

# ZM220 Signal Processor



## Service Manual

AWT35-100261  
Issue AA

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Current Issue	Date Created	Details of Changes
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# 1 General Information and Warnings

## 1.1 About this Manual

This manual is divided into sections by the section number and the large text at the top of a page. Subsections are labelled using the 1.1 and 1.1.1 convention. The page numbers appear at the bottom of the pages in the “Page x of y” format.

## 1.2 Special Messages

Special messages used in this manual are defined below. The heading words have specific meanings to alert users to additional information or the relative level of hazard.



***ELECTRICAL WARNING!***

***THIS IS AN ELECTRICAL WARNING SYMBOL.***

***ELECTRICAL WARNINGS MEAN THAT FAILURE TO FOLLOW SPECIFIC PRACTICES OR PROCEDURES MAY RESULT IN ELECTROCUTION, ARC BURNS, EXPLOSIONS OR OTHER HAZARDS THAT MAY CAUSE INJURY OR DEATH.***



***WARNING!***

***This is a Warning symbol.***

***Warnings mean that failure to follow specific practices and procedures may have major consequences such as injury or death.***



***CAUTION!***

***This is a Caution symbol.***

***Cautions give information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.***



***Note: This is a Note symbol. Notes give additional information about the product.***

## 1.3 Installation



***THE ZM220 DOES NOT CONTAIN USER-REPAIRABLE PARTS. REQUEST REPAIRS FROM QUALIFIED PERSONNEL.***



***WARNING!***

***Signal processors with CLASS I construction must be connected to the electrical outlet with a protective ground connection.***



***WARNING!***

***Batteries (battery pack or installed batteries) should not be exposed to excessive heat, such as sunlight, fire, or similar sources.***

The ZM220 must be powered by an external power source of 12VDC at 1.2 Amps to 28VDC at 400mA (14.4 Watts). These are the power requirements for a fully loaded unit (8 x 350 Ω load cells), 500mA at the terminal block of the 5V COM port, and a 500mA load at the USB Host port.

To turn on the ZM220 Signal Processor, wire the DC power cable to the ZM220 DC power connector and the other end to a 12VDC to 28VDC electrical outlet. The signal processor will turn on automatically.

### 1.3.1 Safe Handling of Equipment with Batteries

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**CAUTION:** *Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

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### 1.4 Routine Maintenance

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This equipment must be routinely checked for proper operation and calibration. Application and usage will determine the frequency of calibration required for safe operation.

Always turn off the signal processor and isolate it from the power supply before starting any routine maintenance to avoid the possibility of electric shock.

### 1.5 Equipment Operation

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The operation of this equipment is subject to the following two conditions:

1. This equipment or device may not cause harmful interference.
2. This equipment or device must accept any interference. Including the one that may cause unwanted operation.

La operación de este equipo está sujeta a las siguientes dos condiciones:

1. Es posible que este equipo o dispositivo no cause interferencia perjudicial.
2. Este equipo o dispositivo debe aceptar cualquier interferencia. Incluyendo la que pueda causar su operación no deseada.

### 1.6 Training

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Users must not attempt to operate or complete any procedure on this signal processor unless they have received the appropriate training or read the instructions.

### 1.7 FCC and EMC Declarations of Compliance

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#### United States

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

#### European Countries

**WARNING:** This is a Class A product. In a domestic environment, this product may cause radio interference in which the user may be required to take adequate measures.

## 2 Introduction

The ZM220 is a fully programmable signal processor. It runs a General Weighing application out of the box.

The ZM220 is a robust yet easy-to-use signal processor ideal for mounting inside an electrical control box, either using the optional Din Rail mount or fixed in place with the four fixing holes on the signal processor.

The ZM220 offers all the weighing accuracy and performance of the ZM223 indicator without the need of a display or keypad. The ZM220 can be connected directly to a PC, using the ZM220 Web Browser page or viewed remotely using the Avery Weigh-Tronix Remote Assist Mobile App.

The signal processor has one optional USB port, two RS232 serial COM ports, an Ethernet port, and Bluetooth connectivity. Using these options, the ZM220 can connect to USB flash drives, printers, remote displays, computers, PLCs, mobile devices, and other peripheral devices via USB, Ethernet, serial, or Bluetooth connections.

Full setup and configuration (or program customization) requires Avery Weigh-Tronix licensed Ztools along with Zedit prior to installation by a qualified technician.

## 2.1 Installation

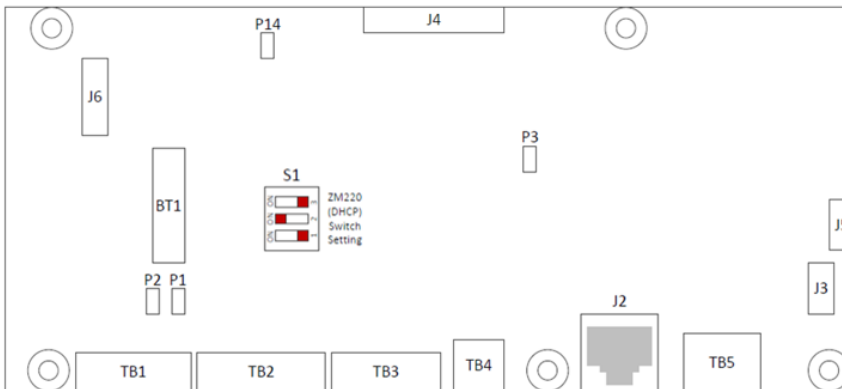
Below are detailed instructions on how to install the ZM220 Signal Processor, broken down into two sections: Hardware Installation and Software Installation.

### 2.1.1 Hardware Installation

What a technician needs to install the ZM220 inside a cabinet...

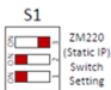
- ZM220
- Mounting hardware (self tapping screws, bolts, or Zipties)
- Optional din rail mounting kit (AWT77-504357)
- Ztools for scale configuration setup

### System Block Diagram and Wiring Instructions



RS232 COM1 & 2	
TB5	Description
Pin 1	5Vout
Pin 2	D-
Pin 3	D+
Pin 4	GND
Pin 5	Shield

Power Input	
TB4	Description
Pin 1	12-24 VDC
Pin 2	GND



ZM220 Standard	
TB1	Description
Pin 1	-EXC
Pin 2	+EXC
Pin 3	-SEN
Pin 4	+SEN
Pin 5	-SIG
Pin 6	+SIG
Pin 7	Shield

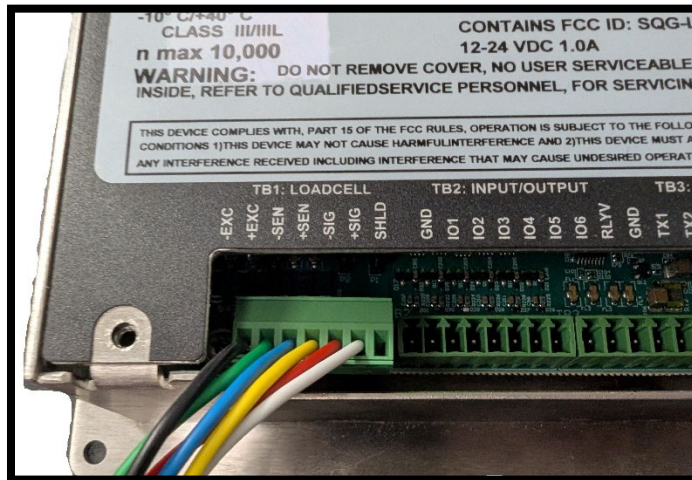
Input / Output	
TB2	Description
Pin 1	GND
Pin 2	I/O1
Pin 3	I/O2
Pin 4	I/O3
Pin 5	I/O4
Pin 6	I/O5
Pin 7	I/O6
Pin 8	Relay Voltage

RS232 COM1 & 2	
TB3	Description
Pin 1	GND
Pin 2	TX1
Pin 3	TX2
Pin 4	RX1
Pin 5	RX2
Pin 6	5VDC



*Note: All setup must be done through Ztools prior to installation. The default IP address for a ZM220 is (192.168.1.15) if this has been changed and Zcom cannot identify this scale, you may need to set the S1 trip switches to Static IP address position. This allows the ZM220 to use the Static IP 192.168.1.15. Once connected, change the IP address to the new required IP address using Ztools before resetting the trip switches back to DHCP settings.*

1. Connect the Scale/Loadcell to the Signal Processor through the TB1 terminal block. Use the System Block Diagram above to wire the terminal block correctly.



2. Connect the Signal Processor to a power source. Once connected to power, Multiple green LEDs built into the signal processor will turn on.



3. The basic wiring process is now complete.

## Mounting Diagram and Instructions

1. Technicians need either self tapping screws, bolts, or Zipties to secure the Signal Processor inside a cabinet.
2. To mount the ZM220 Signal Processor, use the four tapped mounting holes on the corners of the Signal Processor.



3. Be sure to not tangle or kink the power cable or the scale connection cable when situating the signal processor in the cabinet.
4. Line up the mounting holes to whatever surface the signal processor is being mounted to (mounting posts, tapped holes, grates, etc.)
5. Use the necessary hardware (self tapping screws, bolts, or Zipties) to secure the signal processor to the mounting surface.

## 2.1.2 Software Installation

The software required for the ZM220 Signal Processor depends on how the customer is going to use the product: Data Capture only, Remote Assist only, Customer PC.

What a technician needs to set up the ZM220 once it is inside a cabinet:

- Service Tech PC with Ztools License to install product
  - Connect Ztools to the ZM220 using an Ethernet cable connection. Ztools must be used to fully configure the ZM220 General App. If any Supervisor Level setup is required, it must all be set up using Zedit inside the Ztools simulator then saved prior to downloading the ZM220 General App into the ZM220 Signal Processor.
- Latest ZM220 Firmware (recommended)
- Latest ZM220 General app (or custom app/apps)
  - Or any ZM223 app converted to work in the ZM220 (open in Ztools setup in Zedit and save as a ZM220 app prior to downloading into the ZM220)
- ZM220 Phone or Tablet Calibration

### Downloading Latest ZM220 Firmware

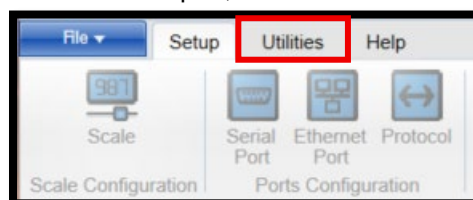
1. Connect the Signal Processor to a PC using a Ethernet Cable



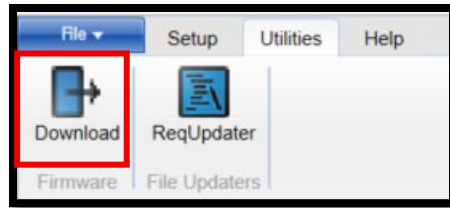
2. Open **Ztools**



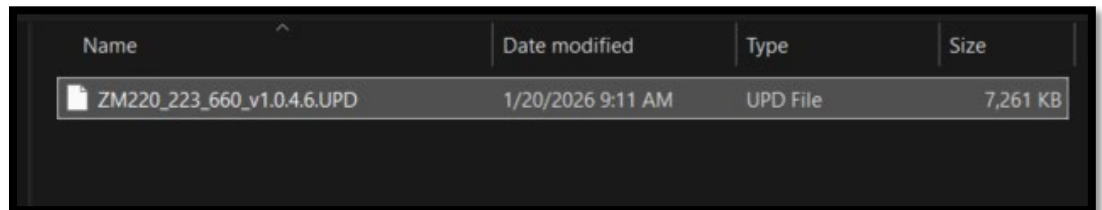
3. Once Ztool is open, click on **Utilities**.



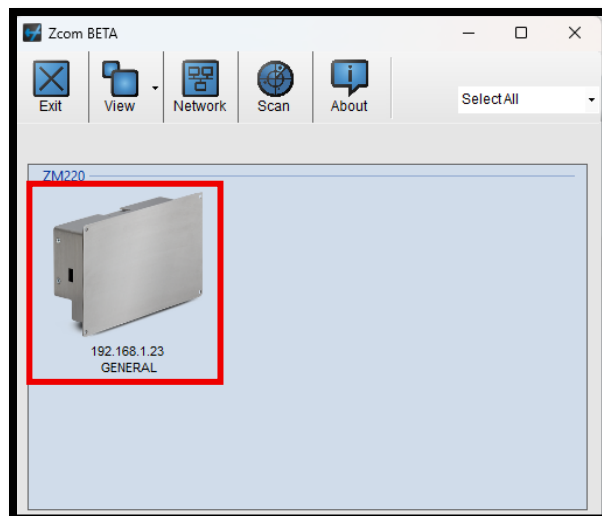
4. Now click on **Download**.



5. Double click on the updated Firmware File.



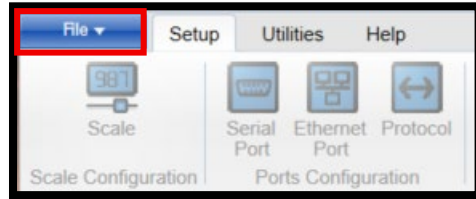
6. Zcom will automatically open.
7. Double click on the desired Signal Processor.



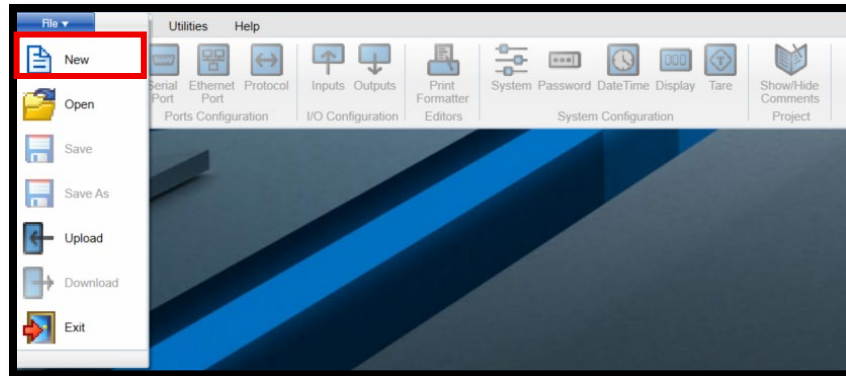
8. The Firmware file will now automatically download.
9. Once the download is complete, a Firmware Download Complete! popup message will display.

## Downloading Latest General App/Other Applications

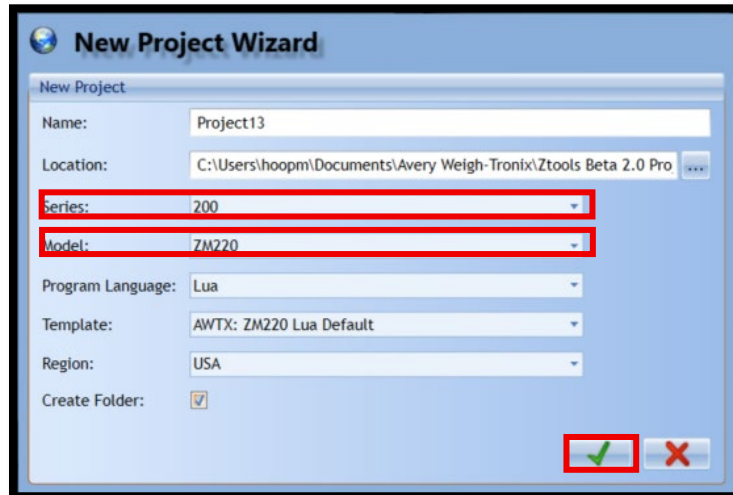
1. In Ztools, click on **File**.



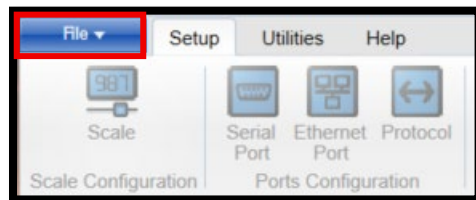
2. Click on **New**.



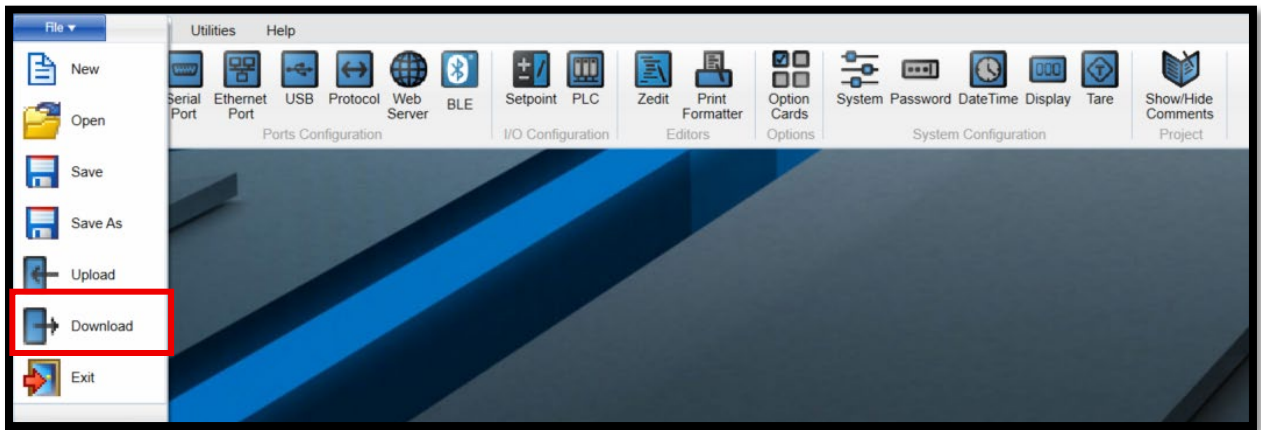
3. Set Series to 200, Model to ZM220, and then click on the green checkmark.



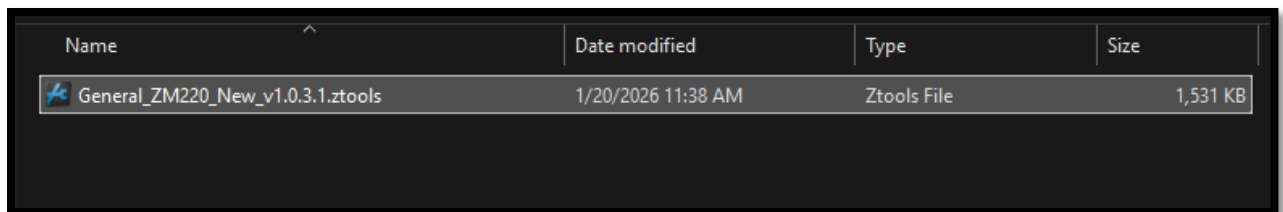
4. Click on **File**



5. Click on **Download**

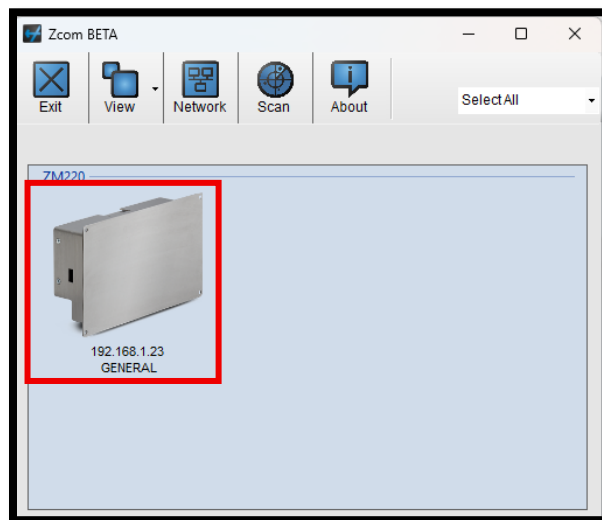


6. Double Click on the App File



7. Zcom will automatically open.

8. Double click on the desired Signal Processor.



*Note: Zcom will only show Indicators/Signal Processors that are the same model previously selected.*

9. The selected app will now download.

10. Once the download is complete, a Download Complete! popup message will display.

## ZM220 Phone or Tablet Calibration

Scale Technicians can calibrate their ZM220 Signal Processor and any connected scales through the Remote Assist Mobile App using weights or entered values. Follow the below steps to use Remote Assist to calibrate a ZM220.

1. Download the Remote Assist app to any smartphone or tablet from either the Google Play Store or the Apple App Store by using the QR Code below.

Google Play Store: [AWTX Remote Assist - Apps on Google Play](#)

Apple App Store: [AWTX Remote Assist on the App Store](#)

OR

Search "AWTX Remote Assist" in either app store and then tap on the Remote Assist App Icon.

Once downloaded, tap the R-Assist icon to launch the application.

4. Tap the R-Assist application icon

5. Tap "Add Bluetooth Device"

Choose Start scanning: select the Serial Number that corresponds to the desired ZM220 Indicator

OR

Use QR code on the back of the indicator be sure to scan the Bluetooth Connection sticker on the back right hand side of the indicator.

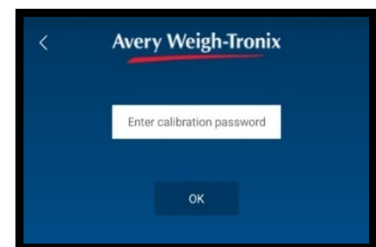


6. Name the device, while being sure to maintain an easy to remember naming convention.



*Note: We recommend that users maintain a reliable naming convention for all ZM220 units. For example, if there are four production lines (Named: Line A, Line B, Line C, and Line D) that are getting four ZM220 units, name each unit the same as the line it is installed on so when connecting to an indicator through Remote Assist you will see Line A, Line B, Line C, and Line D.*

7. Tap the OK button and the mobile device is connected to the ZM220 Indicator
8. From the home screen, tap the Menu Button in the upper left corner of the screen
9. Select the Calibration menu option.
10. Enter the Remote Assist Admin Password (3088) and tap the OK button.

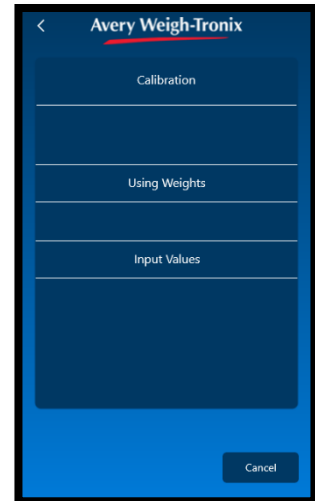




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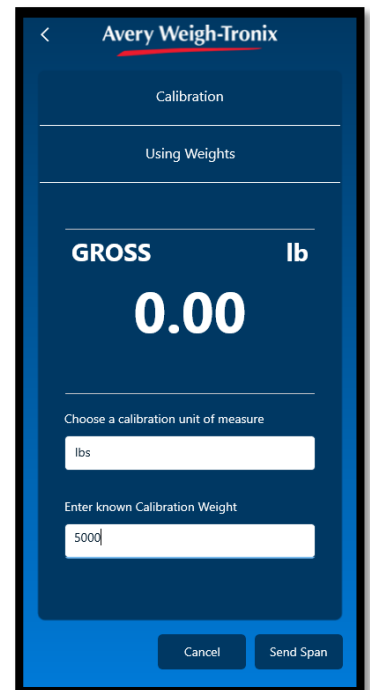
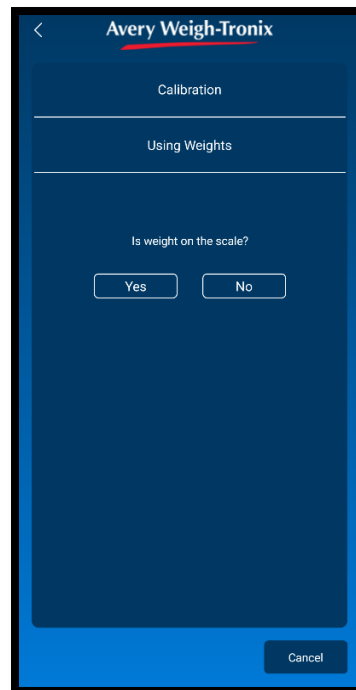
*Note: If the Indicator's Admin Password changes the Remote Assist Admin password will also change automatically.*

---



## Using Weights

- 11a. From the Calibration Menu, tap on the **Using Weights** button.
- 12a. With no weight on the scale, tap **No**.
- 13a. Tap the **ZERO** button to perform a Zero Span.
- 14a. Place the weight on the scale.
- 15a. When prompted with "Is weight on the scale", tap **Yes**.
- 16a. Choose the desired "Unit of Measure".
- 17a. Enter the "known Calibration Weight" in the provided field.
- 18a. Tap the **Send Span** button...  
"Calibration Successful" will briefly display before redirecting the user to the home screen.



---

*Note: If Calibration is successful the Calibration Counter will update by 1.*

---

## Input Values

- 11b. From the Calibration Menu, tap on the **Input Values** button...  
Using Weights and Input Values will now be displayed.
- 12b. Tap on **Zero Input** button...  
"Enter mV/V or counts value" and "Choose a calibration unit of measure" fields are now displayed.
- 13b. Enter the mV/V or counts value in the provided field.
- 14b. Choose the desired Unit of Measure.
- 15b. Tap the **Send Span** button  
"Calibration Successful" will briefly display before redirecting the user to the home screen.



*Note: If Calibration is successful the Calibration Counter will update by 1.*

OR

- 11c. Tap on **Span** button...  
"Enter mV/V or count value," "Choose a calibration unit of measure," "Enter weight value," and "Choose a unit of measure for weight" fields are now displayed.
- 12c. Enter the mV/V or count value in the provided field.
- 13c. Choose the desired Unit of Measure.
- 14c. Enter the weigh value.
- 15c. Choose a unite of measure for weight.
- 16c. Tap the Send Span button...  
"Calibration Successful" will briefly display before redirecting the user to the home screen.

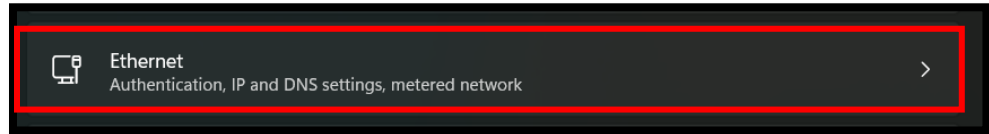


*Note: If Calibration is successful the Calibration Counter will update by 1.*

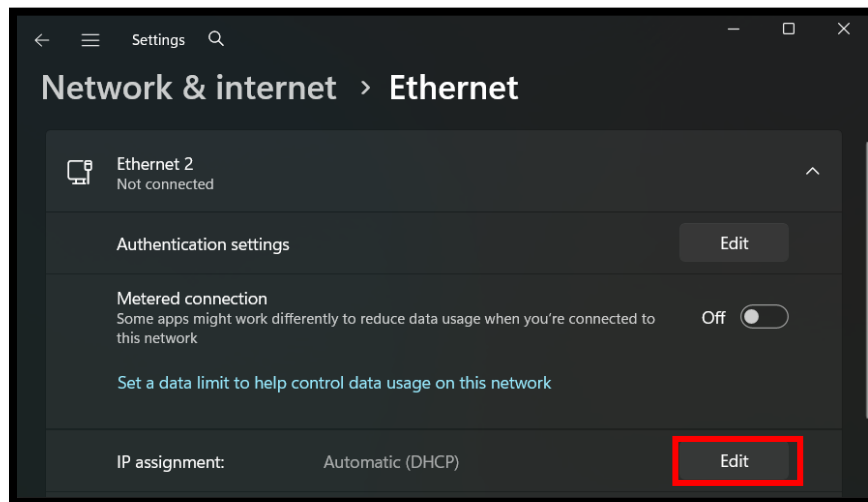
### 2.1.3 Installation Troubleshooting

When installing the ZM220 Signal Processor it may be difficult to see if the signal processor is connected to the network. Network issues will usually become known when the technician initially attempts to connect the signal processor to either web browser pages or the Remote Assist mobile app. Technicians can test this by using a computer with a static IP and Zcom.

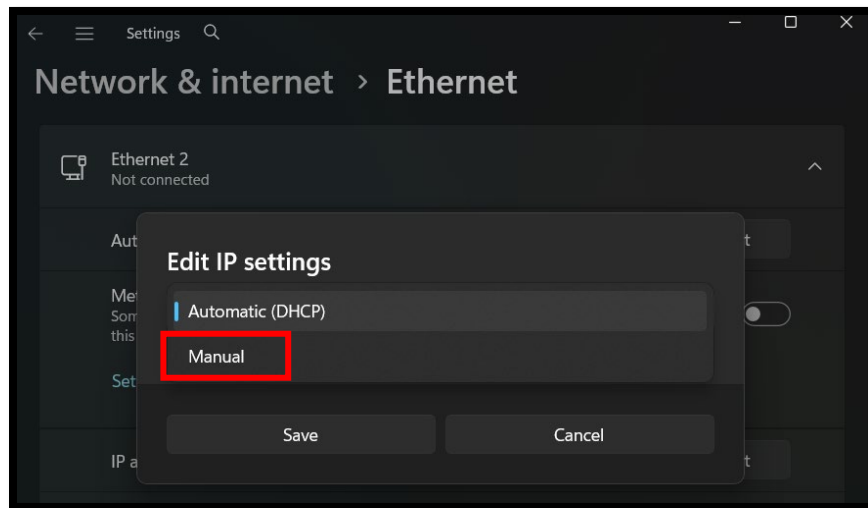
1. Go to your PC's Settings Menu
2. Click on **Ethernet**



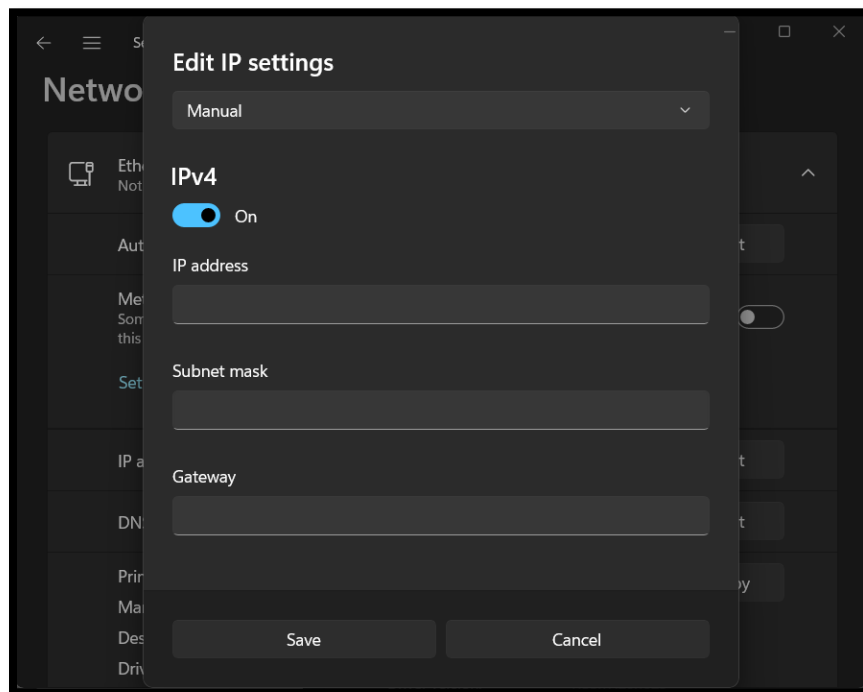
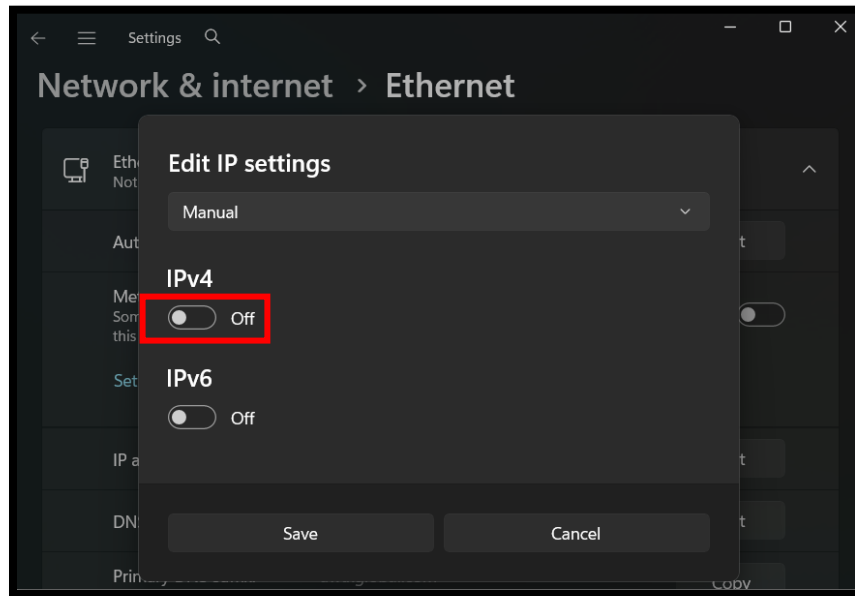
3. Click the **Edit** button next to IP assignment.



4. Click on the dropdown menu to switch from Automatic (DHCP) to Manual



5. Toggle the IPv4 from Off to On



6. Type in **192.168.1.100** to the IP address field.
7. Type in **255.255.255.0** into the Subnet mask field.

**Edit IP settings**

Manual

**IPv4**

On

IP address

192.168.1.100

Subnet mask

255.255.255.0

8. Click on **Save**

**Edit IP settings**

Manual

**IPv4**

On

IP address

192.168.1.100

Subnet mask

255.255.255.0

Gateway

Preferred DNS

DNS over HTTPS

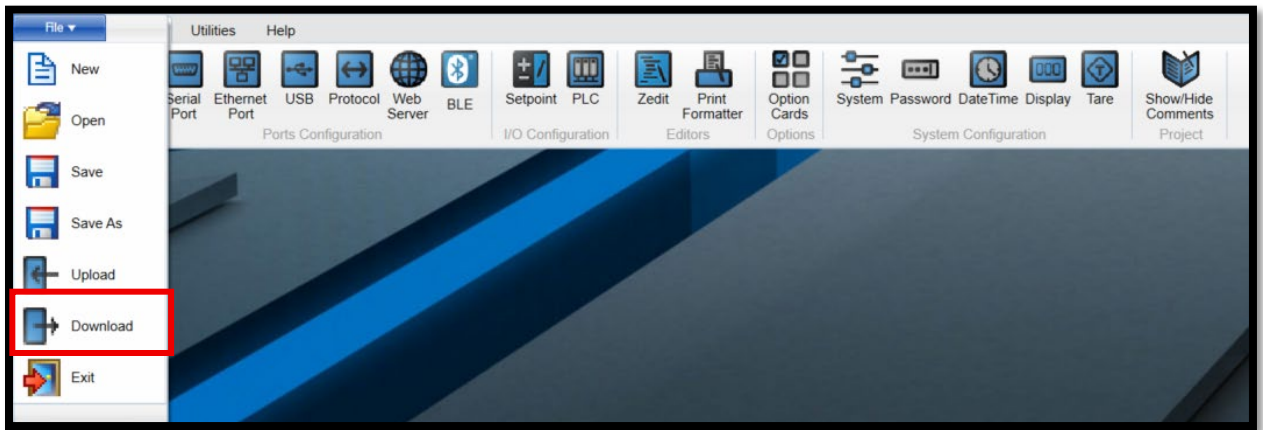
Off

Alternate DNS

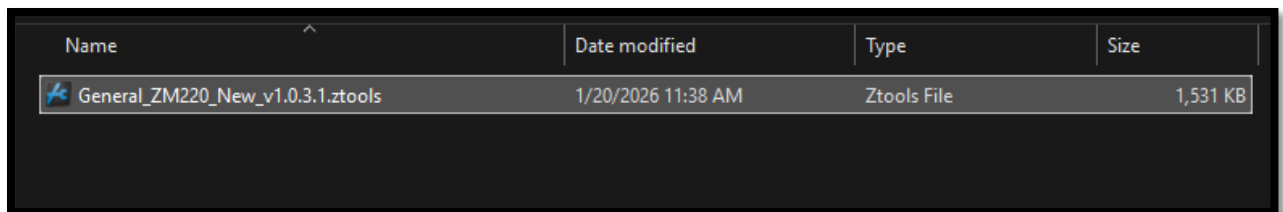
Save Cancel

9. Make the necessary edits in the General Application settings in Ztools, save the application to the PC.

10. Click on **Download**



11. Double Click the App File with the modified settings



12. Zcom will automatically open.

13. Select the Signal Processor that requires the update.  
Click Scan if the required signal processor is not accessible.

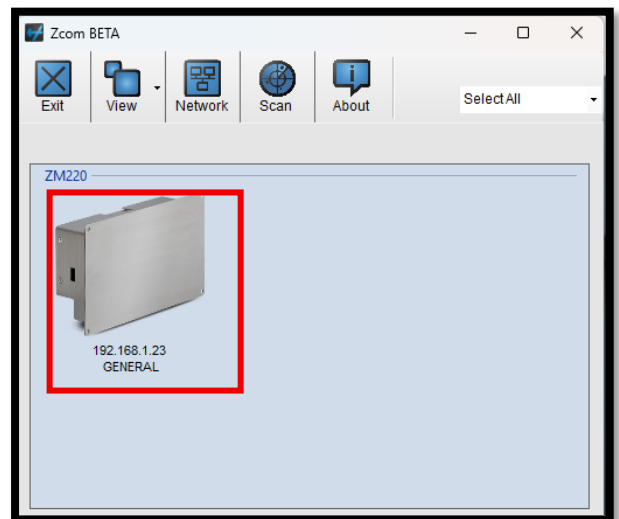


*Note: Zcom will only show Indicators/Signal Processors that are the same model previously selected.*

14. The selected app will now download

15. Once the download is complete, a Download Complete! popup message will display.

16. Be sure to switch IP settings back to Automatic (DHCP) when finished troubleshooting.



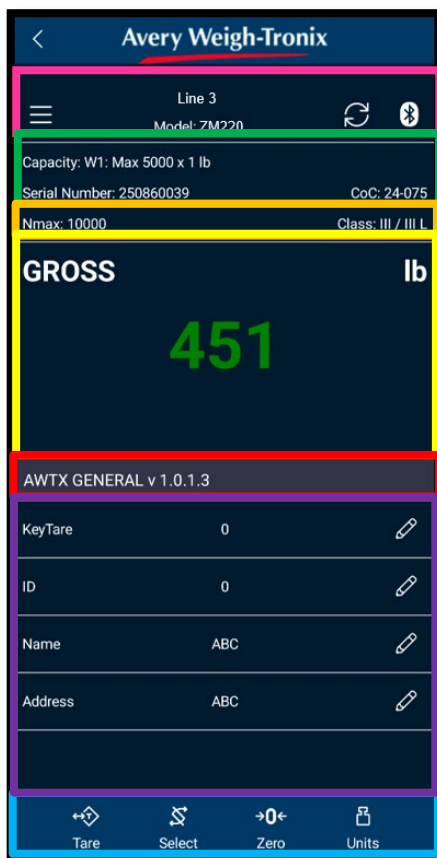
## 2.2 Remote Assist Mobile Application

There is a free Avery Weigh-Tronix Remote Assist mobile application that pairs with any ZM220 via Bluetooth. Remote Assist provides users with additional features to make the signal processor more flexible.

Using the Remote Assist app users can: remotely view live weights, remotely use primary Signal Processor keys, view and change a wide range of app defined weight data fields, change UDF printable text fields that can be used on a print ticket or label, retrieve stored data from the ZM220 flash drive memory, store weight data to the mobile device, and use operator prompts to aid in using the ZM220.

Subject to the app running on the ZM220, special fields can be viewed and used in the Remote Assist mobile app. However, it is recommended to keep these active fields to around 6 to reduce the risk of slowing down the Remote Assist mobile app.

### 2.2.1 Remote Assist Homepage Breakdown



Menu button, Scale data, Refresh button, and Bluetooth icon.

Device Settings, Name, Model, Connection Type – (Firmware Driven)

Scale Device Info: Capacity, Serial Number, Etc. – (Firmware Driven)

Active Value, Weight, and Units – (Firmware Driven)

User Prompt - (App Driven)

#### UDF (User Defined Fields) + Custom App Buttons – (App Driven)

- Driven using LUA Variables
- Define which values you want displayed and their order.
- Variable description, value, and read/write status is show.
- Define custom buttons and colors.

Device Keys/Remote Keys – (Firmware Driven)

For additional details regarding the Remote Assist mobile app, see [page 27](#)

## 2.3 ZM220 Web Browser Page

This web-based application allows operators the ability to run the signal processor remotely from any PC or tablet that is connected to the same network as the ZM220 through any search browser. Using the web browser app also provides the technician or user with additional features that cannot be done directly from the ZM220 signal processor.

Through the web browser app users can: remotely view live weights, use all Signal Processor keys, view and change a wide range of app defined weight data fields, change UDF printable text fields that can be used on a print ticket or label, retrieve stored data from the ZM220 flash drive memory and use operator prompts to aid in using the ZM220.

- To navigate between the available webpage screens (Scale, Super, and About), click on the corresponding screen button in the upper right-hand corner of the screen shown below.
- Within the web browser page users can view the active UDF fields and provide a simple method to quickly edit them. Please note that the UDF fields varies depending on the Signal Processor Application the ZM220 is currently running.
- To use any of the ZM220 Signal Processor's keys, click on the desired key on the simulated Signal Processor display shown below.
- To edit any of the ZM220 Information Fields click on the "Edit" button to the right of the field that needs to be edited.



*Note: IP address used in the web browser must match the inductors IP address. For example: 192.168.1.15*

The screenshot displays the web browser interface for the ZM220 signal processor. At the top, there are navigation buttons for 'Scale', 'Super', and 'About'. Below these, the 'Scale' screen is active, showing a simulated scale display with a weight of 9.408 lb Gross and a 'Not Legal For Trade' message. The scale keypad is visible with various function keys like TARE, SELECT, ZERO, PRINT, UNITS, F1, and ENTER. To the right of the scale display is a list of application information fields, each with an 'Edit' button next to it. The fields include ID, PartNum, Desc, Loc, Name, Address, Driver, Manager, Locat, Shift, ID Box, User No, Numeric, FCS No, FL No, and Float N. A red box highlights the 'App Info Fields' section.

Subject to the Site Location and the location's requirements for approval a **Not Legal For Trade** Message will display.

Usable Keys

App Info Fields

For additional details regarding the ZM220 web browser, see [page 32](#).

## 2.4 Powering up the ZM220

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### Always On (default)

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Once the ZM220 signal processor is connected to a DC power supply it will automatically power up and remain on until the power source is removed.

### Power Supply Required for the ZM220

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- **External 12VDC @ 1.2 Amps up to 28VDC @400mA (14.4 Watts).** These are the power requirements for a fully loaded unit (8 x 350. load cell, 500mA out the 5V COM port terminal block).
  
- **External 24VDC** battery pack connection. Recharging the battery pack must be done away from the signal processor to avoid damage.

## 2.5 Available Communication Ports

---

To allow the ZM220 to connect to a wide range of peripheral devices like printers, remote displays, remote bases, scanners, PLCs, PC, cloud servers, USB keyboards, phones, and tablets the signal processor comes standard with the following connection ports.

- 2 x RS232
- 1 x USB host (optional) loom required
- 1 x Bluetooth
- 1 x Ethernet port (with 10 independent connections)
  - Eth-net IP
  - ModbusTCP
  - FTP
  - HTTPS
  - MQTT

## 2.6 Base Switching Mode

---

One ZM220 signal processor can run two scale bases (one analog scale base and one digital BSQ scale base or two digital BSQ bases).

When a second scale base is configured to the ZM220 users can switch between base 1 and base 2 by using the base switching UDF field found in both the Web Browser Page and the Remote Assist mobile app.

## 2.7 UDF Fields

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The following text UDF fields that can be called up from the signal processor for use on print tickets or labels.

- ID
- Part Number
- Description
- Lot location
- Name
- Address
- 10 Free UDF text fields

These extra UDF fields are designed to allow the operator to easily add text to a known print label or ticket. These fields are not Linked to a PLU number and can be turned on or off from within the Supervisor Menu (1793) under the Mobile Field.

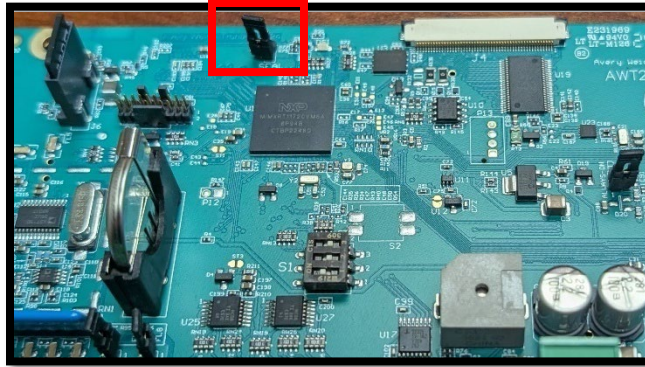
The UDF fields can only be entered or edited using the Remote Assist app or the Web Browser page.

Any of the text UDF fields can only be viewed or changed using the ZM mobile app or the web browser page.

## 2.8 Seal

**Seal:** This allows users/technicians to view the seal status of the physical seal jumper inside the signal processor. If the unit is sealed, no changes can be made to the configuration of the signal processor. For more information, see the note below.

The seal switch jumper, P14, is in the top left quadrant of the main PCB. If the jumper is installed, the signal processor is sealed.



## 3 ZM220 Signal Processor Application

The ZM220 signal processor comes with the standard Avery Weigh-Tronix General Weighing Application installed and ready for use out of the box and can run all the existing ZM223 apps with limited supervisor functionality. Ideal for more conventional applications like: Acclamation, Counting, Batching, Checkweighing, Grading, Peak Hold, Animal Autoloc, or Truck In/out. Additionally, the ZM220 is a fully programmable signal processor allowing for custom applications.

**ZM Mobile Connection:** All current ZM220 applications listed below can also be used in conjunction with the Remote Assist App (see [page 27](#)).

**ZM220 Web Browser Control:** The ZM220 Web Browser page can also be used if the signal processor is connected to the same network as the PC viewing the web browser (see [page 32](#)).

**SMA Commands:** The Z220 can be fully controlled using SMA commands from a connected PC (see [page 45](#)).

**ZPort:** The current version of ZPort can be used with the ZM220 signal processor.

### 3.1 General Weighing Application

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This section covers the ZM220's General Weighing application. All ZM220's come with the General Weighing application active.

The ZM220 signal processor does not have physical keys or a display. It relies on external devices like a PC or Bluetooth phone/tablets to view live weight or control set functions like Zero, Tare, Print, etc.



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**Note:** If the ZM220 is loaded with any ZM223 apps, refer to the ZM223 User Manual for app functionality.

---

The basic General app functions can be accessed using a web browser.

- 1 Enter the signal processor's IP address into any PC's web browser that is connected to the same network as the ZM220.
- 2 You can now view live weights and carry out key functions like Zero, Select, Tare, Print, Unit switching, and Base Switching.

**Zero Key:** If the weight on the scale is not at Zero press the Zero key. The weight will now display 0.000 and the Zero annunciator will illuminate.

**Select Key:** This key toggles between Gross, NET, and Tare weights.

**Tare Key:** This key tares off the weight of an empty container prior to filling. The display will show a 0.00 NET weight.

**Entering a Known Tare Weight:** Click on the Tare Weight UDF field and enter in the tare weight and press enter. The web browser display weight will now deduct the known weight and show a NET Weight.

**Clearing a Tare weight:** With no weight on the scale and an active Tare, the Tare key will remove the active tare and will change from NET Weigh to Gross Weight.

**Units Key:** This key changes the units of measure.

**Print Key:** This key prints or stores a weight transaction. If the weight is not stable when the print key is pressed the display may show **cant**. Depending on how the Print function is setup, weight may need to return to Zero before the next print transaction can take place. Please note that on most automated process, the print transaction functions are normally set to auto print.

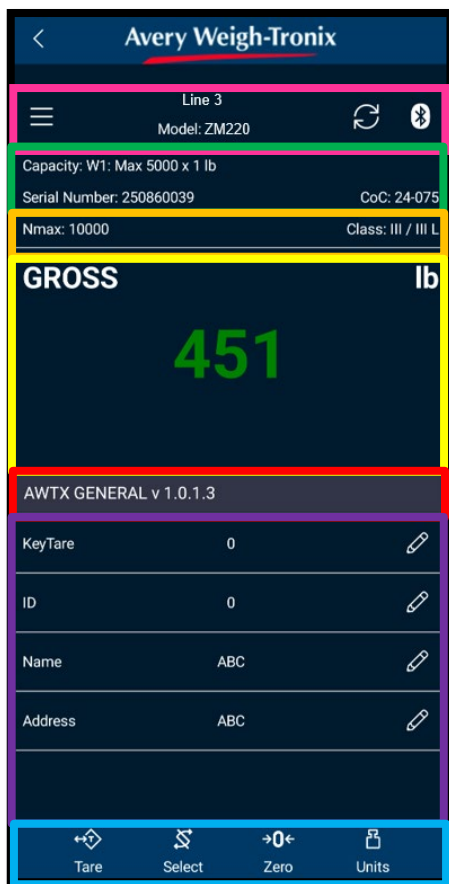
**Loss of Network Connection:** In the event the network connection is lost, the web browser screen will black and show **No Conn**. When the connection comes back on the weight display will resume and once again show live weight. If the connection does not reconnect, users can force a reconnect by pressing the SCALE tab at the top of the web browser page.

**Supervisor Password:** Use the 1793 passwords to access the Supervisor Menu on the web browser page.

## 4 Remote Assist Mobile App Walkthrough

This section covers the free Avery Weigh-Tronix Remote Assist mobile app that pairs with any ZM220 via Bluetooth. Remote Assist provides users with additional features to make the signal processor more flexible. Using the Remote Assist app users can: remotely view live weights, use some of ZM223 Indicator keys, view and change a wide range of app defined weight data fields, change UDF printable text fields that can be used on a print ticket or label, and use operator prompts to aid in using the ZM220. Subject to the app running on the ZM220, special fields can be viewed and used in the Remote Assist mobile app. However, it is recommended to keep these active fields to around 6 to reduce the risk of slowing down the Remote Assist mobile app. The Remote Assist mobile app is available in Android, IOS, and Windows formats and can be downloaded using the QR code below or directly from the Google Play or Apple App Store.

### 4.1 Remote Assist Mobile App Breakdown



Menu button, Scale data, Refresh button, and Bluetooth icon.

Device Settings, Name, Model, Connection Type – (Firmware Driven)

Scale Device Info: Capacity, Serial Number, Etc. – (Firmware Driven)

Active Value, Weight, and Units – (Firmware Driven)

User Prompt - (App Driven)

**UDF (User Defined Fields) + Custom App Buttons – (App Driven)**

- Driven using LUA Variables
- Define which values you want displayed and their order.
- Variable description, value, and read/write status is show.
- Define custom buttons and colors.

Device Keys/Remote Keys – (Firmware Driven)

## 4.2 Downloading the Remote Assist Application

Download the Remote Assist app to any smartphone or tablet from either the Google Play Store or the Apple App Store by using the QR Code below.

Google Play Store: [AWTX Remote Assist - Apps on Google Play](#)

Apple App Store: [AWTX Remote Assist on the App Store](#)

OR

Search “AWTX Remote Assist” in either App Store and tap on the Remote Assist App Icon.

Once downloaded, tap the R-Assist icon to launch the application.

## 4.3 Connecting a Scale

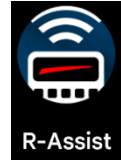
1. Tap the R-Assist application icon.

2. Tap “Add Bluetooth Device”

Choose Start scanning: Select the Serial Number that corresponds to the desired ZM220 Signal Processor.

OR

Use QR Code on the back of the signal processor. Be sure to scan the Bluetooth Connection sticker on the back right hand side of the signal processor.



3. Name the device, while being sure to maintain an easy to remember naming convention.

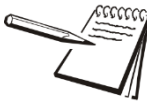


*Note: We recommend that users maintain a reliable naming convention for all ZM220 units. For example, if there are four production lines (Named: Line A, Line B, Line C, and Line D) that are getting four ZM220 units, name each unit the same as the line it is installed on so when connecting to an signal processor through Remote Assist you will see Line A, Line B, Line C, and Line D.*

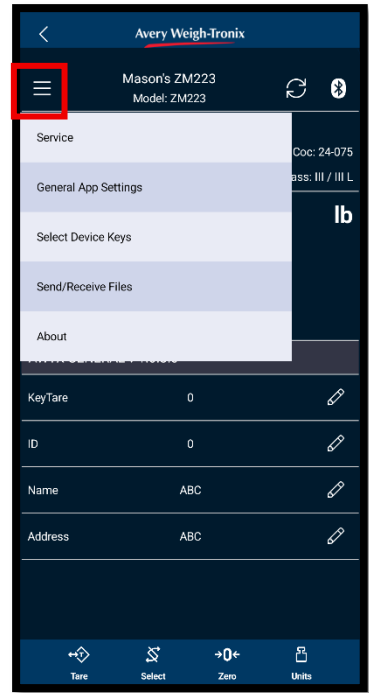
4. Tap the **OK** button and the mobile device is connected to the ZM220 Signal Processor.

## 4.4 Mobile App Screen Navigation

To navigate between the menus of the Remote Assist application use the Navigation Popup menu. To access the Navigation Popup menu, tap the Navigation Button on the upper left-hand side of the home screen.



*Note: The Navigation Button will be in the same location on every page of the Remote Assist Mobile App. Subject to the app that is running in the ZM220, some fields, like reports, may not be available in the app.*



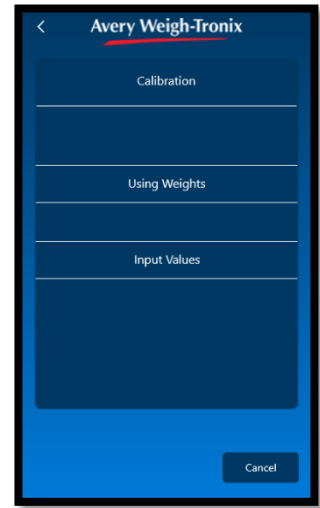
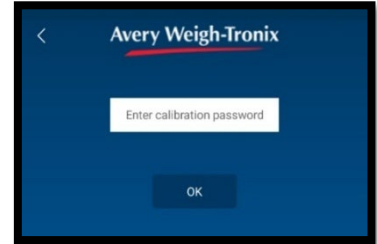
### 4.4.1 In-App Calibration

Scale Technicians can calibrate their ZM220 Signal Processor and any connected scales through the Remote Assist Mobile App using weights or entered values. Follow the below steps to use Remote Assist to calibrate a ZM220.

1. From the home screen, tap the Menu Button in the upper left corner of the screen.
2. Select **Service**.
3. Enter the Remote Assist Admin Password (3088) and tap the OK button.

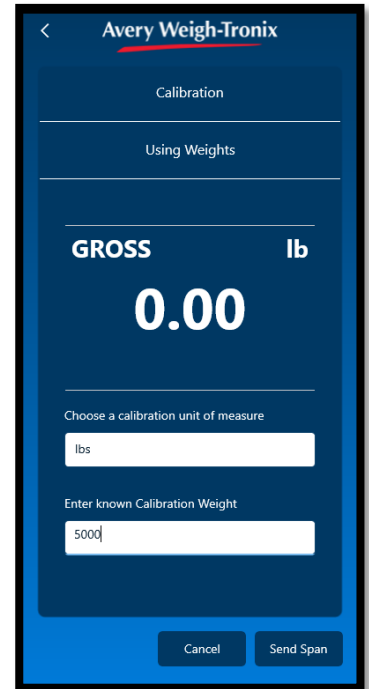
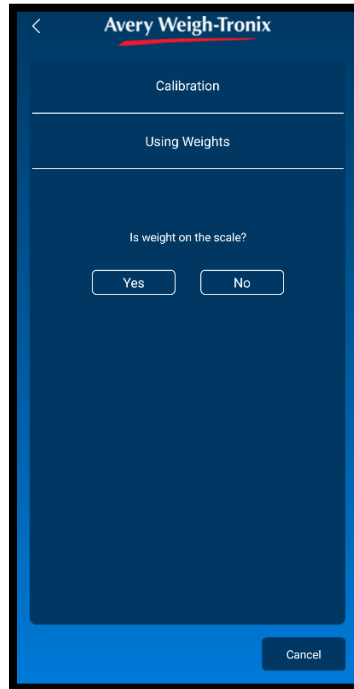


*Note: If the Signal Processor's Admin Password changes the Remote Assist Admin password will also change automatically.*



## Using Weights

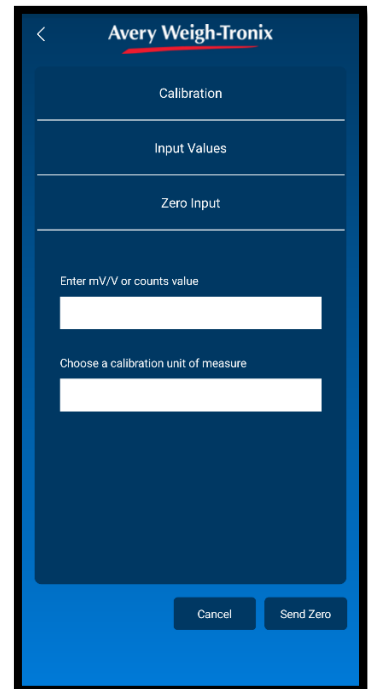
- 4a. From the Calibration Menu, tap on the **Using Weights** button
- 5a. With no weight on the scale, tap **No**.
- 6a. Tap the **ZERO** button to perform a Zero Span.
- 7a. Place the weight on the scale.
- 8a. When prompted with “is weight on the scale,” tap **Yes**.
- 9a. Choose the desired Unit of Measure.
- 10a. Enter the known Calibration Weight in the provided field and then.
- 11a. Tap the **Send Span** button...  
 “Calibration Successful” will briefly display before redirecting the user to the home screen.



*Note: If Calibration is successful the Calibration Counter will update by 1.*

## Input Values

- 4b. From the Calibration Menu, tap on the **Input Values** button...  
 Using Weights and Input Values will now be displayed.
- 5b. Tap on **Zero Input**...  
 “Enter mV/V or count value” and “Choose a calibration unit of measure” fields are now displayed.
- 6b. Enter the mV/V or count value in the provided field
- 7b. Choose the desired Unit of Measure
- 8b. Tap the **Send Span** button...  
 “Calibration Successful” will briefly display before redirecting the user to the home screen.



*Note: If Calibration is successful the Calibration Counter will update by 1.*

OR

- 4c. Tap on **Span** button...  
“Enter mV/V or count value,” “Choose a calibration unit of measure,” “Enter weight value,” and “Choose a unit of measure for weight” fields are now displayed.
- 5c. Enter the mV/V or count value in the provided field.
- 6c. Choose the desired Unit of Measure
- 7c. Enter the weigh value.
- 8c. Choose a unite of measure for weight.
- 9c. Tap the **Send Span** button...  
“Calibration Successful” will briefly display before redirecting the user to the home screen.



---

*Note: If Calibration is successful the Calibration Counter will update by 1.*

---

A screenshot of the 'Avery Weigh-Tronix' Calibration screen. The screen has a dark blue header with a back arrow and the title 'Avery Weigh-Tronix'. Below the header, the word 'Calibration' is centered. The screen is divided into sections by horizontal lines: 'Input Values', 'Span', and a main input area. The main input area contains four white text boxes with labels: 'Enter mV/V or counts value', 'Choose a calibration unit of measure', 'Enter weight value', and 'Choose a unit of measure for weight'. At the bottom right, there are two buttons: 'Cancel' and 'Send Span'.

## 5 Web Browser Walkthrough

This section covers the ZM220's remote connectivity using the new Avery Weigh-Tronix web browser page. This web-based application allows operators to run the signal processor remotely like a normal indicator from any PC or tablet that is connected to the same network as the ZM220 through any search browser. Using the web browser app also provides the user with indicator features that cannot be done directly from the ZM220 signals processor.

Through the web browser app users can: remotely view live weights, use all Signal Processor keys, view and change a wide range of app defined weight data fields, change UDF printable text fields that can be used on a print ticket or label, retrieve stored data from the ZM220 flash drive memory, store weight data to the mobile device, and use operator prompts to aid in using the ZM220.

- To navigate between the available webpage screens (Scale, Super, and About), click on the corresponding screen button in the upper right-hand corner of the screen shown below.
- Within the web browser page users can view, edit, and adjust UDF fields. Please note that the UDF fields varies depending on the Signal Processor Application the ZM220 is currently running.
- To use any of the ZM220 Signal Processor's keys, click on the desired key on the simulated signal processor display shown below.
- To edit any of the ZM220 Information Fields click on the "Edit" button to the right of the field that needs to be edited.



*Note: IP address used in the web browser must match the signal processor's IP address. For example: 192.168.1.15*

Subject to the Site Location and the location's requirements for approval a **Not Legal For Trade** Message will display.

Usable Signal Processor Keys

Available Webpage Screens

Signal Processor UDF Fields



*Note: If the connection is lost and the web browser page will not reconnect, click on the Scale Tab to refresh the screen. It is advised to do this after changing anything in the Supervisor Menu to ensure any new fields that have been turned on have fully activated and displaying on the web browser page.*

## 5.1 Using the Web Browser

Follow the steps below to connect to and operate a ZM220 signal processor from a web browser page.

1. From a new web browser tab (Google Chrome, Microsoft Edge, Safari) type in the IP address of the ZM220 signal processor you wish to connect to.



*Note: Remember that the ZM220 signal processor must be connected to the same network for the web browser page to connect properly.*

UDF fields with an **Edit/Pencil icon next** to them are fields that can be changed or edited from the web browser screen.

Designed to provide an easy method to add text data to the transaction data or printed label data

- Currently there are several predefined UDF fields that can be easily turned on from the supervisor menu

**UDF 1: Part No**                      **UDF 2: Description**                      **UDF 3: Loc**  
**UDF 4: Name**                              **UDF 5: Address**

- There are also 10 unnamed UDF fields that can be quickly turned on, edited & used.

UDF 6                      UDF 10                      UDF 14  
 UDF 7                      UDF 11                      UDF 15  
 UDF 8                      UDF 12  
 UDF 9                      UDF 13

## 5.2 Live Weight

The web browser page will show the live weight from the signal processor. All keys on the web browser, like **TARE, SELECT, ZERO, PRINT, UNITS** and **F1** work.

## 5.3 Supervisor Tab

The Supervisor Tab is password protected with the same password as the signal processor's Supervisor Menu.

Any of the UDF fields can be modified/renamed from the Web Browser page (see screen capture below).

To gain access to the Supervisor Menu enter the Supervisor password (1793). From the Supervisor Menu, managers can enable, disable, or edit any UDF field.

1. To activate or deactivate a UDF field, click or tap the switch button next to the desired UDF field to toggle it on or off.
2. To edit a UDF field, click or tap on UDF field bar and select the desired UDF value from the popup menu.

The screenshot shows the 'Supervisor' tab in the web browser. On the left, there is a list of UDF fields with toggle switches and text input fields. On the right, a popup menu titled 'UDF linked Print Tokens' lists UDF 1 through UDF 15, each associated with a specific PrintToken value (e.g., PrintTokens[151]).

UDF	PrintToken
UDF 1	PrintTokens[151]
UDF 2	PrintTokens[152]
UDF 3	PrintTokens[153]
UDF 4	PrintTokens[154]
UDF 5	PrintTokens[155]
UDF 6	PrintTokens[156]
UDF 7	PrintTokens[157]
UDF 8	PrintTokens[158]
UDF 9	PrintTokens[159]
UDF 10	PrintTokens[160]
UDF 11	PrintTokens[161]
UDF 12	PrintTokens[162]
UDF 13	PrintTokens[163]
UDF 14	PrintTokens[164]
UDF 15	PrintTokens[165]

## 5.4 Mobile and Web Browser Operator Prompts

The web browser screen and the mobile app screen both offer an additional text field area that allows additional operator prompts to be seen and viewed to aid the operator in carrying out the tasks in hand. These prompts will vary depending on the app.

## 5.5 Viewable Data Fields for Mobile and Web Browser Pages

The Remote Assist Mobile App and web browser pages will show other useful data fields that have been turned on depending on the app.

RPN secondarily key function in the ZM220 do not work on the Web browser, however these same scale field function can be customized to work from a Scale Field in the web browser.

Available RPN Functions	Application											
	ZM220 General	ZM223 Accum	ZM223 Count	ZM223 Check			ZM223 Check Grade	ZM223 Check by %	ZM223 Truck In/Out	ZM223 Batch-ing	ZM22 3 P-Hold	ZM223 In-Motion
				Simp	Mid	Adv						
Tare Weight	X	X	X	X	X	X	X	X	X	X	X	X
ID	X	X	X	X	X	X	X	X	X	X	X	X
I/O 4-6	X	X						X	X	X	X	X
Accumulation Channel		X										
Preact 4 – 6										X		
Gross, Net, Tare									X			
Description			X									
Inbound WT									X			
Outbound WT									X			
PLU			X		X			X				
Grade 1-11							X					
Transaction									X			
Target			X		X	X		X				
Low			X	X	X	X		X				
High			X	X	X	X		X				
Piece Weight			X	X	X	X						
Part Number			X	X	X	X		X				

## 5.6 UDF Printable Fields

The new web browser view also allows users to view and edit other UDF fields directly from any web browser.

The following UDF fields can be turned on from within the Supervisor menu are:

- Part Number
- Description
- Lot Location
- Name
- Address
- 10 UDF Text Fields

## 5.7 Communication Port Protocols

### 5.7.1 Level 1 and 2 Commands

Sent	Action	Response
<LF>W<CR>	Weight of the current scale is returned.	Standard response (displayed weight)
<LF>P<CR>	Indicator attempts to capture a stable weight on the current scale.	Standard response (displayed weight). Weight is returned as center dashes ←-----→ if a stable weight cannot be established.
<LF>Z<CR>	Indicator attempts to zero the current scale.	Standard response (displayed weight)
<LF>T<CR>	Indicator attempts to tare the current scale.	Standard response (displayed weight)
<LF>T<xxxxxx.xxx><CR>	The indicator attempts to set the current scale's tare weight to the value that was sent.	Standard response (displayed weight)
<LF>M<CR>	The indicator returns the current scale's Tare weight.	Standard response (tare weight)
<LF>C<CR>	The indicator sets the current scale's Tare weight to zero.	Standard response (gross weight)
<LF>U<CR>	The indicator will cycle the unit of measure on the current scale	Standard response (displayed weight)
<LF>U<uuu><CR>	The indicator will set the unit of measure to <uuu> on the current scale.	Standard response (displayed weight)
<LF>D<CR>	The indicator will return a diagnostic message.	<LF><r><e><c><m><CR> <r> = 'R' (RAM error) or ' ' (space) (RAM ok)
<LF>A<CR>	The indicator will respond with the first line of the About data.	See "About Command Response" (below)
<LF>B<CR>	The indicator will respond with the rest of the About data.	See "About Command Response" (below)
<LF>I<CR>	The indicator will respond with the first line of the scale Information data. (for the current scale)	See "Scale Information Command Response" (below)
<ESC>	The indicator will reboot itself	None

SMA protocol is maintained by an external organization. For definitive and current details on this protocol, go to [www.scalemanufacturers.org](http://www.scalemanufacturers.org).

## 5.7.2 Standard Scale Response Message

---

<code>&lt;LF&gt;&lt;s&gt;&lt;r&gt;&lt;n&gt;&lt;m&gt;&lt;f&gt;&lt;xxxxxx.xxx&gt;&lt;uuu&gt;&lt;CR&gt;</code>		
<code>&lt;LF&gt;</code>	Line feed	Start of the response message.
<code>&lt;s&gt;</code>	Scale Status	'Z' Center of Zero 'O' Over Capacity 'U' Under Capacity 'E' Zero Error 'T' Tare Error <space> None of the above conditions.
<code>&lt;r&gt;</code>	range	Multi-interval range. Always '1' if multi-interval is disabled.
<code>&lt;n&gt;</code>	gross/net status	G' = Gross weight 'T' = Tare weight 'N' = Net weight
<code>&lt;m&gt;</code>	Motion status	'M' = scale is in motion <space> = scale is stable
<code>&lt;f&gt;</code>	Future use	<space> = always a space.

## 5.7.3 Unrecognized Command Response

---

`<LF>?<CR>`

## 5.7.4 About Command Response

---

The 'A' and 'B' commands are used together to get all of the scale about data. The 'A' command will always return the 1st response below. The 'B' command must be sent multiple times to get the 2nd, 3rd, and 4th responses. Once the 4th response is received, the next 'B' command will return an Unrecognized Command Response. At this point send another 'A' command to get the 1st response again.

`<LF><xxx>:<yyyy><CR>`

1st response:	<code>&lt;xxx&gt; = "SMA"</code> <code>&lt;yyyy&gt; = compliance level/revision</code>
2nd response:	<code>&lt;xxx&gt; = "MFG"</code> <code>&lt;yyyy&gt; = manufacturer</code>
3rd response:	<code>&lt;xxx&gt; = "MOD"</code> <code>&lt;yyyy&gt; = software part number</code>
4th response:	<code>&lt;xxx&gt; = "REV"</code> <code>&lt;yyyy&gt; = software revision</code>

## 5.7.5 Scale Information Command Response

The 'I' and 'N' commands are used together to get all of the scale information data. The 'I' command will always return the 1st response below. The 'N' command must be sent multiple times to get the 2nd, 3rd, 4th, 5th, and 6th responses. Once the 6th response is received, the next 'N' command will return an Unrecognized Command Response. At this point send another 'I' command to get the 1st response again.

<LF><xxx>:<yyyy><CR>

1st response: <xxx> = "SMA"

<yyyy> = compliance level/revision

2nd response: <xxx> = "TYP"

<yyy> = 'S'

3rd response: <xxx> = "CAP"

<yyyy> = uuu:ccc:n:d where

uuu = unit of measure

ccc = capacity of the range lower range (capacity of the scale is multi-interval is disabled)

n = least significant count-by digit for this range d = decimal point position for this range

'0' = none

'1' = xxxx.x

'2' = xxx.xx etc.

4th response: <xxx> = "CAP"

<yyyy> = uuu:ccc:n:d where

uuu = unit of measure

ccc = capacity of the range upper range (4th response will not be sent if multi-interval is disabled)

n = least significant count-by digit for this range d = decimal point position for this range

'0' = none

'1' = xxxx.x

'2' = xxx.xx etc.

5th response: <xxx> = "CMD"

<yyyy> = "PTMCU" list of supported SMA commands.

Level 1 commands are not included in the list.

6th response: <xxx> = "END"

<yyyy> = nothing

7th & more -

responses: Subsequent N commands will return a '?' response. Unrecognized Command Response

## 5.7.6 Avery Weigh-Tronix Extended SMA Commands



*Note: AWT Extended SMA command/response protocol allows use of the same Network Tokens shown in ATTRIBUTE: 3 hex on [page 77](#).*

**<LF>XA<CR>** This will initiate an Accumulate command. If the indicator is in ACCUM or COUNT app, it will perform an Accumulation transaction if all required conditions are met.

The command will also perform the same function as pressing the **PRINT** key on the front panel. Response will be to any communication ports that are bound to a Type = Print. The port that initiated the command will also receive an <LF>xa<CR> response.

**<LF>XB<CR>** This will initiate a **PRINT** command. The command will also perform the same function as pressing the **PRINT** key on the front panel.

No response.

**<LF>XK<CR>** This will return a list of up to the last twenty keys pressed. The buffer is cleared after this command.

<LF>xk:Y<CR> where Y is:

T for TARE key

S for SELECT key

Z for ZERO key

P for PRINT key

U for UNITS key

F for F1 key

G for START key

H for STOP key

I for ID key

L for TARGET key

J for SAMPLE key

K for SETUP key

C for CLEAR

R for REPORT key

Q for IN/OUT key



*Note: The list above includes all the keys for all the various models of Z indicators. If the indicator model does not have one of these keys, that key will not be included in the returned list.*



*Note: XD, XZ and XS commands, below, only work if the indicator is unsealed.*

- <LF>XC<CR>** This will return the audit counters in this format:  
<LF>Calib:xxx:Config:yyy:<CR>
- <LF>XD<n><CR>** This will initiate the resetting of the calibration and/or configuration parameters depending on the format chosen from the list below:  
If n=1, reset config only  
If n=2, reset calibration only  
If n=3, reset both  
The response will be in the form of:  
<LF>xd<n><CR>
- <LF>XZ<CR>** This will initiate a Cal Zero command. The scale responds with a standard scale response message, with one additional custom status response added. If the “Set Zero” operation fails then the scale responds with the <s> field = “0”
- <LF>XS<www><CR>** This will initiate a Cal Span command where <www> is the weight used to calibrate with. The scale responds with a standard scale response message, with one additional custom status response added. If the “Set Span” operation fails, then the scale responds with the <s> field = “s”
- <LF>XVS<n>:<value><CR>** The indicator will set the <value> of the variable specified by the Network token. A valid XVS command will receive a response of <LF>xvs<CR>. To verify an XVS command was successful requires sending the XVG command to confirm the value of the variable.



---

*Note: To set I/O 4 value to 10.5 lb, send  
<LF>XVS1004:10.5<CR>  
To tell the indicator to use Tare register 2, send  
<LF>XVS1002:2<CR>*

---

**<LF>XVG<n><CR>** The indicator will get or return the value of the variable specified by the network token. A valid response is in the form of <LF><value><CR>.



---

*Note: To get the I/O 4 value, send <LF>XVG1004<CR> 10.500000 will be returned.  
Integer type variables will return integer values.*

---



---

*Note: When used with weight-based values, the XVS command uses the active unit of measure. The XVG command returns the value that was entered or sent using an XVS command regardless of the current active unit of measure.*

---



*Note: If the protocol is configured with an address attribute that is not zero, the address is added. If multiple indicators are connected on an RS232 multi-drop network, each will have a unique address. The network device can use SMA protocol to communicate to individual indicators by adding the indicator address <addr> following the initial <LF> character to any of the SMA commands. As an example, the standard weight command would be <LF><addr>W<CR>. The response will also include the indicator address value following the initial <LF><addr>.*

## 5.7.7 ENQ & B-Cast Commands

<b>A</b>	ACCUM Command	"If ACCUM APP is active, this command will generate an accumulation transaction, but it does not perform the print function"
<b>P</b>	PRINT Command	"Performs same function as pressing the <b>PRINT</b> key. All Ports that are bound with <b>PRINT</b> type will transmit the assigned print format"
<b>S</b>	SELECT Command	Performs the same function as pressing the <b>SELECT</b> key
<b>T</b>	TARE Command	Performs the same function as pressing the <b>TARE</b> key
<b>U</b>	UNITS Command	Performs the same function as pressing the <b>UNITS</b> key
<b>Z</b>	ZERO Command	Performs the same function as pressing the <b>ZERO</b> key
<b>F</b>	F1 Command	Performs the same function as pressing the <b>F1</b> key
<b>G</b>	START Command	Performs the same function as pressing the <b>START</b> key
<b>H</b>	STOP Command	Performs the same function as pressing the <b>STOP</b> key
<b>I</b>	ID Command	Performs the same function as pressing the <b>ID</b> key
<b>J</b>	SAMPLE Command	Performs the same function as pressing the <b>SAMPLE</b> or <b>FLEET</b> key
<b>K</b>	SETUP Command	Performs the same function as pressing the <b>SETUP</b> key
<b>L</b>	TARGET Command	Performs the same function as pressing the <b>TARGET</b> or <b>REPORT</b> key
<b>Enter</b>	ENTER Command	Performs the same function as pressing the <b>ENTER</b> key.
	Base Switching	Performs the base switching function.
	PLU Activation	Performs the PLU activation key function.



*Note: Upper or lower case characters will perform the same function.*

## 5.7.8 NCI Commands (legacy protocols before SMA)

W <Cr>	Weight request	Returns decimal weight, units and status
S <Cr>	Status request	Returns status.
Z <Cr>	Zero request	Scale is Zeroed and returns scale status.
H <Cr>	High Resolution Weight request	Returns decimal wt in 10x or 100x resolution with units and status. For x100 resolution set the associated PROT > ATTR > ENQ menu value to 100. For all other values, the H command will return x10 resolution
U <Cr>	Units request	Changes unit of measure and then returns decimal weight in the new units with status.
M <Cr>	Metrology Raw Counts request	Returns normalized raw counts and scale status.
T <Cr>	Tare request	Scale is Tared and returns scale status.
all else	Unrecognized command	Returns <Cr> ? <Lf>



---

*Note: If the PROT > ATTR > ENQ menu value is set to 100, to increase resolution by 100, users may add a 2 or 3 to the command to return a 2 or 3 character status byte. For example: 102 will increase resolution by 100 and return a 2 character status byte.*

---

## 6 Communication Port Protocols

### 6.1 Level 1 and 2 SMA Commands

Sent	Action	Response
<LF>W<CR>	Weight of the current scale is returned.	Standard response (displayed weight)
<LF>P<CR>	Signal processor attempts to capture a stable weight on the current scale.	Standard response (displayed weight). Weight is returned as center dashes ←-----→ if a stable weight cannot be established.
<LF>Z<CR>	Signal processor attempts to zero the current scale.	Standard response (displayed weight)
<LF>T<CR>	Signal processor attempts to tare the current scale.	Standard response (displayed weight)
<LF>T<xxxxxx.xxx><CR>	The signal processor attempts to set the current scale's tare weight to the value that was sent.	Standard response (displayed weight)
<LF>M<CR>	The signal processor returns the current scale's Tare weight.	Standard response (tare weight)
<LF>C<CR>	The signal processor sets the current scale's Tare weight to zero.	Standard response (gross weight)
<LF>U<CR>	The signal processor will cycle the unit of measure on the current scale	Standard response (displayed weight)
<LF>U<uuu><CR>	The signal processor will set the unit of measure to <uuu> on the current scale.	Standard response (displayed weight)
<LF>D<CR>	The signal processor will return a diagnostic message.	<LF><r><e><c><m><CR> <r> = 'R' (RAM error) or ' ' (space) (RAM ok)
<LF>A<CR>	The signal processor will respond with the first line of the About data.	See "About Command Response" (below)
<LF>B<CR>	The signal processor will respond with the rest of the About data.	See "About Command Response" (below)
<LF>I<CR>	The signal processor will respond with the first line of the scale Information data. (for the current scale)	See "Scale Information Command Response" (below)
<ESC>	The signal processor will reboot itself	None

SMA protocol is maintained by an external organization. For definitive and current details on this protocol, go to [www.scalemanufacturers.org](http://www.scalemanufacturers.org).

## 6.2 Standard Scale Response Message

---

<LF><s><r><n><m><f><xxxxxx.xxx><uuu><CR>		
<LF>	Line feed	Start of the response message.
<s>	Scale Status	'Z' Center of Zero 'O' Over Capacity 'U' Under Capacity 'E' Zero Error 'T' Tare Error <space> None of the above conditions.
<r>	range	Multi-interval range. Always '1' if multi-interval is disabled.
<n>	gross/net status	G' = Gross weight 'T' = Tare weight 'N' = Net weight
<m>	Motion status	'M' = scale is in motion <space> = scale is stable
<f>	Future use	<space> = always a space.

## 6.3 Unrecognized Command Response

---

<LF>?<CR>

## 6.4 About Command Response

---

The 'A' and 'B' commands are used together to get all of the scale about data. The 'A' command will always return the 1st response below. The 'B' command must be sent multiple times to get the 2nd, 3rd, and 4th responses. Once the 4th response is received, the next 'B' command will return an Unrecognized Command Response. At this point send another 'A' command to get the 1st response again.

<LF><xxx>:<yyyy><CR>

1st response:	<xxx> = "SMA"
	<yyyy> = compliance level/revision
2nd response:	<xxx> = "MFG"
	<yyyy> = manufacturer
3rd response:	<xxx> = "MOD"
	<yyyy> = software part number
4th response:	<xxx> = "REV"
	<yyyy> = software revision

## 6.5 Scale Information Command Response

---

The 'I' and 'N' commands are used together to get all of the scale information data. The 'I' command will always return the 1st response below. The 'N' command must be sent multiple times to get the 2nd, 3rd, 4th, 5th, and 6th responses. Once the 6th response is received, the next 'N' command will return an Unrecognized Command Response. At this point send another 'I' command to get the 1st response again.

<LF><xxx>:<yyyy><CR>

1st response: <xxx> = "SMA"

<yyyy> = compliance level/revision

2nd response: <xxx> = "TYP"

<yyy> = 'S'

3rd response: <xxx> = "CAP"

<yyyy> = uuu:ccc:n:d where

uuu = unit of measure

ccc = capacity of the range lower range (capacity of the scale is multi-interval is disabled)

n = least significant count-by digit for this range

d = decimal point position for this range

'0' = none

'1' = xxxx.x

'2' = xxx.xx etc.

4th response: <xxx> = "CAP"

<yyyy> = uuu:ccc:n:d where

uuu = unit of measure

ccc = capacity of the range upper range (4th response will not be sent if multi-interval is disabled)

n = least significant count-by digit for this range

d = decimal point position for this range

'0' = none

'1' = xxxx.x

'2' = xxx.xx etc.

5th response: <xxx> = "CMD"

<yyyy> = "PTMCU" list of supported SMA commands.

Level 1 commands are not included in the list.

6th response: <xxx> = "END"

<yyyy> = nothing

7th & more -

responses: Subsequent N commands will return a '?' response. Unrecognized Command Response

## 6.6 Avery Weigh-Tronix Extended SMA Commands

---



*Note: AWT Extended SMA command/response protocol allows use of the same Network Tokens shown in ATTRIBUTE: 3 hex on [page 77](#).*

---

**<LF>XA<CR>** This will initiate an Accumulate command. If the signal processor is in ACCUM or COUNT app, it will perform an Accumulation transaction if all required conditions are met.

The command will also perform the same function as pressing the **PRINT** key on the web browser page. Response will be to any communication ports that are bound to a Type = Print. The port that initiated the command will also receive an <LF>xa<CR> response.

**<LF>XB<CR>** This will initiate a **PRINT** command. The command will also perform the same function as pressing the **PRINT** key on the front web browser page.

**<LF>XK<CR>** This will return a list of up to the last twenty keys pressed. The buffer is cleared after this command.

**<LF>xk:Y<CR>** where Y is it will return one of the following:

T for TARE key  
S for SELECT key  
Z for ZERO key  
P for PRINT key  
U for UNITS key  
F for F1 key  
G for START key  
H for STOP key  
I for ID key  
L for TARGET key  
J for SAMPLE key  
K for SETUP key  
C for CLEAR  
R for REPORT key  
Q for IN/OUT key



---

*Note: XD, XZ and XS commands, below, only work if the signal processor is unsealed.*

---

**<LF>XC<CR>**

This will return the audit counters in this format:

**<LF>Calib:xxx:Config:yyy:<CR>**

**<LF>XD<n><CR>**

This will initiate the resetting of the calibration and/or configuration parameters depending on the format chosen from the list below:

If n=1, reset config only

If n=2, reset calibration only

If n=3, reset both

The response will be in the form of:

**<LF>xd<n><CR>**

**<LF>XG<number><CR>**

This will set the scale Number.

**<LF>XH<CR>**

This will get the active scale Number.

**<LF>XZ<CR>**

This will initiate a Cal Zero command. The scale responds with a standard scale response message, with one additional custom status response added. If the "Set Zero" operation fails then the scale responds with the <s> field = "0"

**<LF>XS<www><CR>**

This will initiate a Cal Span command where <www> is the weight used to calibrate with. The scale responds with a standard scale response message, with one additional custom status response added. If the "Set Span" operation fails, then the scale responds with the <s> field = "s"

**<LF>XVS<n>:<value><CR>**

The signal processor will set the <value> of the variable specified by the Network token. A valid XVS command will receive a response of <LF>xvs<CR>. To verify an XVS command was successful requires sending the XVG command to confirm the value of the variable.



*Note: To set I/O 4 value to 10.5 lb, send*

**<LF>XVS1004:10.5<CR>**

*To tell the signal processor to use Tare register 2, send*

**<LF>XVS1002:2<CR>**

**<LF>XVG<n><CR>**

The signal processor will get or return the value of the variable specified by the network token. A valid response is in the form of <LF><value><CR>.



*Note: To get the I/O 4 value, send <LF>XVG1004<CR> 10.500000 will be returned.*

*Integer type variables will return integer values.*



*Note: When used with weight-based values, the XVS command uses the active unit of measure. The XVG command returns the value that was entered or sent using an XVS command regardless of the current active unit of measure.*



*Note: If the protocol is configured with an address attribute that is not zero, the address is added. If multiple signal processors are connected on an RS232 multi-drop network, each will have a unique address. The network device can use SMA protocol to communicate to individual signal processors by adding the signal processor address <addr> following the initial <LF>*

*character to any of the SMA commands. As an example, the standard weight command would be <LF><addr>W<CR>. The response will also include the signal processor address value following the initial <LF><addr>...*

## 6.7 ENQ & B-Cast Commands

<b>A</b>	ACCUM Command	“If ACCUM APP is active, this command will generate an accumulation transaction, but it does not perform the print function”
<b>P</b>	PRINT Command	“Performs same function as pressing the <b>PRINT</b> key. All Ports that are bound with <b>PRINT</b> type will transmit the assigned print format”
<b>S</b>	SELECT Command	Performs the same function as pressing the <b>SELECT</b> key
<b>T</b>	TARE Command	Performs the same function as pressing the <b>TARE</b> key
<b>U</b>	UNITS Command	Performs the same function as pressing the <b>UNITS</b> key
<b>Z</b>	ZERO Command	Performs the same function as pressing the <b>ZERO</b> key
<b>F</b>	F1 Command	Performs the same function as pressing the <b>F1</b> key
<b>G</b>	START Command	Performs the same function as pressing the <b>START</b> key
<b>H</b>	STOP Command	Performs the same function as pressing the <b>STOP</b> key
<b>I</b>	ID Command	Performs the same function as pressing the <b>ID</b> key
<b>J</b>	SAMPLE Command	Performs the same function as pressing the <b>SAMPLE</b> or <b>FLEET</b> key
<b>K</b>	SETUP Command	Performs the same function as pressing the <b>SETUP</b> key
<b>L</b>	TARGET Command	Performs the same function as pressing the <b>TARGET</b> or <b>REPORT</b> key
<b>Enter</b>	ENTER Command	Performs the same function as pressing the <b>ENTER</b> key.
	Base Switching	Performs the base switching function.
	PLU Activation	Performs the PLU activation key function.



*Note: Upper or lower case characters will perform the same function.*

## 6.8 NCI Commands (legacy protocols before SMA)

W <Cr>	Weight request	Returns decimal weight, units and status
S <Cr>	Status request	Returns status.
Z <Cr>	Zero request	Scale is Zeroed and returns scale status.
H <Cr>	High Resolution Weight request	Returns decimal wt in 10x or 100x resolution with units and status. For x100 resolution set the associated PROT > ATTR > ENQ menu value to 100. For all other values, the H command will return x10 resolution
U <Cr>	Units request	Changes unit of measure and then returns decimal weight in the new units with status.
M <Cr>	Metrology Raw Counts request	Returns normalized raw counts and scale status.
T <Cr>	Tare request	Scale is Tared and returns scale status.
all else	Unrecognized command	Returns <Cr> ? <Lf>



*Note: If the PROT > ATTR > ENQ menu value is set to 100, to increase resolution by 100, users may add a 2 or 3 to the command to return a 2 or 3 character status byte. For example: 102 will increase resolution by 100 and return a 2 character status byte.*

## 6.9 R-Disp Command

Key press commands are supported by COM Port 1 and 2 only.

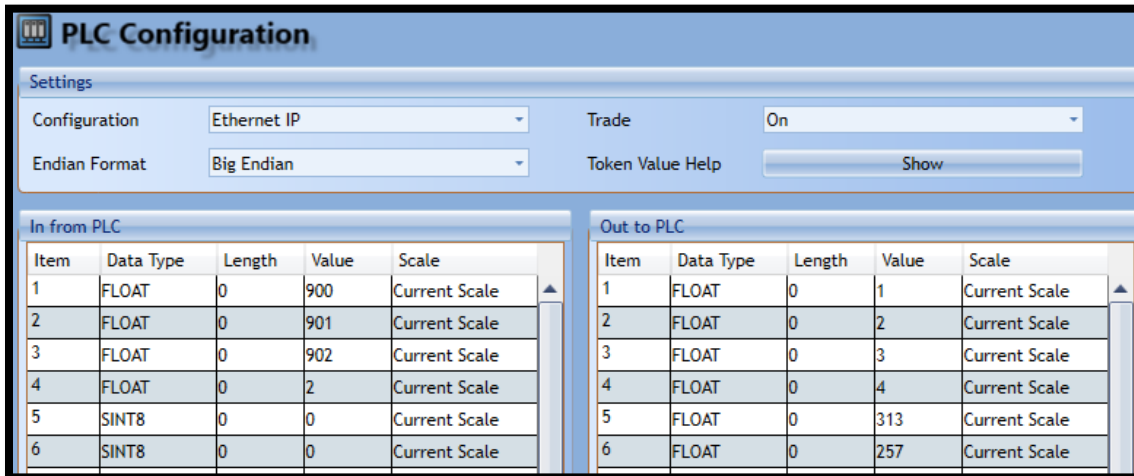
<b>Incoming commands from the Master signal processor that control the Remote display annunciators.</b>		
G	Gross	Change to Gross weight mode
N	Net	Change to Net weight mode
T	Tare	Change to Tare weight mode
L	lb	Change to lb
K	kg	Change to kg
O	oz	Change to oz
G	grams	Change to grams

<b>Outgoing key press commands from the Remote display that control the Master signal processor operation</b>	
T	TARE
S	SELECT
Z	ZERO
P	PRINT
U	UNITS
F	F1
	ENTER
	CLEAR
	NUMERIC ENTRY
	BASE SWITCHING

## 6.10 PLC Configuration Information

The PLC setup for the ZM220 follows the same logic as other ZM indicators and allows customers to get the exact PLC data they need. Technicians can reset any changes made to the Default setup by using the reset feature.

**Default:** The Ethernet IP PLC setting as: 5 outputs, 3 inputs. GTN, stats for the Outputs and Remote Zero, Remote Tare and Remote Print for the Inputs. It also needs to be set to a signed 32-bit integer as default.



There is a standard Default setting for Ethernet IP and Modbus TCP that can be used, or it can be configured manually. If connecting to a PLC there are required configuration settings in the SETUP > PORTS menu.

In the PROTCL menu set TYPE x = PLC and BIND x = Enet x

In the E-NET menu, users must configure the proper network IP address settings in IP ADDR, set DHCP = OFF (PLC's are not DHCP reliant), and CONN > E-NET x > TYPE x = OFF (PLC's do not use Client/Server topology)

In the PLC menu, configure the settings as required for the connected PLC network.

At the PLC, select the size that matches the number of bytes for each item configured in the signal processor's data type setting. If possible, use the same data type for all data.

DATA TYPE TABLE		
Typical PLC Terminology	Signal processor Terminology	Data TYPE Size
CHAR / SBYTE	SINT8	8 Bits (Signed Value / -127 to 127)
BYTE / UBYTE	UNIT8	8 Bits (Unsigned Value / 0-255)
SHORT / SINT	SINT16	16 Bits (Signed Value /-32767 to 32767)
WORD / UNIT	UNIT16	16 Bits (Unsigned Value / 0 to 65535)
LONG / SDINT	SINT32	32 Bits (Signed Value / -2,147,483,647 to 2,147,483,647)
DWORD / UDINT	UNIT32	32 Bits (Unsigned Value / 0 to 4,294,967,295)
REAL	FLOAT	32 Bits (Signed Decimal Value / 1.0E-37 to 1.0E37)

## 6.11 ModBus/TCP

Each register holds 2-bytes or 1-word. If a 4-byte or 2-word data type is used, 2-registers are required for each item. This makes the starting register number for each item skip a register number between items.

Starting Register Locations for PLC Configuration

To PLC	Input Read Only	30001 (Mirrored at the Read/Write Locations)
	Input Read/Write	40001 (i.e. Gross, Net, etc.)
From PLC	Output Read/Write	41025 (i.e. PB-Zero, Print, etc.)

2 Byte Example	
Signal Processor Data Type (out)	ModBus Register
SINT16	40001
SINT16	40002

4 Byte Example	
Signal Processor Data Type (out)	ModBus Register
SINT32	40001
SINT32	40003

## 6.12 Ethernet/IP Implicit Messaging:

AWTX Assembly Instance and Size

	Assembly Instance	Size
<b>Input</b>	100	Refer to the number of items configured for Out Configuration at the signal processor
<b>Output</b>	112	Refer to the number of items configured for In Configuration at the signal processor
<b>Configuration</b>	128	0

INPUT/OUTPUT SIZE: The number of elements (items) configured in the signal processor for the data IN and OUT not the number of bytes.

### 6.13 Ethernet/IP Explicit Messaging:

AWTX Signal Processor Input Point Object (PLC Data Out)  
 CLASS: 64 hex  
 ATTRIBUTE: 3 hex

PLC Instance	Supported services for this attribute (hex value)	Data Type	Signal processor Input (In) Configuration Data
Data Element Location 1= First Element 2=Second Element	0 x 10 (Set Attribute Single)	Based on network configuration in signal processor. See DATA TYPE TABLE	1-16 (Bound to the instance x)

AWTX Signal Processor Output Point Object (PLC Data In)  
 CLASS: 64 hex  
 ATTRIBUTE: 3 hex

PLC Instance	Supported services for this attribute (hex value)	Data Type	Signal processor Output (Out) Configuration Data
Data Element Location 1= First Element 2=Second Element	0 x 0E (Get Attribute Single)	Based on network configuration in signal processor. See DATA TYPE TABLE	1-16 (Bound to the instance x)

## **7 Option Cards**

The ZM220 has no option cards slots available inside the ZM220 enclosure. However, if the ZM220 is in a secure cabinet, the available option cards (Analog Output Option Card and a STVS or Severe Transient Voltage Suppressor Option Card) can be externally secured close to the ZM220 enclosure but still inside the main control cabinet. For full installation, setup, and calibration instructions for the two Option Cards, see the ZM223 Service Manual.

## 8 Printed Calibration Report

To print a Calibration Report, use the Remote Assist App's Report

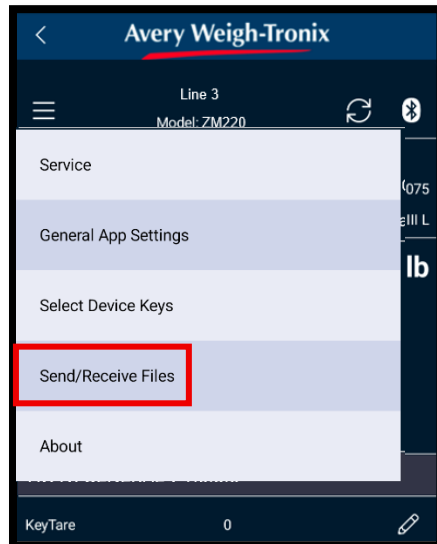
1. Open the **Remote Assist App**



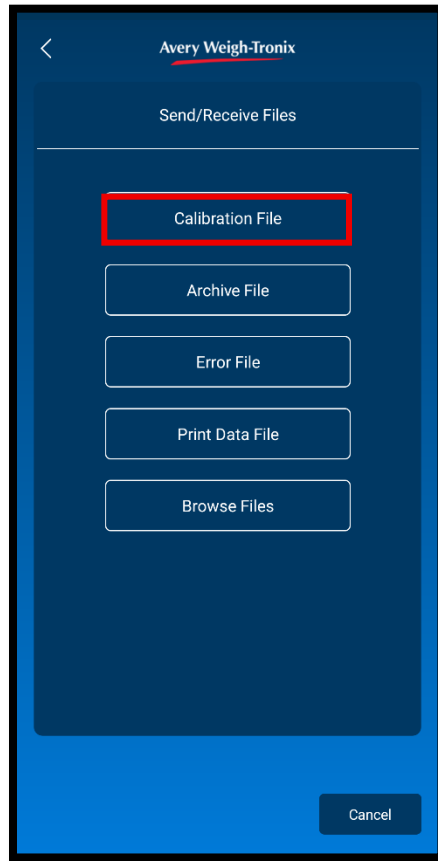
2. Connect to the signal processor.
3. From the signal processor's home screen, tap on the dropdown navigation menu at the top lefthand corner of the screen.



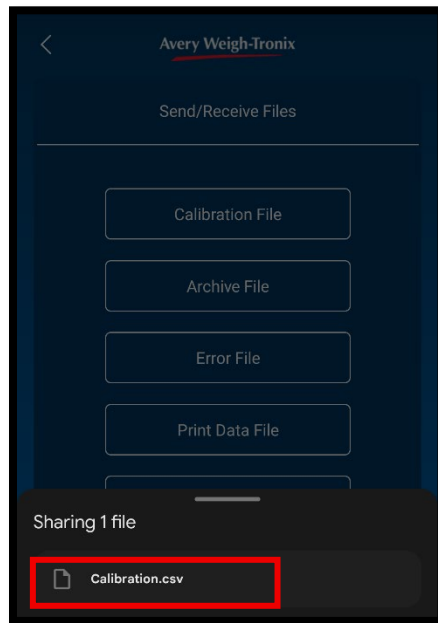
4. Tap on **Send/Receive Files**.



5. Tap on **Calibration File**.



6. Choose where to save or send the Calibration Report File to.



7. See an example Calibration Report below.

Scale #1 Calibration Settings Fri Jan 3 15:11:11 2025

Parameter	Value
SCALE_1_ZERO_COUNTS	-523184
SCALE_1_LIN_FACTOR_1_WT	0
SCALE_1_LIN_FACTOR_1_CNT	0
SCALE_1_LIN_FACTOR_2_WT	0
SCALE_1_LIN_FACTOR_2_CNT	0
SCALE_1_LIN_FACTOR_3_WT	0
SCALE_1_LIN_FACTOR_3_CNT	0
SCALE_1_SPAN_FACTOR	0.006238615
SCALE_1_GRAVITY	9.804300000000001347
SCALE_1_LIN_FACTOR_4_WT	0
SCALE_1_LIN_FACTOR_4_CNT	0
SCALE_1_LIN_FACTOR_5_WT	0
SCALE_1_LIN_FACTOR_5_CNT	0
SCALE_1_LIN_FACTOR_6_WT	0
SCALE_1_LIN_FACTOR_6_CNT	0
SCALE_1_LIN_FACTOR_7_WT	0
SCALE_1_LIN_FACTOR_7_CNT	0
SCALE_1_LIN_FACTOR_8_WT	0
SCALE_1_LIN_FACTOR_8_CNT	0
SCALE_1_LIN_FACTOR_9_WT	5000.000000000000000000
SCALE_1_LIN_FACTOR_9_CNT	1313686
SCALE_1_ZERO_MV	-0.779605655
SCALE_1_SPAN_MV	1.194269603986362505
SCALE_1_SERIAL_NUMBER	0
SCALE_1_SPAN_CAL_TIME_DATE	1735915170
SCALE_1_LATITUDE	0
SCALE_1_ALTITUDE	0
SCALE_1_SPAN_COUNTS	801460
SCALE_1_CAL_WEIGHT	5000.000000000000000000
UNIT SERIAL NUMBER	425000020

## 9 Print Tokens, Parameters, and Default Print Formats

### 9.1 Explanation of width syntax for WEIGHT (integers)

---

Description of Value (T.x.1) represents the system value. By default, the width of the printed value is based on configuration items like capacity and division size used. By using syntaxes, users can control the number of digits printed, leading zeroes/spaces, left/right justification, and much more.

### 9.2 Explanation of width syntax for WEIGHT (strings)

---

Name Value (T.x.2) represents the string shown. By default, the width of the printed value is the entire string. By using the (W) width syntax, user or technician can control the number of characters used. For example {GWT.2} prints Gross, and when width syntax like {{GWT.2[W1]}} is used, it will only print G because the value was limited to 1 character.

### 9.3 Explanation of width syntax for UNITS OF MEASURE (strings)

---

Description of Value (T.x.1) represents the system value. By default, the width of the printed value is based on configuration items. Units of measure are as shown below. Without the width syntax all custom units are defaulted to a 2-letter width. By using the (W) width syntax, users can control the number of digits printed. When offering custom units of measure, like TONS, the WIDTH syntax must be used as follows to have all 3 letters printed to spell TON { T.UNIT.1[W3]}

DEFAULTS:

Pounds	= lb
Kilograms	= kg
Grams	= g
Ounces	= oz
Pounds/Ounces	= lb-oz
Custom	= (first 2 letters)

## 9.4 Firmware Tokens

Token	Token Code	Description of Value	Name Value	Data Type	Parameter Name	Optional Parameter	Available Values	
T.x		T.x.1	T.x.2	T.x.3				
1	GWT	Gross Weight	Gross	WEIGHT	Show sign	p	1 = Show minus (default) 2 = Show plus 3 = Show both 4 = Hide both	
2	SAT	Semi-Automatic Tare Weight	Tare					
3	NWT	Net Weight	Net					
10	PGW	Peak Gross Weight	Peak Max			Width	W	1 – 127 Characters Default is Configuration Dependent
11	PNW	Peak Net Weight	Peak Min			Precision	P	0 – 127 Characters 1 – 127 Characters Default is Configuration Dependent
13	PCE	Piece Weight	Piece Weight					
14	HAO	Hub Analog Output	HubAnalogOut					
16	ACT	Active Displayed Value	Spelled Active Value			Leading Zero	Z	0 = None (default) 1 = Leading Zeros 2 = Leading Spaces 3 = Show All 4 = Hide All
18	ROC	Rate of Change	Rate of Change					
19	PMAX	Peak Maximum Weight	Peak Max					
20	PMIN	Peak Minimum Weight	Peak Min					
35	GWTHR	High Resolution Gross Weight	GrossHiRes			Multiplier	m	0 = None or *1 (default) 1 = Multiply *10 2 = Multiply *100 3 = Multiply *1000
36	NWTHR	High Resolution Net Weight	NetHiRes					
37	INMOWT	Active Displayed In-Motion Weight Value	In-Motion Weight					
39	INMOGWT	AVERAGED In-Motion Gross Weight Value	Gross Avg			Decimal Point	D	1 = Show decimal (default) 2 = Hide Decimal
40	INMONWT	AVERAGED In-Motion Net Weight Value	Net Avg			Justification	J	1 = Right (default) 2 = Left
41	ACTM	Active Weight Value with Motion GR=Gross no-motion gr=Gross with motion NT=Net no motion nt=New with motion	GR gr NT nt			Unit of Measure	u (Never use 'u' and 'r' together in the same weight syntax) (This syntax should only be used with	1 = Current displayed Unit of measure (default) 2 = Calibration Unit 3 = Rounded Current Unit 4 = Rounded Calibration Unit 5 = lb 6 = kg

Token	Token Code	Description of Value	Name Value	Data Type	Parameter Name	Optional Parameter	Available Values
T.x		T.x.1	T.x.2	T.x.3			
				WEIGHT		high resolution weight tokens)	7 = oz 8 = g 9 = lb-oz 10 = Custom Unit 1 11 = Custom Unit 2 12 = Custom Unit 3 13 = Custom Unit 4
42	LSTSTBL	Last Stable Weight	Last Stable Weight		Rounded Unit of Measure	r (Never use 'u' and 'r' together in the same weight syntax) (This syntax should only be used with high resolution weight tokens)	
47	PER	Percent	Percent				
48	TGT	Load/Unload Target Weight	N(Load/Unload)				
49	GWTPC		Gross Total + Current				
50	GWTMC		Gross Total - Current				
51	NWTPC		Net Total + Current				
52	NWTMC		Net Total - Current				
53	CNTPC		Count Total + Current				
54	CNTMC		Count Total - Current				
55	GAVG	Gross Average	Gross Average				
56	NAVG	Net Average	Net Average				
57	CAVG	Count Average	Count Average				
58	NMAX	Max Net Weight	Max Net Weight				
59	NMIN	Min Net Weight	Min Net Weight				
60	FF1	Free Fall 1	Free Fall Time 1				
61	FF2	Free Fall 2	Free Fall Time 2				
62	FGWT1		Future Gross 1				
63	FGWT2		Future Gross 2				
64	FNWT1		Future Net 1				
65	FNWT2		Future Net 2				
66	PCEKWT		Piece Weight x1000				
67	ACC		Percent Accuracy				
68	LSAMP	Last Sample	Last Sample				
69	CALW		Calibration Weight				
100	SATAS	All Scales Tare Weight Summed	Gross All Scales				
101	NWTAS	All Scales Net Weight Summed	Tare All Scales				

Token	Token Code	Description of Value	Name Value	Data Type	Parameter Name	Optional Parameter	Available Values
<b>T.x</b>		<b>T.x.1</b>	<b>T.x.2</b>	<b>T.x.3</b>			
102	CNTAS	All Scales Count's Summed	Net All Scales				
103	SATAS	All Scales Tare Weight Summed	Count All Scale				
104	GAT	Accumulated Gross Weight Total	Gross Total		Binary Output	B	1 = Truncate to 1-Byte Integer 2 = Truncate to 2-Byte Integer 3 = Truncate to 4-Byte Integer 4 = 4-Byte Floating Point
105	TAT	Accumulated Tare Weight Total	Tare Total		Binary Conversion	c	1 = As Binary (High Byte First) 2 = As Comma Separated Decimal in ASCII Format (High Byte First) 3 = As HEX in ASCII Format (High Byte First)
106	NAT	Accumulated Net Weight Total	Net Total		Polarity Character	v	Just a "+" or "-" character.
					Scale	S	0 = Current Scale 1 = Scale 1 2 = Scale 2
108	GATAS	All Scales Gross Total's Summed	Gross Total All Scales				
109	TATAS	All Scales Tare Total's Summed	Tare Total All Scales				
110	NATAS	All Scales Net Total's Summed	Net Total All Scales				
111	CATAS	All Scales Count Total's Summed	Count Total All Scales				
200	TIM	Time	Time		TIME	Time Format	F
					Seconds Format	S	0 = As Configured (default) 1 = Hide Seconds 2 = Seconds Since Midnight 3 = Both 1 and 2 4 = Number of seconds since Jan. 1, 1970. (unixtime)
					Width	W	1 - 127 Characters Default is Configuration Dependent
					Time Separator	s	1 = None 2 = Comma (,) 3 = Period or Decimal Point (.) 4 = Backslash (\) 5 = Space ( ) 6 = Forward Slash (/) 7 = Colon (:) 8 = Dash (-)
201	DAT	Date	Date	DATE	Format	F	0 = As Configured (default)

Token	Token Code	Description of Value	Name Value	Data Type	Parameter Name	Optional Parameter	Available Values
T.x		T.x.1	T.x.2	T.x.3			
							1 = MM-DD-YY 2 = MM-DD-YYYY 3 = DD-MM-YY 4 = DD-MM-YYYY 5 = YY-MM-DD 6 = YYYY-MM-DD 7 = DD-YY-MM 8 = DD-YYYY-MM 9 = YY-DD-MM 10 = YYYY-DD-MM 11 = WW-YY 12 = WW-YYYY 13 = YY-WW 14 = YYYY-WW
					Show Day of Week	d	d = day of the week spelled out (MON, TUES, etc.)
					Day of the year	j	j = number of days since beginning of the year
					Spelled Date	S	S = month spelled out (MAY, JUNE, etc.)
					Width	W	1 - 127 Characters Default is Configuration Dependent
					Separator	s	1 = None 2 = Comma (,) 3 = Period or Decimal Point (.) 4 = Backslash (\) 5 = Space ( ) 6 = Forward Slash (/) 7 = Colon (:) 8 = Dash (-) (default)
4	MOTN	Motion	Motion	INTEGER	Show Sign	p	1 = Show - (default) 2 = Show + 3 = Show All 4 = Hide All
6	OVER	Overload	Overload		Leading Zero	Z	0 = None (default) 1 = Leading Zeros 2 = Leading Spaces
7	UNDER	Underload	Underload		Width	W	1 - 127 Characters 38 INMOTM InMotion Time InMotion Time Default is Configuration Dependent
8	CZ	Center of Zero	Center of Zero		Justification	J	1=Right (default) 2=Left
12	CNT	Count	Count				
38	INMOTM	InMotion Time	InMotion Time				
107	CAT	Accumulated Count Value Total	Count Total				
250	OUT1	Output 1 State: <b>0 = Not Active, 1 = Active</b>	OUT1				

Token	Token Code	Description of Value	Name Value	Data Type	Parameter Name	Optional Parameter	Available Values
<b>T.x</b>		<b>T.x.1</b>	<b>T.x.2</b>	<b>T.x.3</b>			
251	OUT2	Output 2 State: <b>0 = Not Active, 1 = Active</b>	OUT2				
252	OUT3	Output 3 State: <b>0 = Not Active, 1 = Active</b>	OUT3				
300	RTN	Transaction Count	Transaction Count				
301	CON	Consecutive Number	Consecutive Number				
304	B2H	Binary to Hexadecimal	Bin2Hex		Mode ( <b>Applies to tokens 304 and 305 only</b> )	M	1=Stop (default) 2= Start
305	B2A	Binary to ASCII	Bin2Asc				
313	DIS	Status Byte	Status		Binary Output	B	1 = Truncate to 1-Byte Integer 2 = Truncate to 2-Byte Integer 3 = Truncate to 4-Byte Integer 4 = 4-Byte Floating Point
314	UTID	Unique ID (Archive menu)	DSD Consec.		Binary Conversion	c	1 = As Binary (High Byte First) 2 = As Comma Separated Decimal in ASCII Format (High Byte First) 3 = As HEX in ASCII Format (High Byte First)
302	CKSM	Checksum	Checksum		Mode <b>Applies to token 302 only</b>	M	1 = Stop 2 = Transmit LSB First 3 = Transmit MSB First 4 = Send CRC 7-Bit 50 = Start CCITT 51 = Start SDLC / HDLC 52 = Start CRC 16 (0000) 53 = Start CRC 12 54 = Start IRCC 16 55 = Start IRCC 8 56 = Start Xmodem 57 = Start Sum 16 58 = Start Sum 8 59 = Start CRC 16 (FFFF) 60 = Start Inverse IRCC 8 61 = Start Sum 16 (W/O Twos) 62 = BCC
9	UNIT	Unit of Measure Type	Unit		Unit of Measure <b>Applies to token 9 only</b>	U	1 = Current (default) 2 = Calibration 3 = lb 4 = kg 5 = oz 6 = g 7 = lb-oz 8 = Custom Unit 1 9 = Custom Unit 2

Token	Token Code	Description of Value	Name Value	Data Type	Parameter Name	Optional Parameter	Available Values	
T.x		T.x.1	T.x.2	T.x.3				
							10 = Custom Unit 3 11 = Custom Unit 4	
5	WST	Motion = M Stable or no motion = S	sMotion	STRING				
15	WSTAT	Weight Status	Weight Status					
17	TSAT	Return type of Tare used	Tare Type					
28	HEX	Prints HEX value of a ASCII Decimal Value	Hexadecimal		<b>Applies to token 28 only.</b>	non-optional parameter <b>[hXX]</b>	0 through 255	
29	NCIBYTE1	Returns NCI Status Byte 1 only	NCI Status Byte 1					
30	NCIBYTE2	Returns NCI Status Byte 2 only	NCI Status Byte 2					
31	NCIBYTE3	Returns NCI Status Byte 3 only	NCI Status Byte 3					
32	NCIBYTE12	Returns NCI Status Bytes 1 & 2 only	NCI Status Bytes 12					
33	NCIBYTE23	Returns NCI Status Bytes 2 & 3 only	NCI Status Bytes 23					
34	NCIBYTE123	Returns NCI Status Bytes 1, 2 & 3	NCI Status Bytes 123					
309	SITE	Site ID	Site ID					
310	SN	Serial Number	Serial Number			Justification	J	1 = Right (default) 2 = Left
311	LK	Condec Units = L or K	Condec Units			Width	W	1 - 127 Characters
312	STAT	Condec Status = " " (space = stable) "M" = motion "O" = out of range	Condec Status		STRING (cont.)			
323	S127	WI-127 Status Byte	127 Status				STATUS CODES These are the most common characters you will see on a terminal: "0" = Valid weight "1" = Motion "2" = Range error (Over/Underload) "4" = A-D error "8" = Low voltage Combinations of these errors can also occur. (e.g., "3 = Range error (2) plus Motion (1))	
324	NAME	Signal processor Scale Name	Scale Name				32 characters max entered in Ztools under SYSTEM TAB	
225	LOC	Signal processor Scale Location	Scale Location					
21	SMOTSTR	Sets values for Motion TRUE / FALSE	sSPCMot			Using these tokens requires use of the required parameter [tXXfYY] where XX and YY represent the		

Token	Token Code	Description of Value	Name Value	Data Type	Parameter Name	Optional Parameter	Available Values
<b>T.x</b>		<b>T.x.1</b>	<b>T.x.2</b>	<b>T.x.3</b>			
22	SCZSTR	Sets values for Center of Zero TRUE / FALSE	sSPCCZ		<b>Applies to tokens 21-27 only</b>		ASCII hex character (1-255) to be sent for a true or false condition respectively. The XX or YY must be entered as individual decimal values. Example: To send a "1" for true or "0" for false condition the parameter would be entered as [116 52 57 102 52 56] in the Print Format Editor.
23	SOLDSTR	Sets values for Overload TRUE / FALSE	sSPCOld				
24	SULDSTR	Sets values for Underload TRUE / FALSE	sSPCUld				
25	SGPOL	Sets values for Gross Polarity	sSPCGPol				
26	SNPOL	Sets values for Net Polarity	sSPCNPol				
27	SAPOL	Sets values for Active Value Polarity	sSPCAPol				
500	NULL	Null	NULL				
501	SOP	Start Optional Parameters	SOP	[			
502	EOP	End Optional Parameters	EOP	]			
600	TEXT	Print Data is Text	Data Type Text	"<ESC>txt"			
601	PCL	Print Data is Printer Control Language	Data Type PCL	"<ESC>PCL"			
602	EPPOS	Print Data is Epson Point of Sale	Data Type Epson Pos	"<ESC>EPS"			
603	ZEBRA	Print Data is Zebra Language	Data Type Zebra	"<ESC>ZEB"			
604	RAW	Print Data is RAW	Data Type RAW	"<ESC>raw"			
650	BOLD	Print Format Bold	Format Bold	"<ESC><ESC>B"			
651	ITAL	Print Format Italic	Format Italic	"<ESC><ESC>I"			
652	UNDER	Print Format Underline	Format Underline	"<ESC><ESC>U"			
653	LAND	Print Format Landscape	Format Landscape	"<ESC><ESC>L"			
654	FF	Print Format Form feed	Format Form Feed	"<ESC><ESC>F"			
655	WRAP	Print Format Line Wrap	Format Line Wrap	"<ESC><ESC>W"			

### 9.4.1 Additional Token Tables

The WSTAT and TSAT token default length is 6 characters.

WSTAT Token Table	
"O"	Overload
"U"	Underload
"M"	Motion
"S"	Stable
"E"	Cal error

TSAT Token Table	
"NT"	no tare active
"T"	Pushbutton tare active
"PT"	Preset or enter tare active

DIS token table: AWTX Status Byte format			
	Byte 1	Byte 2	Byte 3
Bit 0	1 = Under or OverLoad	1 = Center Zero	0
Bit 1	0	1=Gross	1
Bit 2	1=kg	1=Net	1=Overload
Bit 3	1=lb	0	1=Motion
Bit 4	1	1	1
Bit 5	1	1	1
Bit 6	0	0	0
Bit 7	0	0	0

NCI Status Byte Table			
Bit	Byte 1	Byte 2	Byte 3
1	1 = Scale in motion 0 = Stable	1 = Underloaded 0 = Not Underloaded	00 = Low Range 01 = Undefined 10 = Undefined 11 = High Range
2	1 = Scale at Zero 0 =Not at Zero	1 = Overloaded 0 = Not Overloaded	
3	1 = RAM error 0 = RAM OK	1 = ROM error 0 = ROM OK	1 = Net Weight 0 = Gross Weight
4	Always 0	1 = Faulty Calibration 0 = Calibration OK	1 = Initial Zero Error 0 = Initial Zero OK
5	Always 1	Always 1	Always 1
6	Always 1	Always 1	Always 1
7	Always 0	1 = Byte follows 0 = Last Byte	1 = Byte follows 0 = Last Byte
8	Parity	Parity	Parity

## 9.5 Application Variable Token Table

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
1	ID as entered into the ID Key field	ID	Integer	All Apps	Yes
		ID	String	All Apps	Yes
2		KeyTare	Weight	All Apps	Yes
	Stored Tare Weight Channel	Tare Channel	Integer	All Apps	Yes
		PbTare	Weight	All Apps	Yes
3	Accumulator Channel	Accum Channel	Integer	Accum	Yes
		Accum Channel	Integer	Count	Yes
		Accum Channel	Integer	660	Yes
4	Output 1 Configured Value	Out 1	Weight	All Apps	Yes
		Target1	Float	Batch	Yes
5	Output 2 Configured Value	Out 2	Weight	All Apps	Yes
	Target 2	Target2	Float	Batch	Yes
6	Output 3 Configured Value	Out 3	Weight	All Apps	Yes
	Target 3	Target3	Float	Batch	Yes
7	Output #1 Low Value	Out 1Lo	Weight	All Apps	Yes
	Preact Value #1	Preact1	Float	Batch	Yes
8	Output #2 Low Value	Out 2Lo	Weight	All Apps	Yes

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?	
A.x	A.x.1	A.x.2	A.x.3			
	Preact Value #2	Preact2	Float	Batch	Yes	
9	Output #3 Low Value	Out 3Lo	Weight	All Apps	Yes	
	Preact Value #3	Preact3	Float	Batch	Yes	
10	Output #1 High Value	Out 1Hi	Weight	All Apps	Yes	
	Output #1 Actual Value	Actual1	Float	Batch	No	
11	Output #2 High Value	Out 2Hi	Weight	All Apps	Yes	
	Output #2 Actual Value	Actual2	Float	Batch	No	
12	Output #3 High Value	Out 3Hi	Weight	All Apps	Yes	
	Output #3 Actual Value	Actual3	Float	Batch	No	
13	Input #1 State	Configured Input x Action (None, Print Key, Units Key, Select Key, Tare Key, Zero Key, *Sample Key, F1 Key, *Target Key, *Start Key, *Stop Key, *ID Key, *Setup Key, *Under Key, *Over Key, *Accum Key, *Base Key, *Print Hold Key, *User Defined) An (*) signifies indicator specific keys	Integer	All Apps	Yes	
	Input #1 State		Integer	Batch	Yes	
14	Input #2 State		Integer	All Apps	Yes	
	Input #2 State		Integer	Batch	Yes	
15	Input #3 State		Integer	All Apps	Yes	
	Input #3 State		Integer	Batch	Yes	
16	SMA "User ID"		SMA "User ID"	String	All Apps	Yes
17	SMA "User ID"		SMA "User ID"	Integer	All Apps	Yes
18	SMA "Message"		SMA "Message"	String	All Apps	Yes

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
19	SMA "Message Time"	SMA "Message Time"	Integer	All Apps	Yes
20	SMA "Timeout"	SMA "Timeout"	Integer	All Apps	Yes
21	In-MO	InMo WT	String	In Motion	No
	Truck ID Value	Truck ID	Integer	Truck IO	Yes
22	Fleet ID Tare Db Value	Fleet Tare	Float	Truck IO	No
23	Inbound Vehicle Weight Db Value	In Weight	Float	Truck IO	No
24		Transaction Count	Integer	Checkweigh	No
		Peak Min Str	String	P-Hold	No
	Inbound Vehicle Date Db Value	In Date	String	Truck IO	No
25		Transaction UofM	String	Checkweigh	No
		Peak Max Str	String	P-Hold	No
	Inbound Vehicle Time Db Value	In Time	String	Truck IO	No
26		Transaction Gross Weight	Float	Checkweigh	No
	Truck Accumulated Gross Total	Gross Total	Float	Truck IO	No
27		Transaction Net Weight Total	Float	Checkweigh	No
	Truck Accumulated Net Total	Net Total	Float	Truck IO	No
28	Truck Accumulated Tare Total	Tare Total	Float	Truck IO	No
29		grading.GradStr	Float	Grade	No

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
	Truck Transaction Count Value	Transaction Count	Integer	Truck IO	No
30	Grade 1	Grad1	Float	Grade	Yes
	Truck Unit of Measure Value	Unit of Measure	String	Truck IO	No
31	Grade 2	Grad2	Float	Grade	Yes
	Truck Gross Weight Value	Last Gross Wt	Float	Truck IO	No
32	Grade 3	Grad3	Float	Grade	Yes
	Truck Tare Weight Value	Last Tare Wt	Float	Truck IO	No
33	Grade 4	Grad4	Float	Grade	Yes
	Truck Net Weight Value	Last Net Wt	Float	Truck IO	No
34	Grade 5	Grad5	Float	Grade	Yes
	Outbound Ticket Date	Last Ticket Date	String	Truck IO	No
35	Grade 6	Grad6	Float	Grade	Yes
	Outbound Ticket Time	Last Ticket Time	String	Truck IO	No
36	Grade 7	Grad7	Float	Grade	Yes
		Truck Type	String	Truck IO	No
37	Grade 8	Grad8	Float	Grade	Yes
38	Grade 9	Grad9	Float	Grade	Yes
39	Grade 10	Grad10	Float	Grade	Yes

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
40	Grade 11	Grad11	Float	Grade	Yes
41		Cnt of Tot Wt	Integer	Stats	No
42		Cnt of Under Wt	Integer	Stats	No
43		Cnt of Target Wt	Integer	Stats	No
44		Cnt of Over Wt	Integer	Stats	No
45		Mean New Wt	Float	Stats	No
46		Median Net Wt	Float	Stats	No
47		SD Net Wt	Float	Stats	No
48		CV Net Wt	Float	Stats	No
49		Max Net Wt	Float	Stats	No
50		Min Net Wt	Float	Stats	No
51		Basis	Integer	Checkweigh	No
52		Minimum	Float	Checkweigh	No
53		Target Lo	Float	Checkweigh	Yes
54		Target Hi	Float	Checkweigh	Yes
55		Tolerance Lo	Float	Checkweigh	Yes
56		Tolerance Hi	Float	Checkweigh	Yes

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
57		Target	Float	Checkweigh	Yes
58		Under Divisions	Integer	Checkweigh	Yes
59		Over Divisions	Integer	Checkweigh	Yes
60		Maximum	Float	Checkweigh	No
61		Under Divisions per Segment	Integer	Checkweigh	Yes
62		Over Divisions per Segment	Integer	Checkweigh	Yes
63		checkweighBand	Float	Checkweigh	No
64		checkweighBand1	Float	Checkweigh	No
65	XR4500 Traffic Light Control (Green/Red)	XR4500 Light	String	Checkweigh	No
		XR4500 Light	String	In Motion	No
		XR4500 Light	String	Truck IO	No
66		Type	Integer	Checkweigh	Yes
67		XBar	Float	Stats	No
68		XBar/R	Float	Stats	No
69		XBar/R Message	String	Stats	No
70		UofM	String	Checkweigh	Yes
		Mode	Integer	All Apps	Yes

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
71		PLU Channel	Integer	Count, Adv Checkweigh	Yes
72		PLU Number	Integer	Count, Adv Checkweigh	No
73		PLU Channel	Integer	Count, Adv Checkweigh	No
74		Target Hi	Float	Count, Adv Checkweigh	No
75		Tolerance Lo	Float	Count, Adv Checkweigh	No
76		Tolerance Hi	Float	Count, Adv Checkweigh	No
77		Target	Float	Count, Adv Checkweigh	No
78		Transaction Count	Integer	Count, Adv Checkweigh	No
79		Gross Accum	Float	Count, Adv Checkweigh	No
80		Net Accum	Float	Count, Adv Checkweigh	No
81		Under Accum	Float	Count, Adv Checkweigh	No
82		Target Accum	Float	Count, Adv Checkweigh	No
83		Over Accum	Float	Count, Adv Checkweigh	No
84		Under Count	Integer	Count, Adv Checkweigh	No
85		Target Count	Integer	Count, Adv Checkweigh	No

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
86		Over Count	Integer	Count, Adv Checkweigh	No
87		Pieceweight	Float	Count, Adv Checkweigh	No
88		Units	String	Count, Adv Checkweigh	No
89		Message 1	String	Scanner	No
90		Message 2	String	Scanner	No
91		Transaction Count	Integer	Checkweigh	No
92		Transaction PLU Number	Integer	Checkweigh	No
93		Transaction TimeDate	String	Checkweigh	No
94		Transaction SysCount	Integer	Checkweigh	No
95		Transaction GrossWt	Float	Checkweigh	No
96		Transaction NetWt	Float	Checkweigh	No
97		Transaction UofM	String	Checkweigh	No
98		Transaction UAO	String	Checkweigh	No
99		Reserved for Webpage		All Apps	No
100		Reserved for Webpage		All Apps	No
101		Transaction ID	Integer	Checkweigh	No
110		Target Low	Integer	Count	Yes

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
111		Target High	Integer	Count	Yes
112		Current APW	Float	Count	Yes
113		Sample Size	Integer	Count	Yes
114		Cur Count	Integer	Count	No
150		Scl Num	Integer	All Apps	Yes
151		UDF1	String	All Apps	Yes
152		UDF2	String	All Apps	Yes
153		UDF3	String	All Apps	Yes
154		UDF4	String	All Apps	Yes
155		UDF5	String	All Apps	Yes
156		UDF6	String	All Apps	Yes
157		UDF7	String	All Apps	Yes
158		UDF8	String	All Apps	Yes
159		UDF9	String	All Apps	Yes
160		UDF10	Integer	All Apps	Yes
161		UDF11	Integer	All Apps	Yes
162		UDF12	Integer	All Apps	Yes

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
163		UDF13	Float	All Apps	Yes
164		UDF14	Float	All Apps	Yes
165		UDF15	Float	All Apps	Yes
171		GrossTotal	String	660	No
		GrossTotal	Weight	Accum	No
172		NetTotal	Weight	Accum	No
173		TareTotal	Weight	Accum	No
174		CountTotal	Integer	Accum	No
175		TransactionCount	Integer	660	No
		TransactionCount	Integer	Accum	No
176		TotalUnits	String	Accum	No
219		L-U Enabled	Integer	660	Yes
220		Auto Accum Enable	Integer	660	Yes
221		Auto Lock Mode	Integer	660	Yes
		Auto Lock Mode	Integer	P-Hold	Yes
222		Print Format Number	Integer	660	Yes
223		Auto Lock Min Weight	Weight	660	Yes
		Auto Lock Min Weight	Weight	P-Hold	Yes

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
224		Auto Relock Tolerance	Integer	660	Yes
		Auto Relock Tolerance	Integer	P-Hold	Yes
225		Auto Accum Min Weight	Weight	660	Yes
226		Gross Average	String	660	No
227		Channel Name	String	660	Yes
228		L-U Target	Weight	660	Yes
229		L-U Target	Integer	660	Yes
230		Load/Unload	String	660	No
231		LockedWeightAsString	String	660	No
		Locked Weight	String	P-Hold	No
238		Reserved for Mobile App Buttons			No
239		Reserved for Mobile App Buttons			No
240		Reserved for Mobile App Buttons			No
241		Reserved for Mobile App Buttons			No
242		Reserved for Mobile App Buttons			No
243		Reserved for Mobile App Buttons			No
244		Reserved for Mobile App Buttons			No

App Token	Variable Value Description	Name Value	Data Type	Indicator Apps	Settable?
A.x	A.x.1	A.x.2	A.x.3		
245		Reserved for Mobile App Buttons			No
246		Reserved for Mobile App Buttons			No
247		Reserved for Mobile App Buttons			No
248		Reserved for Mobile App Buttons			No
249		Reserved for Mobile App Buttons			No
250		Reserved for Mobile App Buttons			No




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*Note: When application variables are used in a print format, they typically only get updated by a Print command. If using ENQ or B-Cast protocols, use the P (Print) command to get active values for application variables.*

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## 9.6 Network Tokens

Token	SMA Protocol		PLC Protocol		Description of Network Token	Data Type			ZM220 Standard Applications								ZM305 GTN App. In/Out	Notes
	Set XVS	Get XVG	Inbound	Outbound		INTEGER	FLOAT	STRING	Gen.	Accumu.	Counting	Check-weighing	Batching	Peak Hold	Remote Dis	In-Motion		
0					Disabled				X	X	X	X	X	X	X	X	X	
1		X		X	Gross Weight Value		X		X	X	X	X	X	X	X	X	X	
2	X	X	X	X	Tare Weight Value		X		X	X	X	X	X	X	X	X	X	
3		X		X	Net Weight Value		X		X	X	X	X	X	X	X	X	X	
4		X		X	Scale Motion / Weigher Steady Flag	X			X	X	X	X	X	X	X	X	X	0 = Motion on Scale / Unsteady Weight 1 = No Motion on Scale / Steady Weight
6		X		X	Scale Overload Flag	X			X	X	X	X	X	X	X	X	X	0 = Scale is NOT Overloaded 1 = Scale is Overloaded
7		X		X	Scale Underload Flag	X			X	X	X	X	X	X	X	X	X	0 = Scale is NOT Underloaded 1 = Scale is Underloaded
8		X		X	Scale Center of Zero / Zero Balance	X			X	X	X	X	X	X	X	X	X	0 = Scale is NOT at Center of Zero / Zero Balanced 1 = Scale is at Center of Zero / Zero Balanced
9	X	X	X	X	Active Unit of Measure	X			X	X	X	X	X	X	X	X	X	0 = lb 1 = kg 2 = oz 3 = g 4 = lb-oz 5 = Custom Unit #1 6 = Custom Unit #2 7 = Custom Unit #3 8 = Custom Unit #4
10		X		X	Peak Max Weight Value		X							X				

Token	SMA Protocol		PLC Protocol		Description of Network Token	Data Type			ZM220 Standard Applications								ZM305 GTN App. In/Out	Notes
	Set XVS	Get XVG	Inbound	Outbound		INTEGER	FLOAT	STRING	Gen.	Accumu.	Counting	Check-weighing	Batching	Peak Hold	Remote Dis	In-Motion		
11		X		X	Peak Min Weight Value		X							X				
12		X		X	Count Value	X					X							
13	X	X	X	X	Piece Weight Value		X				X							
104	X	X	X	X	Accumulated Gross Weight Total Value		X			X	X							
105		X		X	Accumulated Tare Weight Total Value		X			X	X							
106	X	X	X	X	Accumulated Net Weight Total Value		X			X	X							
107	X	X	X	X	Accumulated Count Total Value	X					X							
257		X		X	Signal processor Watchdog Counter Value	X			X	X	X	X	X	X	X	X	X	Enables Operator to verify scale is functioning
300	X	X	X	X	Transaction Counter Value	X				X	X							
310		X		X	Signal processor Serial Number	X			X	X	X	X	X	X	X	X	X	
313		X		X	Signal processor Healthy Status (2-Byte)	X			X	X	X	X	X	X	X	X	X	Output of 2-bytes which indicate any faults. With no Errors = 0xFFFF BYTE #1: Bit 0 = Any Fault Bit 1 = ADC Error Bit 2, 3, 4 = N/A Bit 5 = Overload Condition Bit 6 = Underload Condition Bit 7 = N/A

Token	SMA Protocol		PLC Protocol		Description of Network Token	Data Type			ZM220 Standard Applications								ZM305 GTN App. In/Out	Notes
	Set XVS	Get XVG	Inbound	Outbound		INTEGER	FLOAT	STRING	Gen.	Accumu.	Counting	Check-weighing	Batching	Peak Hold	Remote Dis	In-Motion		
700	X	X	X	X	Signal processor Input Status Byte	X			X	X	X	X	X	X	X	X	X	Bit 0 = Input #1, #2 and #3 is OFF Bit 1 = Input #1 is ON Bit 2 = Input #2 is ON Bit 3 = Input #1 and #2 is ON Bit 4 = Input #3 is ON Bit 5 = Input #1 and #3 is ON Bit 6 = Input #2 and #3 is ON Bit 7 = Input #1, #2 and #3 is ON
800	X	X	X	X	Signal processor Output Status Byte	X			X	X	X	X	X	X	X	X	X	Bit 0 = Output #1, #2 and #3 is OFF Bit 1 = Output #1 is ON Bit 2 = Output #2 is ON Bit 3 = Output #1 and #2 is ON Bit 4 = Output #3 is ON Bit 5 = Output #1 and #3 is ON Bit 6 = Output #2 and #3 is ON Bit 7 = Output #1, #2 and #3 is ON

Token	SMA Protocol		PLC Protocol		Description of Network Token	Data Type			ZM220 Standard Applications								ZM305 GTN App. In/Out	Notes
	Set XVS	Get XVG	Inbound	Outbound		INTEGER	FLOAT	STRING	Gen.	Accumu.	Counting	Check-weighing	Batching	Peak Hold	Remote Dis	In-Motion		
900	X		X		Remote PB Zero Key	X			X	X	X	X	X	X	X	X	These value are configuration dependent. The following commands will change their value or function if the register which is mapped from the host changes at any time. XOR the mapped register with a "1" to toggle the register every time the XOR is executed.	
901	X		X		Remote PB Tare Key	X			X	X	X	X	X	X	X	X		
902	X		X		Remote PB Print Key	X			X	X	X	X	X	X	X	X		
903	X		X		Remote PB Accumulate Key	X				X	X							
904	X		X		Remote PB Units Key	X			X	X	X	X	X	X	X	X		
1001	X	X	X	X	Signal processor ID Value	X			X	X	X	X	X	X	X	X		
1002	X	X	X	X	Tare Channel Select	X			X	X	X	X	X	X	X	X	Available Tare Channels are 1 - 10	
1003	X	X	X	X	Accumulator Channel Select	X				X							Available Accumulator Channels are 1 - 200	
1004	X	X	X	X	Output #1 Weight Value		X		X	X	X	X	X	X	X	X		
1005	X	X	X	X	Output #2 Weight Value		X		X	X	X	X	X	X	X	X		
1006	X	X	X	X	Output #3 Weight Value		X		X	X	X	X	X	X	X	X		
1007	X	X	X	X	Preact #1 Weight Value		X					X						
	X	X	X	X	Output #1 Low Weight Value		X		*X	*X	*X	*X		*X	*X	*X	*X	
1008	X	X	X	X	Preact #2 Weight Value		X					X						
	X	X	X	X	Output #2 Low Weight Value		X		*X	*X	*X	*X		*X	*X	*X	*X	
1009	X	X	X	X	Preact #3 Weight Value		X					X						

Token	SMA Protocol		PLC Protocol		Description of Network Token	Data Type			ZM220 Standard Applications								ZM305 GTN App. In/Out	Notes
	Set XVS	Get XVG	Inbound	Outbound		INTEGER	FLOAT	STRING	Gen.	Accumu.	Counting	Check-weighing	Batching	Peak Hold	Remote Dis	In-Motion		
	X	X	X	X	Output #3 Low Weight Value		X		*X	*X	*X	*X		*X	*X	*X	*X	
1010		X		X	Output #1 Actual Weight Value		X					X						
	X	X	X	X	Output #1 High Weight Value		X		*X	*X	*X	*X		*X	*X	*X	*X	
1011		X		X	Output #2 Actual Weight Value		X					X						
	X	X	X	X	Output #2 High Weight Value		X		*X	*X	*X	*X		*X	*X	*X	*X	
1012		X		X	Output #3 Actual Weight Value		X					X						
	X	X	X	X	Output #3 High Weight Value		X		*X	*X	*X	*X		*X	*X	*X	*X	
1013	X	X	X	X	Remote Input #1 Value	X			X	X	X	X	X	X	X	X	X	
1014	X	X	X	X	Remote Input #2 Value	X			X	X	X	X	X	X	X	X	X	
1015	X	X	X	X	Remote Input #3 Value	X			X	X	X	X	X	X	X	X	X	
1021		X		X	Truck ID Number	X												X
1022		X		X	Fleet Tare Value		X											X
1023		X		X	Inbound Weight Value		X											X
1024		X		X	Inbound Date Value			X										X
1025		X		X	Inbound Time Value			X										X
1026		X		X	Accumulated Outbound Gross Weight Total		X											X
1027		X		X	Accumulated Outbound Net Weight Total		X											X
1028		X		X	Accumulated Outbound Tare Weight Total		X											X
1029		X		X	Truck Transaction Count	X												X
1030		X		X	Truck Unit of Measure			X										X
1031		X		X	Outbound Truck Gross Weight Value		X											X

Token	SMA Protocol		PLC Protocol		Description of Network Token	Data Type			ZM220 Standard Applications							ZM305 GTN App. In/Out	Notes	
	Set XVS	Get XVG	Inbound	Outbound		INTEGER	FLOAT	STRING	Gen.	Accumu.	Counting	Check-weighing	Batch-ing	Peak Hold	Remote Dis			In-Motion
1032		X		X	Outbound Truck Tare Weight Value		X										X	
1033		X		X	Outbound Truck Net Weight Value		X										X	
1034		X		X	Outbound Ticket Date			X									X	
1035		X		X	Outbound Ticket Time			X									X	
1065		X		X	XR4500TL Light Control			X				X					X	

\* the "Low Weight Value" and "High Weight Value" only apply when the Output mode selection is Act-In or Act-Out

## 9.7 ASCII Characters

Code #	Cont. Char.	Print Char.	Hex	Code #	Cont. Char.	Print Char.	Hex	Code #	Cont. Char.	Print Char.	Hex	Code #	Cont. Char.	Print Char.	Hex	Code #	Cont. Char.	Print Char.	Hex			
0	NUL		00	045	-	-	2D	090	Z	Z	5A	0128	NA	€	80	0173	NA	ad	0218	NA	ú	da
01	SOH	☺	01	046	.	.	2E	091	[	[	5B	0129	NA	ı	81	0174	NA	ae	0219	NA	û	db
02	STX	☹	02	047	/	/	2F	092	\	\	5C	0130	NA	,	82	0175	NA	af	0220	NA	ü	dc
03	ETX	♥	03	048	0	0	30	093	]	]	5D	0131	NA	f	83	0176	NA	b0	0221	NA	ý	dd
04	EOT	♦	04	049	1	1	31	094	^	^	5E	0132	NA	"	84	0177	NA	b1	0222	NA	ÿ	de
05	ENG	♣	05	050	2	2	32	095	_	_	5F	0133	NA	---	85	0178	NA	b2	0223	NA	ß	df
06	ACK	♠	06	051	3	3	33	096	`	`	60	0134	NA	+	86	0179	NA	b3	0224	NA	à	e0
07	BEL		07	052	4	4	34	097	a	a	61	0135	NA	+	87	0180	NA	b4	0225	NA	á	e1
08	BS		08	053	5	5	35	098	b	b	62	0136	NA	^	88	0181	NA	b5	0226	NA	â	e2
09	HT		09	054	6	6	36	099	c	c	63	0137	NA	€	89	0182	NA	b6	0227	NA	ã	e3
010	LF	LF	0A	055	7	7	37	0100	d	d	64	0138	NA	š	8a	0183	NA	b7	0228	NA	ä	e4
011	VT	☺	0B	056	8	8	38	0101	e	e	65	0139	NA	<	8b	0184	NA	b8	0229	NA	å	e5
012	FF	FF	0C	057	9	9	39	0102	f	f	66	0140	NA	œ	8c	0185	NA	b9	0230	NA	æ	e6
013	CR	CR	0D	058	:	:	3A	0103	g	g	67	0141	NA	J	8d	0186	NA	ba	0231	NA	ç	e7
014	SO	☺	0E	059	;	;	3B	0104	h	h	68	0142	NA	ž	8e	0187	NA	bb	0232	NA	è	e8
015	S1	⚙	0F	060	<	<	3C	0105	i	i	69	0143	NA	7	8f	0188	NA	bc	0233	NA	é	e9
016	DLE	4	10	061	=	=	3D	0106	j	j	6A	0144	NA	l	90	0189	NA	bd	0234	NA	ê	ea
017	DC1	3	11	062	>	>	3E	0107	k	k	6B	0145	NA	'	91	0190	NA	be	0235	NA	ë	eb
018	DC2	ø	12	063	?	?	3F	0108	l	l	6C	0146	NA	,	92	0191	NA	bf	0236	NA	ì	ec
019	DC3	Ø	13	064	@	@	40	0109	m	m	6D	0147	NA	"	93	0192	NA	c0	0237	NA	í	ed
020	DC4	B	14	065	A	A	41	0110	n	n	6E	0148	NA	"	94	0193	NA	c1	0238	NA	î	ee
021	NAK	§	15	066	B	B	42	0111	o	o	6F	0149	NA	*	95	0194	NA	c2	0239	NA	ï	ef
022	SYN		16	067	C	C	43	0112	p	p	70	0150	NA	-	96	0195	NA	c3	0240	NA	ð	f0
023	ETB	—	17	068	D	D	44	0113	q	q	71	0151	NA	-	97	0196	NA	c4	0241	NA	ñ	f1
024	CAN	↑	18	069	E	E	45	0114	r	r	72	0152	NA	~	98	0197	NA	c5	0242	NA	ò	f2
025	EM	↓	19	070	F	F	46	0115	s	s	73	0153	NA	™	99	0198	NA	c6	0243	NA	ó	f3
026	SUB	→	1A	071	G	G	47	0116	t	t	74	0154	NA	š	9a	0199	NA	c7	0244	NA	ô	f4
027	ESC	←	1B	072	H	H	48	0117	u	u	75	0155	NA	>	9b	0200	NA	c8	0245	NA	õ	f5
028	FS	—	1C	073	I	I	49	0118	v	v	76	0156	NA	œ	9c	0201	NA	c9	0246	NA	ö	f6
029	GS	—	1D	074	J	J	4A	0119	w	w	77	0157	NA	l	9d	0202	NA	ca	0247	NA	+	f7
030	RS	5	1E	075	K	K	4B	0120	x	x	78	0158	NA	ž	9e	0203	NA	cb	0248	NA	ø	f8
031	US	6	1F	076	L	L	4C	0121	y	y	79	0159	NA	ÿ	9f	0204	NA	cc	0249	NA	ù	f9
032	SP		20	077	M	M	4D	0122	z	z	7A	0160	NA	Ê	a0	0205	NA	cd	0250	NA	ú	fa
033	!	!	21	078	N	N	4E	0123	{	{	7B	0161	NA	i	a1	0206	NA	ce	0251	NA	û	fb
034	"	"	22	079	O	O	4F	0124			7C	0162	NA	¢	a2	0207	NA	cf	0252	NA	ü	fc
035	#	#	23	080	P	P	50	0125	}	}	7D	0163	NA	£	a3	0208	NA	d0	0253	NA	ý	fd
036	\$	\$	24	081	Q	Q	51	0126	~	~	7E	0164	NA	¤	a4	0209	NA	d1	0254	NA	þ	fe
037	%	%	25	082	R	R	52	0127	DEL	☐	7F	0165	NA	¥	a5	0210	NA	d2	0255	NA	ÿ	ff
038	&	&	26	083	S	S	53					0166	NA	ı	a6	0211	NA	d3				
039	'	'	27	084	T	T	54					0167	NA	§	a7	0212	NA	d4				
040	(	(	28	085	U	U	55					0168	NA	¨	a8	0213	NA	d5				
041	)	)	29	086	V	V	56					0169	NA	©	a9	0214	NA	d6				
042	*	*	2A	087	W	W	57					0170	NA	ª	aa	0215	NA	d7				
043	+	+	2B	088	X	X	58					0171	NA	«	ab	0216	NA	d8				
044	,	,	2C	089	Y	Y	59					0172	NA	¬	ac	0217	NA	d9				

## 9.8 Control Codes

ASCII	Control Code Description	Control
1	Start of Heading	#SOH
2	Start of Text	#STX
3	End of Text	#ETX
4	End of Transmission	#EOT
5	Enquiry	#ENQ
6	Acknowledge	#ACK
7	Bell	#BEL
8	Backspace	#BS
9	Horizontal Tab	#TAB
10	Line Feed (New Line)	#LF
11	Vertical Tab	#VT
12	Form Feed (New Page)	#FF
13	Carriage Return	#CR
14	Shift Out	#SO
15	Shift In	#SI
16	Data Link Escape	#DLE
17	Device Control 1	#DC1
18	Device Control 2	#DC2
19	Device Control 3	#DC3
20	Device Control 4	#DC4
21	Negative Acknowledge	#NAK
22	Synchronous Idle	#SYN
23	End of Block	#ETB
24	Cancel	#CAN
25	End of Medium	#EM
26	Substitute	#SUB
27	Escape	#ESC
28	File Separator	#FS
29	Group Separator	#GS
30	Record Separator	#RS
31	Unit Separator	#US
32	Space	

## 9.9 Default Print Formats

Technicians can quick select a Print Format by using the keypad. For example, key in 1 9 and press the **PRINT** key to print a ticket using Print Format 19, 3 5 to get Print Format 35, etc.

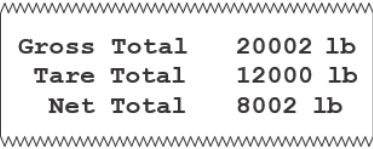



Note: The below ticket examples are close approximations of how the different print formats look when used. There may be small differences in font, size, and formatting when printing in the field.

Print Format Number	Description	Example Ticket	Code:
1	General App. Default	<pre> Gross      3000 lb Tare       1000 lb Net        2000 lb           </pre>	<pre> Gross {T.GWT.1[S0]}  {T.UNIT.1[S0]} #CR #LF Tare {T.SAT.1[S0]}  {T.UNIT.1[S0]} #CR #LF Net {T.NWT.1[S0]}  {T.UNIT.1[S0]} #CR #LF           </pre>
2	Accumulate App. Default (see PF 8 for Totals)	<pre> Acc #      1 Trans #    3 Gross     3000 lb Tare      1000 lb Net       2000 lb           </pre>	<pre> Acc ## {A.3.1} #CR #LF Trans ##  {T.RTN.1[S0]} #CR #LF Gross {T.GWT.1[S0]}  {T.UNIT.1[S0]} #CR #LF Tare {T.SAT.1[S0]}  {T.UNIT.1[S0]} #CR #LF Net {T.NWT.1[S0]}  {T.UNIT.1[S0]} #CR #LF #LF           </pre>
3	Count App. Default (see PF 31 for Totals)	<pre> Count      150           </pre>	<pre> Count {T.CNT.1[S0]} #CR #LF           </pre>
4	Net Weight	<pre> Net        2000 lb           </pre>	<pre> Net {T.NWT.1[S0]}  {T.UNIT.1[S0]} #CR #LF           </pre>

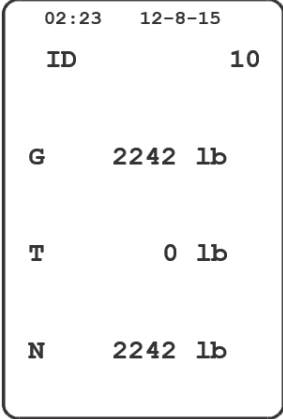
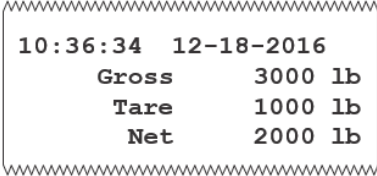
Print Format Number	Description	Example Ticket	Code:
5	Displayed Weight	<pre>                 ~~~~~                 G   2000 lb                 ~~~~~             </pre>	{T.ACT.2[W1S0]} {T.ACT.1[S0]} {T.UNIT.1[S0]} #CR #LF
6	Peak App. Default	<pre>                 ~~~~~                 Peak  6000 lb                 ~~~~~             </pre>	{T.PMAX.2[S0]} {T.PMAX.1[S0]} {T.UNIT.1[S0]} #CR #LF
7	Remote App. Default (broadcast this format to remote)	<pre>                 ~~~~~                 1000 lb G                 ~~~~~             </pre>	{T.ACT.1[S0]} {T.UNIT.1[S0]} {T.ACT.2[W1S0]} #CR #LF
8	Accumulate Totals App. Default (see PF 2 for print out)	<pre>                 ~~~~~                 Acc #      1                 Trans #    3                 Gross Total 9000 lb                 Tare Total  2000 lb                 Net Total   7000 lb                 ~~~~~             </pre>	Acc ## {A.3.1} #CR #LF Trans ## {T.RTN.1[S0]} #CR #LF Gross Total {T.GAT.1[S0]} {T.UNIT.1[S0]} #CR #LF Tare Total {T.TAT.1[S0]} {T.UNIT.1[S0]} #CR #LF Net Total {T.NAT.1[S0]} {T.UNIT.1[S0]} #CR #LF #CR #LF
9	CONDEC clone format	<pre>                 ~~~~~                 1000LG                 ~~~~~             </pre>	#STX {T.ACT.1[Z2W8]} {T.LK.1} {T.ACT.2[W1]} {T.STAT.1} #CR #LF
10	Displayed Weight with Tare Register number	<pre>                 ~~~~~                 1 G   1000 lb                 ~~~~~             </pre>	{A.2.1[W1]} {T.ACT.2[W1S0]} {T.ACT.1[S0]} {T.UNIT.1[S0]} #CR #LF
11	Displayed Weight with Status (3-bytes)	<pre>                 ~~~~~                 G   2000 lb 822                 ~~~~~             </pre>	{T.ACT.2[W1S0]} {T.ACT.1[S0]} {T.UNIT.1[S0]} {T.DIS.1} #CR #LF

Print Format Number	Description	Example Ticket	Code:
12	Displayed Weight with Status (Alphanumeric)	<pre>           ~~~~~           G    5000 lb S           ~~~~~         </pre>	<pre> {T.ACT.2[W1S0]} {T.ACT.1[S0]} {T.UNIT.1[S0]} {T.WSTAT.1[W1S0]} #CR #LF         </pre>
13	Basic Weight Ticket with Time, Date, and Site ID number	<pre>           ~~~~~           02:21:28    04-23-2015             ID  141414           Gross    5000 lb            Tare    1000 lb             Net    4000 lb           ~~~~~         </pre>	<pre> {T.TIM.1} {T.DAT.1} #CR #LF {A.1.2[W6]} {A.1.1[W6]} #CR #LF {T.GWT.2[W6S0]} {T.GWT.1[S0]} {T.UNIT.1[S0]} #CR #LF {T.SAT.2[W6S0]} {T.SAT.1[S0]} {T.UNIT.1[S0]} #CR #LF {T.NWT.2[W6S0]} {T.NWT.1[S0]} {T.UNIT.1[S0]} #CR #LF         </pre>
14	Basic Weight Ticket with Time, Date, and Tare Register number	<pre>           ~~~~~           02:21:28 04-23-2015             G    5000 lb             1 T    1000 lb             N    4000 lb           ~~~~~         </pre>	<pre> {T.TIM.1} {T.DAT.1} #CR #LF {T.GWT.2[W1S0]} {T.GWT.1[S0]} {T.UNIT.1[S0]} #CR #LF {A.2.1[W1]} {T.SAT.2[W1S0]} {T.SAT.1[S0]} {T.UNIT.1[S0]} #CR #LF {T.NWT.2[W1S0]} {T.NWT.1[S0]} {T.UNIT.1[S0]} #CR #LF         </pre>
15	Accumulated Gross Weight (Used with Accumulate or Count Apps.)	<pre>           ~~~~~           Gross Total    5000 lb           ~~~~~         </pre>	<pre> {T.GAT.2[S0]} {T.GAT.1[S0]} {T.UNIT.1[S0]} #CR #LF         </pre>
16	Accumulated Net Weight (Used with Accumulate or Count Apps.)	<pre>           ~~~~~           Net Total    8002 lb           ~~~~~         </pre>	<pre> {T.NAT.2[S0]} {T.NAT.1[S0]} {T.UNIT.1[S0]} #CR #LF         </pre>

Print Format Number	Description	Example Ticket	Code:
17	Basic Accumulate Ticket for GTN values (Used with Accumulate or Count Apps.)		<pre>{T.GAT.2[S0]} {T.GAT.1[S0]} {T.UNIT.1[S0]} #CR #LF {T.TAT.2[S0]} {T.TAT.1[S0]} {T.UNIT.1[S0]} #CR #LF {T.NAT.2[S0]} {T.NAT.1[S0]} {T.UNIT.1[S0]} #CR #LF</pre>
18	Minimum Peak Weight Value/ Peak Min Max	N/A	N/A
19	2.5 in. X 4.0 in. Barcode Ticket with Site ID, Time and Date		<pre>{T.ZEBRA.1} #CR #LF OD #CR #LF N #CR #LF q464 #CR #LF Q812,20+0 #CR #LF S2 #CR #LF D8 #CR #LF ZT #CR #LF A55,650,3,4,1,1,N," {T.TIM.1}  {T.DAT.1} " #CR #LF B100,690,3,3,2,4,40,B,"ID {A.1.1} " #CR #LF B180,690,3,3,2,4,40,B,"G {T.GWT.1[S0]}  {T.UNIT.1[S0]} " #CR #LF B265,690,3,3,2,4,40,B,"T {T.SAT.1[S0]}  {T.UNIT.1[S0]} " #CR #LF B370,690,3,3,2,4,40,B,"N {T.NWT.1[S0]}  {T.UNIT.1[S0]} " #CR #LF P1 #CR #LF #FF</pre>

Print Format Number	Description	Example Ticket	Code:
20	1.25 in. X 1.0 in. Thermal Label Ticket with Time and Date	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p style="text-align: center;">02:23 12-8-15</p> <p><b>G 2242 1b</b></p> <p><b>T 0 1b</b></p> <p><b>N 2242 1b</b></p> </div>	<pre> {T.ZEBRA.1} #CR #LF OD #CR #LF N #CR #LF q248 #CR #LF Q173,24+0 #CR #LF S2 #CR #LF D8 #CR #LF ZT #CR #LF A18,8,0,3,1,1,N," {T.TIM.1[F2]} " #CR #LF A134,8,0,3,1,1,N," {T.DAT.1[F3]} " #CR #LF A30,47,0,4,1,1,N,"G {T.GWT.1[S0]} {T.UNIT.1[S0]} " #CR #LF A30,81,0,4,1,1,N,"T {T.SAT.1[S0]} {T.UNIT.1[S0]} " #CR #LF A30,116,0,4,1,1,N,"N {T.NWT.1[S0]} {T.UNIT.1[S0]} " #CR #LF P1 #CR #LF #FF                     </pre>

Print Format Number	Description	Example Ticket	Code:
21	2.50 in. X 4.0 in. Thermal Label Ticket with ID, Time and Date	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <pre> 02:23  12-8-15  ID              10  G      2242 lb  T          0 lb  N      2242 lb           </pre> </div>	<pre> {T.ZEBRA.1} #CR #LF OD #CR #LF N #CR #LF q464 #CR #LF Q812,24+0 #CR #LF S2 #CR #LF D8 #CR #LF ZT #CR #LF A40,120,0,1,2,2,N," {T.TIM.1}  {T.DAT.1} " #CR #LF A60,225,0,1,3,4,N,"ID {A.1.1} " #CR #LF A30,360,0,1,3,5,N,"G {T.GWT.1[S0]}  {T.UNIT.1[S0]} " #CR #LF A30,490,0,1,3,5,N,"T {T.SAT.1[S0]}  {T.UNIT.1[S0]} " #CR #LF A30,620,0,1,3,5,N,"N {T.NWT.1[S0]}  {T.UNIT.1[S0]} " #CR #LF P1 #CR #LF #FF           </pre>

Print Format Number	Description	Example Ticket	Code:
22	4.0 in. X 6.0 in. Thermal Label Ticket with ID, Time and Date	 <pre> 02:23 12-8-15 ID 10  G 2242 lb  T 0 lb  N 2242 lb                     </pre>	<pre> {T.ZEBRA.1} #CR #LF OD #CR #LF N #CR #LF q816 #CR #LF Q1218,20+0 #CR #LF S2 #CR #LF D8 #CR #LF ZT #CR #LF A190,135,0,2,2,2,N," {T.TIM.1}  {T.DAT.1} " #CR #LF A190,275,0,2,3,3,N,"ID {A.1.1} " #CR #LF A90,545,0,2,4,4,N,"G {T.GWT.1[S0]}  {T.UNIT.1[S0]} " #CR #LF A90,685,0,2,4,4,N,"T {T.SAT.1[S0]}  {T.UNIT.1[S0]} " #CR #LF A90,825,0,2,4,4,N,"N {T.NWT.1[S0]}  {T.UNIT.1[S0]} " #CR #LF P1 #CR #LF #FF                     </pre>
23	Same as PF1 with Time and Date first	 <pre> ~~~~~ 10:36:34 12-18-2016 Gross 3000 lb Tare 1000 lb Net 2000 lb ~~~~~                     </pre>	<pre> {T.TIM.1}  {T.DAT.1} #CR #LF Gross {T.GWT.1[S0]}  {T.UNIT.1[S0]} #CR #LF Tare {T.SAT.1[S0]}  {T.UNIT.1[S0]} #CR #LF Net {T.NWT.1[S0]}  {T.UNIT.1[S0]} #CR #LF                     </pre>

Print Format Number	Description	Example Ticket	Code:
24	Same as PF1 with Time and Date last	<pre>           ~~~~~           Gross      3000 lb           Tare       1000 lb           Net        2000 lb           10:36:34  12-18-2016           ~~~~~         </pre>	<pre>           Gross           {T.GWT.1[S0]}            {T.UNIT.1[S0]}           #CR           #LF           Tare           {T.SAT.1[S0]}            {T.UNIT.1[S0]}           #CR           #LF           Net           {T.NWT.1[S0]}            {T.UNIT.1[S0]}           #CR           #LF           {T.TIM.1}            {T.DAT.1}           #CR           #LF         </pre>
25	Gross Weight & Time & Date	<pre>           ~~~~~           Gross  3001 11:54:46  12-18-2014           ~~~~~         </pre>	<pre>           {T.GWT.2[S0]}            {T.GWT.1[S0]}            {T.TIM.1}            {T.DAT.1}           #CR           #LF         </pre>
26	Brecknell RD-65 (Setup RD for Data Format #3)	<pre>           ~~~~~           G      6210 lb           ~~~~~         </pre>	<pre>           {T.ACT.2[W1S0]}            {T.ACT.1[W6S0]}            {T.UNIT.1[W2S0]}            #CR           #LF         </pre>
27	In-Motion App. Default	<pre>           ~~~~~           G      5000 lb           ~~~~~         </pre>	<pre>           {T.ACT.2[W1S0]}            {T.INMOWT.1}            {T.UNIT.1[S0]}            #CR           #LF         </pre>
28	In_Motion App. (Alternate)	<pre>           ~~~~~           Gross      28.0 lb           Net        16.0 lb           Tare       12.0 lb           ~~~~~         </pre>	<pre>           Gross           {T.INMOGWT.1[W6S0]}            {T.UNIT.1[S0]}            #CR           #LF           Net           {T.INMONWT.1[W6S0]}            {T.UNIT.1[S0]}            #CR           #LF           Tare           {T.SAT.1[W6S0]}            {T.UNIT.1[S0]}            #CR           #LF         </pre>



Print Format Number	Description	Example Ticket	Code:
35	Single transaction of accumulated GTN data (see PF 8 or PF 9 for Totals Mode dependant)	<pre>           ~~~~~           PLU #           1           Trans #         3           Gross      3000 lb           Tare       1000 lb           Net        2000 lb           ~~~~~         </pre>	PLU ## {A.72.1} #CR #LF Trans ## {T.RTN.1[S0]} #CR #LF Gross {T.GWT.1[S0]} {T.UNIT.1[S0]} #CR #LF Tare {T.SAT.1[S0]} {T.UNIT.1[S0]} #CR #LF Net {T.NWT.1[S0]} {T.UNIT.1[S0]} #CR #LF #CR #LF
36	Accumulate Totals for PLU # (see PF 2 for print out) Advanced Mode only	<pre>           ~~~~~           PLU #           3           Trans #         2           Gross Total  26.5 lb           Net Total   26.5 lb           ~~~~~         </pre>	PLU ## {A.72.1} #CR #LF Trans ## {A.78.1} #CR #LF Gross Total {A.79.1} {T.UNIT.1[S0]} #CR #LF Net Total {A.80.1} {T.UNIT.1[S0]} #CR #LF #CR #LF
37	Accumulate Totals (see PF 2 for print out) Mid375 Mode only	<pre>           ~~~~~           Trans #         2           Gross Total  26.5 lb           Net Total   26.5 lb           ~~~~~         </pre>	Trans ## {A.24.1} #CR #LF Gross Total {A.26.1} {A.25.1} #CR #LF Net Total {A.27.1} {A.25.1} #CR #LF #CR #LF

Print Format Number	Description	Example Ticket	Code:
38	ZM223 Checkweigher Under/Accept/ Over Band	<pre style="font-family: monospace;"> OVER       :    0.378 lb         </pre>	{A.63.2} : {A.63.1} {T.UNIT.1[S0]} #CR #LF
39	ZM223 Checkweigher Accept/Reject Band	<pre style="font-family: monospace;"> REJECT     :    0.542 lb         </pre>	{A.64.2} : {A.64.1} {T.UNIT.1[S0]} #CR #LF
40	ZM223 Net Weighment with Band	<pre style="font-family: monospace;"> 1.176 lb OVER         </pre>	{T.NWT.1[S0]} {T.UNIT.1[S0]} {A.63.2} #CR #LF
41	ZM223 Standard Deviation Stats.	<pre style="font-family: monospace;"> Tol Hi =    0.550 lb Tol Lo =    0.240 lb Target =   16.000 lb # Over  =         5 # Under =         4 #Accept =         5   Mean =   16.504 lb   Max Wt =   17.504 lb   Min Wt =   15.003 lb   Std Dev =    1.370   C of V =    1.202 PCT # Smpl  =          14         </pre>	#CR #LF Tol Hi = {A.56.1} {T.UNIT.1[S0]} #CR #LF Tol Lo = {A.55.1} {T.UNIT.1[S0]} #CR #LF Target = {A.57.1} {T.UNIT.1[S0]} #CR #LF ## Over = {A.44.1} #CR #LF ## Under = {A.42.1} #CR #LF ## Accept = {A.43.1} #CR #LF Mean = {A.45.1} {T.UNIT.1} #CR #LF Max Wt = {A.49.1} {T.UNIT.1} #CR #LF Min Wt = {A.50.1} {T.UNIT.1} #CR #LF Std Dev = {A.47.1} #CR #LF C of V = {A.48.1} PCT #CR #LF ## Smpl = {A.41.1} #CR #LF #CR #LF

Print Format Number	Description	Example Ticket	Code:
42	ZM223 X-Bar/R Stats. with Trend Message if a trend condition exists.	<pre> Tol Hi = 3.100 lb Tol Lo = 2.900 lb Target = 3.000 lb Ave Wt = 3.526 lb Range = 1.200 lb </pre>	<pre> #CR #LF Tol Hi = {A.56.1}  {T.UNIT.1[S0]} #CR #LF Tol Lo = {A.55.1}  {T.UNIT.1[S0]} #CR #LF Target = {A.57.1}  {T.UNIT.1[S0]} #CR #LF Ave Wt = {A.67.1}  {T.UNIT.1[S0]} #CR #LF Range = {A.68.1[p4]}  {T.UNIT.1[S0]} #CR #LF {A.69.1} #CR #LF #CR #LF </pre>
43	ZM223 Grading	<pre> Grad3 6.005 lb </pre>	<pre> {A.29.2}  {A.29.1}  {T.UNIT.1[S0]} #CR #LF </pre>
45	Scale 1	<pre> Gross 1 0 lb Tare 1 0 lb Net 1 0 lb </pre>	<pre> Gross 1 {T.GWT.1[S1]}  {T.UNIT.1[S1]} #CR #LF Tare 1 {T.SAT.1[S1]}  {T.UNIT.1[S1]} #CR #LF Net 1 {T.NWT.1[S1]}  {T.UNIT.1[S1]} #CR #LF #CR #LF </pre>
46	Scale 2	<pre> Gross 2 0 lb Tare 2 0 lb Net 2 0 lb </pre>	<pre> Gross 2 {T.GWT.1[S2]}  {T.UNIT.1[S2]} #CR #LF Tare 2 {T.SAT.1[S2]}  {T.UNIT.1[S2]} #CR #LF Net 2 {T.NWT.1[S2]}  {T.UNIT.1[S2]} #CR #LF #CR #LF </pre>

Print Format Number	Description	Example Ticket	Code:
47	Scale 1 and 2 Total	<pre> <b>Gross 1</b>      0 lb <b>Tare 1</b>      0 lb <b>Net 1</b>       0 lb <b>Gross 2</b>      0 lb <b>Tare 2</b>      0 lb <b>Net 2</b>       0 lb <b>Gross Total</b>  0 lb <b>Tare Total</b>  0 lb <b>Net Total</b>   0 lb           </pre>	<pre> Gross 1 {T.GWT.1[S1]}  Tare 1 {T.UNIT.1[S1]} #CR #LF Tare 1 {T.SAT.1[S1]}  Tare 2 {T.UNIT.1[S1]} #CR #LF Gross 2 {T.GWT.1[S2]}  Tare 2 {T.UNIT.1[S2]} #CR #LF Tare 2 {T.SAT.1[S2]}  Tare 2 {T.UNIT.1[S2]} #CR #LF Net 2 {T.NWT.1[S2]}  Gross Total {T.GWTAS.1}  Tare Total {T.SATAS.1}  Net Total {T.NWTAS.1}  Gross Total {T.GWTAS.1} #CR #LF Tare Total {T.SATAS.1} #CR #LF Net Total {T.NWTAS.1} #CR #LF #CR #LF           </pre>
48	Inbound Ticket	<pre> ~~~~~ <b>In Date 2015-03-25</b> <b>In Time 10:50:45</b> <b>ID 38577</b> <b>In Weight 14300 lb</b> ~~~~~           </pre>	<pre> In Date {A.34.1} #CR #LF In Time {A.35.1} #CR #LF ID {A.21.1[W8]} #CR #LF In Weight {A.31.1[W6Z2]}  {A.30.1} #CR #LF #CR #LF           </pre>

Print Format Number	Description	Example Ticket	Code:
49	Inbound Report Header	<pre> Inbound Vehicle Report 10:36:41 03-25-2015    ID      Time      Date      Weight ----- </pre>	<pre> Inbound Vehicle Report #CR #LF {T.TIM:1[F3]} {T.DAT:1} #CR #LF #CR #LF   ID      Time      Date      Weight #CR #LF ----- #CR #LF </pre>
50	Inbound Report Body of Data	<pre> 966558    20:17    3-9-2015    49300 lb 561152    22:41    3-11-2015    6800 lb 443216    13:05    3-18-2015    59000 lb 606912     5:53    3-18-2015    11620 lb 394736     1:05    3-18-2015    13380 lb </pre>	<pre> {A.21.1[W8Z2]} {A.25.1[W8Z2]} {A.24.1[W10Z2]} {A.23.1[W8Z2]} {A.30.1[W2Z2]} #CR #LF </pre>
51	Inbound Report Footer	<pre>       Gross    0 lb       Tare     0 lb       Net      0 lb End of Fleet Report End of Inbound Report </pre>	<pre> #CR #LF End of Inbound Report #CR #LF #CR #LF </pre>
52	Outbound Ticket	<pre> ~~~~~ In Date 2015-03-25 In Time 10:50:45 Out Date 2015-03-25 Out Time 10:56:04       ID 38577 Transaction 51        Gross 51040 lb       Tare 14300 lb       Net 36740 lb ~~~~~ </pre>	<pre> In Date {A.24.1} #CR #LF In Time {A.25.1} #CR #LF Out Date {A.34.1} #CR #LF Out Time {A.35.1} #CR #LF ID {A.21.1[W8]} #CR #LF Transaction {A.29.1[W6Z2]} #CR #LF #CR #LF Gross {A.31.1[W6Z2]} {A.30.1} #CR #LF Tare {A.32.1[W6Z2]} {A.30.1} #CR #LF Net {A.33.1[W6Z2]} {A.30.1} #CR #LF #CR #LF </pre>

Print Format Number	Description	Example Ticket	Code:															
53	Outbound Report Header	<p style="text-align: center;"><b>Outbound Vehicle Report</b> 10:39:32 03-25-2015</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">ID</th> <th style="text-align: left;"># Trans</th> <th style="text-align: left;">Total Net Wt</th> </tr> </thead> <tbody> <tr> <td>-----</td> <td>-----</td> <td>-----</td> </tr> </tbody> </table>	ID	# Trans	Total Net Wt	-----	-----	-----	Outbound Vehicle Report #CR #LF {T.TIM:1[F3]} {T.DAT:1} #CR #LF #CR #LF ID ## Trans Total Net Wt #CR #LF ----- #CR #LF									
ID	# Trans	Total Net Wt																
-----	-----	-----																
54	Outbound Report Body of Data	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 30%;">674758</td> <td style="width: 10%;">2</td> <td style="width: 60%;">130400 lb</td> </tr> <tr> <td>806039</td> <td>2</td> <td>99200 lb</td> </tr> <tr> <td>961564</td> <td>6</td> <td>250100 lb</td> </tr> <tr> <td>735023</td> <td>5</td> <td>317900 lb</td> </tr> <tr> <td>495520</td> <td>10</td> <td>361200 lb</td> </tr> </tbody> </table>	674758	2	130400 lb	806039	2	99200 lb	961564	6	250100 lb	735023	5	317900 lb	495520	10	361200 lb	{A.21.1[W8Z2]} {A.29.1[W7Z2]} {A.27.1[W9Z2]} {A.30.1[W2Z2]} #CR #LF
674758	2	130400 lb																
806039	2	99200 lb																
961564	6	250100 lb																
735023	5	317900 lb																
495520	10	361200 lb																
55	Outbound Report Footer	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> <p><b>End of Outbound Report</b></p> </div>	#CR #LF End of Outbound Report #CR #LF #CR #LF															
56	Fleet Ticket	<div style="border: 1px dashed black; padding: 10px; width: fit-content; margin: auto;"> <p>Date 2015-03-25            Time 10:51:24            Fleet ID 759111            Transaction 192</p> <p>Gross 69080 lb            Tare 14100 lb PT            Net 54980 lb</p> </div>	Date {A.34.1} #CR #LF Time {A.35.1} #CR #LF Fleet ID {A.21.1[W8]} #CR #LF Transaction {A.29.1[W6Z2]} #CR #LF #CR #LF Gross {A.31.1[W6Z2]} {A.30.1} #CR #LF Tare {A.32.1[W6Z2]} {A.30.1} PT #CR #LF Net {A.33.1[W6Z2]} {A.30.1} #CR #LF #CR #LF															

Print Format Number	Description	Example Ticket	Code:
57	Fleet Report Header	<pre> Fleet Vehicle Report 10:43:40 03-25-2015  Fleet ID  Tare Wt  # Trans Total Net Wt ----- </pre>	<pre> Fleet Vehicle Report #CR #LF {T.TIM.1[F3]} {T.DAT.1} #CR #LF #CR #LF Fleet ID  Tare Wt ## Trans Total Net Wt #CR #LF ----- #CR #LF </pre>
58	Fleet Report Body of Data	<pre> 759109 20500 lb 14 1148000 lb 8262677 12280 lb 32 1571840 lb 8262686 11880 lb 41 1948320 lb 8262691 11940 lb 54 2579040 lb 8262671 11880 lb 56 2661120 lb </pre>	<pre> {A.21.1[W8Z2]} {A.22.1[W6Z2]} {A.30.1[W2Z2]} {A.29.1[W7Z2]} {A.27.1[W9Z2]} {A.30.1[W2Z2]} #CR #LF </pre>
59	Fleet Report Footer	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">End of Fleet Report</div>	<pre> #CR #LF End of Fleet Report #CR #LF #CR #LF </pre>
60	Reprinted Data Identifier	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">***** REPRINT *****</div>	<pre> ***** REPRINT ***** #CR #LF </pre>
61	GTN Boca	<pre> 01:45:26 04-15-2026 Gross 0 lb Tare 0 lb Net 0 lb </pre>	<pre> &lt;RL&gt;&lt;HW6,6&gt;&lt;F13&gt;&lt;RC624,360&gt;&lt;SD4&gt; {T.TIM.1} &lt;RC624,420&gt;&lt;SD4&gt; {T.DAT.1} &lt;RC624,480&gt;&lt;SD4&gt; {T.GWT.2} {T.GWT.1} {T.UNIT.1} &lt;RC624,540&gt;&lt;SD4&gt; {T.SAT.2} {T.SAT.1} {T.UNIT.1} &lt;RC624,600&gt;&lt;SD4&gt; {T.NWT.2} {T.NWT.1} {T.UNIT.1} &lt;NR&gt;&lt;RC500,960&gt;&lt;HW1,1&gt;&lt;F2&gt;&lt;SD1&gt;&lt;p&gt; </pre>
62	Inbound Ticket Label Boca	<pre> In Date 0 In Time 0 TRUCK ID 0 In Weight 0 </pre>	<pre> &lt;RL&gt;&lt;HW6,6&gt;&lt;F13&gt;&lt;RC624,360&gt;&lt;SD4&gt; In Date {A.34.1} &lt;RC624,420&gt;&lt;SD4&gt; In Time {A.35.1} &lt;RC624,480&gt;&lt;SD4&gt; TRUCK ID {A.21.1[W8]} &lt;RC624,600&gt;&lt;SD4&gt; In Weight {A.31.1[W6Z2]} {A.30.1} </pre>

Print Format Number	Description	Example Ticket	Code:
63	Inbound Rpt Header Label Boca	<b>Inbound Vehicle Report</b> 14:29:24 04-15-2026 TRUCK    Time    Date    Weight -----	<RL><HW2,2><F13><RC624,30><SD4> Inbound Vehicle Report<RC624,60><SD4> {T.TIM.1[F3]} {T.DAT.1} <RC624,90><SD4>TRUCK Time Date Weight<RC624,120><SD4>-----
64	Inbound Rpt Body Label Boca	0        0        0        0    0	<RC624, {A.40.1}> ><SD4> {A.21.1[W8Z2]} {A.25.1[W8Z2]} {A.24.1[W10Z2]} {A.23.1[W8Z2]} {A.30.1[W2Z2]}
65	Inbound Rpt Footer Label Boca	<b>End of Inbound Report</b>	<RC624, {A.40.1}> ><SD4> End of Inbound Report<NR><RC500,960><HW1,1><F2><SD1><p>
66	Outbound Ticket Label Boca	In Date            0 In Time            0 Out Date           0 Out Time           0 TRUCK ID           0 Trans#        0 Gross              0        0 Tare                0        0 Net                 0        0	<RL><HW6,6><F13><RC624,360><SD4> In Date {A.24.1} <RC624,420><SD4> In Time {A.25.1} <RC624,480><SD4> Out Date {A.34.1} <RC624,540><SD4> Out Time {A.35.1} <RC624,600><SD4> TRUCK ID {A.21.1[W8]} <RC624,720><SD4> Trans ## {A.29.1[W6Z2]} <RC624,780><SD4> Gross {A.31.1[W6Z2]} {A.30.1} <RC624,840><SD4> Tare {A.32.1[W6Z2]} {A.30.1} <RC624,900><SD4> Net {A.33.1[W6Z2]} {A.30.1}
67	Outbound Rpt Header Label Boca	<b>Outbound Vehicle Report</b> 14:44:42 04-15-2026 TRUCK    # Trans Total Net Wt -----	<RL><HW2,2><F13><RC624,30><SD4> Outbound Vehicle Report<RC624,60><SD4> {T.TIM.1[F3]} {T.DAT.1} <RC624,90><SD4>TRUCK ## Trans Total Net Wt<RC624,120><SD4>-----
68	Outbound Rpt Body Label Boca	0        0        0    0	<RC624, {A.40.1}> ><SD4> {A.21.1[W8Z2]} {A.29.1[W7Z2]} {A.27.1[W9Z2]} {A.30.1[W2Z2]}
69	Outbound Rpt Footer Label Boca	<b>End of Outbound Report</b>	<RC624, {A.40.1}> ><SD4> End of Outbound Report<NR><RC500,960><HW1,1><F2><SD1><p>

Print Format Number	Description	Example Ticket	Code:
70	Fleet Ticket Label Boca	<pre> Date      0 Time      0 Fleet ID  0 Trans#    0 Gross     0 Tare      0 Net       0           </pre>	<pre> &lt;RL&gt;&lt;HW6,6&gt;&lt;F13&gt;&lt;RC624,360&gt;&lt;SD4&gt; Date {A.34.1} &lt;RC624,420&gt;&lt;SD4&gt; Time {A.35.1} &lt;RC624,480&gt;&lt;SD4&gt; Fleet ID {A.21.1[W8]} &lt;RC624,600&gt;&lt;SD4&gt; Trans ## {A.29.1[W6Z2]} &lt;RC624,660&gt;&lt;SD4&gt; Gross {A.31.1[W6Z2]}  {A.30.1} &lt;RC624,720&gt;&lt;SD4&gt; Tare {A.32.1[W6Z2]}  {A.30.1} &lt;RC624,780&gt;&lt;SD4&gt; Net {A.33.1[W6Z2]}  {A.30.1}           </pre>
71	Fleet Rpt Header Label Boca	<pre> Fleet Vehicle Report 15:29:00 04-15-2026 TRUCK    Tare Wt # Trans Total Net Wt -----           </pre>	<pre> &lt;RL&gt;&lt;HW2,2&gt;&lt;F13&gt;&lt;RC624,30&gt;&lt;SD4&gt; Fleet Vehicle Report&lt;RC624,60&gt;&lt;SD4&gt; {T.TIM.1[F3]}  {T.DAT.1} &lt;RC624,90&gt;&lt;SD4&gt;TRUCK Tare Wt ## Trans Total Net Wt&lt;RC624,120&gt;&lt;SD4&gt;-----           </pre>
72	Fleet Rpt Body Label Boca	<pre> 0 0 0 0 0 0           </pre>	<pre> &lt;RC624, {A.40.1} &gt;&lt;SD4&gt; {A.21.1[W8Z2]}  {A.22.1[W6Z2]}  {A.30.1[W2Z2]}  {A.29.1[W7Z2]}  {A.27.1[W9Z2]}  {A.30.1[W2Z2]}           </pre>
73	Fleet Rpt Footer Label Boca	<pre> Gross 0 lb Tare 0 lb Net 0 lb End of Fleet Report           </pre>	<pre> &lt;RC624, {A.40.1} &gt;&lt;SD4&gt; End of Fleet Report&lt;NR&gt;&lt;RC500,960&gt;&lt;HW1,1&gt;&lt;F2&gt;&lt;SD1&gt;&lt;p&gt;           </pre>
74	Normal Print Identifier Boca	<pre> Gross 0 lb Tare 0 lb Net 0 lb End of Fleet Report           </pre>	<pre> &lt;NR&gt;&lt;RC500,960&gt;&lt;HW1,1&gt;&lt;F2&gt;&lt;SD1&gt;&lt;p&gt;           </pre>
75	RePrint Identifier Boca	<pre> ***** REPRINT *****           </pre>	<pre> &lt;RC624, {A.40.1} &gt;&lt;SD4&gt; ***** REPRINT *****&lt;NR&gt;&lt;RC500,960&gt;&lt;HW1,1&gt;&lt;F2&gt;&lt;SD1&gt;&lt;p&gt;           </pre>
76	Inbound Rpt Header	<pre> Inbound Vehicle Report 15:32:28 04-15-2026 ID Time Date Weight -----           </pre>	<pre> Inbound Vehicle Report #CR #LF {T.TIM.1[F3]}  {T.DAT.1} #CR #LF ID Time Date Weight #CR #LF ----- #CR #LF           </pre>

Print Format Number	Description	Example Ticket	Code:
77	Inbound Rpt Body	0, 0, 0, 0 0	{A.21.1[W8Z2]} , {A.25.1[W8Z2]} , {A.24.1[W10Z2]} , {A.23.1[W8Z2]}  {A.30.1[W2Z2]} #CR #LF
78	Inbound Rpt Footer	End of Inbound Report	End of Inbound Report #CR #LF #CR #LF
79	Outbound Rpt Header	<b>Outbound Vehicle Report</b> 15:33:42 04-15-2026 ID # Trans Total Net Wt -----	Outbound Vehicle Report #CR #LF {T.TIM.1[F3]}  {T.DAT.1} #CR #LF ID ## Trans Total Net Wt #CR #LF ----- #CR #LF
80	Outbound Rpt Body	0, 0, 0 0	{A.21.1[W8Z2]} , {A.29.1[W7Z2]} , {A.27.1[W9Z2]}  {A.30.1[W2Z2]} #CR #LF
81	Outbound Rpt Footer	End of Outbound Report	End of Outbound Report #CR #LF #CR #LF
82	Fleet Rpt Header	<b>Fleet Vehicle Report</b> 15:34:25 04-15-2026 Fleet ID Tare Wt # Trans Total Net Wt -----	Fleet Vehicle Report #CR #LF {T.TIM.1[F3]}  {T.DAT.1} #CR #LF Fleet ID Tare Wt ## Trans Total Net Wt #CR #LF ----- #CR #LF
83	Fleet Rpt Body	0, 0 0, 0,	{A.21.1[W8Z2]} , {A.22.1[W6Z2]}  {A.30.1[W2Z2]} , {A.29.1[W7Z2]} , {A.27.1[W9Z2]}  {A.30.1[W2Z2]} #CR #LF
84	Fleet Rpt Footer	End of Fleet Report	End of Fleet Report #CR #LF #CR #LF


Print Format Number	Description	Example Ticket	Code:
85	Inbound Ticket Label Boca with barcode	<pre style="text-align: center;">                 In Date      0                 In Time      0                 TRUCK ID     0                 In Weight    0                 *             0*</pre>	<pre> {A.34.1} &lt;RC624,420&gt;&lt;SD4&gt; In Time {A.35.1} &lt;RC624,480&gt;&lt;SD4&gt; TRUCK ID {A.21.1[W8]} &lt;RC624,600&gt;&lt;SD4&gt; In Weight {A.31.1[W6Z2]}  {A.30.1} &lt;RC600,720&gt;&lt;X3&gt;&lt;RL&gt;&lt;nL10&gt;* {A.21.1[W8]} *&lt;NR&gt;</pre>
86	GTN ID T&D 1.25x1 Zebra	<pre style="text-align: center;"> 12:25:51 04-21-2026  ID      0 G      0 lb T      0 lb N      0 lb</pre>	<pre> {T.ZEBRA.1} #LF ^XA^LT0^MTD^PR6,6~SD15^JUS^XZ #CR #LF ^XA #CR #LF ^MMT #CR #LF ^PW254 #CR #LF ^LL203 #CR #LF ^LS0 #CR #LF ^FT20,50^A0N,18,20^FH^FD {T.TIM.1}  {T.DAT.1} ^FS #CR #LF ^FT20,90^A0N,28,32^FH^FDID {A.1.1} ^FS #CR #LF ^FT20,130^A0N,28,32^FH^FD {T.GWT.2[W1]}  {T.GWT.1[W6]}  {T.UNIT.1} ^FS #CR #LF ^FT20,170^A0N,28,32^FH^FD {T.SAT.2[W1]}  {T.SAT.1[W6]}  {T.UNIT.1} ^FS #CR #LF ^FT20,210^A0N,28,32^FH^FD {T.NWT.2[W1]}  {T.NWT.1[W6]}  {T.UNIT.1} ^FS #CR #LF ^PQ1,0,1,Y^XZ #CR #LF</pre>

Print Format Number	Description	Example Ticket	Code:
87	GTN ID T&D 2.25x4 Zebra	<p>12:25:51 04-21-2026</p> <p>ID 0</p> <p>G 0 lb</p> <p>T 0 lb</p> <p>N 0 lb</p>	<pre> {T.ZEBRA.1} #LF ^XA^LT0^MTD^PR6,6~SD15^JUS^XZ #CR #LF ^XA #CR #LF ^MMT #CR #LF ^PW456 #CR #LF ^LL812 #CR #LF ^LS0 #CR #LF ^FT50,100^A0N,40,35^FH^FD {T.TIM.1}  {T.DAT.1} ^FS #CR #LF ^FT50,200^A0N,80,75^FH^FDID {A.1.1} ^FS #CR #LF ^FT50,300^A0N,80,75^FH^FD {T.GWT.2[W1]}  {T.GWT.1[W6]}  {T.UNIT.1} ^FS #CR #LF ^FT50,400^A0N,80,75^FH^FD {T.SAT.2[W1]}  {T.SAT.1[W6]}  {T.UNIT.1} ^FS #CR #LF ^FT50,500^A0N,80,75^FH^FD {T.NWT.2[W1]}  {T.NWT.1[W6]}  {T.UNIT.1} ^FS #CR #LF ^PQ1,0,1,Y^XZ #CR #LF </pre>

Print Format Number	Description	Example Ticket	Code:
88	GTN ID T&D 4x6 Zebra	<p>12:25:51 04-21-</p> <p>2026</p> <p>ID 0</p> <p>G 0 lb</p> <p>T 0 lb</p> <p>N 0 lb</p>	<pre>{T.ZEBRA.1} #LF ^XA^LT0^MTD^PR6,6~SD15^JUS^XZ #CR #LF ^XA #CR #LF ^MMT #CR #LF ^PW812 #CR #LF ^LL1218 #CR #LF ^LS0 #CR #LF ^FT150,200^A0N,60,50^FH^FD {T.TIM.1}  {T.DAT.1} ^FS #CR #LF ^FT100,400^A0N,100,90^FH^FDID {A.1.1} ^FS #CR #LF ^FT100,600^A0N,100,90^FH^FD {T.GWT.2[W1]}  {T.GWT.1[W6]}  {T.UNIT.1} ^FS #CR #LF ^FT100,800^A0N,100,90^FH^FD {T.SAT.2[W1]}  {T.SAT.1[W6]}  {T.UNIT.1} ^FS #CR #LF ^FT100,1000^A0N,100,90^FH^FD {T.NWT.2[W1]}  {T.NWT.1[W6]}  {T.UNIT.1} ^FS #CR #LF ^PQ1,0,1,Y^XZ #CR #LF</pre>

Print Format Number	Description	Example Ticket	Code:
89	GTN ID T&D 2.25x4 Zebra Ticket Roll Paper	<p>12:25:51 04-21-2026</p> <p>ID 0</p> <p>G 0 lb</p> <p>T 0 lb</p> <p>N 0 lb</p>	<pre>{T.ZEBRA.1} #LF ^XA~TA000~JSN^LTO^MNN^MTD^PON^PMN^LH0,0^JMA^PR 6,6~SD15^JUS^LRN^CI0^XZ #LF ^XA #LF ^MMT #LF ^PW456 #LF ^LL0812 #LF ^LS0 #LF ^FT356,382^A01,39,38^FH^FD {T.SAT.1} ^FS #LF ^FT369,263^A01,39,38^FH^FD {T.NWT.1} ^FS #LF ^FT190,262^A01,39,38^FH^FD {T.UNIT.1} ^FS #LF ^FT194,383^A01,39,38^FH^FD {T.UNIT.1} ^FS #LF ^FT197,507^A01,39,38^FH^FD {T.UNIT.1} ^FS #LF ^FT375,508^A01,39,38^FH^FD {T.GWT.1} ^FS #LF ^FT417,382^A01,39,38^FH^FDT^FS #LF ^FT415,263^A01,39,38^FH^FDN^FS #LF ^FT422,506^A01,39,38^FH^FDG^FS #LF ^FT380,635^A01,39,38^FH^FD {A.1.1} ^FS #LF ^FT425,635^A01,39,38^FH^FDID^FS #LF ^FT248,734^A01,39,38^FH^FD {T.DAT.1} ^FS #LF ^FT427,735^A01,39,38^FH^FD {T.TIM.1} ^FS #LF ^PQ1,0,1,Y^XZ #LF</pre>

Print Format Number	Description	Example Ticket	Code:
90	GTN T&D 4x6 Zebra Ticket Roll Paper	<p>12:25:51 04-21-2026</p> <p>G 0 lb</p> <p>T 0 lb</p> <p>N 0 lb</p>	<pre>{T.ZEBRA.1} #LF ^XA~TA000~JSN^LTO^MNN^MTD^PON^PMN^LH0,0^JMA^PR 6,6~SD15^JUS^LRN^CI0^XZ #CR #LF ^XA #CR #LF ^MMT #CR #LF ^PW812 #CR #LF ^LL1218 #CR #LF ^LS0 #CR #LF ^FT762,515^A01,68,67^FH^FDN^FS #CR #LF ^FT674,512^A01,68,67^FH^FD {T.NWT.1} ^FS #CR #LF ^FT658,682^A01,68,67^FH^FD {T.SAT.1} ^FS #CR #LF ^FT681,851^A01,68,67^FH^FD {T.GWT.1} ^FS #CR #LF ^FT345,514^A01,68,67^FH^FD {T.UNIT.1} ^FS #CR #LF ^FT347,682^A01,68,67^FH^FD {T.UNIT.1} ^FS #CR #LF ^FT346,851^A01,68,67^FH^FD {T.UNIT.1} ^FS #CR #LF ^FT771,1018^A01,68,67^FH^FD {T.TIM.1} ^FS #CR #LF ^FT446,1020^A01,68,67^FH^FD {T.DAT.1} ^FS #CR #LF ^FT763,685^A01,68,67^FH^FDT^FS #CR #LF ^FT766,853^A01,68,67^FH^FDG^FS #CR #LF ^PQ1,0,1,Y^XZ #CR #LF</pre>

Print Format Number	Description	Example Ticket	Code:
91	GTN ID T&D Customer 2.25x3 r270 Zebra	04-21-2026 12:25:51  ID 0  G 0 lb  T 0 lb  N 0 lb  Customer Name	{T.ZEBRA.1} #LF ^XA^PW456^LL609^LS0^FS #CR #LF ^FT70,575^A0B,60,55^FD {T.DAT.1}  {T.TIM.1} ^FS #CR #LF ^FT140,575^A0B,60,55^FDID {A.1.1} ^FS #CR #LF ^FT210,575^A0B,60,55^FD {T.GWT.2[W1]}  {T.GWT.1}  {T.UNIT.1} ^FS #CR #LF ^FT280,575^A0B,60,55^FD {T.SAT.2[W1]}  {T.SAT.1}  {T.UNIT.1} ^FS #CR #LF ^FT350,575^A0B,60,55^FD {T.NWT.2[W1]}  {T.NWT.1}  {T.UNIT.1} ^FS #CR #LF ^FT430,575^A0B,60,55^FDCustomer Name^FS #CR #LF ^PQ1,0,1,Y^XZ
92	GTN ID T&D NtBC 4x3 Zebra	<b>12:29:58</b> <b>04</b>  <b>G</b> <b>0</b>  <b>T</b> <b>0</b>  <b>N</b> <b>0</b>   *0*	{T.ZEBRA.1} #LF ^XA #CR ^PW456^LL609 #CR #LF ^LS0^FT30,50^ADN,30,25^FD {T.TIM.1[F1]}  {T.DAT.1} ^FS #CR ^FT30,150^ADN,60,50^FDG {T.GWT.1[W5]}  {T.UNIT.1} ^FS #CR ^FT30,250^ADN,60,50^FDT {T.SAT.1[W5]}  {T.UNIT.1} ^FS #CR ^FT30,350^ADN,60,50^FDN {T.NWT.1[W5]}  {T.UNIT.1} ^FS #CR ^BY3,2.5,75^FT150,475^B3N,,Y,Y^FD {T.NWT.1[W1]} ^FS #CR ^FT30,575^ADN,40,40^FDID {A.1.1[W1]} ^FS^XZ #CR

Print Format Number	Description	Example Ticket	Code:
93	GWT lb/kg ID T&D 4x3 Zebra	<p style="text-align: center;">0</p> <p>4-21-2026                      12:30:30</p> <p>GROSS WT:                      0 lb</p> <p style="padding-left: 150px;">0.0 kg</p>	<pre>{T.ZEBRA.1} #CR ^XA~TA000^LT0~SD15^JUS^XZ^XA^PW812^LL0609^LS0 #CR #LF ^FT225,120^A0N,100,90^FD {A.1.1} ^FS #CR #LF ^FT70,250^A0N,70,60^FD {T.DAT.1}  {T.TIM.1} ^FS #CR #LF ^FT70,375^A0N,70,60^FDGROSS WT: {T.GWT.1[W6P0u5]}  {T.UNIT.1[U3]} ^FS #CR #LF ^FT390,460^A0N,70,60^FD {T.GWT.1[W8P1u6]}  {T.UNIT.1[U4]} ^FS #CR #LF ^PQ1^XZ</pre>
94	DSPWT T&D 4x6 r270 Zebra	<p style="text-align: center; font-size: 2em;">0 lb</p> <p style="text-align: center; font-size: 1.2em;">12:31:24 4/21/2026</p>	<pre>{T.ZEBRA.1} #CR #LF ^XA^MMT^PW812^LL1218 #CR #LF ^FT330,1100^A0B,254,280^FH^FD {T.ACT.1}  {T.UNIT.1} ^FS #CR #LF ^FT650,1100^A0B,132,115^FH^FD {T.TIM.1}  {T.DAT.1[s6]} ^FS #CR #LF ^PQ1,0,1,Y^XZ</pre>

Print Format Number	Description	Example Ticket	Code:
95	GTN T&D 4x6 w UDF 1-5 Ticket Roll Paper Zebra	<p>12:29:58      04-21-2026</p> <p>G      0              lb</p> <p>T      0              lb</p> <p>N      0              lb</p> <p>PartNum    ABC</p> <p>Desc        ABC</p> <p>Loc         ABC</p> <p>Name        ABC</p> <p>Address     ABC</p>	<pre>{T.ZEBRA.1} #LF ^XA~TA000~JSN^LT0^MNN^MTD^PON^PMN^LH0,0^JMA^PR6,6- SD15^JUS^LRN^CIO^XZ #LF ^XA #LF ^MMT #LF ^PW812 #LF ^LL1218 #LF ^LS0 #LF ^FT793,781^A01,68,67^FH^FDN^FS #LF ^FT514,390^A01,68,67^FH^FD {A.154.1} ^FS #LF ^FT512,284^A01,68,67^FH^FD {A.155.1} ^FS #LF ^FT798,283^A01,68,67^FH^FD {A.155.2} ^FS #LF ^FT802,388^A01,68,67^FH^FD {A.154.2} ^FS #LF ^FT519,492^A01,68,67^FH^FD {A.153.1} ^FS #LF ^FT803,491^A01,68,67^FH^FD {A.153.2} ^FS #LF ^FT522,591^A01,68,67^FH^FD {A.152.1} ^FS #LF ^FT805,591^A01,68,67^FH^FD {A.152.2} ^FS #LF ^FT525,686^A01,68,67^FH^FD {A.151.1} ^FS #LF ^FT806,686^A01,68,67^FH^FD {A.151.2} ^FS #LF ^FT685,782^A01,68,67^FH^FD {T.NWT.1} ^FS #LF ^FT664,888^A01,68,67^FH^FD {T.SAT.1} ^FS #LF ^FT684,1002^A01,68,67^FH^FD {T.GWT.1} ^FS #LF ^FT339,785^A01,68,67^FH^FD {T.UNIT.1} ^FS #LF ^FT341,889^A01,68,67^FH^FD {T.UNIT.1} ^FS #LF ^FT340,1000^A01,68,67^FH^FD {T.UNIT.1} ^FS #LF ^FT796,1120^A01,68,67^FH^FD {T.TIM.1} ^FS #LF ^FT471,1121^A01,68,67^FH^FD {T.DAT.1} ^FS #LF ^FT795,890^A01,68,67^FH^FDT^FS #LF ^FT797,1002^A01,68,67^FH^FDG^FS #LF ^PQ1,0,1,Y^XZ #LF</pre>

Print Format Number	Description	Example Ticket	Code:
96	GTN T&D 4x6 UDFs Ticket Roll Paper w_Cutter Zebra	<p>12:29:58      04-21-2026</p> <p>G    0            lb</p> <p>T    0            lb</p> <p>N    0            lb</p> <p>PartNum    ABC</p> <p>Desc        ABC</p> <p>Loc         ABC</p> <p>Name        ABC</p> <p>Address     ABC</p>	<pre>{T.ZEBRA.1} #LF ^XA~TA000~JSN^LT0^MNN^MTD^PON^PMN^LH0,0^JMA^PR6,6~ SD15^JUS^LRN^C10^XZ #LF ^XA #LF ^MMC #LF ^PW812 #LF ^LL1218 #LF ^LS0 #LF ^FT793,781^A01,68,67^FH^FDN^FS #LF ^FT514,390^A01,68,67^FH^FD {A.154.1} ^FS #LF ^FT512,284^A01,68,67^FH^FD {A.155.1} ^FS #LF ^FT798,283^A01,68,67^FH^FD {A.155.2} ^FS #LF ^FT802,388^A01,68,67^FH^FD {A.154.2} ^FS #LF ^FT519,492^A01,68,67^FH^FD {A.153.1} ^FS #LF ^FT803,491^A01,68,67^FH^FD {A.153.2} ^FS #LF ^FT522,591^A01,68,67^FH^FD {A.152.1} ^FS #LF ^FT805,591^A01,68,67^FH^FD {A.152.2} ^FS #LF ^FT525,686^A01,68,67^FH^FD {A.151.1} ^FS #LF ^FT806,686^A01,68,67^FH^FD {A.151.2} ^FS #LF ^FT685,782^A01,68,67^FH^FD {T.NWT.1} ^FS #LF ^FT664,888^A01,68,67^FH^FD {T.SAT.1} ^FS #LF ^FT684,1002^A01,68,67^FH^FD {T.GWT.1} ^FS #LF ^FT339,785^A01,68,67^FH^FD {T.UNIT.1} ^FS #LF ^FT341,889^A01,68,67^FH^FD {T.UNIT.1} ^FS #LF ^FT340,1000^A01,68,67^FH^FD {T.UNIT.1} ^FS #LF ^FT796,1120^A01,68,67^FH^FD {T.TIM.1} ^FS #LF ^FT471,1121^A01,68,67^FH^FD {T.DAT.1} ^FS #LF ^FT795,890^A01,68,67^FH^FDT^FS #LF ^FT797,1002^A01,68,67^FH^FDG^FS #LF ^PQ1,1,1,Y^XZ #LF</pre>


Print Format Number	Description	Example Ticket	Code:
97	2.25x4 GTN T&D GoDex	<p>11:03:34      4-24-2026</p> <p>G      0              lb</p> <p>T      0              lb</p> <p>N      0              lb</p>	<pre>{T.ZEBRA.1} #LF ^Q102,3 #LF ^W57 #LF ^H5 #LF ^P1 #LF ^S2 #LF ^AD #LF ^C1 #LF ^R0 #LF ~Q+0 #LF ^O0 #LF ^D0 #LF ^E12 #LF ~R255 #LF ^XSET,ROTATION,0 #LF ^L #LF Dy2-me-dd #LF Th:m:s #LF AE,26,233,1,1,0,0E,G #LF AE,26,329,1,1,0,0E,T #LF AE,26,427,1,1,0,0E,N #LF AE,78,233,1,1,0,0E, {T.GWT.1} #LF AE,93,329,1,1,0,0E, {T.SAT.1} #LF AE,80,427,1,1,0,0E, {T.NWT.1} #LF AE,276,233,1,1,0,0E, {T.UNIT.1} #LF AE,276,329,1,1,0,0E, {T.UNIT.1} #LF AE,276,427,1,1,0,0E, {T.UNIT.1} #LF AE,18,113,1,1,0,0E, {T.TIM.1} #LF AE,182,113,1,1,0,0E, {T.DAT.1} #LF E #LF</pre>

Print Format Number	Description	Example Ticket	Code:
98	4x6 GTN ID T&D GoDex	<p>11:03:34      4-24-2026</p> <p>ID    0</p> <p>G    0      lb</p> <p>T    0      lb</p> <p>N    0      lb</p>	<pre>{T.ZEBRA.1} #LF ^Q152,3 #LF ^W101 #LF ^H5 #LF ^P1 #LF ^S2 #LF ^AD #LF ^C1 #LF ^R0 #LF ~Q+0 #LF ^O0 #LF ^D0 #LF ^E12 #LF ~R255 #LF ^XSET,ROTATION,0 #LF ^L #LF Dy2-me-dd #LF Th:m:s #LF AG,50,68,1,1,0,0E, {T.TIM.1} #LF AG,350,66,1,1,0,0E, {T.DAT.1} #LF AG,166,376,1,1,0,0E, {T.GWT.1} #LF AG,196,564,1,1,0,0E, {T.SAT.1} #LF AG,176,750,1,1,0,0E, {T.NWT.1} #LF AG,28,384,1,1,0,0E,G #LF AG,32,564,1,1,0,0E,T #LF AG,34,754,1,1,0,0E,N #LF AG,464,380,1,1,0,0E, {T.UNIT.1} #LF AG,468,564,1,1,0,0E, {T.UNIT.1} #LF AG,470,750,1,1,0,0E, {T.UNIT.1} #LF AG,36,210,1,1,0,0E,ID #LF AG,298,210,1,1,0,0E, {A.1.1} #LF E #LF</pre>
99	Peak Net w T+D	<p><b>Peak Max</b>    0 lb 03:37:21 pm 04-15-2026</p>	<pre>{T.PMAX.2[S0]} {T.PMAX.1[S0]} {T.UNIT.1[S0]} {T.TIM.1[F4]} {T.DAT.1} #CR #LF</pre>

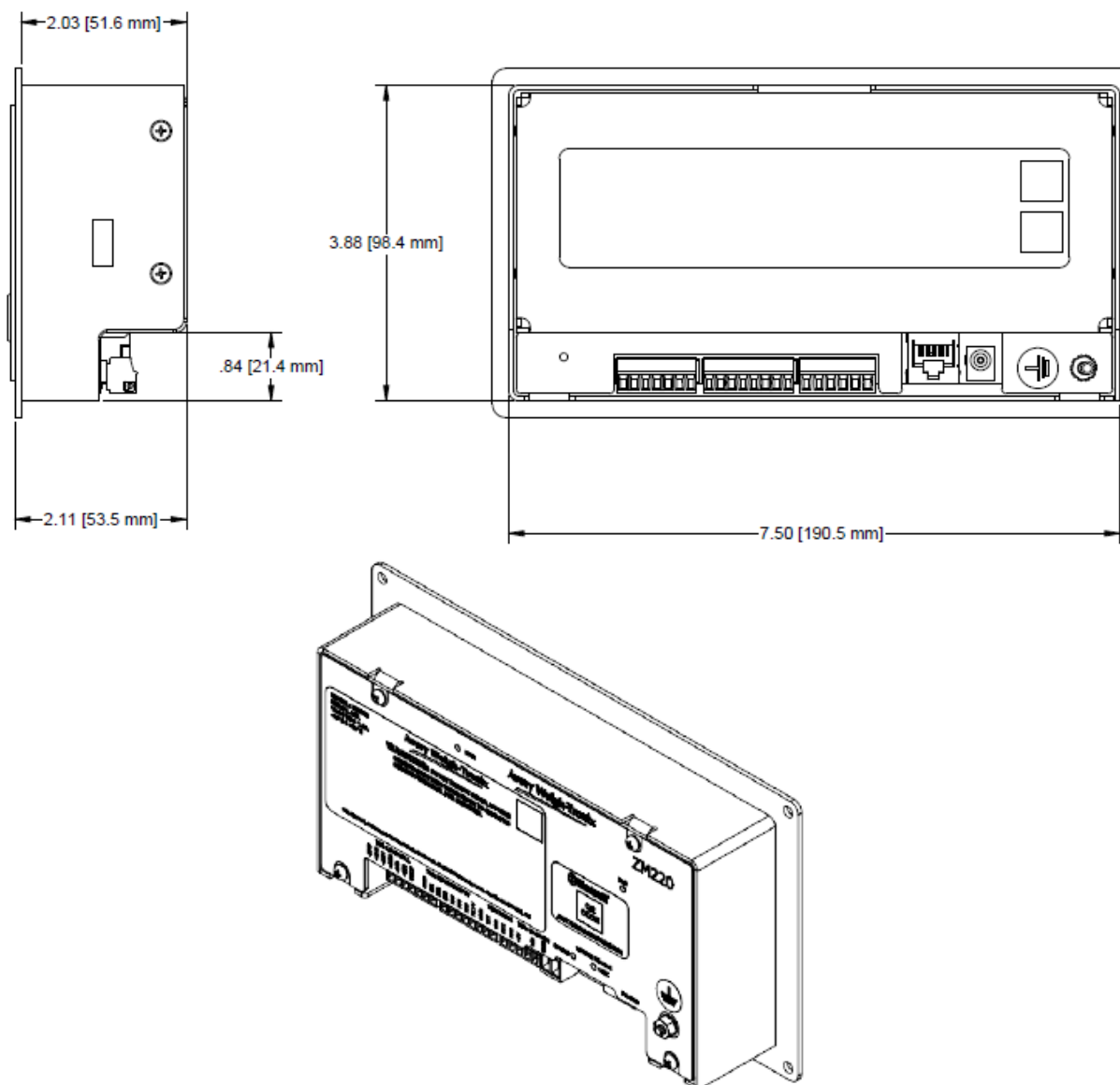
Print Format Number	Description	Example Ticket	Code:
100	Peak Net w T+D CSV	Peak Max, 0,1b,03:37:04 pm,04-15-2026	{T.PMAX.2[S0]} , {T.PMAX.1[S0]} , {T.UNIT.1[S0]} , {T.TIM.1[F4]} , {T.DAT.1} #CR #LF

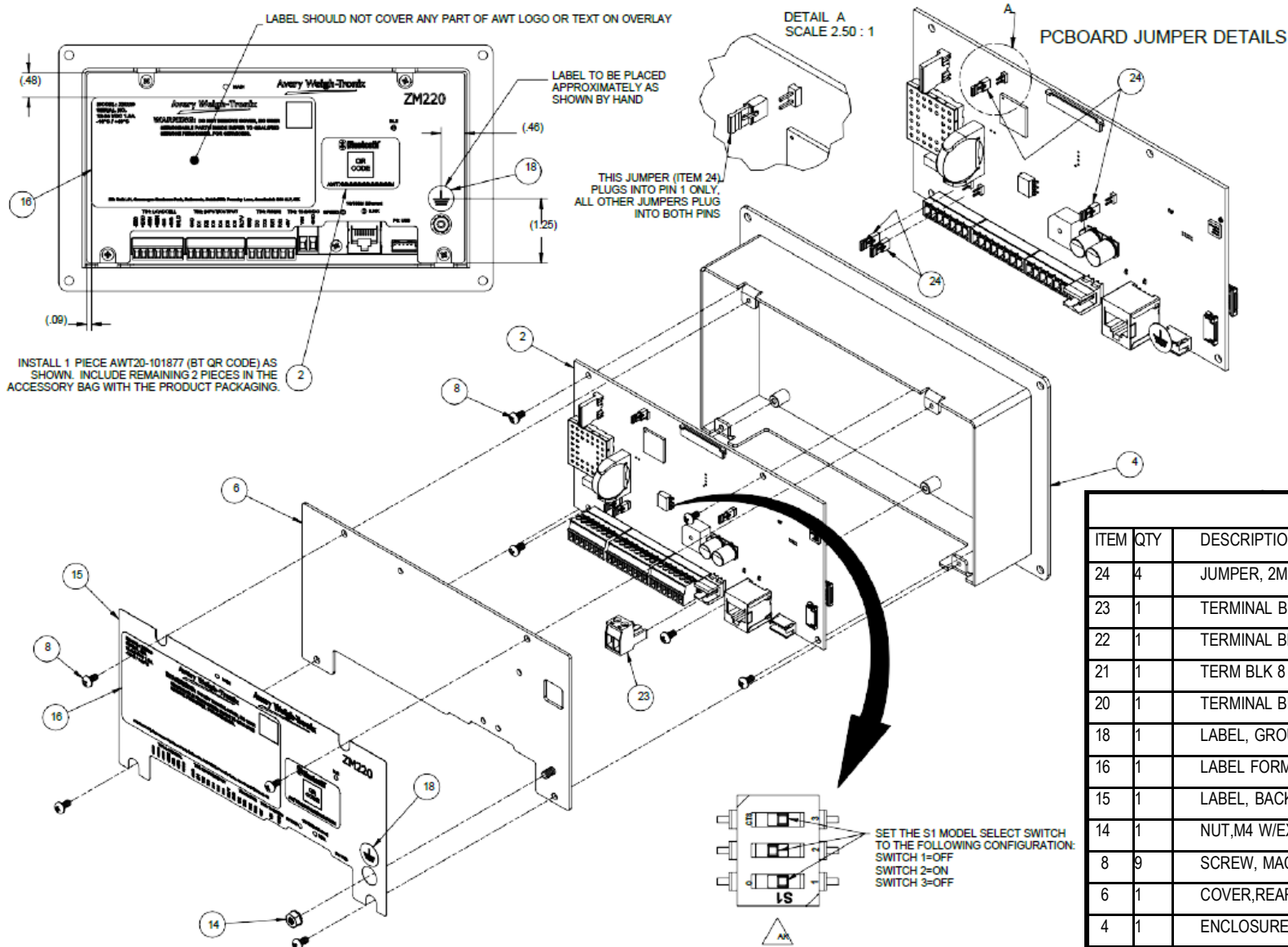
## 9.10 Error Messages

The following error messages may be displayed during use of the indicator:

Message	Display
Overload	
Can't fit on display or load cell not properly connected	- - - - -
Underload	-----
Can't	cAnt
Entry not in valid range	boundS
Lost Connection	Conn

## 10 Technical Illustrations

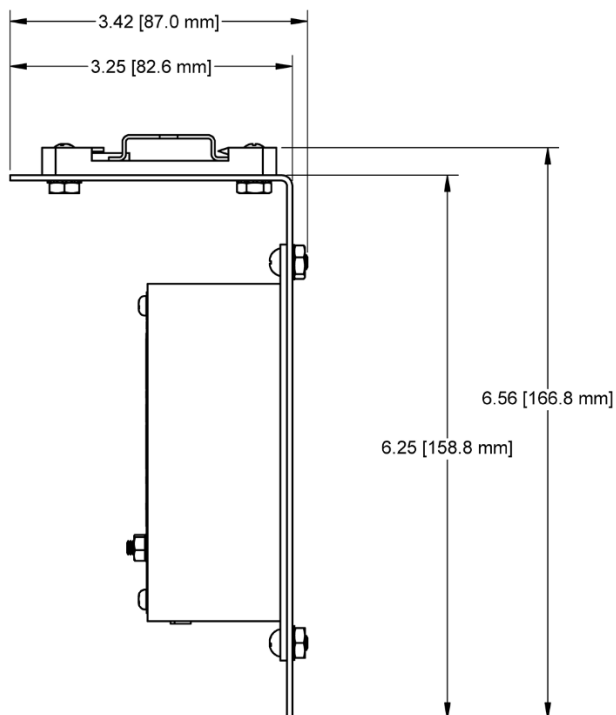
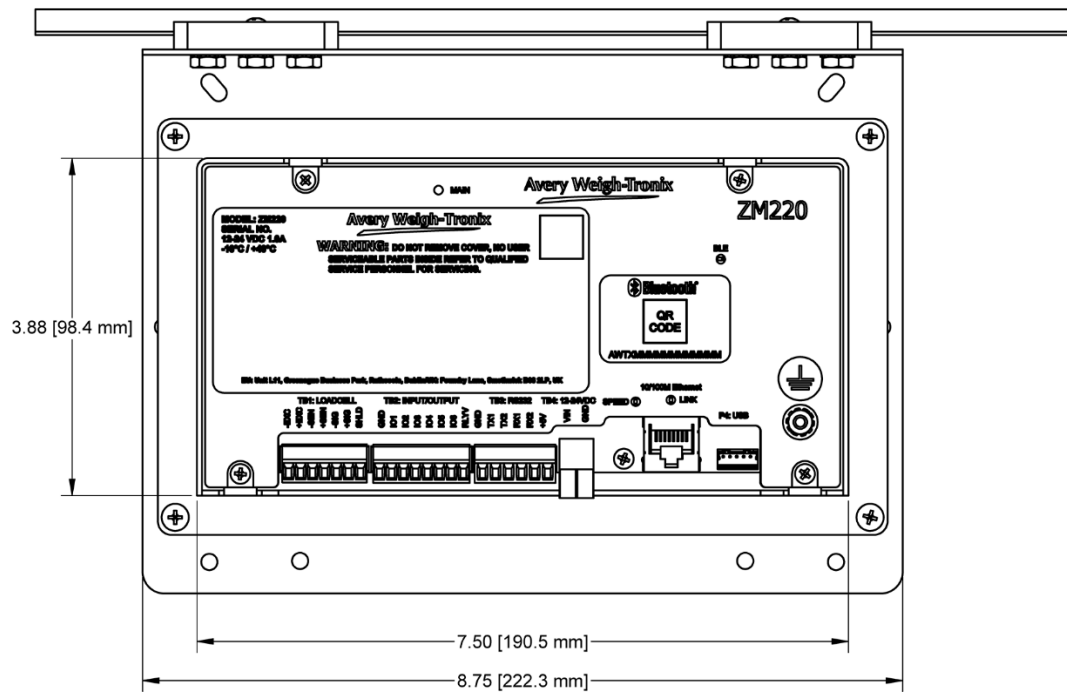






PARTS LIST		
ITEM	QTY	DESCRIPTION
24	4	JUMPER, 2MM 2POS WITH GRIP
23	1	TERMINAL BLOCK, PLUG 2 PIN
22	1	TERMINAL BLOCK, 7 POS PLUG 3.5mm
21	1	TERM BLK 8 POS PLUG 3.5
20	1	TERMINAL BLOCK 6 POS PLUG 3.8
18	1	LABEL, GROUND (GREEN)
16	1	LABEL FORMAT, CERT, DC VOLTAGE, ZM220 SERIES
15	1	LABEL, BACK-SIGNAL PROCESSOR 215
14	1	NUT, M4 W/EXT LOCK WASHER SST
8	9	SCREW, MACH PH M3x0.5x6mm SST MAGNETIC
6	1	COVER, REAR-WELDMENT ZM220
4	1	ENCLOSURE, WELDMENT, SIGNAL PROCESSOR, ZM220
2	1	PCB ASSY, MODEL ZM22X & 660


FASTENER TORQUE VALUES	
FASTENERS	TORQUE lb-in (N-m)
(M4) ITEM 14	10 lb-in (1.13 N-m)
(M3) ITEM 8	3.5 lb-in (0.40 N-m)

## 10.1 ZM220 with Din Rail Mounting Bracket








## 10.2 Replacement Part Kits

<b>Kit Name:</b> KIT, PCB, MAIN, ZM220				
<b>Part Number:</b> AWT05-101217				
Diagram	Diagram #	Qty.	Description	Fastenal Part Number
	2	1	PCB ASSY, MODEL ZM22X	
	8	5	SCREW, M3 X 6MM SELF TAP	12886-00435

<b>Kit Name:</b> KIT, JUMPER, ZM22X 660				
<b>Part Number:</b> AWT05-101335				
Diagram	Diagram #	Qty.	Description	Fastenal Part Number
	24	30	JUMPER, 2MM 2POS WITH GRIP	

<b>Kit Name:</b> KIT, USB A PATCH CA, ZM223				
<b>Part Number:</b> AWT05-101220				
Diagram	Diagram #	Qty.	Description	Fastenal Part Number
	N/A	1	CABLE, USB-A FEM TO CONN, 6IN	

Kit Name: KIT, DIN RAIL MOUNT				
Part Number: AWT77-504357				
Diagram	Diagram #	Qty.	Description	Fastenal Part Number
		2	CLIPS, MTG, DIN RAIL 15V2-RC	
		6	SCREW,PHIL PAN HD SS 8-32X.44	72397
		10	NUT/WASHER ASSY, 8-32X.34 SST	70922
		1	MOUNT, DIN RAIL TO ZM, 90 DEG.	
		4	SCREW,PHIL PAN HD SS 8-32X.312	72395
		1	RAIL,RELAY MTG-MACH, 9.00" LG	

## Avery Weigh-Tronix

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### **Avery Weigh-Tronix USA**

1000 Armstrong Dr.  
Fairmont MN 56031 USA  
Tel: 507-238-4461  
Fax: 507-238-4195  
Email: [usinfo@awtx-itw.com](mailto:usinfo@awtx-itw.com)  
[www.averyweigh-tronix.com](http://www.averyweigh-tronix.com)

### **Avery Weigh-Tronix UK**

Foundry Lane,  
Smethwick, West Midlands,  
England B66 2LP  
Tel: +44 (0) 8453 66 77 88  
Fax: +44 (0)121 224 8183  
Email: [info@awtx-itw.com](mailto:info@awtx-itw.com)  
[www.averyweigh-tronix.com](http://www.averyweigh-tronix.com)