



# **FB1200 Series Instrumentation**





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# AMENDMENT RECORD

## FB1200 Series Instrumentation

### Operator Manual Document 51513

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# TABLE OF CONTENTS

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<b>SECTION 1: GENERAL INFORMATION .....</b>	<b>7</b>
1.1. Instrument Description .....	7
1.2. Technical Specifications.....	8
1.3. User's Responsibility.....	9
<b>SECTION 2: USER INTERFACE.....</b>	<b>10</b>
2.1. Optical Communications .....	11
2.2. Display Functions .....	12
2.3. Keys .....	12
<b>SECTION 3: SECURITY .....</b>	<b>14</b>
3.1. Levels of Security .....	14
3.2. Setup Security .....	14
<b>SECTION 4: SETUP .....</b>	<b>17</b>
4.1. Front Panel Navigation .....	17
4.2. FB1200 Viewer Navigation.....	18
4.3. Editing Using the Front Panel .....	20
4.3.1. <i>Editing Option Items</i> .....	20
4.3.2. <i>Editing Weight and Number Items</i> .....	21
4.3.3. <i>Editing with Functions</i> .....	21
4.3.4. <i>Exit Setup</i> .....	21
4.4. Setup Menu.....	22
4.4.1. <i>SETUP: General Setup Menu</i> .....	22
4.4.2. <i>PIN: Security Pin Codes</i> .....	23
4.4.3. <i>Port: Serial Communications Menu</i> .....	23
4.4.4. <i>Setpoint Configuration</i> .....	25
<b>SECTION 5: OPERATIONS .....</b>	<b>28</b>
5.1. Weighing Operations .....	28
5.1.1. <i>Basic Gross Weighing</i> .....	28
5.1.2. <i>Basic Net Weighing</i> .....	28
5.1.3. <i>Preset Tare Entry</i> .....	28
5.1.4. <i>Instrument Weighing Functions</i> .....	28
5.2. Piece Counting .....	29
5.2.1. <i>Piece Counting in Weight Mode</i> .....	29
5.2.2. <i>Piece Counting in Resample Mode</i> .....	29
5.3. Checkweighing.....	30
5.3.1. <i>Absolute Checkweigh Settings</i> .....	31
5.3.2. <i>Relative Checkweigh Settings</i> .....	31
5.3.3. <i>Setting New Checkweigh Targets via the Front Panel</i> .....	32
5.4. Accumulation .....	32
5.5. Live Weight.....	34
5.6. Setpoint Operation.....	34
5.6.1. <i>Settings</i> .....	35
<b>SECTION 6: SERIAL INPUT / OUTPUT.....</b>	<b>38</b>
6.1. Connecting the FB1200 to a Remote Display.....	38



- 6.1.1. *Remote Display Output*..... 38
- 6.2. Printing** ..... **39**
- 6.2.1. *Printer Switch Settings*..... 39
- 6.3. Printers** ..... **39**
- 6.3.1. *Printer Cabling*..... 39
- 6.3.2. *iDP3550 Tape Printer Settings*..... 40
- 6.3.3. *TM-U590 Ticket Printer Settings* ..... 40
- 6.3.4. *TM-U220 Tape Printer* ..... 41
- 6.3.5. *TM-U295 Ticket Printer Settings* ..... 42
- 6.3.6. *SP298 Printer Settings*..... 43
- 6.3.7. *SP700 Printer Settings*..... 45
- 6.3.8. *SP2000 Printer Settings*..... 46
- 6.3.9. *SP2200 Printer Settings*..... 47
- 6.3.10. *TM-U230 Printer Settings* ..... 47
- 6.3.11. *L540 Printer Settings* ..... 49
- 6.3.12. *GC420d Printer Settings* ..... 49
- 6.3.13. *Ticket Formatting* ..... 49
- 6.3.14. *Default Ticket Formats*..... 55
- 6.4. Continuous Weight Output**..... **57**
- 6.4.1. *Introduction*..... 57
- 6.4.2. *Adding a Custom Continuous Output Format*..... 57
- 6.4.3. *String Builder* ..... 57
- 6.4.4. *Direct Token Entry* ..... 59
- 6.5. Formats**..... **60**
- 6.5.1. *FBANKS: Fairbanks and Toledo Format* ..... 60
- 6.5.2. *CARD: Cardinal 738 Format* ..... 62
- 6.5.3. *WTX: Weigh-Tronix WI-120 Format*..... 62
- 6.5.4. *Condec: Condec Format*..... 63
- 6.5.5. *CUSTOM: Continuous Output Custom Format*..... 63
- 6.5.6. *Remote Input Characters*..... 64
- 6.5.7. *Poll Output Format*..... 64
- 6.5.8. *Remote Display Mode*..... 65
- SECTION 7: CONFIGURABLE FUNCTIONS** ..... **69**
- 7.1. *Introduction* ..... 69
- 7.2. *Functions*..... 69
- 7.3. *Totaling*..... 69
- APPENDIX I: DATA STRING OUTPUTS** ..... **70**
- A. *Remote Display Output* ..... 70
- B. *Configure Output*..... 70
- APPENDIX II: REMOTE MODE COMPATIBLE OUTPUTS** ..... **74**
- APPENDIX III: REMOTE COMMANDS** ..... **85**

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# SECTION 1: GENERAL INFORMATION

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This manual details the **FB1200 Instruments**.

## 1.1. Instrument Description

The FB1200 is a precision digital instrument. It uses a sigma-delta analog-to-digital (A/D) converter to ensure extremely fast and accurate weight readings. This advanced technology allows the FB1200 to be configured for up to 50,000 divisions at 60 A/D conversions per second. The units have extended sensitivity adjustment which can handle scales with outputs 0.2-5.0mV/V for full range. The design is optimized to deliver precision performance on scale bases delivering above 0.5mV/V at display resolutions of up to 10000 divisions.

Throughout this document the device will be referred to as the FB1200. The FB1200 digital weight instrument has a white on black, six-digit, 10 segment LCD display with additional indication of weighing status. Each digit is 2" high. The instrument has 2 setpoints with status display on the front panel.

The setup and calibration are digital, with a non-volatile security store for all setup parameters. The built-in clock can be used to date-stamp printouts. There is an NVRAM store to ensure day to day operating settings (zero, tare, date/time, etc.) are retained when power is removed.

An infrared communications port for easy configuration is available. The FB1200 includes the following interfaces:

### ***Standard Features***

- **Two (2) RS232 Ports**
- **One (1) RS485 Port**
- **One (1) 20mA Port**
- **Touchscreen Buttons, including the following keys:**
  - **(Front panel) IPower, Units, Zero, Gross/Net, Tare, Print, Function**
  - **(Back Panel) Rear Setup key**
- **2 Isolated Digital Outputs**

An optional battery accessory module can be fitted to the instrument.

---

**IMPORTANT NOTE:** When you see capitalized words separated by a colon (:) (example, CONFIG:TYPE) throughout this manual. The 2<sup>nd</sup> word is a menu item under the first.

---

## 1.2. Technical Specifications

<b>PARAMETER</b>	<b>SPECIFICATION</b>
<b>Model</b>	FB1200 NEMA 4X / IP66 – SS Enclosure FB1200 NEMA 4 / IP65– Resin alloy enclosure (indoor use)
<b>Displayed Characters</b>	2.0"
<b>Load Cell Interface</b>	(8) 350 Ohm Load Cells
<b>Cell Capacity</b>	No Practical Limit
<b>Load Cell Excitation</b>	5 VDC
<b>Units</b>	lb, oz, kg, g, ton, tonne
<b>No. of Scales</b>	One (1)
<b>Resolution</b>	10,000d Commercial 50,000d non-commercial
<b>Scale Capacity</b>	0-999,999
<b>Division Size</b>	0.0001-100
<b>Units</b>	LB, OZ, KG, G, TONS, TONNE
<b>Serial Input/ Output</b>	Two (2) RS232 COM Ports, one (1) RS485 COM port, one (1) dedicated optically-isolated 20mA (passive)
<b>Network Connection</b>	N/A
<b>PC Connection</b>	Cable – Optical coupling head (connected to front of instrument) to USB
<b>Auto Zero Tracking</b>	Selectable – Off, 0.5d, 1.0d, 3.0d
<b>Motion Band</b>	Selectable – Off, 0.5d, 1.0d, 3.0d
<b>Zero Range</b>	Selectable – 2%, 100%
<b>Filters</b>	Off, Low, Med (default), High, V High
<b>Digital Filter</b>	Configurable
<b>Clock</b>	Real time clock 24-hour/ 12-hour AM/PM, Date (month/day/year)
<b>ENVIRONMENTAL</b>	<b>SPECIFICATION</b>
<b>Enclosure</b>	NEMA 4X / IP66 - Stainless Steel Washdown NEMA 4 / IP65 – Resin Alloy Enclosure
<b>Operating Temperature</b>	14°F to 104°F, (-10°C to 40°C).
<b>Operating Humidity</b>	0 to 90% non-condensing
<b>POWER REQUIREMENTS</b>	<b>SPECIFICATION</b>
<b>Incoming Voltage Requirement</b>	Instrument has an Auto-switching power supply. 100 VAC to 130 VAC, 50Hz\ 60Hz 200 VAC to 260 VAC, 50Hz\ 60Hz It is recommended to install a separate circuit from the circuit panel to the outlet used. There must not be more than 0.2VAC between AC neutral and ground

<b>Ground Requirements</b>	For proper performance, the ground should have no more than 3.0 $\Omega$ resistance to true earth ground.
<b>Power Consumption</b>	< 30 W
<b>ETL Listed</b>	Conforms to UL STD 62368-1 Certified to CSA STD C22.2 #62368-1
<b>Approvals</b>	NTEP CC: 20-097 MC: AM-6162C
<b>Accuracy</b>	Class III/IIIL

### **1.3. User's Responsibility**

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, and physical alterations (holes, etc.) are not allowed.



*Please call your local*  
**FAIRBANKS SCALES REPRESENTATIVE**  
*For any question, problems, or comments.*

## SECTION 2: USER INTERFACE

The front panel of the FB1200 has a six-digit LCD display and a 7-key keypad. A cover on the rear allows access to a hidden key which can be used to enter full digital setup and calibration. The diagram below shows the main elements of the front panel.



The FB1200 user interface includes:

1. Setpoint status
2. Units indicator
3. Multiple range/interval status
4. Check weigh status
5. 7-key keypad
6. 6-digit 9 segment LCD display
7. Weighing status
8. Rinlink attachment (See [Optical Communications](#) below)
9. Full setup key (on the rear of the indicator – Not shown)

- Display (6): weight readings, errors, information and setup.
- Units indicator (2): units for the weight reading (pounds (lb), kilograms (kg), grams (g), ounces (oz), tonnes (t), and tons (T)).
- Status indicators (1), (3), (4) and (7): The weighing status (7) shows the status of the displayed reading. The multirange status (3) shows the current multirange operation. The setpoint status set (1) shows the status of the 2 switch inputs and 2 digital outputs (IO).

## 2.1. Optical Communications



A temporary infrared communications link can be established between the instrument and a PC using an optional cable. This connection can be used to transfer setup and calibration information from a PC.

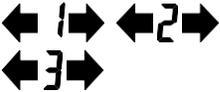
The PC end of the cable is a standard USB connector. The instrument end of the cable attaches to the left side of the indicator display, or the rear of the indicator as shown below.

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**WARNING:** The optical coupling head contains a strong magnet and should not be placed near any magnetic storage media.

---

## 2.2. Display Functions

	Lit when the displayed reading is within $\pm 1$ of a division of true zero.
	Lit when the displayed reading is in motion.
<b>NET</b>	Lit when the displayed reading represents net weight.
	Lit when the displayed reading is within the zero band.
	Lit when the display reading has been held.
	Ranges 1, 2 and 3 (multiple range/interval modes only).
<b>1234</b>	Lit to indicate when a setpoint output is active.
	Lit to indicate various states during checkweigh.
<b>TOT</b>	Lit to indicate that the displayed weight is a total.
	Lit when operating on battery, to indicate the charge level of the battery.

The FB1200 has 7 front panel keys that controls the operation of the instrument. The 8th key (SETUP) is on the rear of the instrument. The setup key can be sealed to prevent unauthorized tampering of trade critical settings and calibration. Each of the front panel keys has two separate functions:

- A normal function that is available during normal weighing (as printed on the key). These are described below.
- A setup function, which is available during setup and calibration. See [Navigation](#) section.

## 2.3. Keys

 Power Key	• Short press	Powers on the instrument
	• Long press	Displays the power off countdown, then powers off the instrument.
	• Short press	Cycle through displayed units: primary -> secondary -> tertiary (if enabled) -> pieces (if enabled).

 Units Key	<ul style="list-style-type: none"> <li>• Long press</li> </ul>	Piece weight setup (if counting is enabled)
 Zero Key	<ul style="list-style-type: none"> <li>• Short press</li> </ul>	Zero the scale
	<ul style="list-style-type: none"> <li>• Long press</li> </ul>	N/A
 Gross/Net Key	<ul style="list-style-type: none"> <li>• Short press</li> </ul>	Toggles between <b>Gross</b> and <b>Net</b> weight.
	<ul style="list-style-type: none"> <li>• Long press</li> </ul>	N/A
 Tare Key	<ul style="list-style-type: none"> <li>• Short press</li> </ul>	Tare the scale
	<ul style="list-style-type: none"> <li>• Long press</li> </ul>	Enter a preset tare value to apply to the scale <b>NOTE:</b> <i>The Tare key can operate over the entire weight range. In trade mode, the Tare key will not operate if the gross weight is negative.</i>
 Print Key	<ul style="list-style-type: none"> <li>• Short press</li> </ul>	Print the weight
	<ul style="list-style-type: none"> <li>• Long press</li> </ul>	Edit operator parameters
 Function Key	<ul style="list-style-type: none"> <li>• Short press</li> </ul>	Configured in setup
	<ul style="list-style-type: none"> <li>• Long press</li> </ul>	Varies with configured normal function. See section <a href="#">Configurable Functions</a>

---

# SECTION 3: SECURITY

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## 3.1. Levels of Security

- There are three **Security Levels**: One thru Three (1 – 3) used to configure the hierarchy of the management functions, and limits privilege accesses from unauthorized employees.
- When making the employee hierarchy, employee duties should determine their security level.
- Each access level includes all of the rights of any access level(s) below it.
- All parameters can be edited using the FB1200 interface. They can also be edited using the PC configuration tool.

### FIRST LEVEL: OPERATOR ACCESS

- **No Password** is necessary for this level of instrument access.

### SECOND LEVEL: SUPERVISOR ACCESS

- Supervisor Password is required.
- Allows access to setup parameters which are not critical for trade operation of the scale.

### THIRD LEVEL: SERVICE TECHNICIAN ACCESS

- Allows access to all setup parameters, including calibration.
- With the **Service Password**, the technician can also access *all* menus options, including the highest level programming.

## 3.2. Setup Security

There are 2 types of security for unauthorized setup access:

### Pin Code:

- Access to the setup can be pin code protected to prevent unauthorized tampering.
- Service and supervisor setup have separate pin codes. These are set in **PIN/SERV** and **PIN/SUPER** respectively.
- The service pin code can be used to access supervisor setup.
- The supervisor pin code cannot be used to access service setup.
- Set these pin codes to 0 to disable passcode protection. This is the default.

**There are 2 methods of entering the setup program:**

**Supervisor and Service setup (front keys):**

1. Long press the **POWER** and **GROSS/NET** keys simultaneously.
2. Press the Units key to choose which level of setup is required, and the Zero key to continue.

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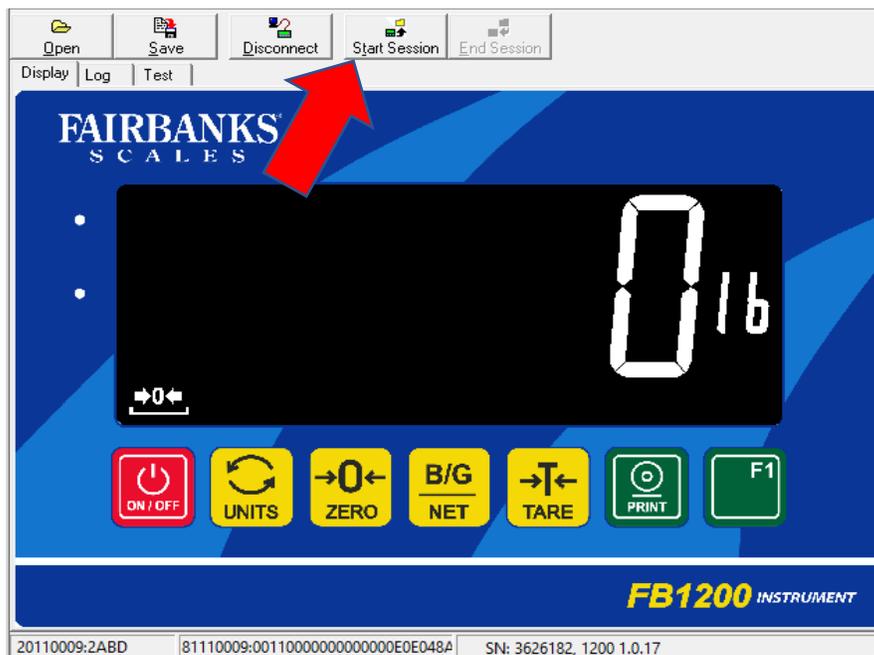
**NOTE:** Service setup will not be available via this method if the rear entry setting has been set in: CONFIG:R.ENTRY

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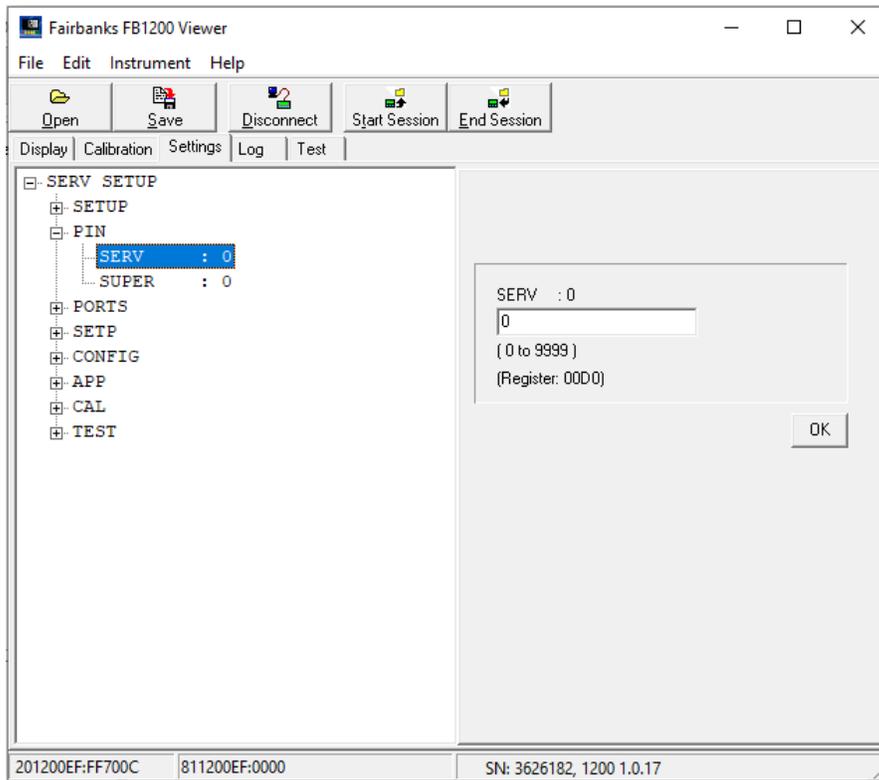
3. If a passcode has been set: Use the **ZERO** key to move the cursor and the Units key to edit passcode. Move the cursor past the last digit to confirm the passcode.

**Using a PC by connecting the USB Optical Cable to a USB Port**

1. Connect the USB Optical cable from the front of the FB1200 to a USB port on the PC.
2. Click the FB1200 Viewer link on the PC's desktop (or alternate C: drive location)
3. Click the **START SESSION** button. (see image)



4. A pop-up box appears. Select **SUPERVISOR** access from the drop-down menu and click **OK**.
5. Click the **SETTINGS** tab.
6. Navigate to **SERV** or **SUPER** and click to view the numerical entry box.



7. Enter a 4-digit numerical PIN and click **OK**.

# SECTION 4: SETUP

Setup and calibration can be completed either from the **front panel** using the setup functions on the front keys, or by using a PC connected via the optical cable. There are 2 types of setup:

- **Service setup:** Allows access to all setup parameters, including calibration. (Only available to authorized Fairbanks' technicians).
- **Supervisor setup:** Allows access to setup parameters which are not critical for trade operation of the scale.

The setup menus are a menu tree of parameters.

## 4.1. Front Panel Navigation

The setup menus are organized in a tree structure. Main menus are called groups. Groups contain sub-groups and items. Items are settings which can be edited. All items in a groups or sub-groups have related functions.

Once entered, groups and subgroups must be traversed in their entirety before returning to the level above.

 Power Key	• Setup menu function	None	
	• Setup editor function	None	
 Units Key	• Setup menu function	Navigate forwards	Step through current group or sub group's items.
	• Number editor function	Increment	Increment selected digit.
	• List editor function	Increment	Next option.
 Zero Key	• Setup menu function	Select	Select menu group or item.
	• Number editor function	Select	Select value for selected digit and advance to next digit. Exit once the value of the rightmost digit has been selected.

	<ul style="list-style-type: none"> <li>List editor function</li> </ul>	Select	Select current value and exit.
 Gross/Net Key	<ul style="list-style-type: none"> <li>Setup menu function</li> </ul>	Navigate backwards	Step through current group or sub group's items.
	<ul style="list-style-type: none"> <li>Number editor function</li> </ul>	Decrement	Decrement selected digit.
	<ul style="list-style-type: none"> <li>List editor function</li> </ul>	Decrement	Previous option.
 Tare Key	<ul style="list-style-type: none"> <li>Setup menu function</li> </ul>	Cancel	Return to previous menu level or exit menu if at top level.
	<ul style="list-style-type: none"> <li>Number editor function</li> </ul>	Cancel	Move selection to the previous digit. Cancel out of the editor if pressed on the leftmost digit.
	<ul style="list-style-type: none"> <li>List editor function</li> </ul>	Cancel	Cancel out of the editor.
 Print Key	<ul style="list-style-type: none"> <li>Setup menu function</li> </ul>	None	
	<ul style="list-style-type: none"> <li>Setup editor function</li> </ul>	None	
 Function Key	<ul style="list-style-type: none"> <li>Setup menu function</li> </ul>	None	
	<ul style="list-style-type: none"> <li>Setup editor function</li> </ul>	None	

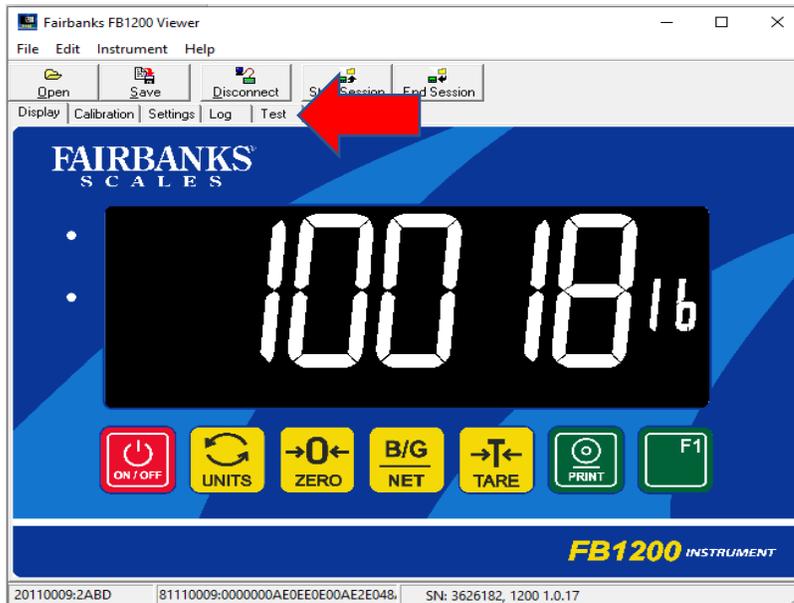
## 4.2. FB1200 Viewer Navigation

The same buttons available on the front panel navigation may be used in the Fairbanks FB1200 Viewer.

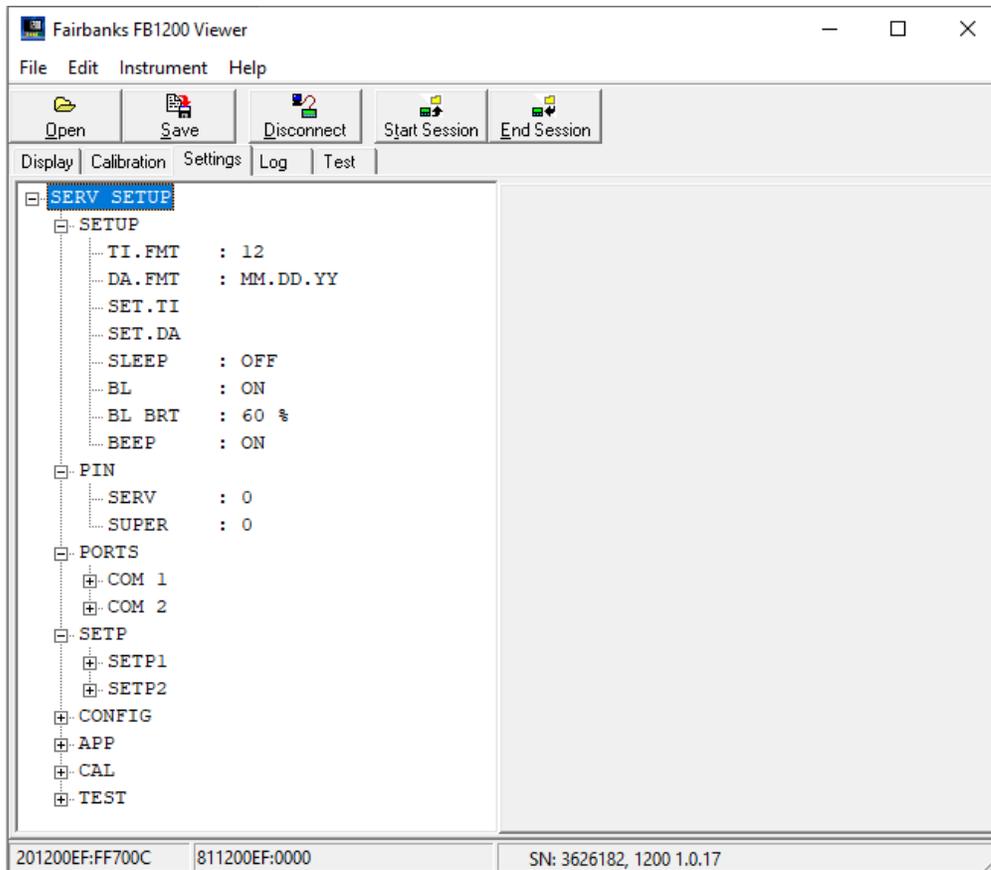
1. Connect the USB Optical cable from the front of the FB1200 to a USB port on the PC.
2. Click the FB1200 Viewer link on the PC's desktop (or alternate C: drive location).
3. Once the viewer appears, click the **START SESSION** button.



4. A pop-up box appears with a drop-down list of the 3 available security profiles. A PIN code is required for the **Supervisor Setup Menu** or **Service Setup Menu**.
5. The tabs will change depending on the level of access. **Supervisor** access will see 4 tabs and **Operator** access, 3 tabs (Display, Log, Test).



6. The menu options in the **Settings** tab are identical to the front panel. See [Setup Menu](#) for a detailed description of each option.



7. Click  to save any changes.

## 4.3. Editing Using the Front Panel

### 4.3.1. Editing Option Items

Some settings allow the choice of an option from a predefined list of options. Examples are **SETUP:TI.FMT** or **CONFIG:TYPE**. To show/edit:

1. Press the **ZERO** key to enter the editor.
2. Press the **UNITS** or **GROSS/NET** keys until the correct setting is shown.
3. Press the **ZERO** key to accept the selection and exit the editor.

### 4.3.2. Editing Weight and Number Items

Some settings require the entry of a weight or other number. Examples are **PIN:SUPER** or **CONFIG:CAP.1**. The correct decimal point and units (if applicable) are shown while editing. To show/edit:

1. Press the **ZERO** key to enter the editor.
2. Press the **UNITS** or **GROSS/NET** keys to increment or decrement the currently selected digit.
3. Press the **ZERO** or **TARE** keys to move the cursor forwards or backwards
4. Move the cursor past the final (right most) digit to accept the selection and exit the editor.
  - If the setting is not possible (for example if the value is greater than the allowed maximum), ----- is shown and the editor will not exit.

### 4.3.3. Editing with Functions

Some settings have a special function to control their use. These are not simple settings but are more complex routines. Examples are **CAL:ZERO** or **TEST:SCALE**. To use:

- Press the **ZERO** key to start the function
- Press the **ZERO** key again to exit the function

### 4.3.4. Exit Setup

There are several methods of exiting the setup menu.

- Method 1: Save and exit
  - Continue to press the **UNITS KEY** until you have navigated past the final top-level menu item.
- Method 2: Save and exit
  - Continue to press the **TARE KEY** until you have navigated back past the top-level menu.
- Method 3: Save and exit
  - –Press the **REAR SETUP KEY**
- Method 4: Exit without saving
  - –Remove the power from the instrument.

## 4.4. Setup Menu

### 4.4.1. SETUP: General Setup Menu

This menu is used to set general setup options for the indicator.

Items	Name	Description
Time format	TI.FMT	Set the time format for the indicator. Options are: <ul style="list-style-type: none"> <li>• 12 (default)</li> <li>• 24</li> </ul>
Date format	DA.FMT	Set the date format for the indicator. Options are: <ul style="list-style-type: none"> <li>• DD.MM.YY</li> <li>• DD.MM.Y4</li> <li>• MM.DD.YY (default)</li> <li>• MM.DD.Y4</li> <li>• YY.MM.DD</li> <li>• Y4.MM.DD</li> </ul>
Time set	SET.TI	Set the time as prompted: <ul style="list-style-type: none"> <li>• Hours: Enter hours (01-12 for SETUP:TI.FMT=12, 00 - 23 for SETUP:TI.FMT=24)</li> <li>• Min: Enter minutes (00 - 59)</li> <li>• Sec: Enter seconds (00 - 59)</li> <li>• AMPM: Enter AM or PM for SETUP:TI.FMT=12, not available for SETUP:TI.FMT=24</li> </ul>
Date set	SET.DA	Set the current date as prompted: <ul style="list-style-type: none"> <li>• Year: Enter year (2000 - 2099)</li> <li>• Month: Enter month (01 - 12)</li> <li>• Day: Enter day (01 - 31)</li> </ul>
Auto power off	SLEEP	Turn the indicator off after the configured amount of time in minutes. <ul style="list-style-type: none"> <li>• OFF: Do not turn off (default)</li> <li>• 5 minutes</li> <li>• 10 minutes</li> <li>• 20 minutes</li> <li>• 30 minutes</li> <li>• 60 minutes</li> </ul>
Backlight enable	BL	Configure the backlight operation <ul style="list-style-type: none"> <li>• OFF: Backlight is always at minimum brightness</li> <li>• ON: Backlight is always at maximum brightness (default)</li> <li>• AUTO: Backlight turns off after the time specified in SETUP:BLT of no motion or user input.</li> </ul>

Backlight timeout		BLT	Configure the period of no motion or user input before the back-light turns off. Only available when SETUP:B.L=AUTO. <ul style="list-style-type: none"> <li>• 15 seconds (default)</li> <li>• 30 seconds</li> <li>• 60 seconds</li> <li>• 300 seconds</li> </ul>
Backlight brightness		BL BRT	Configure the percentage backlight brightness applied when the backlight is on. (1 - 100) Default: 60.
Buzzer enable		BEEP	Configure the buzzer <ul style="list-style-type: none"> <li>• OFF: The buzzer is turned off</li> <li>• ON: The buzzer is turned on (default)</li> </ul>

### 4.4.2. PIN: Security Pin Codes

Items		Name	Description
Service setup passcode	⊕	SERV	This PIN should only be known and utilized by a Fairbanks' authorized technician.
Supervisor setup pin code	⊕	SUPER	Pin code required to enter supervisor setup. The Supervisor PIN code may set by the Fairbanks technician and provided. The PIN may be set to 0 to allow free access. Default is 0.

⊕ = Change only possible in service setup

### 4.4.3. Port: Serial Communications Menu

Items	Name	Description
Serial Ports	COM1 COM2	Options for serial port 1 Options for serial port 2
Port output hardware	PORT 1	Sets the serial port output hardware. Options are: <ul style="list-style-type: none"> <li>• RS232 output (default)</li> <li>• C.LOOP current loop output</li> </ul>

Function type	OUTPUT	<p>Sets the function of the serial port. Options are:</p> <ul style="list-style-type: none"> <li>• <b>OFF</b>: Disable the port</li> <li>• <b>BUTTON</b>: Trigger a printout (see Section 8)</li> <li>• <b>CONFIG</b>: Configuration port (communicates with the Viewer)</li> <li>• <b>AUTO</b>: Auto printing (see Section 8)</li> <li>• <b>CONTIN</b>: Auto transmit at 10Hz as specified by PORTS:COMx:FMT setting (see Section 7)</li> <li>• <b>POLL</b>: Perform action on receiving the poll character</li> </ul> <p>Availability:</p> <ul style="list-style-type: none"> <li>• <b>COM1</b>: CONFIG not available</li> <li>• <b>COM2</b>: BUTTON not available</li> </ul>
Baudrate	BAUD 1 BAUD 2	<p>Sets the baudrate for the serial port. Options are:</p> <ul style="list-style-type: none"> <li>• 1200</li> <li>• 2400</li> <li>• 4800</li> <li>• 9600 (default)</li> <li>• 19200</li> <li>• 38400</li> <li>• 57600</li> <li>• 115200</li> </ul>
Number of data bits	D.BITS.1 D.BITS.2	<p>Sets the number of data bits for the serial port. Options are:</p> <ul style="list-style-type: none"> <li>• 7 data bits</li> <li>• 8 data bits (default)</li> </ul>
Parity bits	PAR 1 PAR 2	<p>Sets the number of parity bits for the serial port. Options are:</p> <ul style="list-style-type: none"> <li>• P.NONE: No parity bit (default)</li> <li>• P.EVEN: Even parity bit</li> <li>• P.ODD: Odd parity bit</li> </ul>
Stop bits	STOP 1 STOP 2	<p>Sets the number of stop bits for the serial port. Options are:</p> <ul style="list-style-type: none"> <li>• 1 stop bit (default)</li> <li>• 2 stop bits</li> </ul>
Output format	FMT 1 FMT 2	<p>Sets the output format for the serial port. Options are:</p> <ul style="list-style-type: none"> <li>• FBANKS</li> <li>• TOLEDO</li> <li>• CARD</li> <li>• WTX</li> <li>• CONDEC</li> <li>• CUSTOM</li> </ul> <p>See <a href="#">Section 7</a> for a description of each format.</p>
Poll character	POLL 1 POLL 2	<p>Sets the poll character to request a single weight transmission for a port configured as PORTS:COMx:TYPE=POLL or BUTTON.</p> <p>Selectable from 0 to 255. Default: 5 (ASCII ENQ)</p>

Custom auto transmit format	EV.AUTO	Configures the custom continuous automatic transmit format for a port configured as PORTS:COMx:OUTPUT=CONTIN and PORTS:COMx:FMT x=CUSTOM. Up to 30 characters.  Default: " (empty)
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#### 4.4.4. Setpoint Configuration

Setpoint settings are found under the SETP heading of the FB1200 menu. The FB1200 has two digital setpoints that can be configured independently.

#### Wiring:

Pin Desc	Purpose
Out1	Output 1
Out2	Output 2
Com+	12/24 VDC
Com-	0 VDC
Shld	Shield

#### Settings

- Type

- **Off** – Setpoint is always inactive
- **On** – Setpoint is always active
- **Over** – Setpoint is active when weight displayed is over a certain value
- **Under** – Setpoint is active when weight displayed is under a certain value
- **COZ** – Setpoint is active when scale is at “center of zero”
- **Zero** – Setpoint is active when instrument displays zero weight
- **Net** – Setpoint is active when instrument displays net weight
- **Motion** – Setpoint is active when motion is detected on the scale
- **Error** – Setpoint is active when an error condition is detected
- **C.W.HI** – Setpoint is active when the weight on the scale is above the CW.HIGH setting in the APP menu.
- **C.W.OK** – Setpoint is active when the weight on the scale is between the CW.LOW and the CW.HIGH settings in the APP menu.
- **C.W.LO** – Setpoint is active when the weight on the scale is below the CW.LOW setting in the APP menu.

- **Logic** – Determines the state of the output when setpoint conditions are met.
  - **High** – When the condition of the type is met, the digital output will be driven to the high value. Otherwise it will be at the low value.
  - **Low** – When the condition of the type is met, the digital output will be at the low value. Otherwise it will be driven to the high value.
  
- **Timing** – Determines the behavior of a setpoint.
  - **Level** – The setpoint becomes active when the condition of the type is met. The setpoint can be deactivated by dropping below the hysteresis value or while a reset input is active.
  - **Edge** – The setpoint becomes active when the condition of the type is met. The setpoint can be deactivated by dropping below the hysteresis value or activating a reset input. Unlike “level” timing, a setpoint with this setting will remain *deactivated* after a reset input is received until the weight drops below hysteresis and the setpoint condition is reached again.
  - **Latch** – The setpoint will become active when the type condition is met. It will remain active, regardless of scale conditions, until the reset input becomes active.
  
- **Alarm** – Determines the instrument response to a setpoint condition being met. This setting works independently of the logic value.
  - **Single** – The FB1200 produces a single beep every two seconds.
  - **Double** – The FB1200 produces a double beep every two seconds.
  - **Flash** – The FB1200 flashes the display.
  
- **Name** – When F.KEY is set to TARGET, this name is used on the display to identify the setpoint to allow entry of a new target value.
  
- **Target** – Used when the type is OVER or UNDER. Determines the target weight of the setpoint.
  
- **P.ACT** – Used when the type is OVER or UNDER. Determines the preact of the setpoint. Used to account for material that may still flow after setpoint is active.
  
- **HYS** – Used when the type is OVER or UNDER. Determines the hysteresis value of the setpoint. The hysteresis value determines the change in weight past the target and preact that is required to deactivate the setpoint.
  - Ex. TYPE = OVER, TARGET = 1000 lbs, P.ACT = 100 lbs, HYS = 50 lbs. The setpoint would become active when the scale reached 900 lbs (1000 lbs-100 lbs) and would remain active until the weight returned below 850 lbs (1000 lbs-100 lbs-50 lbs).
  
- **Source** – Used when the type is OVER or UNDER. Select the source for the setpoint.

- **Gross** – Use gross weight, regardless of displayed weight
- **Net** – Use net weight, regardless of displayed weight
- **GR.or.NT** – Uses the displayed weight
- **Piece** – Uses the piece count

## Setting new targets

With the F.KEY set to TARGET in the APP menu, the setpoint targets for OVER and UNDER types can be quickly changed through the front panel.

1. Press and hold **F1** for two seconds.
2. The display will flash the name of **SETP1** and its value.
3. Press the **ZERO** key to open the number editor.  
Use the **UNITS** key to increase the highlighted digit, the **B/G NET** key to decrease the highlighted digit, and the **ZERO** key to accept a value and move to the next digit.
4. After the last digit, press **ZERO** to return to the name of **SETP1** and its new value.
5. Press the **UNITS** key and the display will flash the name of **SETP2** and its value.
6. Press the **ZERO** key to open the number editor.
7. Use the **UNITS** key to increase the highlighted digit, the **B/G NET** key to decrease the highlighted digit, and the **ZERO** key to accept a value and move to the next digit.
8. After the last digit, press **ZERO** to return to the name of **SETP2** and its new value.
9. Press **UNITS** to return to the weigh screen and save these new targets.
  - a. If checkweigh is enabled, these values will be presented after targets and modified the same way.

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# SECTION 5: OPERATIONS

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## 5.1. Weighing Operations

### 5.1.1. Basic Gross Weighing

1. With the scale unloaded, press **ZERO**.
2. Add weight to the scale.
3. To cycle units, press **UNITS**.
4. Press **PRINT** to push the weight to an attached printer or PC.

### 5.1.2. Basic Net Weighing

1. With the scale unloaded, press **ZERO**.
2. Add the container to the scale. Press **TARE**.
3. Fill the container with material.
4. To cycle units, press **UNITS**.
5. To cycle between gross and net weight, press **B/G NET**.
6. Press **PRINT** to push the weight to an attached printer or PC.

### 5.1.3. Preset Tare Entry

The FB1200 allows for the manual entry of tare weights for net weight calculations.

1. With the scale loaded or unloaded, hold the **TARE** key for about 2 seconds.
2. The FB1200 will beep and the number editor will appear with the first digit flashing.
  - a. Use **UNITS** to increase flashing digit, **B/G NET** to decrease flashing digit.
  - b. Use **ZERO** to advance to next digit and complete entry, use **TARE** to return to previous digit.
3. **PT** will flash on the display to indicate the preset tare was saved.
4. **Net weight** will be displayed, calculated from the entered tare.
5. To clear the preset tare, return the scale to zero gross and press the **TARE** key.

### 5.1.4. Instrument Weighing Functions

The industry uses three terms to describe the apportionment of an object's weight. These terms are GROSS WEIGHT, TARE WEIGHT, and NET WEIGHT.

*Example: A can of house paint is an object to be weighed.  
The empty can is the 'TARE' weight,*

*the paint is the 'NET' weight, and together they equal the 'GROSS' weight.*

GROSS = NET + TARE

GROSS – NET = TARE

GROSS – TARE = NET

## 5.2. Piece Counting

The FB1200 has two piece counting modes:

1. **Weight** – Weigh a sample and enter the quantity of the sample to store a per-piece weight value.
2. **Resample** – Weigh an initial sample and enter a quantity to determine a per-piece weight, then incrementally increase the sample size to fine-tune the piece weight value.

These piece counting modes can be selected in the P.COUNT item of the APP menu. Set P.COUNT = WEIGHT for simple piece counting or P.COUNT = RESAMP for resampling.

### 5.2.1. Piece Counting in Weight Mode

1. Set P.COUNT = WEIGHT in the APP menu.
2. Ensure the FB1200 is showing live weight (i.e. is not in the menu).
3. (Optional) if the parts will be weighed in a container, add the empty container to the scale and press **TARE**.
4. Add a known sample to the scale.
5. Hold the **UNITS** key until **ENTER QTY** flashes on the screen. The number of parts, based on previously stored values, will appear.
6. Press **ZERO** to bring up the number editor and use the function keys to enter the quantity of the known sample.
  - a. Use **UNITS** to increase flashing digit, B/G NET to decrease flashing digit.
  - b. Use **ZERO** to advance to next digit and complete entry, use **TARE** to return to previous digit.
7. Additional weight added to scale will be displayed in the units “number of pieces”, displayed by the “p” indicator.
8. To cycle between metrological units and piece count, use the **UNITS** key.

### 5.2.2. Piece Counting in Resample Mode

1. Set P.COUNT = RESAMP in the APP menu.
2. Ensure the FB1200 is showing live weight (i.e. is not in the menu).

3. (Optional) if the parts will be weighed in a container, add the empty container to the scale and press **TARE**.
4. Add a known sample to the scale.
5. Hold the **UNITS** key until **ENTER QTY** flashes on the screen. The number of parts, based on previously stored values, will appear.
6. Press **ZERO** to bring up the number editor and use the function keys to enter the quantity of the known sample.
  - a. Use **UNITS** to increase flashing digit, **B/G NET** to decrease flashing digit.
  - b. Use **ZERO** to advance to next digit and complete entry, use **TARE** to return to previous digit.
7. **RESAMP QTY** will flash on the screen.
8. Add additional samples. The FB1200 will automatically calculate the closes whole number of pieces. If the difference in per-piece weight between samples is less than 5%, the instrument will beep once and record the new weight.
9. Repeat step 8 until the sample size is sufficient for accurate weighing.
  - a. If at any time the difference between per-piece weights is greater than 5%, the instrument will beep twice and the new weight will not be recorded. Remove the weight and start the process over, using larger samples.
10. When finished resampling, press the **ZERO** key to return to the weighing mode.
11. Additional weight added to scale will be displayed in the units “number of pieces”, displayed by the “p” indicator.
12. To cycle between metrological units and piece count, use the **UNITS** key.

### 5.3. Checkweighing

The FB1200 has a three-zone checkweighing function. Checkweigh zones are indicated by the checkweigh annunciator in the top-right corner of the display.

	Lit when the weight on the scale is <b>above CW.HIGH</b> value.
	Lit when the weight is in the acceptable range <b>between the CW.HIGH and CW.LOW</b> values.
	Lit when the weight on the scale is <b>below CW.LOW</b> value.

The FB1200 has two checkweighing modes. The mode can be selected in the APP menu under CW.MODE.

1. **ABS** – Absolute checkweighing. High and low values are set directly and define the different zones.
2. **REL** – Relative checkweighing. A target weight is set and the high and low values are changes from that value. These differences, relative to the target, define the zones.

### ***5.3.1. Absolute Checkweigh Settings***

1. **CW.MODE** = ABS enables absolute checkweighing
2. **CW.CTRL** – Determines control of the checkweigh feature
  - a. **NONE** – Checkweigh is always running
  - b. **ZERO** – Checkweigh is running when scale is outside of zero band
  - c. **Motion** – Checkweigh is running when scale shows stable weight
3. **CW.HIGH** – The lower limit of the top checkweigh zone
  - a. The up arrow annunciator will be lit when the displayed weight is greater than the entered CW.HIGH value
4. **CW.LOW** – The upper limit of the bottom checkweigh zone
  - a. The down arrow annunciator will be lit when the displayed weight is less than the entered CW.LOW value

### ***5.3.2. Relative Checkweigh Settings***

1. **CW.MODE** = REL enables relative checkweighing
2. **CW.CTRL** – Determines control of the checkweigh feature
  - a. **NONE** – Checkweigh is always running
  - b. **ZERO** – Checkweigh is running when scale is outside of zero band
  - c. **MOTION** – Checkweigh is running when scale shows stable weight
3. **CW.TARG** – The value that the relative checkweigh zones will be calculated from
4. **CW.TOL.H** – The amount greater than CW.TARG that establishes the lower limit of the top checkweigh zone
  - a. The up arrow annunciator will be lit when the displayed weight is greater than  $CW.TARG + CW.TOL.H$
5. **CW.TOL.L** – The amount less than CW.TARG that establishes the upper limit of the bottom checkweigh zone
  - a. The down arrow annunciator will be lit when the displayed weight is less than  $CW.TARG - CW.TOL.L$

### 5.3.3. Setting New Checkweigh Targets via the Front Panel.

With the **F.KEY** set to **TARGET** in the APP menu, the checkweigh zone values can be changed through the front panel.

1. Press and hold **F1** for two seconds.
2. The display will flash the name of the first checkweigh limit and its value.
  - a. This will be **CH.HIGH** in **ABS** mode and **CW.TOL.H** in **REL** mode.
3. Press the **ZERO** key to open the number editor.
4. Use the **UNITS** key to increase the highlighted digit, the **B/G NET** key to decrease the highlighted digit, and the **ZERO** key to accept a value and move to the next digit.
5. After the last digit, press **ZERO** to return to the name and the new value.
6. Press the **UNITS** key and the display will flash the second checkweigh limit and its value.
  - a. This will be **CH.LOW** in **ABS** mode and **CW.TOL.L** in **REL** mode.
7. Press the **ZERO** key to open the number editor.
8. Use the **UNITS** key to increase the highlighted digit, the **B/G NET** key to decrease the highlighted digit, and the **ZERO** key to accept a value and move to the next digit.
9. After the last digit, press **ZERO** to return to the name and the new value.
10. (REL mode only) Press the **UNITS** key and the display will flash **CW.TARG** and its value.
11. (REL mode only) Press the **ZERO** key to open the number editor.
12. (REL mode only) Use the **UNITS** key to increase the highlighted digit, the **B/G NET** key to decrease the highlighted digit, and the **ZERO** key to accept a value and move to the next digit.
13. (REL mode only) After the last digit, press **ZERO** to return to **CW.TARG** and the new value.
14. Press **UNITS** to return to the weigh screen and save these new targets.

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**NOTE:** If setpoints are enabled of the OVER/UNDER type, they will be listed before the checkweigh values. See section [Setpoint Configuration](#) for more information.

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## 5.4. Accumulation

The FB1200 can accumulate weights by gross weight, net weight, or piece count. To enable the accumulation:

- Access the APPS menu through the front panel or FB1200 Viewer.
- Set **F.KEY** to **TOTAL**. (**F1**) **Total** key will enter and exit totalizing mode.
- The **B /G NET** key can be used to cycle between the gross total, net total and pieces total.
- When a total is displayed, the TOT annunciator will be lit. Pressing the units key whilst in totaling mode will add the current weight to the totals, show the new total, then exit accumulation mode.
- A long press of the **F** key will clear the totals. The instrument will prompt with "CLEAR".

To accumulate pieces, **P.COUNT** must be set to **WEIGHT** or **RESAMP** in the APP menu.

---

**NOTE:** When **TRADE** is set to **NTEP**, pieces can only be accumulated as net weight. To accumulate pieces by gross weight, set **TRADE** to **OFF**.

---

## Gross Accumulation

1. **Make sure the scale shows zero gross weight and displays gross.**
2. Add measured weight to the scale.
3. Press the **F1** key "n X" will display, where X is the number of accumulations currently stored. The total accumulated gross weight will display next. The TOT annunciator in the bottom right corner will be lit.
4. Press **UNITS** to accumulate the weight currently on the scale.
5. "ACCEPT" will display on the front panel.
6. The instrument will return to the live weight. Press **F1** to view the new accumulation values, and press **F1** again to return to live weight.
7. With live weight displayed, remove all weight from the scale and return the display to zero.
8. The instrument is now ready to accumulate the next weight.

## Net Accumulation

1. Make sure the scale is at zero gross weight.
2. Add the container to the scale.
3. Press **TARE**.
4. The **NET** annunciator will be lit.
5. Add weight to the container.
6. Press the **F1** key "n X" will display, where X is the number of accumulations currently stored. The total accumulated net weight will display next. The TOT annunciator in the bottom right corner will be lit.
7. Press **UNITS** to accumulate the weight currently on the scale.

8. “**ACCEPT**” will display on the front panel.
9. The instrument will return to the live weight. Press **F1** to view the new accumulation values, and press **F1** again to return to live weight.
10. With live weight displayed, remove all weight, including the container, from the scale and return the display to gross zero. It is not necessary to display zero gross and the instrument can remain in net mode as long as the scale is empty.
11. The instrument is now ready to accumulate the next weight.

### **Printing Accumulated Totals**

1. PORT 1 must be set to **BUTTON**.
2. With the accumulated totals flashing, press **PRINT**.
3. Either the default or custom TOT.PRN ticket will be printed, depending on FMT 1 setting.

## **5.5. Live Weight**

For the Live Weight feature to be enabled, F.KEY must be set to LIVE.W in the APP menu.

1. With livestock on the scale, press the **F1** key.
2. The H indicator on the display will flash while the instrument filters the weight.
3. When the FB1200 is done processing the movement, the H indicator will remain lit and the weight will be held on the display.
4. To clear the weight and return to normal weighing, hold the **F1** key for about 2 seconds.

---

**NOTE:** Live weight will not function unless **TRADE** is set to **OFF**.

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## **5.6. Setpoint Operation**

Setpoint settings are found under the **SETP** heading of the FB1200 menu. The FB1200 has two digital setpoints that can be configured independently.

### **Wiring:**

<b>Pin Desc</b>	<b>Purpose</b>
Out1	Output 1
Out2	Output 2
Com+	12/24 VDC
Com-	0 VDC
Shld	Shield

## 5.6.1. Settings

- **Type**
  - **Off** – Setpoint is always inactive
  - **On** – Setpoint is always active
  - **Over** – Setpoint is active when weight displayed is over a certain value
  - **Under** – Setpoint is active when weight displayed is under a certain value
  - **COZ** – Setpoint is active when scale is at “center of zero”
  - **Zero** – Setpoint is active when instrument displays zero weight
  - **Net** – Setpoint is active when instrument displays net weight
  - **Motion** – Setpoint is active when motion is detected on the scale
  - **Error** – Setpoint is active when an error condition is detected
  - **C.W.HI** – Setpoint is active when the weight on the scale is above the CW.HIGH setting in the APP menu.
  - **C.W.OK** – Setpoint is active when the weight on the scale is between the CW.LOW and the CW.HIGH settings in the APP menu.
  - **C.W.LO** – Setpoint is active when the weight on the scale is below the **CW.LOW** setting in the APP menu.
- **Logic** – Determines the state of the output when setpoint conditions are met.
  - **High** – When the condition of the type is met, the digital output will be driven to the high value. Otherwise it will be at the low value.
  - **Low** – When the condition of the type is met, the digital output will be at the low value. Otherwise it will be driven to the high value.
- **Timing** – Determines the behavior of a setpoint.
  - **Level** – The setpoint becomes active when the condition of the type is met. The setpoint can be deactivated by dropping below the hysteresis value or while a reset input is active.
  - **Edge** – The setpoint becomes active when the condition of the type is met. The setpoint can be deactivated by dropping below the hysteresis value or activating a reset input. Unlike “level” timing, a setpoint with this setting will remain *deactivated* after a reset input is received until the weight drops below hysteresis and the setpoint condition is reached again.
  - **Latch** – The setpoint will become active when the type condition is met. It will remain active, regardless of scale conditions, until the reset input becomes active.
- **Alarm** – Determines the instrument response to a setpoint condition being met. This setting works independently of the logic value.

- **Single** – The FB1200 produces a single beep every two seconds.
- **Double** – The FB1200 produces a double beep every two seconds.
- **Flash** – The FB1200 flashes the display.
- **Name** – When **F.KEY** is set to **TARGET**, this name is used on the display to identify the setpoint to allow entry of a new target value.
- **Target** – Used when the type is **OVER** or **UNDER**. Determines the target weight of the setpoint.
- **P.ACT** – Used when the type is **OVER** or **UNDER**. Determines the preact of the setpoint. Used to account for material that may still flow after setpoint is active.
- **HYS** – Used when the type is **OVER** or **UNDER**. Determines the hysteresis value of the setpoint. The hysteresis value determines the change in weight past the target and preact that is required to deactivate the setpoint.
  - Ex. TYPE = OVER, TARGET = 1000 lbs, P.ACT = 100 lbs, HYS = 50 lbs. The setpoint would become active when the scale reached 900 lbs (1000 lbs-100 lbs) and would remain active until the weight returned below 850 lbs (1000 lbs-100 lbs-50 lbs).
- **Source** – Used when the type is OVER or UNDER. Select the source for the setpoint.
  - Gross – Use gross weight, regardless of displayed weight
  - Net – Use net weight, regardless of displayed weight
  - GR.or.NT – Uses the displayed weight
  - Piece – Uses the piece count

## Setting new targets

With the F.KEY set to **TARGET** in the APP menu, the setpoint targets for **OVER** and **UNDER** types can be quickly changed through the front panel.

1. Press and hold **F1** for two seconds.

The display will flash the name of **SETP1** and its value.
2. Press the **ZERO** key to open the number editor.
3. Use the **UNITS** key to increase the highlighted digit, the **B/G NET** key to decrease the highlighted digit, and the **ZERO** key to accept a value and move to the next digit.
4. After the last digit, press **ZERO** to return to the name of **SETP1** and its new value.
5. Press the **UNITS** key and the display will flash the name of **SETP2** and its value.
6. Press the **ZERO** key to open the number editor.

7. Use the **UNITS** key to increase the highlighted digit, the **B/G NET** key to decrease the highlighted digit, and the ZERO key to accept a value and move to the next digit.
8. After the last digit, press **ZERO** to return to the name of **SETP2** and its new value.
9. Press **UNITS** to return to the weigh screen and save these new targets.
  - If checkweigh is enabled, these values will be presented after targets and modified the same way.

---

# SECTION 6: SERIAL INPUT / OUTPUT

---

## 6.1. Connecting the FB1200 to a Remote Display

The FB1200 can connect to the Fairbanks 1600 Series Remote Displays via RS232, RS485, or 20mA communication.

The default settings for the 1600 Series are:

- **BAUD** = 2400
- **D.BITS** = 7
- **PAR** = P ODD
- **STOP** = 1

Set FMT X = REMOTE to output the standard Fairbanks remote display output. This will allow the LB/KG and GR/NT annunciators to work correctly.

### 6.1.1. Remote Display Output

<STX><A><B><P><WWWWWW><ETX>

<STX>Start of transmission character

<A> Status A

<B>Status B

<P>Polarity

<W>Displayed weight (leading zeroes suppressed)

<ETX>End of Transmission character

#### Status A Character Descriptions

Character	Description
a	Setpoint 1 active
A	Setpoint 2 active
4	Both setpoints or no setpoints active

#### Status B Character Descriptions

Character	Description
0	Lb gross
1	Lb net
2	Lb tare
3	Kg gross
4	Kg net
5	Kg tare

## 6.2. Printing

The FB1200 supports fixed standard printouts based on the instrument configuration, and a customizable print format.

Printing may be triggered manually by the print key. A serial port must be configured for printing by setting.

**Go to:** PORTS:COMx:OUTPUT=BUTTON.

Alternatively, a printout can be triggered automatically by setting **PORTS:COMx:OUTPUT=AUTO**. A printout will then be triggered when the weight is outside center of zero, and the scale is stable, and the weight is 50% greater than the previous printout.

### 6.2.1. Printer Switch Settings

ROLL TAPE PRINTER	SW 1 ON	SW 2 ON	SW 3 ON	COMMUNICATION SETTINGS
<b>iDP3550 (28810)</b>	2, 3, 4, 8	1, 2, 3, 5, 6	—	<b>9600 Baud, No Parity, 8 Data and 1 Stop Bit.</b>

TICKET PRINTER	SW 1 ON	SW 2 ON	SW 3 ON	COMMUNICATION SETTINGS
<b>TM-U590 (24740)</b>	1, 3, 7	All OFF	—	<b>9600 Baud, No Parity, 8 Data and 1 Stop Bit.</b>
<b>TM-U295 (24741)</b>	1, 3	All OFF	—	<b>9600 Baud, No Parity, 8 Data and 1 Stop Bit.</b>
<b>SP298</b>	All OFF	3	1, 5	<b>9600 Baud, No Parity, 8 Data and 1 Stop Bit.</b>
<b>SP700</b>	1 thru 7	1 thru 6	1, 5	<b>9600 Baud, No Parity, 8 Data and 1 Stop Bit.</b>
<b>SP2000</b>	All OFF	3	1, 5	<b>2400 Baud, Even Parity, 7 Data and 2 Stop Bit.</b>
<b>SP2200</b>	2, 3, 8	All OFF	All OFF	<b>2400 Baud, No Parity, 7 Data and 2 Stop Bit.</b>
<b>TM-U230 (30954)</b>	All OFF	2, 5, 8	—	<b>9600 Baud, No Parity, 8 Data and 1 Stop Bit.</b>
<b>GC420D</b>				<b>9600 Baud, No Parity, 8 Data and 1 Stop Bit.</b>

— No switch bank present inside the printer.

---

**NOTE:** The Fairbanks Scales standard default COM Port settings for all the printers is **9600 Baud, No Parity, 8 Bits, and 1 Stop Bit.**

---

## 6.3. Printers

### 6.3.1. Printer Cabling

The chart below shows the connections for the two cable types used with the printers.

**20483 CABLE KIT \***

Used with the with the **GC420d** and the **L540** printers

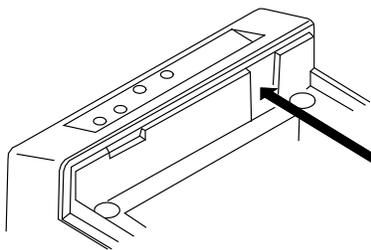
WIRE	COM PORT 1 OR 2	COLOR	GC420d	L540
			DB-9 PRINTER	DB-25 PRINTER
1	2-RX	W	2-TX	2-TX
2	1-TX	R	3-RX	3-RX
3	3-GND	G	5-GND	7-GND

\*Remove the female end of the cable in the field.

### 15599 CABLE KIT

WIRE	COM PORT 1 OR 2	COLOR	DB-25 PRINTER
1	2-RX	W	3 RX
2	2-TX	R	2-TX
3	3-GND	G	7-GND

### 6.3.2. iDP3550 Tape Printer Settings



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	<b>9600</b>
PARITY	<b>No</b>
DATA BITS	<b>8</b>
STOP BIT	<b>1</b>

### 6.3.3. TM-U590 Ticket Printer Settings

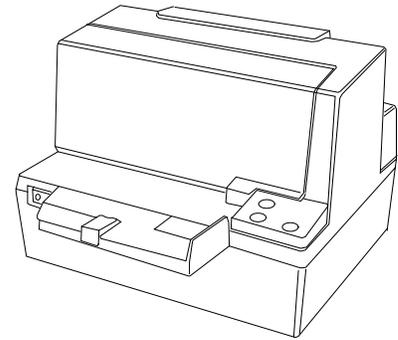
- For **FB1200 Instrument Desktop** and **NEMA 4X SERIAL** communications, use cable **15599**.

BAUD	<b>9600</b>
PARITY	<b>No</b>
DATA BITS	<b>8</b>
STOP BIT	<b>1</b>

Set the printer **dip switches** as listed below.

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

**DSW 2:** All Switches = **OFF**

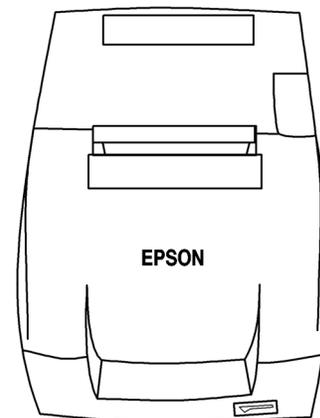


**NOTE:** For wiring table, see [Printer Cabling – 15599 Cable Kit](#)

### 6.3.4. TM-U220 Tape Printer

- Uses **SERIAL** communication.
- Use cable **15599**.

BAUD	<b>9600</b>
PARITY	<b>No</b>
DATA BITS	<b>8</b>
STOP BIT	<b>1</b>



**NOTE:** For wiring table, see [Printer Cabling – 15599 Cable Kit](#)

#### DIP SWITCH 1 (Serial Interface)

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

**Default settings are in bold.**

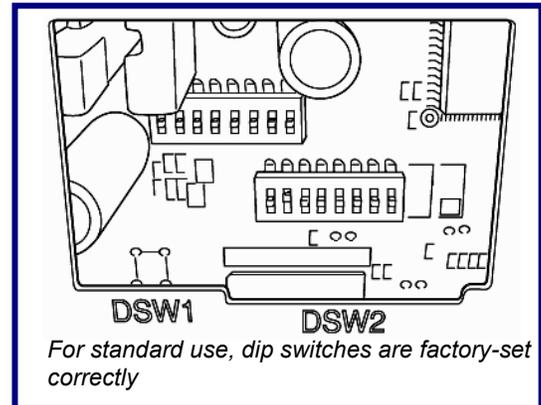
### DIP SWITCH 2 (Serial Interface)

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

**Default settings are in bold.**

\* The TM-U220 Tape Printer DAT (dk gray case, w/cutter) will have DSW2 switch #2 set to ON. TM-U220 Tape Printer (white case, no cutter) will have DSW2 switch #2 set to OFF. All other switch settings are identical between printers.

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



### 6.3.5. TM-U295 Ticket Printer Settings

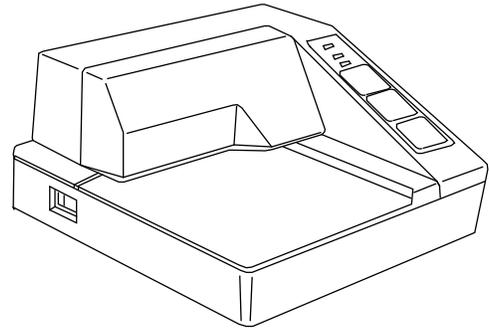
- For **FB1200 Instrument Desktop** and **NEMA 4X SERIAL** communications, use cable **15599**.

BAUD	<b>9600</b>
PARITY	<b>No</b>
DATA BITS	<b>8</b>
STOP BIT	<b>1</b>

Set the printer **dip switches** as listed below.

**SW1:** 1 and 3 = **ON**

**Remainder** = **OFF**




---

**NOTE:** For wiring table, see [Printer Cabling – 15599 Cable Kit](#)

---

### 6.3.6. SP298 Printer Settings

- For **FB1200 Instrument Desktop** and **NEMA 4X SERIAL** communications, use cable **15599**.

BAUD	<b>9600</b>
PARITY	<b>No</b>
DATA BITS	<b>8</b>
STOP BIT	<b>1</b>

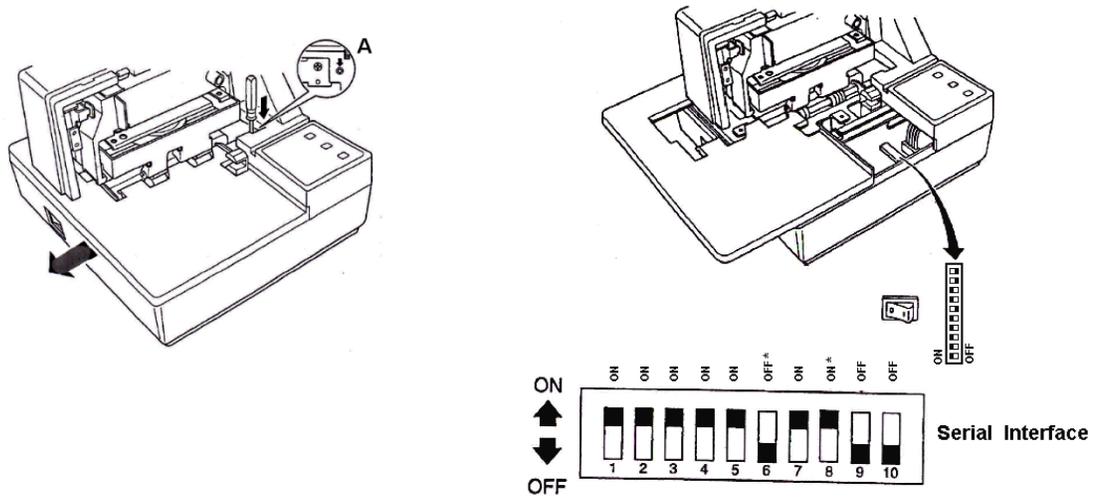
---

**NOTE:** For wiring table, see [Printer Cabling – 15599 Cable Kit](#)

---

### 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.
4. Set the **DIP Switches** into their correct positions.
5. Slide the Document Table back into place while pressing down at **Location “A”**.
6. Replace the **Print Cover**.



**DIP Switch Settings (SERIAL INTERFACE)**

SWITCH	FUNCTION	ON	OFF
1	Baud Rate	<i>See table below.</i>	
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	<i>See table below</i>	
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**.

### 6.3.7. SP700 Printer Settings

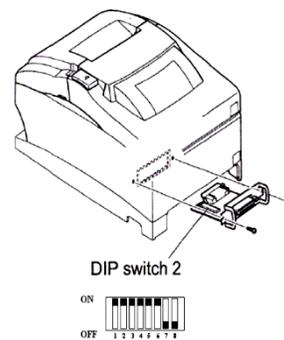
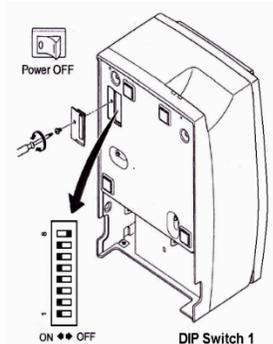
- For **FB1200 Instrument Desktop** and **NEMA 4X SERIAL** communications, use cable **15599**.

BAUD	<b>9600</b>
PARITY	<b>No</b>
DATA BITS	<b>8</b>
STOP BIT	<b>1</b>

**NOTE:** For wiring table, see [Printer Cabling – 15599 Cable Kit](#)

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 Interface Board.



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

\* 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:** Only program the **Auto Cutter** function with models that have the **Auto Cutter Accessory** installed.

- This is models with a tear bar.
  - A mechanical error will occur.
- 

\*\* **USB Interface** model only.

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

## DIP Switch 2

SWITCH	FUNCTION	ON	OFF
2-1	Baud Rate	<i>See table below.</i>	
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

### 6.3.8. SP2000 Printer Settings

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

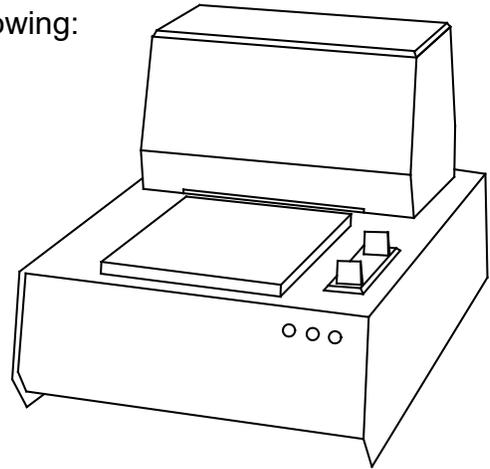
- For **FB1200 Instrument Desktop** and **NEMA 4X SERIAL** communications, use cable **15599**.

BAUD	<b>2400</b>
PARITY	<b>EVEN</b>
DATA BITS	<b>7</b>
STOP BIT	<b>1</b>

**NOTE:** For wiring table, see [Printer Cabling – 15599 Cable Kit](#)

Set the printer's **dip switches** according to the following:

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



### 6.3.9. SP2200 Printer Settings

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

- **FB1200 Desktop** and **NEMA 4X** use cable **15599**.

BAUD	<b>2400</b>
PARITY	<b>NO</b>
DATA BITS	<b>7</b>
STOP BIT	<b>2</b>

**NOTE:** For wiring table, see [Printer Cabling – 15599 Cable Kit](#)

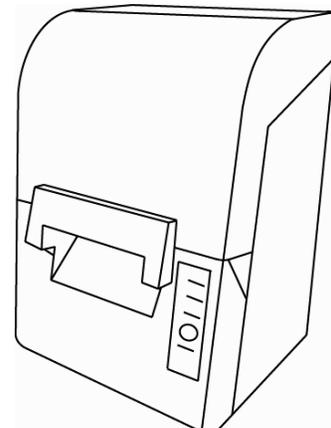
Set the printer's **dip switches** according to the following:

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

### 6.3.10. TM-U230 Printer Settings

- For **FB7100 Instrument Desktop** and **NEMA 4X SERIAL** communications, use cable **15599**.

BAUD	<b>9600</b>
PARITY	<b>No</b>
DATA BITS	<b>8</b>
STOP BIT	<b>1</b>



---

**NOTE:** For wiring table, see [Printer Cabling – 15599 Cable Kit](#)

---

### DIP Switch 1 Settings (SERIAL INTERFACE)

SWITCH	FUNCTION	ON	OFF
1	Data receive error	Ignored	<b>Prints “?”</b>
2	Receive buffer capacity	1KB	<b>16KB</b>
3	Handshaking	XON/XOFF	<b>DTR/DSR</b>
4	Work length	7 bits	<b>8 bits</b>
5	Parity check	Yes	<b>No</b>
6	Parity selection	Even	<b>Odd</b>
7	Transmission speed	4800 bps	<b>9600 bps</b>
8	BUSY condition	Receive buffer full	<b>Receive buffer full or Offline</b>

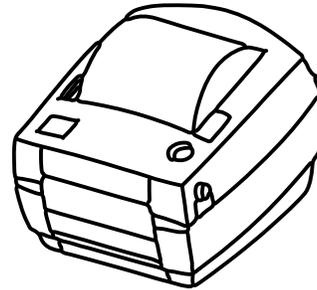
### DIP Switch 2 Settings (SERIAL INTERFACE)

SWITCH	FUNCTION	ON	OFF
1	Sections number of characters per line (cpl) 7 x 9 font/ 9 x 9 font	42/35	<b>40/33</b>
2	For internal use only (Auto-cutter) (do not change)	<b>Enabled</b>	Disabled
3	Pin 6 reset signal	Used	Not used
4	Pin 25 reset signal	Used	Not used
5	PAPER OUT LED flashing pattern	<b>Flashes</b>	Lights on
6	For internal use only (flash memory rewriting) (Do not change)	Enabled	<b>Disabled</b>
7	For internal use only (Internal synchronization) (Do not change)	Asynchronous	<b>Synchronous with clock</b>
8	Internal buzzer	<b>Disabled</b>	Enabled

### 6.3.11. L540 Printer Settings

- For **FB1200** instrument Serial communications use cable **20483**.

BAUD	<b>9600</b>
PARITY	<b>No</b>
DATA BITS	<b>8</b>
STOP BIT	<b>1</b>




---

**NOTE:** For wiring table, see [Printer Cabling – 20483 Cable Kit](#)

---

### 6.3.12. GC420d Printer Settings

- For **FB1200** instrument desktop and Nema 4x Serial communications use cable **20483**.

BAUD	<b>9600</b>
PARITY	<b>NO</b>
DATA BITS	<b>8</b>
STOP BITS	<b>1</b>

---

**NOTE:** For wiring table, see [Printer Cabling – 20483 Cable Kit](#)

---

The **FB1200** Instrument has numerous ports and outlets allowing different Input/ Output devices to be utilized.

- The back of the Instrument has a 120V cord outlet, but the unit also supports 220V.
- The FB1200 instrument has two (2) standard **Serial Output COM Ports**.
  - These are configured for **RS-232** communications.
  - Serial Outputs can be customized to provide specific configured data string protocols, configuration parameters, using output modes such as: **Config, Auto, Continuous, Poll** and **printers**.

### 6.3.13. Ticket Formatting

Tickets can be formatted through the FB1200 viewer for use with generic text printers. There are two custom print formats:

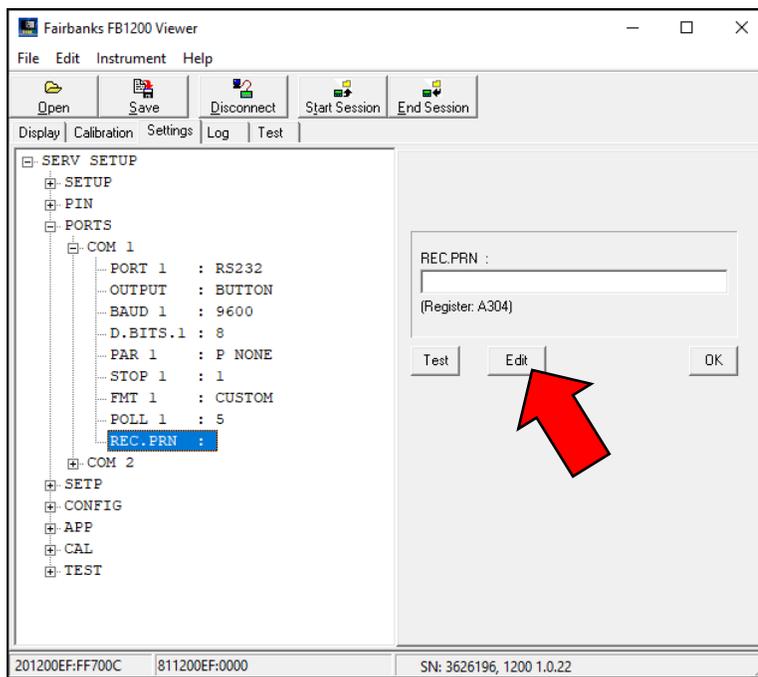
- **BUT.PRN** – Standard printout, acquired by pressing PRINT key when in normal weighing mode and no errors are present.
- **TOT.PRN** – Accumulation printout, acquired by pressing PRINT key when viewing accumulated totals on the display.

1. Connect the Tech-Lynk cable to a PC and open the FB1200 Viewer application and login. See [Setup Security](#) for login instructions, if needed.

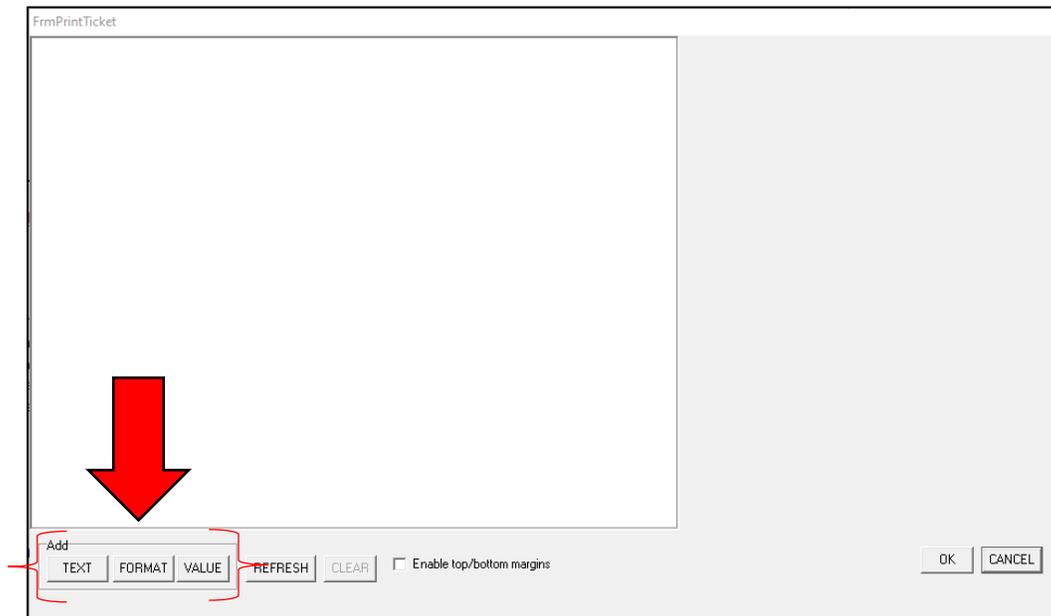
Under **PORTS** select **COM1**, select **OUTPUT** and the **BUTTON** option.

(NOTE: these instructions also allow for the configuration of the OUTPUT = AUTO ticket on COM1 and COM2)

2. Click on **BUT.PRN** or **TOT.PRN** and a field should appear on the right half of the window. If no ticket is currently configured, this field will be empty. Otherwise, it will have the existing token string.



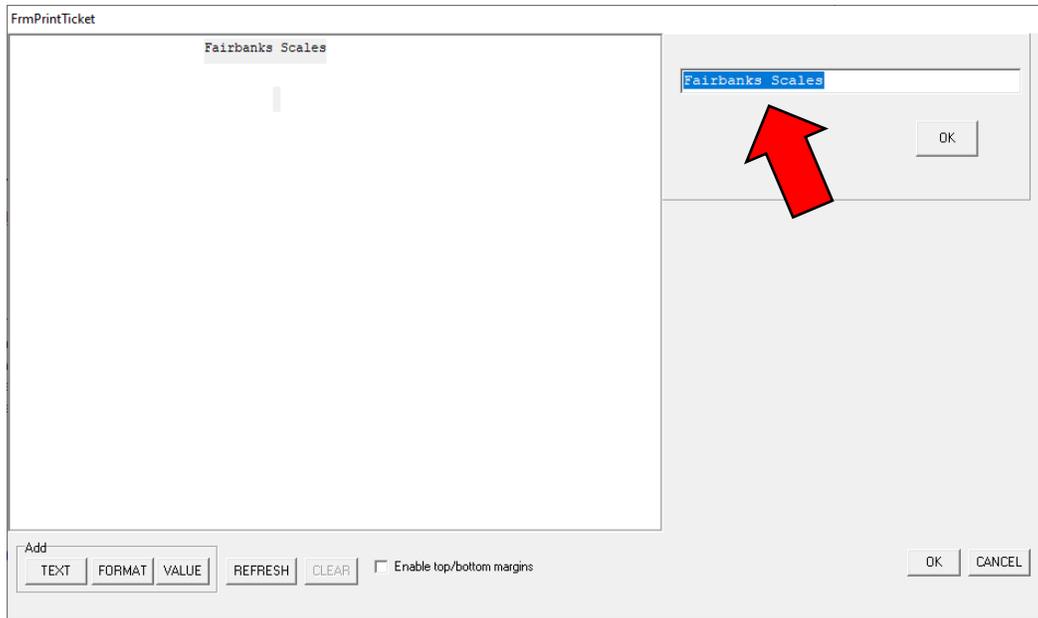
3. Click on **Edit** to open the formatting window. The following window appears. A progress bar will display on the screen as tokens are loaded.



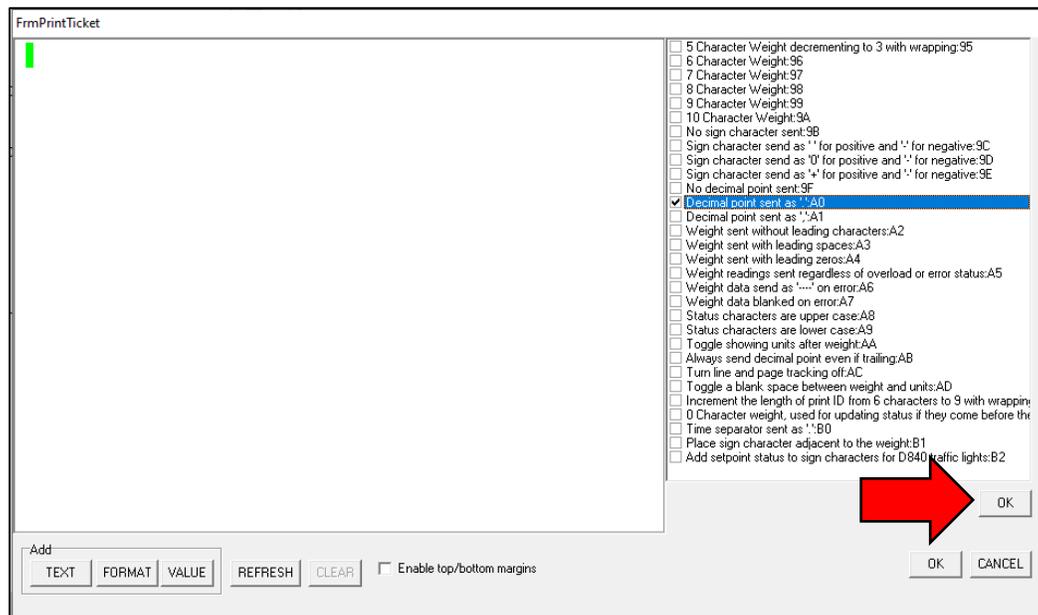
4. To add a field to the format, press a button from the following options, in the lower left corner of the window.
  - a. **TEXT** – Free entry of text characters or ASCII characters by hex value (see [Appendix II: ASCII Table](#))
  - b. **FORMAT** – Used to format the transmission of weight values and status tokens (see section [Custom Format Tokens](#) for details)
  - c. **Value** – Used to add tokens for printed values (see section [Custom Format Tokens](#) for details)

Once one of the add options is selected, a small box will appear in the center of the ticket window. Drag this box into place on the ticket field and the right half of the window will allow for input of the field's properties. Drag the box outside of the ticket field to delete.

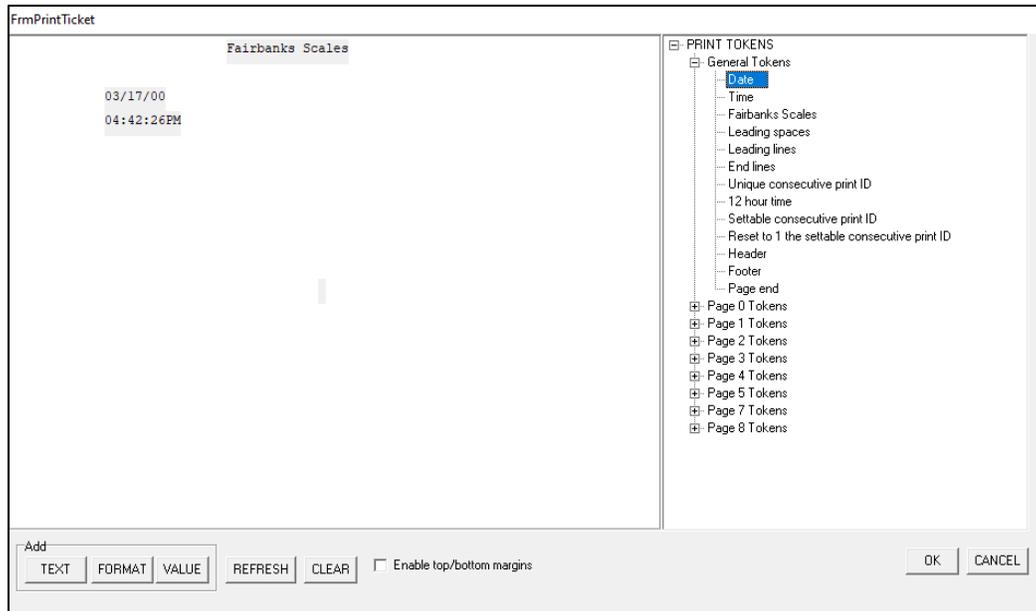
5. If the **TEXT** button is selected, move the box into the desired location. A text box appears on the right. Any ASCII character can be added by typing **\XX**, where **XX** is the two-character hex value of the character. Printable ASCII characters can be added as plain text so this field should be used for control characters (CR, EOT, etc.). Enter the desired text into this field and press **OK**.



6. If the **FORMAT** button is selected, the box should be moved to the top-left corner of the field. Once it is there, a check list will open on the right. Select all applicable formatting items and press the **OK** button.

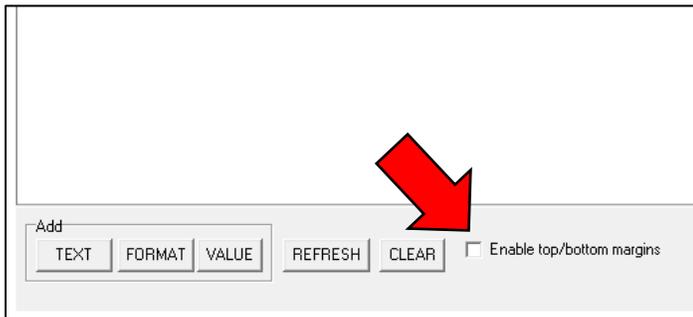


7. If the **VALUE** button is selected, move the box to the desired location. A tree of possible tokens opens on the right. To expand the options, click the **PLUS SIGN** next to a header. To select a value, double click on that value.

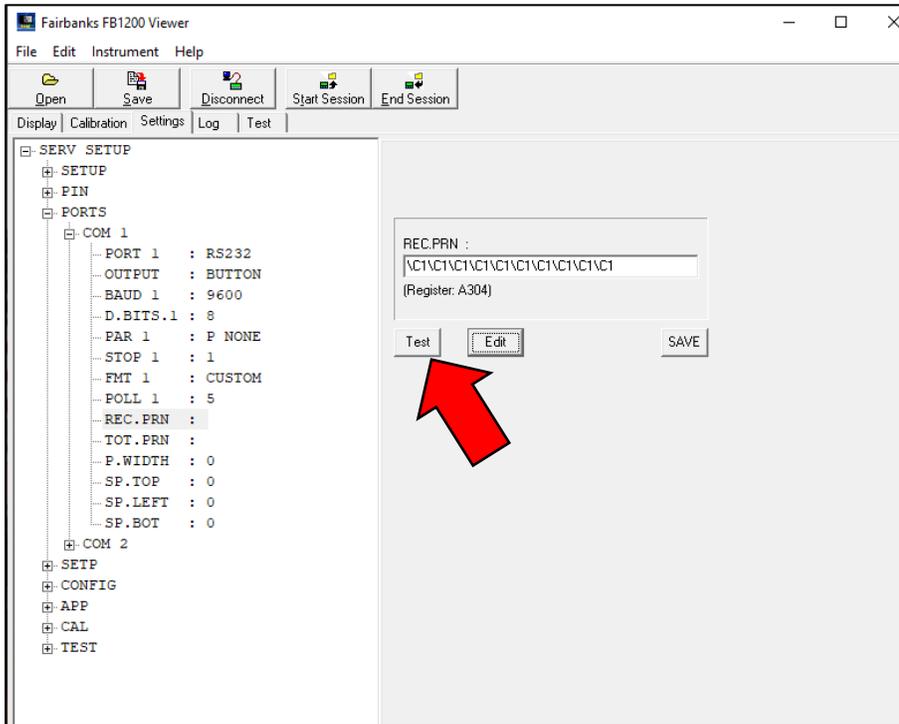


- (optional)** To enable top and bottom margins, check the box in the center bottom of the window. This adds margins to the beginning and end of your ticket print as configured in SP.TOP and SP.BOT.

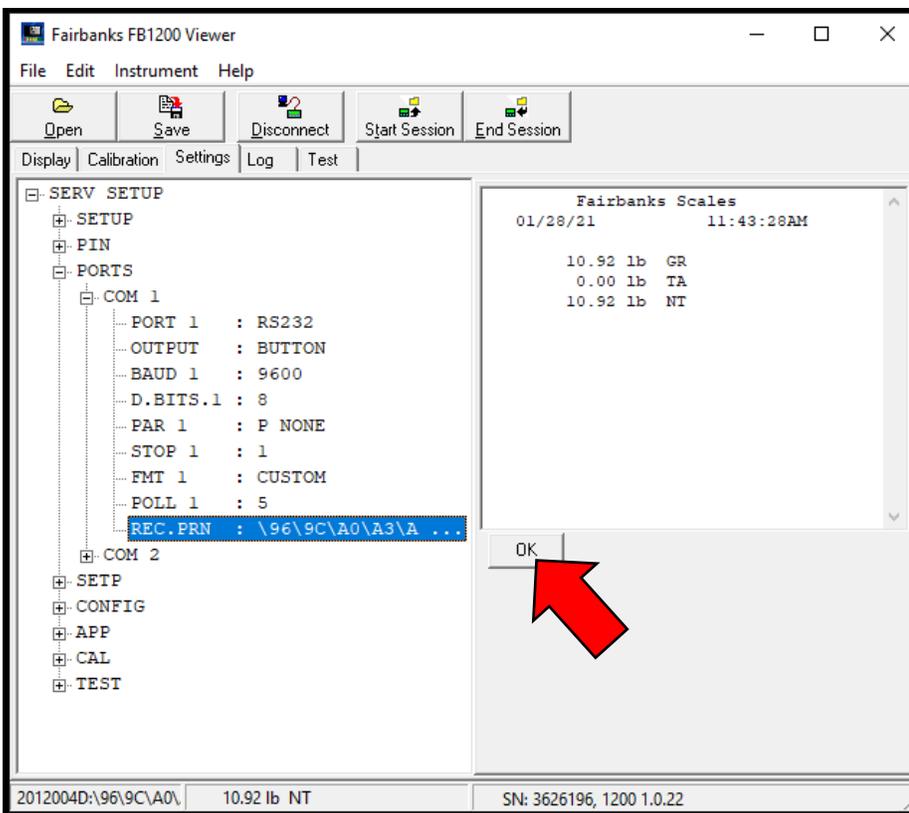
**NOTE:** To use the Epson release token, margins at the bottom of the ticket must be disabled.



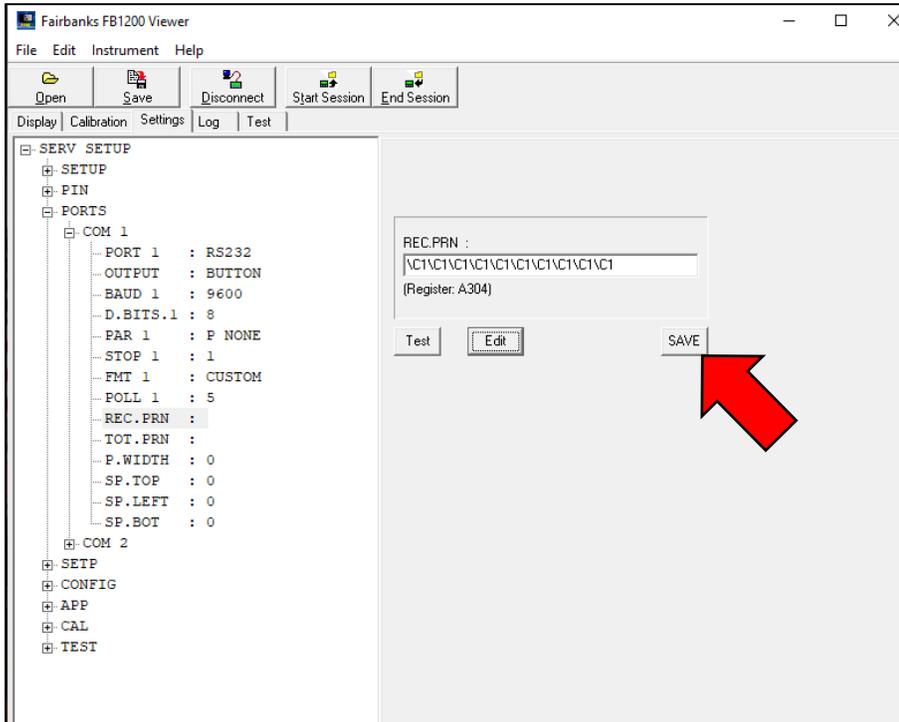
- When the ticket format is finished, press **OK**.
- The tokens required to create saved ticket automatically appear in the **BUT.PRN** or **TOT.PRN** field.



11. Back in the main viewer window, press **Test** to view the ticket as it would appear on the page.



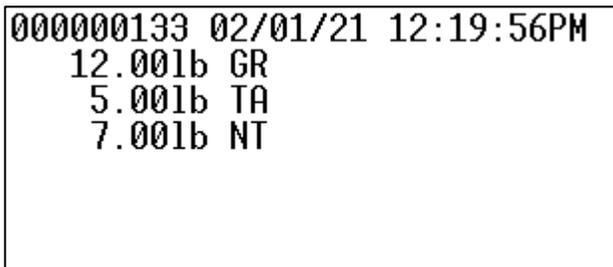
- Once satisfied, press **OK** to push the ticket to the instrument and finalize the ticket.



- Use the **P.WIDTH** field to change the print width of the ticket as a number of characters. An entry of “0” leaves it at default width, not zero characters and is sufficient for a 295 ticket printer or 220 tape printer.
- SP.TOP**, **SP.LEFT**, and **SP.BOT** add margins to the printing at the top, left, and bottom edges respectively. The defaults are zero, or no margin.

### 6.3.14. Default Ticket Formats

#### A. Default GTN Ticket



**B. Default accumulation ticket**

```
02/08/21 12:03:48PM
3 Items GR
 13.5001b GR Total

2 Items NT
  9.5001b NT Total
```

**C. Default GTN ticket with piece counting**

```
000000138 02/01/21 12:27:50PM
 12.001b GR
  5.501b TA
  6.501b NT

 140 p
   0 p Total
```

**D. Default GTN ticket with peak hold**

```
000000134 02/01/21 12:23:59PM
 12.001b GR
  5.501b TA
  6.501b NT

12.721b Peak Weight 02/01/21 12:22:30PM
```

**E. Default accumulation ticket with piece counting**

```
02/08/21 12:16:33PM

3 Items GR
 16.501b GR Total

2 Items NT
 13.001b NT Total
  57 p Total
```

## 6.4. Continuous Weight Output

### 6.4.1. Introduction

The continuous weight output is normally used to drive remote displays, dedicated computer connections or PLCs. The output generates a simple weight message at predefined intervals. **Custom strings are only available through the FB1200 viewer.**

### 6.4.2. Adding a Custom Continuous Output Format

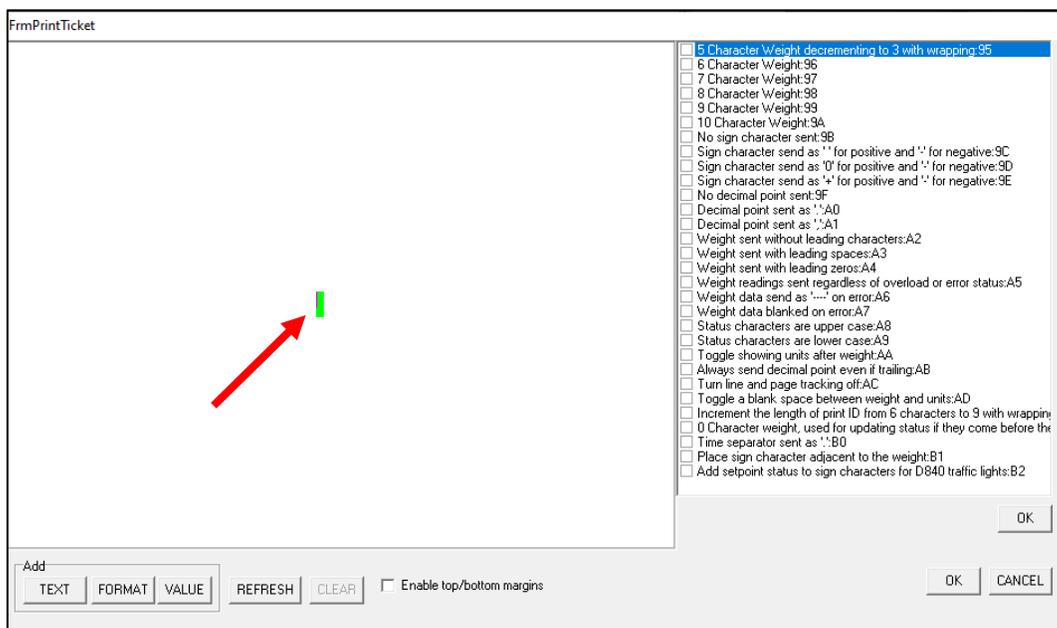
1. Connect the Tech-Lynk cable to the instrument/PC and start a supervisor or service session.
2. Expand the Ports menu and select either **COM 1** or **COM 2**.
3. Set **PORT X** to the desired output type.
4. Set **OUTPUT** to **CONTIN**.
5. Set all data format values to site required values.
  - a. **BAUD X**: baud rate in per second
  - b. **D.BITS.X**: number of data bits: 7 or 8
  - c. **PAR X**: parity of the characters: none, even, or odd
  - d. **STOP X**: number of stop bits; 1 or 2
6. Set FMT X to **CUSTOM**.
7. Highlight **BUILD** A text entry field should appear on the right half of the viewer.
8. If no string is configured, this field will be empty. Otherwise, the existing tokens will be present.
9. Custom strings can be built in two ways:
  - a. By pressing **Edit** to open the string builder window (See section String Builder)
  - b. Entering the tokens directly into the text field (See section **Direct Format Tokens**)
10. Once the string is complete, press **OK** to push it to the instrument. The FB1200 will begin outputting the string immediately.

### 6.4.3. String Builder

1. With the **Build** box open in the Viewer, press **EDIT**.
2. Click on **EDIT** to open the formatting window.
3. To add a field to the format, one of the three buttons in the **Add** box in the lower left corner of the window.



- a. **TEXT** – Free entry of text characters or add ASCII characters by hex value.
  - b. **FORMAT** – Used to format the transmission of weight values and status tokens (see [Appendix III: Token Formatting and ASCII Table](#) for details)
  - c. **VALUE** – Used to add tokens for printed values (see [Appendix III: Token Formatting and ASCII Table](#))
4. Once one of the add options is selected, a small box will appear in the center of the window. Drag this box into place on the format field and the right half of the window will allow for selection of the fields properties.



5. The **FORMAT** field should be placed on the far left of the field. Once it is there, a check list will open on the right. Select all applicable formatting items and press the **OK** button.

6. Once **TEXT** fields are dragged into place, a text box will appear on the right.. Any ASCII character can be added by typing \XX, where XX is the two character hex value of the character. Printable ASCII characters can be added as plain text so this field should be used for control characters (CR, EOT, etc.). See also [Direct Token Entry](#) below. Enter the desired text into this field and press **OK**.
7. When a **VALUE** field is dragged into place, a tree of possible tokens opens on the right. To expand the options, click the plus sign next to a header. To select a value, double click in it.
8. Once the format is complete, press **OK**.
9. Use the **TEST** button to view the string as it would appear in a terminal utility.
10. Press **SAVE** to push the string to the FB1200.

#### 6.4.4. Direct Token Entry

1. With the **BUILD** box active, click the **TEXT** field.
2. Tokens are added by typing them into the field in the order they should be used.
  - a. **Format tokens** – Control the format of string components
  - b. **Page tokens** – Determine what page a value token should be taken from
  - c. **Value token** – Correspond to a transmitted value (weight, time, status, etc.)
  - d. **ASCII** – Enter an ASCII character into a string
    - i. **NOTE:** Printable ASCII characters can be entered directly into a string so the ASCII tokens should be used for control characters only
3. Format tokens should be added first and will determine what the string will look like.
  - a. These tokens are not printed and do not need spaces.
  - b. E.g. “\96\A4\AA” will send a 6-character weight with leading zeroes and no units
4. Value tokens are broken up into pages. Some values are non-paged and can be entered alone, but all others must have a page established first. Once a page token is established, all tokens will be taken from that page until a new page token is entered.
  - a. E.g. “\BE\D8” prints the gross weight in primary units, “\B9\D8” prints a “gross, net, error, overload, underload” status indicator.
  - b. Tokens from multiple pages can be entered in a string, but a page token must be included to change the page.
5. Enter ASCII tokens using \XX where “XX” is the hex value of the character. See [Appendix III: Token Formatting and ASCII Table](#).
  - a. E.g. “\0D” is adds a carriage return to the string.

6. Text can be added by typing it into the field in the appropriate place between tokens.
7. Spaces entered between tokens will add a space to the string, or \20 can be used.
8. Once a string is complete, use **TEST** to view the output in the Viewer.
9. Press **OK** to push the string to the instrument. The FB1200 will begin outputting the string immediately.

## 6.5. Formats

There are 6 continuous weight output formats, including, and one custom format.

### 6.5.1. FBANKS: Fairbanks and Toledo Format

Format:

**<STX><A><B><C><GGGGGG><TTTTTT><CR>**

Where:

Element	Description	Values
STX	Start of transmission character	
A	Status A	See status A bit descriptions below
B	Status B	See status B bit descriptions below
C	Status C	See status C bit descriptions below
G	Gross weight (leading zeroes are not suppressed). 6 characters if grad size does not have a decimal point. 5 characters if the grad size does have a decimal point. The decimal point is not sent as part of the character string.	
T	Tare weight (leading zeroes are not suppressed) 6 characters if grad size does not have a decimal point. 5 characters if the grad size does have a decimal point. The decimal point is not sent as part of the character string.	
CR	Carriage return character	

**Status A Bit Descriptions**

Bits	Description
0-2	Decimal point/zero location 0: x00 1: x0 2: x 3: x.x 4: x.xx 5: x.xxx 6: x.xxxx 7: x.xxxxx
3-4	0: N/A 1: Count by 1 2: Count by 2 3: Count by 5
5	Always 1
6	Always 0
7	Parity bit

**Status B Bit Descriptions**

Bit	Description
0	0: Gross 1: Net
1	0: Positive 1: Negative
2	0: In range 1: Overload/underload
3	0: Stable 1: Motion
4	0: Pounds (lb) 1: Kilograms (kg)
5	Always 1
6	0: Normal 1: Power Up
7	Parity bit

**Status C Bit Descriptions**

Bit	Description
0	Always 0
1	Always 0
2	Always 0

3	0: Normal 1: Print key pressed
4	Always 0
5	Always 1
6	0: Normal 1: Keyboard Tare
7	Parity bit

### 6.5.2. CARD: Cardinal 738 Format

Format:

**<CR><P><WWWWW>Period (.)<m><SP><u><SP><g><SP><SP><ETX>**

Where:

Element	Description	Values
CR	Carriage return character	
P	Weight polarity	+: Positive weight -: Negative weight
W	Displayed weight (leading zeroes are not suppressed). Decimal point always sent, even if trailing.	
m	Motion status	m: Motion o: Overload
SP	Space	
U	Weight units	L: Pounds K: Kilograms
SP	Space	
g	Gross or net status	g: Gross n: Net
SP	Space	
SP	Space	
ETX	End of transmission character	

### 6.5.3. WTX: Weigh-Tronix WI-120 Format

Format:

**<SP><G><WWWWW><SP><U><U><CR><LF>**

Where:

Element	Description	Values
SP	Space	
G	Gross or net status	G: Gross N: Net
P	Weight polarity	+: Positive weight -: Negative weight

W	Displayed weight (leading zeroes are not suppressed)	
SP	Space	
U	Weight units	lb: Pounds kg: Kilograms
CR	Carriage return character	
LF	Line feed character	

### 6.5.4. Condec: Condec Format

Format:

**<STX><SP><SP><WWWWW><U><G><M><CR>**

Where:

Element	Description	Values
STX	Start of transmission character	
P	Weight polarity	“(space): Positive weight -: Negative weight
W	Displayed weight (leading zeroes are suppressed)	-
U	Weight units	L: Pounds K: Kilograms
G	Gross or net weight	G: Gross N: Net
M	Motion status	M: Motion I: Error O: Overload or underload “(space): Stable
CR	Carriage return character	

### 6.5.5. CUSTOM: Continuous Output Custom Format

Custom formats are specified in `PORTS:COMx:BUILD`. The format is entered as an ASCII string with \escaped format tokens in the viewer:

- ASCII codes: See the ASCII table in [Appendix III: ASCII Table](#)
- Format tokens: See the codes in [Custom Format Tokens](#)

Up to 30 characters can be entered. If ASCII 0 needs to be sent, enter the token 80.

For example, the following format string would transmit the weight reading in a fixed 7 character field with leading zero suppression and no decimal point:

**\97\9F\D7**

### 6.5.6. Remote Input Characters

Character	Action	Notes
Z	Zero	Active in the Polled or Button Modes
A	Tare (Auto Tare)	Active in the Polled or Button Modes
U	Change Units	Active in the Polled or Button Modes
g	Toggle Gross / Net	Active in the Polled or Button Modes
p or P	Print	Active in the Polled or Button Modes. The output will be the same as if the instrument print key is pressed. See Section 8 for printer formats.
CR	Carriage Return	Active in the Polled Mode Output. When CR is received, poll output format is sent. The poll output format is described in Section 7.3.9.
<poll char>	Configurable poll character	Active in the Polled Mode Output. When the character set in PORTS:COMx:POLL is received, poll output format is sent.

### 6.5.7. Poll Output Format

The poll output format is sent when the poll character is received on a serial port set for POLL mode.

Format:

**<SP><P><WWWWW><SP><U><SP><SP><S><SP><SP><CR><LF><EOT>**

Where:

Element	Description	Values
SP	Space	
P	Weight polarity	“(space): Positive weight -: Negative weight
W	Displayed weight (leading zeroes are suppressed)	
SP	Space	
U	Weight units	lb: Pounds kg: Kilograms
SP	Space	
SP	Space	
GR	Status	GR: Gross stable gr: Gross motion NT: Net stable nt: Net motion
SP	Space	
SP	Space	
CR	Carriage return character	
LF	Line feed character	
EOT	End of transmission character	

### 6.5.8. Remote Display Mode

The FB1200 can act as a remote display to other FB1200s and other select Fairbanks instruments.

Master Instrument	Cable	COM 1 OUTPUT	Master COM setting
FB1200	17216 (limit 50')	RD1200	COM 2: Config
FB2250/55	17216 (limit 50')	RD2255	POLL
FB2560	10' = 26041, 50' = 26042	RD2560	Continuous; Fairbanks Output
FB6001/11	10' = 26041, 50' = 26042	RD7000	Continuous; Fairbanks Output
FB6005/15	17216 (limit 50')	RD7000	Continuous; Fairbanks Output
FB7100	17216 (limit 50')	RD7000	Continuous; Fairbanks Output
FB400	17216 (limit 50')	RD400	rinCMD

#### FB1200 -to-FB1200

FB1200 Master – SERIAL 2	Cable 17216	FB1200 Remote – SERIAL 1
1 RX	Red	2 TX
2 TX	White	1 RX
3 GND	Green	3 GND

1. Connect the master and remote FB1200s according to the above table.
2. On the master FB1200, set **OUTPUT** to **CONFIG** in **PORTS > COM 2**.
3. On the remote FB1200, set **OUTPUT** to **RD1200** in **PORTS > COM 1**.
4. Ensure that the baud rate, data bits, stop bits, and parity are the same between FB1200s.

UNITS, ZERO, B/G NET, TARE, PRINT, and F1 keys can be used on the remote FB1200 to operate on the master.

#### FB2250/55 -to-FB1200

FB2250/55 Master	Cable 17216	FB1200 Remote – SERIAL 1
1 RX	Red	2 TX
2 TX	White	1 RX
4 GND	Green	3 GND

1. Connect the master FB2250/55 and remote FB1200s according to the above table.
2. On the FB2250/55, set the output type to **POLL**.
3. On the remote FB1200, set **OUTPUT** to **RD2255** in **PORTS > COM 1**.

4. Ensure that the baud rate, data bits, stop bits, and parity are the same between the FB2250/55 and FB1200.

UNITS, ZERO, B/G NET, TARE, and PRINT keys can be used on the remote FB1200 to operate on the master.

**FB2560 -to-FB1200**

FB2560 Master – DB9	Cable 26039/19635	FB1200 Remote – SERIAL 1
2 RX	Red	2 TX
3 TX	White	1 RX
5 GND	Green	3 GND

1. Connect the master FB2560 and remote FB1200s according to the above table.
2. On the FB2560, set the output type to **CONTINUOUS**.
3. Set load to be **FAIRBANKS**.
4. On the remote FB1200, set **OUTPUT** to **RD2560** in **PORTS > COM 1**.
5. Ensure that the baud rate, data bits, stop bits, and parity are the same between the FB2560 and FB1200.

UNITS, ZERO, TARE, and PRINT keys can be used on the remote FB1200 to operate on the master. B/G Net can be used to change the displayed weight on the FB1200.

**FB6001/11 -to-FB1200**

FB6001/11 Master – DB9	Cable 26039/19635	FB1200 Remote – SERIAL 1
2 RX	Red	2 TX
3 TX	White	1 RX
5 GND	Green	3 GND

1. Connect the master FB6001/11 and remote FB1200s according to the above table.
2. On the FB6001/11, set the **OUTPUT** to **CONTINUOUS**.
3. Set load to be **FAIRBANKS**.
4. On the remote FB1200, set **OUTPUT** to **RD7000** in **PORTS > COM 1**.
5. Ensure that the baud rate, data bits, stop bits, and parity are the same between the FB6001/11 and FB1200.

UNITS, ZERO, B/G NET, TARE, and PRINT keys can be used on the remote FB1200 to operate on the master. B/G Net can be used to change the displayed weight on the FB1200.

**FB6005/15 -to-FB1200**

FB6005/15 Master	Cable 17216	FB1200 Remote – SERIAL 1
1 RX	Red	2 TX
2 TX	White	1 RX
5 GND	Green	3 GND

1. Connect the master FB6005/15 and remote FB1200s according to the above table.
2. On the FB6005/15, set the **OUTPUT** to **CONTINUOUS**.
3. Set load to be **FAIRBANKS**.
4. On the remote FB1200, set **OUTPUT** to RD7000 in **PORTS > COM 1**.
5. Ensure that the baud rate, data bits, stop bits, and parity are the same between the FB6005/15 and FB1200.

UNITS, ZERO, TARE, and PRINT keys can be used on the remote FB1200 to operate on the master. B/G Net can be used to change the displayed weight on the FB1200.

**FB7100 -to-FB1200**

FB7100 Master	Cable 17216	FB1200 Remote – SERIAL 1
1 TX	White	1 RX
2 RX	Red	2 TX
3 GND	Green	3 GND

1. Connect the master FB7100 and remote FB1200s according to the above table.
2. On the FB7100, set the **OUTPUT** to **CONTINUOUS**.
3. Set load to be **FAIRBANKS**.
4. On the remote FB1200, set **OUTPUT** to **RD7000** in **PORTS > COM 1**.
5. Ensure that the baud rate, data bits, stop bits, and parity are the same between the FB7100 and FB1200.

UNITS, ZERO, TARE, and PRINT keys can be used on the remote FB1200 to operate on the master. B/G Net can be used to change the displayed weight on the FB1200.

**FB400 -to-FB1200**

<b>FB400 Master</b>	<b>Cable 17216</b>	<b>FB1200 Remote – SERIAL 1</b>
1 GND	Green	3 GND
3 RX	Red	2 TX
4 TX	White	1 RX

1. Connect the master FB400 and remote FB1200s according to the above table.
2. On the FB400, set the **OUTPUT** to **rinCMD**.
3. Set load to be **FAIRBANKS**.
4. On the remote FB1200, set **OUTPUT** to **RD400** in **PORTS > COM 1**.
5. Ensure that the baud rate, data bits, stop bits, and parity are the same between the FB7100 and FB1200.

UNITS, ZERO, TARE, B/G Net, and PRINT keys can be used on the remote FB1200 to operate on the master.

---

# SECTION 7: CONFIGURABLE FUNCTIONS

---

## 7.1. Introduction

The F key on the front of the FB1200 can be set to a variety of functions depending on the application. There are also 2 external key inputs.

## 7.2. Functions

Function	F key	Remote	Description
OFF			No function
HOLD	✓	✓	Hold/unhold the current weight. The held annunciator will be lit while the weight is held. This is available in industrial mode only.
P.HOLD	✓	✓	Show/hide the peak weight reading. The held annunciator will be lit while the weight is held. A long press will clear the current peak weight. This is available in industrial mode only.
LIVE.W	✓	✓	Acquire and show livestock weight. The held annunciator will be lit while the weight is held. A long press will cancel livestock operation and show the current weight on the scale.
TOTAL	✓	✓	Switch into totalizing mode (see Section 9.3). A long press will clear the totals.

## 7.3. Totaling

Totaling is available when `APP:F.KEY=TOTAL`. Pressing the total key will enter and exit totalizing mode. The gross/net key can be used to cycle between the gross total, net total and pieces total. When a total is displayed, the TOT annunciator will be lit. Pressing the units key whilst in totaling mode will add the current weight to the totals, show the new total, then exit totaling mode.

When `CONFIG:TRADE=NTEP` only net values will be added to the piece count total.

When `CONFIG:TRADE=OFF`

or `CONFIG:TRADE=OIML` gross and net piece count values will be added together.

A long press of the total key will clear the totals. The indicator will prompt with "CLEAR". Press the zero key to clear the totals, or the units key to cancel.

---

# APPENDIX I: DATA STRING OUTPUTS

---

## 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.
- 

## 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>

---

### Character String Description:

**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><WWWWW>Period (<.>)<m><SP><u><SP><g><SP><SP><ETX>

### Character String Description:

**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><WWWWW><SP><U><U><CR><LF>

---

#### Character String Description:

**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.
- 

### CONDEC CONTINUOUS DATA FORMAT

<STX><SP><SP><WWWWW><U><G><M><CR>

---

#### Character String Description:

**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.

**U** – Units (L = pounds, K = kilograms)

**G** – Gross; **N** = Net

**M** – Motion

**CR** – Carriage return.

- Leading zeros are suppressed.
-

---

# APPENDIX II: REMOTE MODE COMPATIBLE OUTPUTS

---

## A. Ranger A

Format:

**STX P WWWWWW A ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
P	Weight polarity	-: Negative weight
W	Displayed weight (leading zeroes are suppressed)	
A	Status A	G: Gross N: Net U: Underload O: Overload M: Motion E: Error
ETX	End of transmission character	

## B. Ranger B

Format:

**STX A P WWWWWW UUU ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
A	Status A	G: Gross N: Net U: Underload O: Overload M: Motion E: Error
P	Weight polarity	-: Negative weight
W	Displayed weight (leading zeroes are suppressed)	
U	Weight units	Three characters unit string right justified
ETX	End of transmission character	



### C. Ranger C

Format:

**STX P WWWWWW A M Z R UUU ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
P	Weight polarity	-: Negative weight
W	Displayed weight (leading zeroes are suppressed)	
A	Status A	G: Gross N: Net U: Underload O: Overload E: Error
M	Motion status	M: Motion
Z	Zero band status	Z: Zero band
R	Range status	1: Range 1 2: Range 2 3: Range 3 -: Single range
U	Weight units	Three characters unit string right justified
ETX	End of transmission character	

### D. Ranger D

Format:

**STX P WWWWWW ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
P	Weight polarity	-: Negative weight
W	Displayed weight (leading zeroes are suppressed)	
ETX	End of transmission character	

### ***E. PC Mode E***

Format:

**STX TTTTTTTT SP AA ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
T	Text string	If the first character is L then the display timeout is disabled
SP	Space	
A	Address	Must be 00
ETX	End of transmission character	

### ***F. Register Write***

Format:

**AA CC RRRR : DDDDDDDD CR LF**

Where:

Element	Description	Values
A	Address	Must be 00
C	Command	Must be 12
W	Register	Must be 000E
:	Colon	
D	Data	8 character text string
CR	Carriage return character	
LF	Line feed character	

### ***G. Avery String #7***

Format:

**STX WWWWWW SP UUUUU SP G SP CCCCCC SP I CR LF ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
W	Displayed weight (leading zeroes are suppressed)	Includes polarity -: Negative
SP	Space	
U	Units	
SP	Space	



G	Gross status	G: Gross N: Net
SP	Space	
C	Consecutive numbers	This is not used
SP	Space	
I	Ignore	This is not used
CR	Carriage return character	
LF	Line feed character	
ETX	End of transmission character	

### **H. Gedge C2**

Format:

**STX WWWWWWWW G M O SP SP ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
W	Displayed weight (leading zeroes are not suppressed)	Includes polarity -: Negative weight
G	Gross status	G: Gross N: Net
M	Motion status	M: Motion S: Stable
O	Overload status	O: Overload U: Underload I: In scale
SP	Space	
SP	Space	
ETX	End of transmission character	

### **I. Gedge C3**

Format:

**STX GGGGGGGG TTTTTTTT NNNNNNNN A M O I SP SP ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
G	Gross weight (leading zeroes are not suppressed)	Includes polarity -: Negative weight
T	Tare weight (leading zeroes are not suppressed)	Not used



N	Net weight (leading zeroes are not suppressed)	Includes polarity -: Negative weight
A	Gross status	G: Gross N: Net
M	Motion status	M: Motion S: Stable
O	Overload status	O: Overload U: Underload I: In scale
I	Ignore	Not used
SP	Space	
SP	Space	
ETX	End of transmission character	

**J. AD Standard**

Format:

**AA , BB , P WWWWWW UU CR LF**

Where:

Element	Description	Values
A	Status A	ST: Stable UN: Unstable OL: Over/underloaded
,	Comma	
B	Status B	GS: Gross NT: Net TR: Tare PT: Preset tare
,	Comma	
P	Weight polarity	+: positive -: Negative
W	Displayed weight (leading zeroes are not suppressed)	Decimal point always sent,even if trailing
U	Units	right justified
CR	Carriage return character	
LF	Line feed character	

**K. AD4531**

Format:

**AA , P WWWWW CR LF**

Where:



Element	Description	Values
A	Status A	WT: Weight in range OL: Over/underloaded
,	Comma	
P	Weight polarity	+: positive -: Negative
W	Displayed weight (leading zeroes are not suppressed)	
CR	Carriage return character	
LF	Line feed character	

## **L. GSE**

Format:

**WWWWWWW SP UUUUU SP MMMM A Z CR LF**

Where:

Element	Description	Values
W	Displayed weight (leading zeroes are suppressed)	Includes polarity -: Negative weight
SP	Space	
U	Units	left justified
SP	Space	
M	Mode	Gross: Gross weight Net : Net weight Tare : Tare weight
SP	Space	
A	Status A	M: Motion S: Stable O: Over/underload E: Error
Z	Centre of zero	Z: Centre of zero This status is optional, the string will be supported whether it is sent or not.
CR	Carriage return character	
LF	Line feed character	

## **M. Schenk**

Format:

**STX III P NNNN TTTTTTTT SP A B LF CR**



Where:

Element	Description	Values
STX	Start of transmission character	
I	Ignore	Not used
P	Weight polarity	+: positive -: Negative
N	Net weight (leading zeroes are suppressed)	5 characters without decimal point or 6 characters with decimal point
T	Tare weight	Not used
SP	Space	
A	Status A	ASCII character 0-F see status A bit descriptions below
B	Status B	0: Units = kg 1: Units = g 3: Units = t 5: Weight longer than string
LF	Line feed character	
CR	Carriage return character	

**Status A Bit Descriptions**

Bits	Description
0	0: Tare 1: Preset tare
1	0: Motion 1: Stable
2	0: Not COZ 1: COZ
3	0: Gross 1: Net

**N. Auto control 1**

Format:

**STX A WWW ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
A	Address	Always 1
W	Displayed weight (leading zeroes are suppressed)	Includes polarity -: Negative weight
ETX	End of transmission character	

## O. Auto control 2

Format:

**STX A TTTTTTTT ENQ**

where:

Element	Description	Values
STX	Start of transmission character	
A	Address	Always 2
T	Text	Can include polarity -: Negative weight
ENQ	Enquiry character	

## P. Sartorius

Format:

**IIIIII P SP WWWWWW SP UUU CR LF**

Where:

Element	Description	Values
I	Ignore	Not used
P	Weight polarity	+: positive -: Negative
SP	Space	
W	Displayed weight (leading zeroes are suppressed)	Includes polarity -: Negative weight
SP	Space	
U	Units	left justified
CR	Carriage return character	
LF	Line feed character	

## Q. Soehnle

Format:

**A WWWWW ESC I U CR LF**

Where:

Element	Description	Values
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A	Status A	N: Net M: Net + COZ O: COZ
W	Displayed weight (leading zeroes are suppressed)	5 characters without decimal point or 6 characters with decimal point
ESC	Escape character	
I	Ignore	Not used
U	Units	0: Motion 1: g 2: kg
CR	Carriage return character	
LF	Line feed character	

**R. Flintab**

Format:

**A B P WWWWW CR LF**

Where:

Element	Description	Values
A	Status A	B: Gross N: Net
B	Status B	#: Motion
P	Weight polarity	-: Negative
W	Displayed weight (leading zeroes are suppressed)	5 characters without decimal point or 6 characters with decimal point
ESC	Escape character	
I	Ignore	Not used
U	Units	0: Motion 1: g 2: kg
CR	Carriage return character	
LF	Line feed character	

When overloaded or underloaded the following format is sent instead:

**O L CR LF**

Where:

Element	Description	Values
O	ASCII O character	
L	ASCII L character	



CR	Carriage return character	
LF	Line feed character	

### **S. Philips**

Format:

**STX I A I SP SP WWWW ETX**

Where:

Element	Description	Values
STX	Start of transmission character	
I	Ignore	Not used
A	Status A	0: Motion 1: COZ 2: Stable
SP	Space	
SP	Space	
W	Displayed weight (leading zeroes are suppressed)	
ETX	End of transmission character	

### **T. Condec**

See [Section 7.5.4.](#)

### **U. Rice Lake SCT**

Format:

**AA , MM , WWWWWWW , UU CR LF**

Where:

Element	Description	Values
A	Status A	US: Motion ST: Stable OL: Overload UL: Underload
,	Comma	
M	Mode	GS: Gross NT: Net
,	Comma	
W	Displayed weight (leading zeroes are suppressed)	
,	Comma	
U	Units	Right justified



CR	Carriage return character	
LF	Line feed character	

## V. Systec

Format:

AA WWWWWWWWWW SP UU CR LF

Where:

Element	Description	Values
A	Status A	SD: Motion S : Stable
W	Displayed weight (leading zeroes are suppressed)	
SP	Space	
U	Units	Left justified
CR	Carriage return character	
LF	Line feed character	

## W. Fairbanks

[See Section 7.5.1.](#)

# Appendix III: REMOTE COMMANDS

Various commands can be transmitted to the FB1200 via the RS232 serial connections that will simulate key presses or invoke operations from a remote location.

In the tables below:

- **<XX>** denotes the address of the indicator
- **<CR>** denotes carriage return (0x0D)
- **0xNN** denotes a hexadecimal value

## A. Key Presses

Command	Key Press
U, %u	Units
Z, Z<CR>, KZERO<CR>, MZ<CR>, m<CR>, KZ<XX><CR>, Ka<XX><CR>, @<XX>CZER<CR>, @<XX>MZ<CR>, %z, 0xFA	Zero
A, T<CR>, KTARE<CR>, MT<CR>, t<CR>, KT<XX><CR>, Kb<XX><CR>, @<XX>CTAR<CR>, @<XX>MT<CR>, %t, 0xF4	Tare
g, KGROSSNET<CR>, KG<XX><CR>, Kc<XX><CR>, %s, 0xF3	Gross/ Net
P, p, KPRINT<CR>, KP<XX><CR>, Kd<XX><CR>, %p, 0xF0	Print

## B. Operations

Command	Operation
r, G<CR>, C<CR>, KGROSS<CR>, MG<CR>, @<XX>CGRS<CR>, @<XX>MG<CR>	Gross
n<CR>, N<CR>, KNET<CR>, MN<CR>, @<XX>CNET, @<XX>MN<CR>	Net
W<CR>, S<CR>, H<CR>, R<CR>, Q<CR>, RW<CR>, Kp<XX><CR>, @<XX>RDSP<CR>, @<XX>RW<CR>, 0x05, 0x95, 0x96, 0x0D	Single



### ***C. Examples***

- To zero the scale of indicator at address 1, send: KZ01<CR>
  
- To print, send: KP01<CR>



## **FB1200 Series Instrumentation**

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### **Operator Manual 51513**

Fairbanks Scales Inc.

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