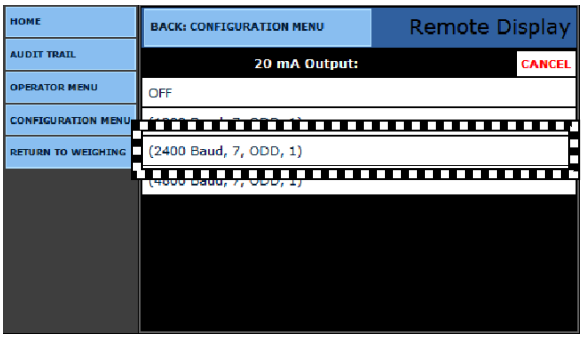


Turn **ON** the 20mA Output option when using the Multi-Function Board.

– This allows **20mA Output**, located at **J1** on the Multi-Function Board.

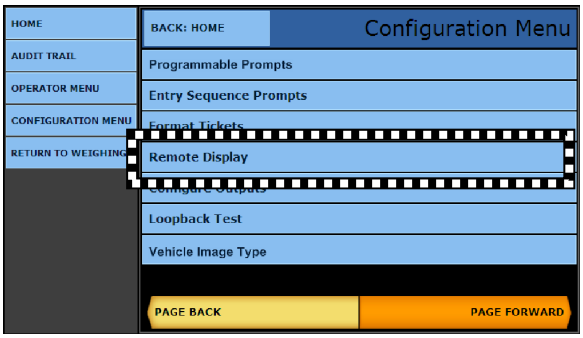
Configure the **20mA Output** to these *recommended* settings.

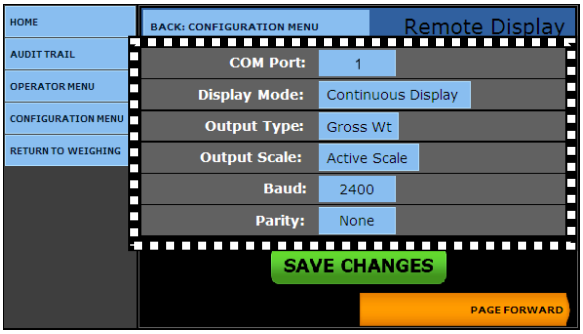
BAUD RATE	**2400**
PARITY	**odd**
DATA BIT(S)	**7**
STOP BIT(S)	**1**



8.5.2. Serial Expansion Board

1. **While in the Configuration Menu. press Page Forward once.**
2. Select Remote Display.





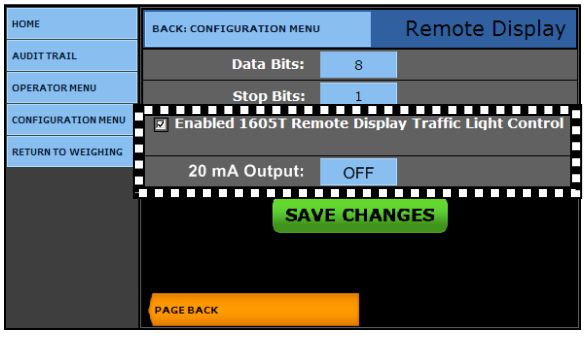
Select from the following options as appropriate for the application. Format the communication settings according to the default parameters on the right.

APPLICATION SETTINGS	
COM Port	**OFF, COM1 – COM4, COM25 – 32 ***
Display Mode	**Continuous Display, Display on Print**
Output Type	**Gross Wt, Net Wt, Ticket Number**
Output Scales	**Active Scales, Scale 1 *thru* 8, All Scales**

PARAMETERS	
Baud	**2400**
Parity	**None**
Data Bits	**8**
Stop Bits	**1**

* *The number of available COM Ports depends upon the* **Expansion Card** *used.*

- Check the Enabled 1605T Remote Display Traffic Light Control if this accessory is installed.
- When using the **Serial Expansion Board**, leave the **20mA Output** turned **OFF**.
  - This **turns on** the 20mA output, located at **J1** on the **Multi-Function Board**.
  - This is *not required* for this **Configuration Setup**.



8.6. Configure Outputs

This menu configures data string protocols, configuration parameters, and output modes such as **Continuous, Demand, Auto, Network (Continuous)**, and **Network (Auto)**.

8.6.1. Configuring an Output Data String

To interface an FB2558 Instrument to software or a pre-existing peripheral device, such as a remote display, knowing their specific Data Output String is ***mandatory***.

- This allows the software or peripheral device to communicate with the FB2558 for weight data.
- When adding to other manufacturer's devices, refer to their Service Manuals for Data Output String information.
- Interfacing with other manufacturer's software, refer to either a web site, Service Manual, or contact the manufacturer directly for the Data Output String information.

8.6.2. Two Methods of Formatting

Noted below are the two methods to format an **Data Output String**.

A. Preconfigured Output

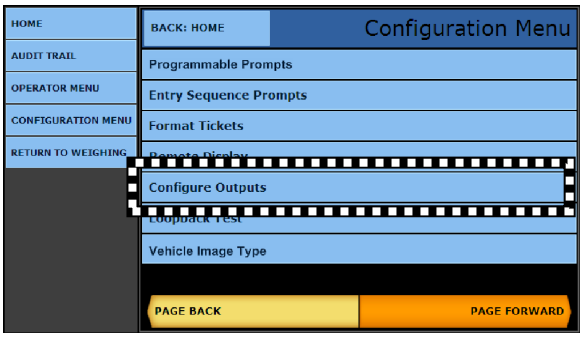
– This method uses one of the seven (7) **Preconfigured Outputs** in the **LOAD** menu.

B. Customizing the Data Output Strings

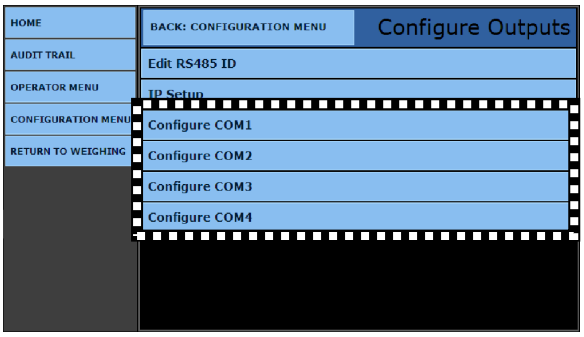
– This method uses a **Preconfigured Output** from the **LOAD** menu as a base format. Then the message in the **Data Output String** is customized in the **BUILD** menu to match the customer's specific configuration requirements.

8.6.3. Method 1 – Preconfigured Output

Follow these steps to configure an **Data Output String** *on the FB2558, completed in the* **Configuration Menu.**

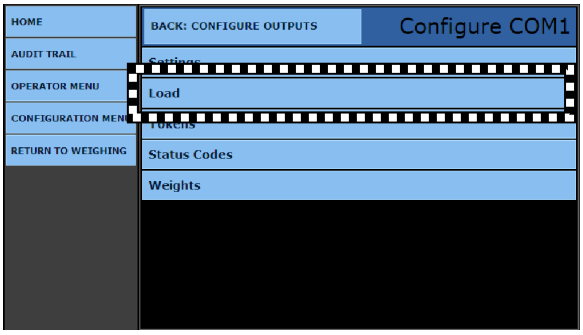


1. While in the **WEIGH SCREEN**, press the **MENU** button.
2. Select **LOGIN**.
3. Enter the **Write Customer Password** or **Service Password**.
4. Press the **LOGIN** button.
5. Select the **CONFIGURATION MENU**, and then press **PAGE FORWARD** once.
6. Select **CONFIGURE OUTPUTS**.

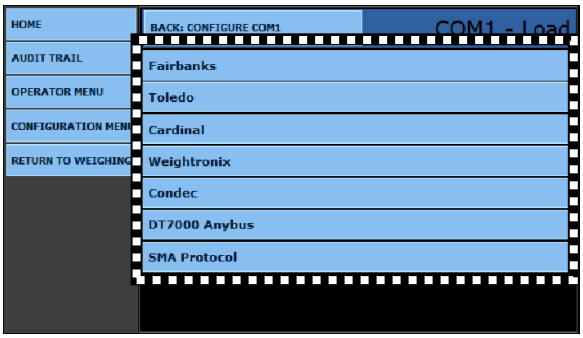


7. Select **CONFIGURE COM X,** where **X** is the desired COM port location
   - **CONFIGURE COM1** is used as an example for the following images.

8. Press the **LOAD** button.

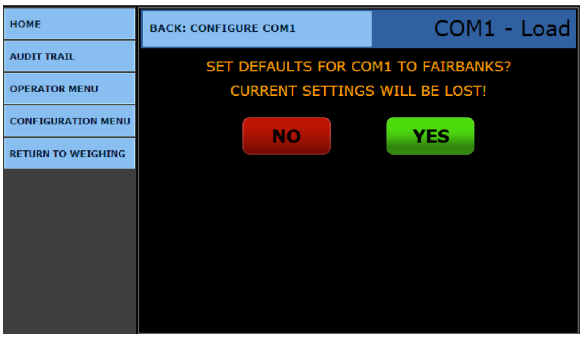


9. Select the correct **Load format**.
   - When configuring an data output string, the FB2558 has **seven (7)** commonly used **preconfigured outputs**.
   - **CONFIGURE COM1** was selected in **Step 8** for the following data string build example.
   - See **Appendix II: Data Output** for further information.

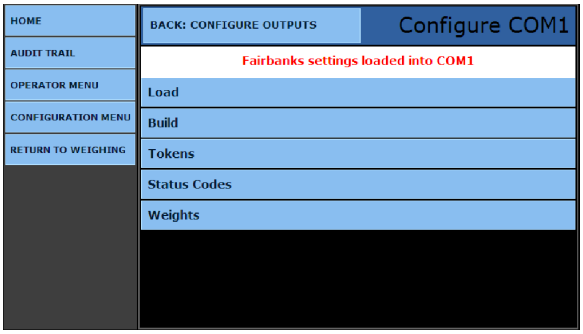


8.6.3. Method 1 – Preconfigured Output, Continued

10. Press the **YES** button to load the default configuration for the data protocol selected.

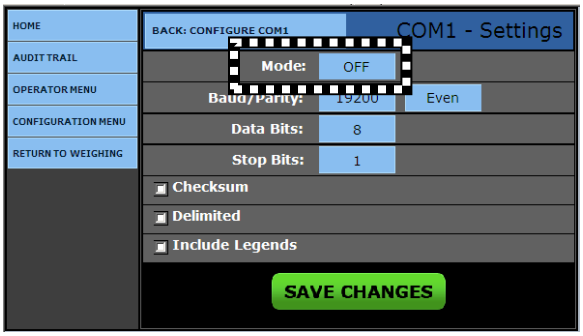


For a few seconds, a similar message to this verifies a successful load.



11. Verify the **CONFIGURATION BAUD, PARITY, STOP BITS** to be at the correct values.

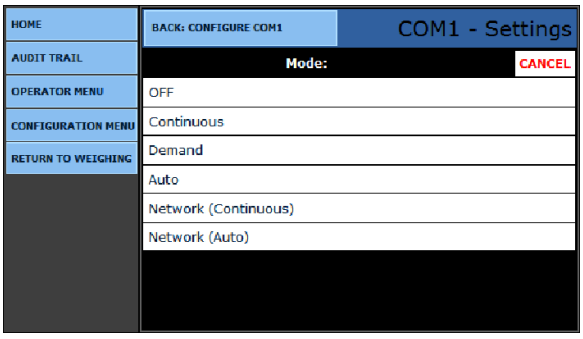
12. Enter the **MODE** menu to configure the data transmission method.



OFF – COM port is disabled.

CONTINUOUS – The COM port transmits the data string continuously per every display update.

DEMAND – The data string is transmitted upon receiving the programmed poll character from a peripheral device.



AUTO – The data string is transmitted upon the printing of a transaction.

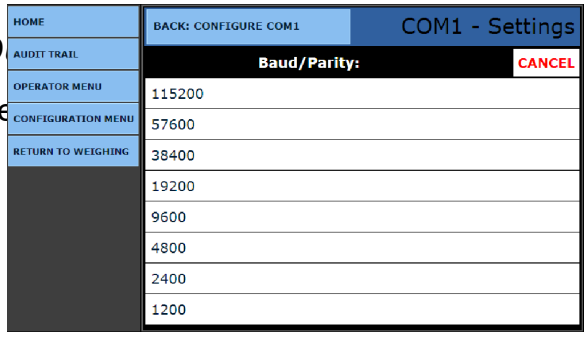
NETWORK (CONTINUOUS) - The data string is transmitted continuously per every display update through the network connection.

NETWORK (AUTO) - The data string

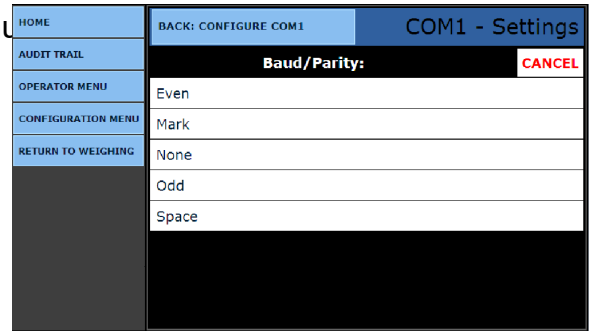
is transmitted upon pressing print and the printing of a transaction will transmit the transaction through the network connection.

8.6.3. Method 1 – Preconfigured Outp

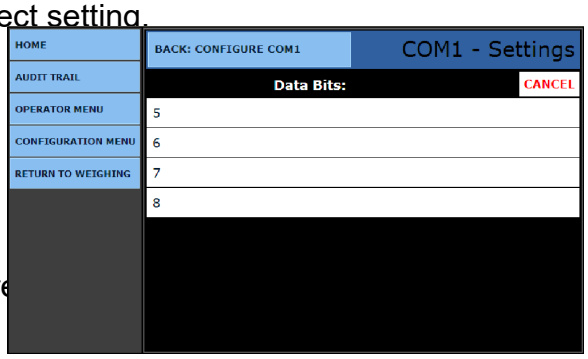
13. Open the **BAUD/PARITY** menu and select the



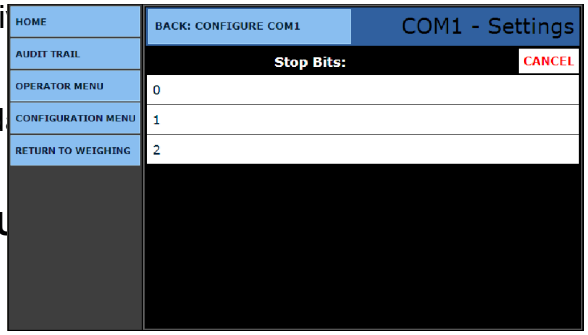
14. Select the required **PARITY** rate from the menu



15. Open the **DATA BIT** menu and select the correct setting.



16. Open the **STOP BIT** option and select the corre



CHECKSUM option verifies the data sent and recei
Networking.

DELIMITED option separates elements within the d
etc.

INCLUDE LEGENDS option turns on and off the **U**
string, such as **LB, KG GROSS, TARE**, etc.

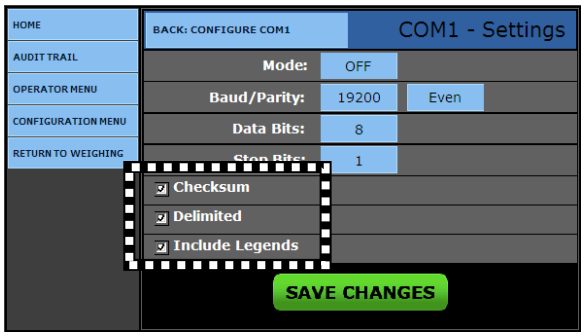
- Not used for the display functions.

- Press the **SAVE CHANGES** button, or they will be lost.

8.6.4. Method 2 – Customizing Data Output Strings

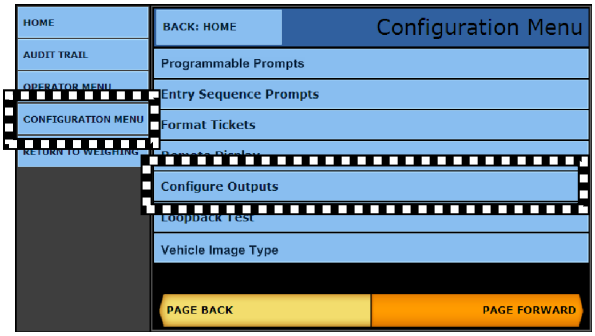
The FB2558 Instrument can be customized to support different manufacturer's software interfaces to peripheral devices.

- When the required data string protocol is not like one of the preconfigured outputs, the data output string must be ***programmed manually*** using the **BUILD, TOKENS, AND WEIGHTS menus.**

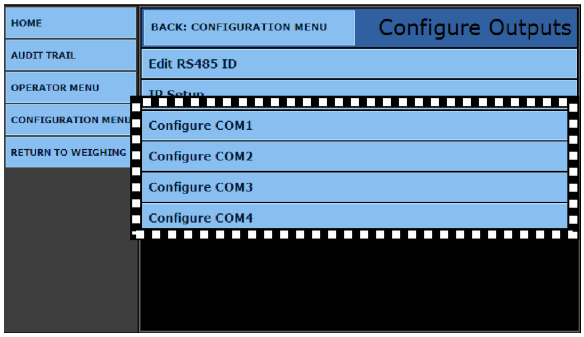


Follow these steps to customize the **Data Output String**.

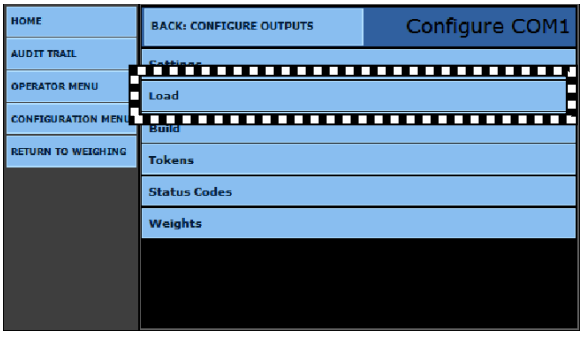
1. **While in the Configuration Menu., press Page Forward once.**
2. Select **CONFIGURE OUTPUTS**.



3. Select **COM PORT X** to configure the output data string.

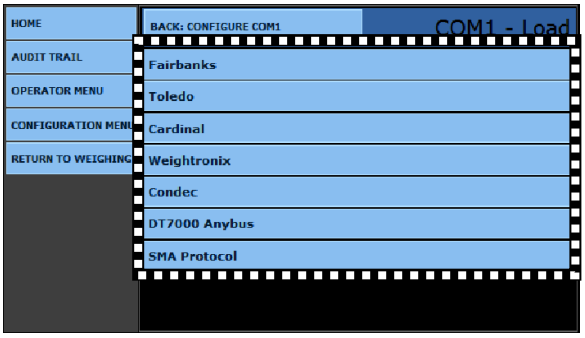


4. Press the **LOAD** option.

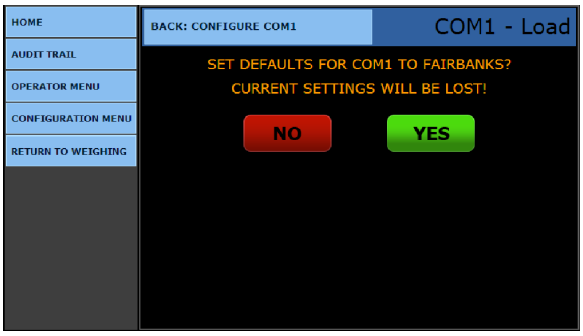


8.6.4. Method 2 – Customizing Data Output Strings, Continued

When configuring an output data string, the FB2558 Instrument has **seven (7)** commonly used preconfigured outputs.

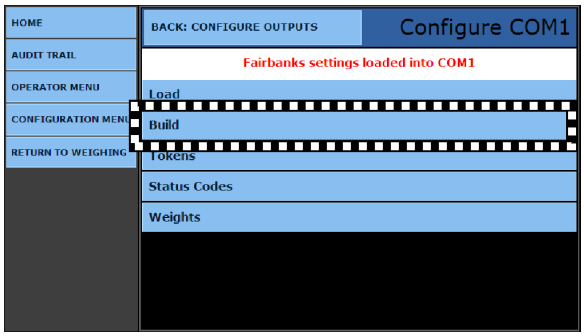


5. Select the correct **Load format**.
   - **Configure COM1** was selected in **Step 8** for the following data string **BUILD** example.
   - The **Data String Load** selected is the one used as the foundation for customizing the **BUILD.**



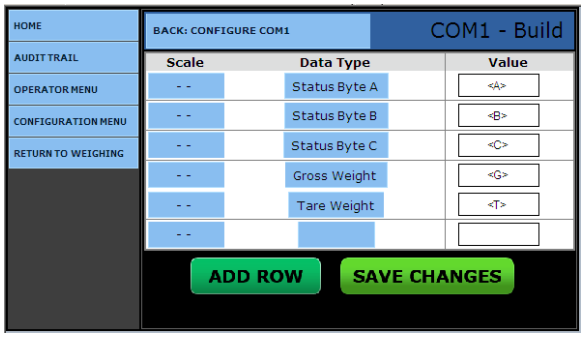
6. Press the **YES** button to load the default configuration for the data protocol selected.

   For a few seconds, a similar message to this verifies a successful load.



7. Select the **BUILD** option to begin customizing the data string.

   The **BUILD** window displays.

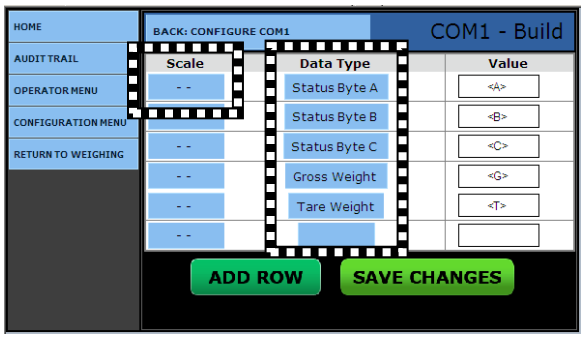


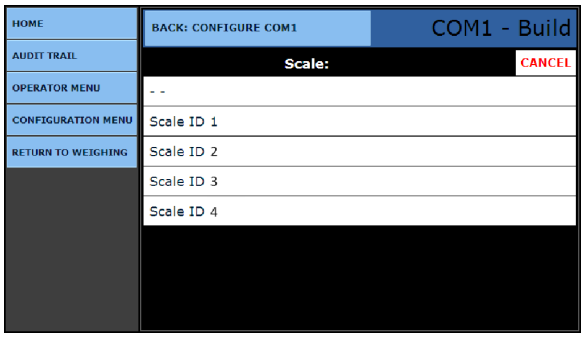
8.6.4. Method 2 – Customizing Data Output Strings, Continued

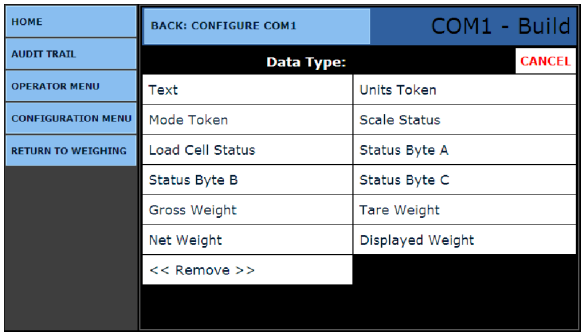
8. Select the **SCALE**, if entering this field applies.
   - This option applies to sites with more than one scale.
   - Selecting the **Scale** will limit the available options for configuring its data string.
   - If this field is left blank and there is more than one scale on the site, all formatting will default to the scale that is currently being formatted.
9. Select a **DATA TYPE** input field to edit it.

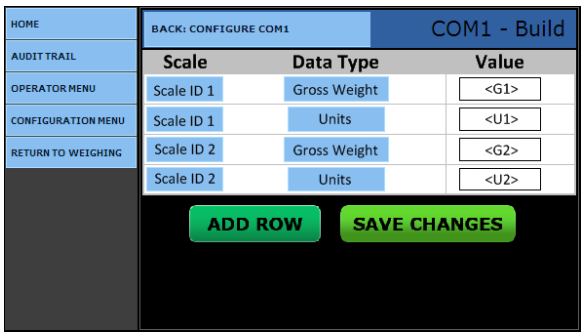
Listed below are the available options for building the **data string**.

- **TEXT** – Allows text entry values in the location.
- **UNITS TOKENS –** Designates the unit of the data such as **lbs** or **kgs**.
- **MODE TOKENS –** Designates if the weight is **Gross, Tare,** or **Net.**
- **SCALE STATUS –** Designates the operating status of the scale such as **motion, overcapacity**, and **behind zero**.
- **LOAD CELL STATUS** – Designates if a load cell has a potential problem.
- **STATUS BYTE A, B** or **C –** Similar to Scale Status item but also includes **graduation size, decimal point,** and **units**.
- **GROSS WEIGHT, TARE WEIGHT, NET WEIGHT –** Weights retrieved from the scale selected for the data item configured.
- **DISPLAYED WEIGHT –** Value which is currently shown on the display.
- **<<REMOVE>> –** Removes the data item selected from the data string configuration.





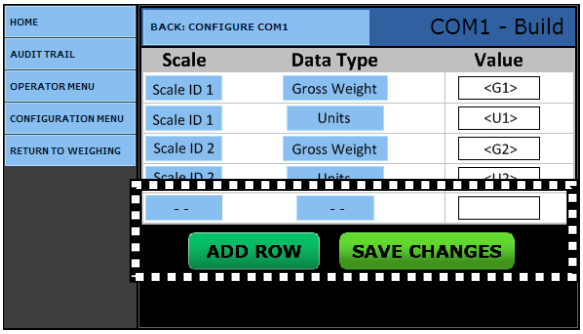




The image above is a common example of how the data string could be reformatted to match the customer's requirements.

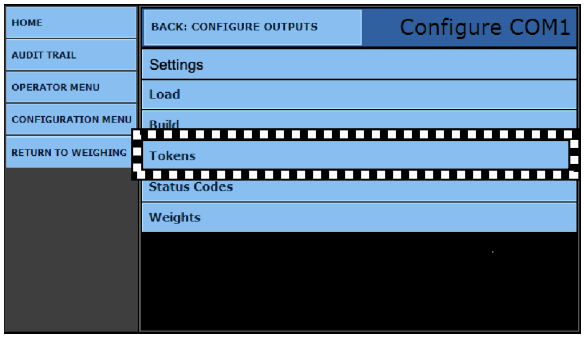
8.6.4. Method 2 – Customizing Data Output Strings, Continued

10. Press the **SAVE CHANGES** button to save and exit to the **BACK: CONFIGURE COM1** menu.

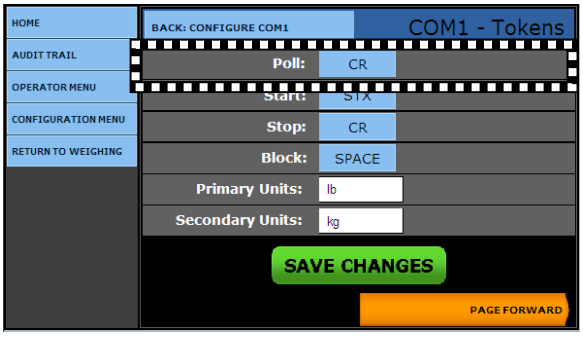


ADDING A NEW DATA TYPE

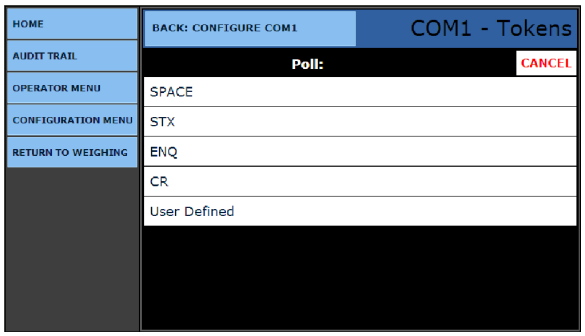
1. In the **COMX – Build** window, press the **ADD ROW** button for a new **Data Type** item, placed at the end of the string.
2. Select the correct **SCALE**, if this applies.
3. Open the **DATA TYPE** entry field and select the correct one.
4. Press the **SAVE CHANGES** button to save and exit to the **BACK: CONFIGURE COM1** menu.



5. In the **Configure Options** menu, select the **TOKENS** menu.

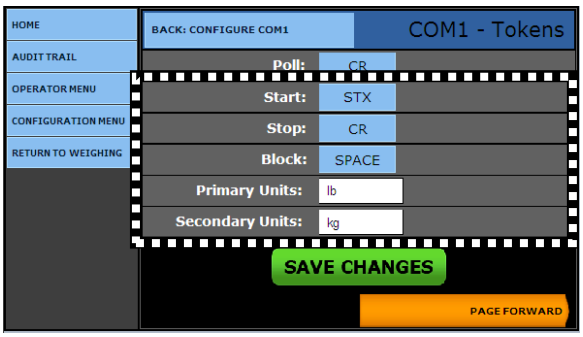


6. In the **COMX – Tokens** window, open the **POLL** option to select a polling character for the **Demand Mode**.

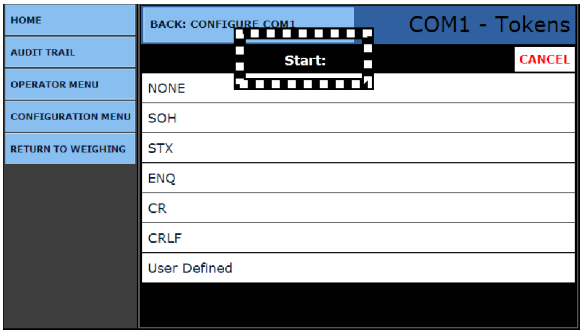


8.6.4. Method 2 – Customizing Data Output Strings, Continued

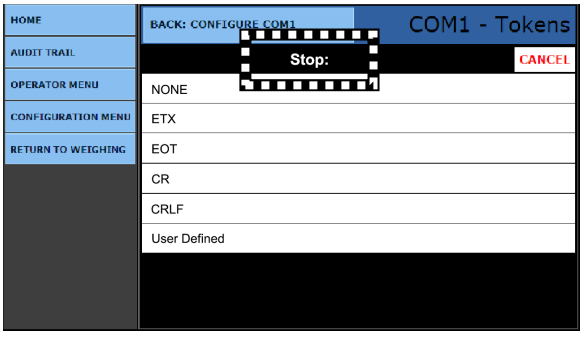
7. In the **COMX – Tokens** window, open the **START** to select the available start character ***for all modes***.



8. Open the **STOP** option to select the available **Stop** character ***for all modes***.
9. Open the **BLOCK** option to select the available **Data Block Separator** character ***for all modes***.



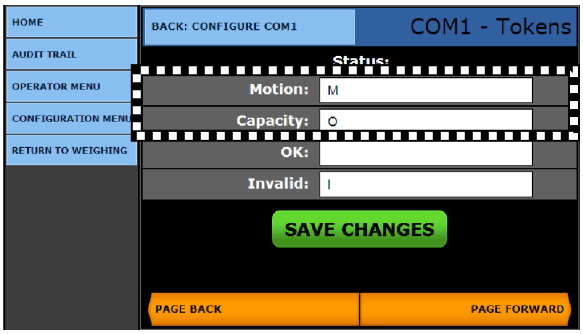
- Enter the **PRIMARY UNITS** legend.
  - Example: **lb**
- Enter the **SECONDARY UNITS** legend.
  - Example: **kg**



NOTE: *Format all* **Threshold Weight** *settings to the same* **PRIMARY UNITS** *used, preventing any errors in programming.*

8.6.4. Method 2 – Customizing Data Output Strings, Continued

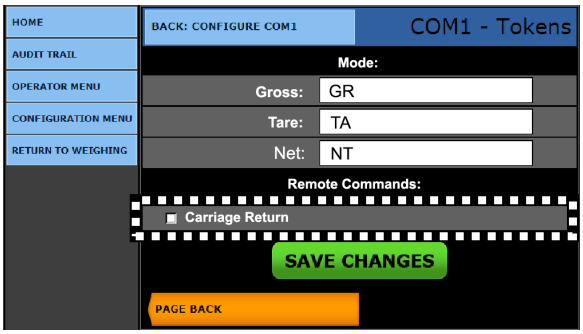
10. Press **PAGE FORWARD** once.



- This page configures the **Status: token** for the output data string.
- Each item configured will indicate the character programmed in the output data string.
- If **Motion** is present on the scale, a **"M"** will be transmitted in the data string.
- The **Capacity** value will indicate if the scale is overloaded.

11. Press **PAGE FORWARD**.

- This page configures the **Mode: token** for the output data string.
- Each item configured will indicate the character(s) programmed in the output data string.
- The **Remote Commands** configuration establishes if a **CARRIAGE RETURN** is required when sending a remote command, such as a **Zero Command**.
- If the **CARRIAGE RETURN** check box is selected, the remote **Zero Command** is **Z<CR>.**
- Otherwise it would be a **"Z"** only.



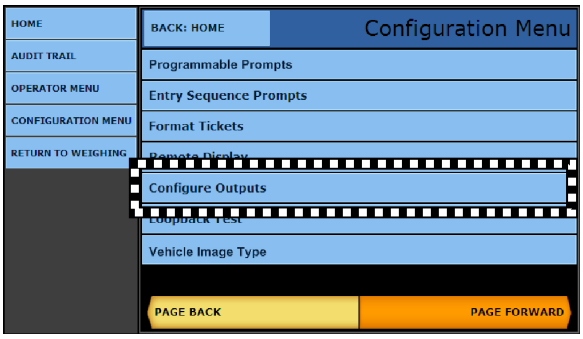
Select **RETURN TO WEIGHING TO TEST** and verify the output is producing the desired results.

- Press the **SAVE CHANGES** button, or they will be lost.

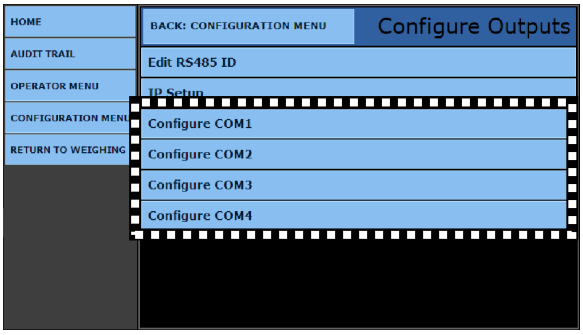
8.6.5. Configuring a COM Port for Scale Summing

Follow these step to program **Scale Summing.**

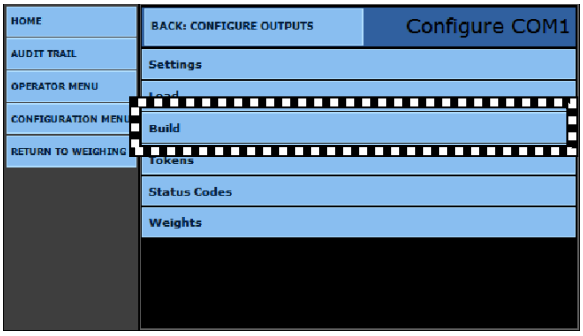
1. **While in the Configuration Menu, press Page Forward once.**
2. Select **CONFIGURE OUTPUTS**.



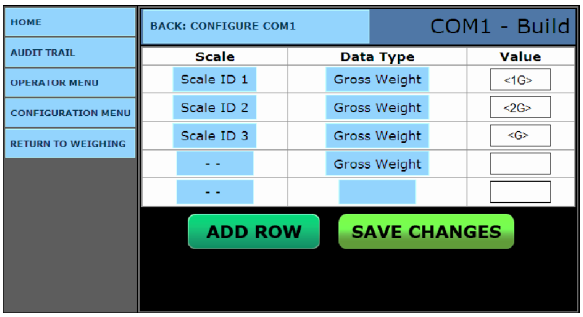
3. Select the correct **COM Port** to configure the output data string.



4. Press the **BUILD** option.



5. To configure the **COM Port Output** for **SCALE SUMMING**, set the window like the sample screen to the right.

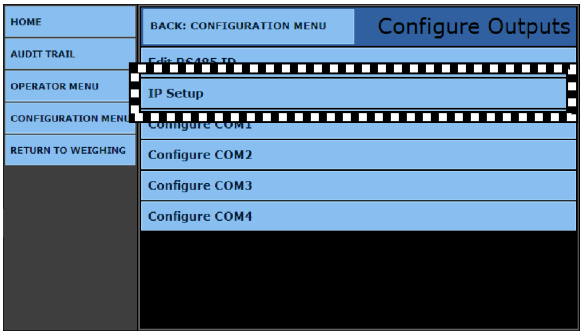


8.7. IP Output Configuration

The IP Output is available using the Ethernet connection of the FB2558 Instrument.

- Follow these sections to configure the Communication Data String Protocol.
- The **MODE** selection configures the **Network (Continuous)** or **Network (Auto).**
- The final step of the IP Configuration is assigning the communication parameters for the device on the Network.

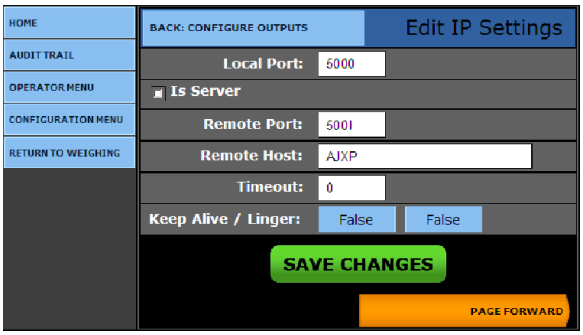
1. **While in the CONFIGURE OUTPUTS menu, select IP SETUP.**



   The **IP SETUP** configuration screen has several parameters to program.

   - The **Local Port** can be a random number which is assigned to the FB2558 Instrument.
   - Port numbers are values from 0 to 65535.
   - Ports **0** to **1024** are reserved for certain privileged services.
   - The combination of **Port Number** and **IP Address** is called a **SOCKET.**
   - The **LOCAL PORT** and **REMOTE PORT** values should match.

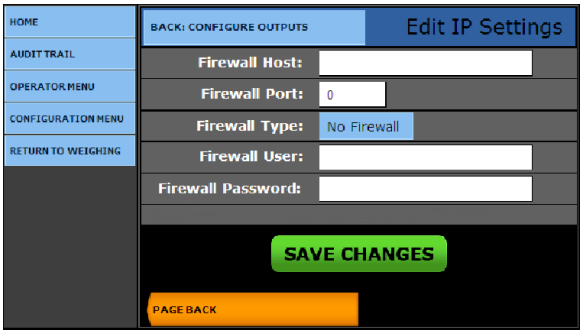
     ✓ **Default = 5001**



   - The **Remote Port:** looks for information to forward to the **Remote Host:** (remote device name) application.
   - The **Timeout:** function is to stop communications when it is inactive.

     The **Keep Alive / Linger** settings will act as a means to keep the connections active even when activity is limited.

- Press **PAGE FORWARD** once.



   - The settings shown assist with networks which have active firewalls, and permit the IP communications to continue operating, instead of becoming blocked by the networks firewall settings.

- Press the **SAVE CHANGES** button when any changes are made otherwise the changes will be lost.

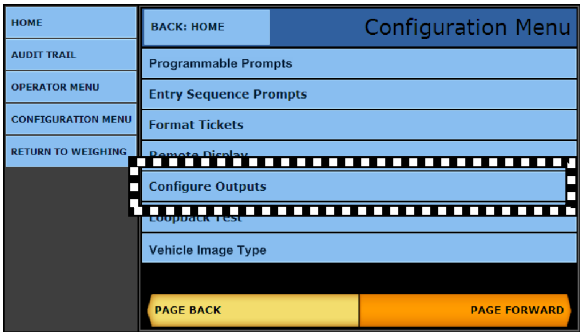
8.8. RS-485 Configuration

The RS-485 output is available from the **RS-485 accessory** (**30937**), or from the **Serial Expansion accessory** (**30921**).

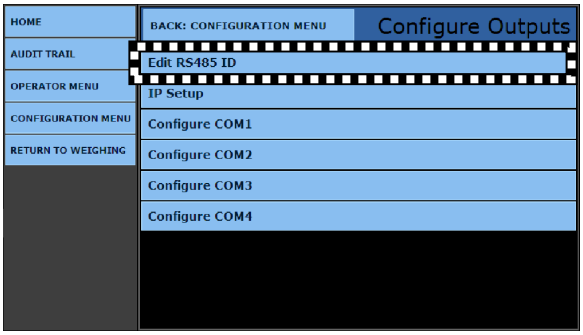
- *Refer to* Section 8: Method 1 – Preconfigured Output *or* Section 8 - Method 2. – Customizing Output Data Strings.
- These sections describe how to configure the data string protocol for the communications.
- The final step for the RS-485 configuration is to assign an ID for the RS-485 communications network.
- This address is a requirement for proper operation.

Follow these steps to configure the **RS-485 ID**.

1. **While in the Configuration Menu, press Page Forward once.**
2. Press **CONFIGURE OUTPUTS**.

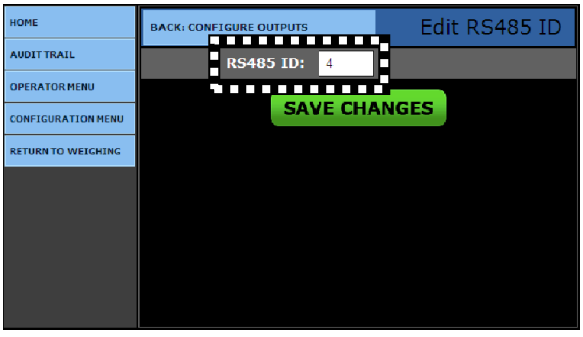


- Select **EDIT RS-485 ID** to edit this option.



3. In the **RS-485 ID** field, enter the ID value, from **1** to **32**.

NOTE: *A* **ZERO (0)** *disables this feature.*



- Press the **SAVE CHANGES** button when any changes are made, otherwise they will be lost.

8.9. Network Parameters Configuration

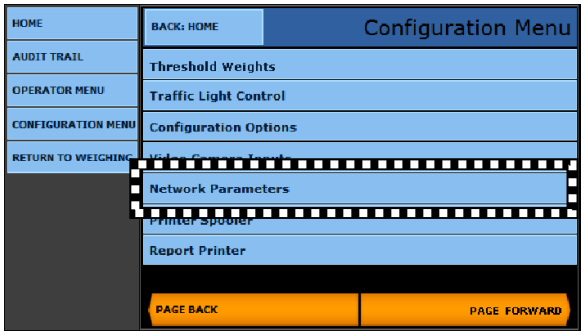
The **Network Name:** is a unique identifier of the instrument as it appears on the Network to which it connects.

- Configure the **NETWORK TYPE** as a Static or Fixed IP, and either DHCP or Dynamic IP Addresses.
- The **IP ADDRESS** and **SUBNET MASK** are unique address values designed to function within the Network for which it is configured.
- IP Address is an identifier for a computer or device on a TCP/IP Network. Networks using the TCP/IP Protocol route messages based on the IP Address of the destination.

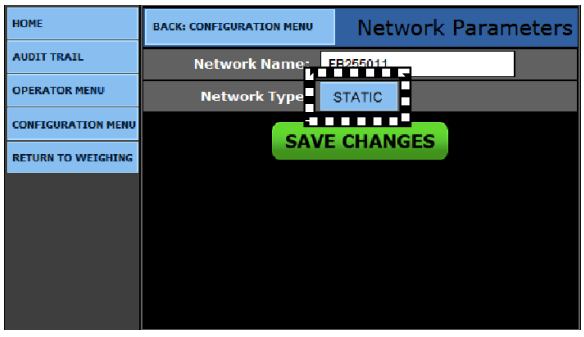
A **SUBNET MASK** is a local division of a **Local Area Network (LAN),** which is created to improve performance and provide Network security.

1. While in the **CONFIGURATION MENU**, press the **PAGE FORWARD** button *twice*.

   Select the **NETWORK PARAMETERS** option.



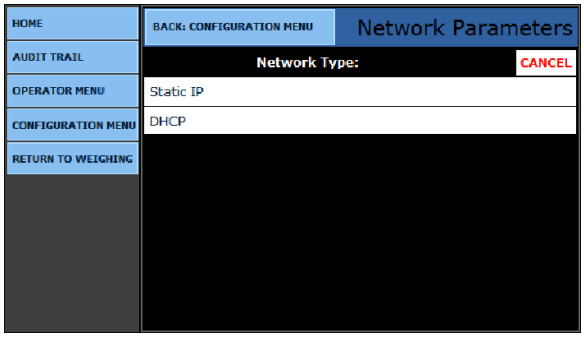
2. Click the **NETWORK TYPE** button.



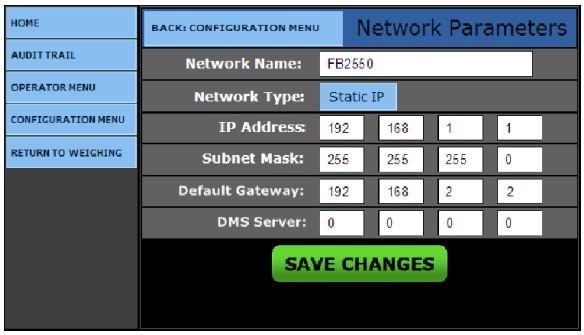
8.9. Network Parameters Configuration, Continued

3. Select either **STATIC IP** or **DHCP**.
   – If **cable is connected** upon initial Power Up and Configuration, the Network type selection will default to **STATIC**.

   For **STATIC IP**, enter the correct **IP Address, Subnet Mask, Default Gateway** and **DNS Server Addresses**.



- Press the **SAVE CHANGES** button, or they will be lost.



IMPORTANT NOTE: *The instrument **must be rebooted** for any Network changes to take effect.*

8.10. Fieldbus Protocols and Formats

8.10.1. Transmission Methods

Communication protocols are simular to conversations; there are several different languages and methods used.

- **PROFIBUS-DP, MODBUS-TCP, INTERBUS-S,** and **ETHERNET/IP** use a method called **"source-destination" communications**. The message packets have destination information in them, and the Fieldbus passes a token from node to node in a timed fashion.
- **DEVICENET, CONTROLNET**, and **CAN** use a **broadcast, producer-consumer model for communications.** Messages are broadcast to all nodes, and each node only "hears" messages intended for it.

8.10.2. Communication Format

Another major difference among Fieldbuses is the format of the communications themselves.

- **DEVICENET** and **CAN** messages are eight bytes long.
- **PROFIBUS-DP** is "word-oriented" and can have up to **256-byte** "stack" per message.

COSTS vs. SPEED

- **PROFIBUS-DP** and **CONTROLNET** are very fast networks – **12 megabits per second** and **500 Mb/s**, respectively. They are much more expensive to operate.
- **DEVICENET** is less expensive.

8.10.3. Handling Network Traffic

FIELDBUSES also handle network traffic in different ways.

- **DEVICENET** and **CAN** use "**non-destructive bitwise arbitration**." When two messages collide, the higher priority message goes first. If the two are equal priority, there is a mechanism within DeviceNet (as well as CAN) that decides which one should go first.
- When a collision occurs in **ETHERNET**, all devices "back off" and re-send their messages, which results in slower transmissions.

Section 9: Accessories

9.1. Accessory Parts List

9.1.1. Printers and Accessories

SERIAL PRINTERS

33292	EPSON TM-U220 DOT MATRIX PRINTER
29260	– *Ribbon*
30954Q	EPSON TM-U230 MATRIX PRINTER
29260	– *Ribbon*
24741	EPSON TM-U295 TICKET PRINTER
14979	– *Ribbon*
96757	– *Scale ticket, 2 part*
96756	– *Scale ticket, 3 part*
16288	– *Scale ticket, 4 part*
24740	EPSON TM-U590 TICKET PRINTER*
24810	– *Ribbon Cartridge*
32403	EPSON EU-T432 THERMAL TAPE PRINTER
32404	– *Paper*
20481	CITIZEN iDP3550 PRINTER
95952	– *Ribbon*
11535	– *Paper Roll Tape, 3"X3", 1 Ply*
N/S	STAR SP298 TICKET PRINTER
N/S	STAR SP700 IMPACT PRINTER
N/S	STAR SP2000 IMPACT PRINTER
N/S	STAR SP2200 TICKET PRINTER

USB PRINTERS

33220	XEROX PHASER 3040 LASER JET PRINTER
29827C	– *6' Hi-Speed USB 2.0 A-to-B Cable (Specify on order – N/C with printer)*
19946	ML 420 SERIES PARALLEL/ USB FORM PRINTER
96799	– *Blank 4-part Tickets*
96801	– *Blank 2-part Tickets*
N/A	HP2055 LASER JET PRINTER

PRINTER ACCESSORIES

32674	EPSON POWER SUPPLY
14809	SERIAL CABLE
25932	SERIAL CABLE

* *Uses the same tickets as the* **TM-U295**.

N/S – N*ot* **S***old by Fairbanks Scales.*

N/A – **N***ot* **A***vailable.*

9.1.2. Additional Accessories

32426	LOOP DETECTOR KIT
31866	FILTERED COOLING FAN KIT
10-4002-009	TRANSCORE RFID SCANNER
25498	EXTERNAL MINI KEYBOARD – USB 87-KEY
31036	EXTERNAL KEYBOARD – USB 104-KEY

CAMERA AND ACCESSORIES

31080	**OUTDOOR IP CAMERA AND POLE ADAPTER**
32373	– *Pole Adapter Plate for Video Camera*
15808	– *Pole Adapter Plate Mounting Clamps (**3" Pole**)*
15809	– *Pole Adapter Plate Mounting Clamps (**4" Pole**)*
15810	– *Pole Adapter Plate Mounting Clamps (**5" Pole**)*

9.2. Programming the Traffic Light Control

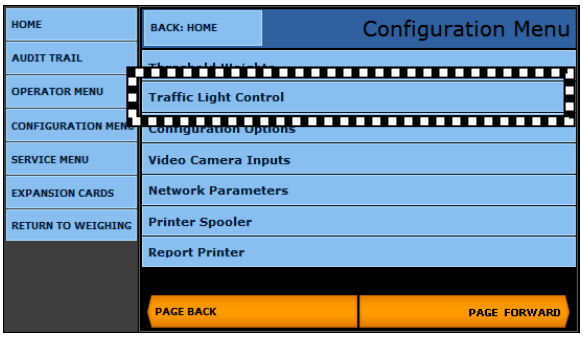
The **TRAFFIC LIGHT CONTROL** shows the status of the scale's traffic light. It is typically controlled automatically by the instrument weighment cycle.

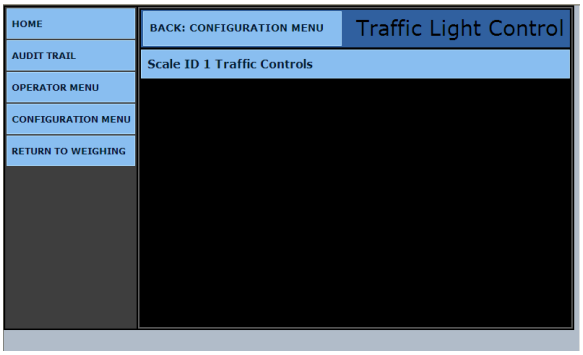
The light has a manual override using the touch screen on the main weighing display.

Each of the **two (2) I/O RELAY CARDS** supports **two (2)** sets of lights, totaling **four (4) Stop Light Units**.

Follow these steps to configure the **Traffic Light Control.**

1. **While in the WEIGH SCREEN, press the MENU button.**
2. Press **LOGIN.**
3. Enter the **Write Customer Password** or **Service Password**, then press the **LOGIN** button.
4. Open the **CONFIGURATION MENU**.
5. Press **PAGE FORWARD** twice.

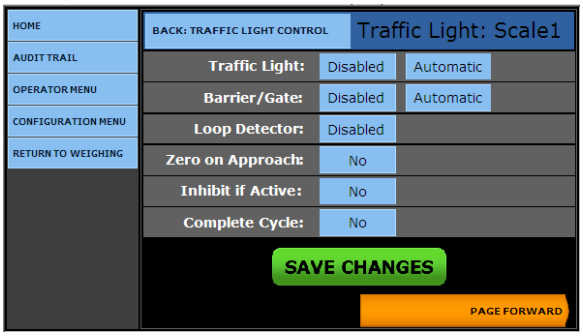




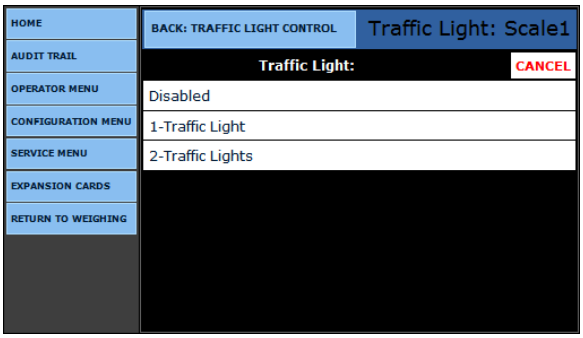
6. Select **TRAFFIC LIGHT CONTROL**.
7. Select **SCALE ID X TRAFFIC CONTROLS**.

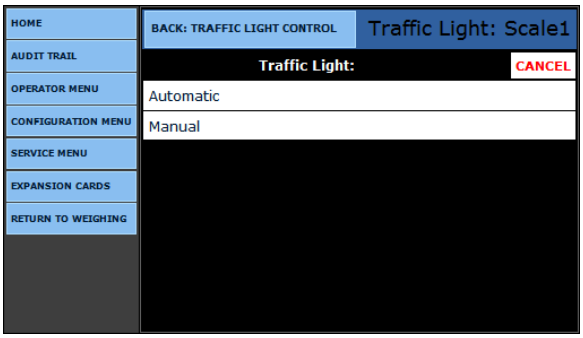
9.2. Programming the Traffic Light Control, Continued

8. Select the **TRAFFIC LIGHT CONTROL** button to one of the following options.
   - **Disabled**
   - **1 – Traffic Light**
   - **2 – Traffic Lights**

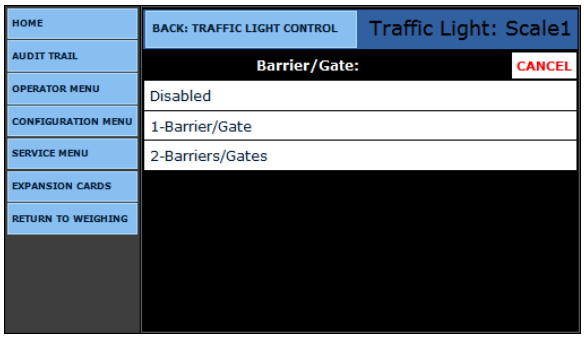


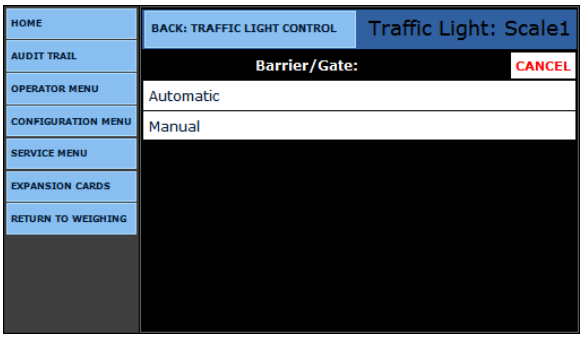
9. In the second button to the right, select whether the **Traffic Lights** operate in a **MANUAL** or **AUTOMATIC** mode.



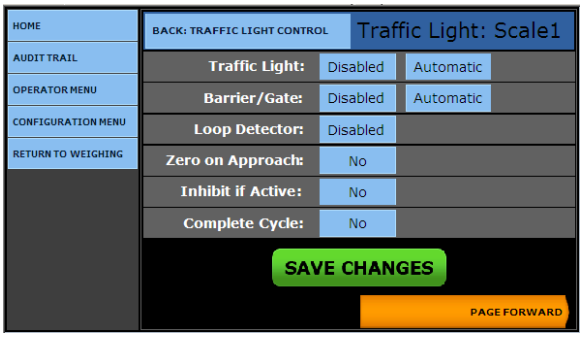


10. **BARRIER/GATES** control is used to control the **Traffic Gates**.

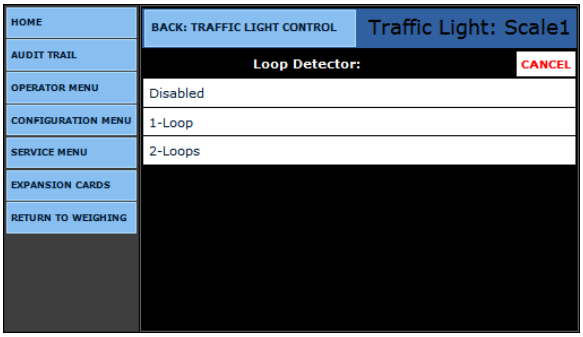




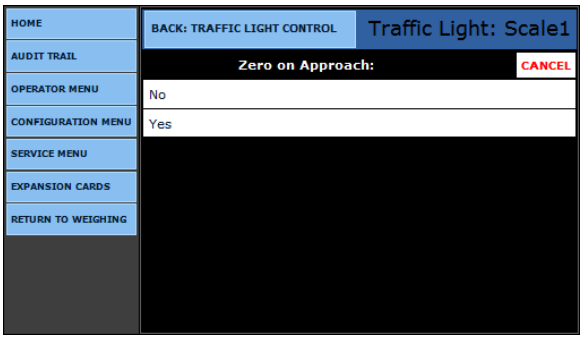
9.2. Programming the Traffic Light Control, Continued



11. Select the **LOOP DETECTOR** control button.
    - **Sensor Loops** alert that the vehicle has entered the scale, and also that it is leaving.
12. Select the correct **Loop Detector**.
    - Extra **LOOP** choices (*i.e.* **3- Loop**, **4-Loop**) appear when the *second* optional **Relay Card (30920)** is added to the Instrument.



13. Select the **ZERO ON APPROACH** Control button.
    - Driver pulls up and stops on the Loop.
    - The scale ZEROs, and the traffic light changes to green, signalling the driver to pull ahead.
14. Choose **NO** or **YES**.
15. Select the **INHIBIT IF ACTIVE** Control button.



16. **OPTION A**.

    Selecting **YES** will *NOT* allow a weighment to be processed if a Loop Detector is **"active".**

    - This ensures that a truck is fully scale-borne before a weight can be processed. Trucks which are in succession cannot stop on the top of the loops, or the weighment transaction will not be permitted.

    OR

    OPTION B

    Select **NO** to allow a transaction to be processed, even if the vehicle is still detected at the loop.

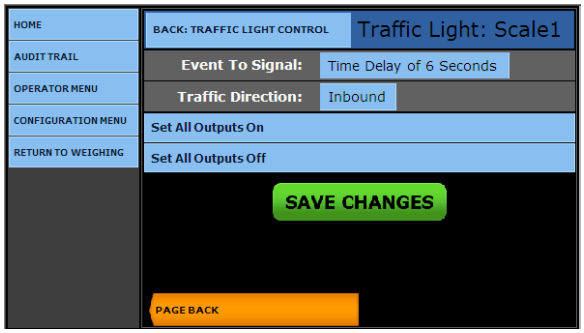
- **COMPLETE CYCLE** is a feature to be used in the future with the **Axlematic Application.**

9.2. Programming the Traffic Light Control, Continued

17. **Press the SAVE CHANGES button when any changes are made, or they will be lost.**

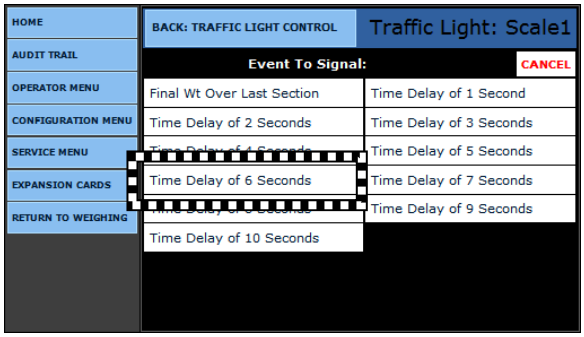
18. Press Page Forward.

19. To the right of the **Event to Signal:**, select **TIME DELAY OF X SECONDS** Control button.



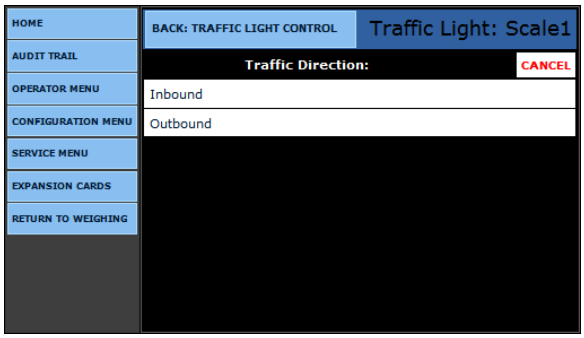
20. Click on the correct time value.
    - This is the time delay from when the truck enters the scale.

    ✓ **Default = 6 Seconds**

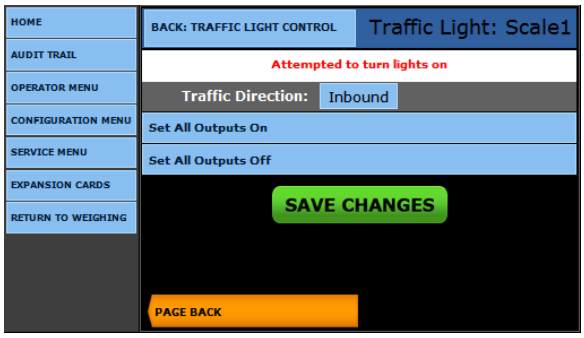


21. Select the **TRAFFIC DIRECTION** Control button.
    - This selects which way the vehicles will normally be traveling.

22. Select either **INBOUND** or **OUTBOUND**.



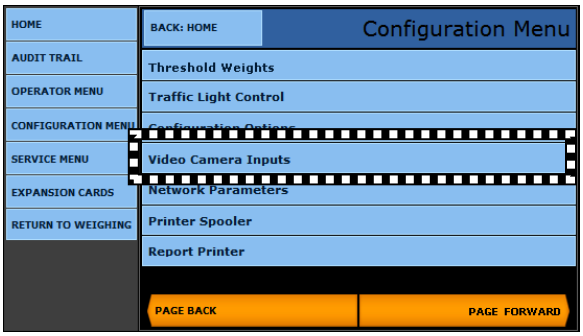
23. Select either the **SET ALL OUTPUTS ON** or the **SET ALL OUTPUTS OFF** Control Button.
    - Activates or deactivates the Traffic Lights for troubleshooting.



- Press the **SAVE CHANGES** button, *or they will be lost.*
- Select **BACK: TRAFFIC LIGHT CONTROL** to return to the previous menu.

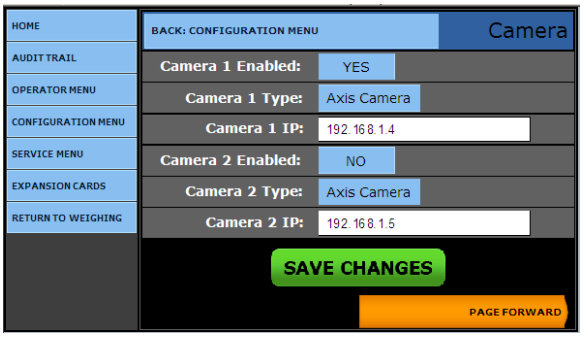
9.3. Video Camera Programming

1. **While in the WEIGH SCREEN, press the MENU button.**
2. Select **LOGIN,** then enter the **Write Customer Password** or **Service Password**.
3. Press the **LOGIN** button.
4. Open the **CONFIGURATION MENU.**
5. Press **PAGE FORWARD** twice.
6. Select **VIDEO CAMERA INPUTS**.

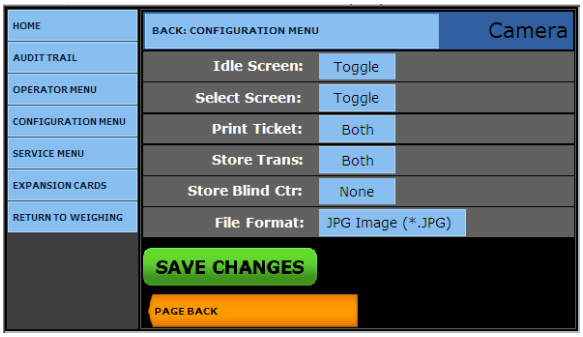


The FB2558 has **two (2) IP video camera inputs.**

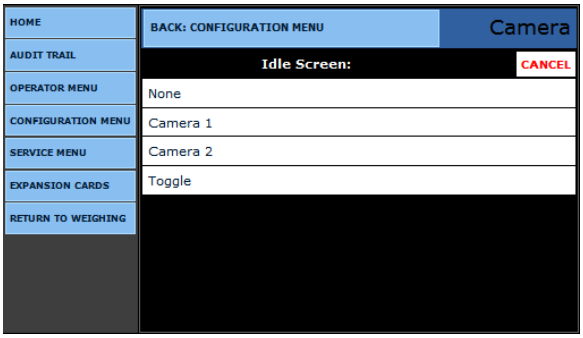
- These can be stored with the Transaction Data
- They can be displayed on the Instrument's **Weigh Screen**, **Idle Screen:** setting**,** in various ways.



7. To activate this feature, select **YES** to one or both of the **CAMERA 1** or **2 ENABLED** options.
8. Select the **CAMERA 1** or **2 TYPE.**
9. Enter the **CAMERA 1** or **2 IP** address.
10. Press **PAGE FORWARD**.

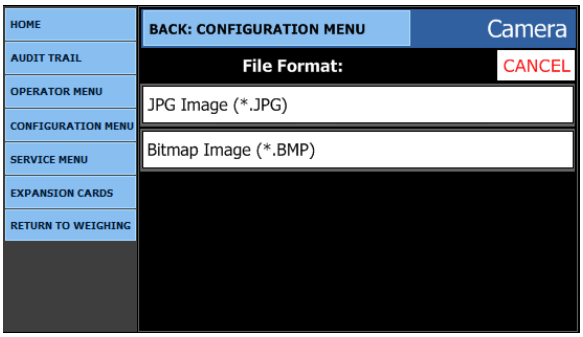


11. Select either **NONE, CAMERA 1, CAMERA 2,** or **TOGGLE** for each of the button options listed below.
    - The video camera can toggle between the two cameras or display them individually.
      - **Idle Screen**
      - **Store Trans**
      - **Print Ticket**
      - **Select Screen**
      - **Store Blind Ctr (Control)**
      - **File Format**



9.3. Video Camera Programming, Continued

12. In the **File Format** option, save the images in either a **PDF** or **JPG** **file format**.



- Press the **SAVE CHANGES** button, or they **will be lost**.
- Select **BACK: CONFIGURATION MENU** to return to the previous menu.

9.4. External Display [Dual Cloning]

The **FB2558** allows **Dual Cloning** of the instrument. Sites/Customers may want cloning to enhance viewing of a larger display yet keep the instrument locally usable.

An external monitor may be added using the **FB2558's** external HDMI port.

- The external monitor must have an HDMI input.
- A HDMI cable is required.

To add an external monitor:

1. Plug the HDMI cable into the HDMI port on the back of the instrument.
2. Plug the HDMI cable into the HDMI port in the external monitor.
3. After a 2-3 second delay, the display should appear on the external monitor.

   The **FB2558's** built-in LCD will to display along with the newly added external monitor.

Section 10: Service & Maintenance

10.1. Database Maintenance

10.1.1. Database Backup

*The FB2558 Instrument has **three (3) methods** of database backup routines.*

A. BACKUP DATABASE TO FLASH – Backs up the database to the **micro SD card** located on the Multi-Function board.

B. BACKUP DATABASE TO EXTERNAL FLASH – Backs up the database to a USB Flash drive, inserted into an available USB port on the instrument rear panel.

C. BACKUP AND SEND AN EMAIL – Backs up the database and attach the file to an email, which is sent to a predetermined user.

D. BACKUP TICKET FORMAT TO FLASH – Backs up changes in the ticket format to the internal memory.

E. BACKUP TICKET FORMAT TO EXTERNAL FLASH – Backs up changes in the ticket format to the external, removable memory drive.

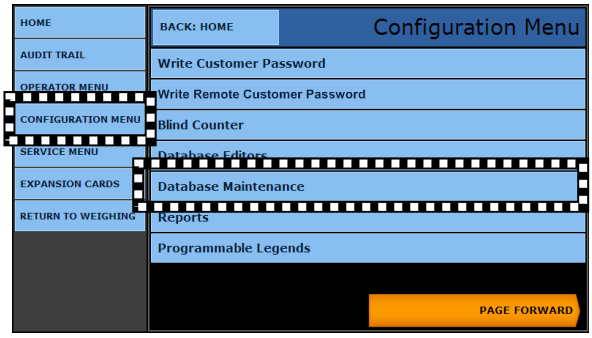
NOTE: *Backups can only be used if they are within the same revision family.*

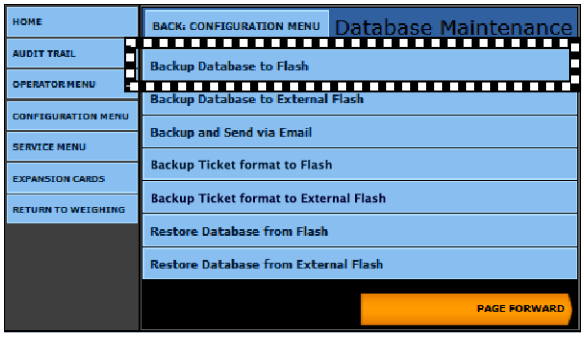
Example: Rev. 5.1 *to* **4.2** *is* **OK**. **Rev. 5.5** *to* **4.0** *is* **NOT OK**.

10.1.1. Database Backup, Continued

A. BACKUP DATABASE TO FLASH [INTERNAL]

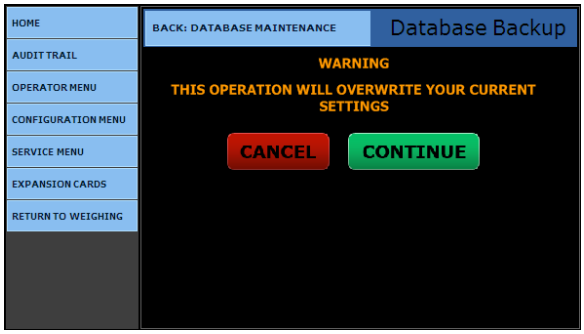
1. While in the **Weight Screen,** press the **MENU** button.
2. Press **LOGIN.**
3. Enter the **Write Customer Password** or **Service Password**.
4. Press the **LOGIN** button.
5. Select **CONFIGURATION MENU**.
6. Select **DATABASE MAINTENANCE**.
7. Select **BACKUP DATABASE TO FLASH**.



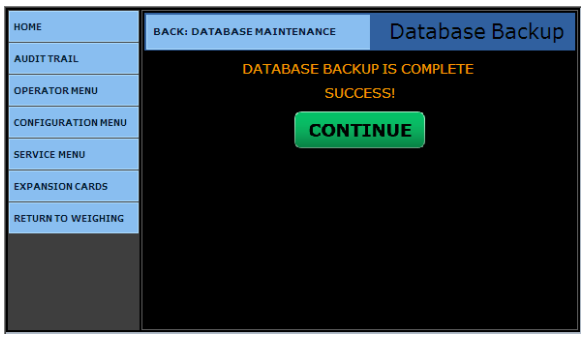


Select either the **CONTINUE** or the **CANCEL** button.

- When the **BACKING UP** process is performed, integrity of the currently used data is **VERIFIED** against the backup.
- The database is completely erased and prepared for new transaction data.



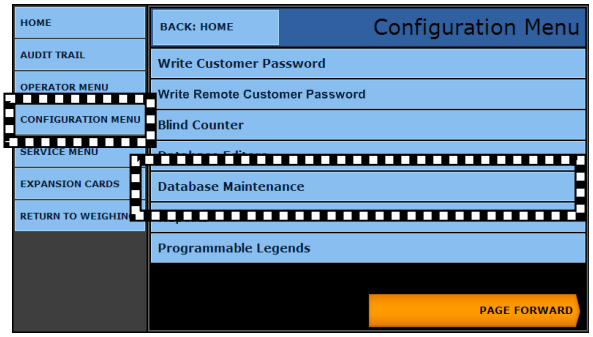
Once the **Backup** is complete, press the **CONTINUE** button to return to the **Database Maintenance Menu**.



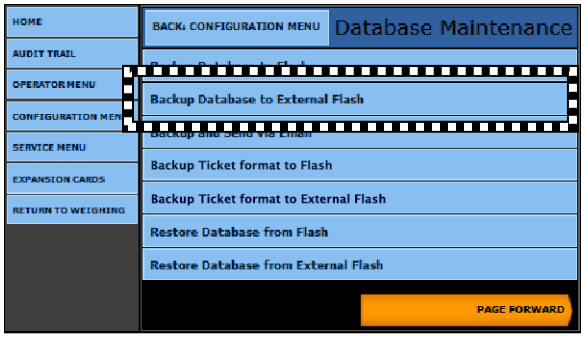
10.1.1. Database Backup, Continued

B. BACKUP DATABASE TO EXTERNAL FLASH

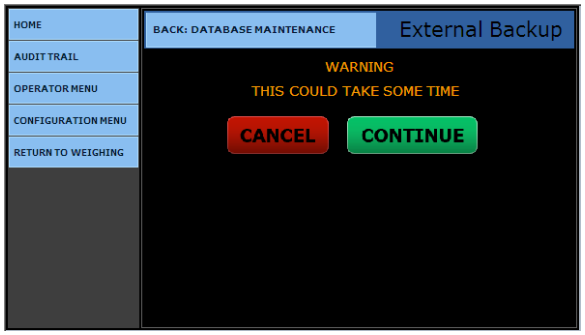
1. Insert a **USB FLASH DRIVE** into an available port on the Instrument's rear panel.
2. While in the **CONFIGURATION MENU**, select **DATABASE MAINTENANCE**.



3. Select **BACKUP DATABASE** to **EXTERNAL FLASH.**

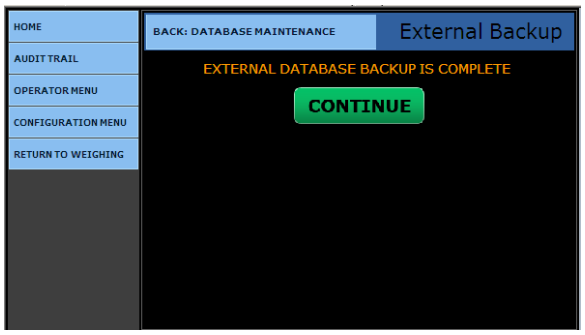


4. Select either **CONTINUE** or **CANCEL.**



After completing the **External Backup,** press the **CONTINUE** button to return to the **Database Maintenance menu**.

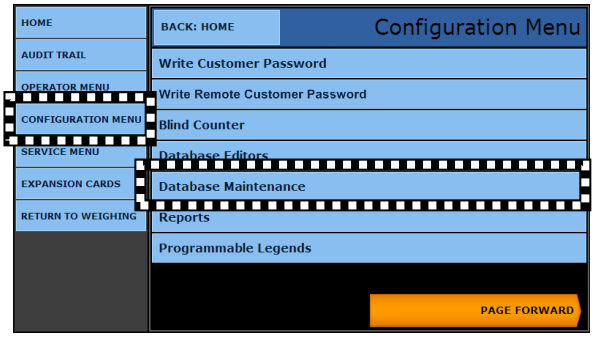
5. Remove the **USB FLASH DRIVE**.



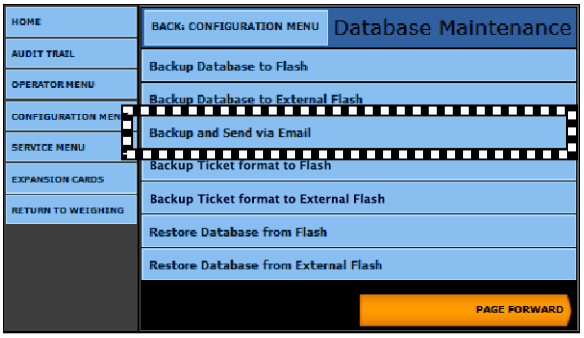
10.1.1. Database Backup, Continued

C. BACKUP AND SEND AN EMAIL

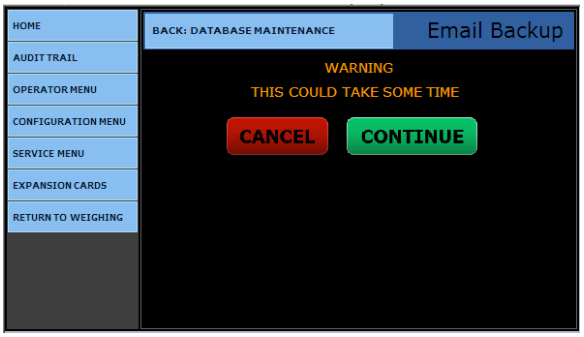
1. While in the **CONFIGURATION MENU,** select **DATABASE MAINTENANCE**.



2. Select Backup and Send via Email.

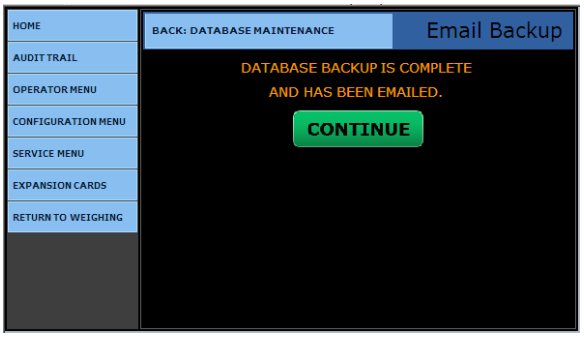


3. Select either **CONTINUE** or **CANCEL**.



4. After completing the **External Backup,** press the **CONTINUE** button to return to the **Database Maintenance menu**.

   Remove the **USB FLASH DRIVE,** if one is used.

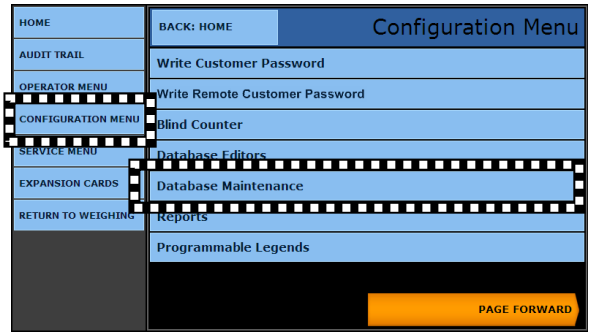


   - Press **RETURN TO WEIGHING** to exit to the Weigh Processing screen.

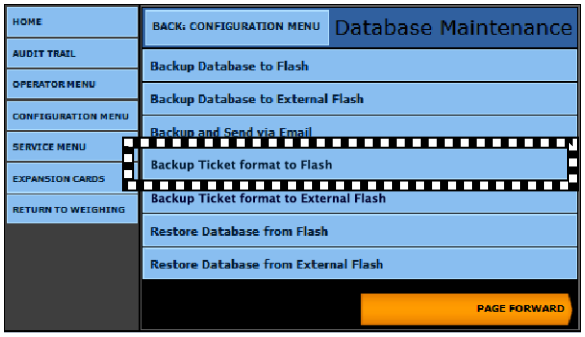
10.1.1. Database Backup, Continued

D. BACKUP TICKET FORMAT TO FLASH – Backs up changes in the ticket format to the internal memory.

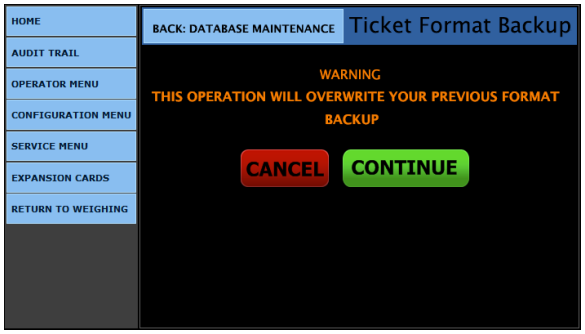
1. While in the **CONFIGURATION MENU**, select **DATABASE MAINTENANCE**.



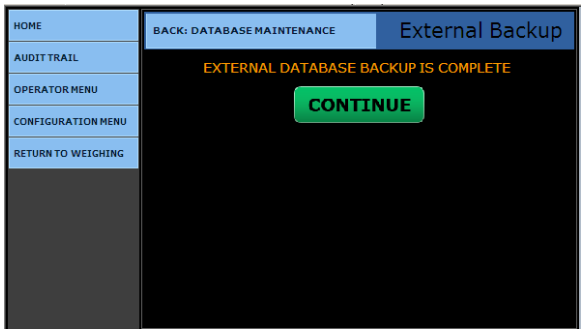
2. Select Backup Ticket Format to Flash.



3. Press **CONTINUE** to complete the operation.



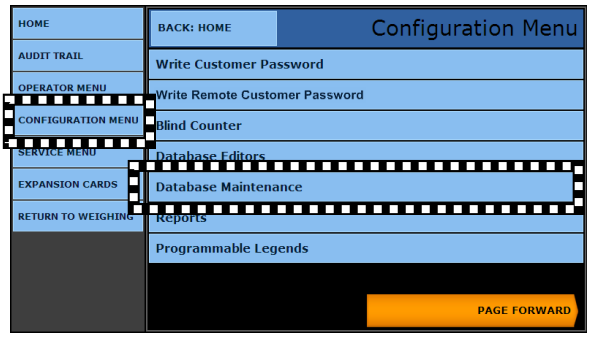
4. Press **CONTINUE** to finish the process.



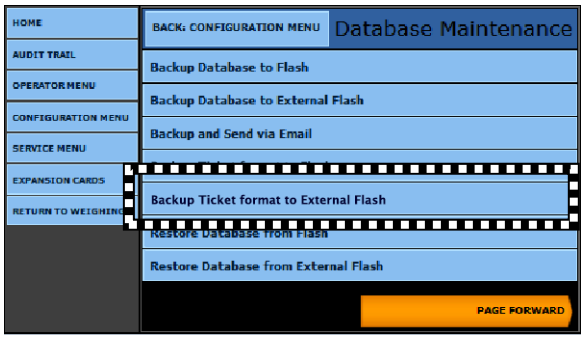
10.1.1. Database Backup, Continued

E. BACKUP TICKET FORMAT TO EXTERNAL FLASH – Backs up changes in the ticket format to the external, removable memory drive.

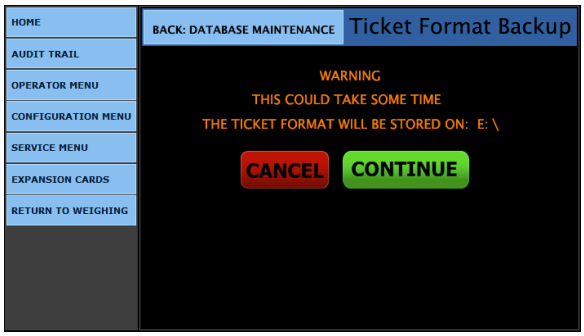
1. While in the **CONFIGURATION MENU**, select **DATABASE MAINTENANCE**.



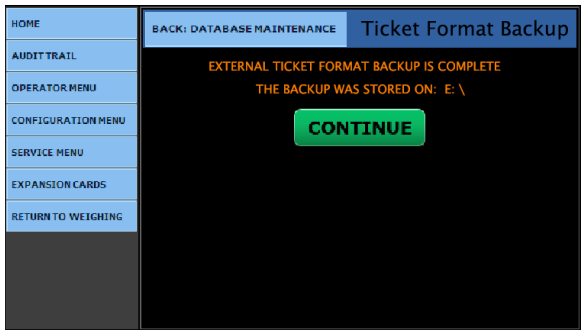
2. Select Backup Ticket Format to Flash.



3. Press **CONTINUE** to complete the operation.



4. Press **CONTINUE** to finish the process.

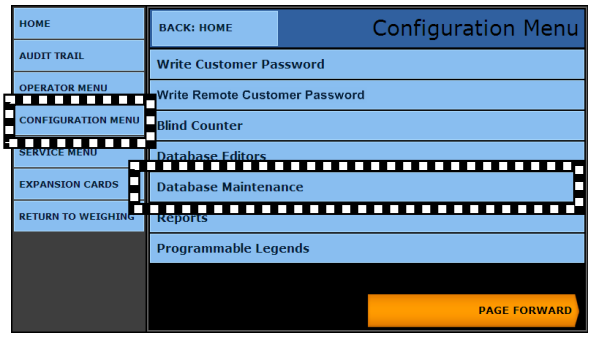


10.1.2. Database Restore

RESTORE DATABASE FROM FLASH uses a database backup from the **PCIe device**, located on the **SBC**.

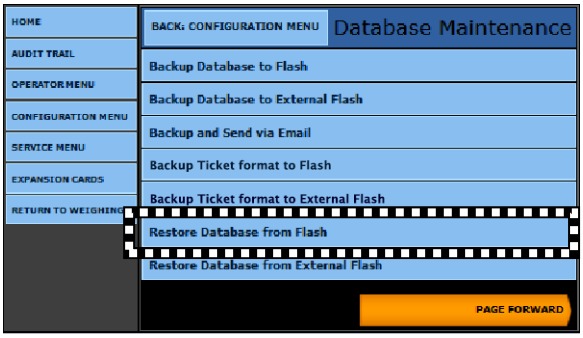
RESTORE DATABASE FROM EXTERNAL FLASH uses a database backup from an **External USB Flash Drive**.

– These two options restore the instrument's database to the same condition as when the backup was performed previously.

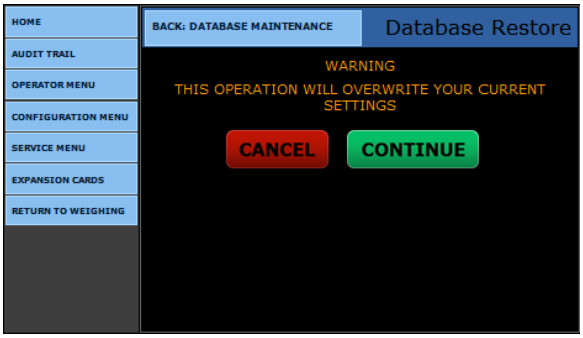


A. RESTORING DATABASE FROM FLASH

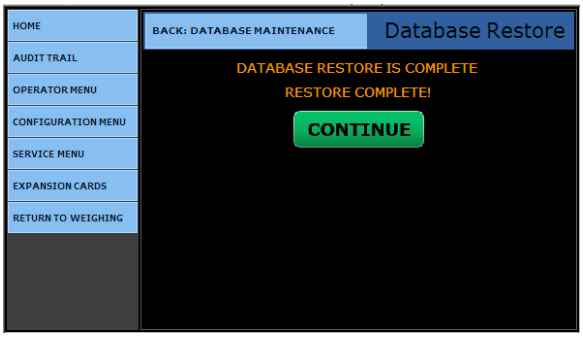
1. While in the **CONFIGURATION MENU**, select **DATABASE MAINTENANCE**.
2. Press Restore Database from Flash.



3. Select either **CONTINUE** or **CANCEL**.



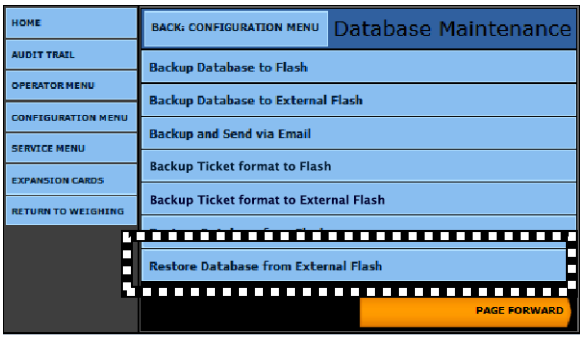
4. Once the process is complete, press the **CONTINUE** button to return to the **Database Maintenance menu.**



10.1.2. Database Restore, Continued

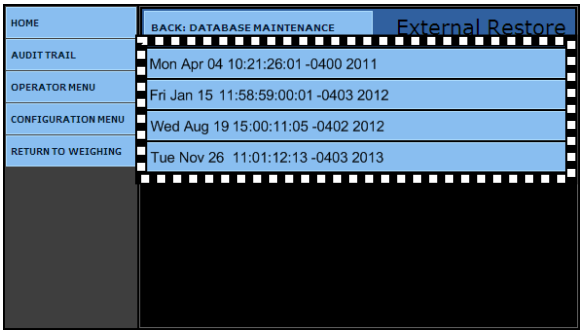
B. RESTORING THE DATABASE FROM EXTERNAL FLASH

1. While in the **CONFIGURATION MENU**, select **DATABASE MAINTENANCE**.

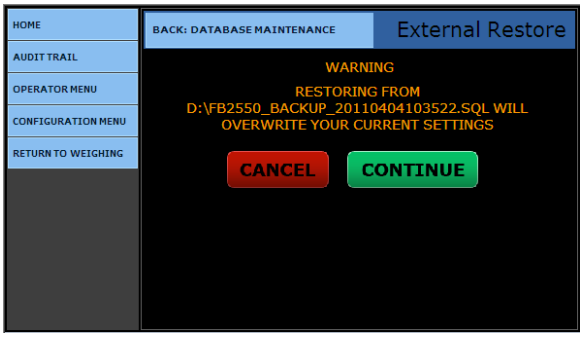


2. Select Restore Database from External Flash.

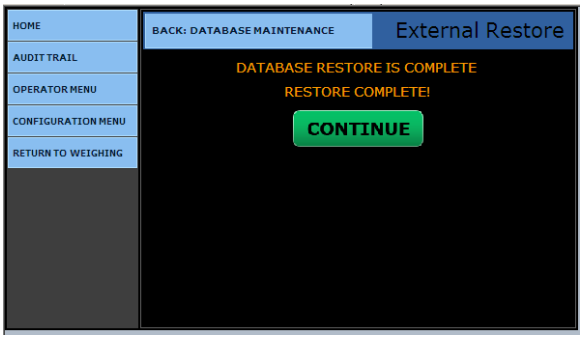
3. Select the correct **EXTERNAL RESTORE** file from the list.



4. Press **CONTINUE** button to complete the process or press the **CANCEL** button to stop the procedure.
   - A warning displays to confirm the decision to proceed.
   - The **External Restore** process may take several minutes to complete.



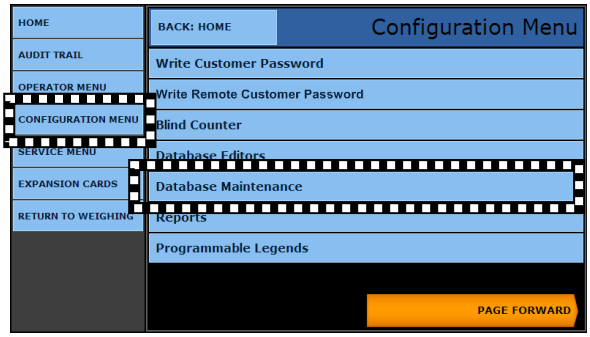
- When the **Database Restore** is complete, press the **CONTINUE** button to return to the **Database Maintenance menu**.



10.1.2. Database Restore, Continued

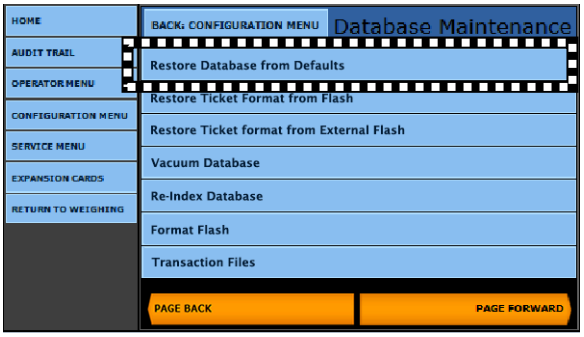
C. PROCEDURE RESTORE DATABASE FROM DEFAULTS

1. While in the **CONFIGURATION MENU**, select **DATABASE MAINTENANCE**.



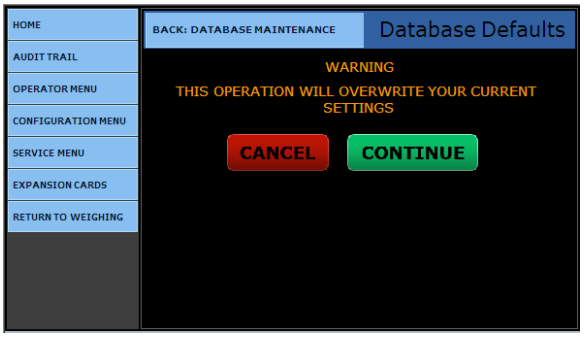
2. Press **PAGE FORWARD** once.

   Select **RESTORE DATABASE FROM DEFAULTS.**

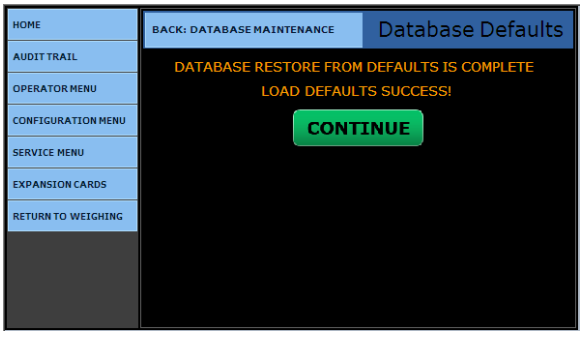


- A warning displays about whether to proceed.
- The message will confirm that the correct backup file has been selected.

3. Press **CONTINUE** button to complete the process or press the **CANCEL** button to stop the procedure.
   - This process could take several minutes.

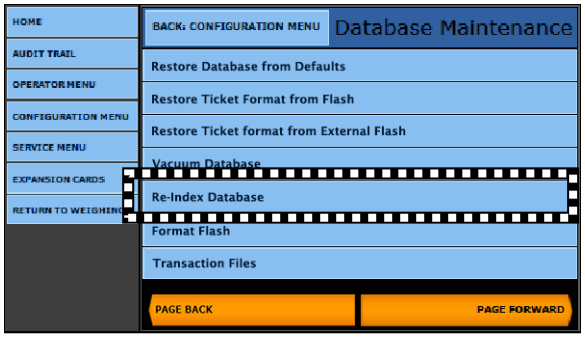


4. When the **Database Default Restore** process is complete, press the **CONTINUE** button to return to the **Database Maintenance menu**.



- Press **RETURN TO WEIGHING** to exit to the Weigh processing screen.

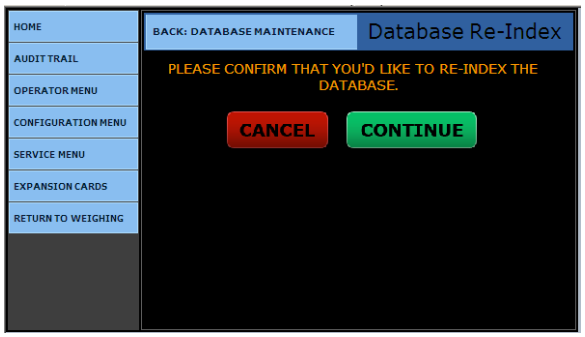
10.1.3. Re-Index Database



1. While in the **CONFIGURATION MENU**, select the **DATABASE MAINTENANCE** menu.
2. Press **PAGE FORWARD** once.

   Select **RE-INDEX DATABASE**.

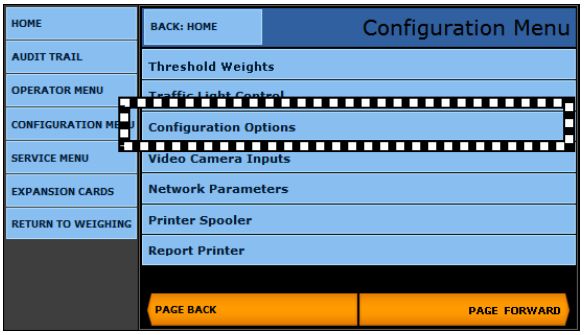
   - A warning will display of whether or not to proceed.
   - This process could take several minutes.
3. Press **CONTINUE** button to complete the process or press the **CANCEL** button.



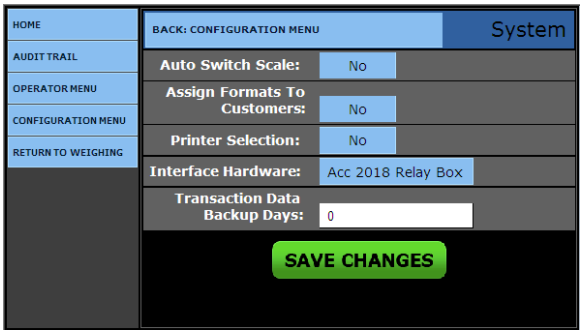
When the **Database Re-Index** process is complete, press the **CONTINUE** button to return to the **Database Maintenance menu.**

10.1.4. Transaction Data Backup Days Reminder

This option emails a reminder to update the database.



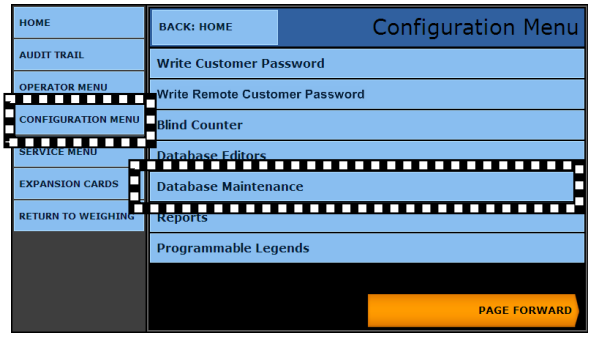
1. While in the Weight Screen, press **LOGIN**.
2. Enter the **Write Customer Password** or **Service Password**.
3. Press the **LOGIN** button.
4. Select **CONFIGURATION MENU**.
5. Press **PAGE FORWARD** twice.
6. Select Configuration Options.
7. Enter a numeral in the **Transaction Data Backup Days** input field.
   - This sets a timed reminder for the **Data Backup**.
   - A value of **0** disables this feature.
8. Press the **SAVE CHANGES** button, and the program returns to the **CONFIGURATION MENU** when complete.



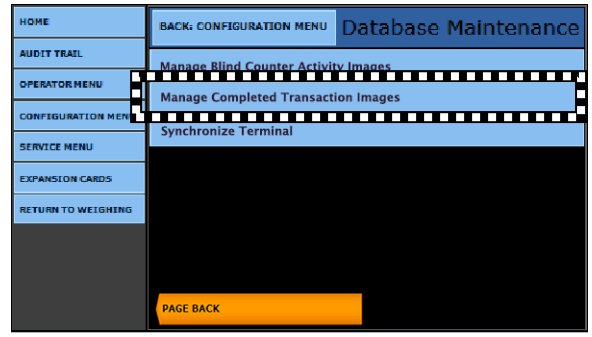
10.1.5. Completed TXN IMGS

This option allows the camera images to be viewed, emailed, deleted and copied to USB device.

1. While in the **CONFIGURATION MENU**, select **DATABASE MAINTENANCE**.
2. Press **PAGE FORWARD** twice.

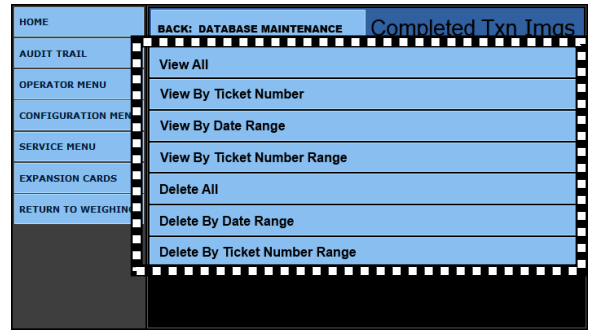


3. Select **MANAGE COMPLETED TRANSACTION IMAGES**.



Select any of the following options.

- **VIEW ALL**
- **VIEW BY TICKET NUMBER**
- **VIEW BY DATE RANGE**
- **VIEW BY TICKET NUMBER RANGE**
- **DELETE ALL**
- **DELETE BY DATE RANGE**
- **DELETE BY TICKET NUMBER RANGE**



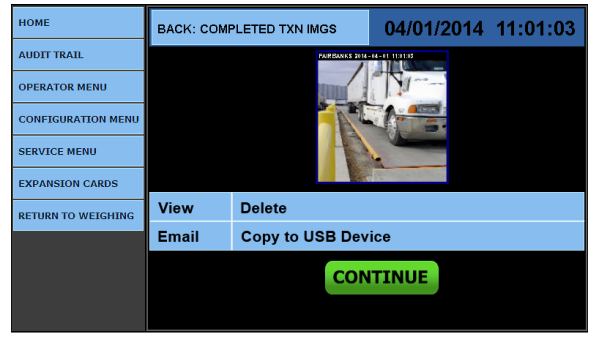
Select one of the following options.

VIEW displays the stored image.

EMAIL sends this image to any recipient within the database.

DELETE erases the image completely.

COPY TO USB DEVICE stores the image to a USB flash drive.



- Each image is **Time** and **Date Stamped** for security recording purposes.

- Pressing **CONTINUE** returns to the **COMPLETED TXN MSGS** menu.

10.2. Printer Troubleshooting

PAPER JAMS

When paper jams occur within one area of the printer, ***unplug the power cable***, then clean that area of the paper path with alcohol and cotton balls.

The following can cause paper jams.

- **Selecting incorrect paper type.**
- **Using unsupported paper.**
- **Overfilling the tray.**
- **Using creased, moist or damaged paper.**
- **Loading paper incorrectly.**
- **Adjusting the paper guides improperly.**

Noted below are some preventative measures.

- **Always use clean, undamaged paper.**
- **Always fan the paper.**
- **Observe the paper tray fill line.**
- **Avoid polyester coated paper (designed for inkjet or thermal-type printers).**
- **Adjust the guides correctly to fit the paper size.**
- **Store the printer and paper in a dry location.**
- **Select the correct paper size for printing.**
- **Use only XEROX® recommended paper.**

NOTE: *For complete printer descriptions, see* **Section 8.1. Printers**

DOES NOT TURN ON

PROBABLE CAUSE (S)	SOLUTION(S)
Switch not turned on.	Turn on switch.
Problem with outlet connections.	Test outlet, then resolve wiring issues. • **Plug it into a different outlet.**

RESETS OR TURNS OFF FREQUENTLY

PROBABLE CAUSE(S)	SOLUTION(S)
Power cord is not connected firmly.	Turn off printer, then confirm the power cord is plugged in correctly, then turn on the printer.
System error occurred.	• **Reboot the printer. Print the** ERROR HISTORY **from the** Information Pages **of the** Printer Setting Utility**.**
Printer connected to an UPS, or is connected to a power strip shared with other high-power devices.	Turn off the printer, then connect it to a more suitable outlet.

10.2. Printer Troubleshooting, Continued

DOES NOT PRINT

PROBABLE CAUSE(S)	SOLUTION(S)
Printer in Energy Saver mode.	Push the Control Panel button.
Error message displays.	Follow message instructions.
Error Instrument is ON.	If the **Ready Instrument** is **OFF**, printer is out of toner. Replace the cartridge. If the **Ready Instrument** is flashing, load paper in the Main Tray.
Error Instrument is blinking.	• **If the** Ready Instrument **is** OFF**, the printer is not working. Reboot the printer.** • **If the** Ready Instrument **is flashing, the printer is canceling a job or is initializing the non-volatile memory.**
Both control panel Instruments are **OFF**.	• **Turn off the printer, check the plug and outlet. Restart the printer.**
The Ready Instrument is flashing.	• **If the Ready Instrument is flashing, but the printer is not functioning, a previous print job could be in error. Delete any print jobs in the queue.** • **Force the printer to print by pushing the Control Panel button.** • **If the Ready Instrument is not flashing after sending a print job, check the USB cable connections, then reboot the printer.**

MAKES UNUSUAL NOISES INSIDE

PROBABLE CAUSE(S)	SOLUTION(S)
Obstruction or debris inside the printer.	Turn off and unplug the printer, then remove the debris or obstruction. – *NEVER USE HAND TOOLS OR OTHER ITEMS TO PROBE INTO THE PRINTER.*

CONDENSATION INSIDE

PROBABLE CAUSE(S)	SOLUTION(S)
Printer has been sitting idle in a cold room.	• **Wipe moisture out with cloth. Clean with alcohol and cotton balls.** • **Allow the printer to operate for several hours at room temperature.**
Relative humidity of the room is too high.	• **If possible, reduce the humidity within the room.** • **If not, move the printer location to where temperature and humidity are within the operating specifications.**

Appendix I: Fieldbus Reference

Overview

The term **FIELDBUS** usually describes an all-digital two-way communications system that interconnects measurement and control equipment such as sensors, actuators and controllers.

- Fieldbus traces its beginnings in the automotive industry, where efforts to simplify and reduce wiring resulted in a multiplexed **CAN** (**C**ontroller **A**rea **N**etwork) system of modules installed at various points of a vehicle.

WORKING EXAMPLE

Most cars have multiple controls on the door panel, such as power-window, power-mirror, power-lock and power-seat controls. A **Fieldbus Network** combines all the switch wires into a two wire communication *BUS*. Pressing a switch closes a relay that provides power to the window motor, sending a packet of data onto the communication bus to adjust the passenger-side mirror.

Noted below are the five (5) **Fieldbus Interfaces types** used with the FB2558 Instrument.

DEVICENET – A network system to interconnect control devices for data exchange.

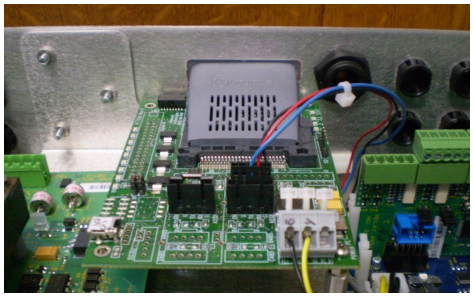
– It uses a differential serial bus, called **Controller Area Network** (**CAN**), as the backbone technology and defines an application layer to cover a range of device profiles.

CONTROLNET – An open Control Network in real-time, for high-throughput applications.

MODBUS-TCP – Serial network communications in a master/slave (request/response) type relationship using either ASCII or RTU (Remote Terminal Unit) modes.

– Non-powered two-wire (RS-485) network, with **up to 126 nodes**, transfering a maximum of 244 data bytes per node per cycle.

PROFIBUS – Protocol use primarily in Europe which utilizes a non-powered two-wire (RS-485) Network.



Typical **Fieldbus Card** *installation.*

ETHERNET/IP – An **Industrial Application Layer Protocol** used for communication between industrial control systems and their components.

– Not to be confused with the simple combination of EtherNet and the Internet Protocol, but instead, the "**IP**" in EtherNet/IP stands for **"Industrial Protocol".**

– *Such components include* **Programmable Automation Controller, Logic Controller**, or an **I/O System**.

FieldBuDevice Types

A. DeviceNet (30923)

DEVICENET is a low-cost communications link that connects industrial devices to a network, eliminating expensive hardwiring.

- It is based on a broadcast-oriented, communications protocol the **CAN**.
- The **CAN Protocol** was originally developed by BOSCH for the European automotive market for replacing expensive wire harnesses with low-cost network cable.
- The **CAN Protocol** has fast response and high reliability for applications like anti-lock brakes and air bags.

DEVICENET also provides power to the network. This allows devices with limited power requirements to be powered directly from the network.

- This reduces connection points and physical size.
- The maximum network size is **up to 64 Nodes**, with message data packets **up to 8 bytes.**

WIRE	SIGNAL	DESCRIPTION
1	**V**	Negative bus supply voltage
2	**CAN_L**	CAN low bus line
3	**SHIELD**	Cable shield
4	**CAN_H**	CAN high bus line
5	**V+**	Positive bus supply voltage

A. DeviceNet (30923), Continued

NETWORK STATUS LED

STATE	INDICATION
OFF	Not online/ No power
GREEN	Online, one or more connection established
FLASHING GREEN (1 Hz)	Online, no corrections established
Red	Critical link failure
Flashing Red (1 Hz)	One or more connections timed out
Alternating Red/Green	Self-test

NS = **Operation Mode** LED
MS = **Mode Status** LED
Connection = DeviceNet Connector

MODULE STATUS LED

STATE	INDICATION
OFF	No power
GREEN	Operating in normal condition
FLASHING GREEN (1 Hz)	Missing/Incomplete configuration/ Device needs comminssioning
Red	Unrecovrerable fault(s)
Flashing Red (1 Hz)	Recoverale fault(s)
Alternating Red/Green	Self-test

B. ControlNet (30924)

CONTROLNET (**30924**) is an open ControlNetwork running in “real-time”, for high-throughput applications.

- It uses a **Control and Information Protocol** (**CIP**), combining the functionality of an I/O Network and a Peer-to-Peer Network.
- **CONTROLNET** is based on the **Producer/Consumer Model**, permiting all nodes on the network to simultaneously access the same data from a single source.
- Maximum of **99 nodes**, with no minimum distance between nodes
- The ControlNet card uses BNC connectors.

SPECIAL NOTES

For **signal redundancy**, both connectors should be used.

Network Status LED A and **Module Status LED** correspond to **LED 1** and **LED 2** in the instance attributes of the **Anybus Object**.

- They are available in the application interface, but the LED placement on the front does not conform to the standard **Anybus CompactCom** placement of **LED 1** and **LED 2**.

B. ControlNet (30924), Continued

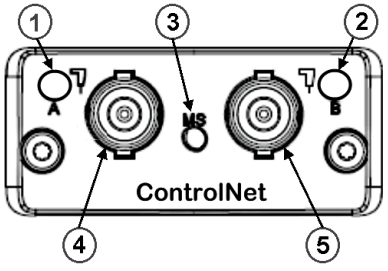
NETWORK STATUS

LED	STATE	INDICATION
A and B	**OFF**	Not online / No power
	Flashing Red (1 Hz)	Incorrect node configuration, duplicate MAC ID etc.
	Alternating Red/Green	Self test of bus controller
	Red	Fatal event or faulty unit
A or B	**OFF**	Channel is disabled
	Alternating Red/Green	Invalid link configuration
	Flashing Green (1 Hz)	Temporary errors (node self-corrects) or node is not configured to go online.
	Green	Normal operation
	Flashing Red (1 Hz)	Media fault or no other nodes on the Network

MODULE STATUS

STATE	INDICATION
OFF	No power
GREEN	Operating in normal condition, controlled by a **Scanner in RUN state.**
FLASHING GREEN (1 Hz)	The module has not been configured or the Scanner is in the **Idle state.**
Red	Unrecovrerable fault(s), EXCEPTION,
Flashing Red (1 Hz)	Media fault or no other nodes on the Network

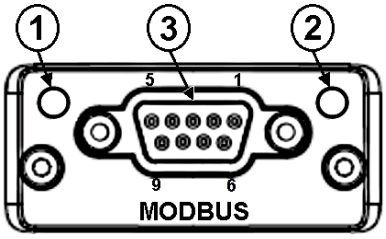
NO.	DESCRIPTION
1	Network Status LED **A**
2	Module Status LED
3	Network Status LED **B**
4	ControlNet Connector **A**
5	ControlNet Connector **B**



C. Modbus RTU (30925)

MODBUS (30925) PROTOCOL was originally developed in 1978 to exchange information between devices on the factory floor.

- It developed into the standard for exchanging data and communication **MODULE STATUS** information between PLC systems.
  - Modbus-TCP devices communicate over a **Serial Network** in a **master/slave** (request/response) type relationship.
  - Uses either the **ASCII** (American Standard Code for Information Interchange) **mode** or the **RTU** (Remote Terminal Unit) **mode**.
- In the **ASCII MODE**, two eight-bit bytes of data are sent as two ASCII characters.
  - The primary advantage of ASCII mode is the flexibility of the timing sequence.
  - Up to a one second interval can occur between character transmissions without causing communication errors.
- In the **RTU MODE**, data is sent as two four-bit, hexadecimal characters, providing for higher throughput than in ASCII mode for the same baud rate.
  - Modbus Plus communicates using a single twisted pair of wires in one shielded cable **(#18AWG)**.
  - Modbus Plus ***does NOT*** *provide power* on the network.
- Maximum of up to **32 Nodes**, and up to **64** with a Repeater.



NO.	DESCRIPTION
1	Communication LED
2	Device Status LED
3	Modbus Interface

COMMUNICATION LED

LED STATE	DESCRIPTION
OFF	No power - *OR* – no traffic
YELLOW	Frame reception or transmission
RED	A fatal error has occured

C. Modbus RTU (30925), Continued

DEVICE STATUS LED

LED STATE	INDICATION
OFF	Initializine – *OR* – *n*o power
GREEN	Module initialized, no error
RED	Internal error – *OR* –major unrecoverable fault
RED, SINGLE FLASH	Communication fault or configuration error **Case 1:** Invalid setttings in Network Configuration error **Case 2**: Settings in Network Configuration Object has been changed during runtime (i.e. the settings do not match the currently used configuration).
RED, DOUBLE FLASH	Application diagnostics available.

MODBUS-TCP INTERFACE

PIN	DIRECTION	SIGNAL	COMMENT
Housing	—	**PE**	Protective Earth
1	—	**GND**	Bus polarization, ground (isolated)
2	Output[3]	**5V**	Bus polarizatino power +5V DC (isolated
3	Input	**PMC**	Connect to pin #2 for RS-232 operation
4			
5	Bidirectional	**B-LINE**	RS-485 B-Line
6			
7	Input	**RX**	RS-232 Data Receive
8	Output	**TX**	RS-232 Data Transmit
9	Bidirectional	**A-Line**	RS-485 A-Line

Modbus-TCP Interface Kit (32760)

Modbus-TCP is an open Master/Slave application protocol that can be used on top of Ethernet-TCP/IP. Modbus reads in 16 bit register sizes == 1 word == (2) bytes.

Test Software: ***recommended from industry customers***

Simply Modbus TCP – free to evaluate Modscan32 - evaluation

Software Recomedations:

IPConfig – Developed by HMS Industries, free to use application that scans a network for ModbusTCP devices, and allows IP assignment.

https://www.fairbanks.com/support/software.cfm

Sample Reference to Input Data:

Function Code	Behavior	Absolute Address	Modicon 5 digital Address
3	Read Holding Register	0-79 , 256-335	40001-40080
4	Read Input Registers	0-79	30001-30080
Example Gross WT.			
3	Read Input Registers	5,6	

Connection Style:

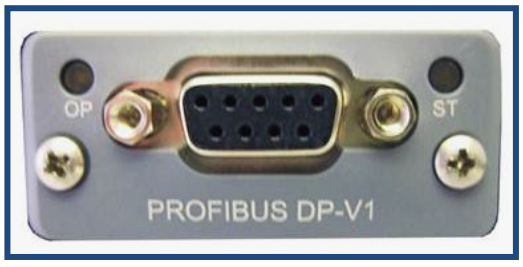
RJ45 – Standard Ethernet Cat5 (supply sketch of back of module)

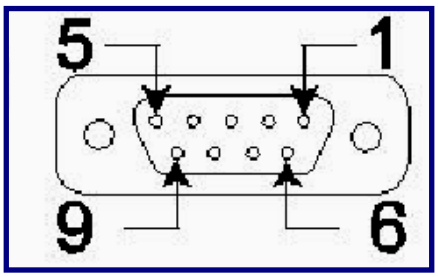
Duplexing is 10/100 Mbits/ full/half, and can be configured from the web interface.

D. ProfiBus-DP (30922)

PROFIBUS-DP utilizes a **non-powered two-wire (RS-485) Network**.

- A PROFIBUS-DP Network may have **up to 126 nodes**, transfering a maximum of **244 bytes data per node/ per cycle**.
- Baud (Communication) Rates are selectable, and overall end-to-end network distance varies with speed.
- The maximum standard Baud Rate is **12Mbps**, with a maximum distance of **100M (328ft),** and **1200M (3936 ft)** at **93.75Kbps** without repeaters.
- **PROFIBUS-DP** connects to a wide variety of field devices including the following:
  - *Discrete and analog I/O Drives.*
  - *Robots.*
  - *HMI/MMI products.*
  - *Pneumatic valves.*
  - *Barcode readers.*
  - *Weigh scales.*
  - *Transducers.*
  - *Flow measuring equipment.*





D. ProfiBus-DP (30922), Continued

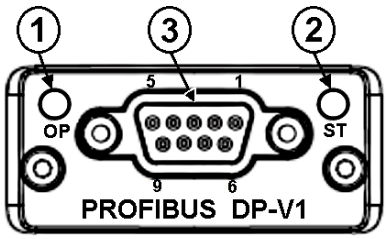
PIN	SIGNAL	DESCRIPTION
3	**B-Line**	Positive RxxD/TxD, Rs485 level
4	**RTS**	Request to Send
5	**GND**	Ground (Isolated)
6	**+5 Bus Output**	+5V termination power (Isolated, short circuit protected)
8	**A-Line**	Negative RXD/TxD, RS485 level

OPERATION MODE LED

LED STATE	DESCRIPTION	COMMENTS
OFF	Not online or No power	
Green	Online/ Data Exchange	
Flashing Green	Online, clear	
Flashing Red (1 flash)	Parameterization error	*See* **Parameterization Data Handling**
Flashing Red (2 flashes)	PROFIBUS-DP configuration error	*See* **Configuration Data Handling**

MODULAR STATUS LED

LED STATE	DESCRIPTION	COMMENTS
OFF	No power - *OR* – not initialized	Module state = "**SETUP"** OR **NW-INIT"**
Green	Initialized	Module has left the **NW_INIT** state
Flashing Green	Initialized, diagnostic events(s) present	Extended diagnostic bit is set
Red	Exception error	Module state = **EXCEPTION**



NO.	DESCRIPTION
1	Communication LED
2	Device Status LED
3	Modbus Interface

NOTE: *Additional information and* **EDS files** *are available at the following website.*
https://www.fairbanks.com/support/software.cfm

E. EtherNet/IP (31974)

The **ETHERNET/IP MODULE** utilizes the Industrial Protocol.

- The data is transmitted continuously from this module.
- Utility IPConfig – Developed by HMS Industries can scan a network for Ethernet IP devices, and allows IP assignment.
- EDS (Electronic Data Sheet file (Vendor specific data is accessible and recommended
- A custom EDS (Electronic Data Sheet) file is available from our website, uploading this file into PLC software can then help target correct memory addressing for scale data.

Use the following download to change the IP, Sub Net and Gateway addresses of an Ethernet/IP Module.

http://www.fairbanks.com/software/FB2558_090513.zip

Use the following download to load into PLC software for configuring the Ethernet/IP module.

http://www.fairbanks.com/software/FB2558_090513.zip

Shown below is the **NETWORK Status LED Chart.**

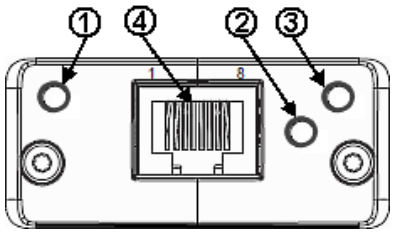
STATE	DESCRIPTION
Off	No power or offline.
GREEN	Online, one or more connections established.
FLASHING	Online, no connections established.
RED	Duplicate IP address, **FATAL** error
FLASHING RED	One or more connections timed out.

Shown below is the **MODULE** **Status LED Chart.**

STATE	DESCRIPTION
Off	No power.
GREEN	Controlled by a scanner in **RUN** state.
FLASHING	Not configured, or scanner in idle state.
RED	Major fault, **FATAL** error.
FLASHING RED	Recoverable fault(s).

Shown below is the **Link / Activity LED Chart.**

STATE	DESCRIPTION
Off	No link, no activity.
GREEN	Link established.
FLICKERING GREEN	Activity.



1. Network Status LED
2. Link/Activity
3. Module Status LED
4. Ethernet Interface (RJ-45) (Standard Cat 5 Cable)

Fieldbus Protocols and Formats

Transmission Methods

Communication protocols are simular to conversations; there are several different languages and methods used.

- **PROFIBUS-DP, MODBUS-TCP, INTERBUS-S,** and **ETHERNET/IP** use a method called **"source-destination" communications**. The message packets have destination information in them, and the Fieldbus passes a token from node to node in a timed fashion.
- **DEVICENET, CONTROLNET**, and **CAN** use a **broadcast, producer-consumer model for communications.** Messages are broadcast to all nodes, and each node only "hears" messages intended for it.

Communication Format

Another major difference among Fieldbuses is the format of the communications themselves.

- **DEVICENET** and **CAN** messages are eight bytes long.
- **PROFIBUS-DP** is "word-oriented", and can have up to **256-byte** "stack" per message.

COSTS vs. SPEED

- **PROFIBUS-DP** and **CONTROLNET** are very fast networks – **12 megabits per second** and **500 Mb/s**, respectively. They are much more expensive to operate.
- **DEVICENET** is less expensive.

Handling Network Traffic

FIELDBUSES also handle network traffic in different ways.

- **DEVICENET** and **CAN** use "**non-destructive bitwise arbitration**." When two messages collide, the higher priority message goes first. If the two are equal priority, there is a mechanism within DeviceNet (as well as CAN) that decides which one should go first.
- When a collision occurs in **ETHERNET**, all devices "back off" and re-send their messages, which results in slower transmissions.

F. DT7000 Gateway

The **DT7000 Communication I/O Gateway** is a module that provides access between Industrial Networks and the serial device(s).

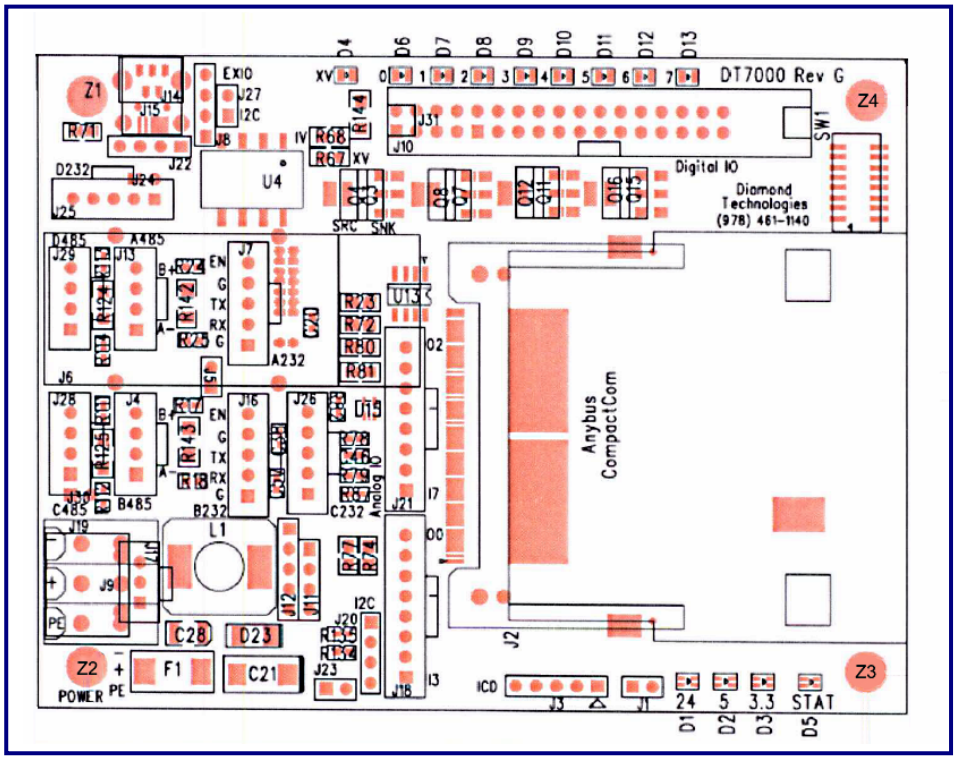
- The DT7000 utilizes one of the available Anybus Compact COM Modules for the desired Fieldbus.
- The Fieldbus Interface(s) support a bi-directional communication capability for the Instrument.
- The FB2558 Interface supports a variety of **Industrial Protocols.**

The following Fieldbus Networks are supported by the DT7000.

- Profibus-DP
- EtherNet/IP
- ControlNet
- DeviceNet
- MODBUS-TCP

MODULE LAYOUT

The image below shows the module layout.



INPUT POWER

The DT7000 requires **Input Power** of **9 to 40 VDC** (**24VDC** normally) at the **Terminal Block Connector (J-19)**.

See the cart below for **Input Power** *connections.*

J19 PIN	SIGNAL
1	PE
2	+V
3	–V

DT7000 SERIAL PORT CONNECTIONS

The DT7000 has four (4) serial ports.

Only **Port B J16** is used.

See the two following tables for connecting **serial devices** *to the* **DT7000**.

RS232

PORT B (J16)	SIGNAL
1	GND
2	RX
3	TX
4	GND
5	ENB

If the **ENB Signal** on the RS232 connector is tied to the **Ground**, the **RS232** is *active*, and the RS485 is disabled. If not, the **RS485** is *active,* and the RS232 is disabled.

– Connect pins **four and five (4 & 5)** on the **RS232 (J12, J4)** to enable RS232.

FIELDBUS CONNECTION

The Fieldbus connects to the **Anybus-CompactCOM Module**.

– This connector is Fieldbus-specific.

– There are also LEDs on this module.

MODULE INDICATORS

Listed below are the four power LEDs on the module.

REF	GREEN	RED
D1	+24 POWER OK	REVERSE INPUT POWER
D2	+5V POWRE OK	RESETTLE FUSE TRIPPED
D3	+3.3V POWER OK	--
D4	I/O POWER OK	REVERSE I/O POWER

D1 indicates 24V power is applied to the module. D2 and D3 indicate the internal voltages are being generated. All (3) LEDs will be on green when the module is operating properly. D4 indicates the l/0 power is applied to the module and will be illuminated green when 1/0 power is present.

There is a red/green dual color status LED (D5) on the module. On power up the LED flashes alternately red and green to indicate the module is starting up. Once the module is initialized, the status LED has the following meaning.

D5– STATE	INDICATION
Flashing RED	Not communicating to serial device
Flashing GREEN	Communicating to the serial device
Flashing mostly OFF (RED or GREEN)	Not communicating on Fieldbus

Flashing Mostly on (RED or GREEN)	Communicating on Fieldbus
Solid RED	Module failure

MODULE DIP SWITCHES

There is an 8 position DIP switch on the module. The 8 switches are used to set the network address on the fieldbus. These switches set an address in binary. A switch in the **UP (OFF)** position corresponds to a **1-bit**.

Example: **Address 05**.

ADDRESS	SWITCH POSITION							
	1	2	3	4	5	6	7	8
05	Up	Dn	Up	Dn	Dn	Dn	Dn	Dn

If the switches are all **DOWN (0 VALUE),** then the module will read the Fieldbus address from the EEPROM on the CompactCom module. This should also be used if the fieldbus address will be set over the network by a network configuration tool.

The switches can be used to reset all configurable parameters in the DDOOO to factory default values, and to erase the user application. If the switches are all up (255 value) on power up, the status LED (D5) will flash red for 5 seconds, and on the diagnostic port the message ***"Change Switches to Reset to Factory Defaults"*** displays. Changing any switch value at this time will reset the module to a factory default state. If the switches remain unchanged, the module will start with a switch value of 255.

The meaning of the address and the valid range is fieldbus specific. Refer to the specific fieldbus supplement for the exact meaning of the dip switch settings.

SERIAL COMMUNICATIONS SETTINGS

The communications settings for the serial port is configured for the application. The module is configured by default with the following settings.

PORT	BAUD	DATA BITS	PARITY	FUNCTION
Port B, J16	115200	8	None	Generic setting

Many of the serial settings can be configured through the diagnostic port. These include enabling or disabling the Generic Serial driver on each port, defining the buffers sizes for the Generic Serial driver, and setting the communication parameters, including BAUD rate and parity. Some settings can only be configured through a user application, including enabling MODBUS master functionality or custom serial protocols on a serial port.

HARDWARE SPECIFICATIONS

Power	**9-40 VDC (24 VDC Nominal)**
Power Consumption	**300 mA typical 800 mA max (@24 VDC)**
Interface connections	**Fieldbus as selected, serial channel**
LEDs/Instruments	**Power, Network connection**
Operating Temperature	**0 to 70 C**
Storage Temperature	**-40 to 85 C**
Operating humidity	**90% non-condensing**
Enclosure rating	**None**
Mounting options	**Thru holes**
Others	**RoHS**
Physical Dimensions	**4.24 inches x 3.20 inches**
Approval	**CE**

SOFTWARE SPECIFICATIONS

Output Data Format to Gateway

The **Gateway** takes a Serial String and remap the data to the format needed for the Fieldbus type installed per the register.

- The following is the definition of the **Serial String** for one (1) scale.
  - The Scale ID is extracted from **Status Word 0**.
  - The data is placed in the appropriate Fieldbus Registers based on this scale ID.
  - **Status Word Data** is sent as binary values **MSB** first over the Serial Channel.
  - Weight data is sent as six (6) characters representing a 6-digit decimal value (000000 – 999999).
  - This decimal value represents the weight multiplied by the scale factor, listed in **Command/Status Word 1 bits 0-2.**
  - The serial string is a fixed length of fifty-seven (57) bytes.

STX character	1 byte, (02h)	
Status word 0	2 bytes,	(includes scale ID)
Status word 1	2 bytes,	
Status word 2	2 bytes,	
Unassigned data	6 characters	(default ‘000000’)
Gross Weight	6 characters	(example ‘002340’)
Tare Weight	6 characters,	

Net Weight	6 characters,	
Setpoint 1	6 characters,	
Setpoint 2	6 characters,	
Flow Rate	6 characters,	
Unassigned data	6 characters,	
CRC	1 byte,	
ETX character	1 byte	(03h)

Note Weight Values sent over the Serial Channel will be represented in the Fieldbus registers based on the settings of **bits 14** and **15** in **STATUS WORD 0.**

- If the data is set to be a 16 bit or 32 bit integer, then the register value will contain the integer value and the host must multiply this by the scale factor to get the actual weight.
- If it is set to be a 16 bit integer, and the integer value is greater then **65535**, a value of **0** is placed in the register.
- If the data is set to be **FLOATING POINT**, then the gateway will multiply the integer value received by the scale factor, and place the resulting 32 bit floating point value in the register.
  - *In this case the host does not use the scale factor to interpret the value.*

INPUT DATA FORMAT FROM GATEWAY

The Gateway will send a string to the Serial Port reflecting data from the Fieldbus.

The following is the definition of the serial string for one (1) scale.

- The scale ID in the Fieldbus register for Command word 0 for a scale must be set to the correct value (1-4) before data for that scale will be sent over the serial channel.
- If the scale ID is set to the correct value, any time any data for this scale changes the data will be sent out the serial channel.
- Command word data is sent as binary values MSB first over the serial channel.
- Weight data is sent as six (6) characters representing a **six (6) digit decimal value** (**000000 – 999999**).
- This decimal value represents the weight multiplied by the scale factor listed in **command/status word 1 bits 0-2**.
- The serial string is a fixed length of **105 bytes**.

STX character	1 byte,	(02h)
Command word 0	2 bytes,	(includes scale ID)
Command word 1	2 bytes,	
Command word 2	2 bytes,	
Setpoint 1 weight	6 characters,	
Setpoint 2 weight	6 characters,	
Tare Weight	6 characters,	
Display Message 1	26 characters,	
Display Message 2	26 characters,	
Display Message 3	26 characters,	
CRC	1 byte,	
ETX character	1 byte	(03h)

Note Weight Values sent over the serial channel will represent data in the Fieldbus registers based on the settings of **bits 14** and **15** in **STATUS WORD 0**.

- If the data is set to be a 16 bit or 32 bit integer, then the integer value in the register will be sent over the serial channel.
- If it is set to be 16 bit, the high order word will be ignored.
- If the data is set to be floating point, then the floating point value will be multiplied by the scale factor and the integer portion of this resulting value will be sent over the serial channel.
- In all cases if the resulting integer is greater than **999999**, a value of **000000** will be sent over the Serial Channel.
- In all cases the scale must multiply the integer by the scale factor to determine the actual weight.

DISPLAY MESSAGES

A change in the Display Message Strings will not cause a serial string to be sent. The **Display Message Strings** will be sent when any data for a scale is changed (provided the Scale ID is set to the correct value for that scale).

Typically, this will happen when command word 2 bit 1 is set indicating the display messages are to be displayed. There is a maximum of 26 characters per line for the Display Message Strings.

Serial data is transferred according to the RS232 specification between the gateway and the FB2558. The communications parameters are listed below.

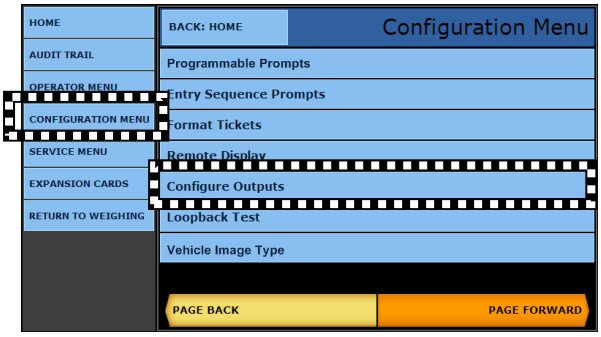
Baud	**115,200**
Data Bits	**8**
Parity	**None**
Stop Bits	**1**

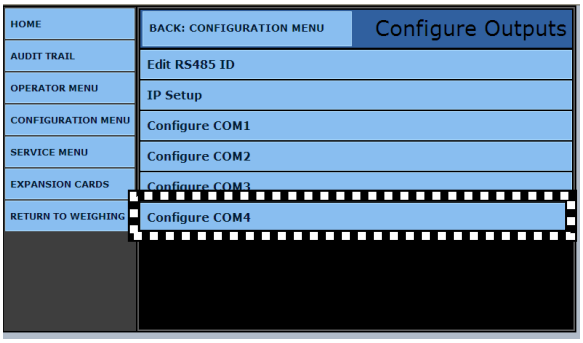
Standard DT7000 Fieldbus Configuration

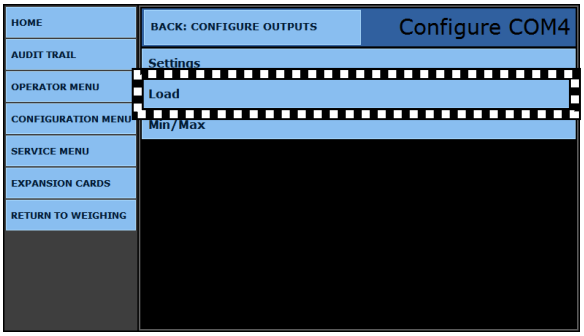
The **DT7000 Fieldbus Module** is a specialized component, so it requires different parameters than the standard Expansion Card default setups.

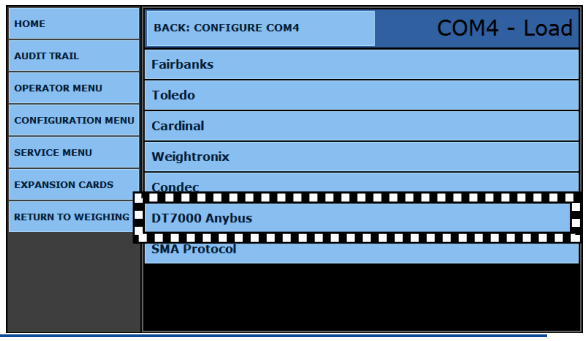
Follow these steps to program the **DT7000** *for* **Fieldbus Modules.**

1. While in the **WEIGH SCREEN**, press the **MENU** button.
2. Select **LOGIN.**
3. Enter the Write Customer or Service Password.
4. Press the **LOGIN** button.
5. Open the **CONFIGURATION MENU**.
6. Press **PAGE FORWARD** once.
7. Open the **CONFIGURE OUTPUTS** option.
8. Select CONFIGURE COM4.
9. Select **LOAD**.
10. Select **DT7000 Anybus**.







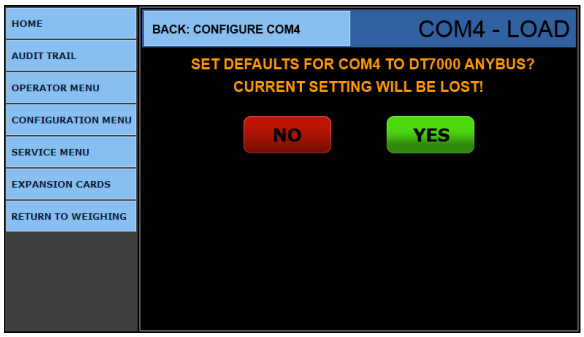


Standard DT7000 Fieldbus Configuration, Continued

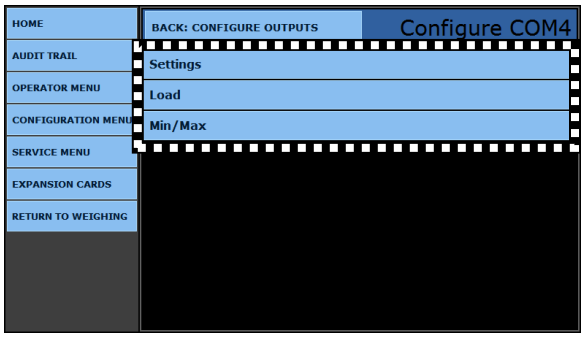
NOTE: *The* **EtherNet/IP Module** *utilizes the* **DT7000 Interface**. *For complete programming details, see* **Appendix I: Fieldbus Interface Reference.**

For the complete data string programming details, see **Appendix II: Data Output.**

Answer **YES** to making the DT7000 Fieldbus the default setup.

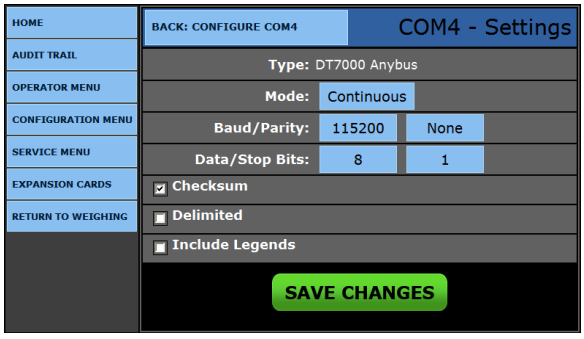


11. Select **SETTINGS**.



12. Set these standard parameters.

BAUD RATE	**115200**
PARITY	**NONE**
DATA BITS	**8**
STOP BITS	**1**
CHECKSUM	**SELECTED**

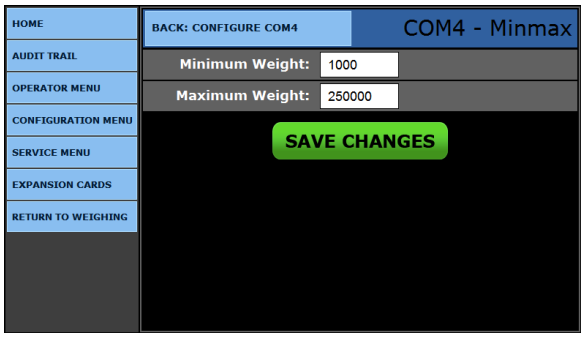


Press the **SAVE CHANGES** button, returning to the **CONFIGURE COM4 menu.**

13. Select **MIN/MAX**.

14. Enter the **Minimum Weight** and the **Maximum Weight** amounts.

- These amounts determine the two “soft” setpoints that change one of the status bytes in the **Fieldbus Output String**.
- When exceeded, a byte is set.
- *See* **APPENDIX I: STATUS/**



COMMAND WORD 2.

15. Press the **SAVE CHANGES** button.

Fieldbus Data Representation

The following information shows the representation of data on all Fieldbuses. Each Fieldbus has input data (from the gateway/scales to the Fieldbus), and output data (from the Fieldbus to the gateway/scales).

ALL FIELDBUS TYPES OUTPUT MEMORY MAP

START ADDRESS	HEX	DECIMAL	SIZE
Scale 1	0	0	10 Words
Scale 2	14	20	10 Words
Scale 3	28	40	10 Words
Scale 4	3C	60	10 Words
Scale Message Line 1	50	80	26 bytes
Scale Message Line 2	6A	106	26 bytes
Scale Message Line 3	84 1	32	26 bytes
Unassigned	9E	158	2 bytes
		Total:	**160 bytes**

START ADDRESS	HEX	DECIMAL	SIZE
Scale 1	0	0	20 Words
Scale 2	28	40	20 Words
Scale 3	50	80	20 Words
Scale 4	78	120	20 Words
			Total: 160 bytes

OUTPUT DATA (WORD BYTE REGISTER USAGE)

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
0	0 - 1	Command Word 0	2	Scale 1
1	2 - 3	Command Word 1	2	
2	4 - 5	Command Word 2	2	
3 - 4	6 - 9	Setpoint 1	4	
5 - 6	10 - 13	Setpoint 2	4	
7 - 8	14 - 17	Tare Weight	4	
9	18 - 19	Unassigned	2	
10	20 - 21	Command Word 0	2	Scale 2
11	22 - 23	Command Word 1	2	
12	24 - 25	Command Word 2	2	
13 - 14	26 - 29	Setpoint 1	4	
15 - 16	30 - 33	Setpoint 2	4	
17 - 18	34 - 37	Tare Weight	4	
19	38 - 39	Unassigned	2	
20	40 - 41	Command Word 0	2	Scale 3
21	42 - 43	Command Word 1	2	
22	44 - 45	Command Word 2	2	
23 - 24	46 - 49	Setpoint 1	4	
25 - 26	50 - 53	Setpoint 2	4	
27 – 28	54 - 57	Tare Weight	4	
29	58 – 59	Unassigned	2	

OUTPUT DATA (WORD BYTE REGISTER USAGE), CONTINUED

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
30	60 - 61	Command Word 0	2	**Scale 4**
31	62 - 63	Command Word 1	2	
32	64 - 65	Command Word 2	2	
33 - 34	66 - 69	Setpoint 1	4	
35 - 36	70 - 73	Setpoint 2	4	
37 - 38	74 - 77	Tare Weight	4	
39	78 – 79	Unassigned	2	
	80 - 105	Display Message Line 1	26	**All Scales**
	106 - 131	Display Message Line 2	26	
	132 - 157	Display Message Line 3	26	

INPUT DATA (WORD BYTE REGISTER USAGE)

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
0	0 - 1	Status Word 0	2	**Scale 1**
1	2 - 3	Status Word 1	2	
2	4 - 5	Status Word 2	2	
3 - 4	6 - 9	Unassigned	4	
5 - 6	10 - 13	Gross Weight	4	
7 - 8	14 - 17	Tare Weight	4	
9 - 10	18 - 21	Net Weight	4	
11 - 12	22 - 25	Setpoint 1	4	
13 – 14	26 - 29	Setpoint 2	4	
15 - 16	30 - 33	Flow Rate (weight /second)	4	
17 - 19	34 - 39	Unassigned	6	

INPUT DATA (WORD BYTE REGISTER USAGE), CONTINUED

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
20	40 - 41	Status Word 0	2	**Scale 2**
21	42 - 43	Status Word 1	2	
22	44 - 45	Status Word 2	2	
23 - 24	46 - 49	Unassigned	4	
25 - 26	50 - 53	Gross Weight	4	
27 - 28	54 - 57	Tare Weight	4	
29 - 30	58 - 61	Net Weight	4	
31 - 32	62 - 65	Setpoint 1	4	
33 - 34	66 - 69	Setpoint 2	4	
35 - 36	70 - 73	Flow Rate (weight /second)	4	
37 - 39	74 - 79	Unassigned	6	
40	80 - 81	Status Word 0	2	**Scale 3**
41	82 - 83	Status Word 1	2	
42	84 - 85	Status Word 2	2	
43 - 44	86 - 89	Unassigned	4	
45 - 46	90 - 93	Gross Weight	4	
47 - 48	94 - 97	Tare Weight	4	
49 - 50	98 – 101	Net Weight	4	
51 - 52	102 - 105	Setpoint 1	4	
53 - 54	106 - 109	Setpoint 2	4	
55 - 56	110 - 113	Flow Rate (weight /second)	4	
57 - 59	114 - 119	Unassigned	6	

INPUT DATA (WORD BYTE REGISTER USAGE), CONTINUED

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
60	120 - 121	Status Word 0	2	**Scale 4**
61	122 - 123	Status Word 1	2	
62	124 - 125	Status Word 2	2	
63 - 64	126 - 129	Unassigned	4	
65 - 66	130 - 133	Gross Weight	4	
67 - 68	134 - 137	Tare Weight	4	
69 - 70	138 - 141	Net Weight	4	
71 - 72	142 - 145	Setpoint 1	4	
73 - 74	146 - 149	Setpoint 2	4	
75 - 76	150 - 153	Flow Rate (weight /second)	4	
77 - 79	154 - 159	Unassigned	6	

STATUS/COMMAND WORD BIT USAGE

Status / Command Word 0

bit	Usage
0	Scale ID bits 0, 1, 2
1	Scale 1 = 001, Scale 2 = 010, Scale 3 = 011, Scale 4 = 100
2	
3	motion
4	over capacity gross weight = scale capacity
5	within 2% capacity
6	Enable Tare
7	Disable Tare
8	lb units
9	kg units
10	ton units
11	tonne units
12	
13	
14	Weight conversion, text to numeric (bits 14 and 15)
15	01 = 32 bit floating point 10 = 32 bit integer 11 = 16 bit integer

STATUS/COMMAND WORD BIT USAGE

Status / Command Word 1

bit	Usage
0	Decimal Point Location bits 0, 1, 2
1	000 * 1.0; 001 * 0.1; 010 * 0.01; 011 * 0.001; 100 * 0.0001
2	
3	Load Tare Command
4	Auto Tare Command
5	Load Setpoint 1
6	Load Setpoint 2
7	Zero Scale Command
8	Load Cell Status bits 8, 9, 10, 11, 12
9	All Good = 0
10	Defective Cell = Cell Number Binary
11	
12	
13	
14	Print Command
15	Beep

Status / Command Word 2

bit	Usage
0	Display Message Command / Operator Acknowledge
1	Scale weight at or above Maximum weight
2	Scale weight at or below Minimum weight
3 -15	Unused

STATUS/COMMAND WORD BIT USAGE, CONTINUED

SCALE ID **WORD 0** **BITS 0,1,2**

Command: Changes Instrument display to applicable scale.

Status: Value is the scale id if the scale is selected, from instrument keyboard or Fieldbus, else the value is zero.

MOTION **WORD 0** **BIT 3**

Command: Not applicable.

Status: Indicates that the scale senses motion.

OVER CAPACITY **WORD 0 BIT 4**

Command: Not applicable.

Status: Indicates that the scale is at 105% of capacity. If this condition is true the gross weight is sent to the Fieldbus as the scale capacity.

WITHIN 2% CAPACITY **WORD 0** **BIT 5**

Command: Not applicable.

Status: Scale is within a range of +/- 2% of capacity and zero.

ENABLE TARE **WORD 0** **BIT 6**

Command: Enable keyboard tare or auto tare weight.

Status: Tare weight enabled.

DISABLE TARE **WORD 0** **BIT 7**

Command: Disable keyboard tare and auto tare weight.

Status: Tare weight disabled.

LB WEIGHT UNITS **WORD 0** **BIT 8**

Command: Switch scale to lb units.

Status: Scale is indicating in lb units.

STATUS/COMMAND WORD BIT USAGE, CONTINUED

KG WEIGHT UNITS WORD 0 BIT 9

Command: Switch scale to kg units.

Status: Scale is indicating in kg units.

TON WEIGHT UNITS WORD 0 BIT 10

Command: Switch scale to ton units.

Status: Scale is indicating in ton units.

TONNE WEIGHT UNITS WORD 0 BIT 11

Command: Switch scale to tonne units.

Status: Scale is indicating in tonne units.

DECIMAL LOCATION WORD 1 BITS 0,1,2

Command: Used in integer to float weight conversions.

Status: Indicates location of decimal point in weight data.

LOAD TARE WORD 1 BIT 3

Command: Load tare from tare memory address.

Status: Switches to 1 after command is executed and returns to 0 when command is cleared.

AUTO TARE WORD 1 BIT 4

Command: Take current scale gross weight as tare value.

Status: Switches to 1 after command is executed and returns to 0 when command is cleared.

LOAD SETPOINT 1 WORD 1 BIT 5

Command: Load setpoint 1 for this scale.

Status: Switches to 1 when command is executed returns to zero when command is cleared.

STATUS/COMMAND WORD BIT USAGE, CONTINUED

LOAD SETPOINT 2 WORD 1 BIT 6

Command: Load setpoint 2 for this scale.

Status: Switches to 1 when command is executed returns to zero when command is cleared.

LOAD CELL STATUS WORD 1 BITS 8,9,10,11,12

Command: Not applicable.

Status: All cells are when the value is zero, else data indicates the number of the failing or failed cell.

PRINT COMMAND: WORD 1 BIT 14

Command: Print scale ticket

Status: Switches to 1 when the command is recognized and resets after the print cycle is complete and the command bit is reset.

BEEP WORD 1 BIT 15

Command: Sound Instrument audible alarm.

Status: Switches to 1 when command is executed, resets to 0 after the command bit is reset.

DISPLAY MESSAGE WORD 2 BIT 0

Command: Display message on Instrument display. Message loaded from display memory 1 to 3 lines.

Status: Switches to 1 when the command is received, and the message is displayed.

When scale operator operates any key, the message and bit are cleared.

SCALE ABOVE MAXIMUM WEIGHT WORD 2 BIT 1

Command: Not applicable.

Status: Bit is set when scale weight is at or above the programmed value.

SCALE BELOW MINIMUM WEIGHT WORD 2 BIT 2

Command: Not applicable.

Status: Bit is set when scale weight is at or below programmed value.

Appendix II: Data Output

A. Remote Display Output

DATA FORMAT

<STX><A><0><SP/–><XXXXXX><ETX>

NOTES:

1. Characters denoted by X are characters 0-9.
2. Leading zeroes are suppressed.
3. Polarity indication for a positive value is a space (SP).
   – Negative values are not transmitted.
4. Identifier code <4><0> = Gross weight.
   – Transmission is Gross Only.
5. Transmission for the DEMAND Mode occurs when a carriage return (CR) HEX 0D is received.
6. See APPENDIX V for more ID Codes.

B. Configure Output

The Continuous Computer Output is an uninitiated, unrequested output that gets transmitted at a fixed time interval.

FAIRBANKS/TOLEDO DATA FORMAT

<STX><A><B><C><GGGGGG><TTTTTT><CR>

NOTES:

STX - Start of Text character (02 Hex)
A - Status Word A
B - Status Word B
C - Status Word C
G (gross weight data) - xxxxxx Displayed Weight : x = Weight

- 6 characters if the graduation size does not have a decimal point.
- 5 characters if the graduation size does have a decimal point. The decimal point is not sent as part of the character string.

T (tare weight data) - xxxxxx Tare Value : x = Tare

- (6 characters if the graduation size does not have a decimal point.)
- (5 characters if the graduation size does have a decimal point. The decimal point is not sent as part of the character string.

CR - Carriage Return Character: (0D hex)
CS - CheckSum Character: If enabled, this character consists of the last eight bits of the binary sum of all characters transmitted up to this checksum character.

B. Configure Output, Continued

STATUS CODE (WORD) A

Bit #	X00	X0	X	X.X	X.XX	X.XXX	X.XXXX	X.XXXXX
0	0	1	0	1	0	1	0	1
1	0	0	1	1	0	0	1	1
2	0	0	0	0	1	1	1	1

FAIRBANKS/TOLEDO DATA FORMAT

INCREMENT SIZE

Bit #		Count By 1		Count by 2		Count by 5
3		1		0		1
4		0		1		1
5				Always Logic 1		
6				Always Logic 0		
7				Parity Bit		

STATUS CODE (WORD) B

Bit #	Description			
0		Gross = 0		Net = 1
1		Positive = 0		Negative = 1
2		In Range = 0		Overcapacity = 1
3		No Motion = 0		Motion = 1
4		Lb = 0		Kg = 1
5		Always Logic 1		
6		Normal = 0		Power Up = 1
7		Parity Bit		

B. Configure Output, Continued

STATUS CODE (WORD) C

Bit #	Description			
0		Always Logic = 0		
1		Always Logic = 0		
2		Always Logic = 0		
3		Normal = 0		Print Switch Pushed = 1
4		Always Logic = 0		
5		Always Logic = 0		
6		Normal = 0		Keyboard Tare = 1
7		Parity Bit		

CARDINAL 738 CONTINUOUS SCOREBOARD DATA FORMAT

<CR><P><WWWWWW>Period (.)<m><SP><u><SP><g><SP><SP><ETX>

NOTES:

CR – Carriage return
P – Polarity (**+** = Positive weight, **-** = Negative weight)
W – Displayed weight

- 6 characters if the graduation size does not have a decimal point.
- 5 characters if the graduation size does have a decimal point.

m – Motion or o = Overload
SP – Space
U - Units (lb = pounds, kg = kilograms)
g – Gross or **n** = Net
ETX - End of text

- Leading zeros are not suppressed
- If division size has no decimal point, set the decimal to "trailing".
- If division size has a decimal point, set the decimal to "floating".

B. Configure Output, Continued

WEIGHTRONIX DATA FORMAT

<SP><G><WWWWWW><SP><U><U><CR><LF>

NOTES:

SP – Space
g – Gross or **n** = Net
W – Displayed weight
- 6 characters if the graduation size does not have a decimal point.
- 5 characters if the graduation size does have a decimal point.

SP – Space
U – Units (lb = pounds, kg = kilograms)
M – Motion
CR – Carriage return
LF – Line feed
- Leading zeros are not suppressed.
- There is no motion character.
- If division size has no decimal point, set the decimal to "trailing".
- If division size has a decimal point, set the decimal to "floating".

CONDEC CONTINUOUS DATA FORMAT

<STX><SP><SP><WWWWWW><U><G><M><CR><LF>

NOTES:

STX – Start of Text character (02 Hex)
SP – Space
SP – Space
W – Displayed weight
- 6 characters if the graduation size does not have a decimal point.
- 5 characters if the graduation size does have a decimal point.

– = negative weight
G – Gross; N = Net
M – Motion
CR – Carrage return.
- Leading zeros are not suppressed.
- If division size has no decimal point, set the decimal to "trailing".
- If division size has a decimal point, set the decimal to "floating".

C. SMA Protocol

SMA (Scale Manufactures Association)

The SMA developed a standard common output for all scale instrument manufacturers to use in the early 2000s so software would easily interface between devices.

The default for the SMA Protocol output is Demand mode, 115200 Baud, no parity, 8 data, 1 stop.

Example of the SMA Protocol output:

Scale division size 20, scale displaying 0 pounds.

Transmitting the polling characters to the 2558:

DATA OUTPUT FORMAT

<LF(0A hex)><W(57 hex)><CR(0D hex)>

2558 response:

Byte 1 LF (0A hex)
Byte 2 Z (5A hex)
Byte 3 1 (31 hex)
Byte 4 G (47 hex)
Byte 5 Space (20 hex)
Byte 6 Space (20 hex)
Byte 7 Space (20 hex)
Byte 8 Space (20 hex)
Byte 9 Space (20 hex)
Byte 10 Space (20 hex)
Byte 11 Space (20 hex)
Byte 12 Space (20 hex)
Byte 13 Space (20 hex)
Byte 14 Space (20 hex)
Byte 15 Space (20 hex)
Byte 16 0 (30 hex)
Byte 17 l (6C hex)
Byte 18 b (62 hex)
Byte 19 Space (20 hex)
Byte 20 CR (0D hex)

STANDARD SCALE RESPONSE MESSAGE

Most of the host commands are responded to in the following message format. The only host commands that do not are the:
Diagnostic, **AB**out and **IN**formation commands

<LF> <s> <r> <n> <m> <f> <xxxxxx.xxx> <uuu> <CR>

where: <LF> Start of response message

<s> scale status — definition / example

'Z'	Center of Zero <xxxxxx.xxx>= 0.000
'O'	Over Capacity <xxxxxx.xxx>= +weight
'U'	Under Capacity <xxxxxx.xxx>= -weight
'E'	Zero Error (clears when condition clears)
'I'	Initial-Zero Error (if used, this error is maintained until zero condition is cleared)
'T'	Tare Error (clears after being read)
<space>	None of the above conditions

Note: For 'E', 'I', 'T' error conditions <xxxxxx.xxx>= ———————— (center dashes) and 'Z', 'O', 'U' are overridden.

<r> range ('1', '2', '3', etc.) always '1' for single range

<n> gross/net status

'G'	Gross normal weight
'T'	Tare weight (in response to 'M' command)
'N'	Net normal weight
'g'	gross weight in high-resolution
'n'	net weight in high-resolution

<m> motion status

'M'	scale in Motion
<space>	scale not in Motion

<f> future — reserved for future or custom use

<xxxxxx.xxx> weight data — this field is fixed at 10 characters

<uuu> Unit of Measure

<CR> End of response message

D. Examples

Command	Response
<LF>W<CR>	<LF> <_> <1> <G> <_> <_> <_ _ _ _ 5.025> <lb_> <CR>
<LF>W<CR>	<LF> <_> <1> <N> <_> <_> <_ _ _ _ 100000> <lb_> <CR>
<LF>W<CR>	<LF> <_> <2> <G> <M> <_> <_ _ _ _ 8:08.5> <l/o> <CR>
<LF>H<CR>	<LF> <_> <1> <g> <_> <_> <_ _ _ _5.0025> <lb_> <CR>
<LF>Z<CR>	<LF> <Z> <1> <G> <_> <_> <_ _ _ _ _0.000> <lb_> <CR>
<LF>R<CR>	<LF> <_> <1> <G> <_> <_> <_ _ _ _ 7.025> <kg_> <CR>
	<LF> <_> <1> <G> <M> <_> <_ _ _ _ 7.650> <kg_> <CR>
	<LF> <_> <1> <G> <_> <_> <_ _ _ _ 7.650> <kg_> <CR>

The scale will repeat weight until next command is received.

Appendix III: 20mA Codes

CODE	UNITS	WEIGHT	SCALE #
00 – Display all data			
40	Lbs	Gross	1
41	Lbs	Net	1
42	Lbs	Tare	1
43	Kg	Gross	1
44	Kg	Net	1
45	Kg	Tare	1
46	Lbs	Gross	2
47	Lbs	Net	2
48	Lbs	Tare	2
49	Kg	Gross	2
50	Kg	Net	2
51	Kg	Tare	2
52	Lbs	Gross	3
53	Lbs	Net	3
54	Lbs	Tare	3
55	Kg	Gross	3
56	Kg	Net	3
57	Kg	Tare	3
58	Lbs	Gross	4
59	Lbs	Net	4
60	Lbs	Tare	4
61	Kg	Gross	4
62	Kg	Net	4
63	Kg	Tare	4

Appendix III: 20mA Codes, Continued

CODE	UNITS	WEIGHT	SCALE #
64	Lbs	Gross	5
65	Lbs	Net	5
66	Lbs	Tare	5
67	Kg	Gross	5
68	Kg	Net	5
69	Kg	Tare	5
70	Lbs	Gross	6
71	Lbs	Net	6
72	Lbs	Tare	6
73	Kg	Gross	6
74	Kg	Net	6
75	Kg	Tare	6
76	Lbs	Gross	7
77	Lbs	Net	7
78	Lbs	Tare	7
79	Kg	Gross	7
80	Kg	Net	7
81	Kg	Tare	7
82	Lbs	Gross	8
83	Lbs	Net	8
84	Lbs	Tare	8
85	Kg	Gross	8
86	Kg	Net	8
87	Kg	Tare	8

APPENDIX IV: Ticket Data Fields

SCALE TICKET: TICKET NUMBER	**Twenty-four (24) characters**
<TICKET NO>: <Ticket#>	**Six (6) characters**
GROSS LABEL: GROSS	**Five (5) characters**
<GROSS WT>: <Gross>	**Six (6) characters**
<GROSS UNITS>: lb GR	**Two (2) characters**
DUAL UNITS GROSS LABEL:P GROSS	
<DUAL UNITS GROSS WT>: <Dual Units Gross>	
<DUAL UNITS GROSS UNITS>: <lb GR	
TARE LABEL: TARE	**Four (4) characters**
<TARE WT>: <Tare>	**Six (6) Characters**
<TARE UNITS>: lb TA	**Two (2) characters**
DUAL UNITS TARE LABEL: TARE	
DUAL UNITS TARE WT>: <Dual Units Tare>	
<DUAL UNITS TARE UNITS>: lb TA	
NET LABEL: NET	**Three (3) characters**
<NET WT>: <Net>	**Six (6) characters**
<NET UNITS>: lb NT	**Two (2) characters**
DUAL UNITS NTET LABEL: NET	
<DUAL UNITS NET WT>: <Dual Units Net>	
<DUAL UNITS NET UNITS>: lb GR	
INBOUND LABEL: INBOUND	**Seven (7) characters**
<INBOUND WT>: <Inbound>	**Six (6) characters**
<INBOUND UNITS>: lb GR	**Six (6) characters**
<DUAL UNITS INBOUND WT>: <Dual Units Inbound>	
<DUAL UNITS GROSS UNITS>: <lb GR>	
<DATE>: <Date>	**Ten (10) characters**
<TIME>: <Time>	**Eight (8) characters**
<SCALE ID>: <SCALE ID>	**Eleven (11) characters**
<LOOP ID LABEL>: LOOP ID	**Twenty (20) characters**
<LOOP ID>: <Loop ID>	**Sixteen (16) characters**
<DATE IN>: <Date In>	**Ten (10) characters**
<TIME IN>: <Time In>	**Eight (8) characters**
<SCALE ID IN>: <Scale ID In>	**Eleven (11) characters**
PRODUCT LABEL: LABEL	**Twenty-four (24) characters**
<PRODUCT ID>: <Product ID>	**Sixteen (16) characters**
<CONVERSION LABEL>: Conversion Name	**Sixteen (16) characters**
<CONVERSION>: <Conversion>	**Seven (7) characters**
<CONVERSION 2 LABEL>: Conversion 2 Name	
<CONVERSION 2>: Conversion 2	

Ticket Data Fields, Continued

<PRODUCT TOTAL WT>: <Prod Tot Wt>	**Six (6) characters**
<PRODUCT TOTAL UNITS>: <Prod Tot Units>	**Two (2) characters**
<DUAL UNITS PROD TOT WT>: < Dual Units Prod Tot Wt>	
DUAL UNITS PROD TOT UNITS>: < Dual Units Prod Tot Un>	
CUSTOMER LABEL: CUSTOMER	**Twenty-four (24) characters (caption is editable from ticket format)**
<CUSTOMER ID>: <Customer ID>	**Sixteen (16) characters**
<CUSTOMER LINE 1/2/3/4>: <Customer Line 1/2/3/4>	**Forty (40) characters**
CUSTOMER TOTAL LABEL: CUSTOMER TOTAL	**Twenty-four (24) characters (caption is editable from ticket format)**
<CUSTOMER TOTAL WT>: <Cust Tot Wt>	**Six (6) characters**
<CUSTOMER TOTAL UNITS>: <Cust Tot Units>	**Two (2) characters**
<DUAL UNITS CUST TOT WT>: <Dual Units Cust Tot Wt>	
<DUAL UNITS CUST TOT UNITS>: <Dual Units Cust Tot Un>	
VEHICLE TYPE: VEHICLE TYPE	**Twenty-four (24) characters (caption is editable from ticket format)**
<VEHICLE DESCRIPTION>: <Vehicle Description>	**Thirty-two (32) characters**
<LOCATION ID>: <Location ID>	**Fifteen (15) characters**
<LOCATION NAME/ADDRESS/ CITY STATE/PHONE NMR>: <Location Name/Address/ City State/Phone Nbr>	**Sixty-four (64) characters**
<LOCATION PHONE NBR>: <Location Phone NBR>	**Twenty (20) characters**
<PROMPT1 LABEL thru PROMPT10 LABEL>: PROMPT 1 thru PROMPT 10	**Twenty (20) characters**
<PROMPT1 thru PROMPT10>: <Prompt 1 thru Prompt 10>	
ALL TEXT FIELDS	**Twenty-four (24) characters**
DUPLICATE COPY LABEL: (DUPLICATE COPY)	
TEXT 1: TEXT 1 thru TEXT 20: TEXT 20	
IMAGE 1: IMAGE 1 and IMAGE 2: IMAGE 2	

Appendix V: Remote Function Commands

HARDWARE CONNECTIONS

REMOTE FUNCTIONS	CN14	
Remote Zero Switch	3	11 or 12
Remote Print Switch	9	11 or 12

- **These must be Dry Contacts only.**
- **The I/O Accessory must be installed.**

REMOTE SOFTWARE COMMANDS

Remote software commands using **Serial Port/ Mapped Memory/ Multicast**.

FUNCTION	COMMAND
Zero Active Scale	**Z**
Zero ALL Scales	**z**
Zero a Specific Scale	**Z#** **(where # is the Scale Number)**
Zero Scales 1-4	**ZA**
Zero Scales 5-8	**ZB**
Set Tare on Active Scale	**Txxxxx** **(where xxxxx is the Tare Weight value)**
Set Tare on a Specific Scale	**T#, xxxxx** ***(were # is the* Scale Number*, and xxxxx is* Tare Weight Value*)***
AutoTare on Active Scale	**A**
Change Units on Active Scale	**U**
Change Units on ALL Scales	**u**
Change Unites on Specific Scale	**U#** **(where # is Scale Number)**
Print Active Scale	**P**
Change to Multi-screen	**m**
Change to GTN Screen	**g**
Select Active Scale	**S#** **(where # is the Scale Number)**

Appendix VI: Fieldbus Reference

DT7000 GATEWAY

The **DT7000 Communication I/O Gateway** is a module that provides access between Industrial Networks and the serial device(s).

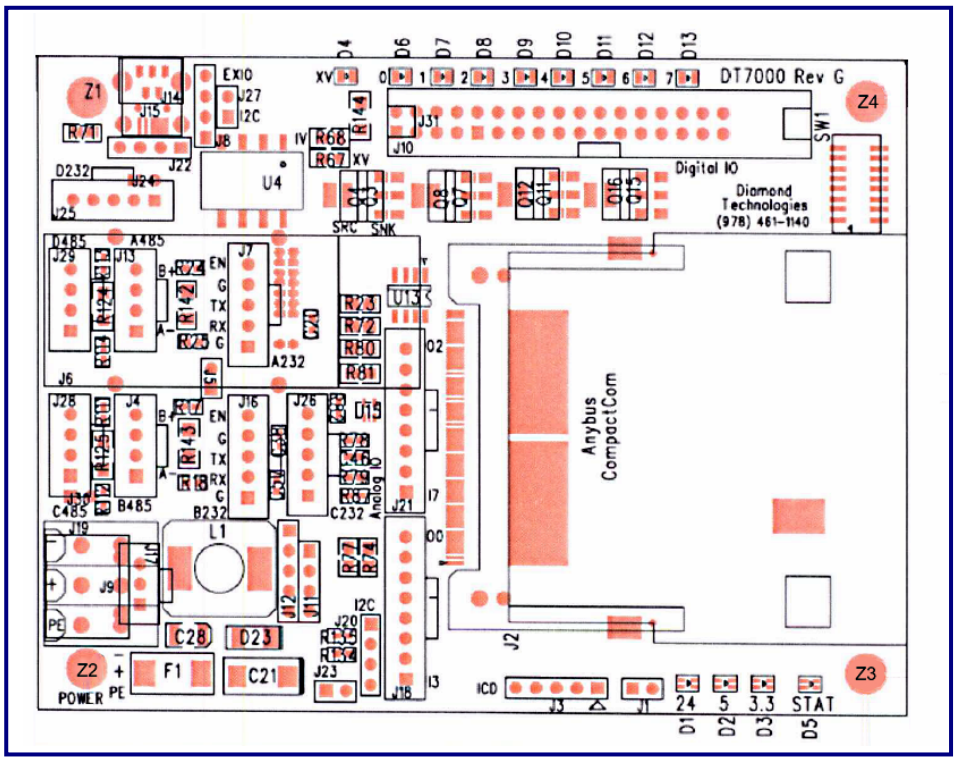
- The DT7000 utilizes one of the available Anybus Compact COM Modules for the desired Fieldbus.
- The Fieldbus Interface(s) support a bi-directional communication capability for the Instrument.
- The FB2558 Interface supports a variety of **Industrial Protocols.**

The following Fieldbus Networks are supported by the DT7000.

- Profibus-DP
- DeviceNet
- EtherNet/IP
- MODBUS-TCP
- ControlNet

MODULE LAYOUT

The image below shows the module layout.



INPUT POWER

The DT7000 requires **Input Power** of **9 to 40 VDC** (**24VDC** normally) at the **Terminal Block Connector (J-19)**.

See the cart below for **Input Power** *connections.*

J19 PIN	SIGNAL
1	PE
2	+V
3	–V

DT7000 SERIAL PORT CONNECTIONS

The DT7000 has four (4) serial ports.

Only **Port B J16** is used.

See the two following tables for connecting **serial devices** *to the* **DT7000**.

RS232

PORT B (J16)	SIGNAL
1	GND
2	RX
3	TX
4	GND
5	ENB

If the **ENB Signal** on the RS232 connector is tied to the **Ground**, the **RS232** is *active*, and the RS485 is disabled. If not, the **RS485** is *active,* and the RS232 is disabled.

– Connect pins **four and five (4 & 5)** on the **RS232 (J12, J4)** to enable RS232.

FIELDBUS CONNECTION

The Fieldbus connects to the **Anybus-CompactCOM Module**.

– This connector is Fieldbus-specific.

– There are also LEDs on this module.

MODULE INDICATORS

Listed below are the four power LEDs on the module.

REF	GREEN	RED
D1	+24 POWER OK	REVERSE INPUT POWER
D2	+5V POWER OK	RESETTLE FUSE TRIPPED
D3	+3.3V POWER OK	--
D4	I/O POWER OK	REVERSE I/O POWER

D1 indicates 24V power is applied to the module. D2 and D3 indicate the internal voltages are being generated. All (3) LEDs will be on green when the module is operating properly. D4 indicates the l/0 power is applied to the module and will be illuminated green when 1/0 power is present.

There is a red/green dual color status LED (D5) on the module. On power up, the LED flashes alternately red and green to indicate the module is starting up. Once the module is initialized, the status LED has the following meaning.

D5– STATE	INDICATION
Flashing RED	Not communicating to serial device
Flashing GREEN	Communicating to the serial device
Flashing mostly OFF (RED or GREEN)	Not communicating on Fieldbus
Flashing Mostly on (RED or GREEN)	Communicating on Fieldbus
Solid RED	Module failure

MODULE DIP SWITCHES

There is an 8 position DIP switch on the module. The 8 switches are used to set the network address on the fieldbus. These switches set an address in binary. A switch in the **UP (OFF)** position corresponds to a **1-bit**.

Example: **Address 05**.

ADDRESS	SWITCH POSITION							
	1	2	3	4	5	6	7	8
05	Up	Dn	Up	Dn	Dn	Dn	Dn	Dn

If the switches are all **DOWN (0 VALUE),** then the module will read the Fieldbus address from the EEPROM on the CompactCom module. This should also be used if the fieldbus address will be set over the network by a network configuration tool.

MODULE DIP SWITCHES, CONTINUED

The switches can be used to reset all configurable parameters in the DDOOO to factory default values, and to erase the user application. If the switches are all up (255 value) on power up, the status LED (D5) will flash red for 5 seconds, and on the diagnostic port the message ***"Change Switches to Reset to Factory Defaults"*** displays. Changing any switch value at this time will reset the module to a factory default state. If the switches remain unchanged, the module will start with a switch value of 255.

The meaning of the address and the valid range is fieldbus specific. Refer to the specific fieldbus supplement for the exact meaning of the dip switch settings.

SERIAL COMMUNICATIONS SETTINGS

The communications settings for the serial port is configured for the application. The module is configured by default with the following settings.

PORT	BAUD	DATA BITS	PARITY	FUNCTION
Port B, J16	115200	8	None	Generic setting

Many of the serial settings can be configured through the diagnostic port. These include enabling or disabling the Generic Serial driver on each port, defining the buffers sizes for the Generic Serial driver, and setting the communication parameters, including BAUD rate and parity. Some settings can only be configured through a user application, including enabling MODBUS master functionality or custom serial protocols on a serial port.

HARDWARE SPECIFICATIONS

Power	**9-40 VDC (24 VDC Nominal)**
Power Consumption	**300 mA typical 800 mA max (@24 VDC)**
Interface connections	**Fieldbus as selected, serial channel**
LEDs/Instruments	**Power, Network connection**
Operating Temperature	**0 to 70 C**
Storage Temperature	**-40 to 85 C**
Operating humidity	**90% non-condensing**
Enclosure rating	**None**
Mounting options	**Thru holes**
Others	**RoHS**
Physical Dimensions	**4.24 inches x 3.20 inches**
Approval	**CE**

SOFTWARE SPECIFICATIONS

Output Data Format to Gateway

The **Gateway** takes a Serial String and remap the data to the format needed for the Fieldbus type installed per the register.

- The following is the definition of the **Serial String** for one (1) scale.
  - The Scale ID is extracted from **Status Word 0**.
  - The data is placed in the appropriate Fieldbus Registers based on this scale ID.
  - **Status Word Data** is sent as binary values **MSB** first over the Serial Channel.
  - Weight data is sent as six (6) characters representing a 6-digit decimal value (000000 – 999999).
  - This decimal value represents the weight multiplied by the scale factor, listed in **Command/Status Word 1 bits 0-2.**
  - The serial string is a fixed length of fifty-seven (57) bytes.

STX character	1 byte, (02h)	
Status word 0	2 bytes,	(includes scale ID)
Status word 1	2 bytes,	
Status word 2	2 bytes,	
Unassigned data	6 characters	(default ‘000000’)
Gross Weight	6 characters	(example ‘002340’)
Tare Weight	6 characters,	
Net Weight	6 characters,	
Setpoint 1	6 characters,	
Setpoint 2	6 characters,	
Flow Rate	6 characters,	
Unassigned data	6 characters,	
CRC	1 byte,	
ETX character	1 byte	(03h)

SOFTWARE SPECIFICATIONS, CONTINUED

Note Weight Values sent over the Serial Channel will be represented in the Fieldbus registers based on the settings of **bits 14** and **15** in **STATUS WORD 0.**

- If the data is set to be a 16 bit or 32 bit integer, then the register value will contain the integer value and the host must multiply this by the scale factor to get the actual weight.
- If it is set to be a 16 bit integer, and the integer value is greater then **65535**, a value of **0** is placed in the register.
- If the data is set to be **FLOATING POINT**, then the gateway will multiply the integer value received by the scale factor, and place the resulting 32 bit floating point value in the register.
  - *In this case the host does not use the scale factor to interpret the value.*

INPUT DATA FORMAT FROM GATEWAY

The Gateway will send a string to the Serial Port reflecting data from the Fieldbus.

The following is the definition of the serial string for one (1) scale.

- The scale ID in the Fieldbus register for Command word 0 for a scale must be set to the correct value (1-4) before data for that scale will be sent over the serial channel.
- If the scale ID is set to the correct value, any time any data for this scale changes the data will be sent out the serial channel.
- Command word data is sent as binary values MSB first over the serial channel.
- Weight data is sent as six (6) characters representing a **six (6) digit decimal value** (**000000 – 999999**).
- This decimal value represents the weight multiplied by the scale factor listed in **command/status word 1 bits 0-2**.
- The serial string is a fixed length of **105 bytes**.

INPUT DATA FORMAT FROM GATEWAY, CONTINUED

STX character	1 byte,	(02h)
Command word 0	2 bytes,	(includes scale ID)
Command word 1	2 bytes,	
Command word 2	2 bytes,	
Setpoint 1 weight	6 characters,	
Setpoint 2 weight	6 characters,	
Tare Weight	6 characters,	
Display Message 1	26 characters,	
Display Message 2	26 characters,	
Display Message 3	26 characters,	
CRC	1 byte,	
ETX character	1 byte	(03h)

Note Weight Values sent over the serial channel will represent data in the Fieldbus registers based on the settings of **bits 14** and **15** in **STATUS WORD 0**.

- If the data is set to be a 16 bit or 32 bit integer, then the integer value in the register will be sent over the serial channel.
- If it is set to be 16 bit, the high order word will be ignored.
- If the data is set to be floating point, then the floating point value will be multiplied by the scale factor and the integer portion of this resulting value will be sent over the serial channel.
- In all cases if the resulting integer is greater than **999999**, a value of **000000** will be sent over the Serial Channel.
- In all cases the scale must multiply the integer by the scale factor to determine the actual weight.

DISPLAY MESSAGES

A change in the Display Message Strings will not cause a serial string to be sent. The **Display Message Strings** will be sent when any data for a scale is changed (provided the Scale ID is set to the correct value for that scale).

Typically, this will happen when command word 2 bit 1 is set indicating the display messages are to be displayed. There is a maximum of 26 characters per line for the Display Message Strings.

Serial data is transferred according to the RS232 specification between the gateway and the FB2558. The communications parameters are listed below.

Baud	**115,200**
Data Bits	**8**
Parity	**None**
Stop Bits	**1**

FIELDBUS DATA REPRESENTATION

The following information shows the representation of data on all Fieldbuses. Each Fieldbus has input data (from the gateway/scales to the Fieldbus), and output data (from the Fieldbus to the gateway/scales).

ALL FIELDBUS TYPES OUTPUT MEMORY MAP

START ADDRESS	HEX	DECIMAL	SIZE
Scale 1	0	0	10 Words
Scale 2	14	20	10 Words
Scale 3	28	40	10 Words
Scale 4	3C	60	10 Words
Scale Message Line 1	50	80	26 bytes
Scale Message Line 2	6A	106	26 bytes
Scale Message Line 3	84 1	32	26 bytes
Unassigned	9E	158	2 bytes
		Total:	**160 bytes**

START ADDRESS	HEX	DECIMAL	SIZE
Scale 1	0	0	20 Words
Scale 2	28	40	20 Words
Scale 3	50	80	20 Words
Scale 4	78	120	20 Words
			Total: 160 bytes

OUTPUT DATA (WORD BYTE REGISTER USAGE)

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
0	0 - 1	Command Word 0	2	Scale 1
1	2 - 3	Command Word 1	2	
2	4 - 5	Command Word 2	2	
3 - 4	6 - 9	Setpoint 1	4	
5 - 6	10 - 13	Setpoint 2	4	
7 - 8	14 - 17	Tare Weight	4	
9	18 - 19	Unassigned	2	
10	20 - 21	Command Word 0	2	Scale 2
11	22 - 23	Command Word 1	2	
12	24 - 25	Command Word 2	2	
13 - 14	26 - 29	Setpoint 1	4	
15 - 16	30 - 33	Setpoint 2	4	
17 - 18	34 - 37	Tare Weight	4	
19	38 - 39	Unassigned	2	
20	40 - 41	Command Word 0	2	Scale 3
21	42 - 43	Command Word 1	2	
22	44 - 45	Command Word 2	2	
23 - 24	46 - 49	Setpoint 1	4	
25 - 26	50 - 53	Setpoint 2	4	
27 – 28	54 - 57	Tare Weight	4	
29	58 – 59	Unassigned	2	

OUTPUT DATA (WORD BYTE REGISTER USAGE), CONTINUED

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
30	60 - 61	Command Word 0	2	**Scale 4**
31	62 - 63	Command Word 1	2	
32	64 - 65	Command Word 2	2	
33 - 34	66 - 69	Setpoint 1	4	
35 - 36	70 - 73	Setpoint 2	4	
37 - 38	74 - 77	Tare Weight	4	
39	78 – 79	Unassigned	2	
	80 - 105	Display Message Line 1	26	**All Scales**
	106 - 131	Display Message Line 2	26	
	132 - 157	Display Message Line 3	26	

INPUT DATA (WORD BYTE REGISTER USAGE)

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
0	0 - 1	Status Word 0	2	**Scale 1**
1	2 - 3	Status Word 1	2	
2	4 - 5	Status Word 2	2	
3 - 4	6 - 9	Unassigned	4	
5 - 6	10 - 13	Gross Weight	4	
7 - 8	14 - 17	Tare Weight	4	
9 - 10	18 - 21	Net Weight	4	
11 - 12	22 - 25	Setpoint 1	4	
13 – 14	26 - 29	Setpoint 2	4	
15 - 16	30 - 33	Flow Rate (weight /second)	4	
17 - 19	34 - 39	Unassigned	6	

INPUT DATA (WORD BYTE REGISTER USAGE), CONTINUED

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
20	40 - 41	Status Word 0	2	**Scale 2**
21	42 - 43	Status Word 1	2	
22	44 - 45	Status Word 2	2	
23 - 24	46 - 49	Unassigned	4	
25 - 26	50 - 53	Gross Weight	4	
27 - 28	54 - 57	Tare Weight	4	
29 - 30	58 - 61	Net Weight	4	
31 - 32	62 - 65	Setpoint 1	4	
33 - 34	66 - 69	Setpoint 2	4	
35 - 36	70 - 73	Flow Rate (weight /second)	4	
37 - 39	74 - 79	Unassigned	6	
40	80 - 81	Status Word 0	2	**Scale 3**
41	82 - 83	Status Word 1	2	
42	84 - 85	Status Word 2	2	
43 - 44	86 - 89	Unassigned	4	
45 - 46	90 - 93	Gross Weight	4	
47 - 48	94 - 97	Tare Weight	4	
49 - 50	98 – 101	Net Weight	4	
51 - 52	102 - 105	Setpoint 1	4	
53 - 54	106 - 109	Setpoint 2	4	
55 - 56	110 - 113	Flow Rate (weight /second)	4	
57 - 59	114 - 119	Unassigned	6	

INPUT DATA (WORD BYTE REGISTER USAGE), CONTINUED

WORD	BYTE	REGISTER USAGE	SIZE(BYTES)	SCALE
60	120 - 121	Status Word 0	2	**Scale 4**
61	122 - 123	Status Word 1	2	
62	124 - 125	Status Word 2	2	
63 - 64	126 - 129	Unassigned	4	
65 - 66	130 - 133	Gross Weight	4	
67 - 68	134 - 137	Tare Weight	4	
69 - 70	138 - 141	Net Weight	4	
71 - 72	142 - 145	Setpoint 1	4	
73 - 74	146 - 149	Setpoint 2	4	
75 - 76	150 - 153	Flow Rate (weight /second)	4	
77 - 79	154 - 159	Unassigned	6	

STATUS/COMMAND WORD BIT USAGE

Status / Command Word 0

bit	Usage
0	Scale ID bits 0, 1, 2
1	Scale 1 = 001, Scale 2 = 010, Scale 3 = 011, Scale 4 = 100
2	
3	motion
4	over capacity gross weight = scale capacity
5	within 2% capacity
6	Enable Tare
7	Disable Tare
8	lb units
9	kg units
10	ton units
11	tonne units
12	
13	
14	Weight conversion, text to numeric (bits 14 and 15)
15	01 = 32 bit floating point
	10 = 32 bit integer
	11 = 16 bit integer

STATUS/COMMAND WORD BIT USAGE

Status / Command Word 1

bit	Usage
0	Decimal Point Location bits 0, 1, 2
1	000 * 1.0; 001 * 0.1; 010 * 0.01; 011 * 0.001; 100 * 0.0001
2	
3	Load Tare Command
4	Auto Tare Command
5	Load Setpoint 1
6	Load Setpoint 2
7	Zero Scale Command
8	Load Cell Status bits 8, 9, 10, 11, 12
9	All Good = 0
10	Defective Cell = Cell Number Binary
11	
12	
13	
14	Print Command
15	Beep

Status / Command Word 2

bit	Usage
0	Display Message Command / Operator Acknowledge
1	Scale weight at or above Maximum weight
2	Scale weight at or below Minimum weight
3 – 15	Unused

STATUS/COMMAND WORD BIT USAGE, CONTINUED

SCALE ID **WORD 0** **BITS 0,1,2**

Command: Changes Instrument display to applicable scale.

Status: Value is the scale id if the scale is selected, from instrument keyboard or Fieldbus, else the value is zero.

MOTION **WORD 0** **BIT 3**

Command: Not applicable.

Status: Indicates that the scale senses motion.

OVER CAPACITY **WORD 0 BIT 4**

Command: Not applicable.

Status: Indicates that the scale is at 105% of capacity. If this condition is true the gross weight is sent to the Fieldbus as the scale capacity.

WITHIN 2% CAPACITY **WORD 0** **BIT 5**

Command: Not applicable.

Status: Scale is within a range of +/- 2% of capacity and zero.

ENABLE TARE **WORD 0** **BIT 6**

Command: Enable keyboard tare or auto tare weight.

Status: Tare weight enabled.

DISABLE TARE **WORD 0** **BIT 7**

Command: Disable keyboard tare and auto tare weight.

Status: Tare weight disabled.

LB WEIGHT UNITS **WORD 0** **BIT 8**

Command: Switch scale to lb units.

Status: Scale is indicating in lb units.

STATUS/COMMAND WORD BIT USAGE, CONTINUED

KG WEIGHT UNITS WORD 0 BIT 9

Command: Switch scale to kg units.

Status: Scale is indicating in kg units.

TON WEIGHT UNITS WORD 0 BIT 10

Command: Switch scale to ton units.

Status: Scale is indicating in ton units.

TONNE WEIGHT UNITS WORD 0 BIT 11

Command: Switch scale to tonne units.

Status: Scale is indicating in tonne units.

DECIMAL LOCATION WORD 1 BITS 0,1,2

Command: Used in integer to float weight conversions.

Status: Indicates location of decimal point in weight data.

LOAD TARE WORD 1 BIT 3

Command: Load tare from tare memory address.

Status: Switches to 1 after command is executed and returns to 0 when command is cleared.

AUTO TARE WORD 1 BIT 4

Command: Take current scale gross weight as tare value.

Status: Switches to 1 after command is executed and returns to 0 when command is cleared.

LOAD SETPOINT 1 WORD 1 BIT 5

Command: Load setpoint 1 for this scale.

Status: Switches to 1 when command is executed returns to zero when command is cleared.

STATUS/COMMAND WORD BIT USAGE, CONTINUED

LOAD SETPOINT 2 WORD 1 BIT 6

Command: Load setpoint 2 for this scale.

Status: Switches to 1 when command is executed returns to zero when command is cleared.

LOAD CELL STATUS WORD 1 BITS 8,9,10,11,12

Command: Not applicable.

Status: All cells are when the value is zero, else data indicates the number of the failing or failed cell.

PRINT COMMAND: WORD 1 BIT 14

Command: Print scale ticket

Status: Switches to 1 when the command is recognized and resets after the print cycle is complete and the command bit is reset.

BEEP WORD 1 BIT 15

Command: Sound Instrument audible alarm.

Status: Switches to 1 when command is executed, resets to 0 after the command bit is reset.

DISPLAY MESSAGE WORD 2 BIT 0

Command: Display message on Instrument display. Message loaded from display memory 1 to 3 lines.

Status: Switches to 1 when the command is received and the message is displayed.

When scale operator operates any key, the message and bit are cleared.

SCALE ABOVE MAXIMUM WEIGHT WORD 2 BIT 1

Command: Not applicable.

Status: Bit is set when scale weight is at or above the programmed value.

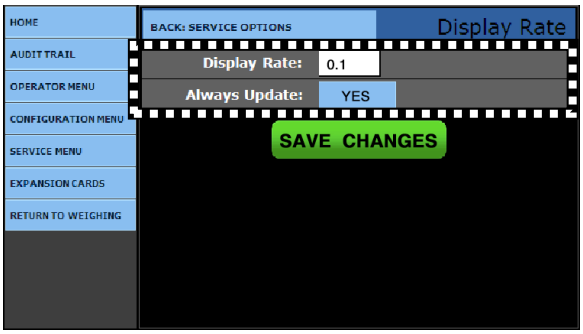
SCALE BELOW MINIMUM WEIGHT WORD 2 BIT 2

Command: Not applicable.

Status: Bit is set when scale weight is at or below programmed value.

A. Recommended Instrument Settings

Noted below are three recommended settings for optimum performance with the FB2558 Instrument for fieldbus configuration.



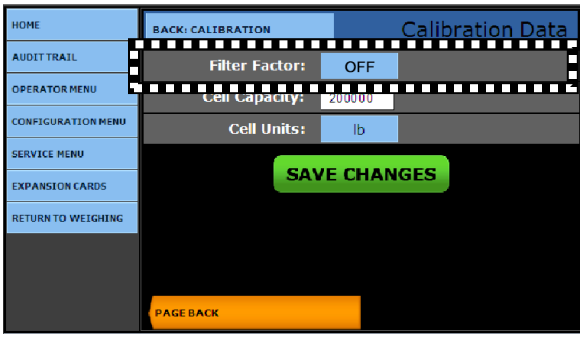
- ***Always Update, Yes***

  In the **Service Menu**, open **SERVICE OPTIONS**, then select **DISPLAY RATE**.

  ✓ **Default = 0.1**

  ✓ **Always Update = YES**

- ***Filter Off***



1. In the **SERVICE MENU**, open **SERVICE SCALES**, select **SCALE ID X,** open **CALIBRATION,** then select **CALIBRATION DATA**.
2. Press **PAGE FORWARD** twice.

   ✓ **Filter Factor = OFF**

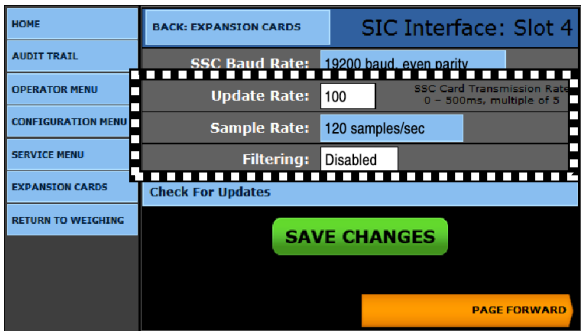
- ***Expansion Filtering, Disabled***

  In the **EXPANSION CARDS MENU**, open the available card to be configured.

  ✓ **Update Rate = 100**

  ✓ **Sample Rate = 120 samples/sec.**

  ✓ **Filtering = Disabled**



2558 Inbound/Outbound Series

Operator Manual

Document 51415

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