Avery Weigh-Tronix

Model 1080 e-tools™

Software

User Instructions

AWT35-500447 Issue AA January 2010

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Manual revision history

Current Issue	Date Created	Details of Changes
AA	January 2010	New manual

1 General information and warnings

1.1 About this manual

This manual is divided into chapters by the chapter number and the large text at the top of a page. Subsections are labeled as shown by the 1 and 1.1 headings shown above. The names of the chapter and the next subsection level appear at the top of alternating pages of the manual to remind you of where you are in the manual. The manual name and page numbers appear at the bottom of the pages.

1.1.1 Text conventions

Key names are shown in **bold** and reflect the case of the key being described. This applies to hard keys and onscreen or soft keys.

Displayed messages appear in ***bold italic*** type and reflect the case of the displayed message.

1.1.2 Special messages

Examples of special messages you will see in this manual are defined below. The signal words have specific meanings to alert you to additional information or the relative level of hazard.

NOTE: This is a Note symbol. Notes give additional and important information, hints and tips that help you to use your product.

2 Introduction

2.1 Minimum system requirements

To install this software you need a computer with the following minimum specifications:

- PC with Microsoft® Windows ME, 2000, XP
- Pentium III processor @ 700 MHz
- 128 MB RAM
- 20 MB of hard drive space
- CD ROM drive
- RS-232 communication port or USB to serial converter

2.2 Product Introduction

Welcome to the Avery Weigh-Tronix® e-tools™ software manual. This software makes configuration of the Evolution™ series of indicators and the 1080 indicator a quick, PC based operation.

This document is meant to help you understand what this software is capable of and how to use it effectively with your 1080 indicator.

The Evolution series of indicators are configurable through the front panel and a menu structure built into the indicator's software. The e-tools program makes this front panel configuration unnecessary.

Easy, on-screen check boxes, drop down lists and data entry boxes make configuration quick. When done, you download the file you create to the indicator via RS-232 serial cable. The new program overwrites the configuration settings in the indicator with your new ones. You can save the configuration file for use on multiple indicators or as a backup for your system. You can also upload the configuration of an indicator into the program and modify it.

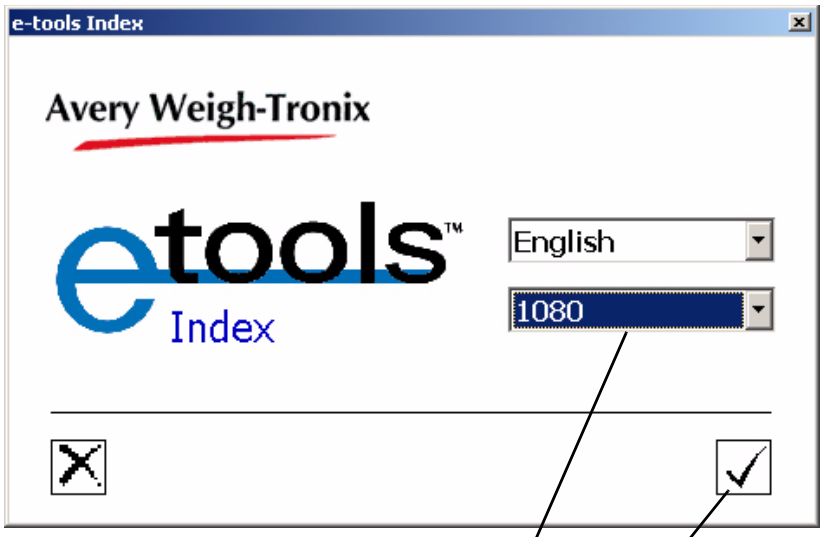
Below is a small list of the items you can enable and configure with this software:

- Capacity
- Division size
- Zero and Motion parameters
- Units of measure
- Serial communication
- Networks
- Applications
- Inputs
- Outputs
- Print formats

2.3 Starting e-tools

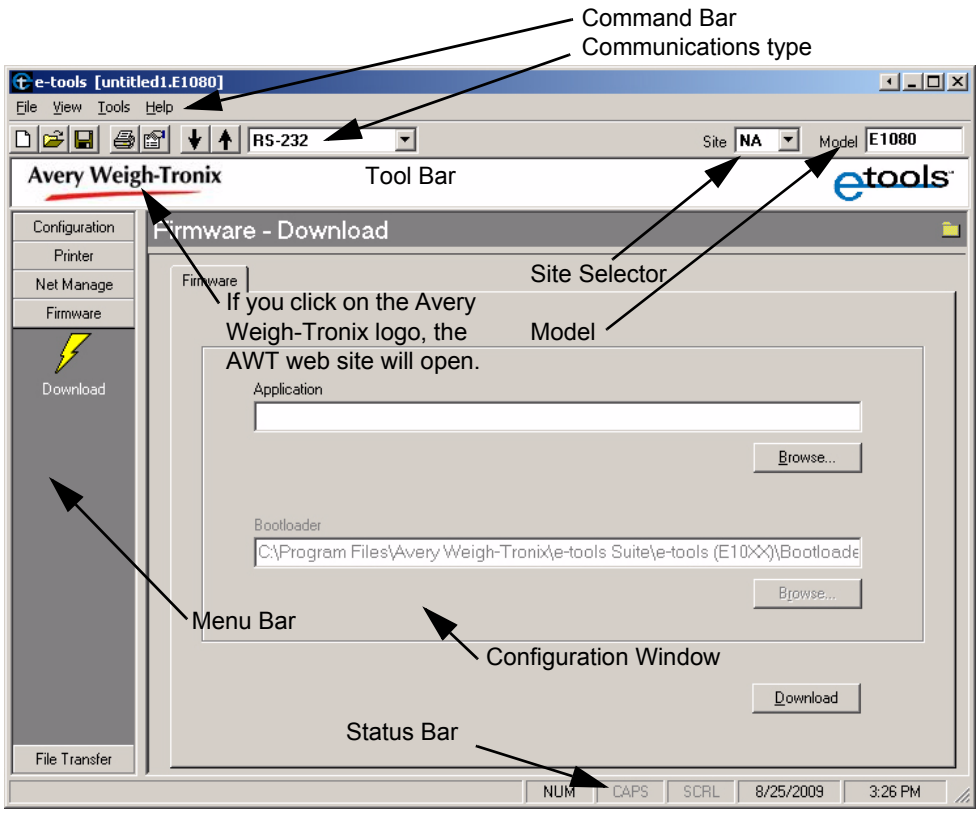
After installation, covered in the Getting Started manual, click on START>PROGRAMS>Avery Weigh-Tronix>etools.

The program will start and you will see the following window:



Choose your indicator model from this drop down box. Currently the only language available is English.

Choose 1080 for this manual, then click on the check box to run the program or the X to exit.



The screen is divided into several parts:

The command bar has drop down lists for you to choose from when you click on the words.

The tool bar lets you:

- start a new file
- open an existing file
- save a file
- print a file
- open the Options dialog box
- upload a configuration file
- download a configuration file
- choose a communication type (See note at left)

The menu bar contains icons you can click on to show the configuration items for your indicator.

The Communications Type drop down box lets you select serial communications, single ethernet device or ethernet network downloads. Ethernet communications allows for downloading of configuration data only.

The configuration window will show the current configuration items to be set.

The status bar at the bottom of the window shows the status of several keyboard keys and the current date and time.

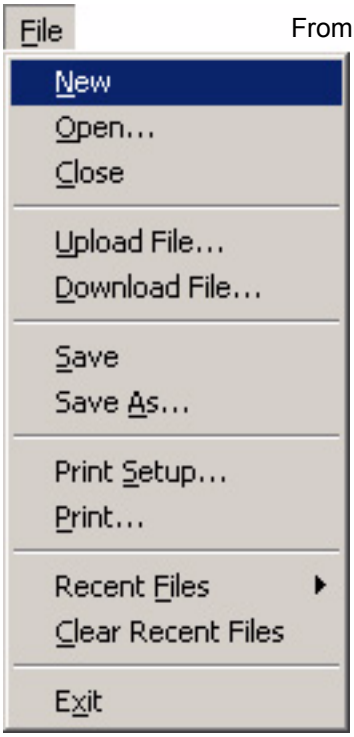
Those items needing further explanation are explained in detail in the following sections.

2.4 Command Bar

The command bar has the following commands:

2.4.1 File

If you click File the following drop down menu appears:

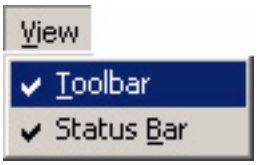


From this list you can:

- create a new file
- open an existing file
- close an open file.
- upload a configuration file from an indicator
- download a configuration file to an indicator
- save an open file
- save an open file under a different name
- setup the printing or a configuration report
- print a configuration report
- choose from a list of recent files
- clear recent file list
- close the program

2.4.2 View

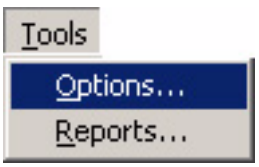
If you click View the following drop down menu appears:



- Click Toolbar to toggle the toolbar on and off
- Click Status Bar to toggle the status bar on and off

2.4.3 Tools

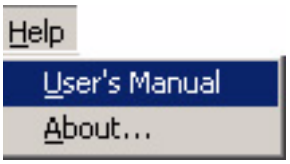
If you click Tools the following drop down menu appears:



- Click here to open the Options dialog box
- Click here to print a configuration report

2.4.4 Help

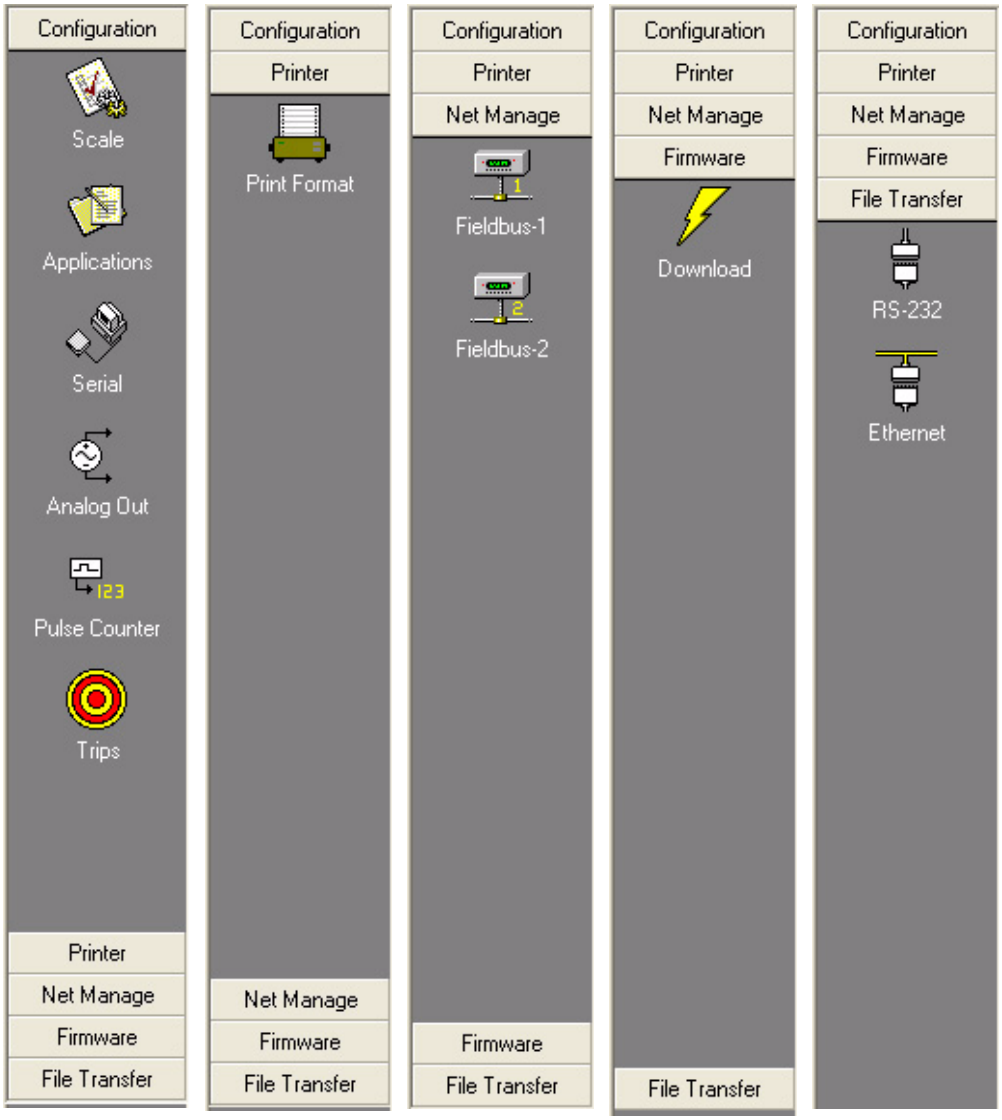
If you click Help the following drop down menu appears:



- Click here to open the user's manual (PDF)
- Click here to see software information

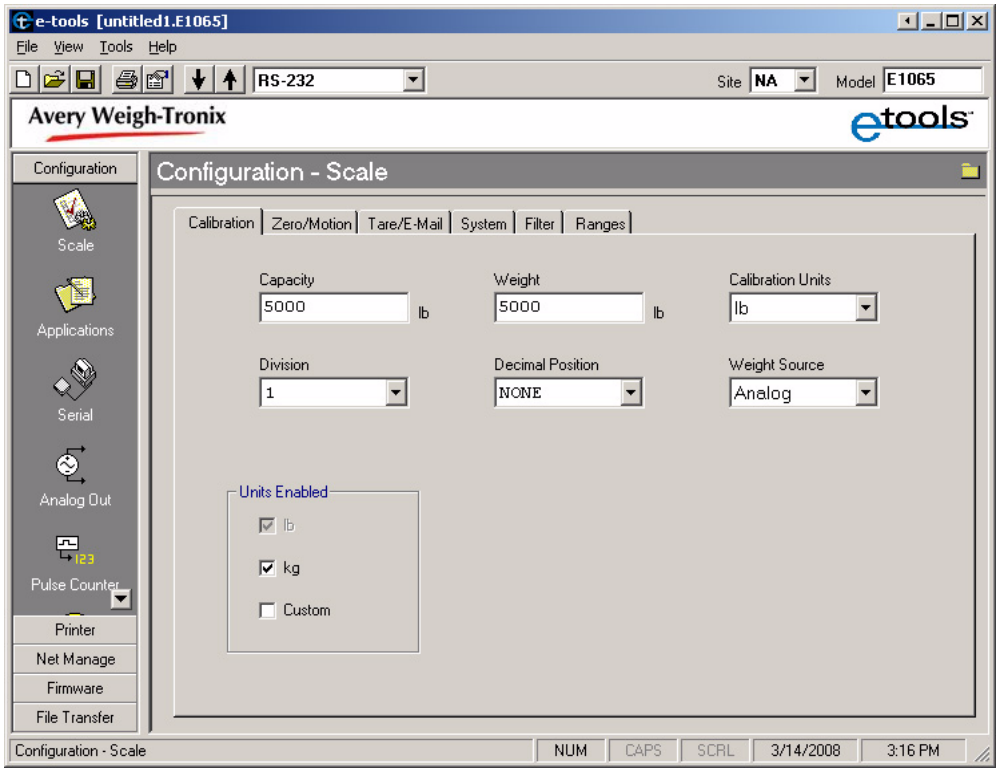
2.5 Menu Bar

As you click on each menu bar item, the related icons appear. All four menu items are shown below. Each icon will be covered in the Configuration section of this manual.



2.6 Configuration Window

When you click on a menu bar icon, the related configuration dialog box appears in the configuration window. Below is an example:



It is in these dialog boxes that you choose all the configuration parameters for your indicator and scale setup.

When all your parameters are set, connect your PC to the indicator and click the **download** (down arrow) button on the button bar. The file is sent to the indicator via configured communications type and all the new parameters take effect.

2.6.1 Entering Values

When you key in values, the software validates the entry so that you cannot enter an incorrect value. For example, if a percentage rate (say 0-100) is required, and you key in 123, then the value will be highlighted and you will not be able to tab to the next input box until the value is corrected. This will also occur if you enter an invalid character, such as '12w' instead of '123'.

You can either edit and correct the value or (while the entire value is highlighted) you can press the **DELETE** key on the PC keyboard and start over. If the entry box is completely clear and you tab to another box, the default value for that item will automatically be inserted in the box.

3 Creating and Saving a Configuration File

The steps you take to create a new configuration file are:

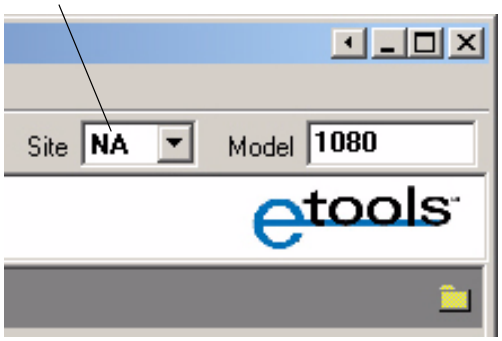
- set the defaults
- configure all scale/indicator parameters
- save the file

Downloading the file is in the next section.

You can edit an existing file by opening the file, making the desired changes and saving the file.

3.1 Setting the Defaults

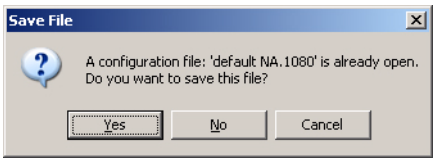
Use this item, in the upper right corner of the program window, to choose your instrument location; NA (North America), EU (Europe). Choosing the correct one will set defaults to your location's requirements.



You must perform the following to load default print strings and to create a downloadable configuration file.

1. Click on **FILE**>**OPEN**…

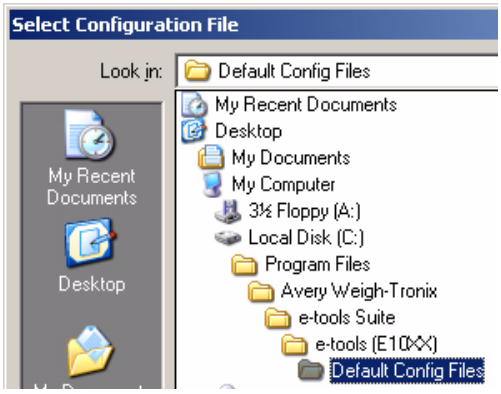
   The following appears:



2. Click **No**…

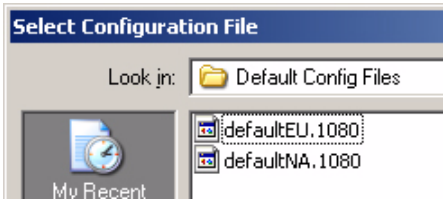
   A *Select Configuration File* dialog box appears.

3. Navigate to the *Default Config Files* folder shown below:



and select that folder…

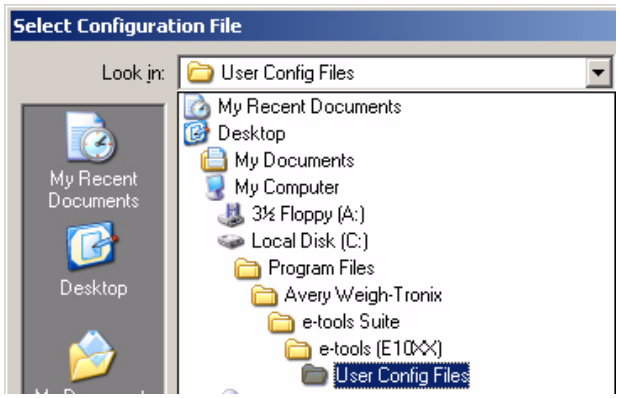
The following choices appear:



4. Select *defaultEU.1080* or *defaultNA.1080*. This should match your *Site* choice made at the beginning of this section, 3.1.

The default NA.1080 and defaultEU.1080 files are locked as read only. Your file needs to be saved as a different file in order for it to download to the 1080. This is done to guarantee a clean and usable file for factory reload.

5. Select **File**>**Save As** and save the file to the User Config Files folder. The path is shown below. You can save file with any name you want.



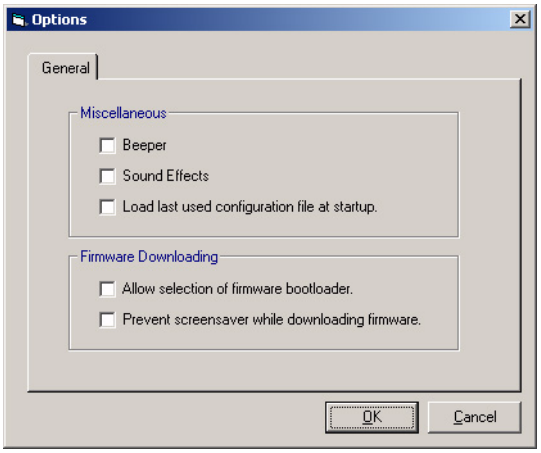
6. When you press **File**>**Save**, this is where the information will now be stored.

7. You now have a downloadable file for the indicator.

It is always a good idea to save your file often as you set the various items in e-tools.

3.2 Setting Options

Click on Tools>Options to see the General tab shown below:



3.2.1 General tab

In the this window you can enable or disable the following options:

Beeper	This is a PC warning beep when an error is detected.
Sound Effects	These are the sounds made as you navigate the e-tools program.
Load last…	If enabled, the last saved file will open when the e-tools program is started.
Allow selection…	If enabled you can select a firmware bootloader under the Firmware menu bar item.
Prevent Screen…	This will disable the screensaver to stop it from interrupting the download process.

3.3 CONFIGURING - Configuration Button

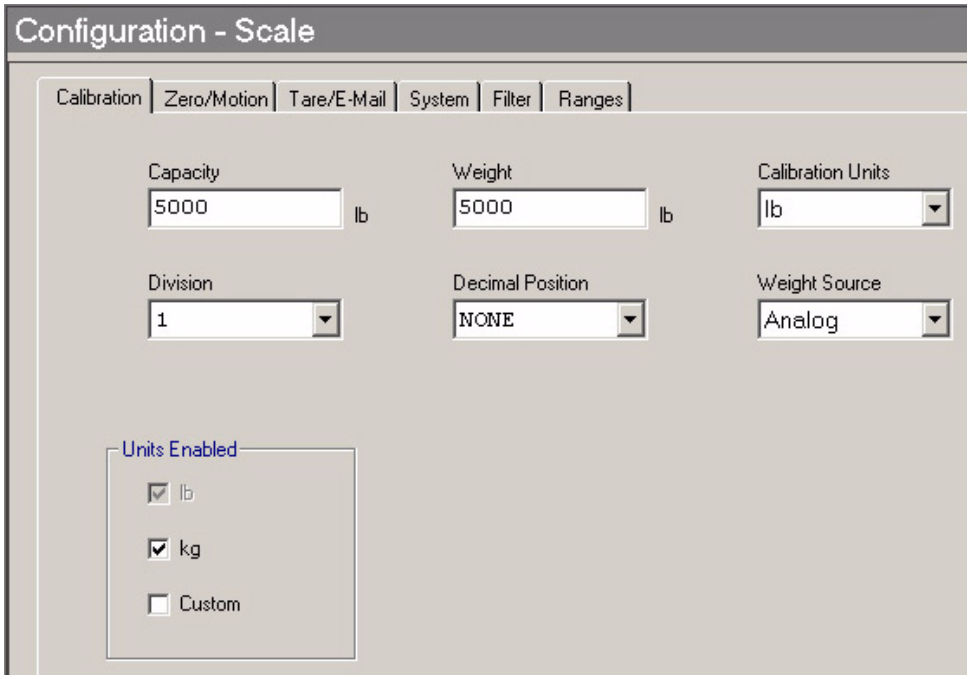
Under the Configuration button on the menu bar there are six icons:

- Scale, see *Scale Icon* on page 17
- Applications, see *Application Icon* on page 25
- Serial, see *Serial Icon* on page 37
- Analog out, see *Analog Output Icon (requires indicator option)* on page 39
- Trips, see *Trips Icon* on page 40

Each is explained on the following pages.

3.3.1 Scale Icon

Click on the Scale icon, shown above, and the following dialog box appears:



The dialog box has several tabs. Each tab is explained below.

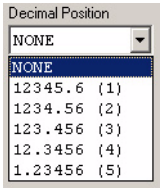
Calibration tab

Under the Calibration tab, type in, select or enable the following items:

Capacity	Type in the scale capacity.
Weight	Type in the calibration test weight size
Calibration Units	Choose lb or kg as the calibration unit of measure
Division	Type in the division size of your displayed weight. Choices are: 1, 2, 5, 10, 20, 50, 100, 200, and 500

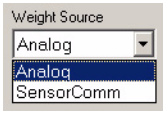
All of these capacities function in conjunction with the decimal place position. For example, if you choose a division size of 5 and a decimal position of 12345.6, your division size will be .5.

Decimal Pos. Pick a decimal position from the drop down list. Choices available are; 123456, 12345.6, 1234.56, 123.456, 12.3456 and 1.23456. See illustration below:

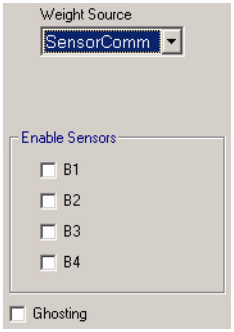


Decimal position works with Division size. Pick a division size then the decimal position to get the displayed division size.

Weight Source Choose if your scale is analog or SensorComm.



If you choose SensorComm, the following appears in the window:



When using a scale with SensorComm, always start with B1 and continue consecutively, i.e. B2, B3, etc.

You must enable the sensors which will be used by SensorComm. You may also enable ghosting which allows the scale to function in certain situations with 1 or more weight sensors out of operation. See the SensorComm manual for complete information.

Units Enabled Enable the units of measure you want available when you click on the indicator's UNITS key. The shaded unit under Units Enabled is a result of the selection in Calibration Units.

If Custom is checked under Units Enabled, the dialog box changes to this:

Custom Units Type a name for the custom unit of measure. Type in a conversion factor based on the primary or calibration unit of measure. See the note below.

If your new custom unit is larger than one CAL UNIT, then you key in how many CAL UNITS make up 1 new custom unit. For example 1 TON = 2000 pounds so with pounds selected as our CAL UNIT we would key in 2000 for the multiplier.

$$\frac{\textbf{one cal unit}}{\textbf{number of custom units}}$$

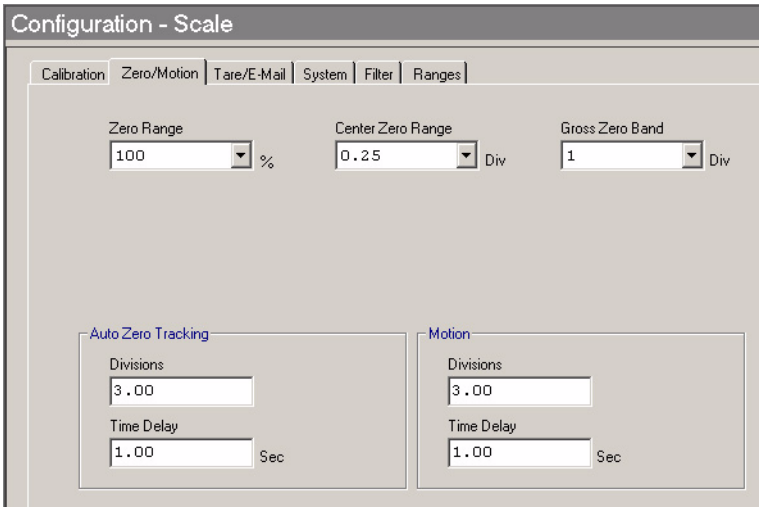
If your new custom unit is smaller than one CAL UNIT, then you divide one cal unit by the number of custom units it takes to make up a single CAL UNIT. Multipliers are limited to a total of seven digits by the display.

Example #1: *16 ounces = 1 pound.*
Do the math: (one cal unit / number of custom units = the multiplier) 1/16=0.0625
So with pounds selected as our CAL UNIT we would key in 0.0625 for the multiplier.

Example #2:
1000 Grams = 1 KG.
Do the math:
(one cal unit / number of custom units = the multiplier) 1/1000=0.001
So with KG selected as our CAL UNIT we would key in 0.001 for the multiplier.

Zero/Motion tab

The following is displayed when you click on the Zero/Motion tab.



Under the Zero/Motion tab, set the following:

Zero Range — Type in a percentage of capacity, within which the ZERO key will zero the scale.

Center Zero Range — Select a window size for the center-of-zero annunciator. You can choose between ±¼ and ±½ division of zero weight. When the weight falls within the window size, the center-of-zero annunciator lights.

Gross Zero Band — This is a parameter used to trigger the tare clear function covered under the Tare tab. You can select values between 0 and 100 divisions.

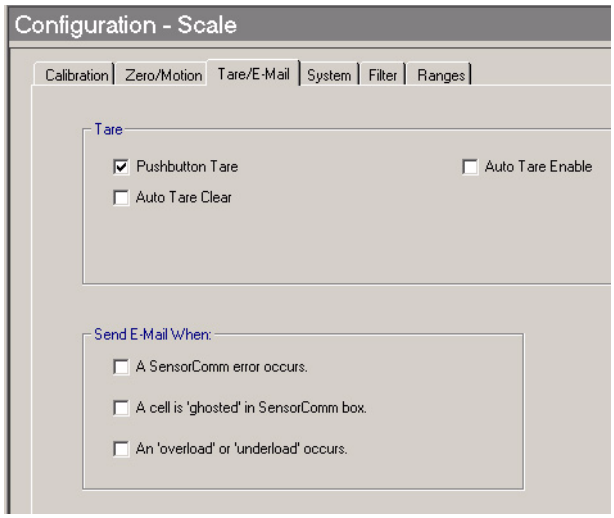
Auto Zero Tracking — Type in a division size and time delay in seconds. The division size you pick defines a range above and below zero. When scale weight is inside this range for the number of seconds you picked, ½ of the weight will be zeroed. The indicator will repeat removing ½ the weight every X seconds. X being the number of seconds you have picked. See the note below.

AZT and Motion
Common Division selections: 0.25, 0.5, 1.0, 2.0, 3.0

Motion — Type in a division size and time delay in seconds. This defines the stability window in terms of ±divisions for a period of time, in seconds. If a weight changes less than this number of divisions in the time period you select, the motion light turns off and the weight is considered stable. See note at left.

Tare/E-Mail tab

The following is displayed when you click on the Tare/E-Mail tab:

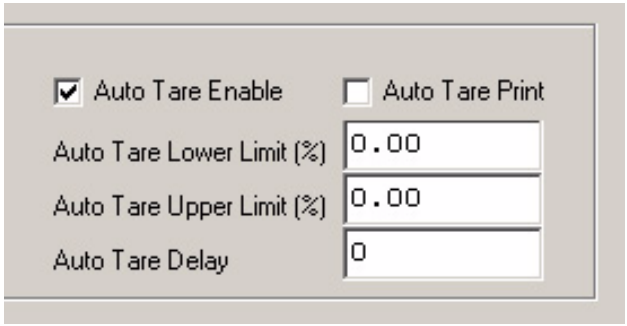


Here you can set the following:

Pushbutton Tare — If you enable this item you can use the **TARE** key to tare a weight from the scale. If you disable this item, you cannot tare using the **TARE** key.

Auto Tare Clear — If you enable this item the tare clears automatically when the weight falls below the value set under Gross Zero Band discussed on the previous page.

Auto Tare Enable — Select this to enable the Auto Tare function. If enabled you will see these additional items:



Auto Tare Print — Select this and a print function will occur whenever an automatic tare is done. The formats chosen for the current application will print when the auto tare print occurs or when the **PRINT** key is pressed.

Auto Tare Lower & Upper Limit

These are the lower and upper thresholds that define the automatic window. They are both entered as a percentage of capacity. When the net weight on the scale is:
- above the lower threshold and
- below the upper threshold and
- the delay (explained below) has expired
- and weight is stable

an auto tare is triggered. See the note below.

Setting the lower or upper limit to zero disables the auto tare feature.

Auto Tare Delay

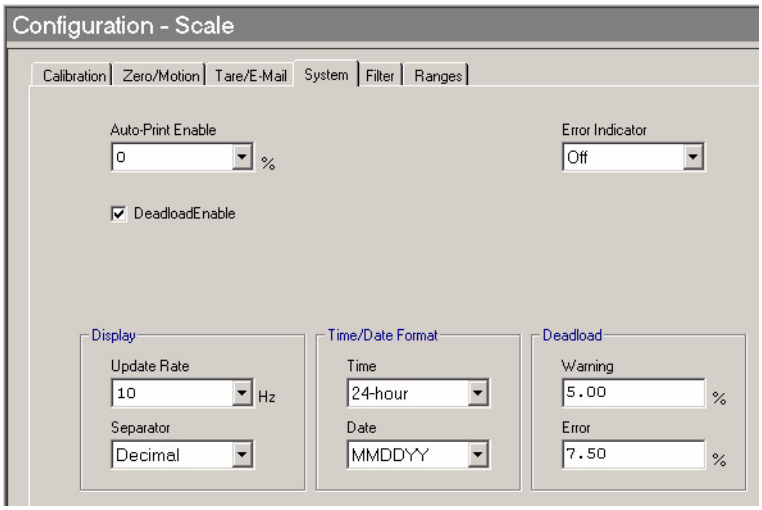
Enter this value in seconds. This is the amount of time after the weight falls into the auto tare window until an auto tare is done.

Send Email When:

Select any or all instances when an email notice is sent by the indicator. Email is setup in the Net Manage window.

System tab

The following is displayed when you click on the System tab:



Auto Print Enable

Use this item to set a minimum weight under which the indicator will send out the configured print format. This is a percentage of scale capacity.

Error Indicator

Choose the function that is associated with the bottom LED error indicator on the display. Choices are Off, SensorComm, Network-1 or Network-2.

Deadload Enable If you enable this, the Deadload choices appear in the bottom right of the window. Use these items to choose a percentage of scale capacity at which the scale gives a warning or causes an error. This is used if SensorComm is enabled.

Display

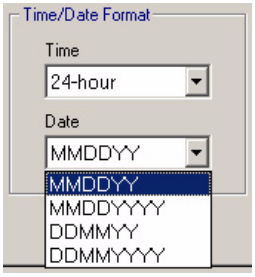
Update Rate Set the display update rate. Choices are 1, 2, 5, 10 Hz.

Separators Pick a decimal point or a comma for the fraction delimiter for the display. For example, if you pick Decimal, the display will show 10.5. If you pick Comma, the display will show 10,5.

Time/Date Format

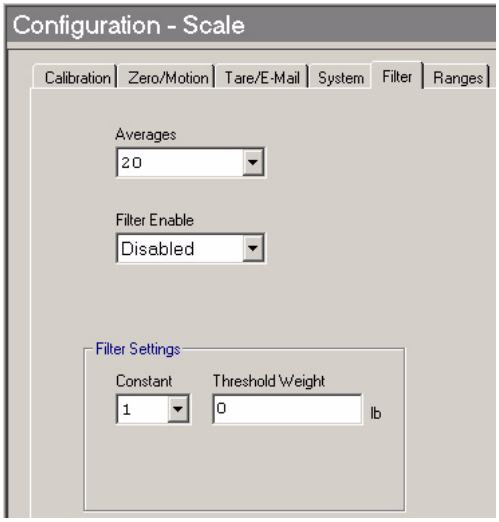
Time Choices are 12 hour (AM/PM) or 24 hour format.

Date Select the style of date display. Choices are shown below:



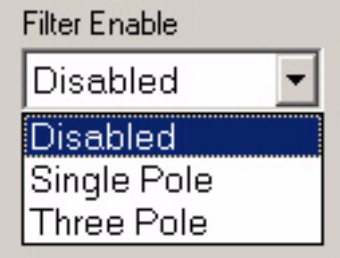
Filter tab

Click the Filter tab and the following is displayed.



Averages Set the number of A to D counts to be averaged for display or printed weight. Choose values between 0 and 128 from the drop down list.

Filter enable Choose Disabled to disable filtering or choose Single Pole or Three Pole filtering



.

Three-pole filtering is faster response to weight in a short time.

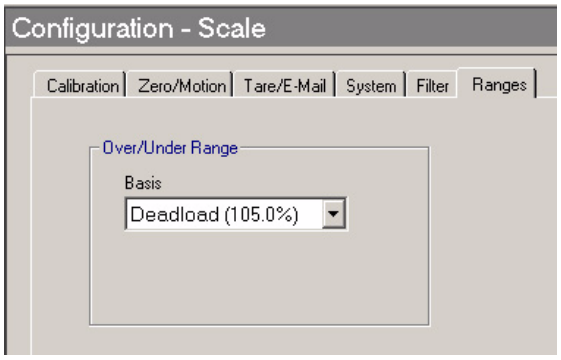
Single-pole, passive filtering is slower response to weight in a longer time period with improved accuracy.

Filter settings If you enable filtering Filter Settings appears. For the Constant value you can pick a value between 1 and 10. Set the number low for small vibration problems and higher for more dampening effect.

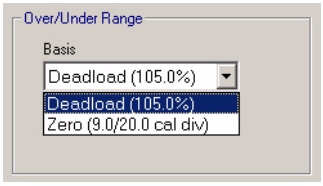
The Threshold Weight parameter causes the indicator to respond quickly to large weight swings. Threshold is the amount of weight swings, in calibration units, beyond which the filtering will be temporarily disabled. For example, if you set this to 10 lbs, a weight swing greater than 10 pounds occurring during the sample time will disable the filtering until the weight swings during the sample time is less than 10 lbs.

Ranges tab

Click the Range tab and the following is displayed:



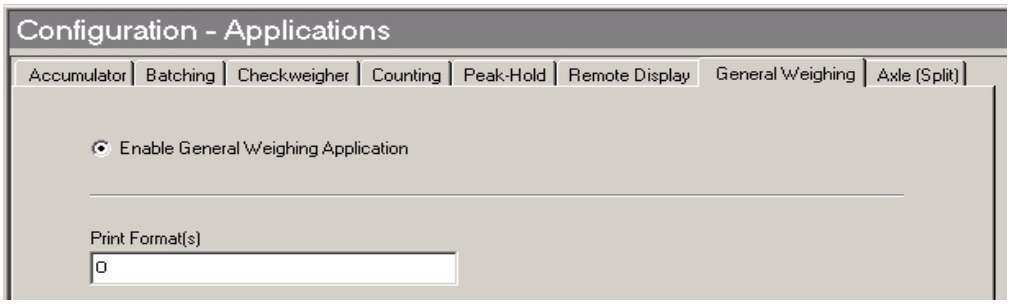
Use this item to set the point at which under range (lower) dashes or over range (upper) dashes are displayed. You can choose between 105% of capacity or +9/-20 divisions over/under capacity. See the list below:



This completes the Scale section of the configuration.

3.3.2 Application Icon

Click the Application icon, shown above, on the Menu Bar and the following window appears:



The tabs give you access to each application which you can enable. If enabled, some applications may have more settings. Each are discussed below.

General Weighing tab

General weighing is the first tab that appears since it is the default application on the 1080. It is enabled automatically since it is the default application.

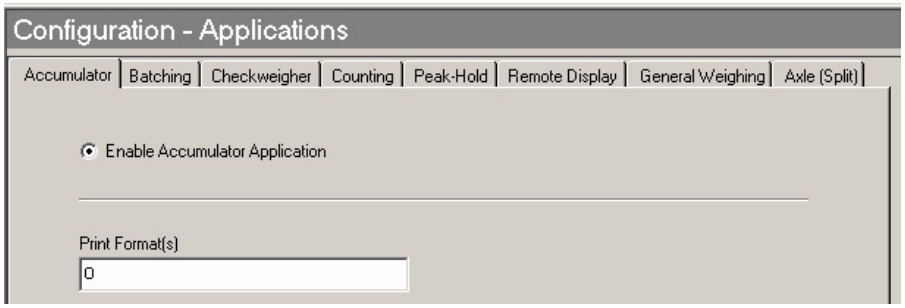
Choose Print Format(s):

Type in the print formats (0-10) that you want printed when the **PRINT** button is pressed during normal operation. Multiple print formats must be typed in ascending order.

For example: Enter 0123410 and print formats 0, 1, 2, 3, 4 and 10 are sent out the serial port.

Accumulator tab

Click on the Accumulator Tab. Enable this application by clicking on the Enable button.



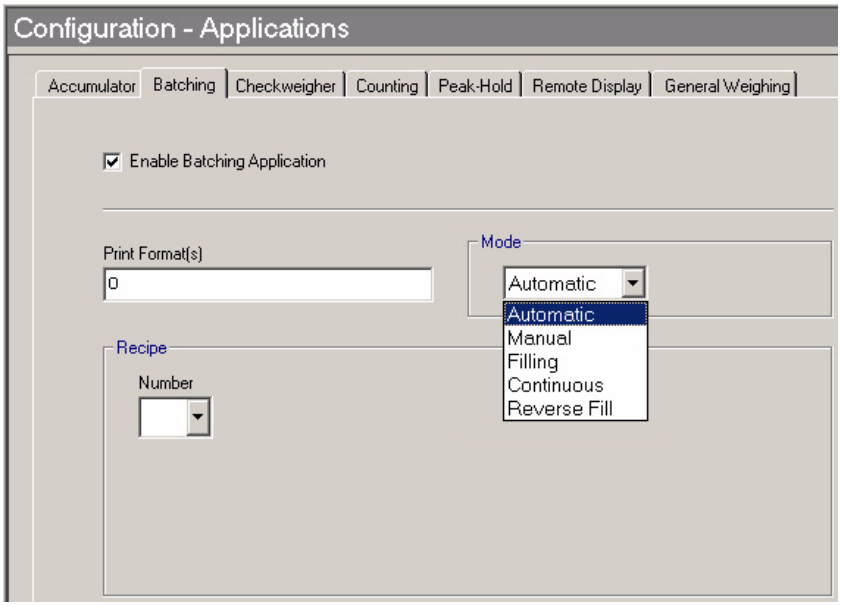
Choose Print Format(s):

Type in the print formats (0-10) that you want printed when the PRINT button is pressed during normal operation. Multiple print formats must be typed in ascending order.

For example: Enter 0123410 and print formats 0, 1, 2, 3, 4 and 10 are sent out the serial port.

Batching tab

Click the Batching tab and select Enable Batching Applications. The following choices will appear:

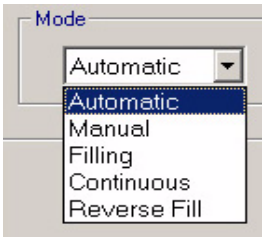


Choose Print Format(s):

Type in the print formats (0-10) that are to be printed when the PRINT button is pressed during normal operation. Multiple print formats must be typed in ascending order.

For example: Enter 0123410 and print formats 0, 1, 2, 3, 4 and 10 are sent out the serial port.

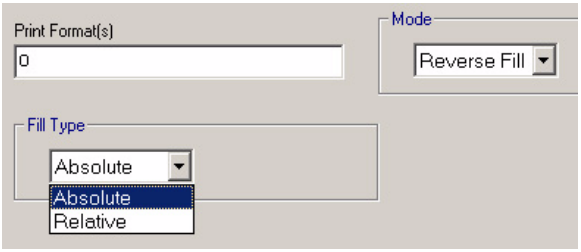
Select Automatic, Manual, Filling, Continuous or Reverse Filling Mode:



Manual If the recipe is set up for Manual mode, you press the **F1** key to start the batch and you need to press the **F1** key each time a output is reached to activate the next ingredient output.

Automatic If the recipe is set up for Automatic mode, you press the **F1** key to start the batch and each output is activated and deactivated automatically by the indicator.

Filling In Fill mode, any recipe that has been setup is ignored. The filling process is run based on the values set for the outputs. In order to complete the filling process, at least one output must be enabled. If you select this mode you are given two Fill Type choices: Absolute and Relative. See the graphic below.

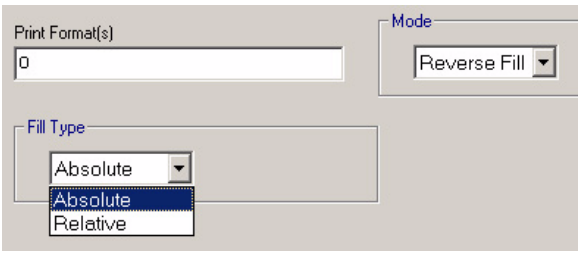


Absolute Choose this mode and setpoints activate when the **F1** key is pressed. When the net weight on the scale reaches the configured setpoint value, the setpoint will deactivate.

Relative Choose this mode and when you press the F1 key the starting weight is captured and the sepoints activate. The setpoint will not deactivate until the net weight on the scale reaches the starting weight plus the configured setpoint value.

Continuous Continuous batching mode. This mode is very close to the Auto mode. In continuous mode, another batch is started immediately after the previous batch has finished. In Auto mode, the user must press the **F1** key to start each batch.

Reverse Fill Reverse fill batching mode. This is similar to the Filling mode. However, the weight on the scale must be above the configured setpoint weight when you press the **F1** key in order for the setpoint to be activated. When the weight on the scale decreases enough to fall below the configured setpoint value, the setpoint will deactivate. If you select this mode you are given two Fill Type choices: Absolute and Relative. See the graphic below.

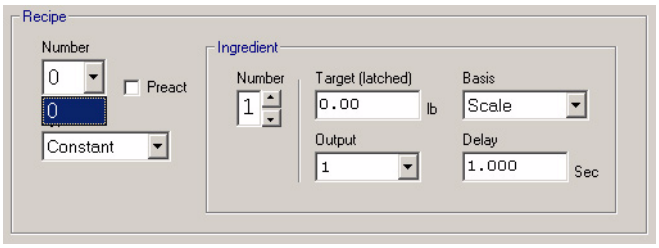


Absolute Choose this mode and setpoints activate when the **F1** key is pressed. When the net weight on the scale reaches the configured setpoint value, the setpoint will deactivate.

Relative Choose this mode and when you press the F1 key the starting weight is captured and the sepoints activate. The setpoint will not deactivate until the net weight on the scale reaches the starting weight plus the configured setpoint value.

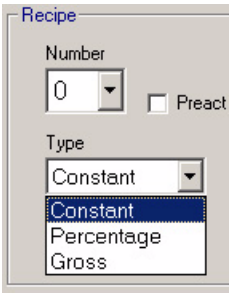
Select Recipe Number:

The 1080 allows only one recipe so the drop down list contains Recipe 0 only. When you select this number, the following appears in the window:



You can now create a recipe using this Recipe area of the screen.

Choose Type of Recipe:



Constant	Batches are all the same size and the weight of each ingredient is predetermined by the recipe.
Percentage	Batch size is chosen by the operator and each ingredient is determined by the percentage set in the recipe.
Gross	You set the gross weight at which each ingredient will stop. The ingredient is complete when the gross weight on the scale reads the value that was set, regardless of the weight on the scale when the batch was started.

Enable or disable the Preact:

A preact is the time it takes an ingredient (which is falling from an auger or other feeder) to reach the scale after the auger or feeder is shut off. There will always be material in “free-fall” after an ingredient is shut off and the indicator will automatically calculate this and update this value.

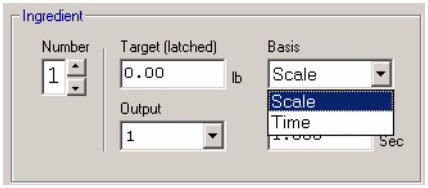
The first time a batch is run, overage for any ingredient weight is calculated and the next time the ingredient is being weighed the output will be shut down so approximately 70% of the overage is reduced. This occurs each time a batch is run so that the system quickly learns and produces accurate batches.

Define the ingredients:

To define an ingredient you:

- Choose an ingredient #.

- Choose the basis for the ingredient:



The Basis of each ingredient can be weight or time.

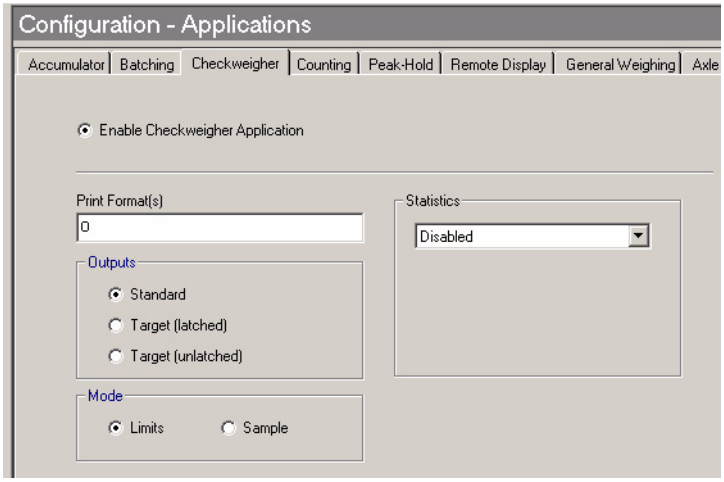
Scale If an ingredient basis is scale weight, the output activates at the appropriate time and deactivates when the weight set in the recipe is reached.

Time If an ingredient basis is time, the output activates for the time set in the recipe and then deactivates.

- Choose an Output: Set the output you want associated with the ingredient. Choices are 1, 2 , 3 or None.
- Choose a Delay: Set a time delay between when a basis is met and the next ingredient action is started.

Checkweigher tab

Click the Checkweigher tab and select Enable Checkweigher Application. The following choices will appear:

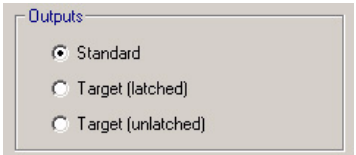


Choose Print Format(s):

Type in the print formats (0-10) that are to be printed when the **PRINT** button is pressed during normal operation. Multiple print formats must be typed in ascending order.

For example: Enter 0123410 and print formats 0, 1, 2, 3, 4 and 10 are sent out the serial port.

Choose Outputs:



Configure Outputs: Choose between Standard, Target1 and Target2.

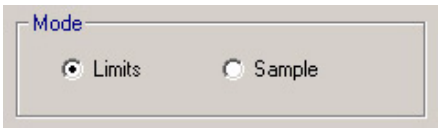
Outputs 1, 2 and 3 must be turned on for the checkweighing annunciators (Over, Accept, Under) to work.

STANDARD: Trips are configurable outputs. An output value can be entered in weigh mode of operation.

TARGET (latched): Latched outputs. When weight is added to the scale, the appropriate trip; OP1, OP2 or OP3, activates. The trip is now activated, and will remain active, until the scale returns to gross zero.

TARGET (unlatched): Unlatched outputs. When weight is added to the scale, the appropriate trip; OP1, OP2 or OP3, activates. The trip will deactivate when weight decreases below the configured trip.

Choose Mode:



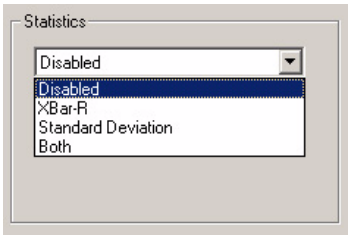
Limits Mode In this mode the user enters the upper and lower limits for the item and the indicator will use those values to run the display.

Sample Mode If you pick Sample Mode, the Target Window box, shown below, appears in the dialog box.

In Sample mode the user places a correct weight “product” on the scale and presses the **F1** key. The indicator will use this weight to run the display. Upper and lower limits will automatically be one division above and below the target weight respectively, by default. This default vaule can be changed using the Target Window, shown above. Type in a target division size other than the default, 1.

The *ACCEPT* annunciator stays lit if weight is within the upper and lower limits.

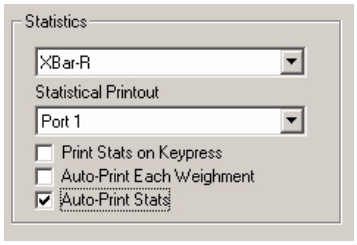
Choose Statistics:



If the statistical features are enabled, the user is to enter a sample size after the over and under targets are set. Each time the gross weight on the scale goes above 10 divisions and the weight stabilizes, the weight is captured and added to the statistical data. The gross weight on the scale must return to the center of zero before another weighment can be captured.

Disabled	Choose this to disable statistics colleciton.
XBar-R	Choose this and the average weight of each complete sample set is stored. The 1080 will keep a queue of the average weights of the last 8 sample sets. This queue of averages is used to print trend information on the statistical reports.
Standard Deviation	Choose this to enable the collection of standard deviation data.
Both	Choose this enable the collection of both XBar-R and Standard Deviation statistics.

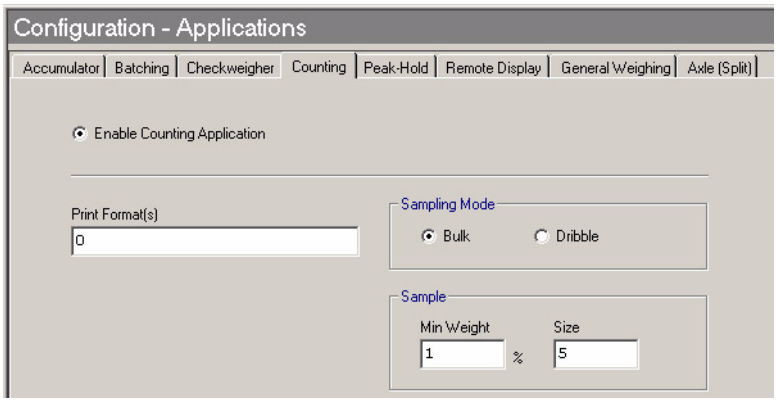
If you choose XBar-R, Standard Deviation or Both, the following items appear:



Statistical Printout	Choose the port through which the statistical information will print.
Print Stats on Keypress	Choose this to cause the statistical information to print when the **PRINT** key is pressed.
Auto-Print Each Weighment	When enabled, each sample weighment is printed as it is captured. The range of the sample (over, under or accept) is also printed.
Auto-Print Stats	When enabled, the statistical information will be automatically deleted after the report is printed.

Counting tab

Click the Counting tab and select Enable Counting Application. The following choices will appear:



Choose Print Format(s):

Type in the print formats (0-10) that are to be printed when the **PRINT** button is pressed during normal operation. Multiple print formats ***must*** be typed in ascending order.

For example: Enter 0123410 and print formats 0, 1, 2, 3, 4 and 10 are sent out the serial port.

Choose a Sample Mode:

Bulk sampling In this sampling method you place the specified sample number of items on the scale all at once (in bulk) and after motion stops, the scale automatically starts to calculate piece weight and then shows the count.

Dribble sampling In this sampling method you can count out the specified sample number of items onto the scale and when you are ready, press the F1 key and after motion stops, the scale starts to calculate piece weight and then shows the count.

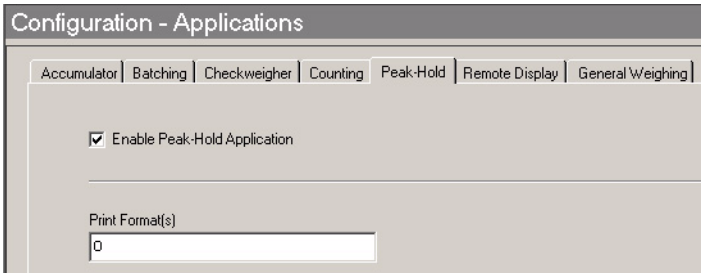
Choose the Sample Minimum Weight and the Sample Size:

Set the minimum sample weight as a percent of capacity that the sample must weigh.

Set the default sample size to prompt the operator to place on the scale.

Peak-Hold tab

Click the Peak-Hold tab and select Enable Peak-Hold Application. The following choices will appear:



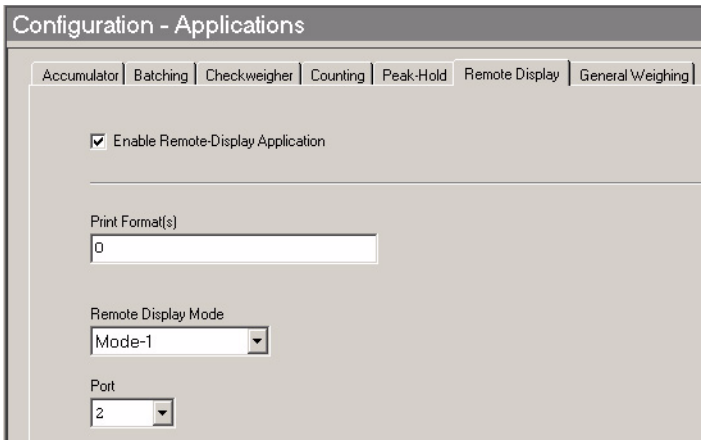
Choose Print Format(s):

Type in the print formats (0-10) that are to be printed when the **PRINT** button is pressed during normal operation. Multiple print formats ***must*** be typed in ascending order.

For example: Enter 0123410 and print formats 0, 1, 2, 3, 4 and 10 are sent out the serial port.

Remote Display tab

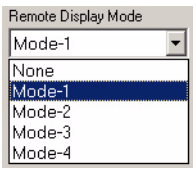
Click the Remote Display tab and if you enable it you will see the following choice:



Choose Print Format(s):

This section for future use

Choose Remote Display Mode:



Mode-1 The indicator acting as the remote display will show the Gross or Net annunciator and the characters displayed on the master indicator.

Mode-2 The remote display will show the Gross or Net annunciator, the characters and all annunciators displayed on the master indicator.

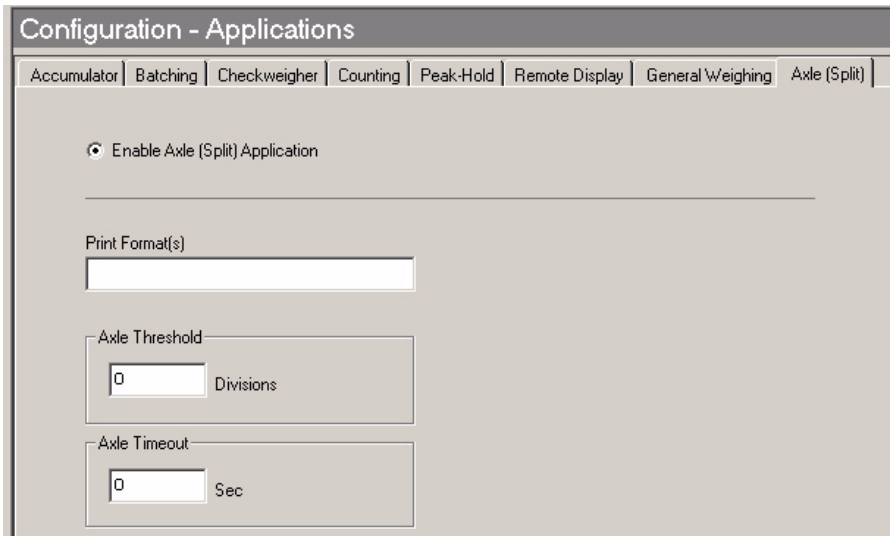
Mode-3 The remote display will show the Gross or Net annunciator, the characters displayed on the master indicator and allows zeroing of the scale from the remote.

Mode-4 The remote display will show the Gross or Net annunciator, the characters and annunciators displayed on the master indicator and allows full function of all the keys on the remote.

Choose a Port: Choose which port, 1 or 2, serial information is coming into.

Axle (Split) tab

Click the Axle (Split) tab and if you enable it you will see the following choice:



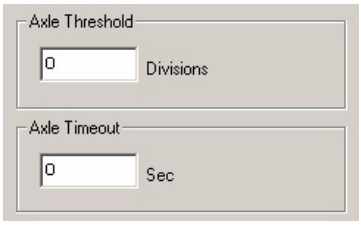
This application allows the 1080 to capture truck axle weights. The scale must be short enought so that the scale becomes empty between axles.

Choose Print Format(s):

Type in the print formats (0-10) that are to be printed when the **PRINT** button is pressed during normal operation. Multiple print formats ***must*** be typed in ascending order.

For example: Enter 0123410 and print formats 0, 1, 2, 3, 4 and 10 are sent out the serial port.

Choose Axle Threshold and Timeout:



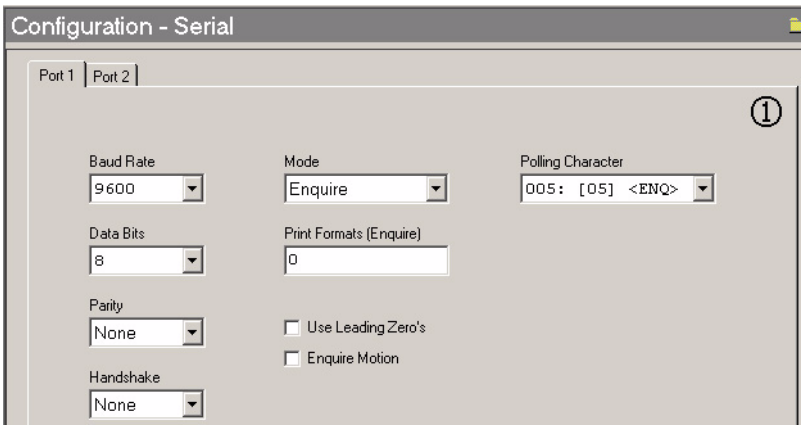
Axle Threshold This is the minimum weight for an axle in divisions. When the weight goes above this threshold the 1080 can turn a connected traffic light red and waits for the weight to stabilize.

Axle Timeout This is the maximum time, in seconds, between axles. After an axle is weighed, the next axle must come onto the scale within the timeout period. If the timeout expires before the next axle is on the scale, the 1080 assumes this was the last axle and prints the axle total.

This concludes the Application Icon section.

3.3.3 Serial Icon

Click the Serial icon on the Menu Bar and the following window appears:



You must type in the print format numbers in ascending order.

For example: Enter 0123410 and print formats 0, 1, 2, 3, 4 and 10 are sent out the serial port.

In this window you set up the serial communication parameters for Port 1 and Port 2. Choose the port and then select values for each item from its drop down list.

Baud Rate Choose from 300 to 115200

Data Bits Choose from 7 or 8

Parity Choose from None, Odd or Even

Handshake Choose from None, RTS/CTS or Xon/Xoff. **(RTS/CTS not available for Port 1)**

Mode Depending on the mode you pick, a secondary choice may appear. All are explained below:

Broadcast Causes a Print Format box and Rate box to appear. Choose Broadcast to cause the configured print format(s) to be sent out the serial port continuously at the rate chosen when there is no motion on the scale

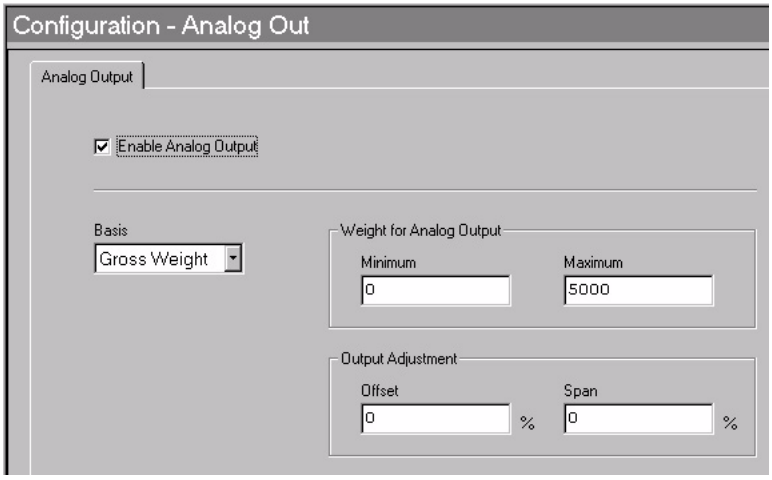
Enquire	Causes a Print Format box and Polling Character box to appear. Choose the polling character which when received by the indicator will cause the print format(s) to be sent through the serial port. The polling character can be any ASCII code # from 0 to 255 (hex 00 to FF).
SMA	Choose from the Scale Manufacturer's Association list of commands and responses.
RD4100	Like Broadcast except it will send information even when the scale is in motion. If you pick format #0, a default G XXXXXX lb format will be sent.
RD Mode 1	Select this to send G XXXXXX lb at the rate you pick in the Rate box.
RD Mode 2	Select this to send the same as RD Mode 1 + annunciators
RD Mode 3	Select this to send the same as RD Mode 1 + will accept the keys presses from the remote (TARE, SELECT, ZERO, PRINT, UNITS)
RD Mode 4	Select this to send the same as RD Mode 2 + accepts the keys presses from the remote (TARE, SELECT, ZERO, PRINT, UNITS)
RS-485	When you choose this a Muli-drop Address box appears. The address can be any ASCII code # from 0 to 255 (hex 00 to FF).
485 Half Duplex	When you choose this a Muli-drop Address box appears. The address can be any ASCII code # from 0 to 255 (hex 00 to FF).

There are also two checkboxes:

Use Leading Zeros	Leading zeros fill in any open spaces before a weight value in a printout
Enquire Motion	If checked, the scale will respond to an enquire code only when there is no motion on the scale.

3.3.4 Analog Output Icon (requires indicator option)

Click the Analog Output icon, shown above, on the Menu Bar. If you enable analog output the following is displayed:



Set the "Basis":

Choose what the output will be based on; Gross Weight or Net Weight

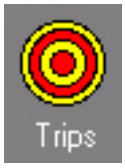
Set the "Weight for Analog Output":

For Example: The minimum weight is 0 pounds and the maximum weight is 5000 lbs. This represents the minimum 4mA output at 0 pounds and the maximum 20mA output at 5000 lbs.

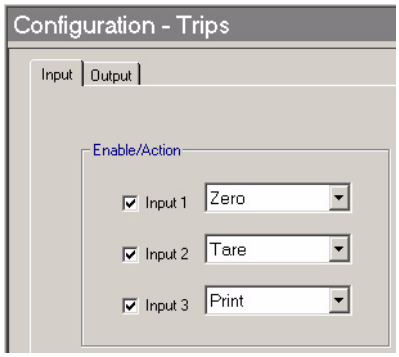
Set the "Output Adjustment":

For Example: Increasing the offset amount above 0% will increase the 0 weight value. Increasing the span percentage will increase the maximum weight value. Both of these adjustments increase the voltage from the physical card.

3.3.5 Trips Icon

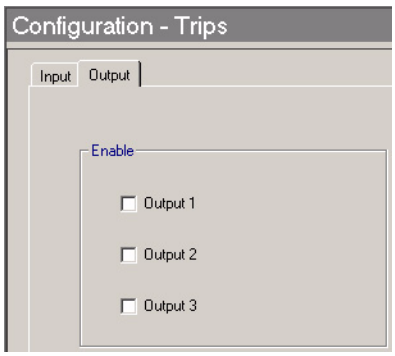


Click the Trips icon. Use this to enable and assign key functions to specific inputs and to enable or disable outputs. Below is a sample of all inputs enabled and an action assigned to each input. See list of choices in the note below.



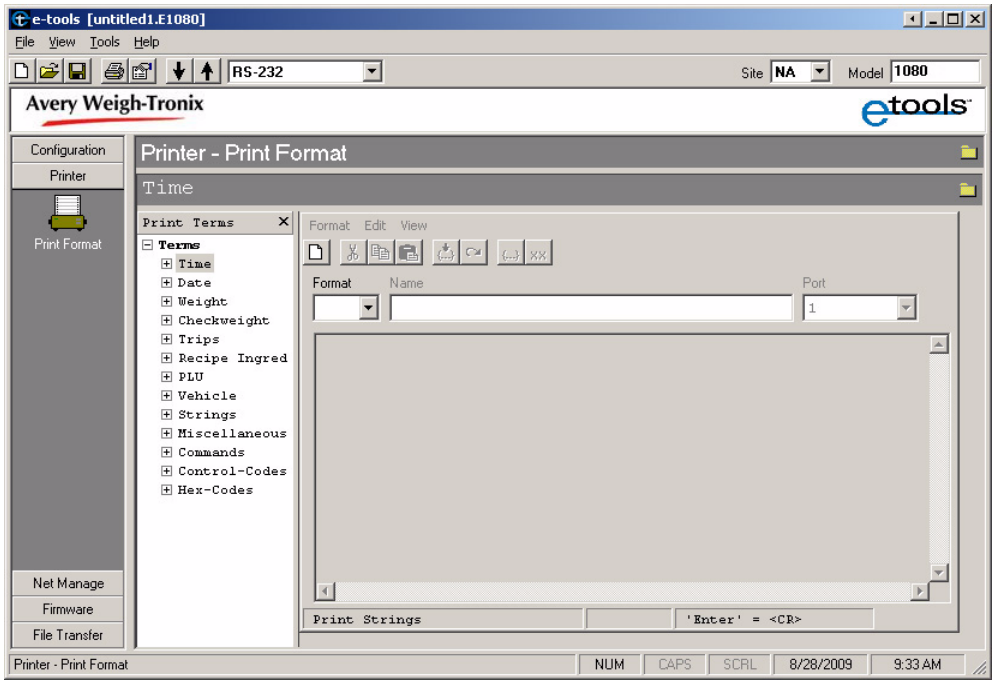
Choice	***Input Action***
None	*No action*
F1_Key	*Remote F1*
Tare	*Remote TARE key*
Units	*Remote UNITS key*
Print	*Remote PRINT key*
Zero	*Remote ZERO key*
Tare Cancel	*Clear active tare*
Start	*Starts batch in batch mode*
Stop	*Stops batch in batch mode*

When you click the Outputs tab you are shown three checkboxes for the three outputs. See example below. Click on the checkbox for the output you want to enable. Click again to disable an output.



3.4 CONFIGURING - Printer Button

When you click the Printer button in the Menu Bar and then click the Print Format icon you will see the screen shown below. Use this window to create and save custom print formats.



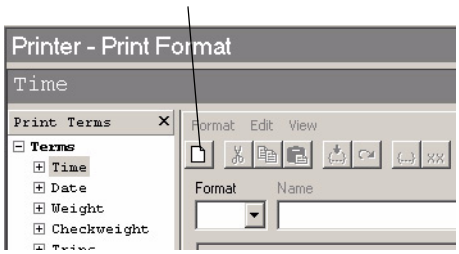
See the note below for information regarding print formats for each application.

*Print **Format 0** is the default print format reserved for each application mode.*

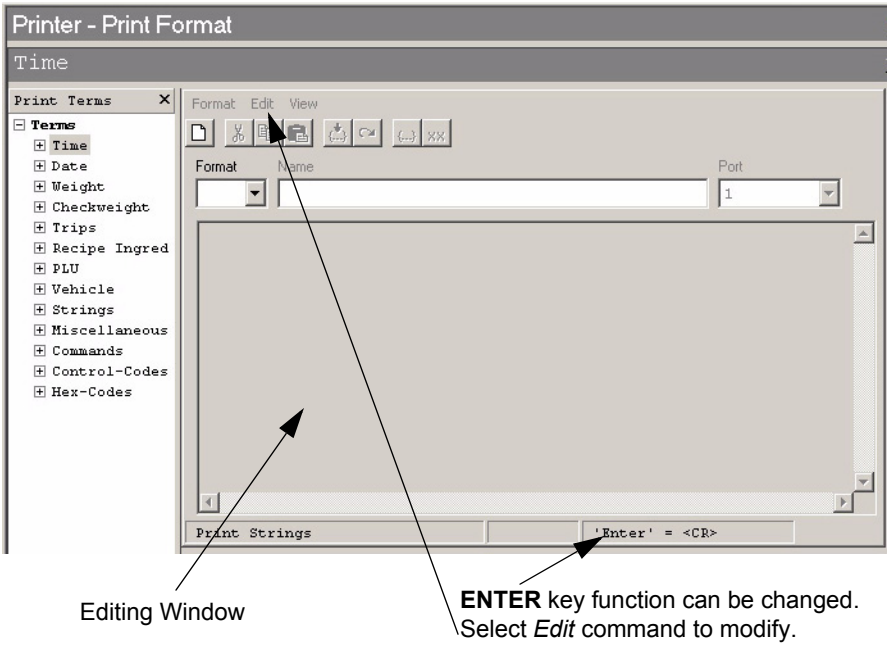
***Formats 1-9** are available for any application mode.*

***Format 10** = Format 0 for the General Weighing application.*
***Format 11** = Format 0 for the ACC application.*
***Format 12** = Format 0 for the Batch application.*
***Format 13** = Format 0 for the Target application.*
***Format 14** = Format 0 for the Count application.*
***Format 15** = Format 0 for the Top application.*
***Format 16** = Format 0 for the Remote Display application. (unused)*
***Format 17** = Format 0 for the Enquire mode on serial port 1.*
***Format 18** = Format 0 for the Broadcast mode on serial port 1.*
***Format 19** = Format 0 for the RD4100 mode on serial port 1.*
***Format 20** = Format 0 for the Enquire mode on serial port 2.*
***Format 21** = Format 0 for the Broadcast mode on serial port 2.*
***Format 22** = Format 0 for RD4100 mode on serial port 2.*
***Format 23** = Format 0 for the General Weighing application.*

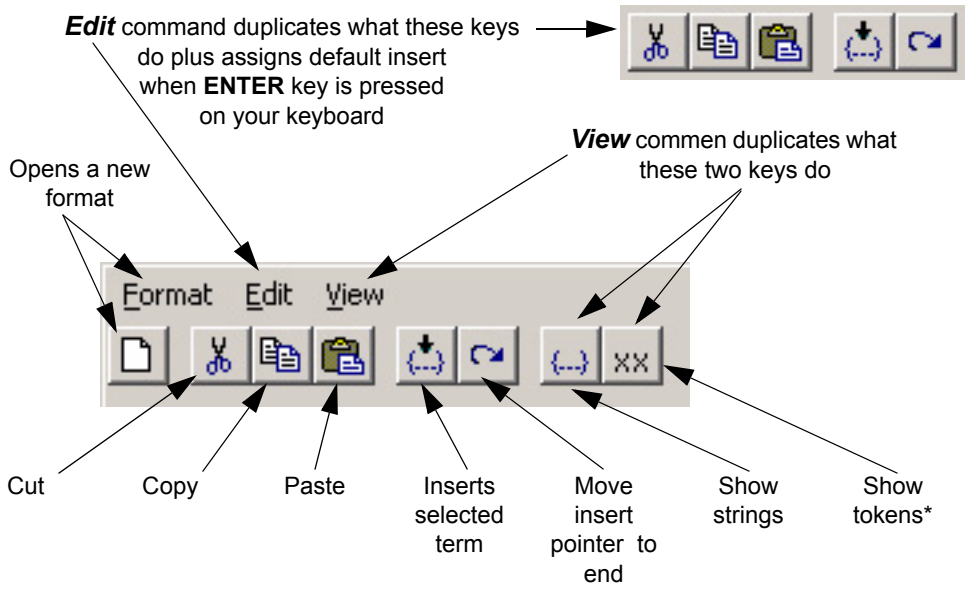
Click on the **New File** icon to start a new print format.



The screen should look similar to this:



The print format command bar is illustrated below with explanations for the functions of each.

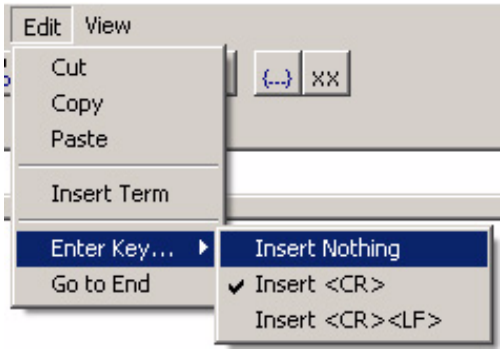


* Print format cannot be edited when *Show Tokens* is selected.

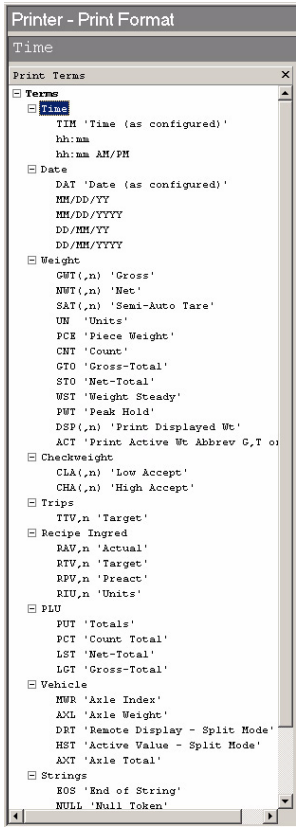
3.4.1 Creating a Print Format

To create a print format, follow these steps:

1. Choose a format # from the drop down list above the editing window.
2. Type a print format name in the Name window.
3. Pick a port to use when printing the format.
4. Click on ***Edit>Enter Key. . .***and select what pressing the **ENTER** key on the keyboard will insert. See illustration below.

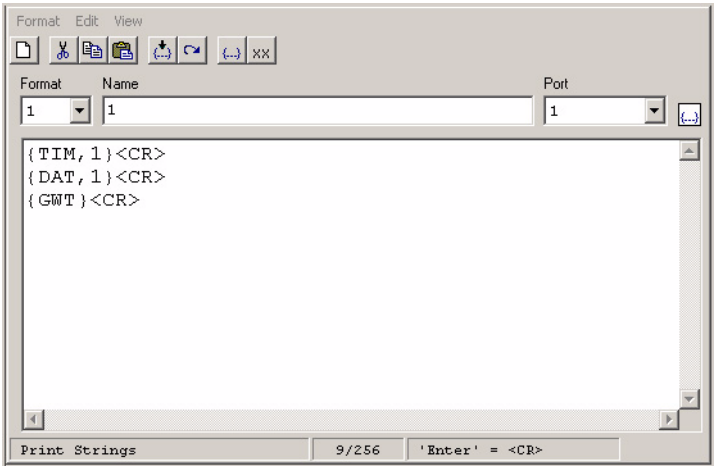


5. Insert the text cursor in the editing window by clicking anywhere in the window.
6. Expand the terms list by clicking on the plus (+) symbol.



7. Double click a term to insert it at the cursor position or click on a term and click the Insert Term button.

8. Press the **ENTER** key when necessary to enter the carriage returns and/or line feeds you picked in step 4. See sample below:



9. When you are finished laying out the look of the format you can go to the next format you want to create or continue with creating your configuration file.

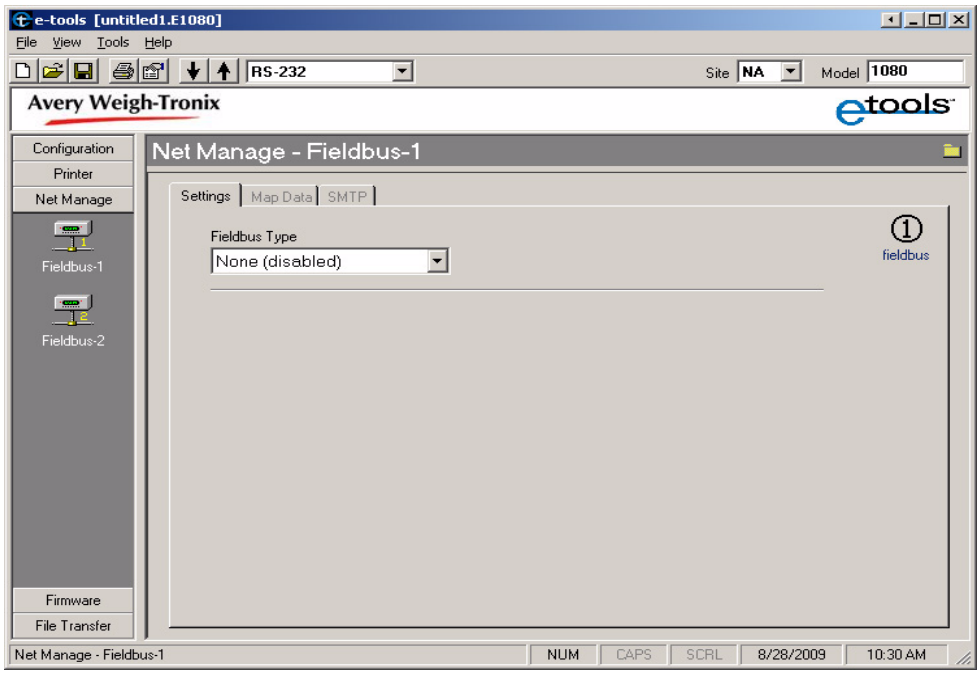
*Print **Format 0** is the default print format reserved for each application mode.*

***Formats 1-9** are available for any application mode.*

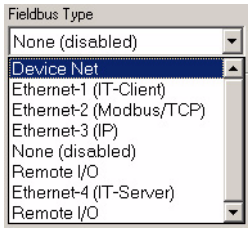
***Format 10** - Format 0 for the General Weighing mode*
***Format 11** = Format 0 for the ACC mode*
***Format 12** = Format 0 for the Batch mode*
***Format 13** = Format 0 for the Target mode*
***Format 14** = Format 0 for the Count mode*
***Format 15** = Format 0 for the Top mode*

3.5 CONFIGURING - Net Manage Button

When you click the **Net Manage** button, shown at left, and the ***Fieldbus-1*** icon in the Menu Bar you will see the screen shown below. Use this window to configure your network connections, if any.



You can choose from ***Fieldbus-1*** or ***Fieldbus-2***. With either of these you can configure the networks shown in the illustration below:



Pick the network from the drop down list and the appropriate boxes will appear and/or appropriate tab(s) will activate. Follow the steps in the next pages to configure each network.

These files are needed to configure the PLC so it will communicate to the 1080 indicator:

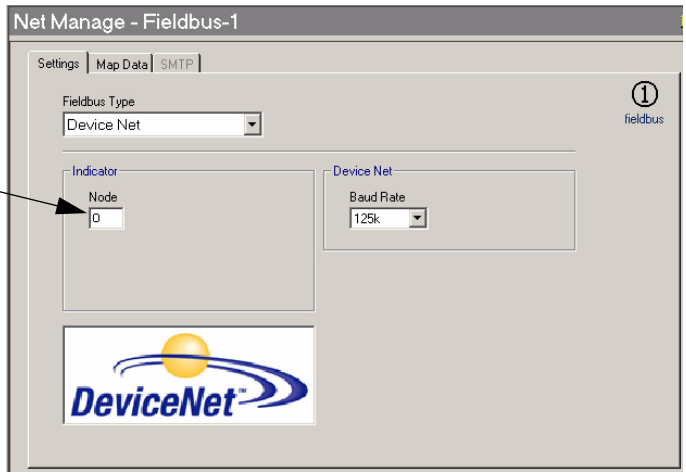
PROFIBUS® -	*AWTX0913.GSD*
DeviceNet™ -	*1080_Dnet_EnetIP.EDS*
EtherNet-3 (EtherNet/IPTM) -	*1080_Dnet_EnetIP.EDS*

These files can be found in the etools folder on your hard drive. Typically this is C:\program files\avery weigh-tronix\etools suite\etools(10xx)\networks

3.5.1 DeviceNet™

Click on DeviceNet™ in the drop down list to configure a DeviceNet network. The window looks like this:

Valid nodes for DeviceNet are 0 to 63.



Select Indicator node:

Key in the node for the indicator. Acceptable values are 0 to 63.

Select Baud Rate:

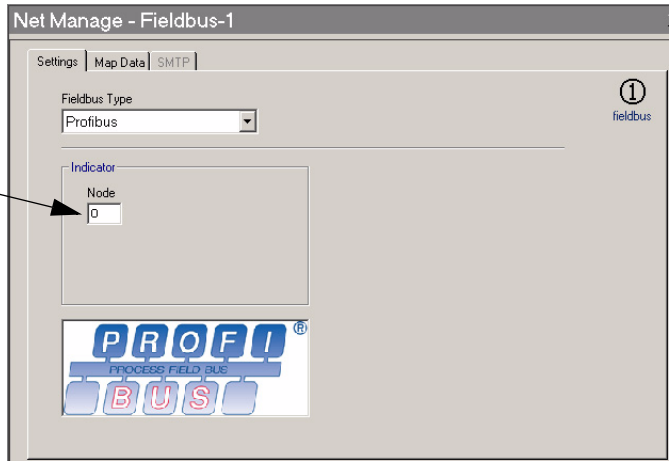
Select a baud rate for network communications. Available choices are 125K, 250K and 500K.

Click the ***Map Data*** tab and the following is displayed:

3.5.2 PROFIBUS®

Click on PROFIBUS® in the drop down list to configure a PROFIBUS® network. The window looks like this::

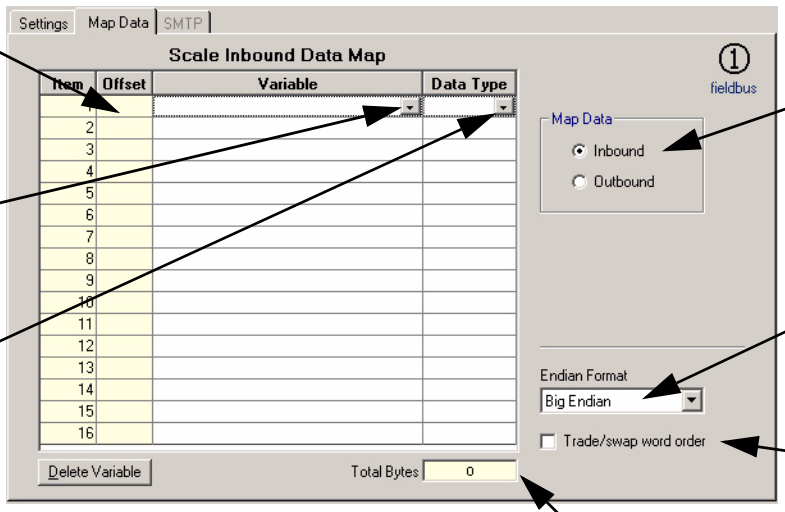
Valid nodes for DeviceNet are 0 to 63.



Select Indicator node:

Key in the node for the indicator. Acceptable values are 0 to 63.

Click the ***Map Data*** tab and the following is displayed:



This shows the "spacing" of each piece of data as it will show up on the PLC.

Click here for a dropdown list of network tokens. See Appendix B for full list.

Click here for a dropdown list of Data Types.

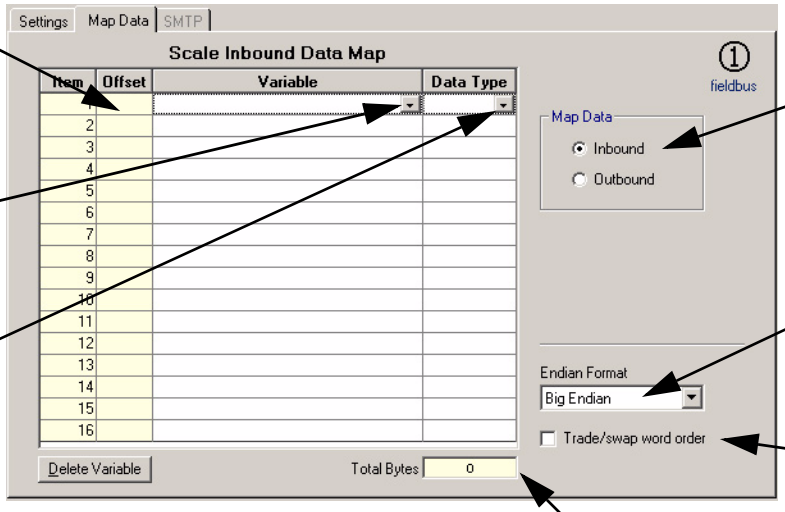
Choose to create the Inbound Data Map or Outbound Data Map by selecting your choice here.

Choose Endian Format (Big or Little) here.

Click here to trade/swap the word order

This shows the total number of bytes used by the indicator. This information is required by the PLC programmer and is automatically calculated.

Data Type	Type #	Data	# of Bytes	Range of Value
S8	0	Signed Char.	1	-127 to 127
U8	1	Unsigned Char.	1	0 to 255
S16	2	Signed Integer	2	-32767 to 32767
U16	3	Unsigned Integer	2	0 to 65535
S32	4	Signed Long	4	-2,147,483,647 to 2,147,483,647
U32	5	Unsigned Long	4	0 to 4,294,967,295
FLOAT	6	Float	4	1.0E-37 to 1.0E37



This shows the "spacing" of each piece of data as it will show up on the PLC.

Click here for a dropdown list of network tokens. See Appendix B for full list.

Click here for a dropdown list of Data Types.

Choose to create the Inbound Data Map or Outbound Data Map by selecting your choice here.

Choose Endian Format (Big or Little) here.

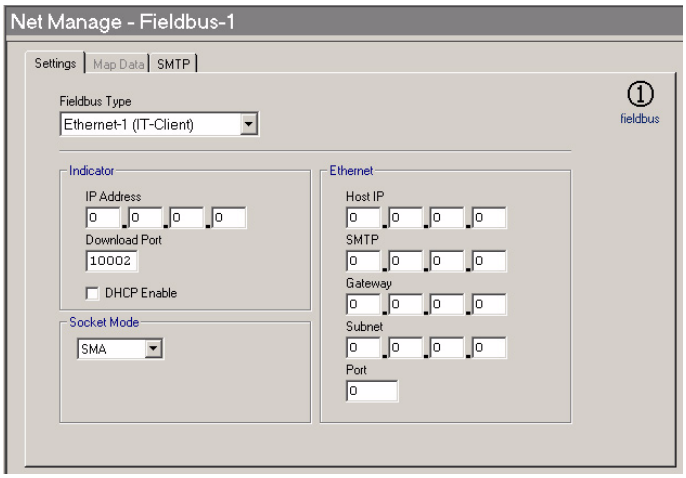
Click here to trade/swap the word order

This shows the total number of bytes used by the indicator. This information is required by the PLC programmer and is automatically calculated.

Data Type	Type #	Data	# of Bytes	Range of Value
S8	0	Signed Char.	1	-127 to 127
U8	1	Unsigned Char.	1	0 to 255
S16	2	Signed Integer	2	-32767 to 32767
U16	3	Unsigned Integer	2	0 to 65535
S32	4	Signed Long	4	-2,147,483,647 to 2,147,483,647
U32	5	Unsigned Long	4	0 to 4,294,967,295
FLOAT	6	Float	4	1.0E-37 to 1.0E37

3.5.3 EtherNet-1 (IT)

Click on **EtherNet-1 (IT)** in the drop down list to configure a EtherNet-1 (IT) network. The window looks like this:



Indicator IP Address:

Key in the IP address for the indicator. If you enable DHCP (Dynamic Host Configuration Protocol), the IP address for the indicator is not required.

DHCP (Dynamic Host Configuration Protocol) is a protocol for assigning dynamic IP addresses to devices on a network.

Download Port:

Key in the network port used to download the configuration changes via Ethernet.

Select Ethernet Addresses:

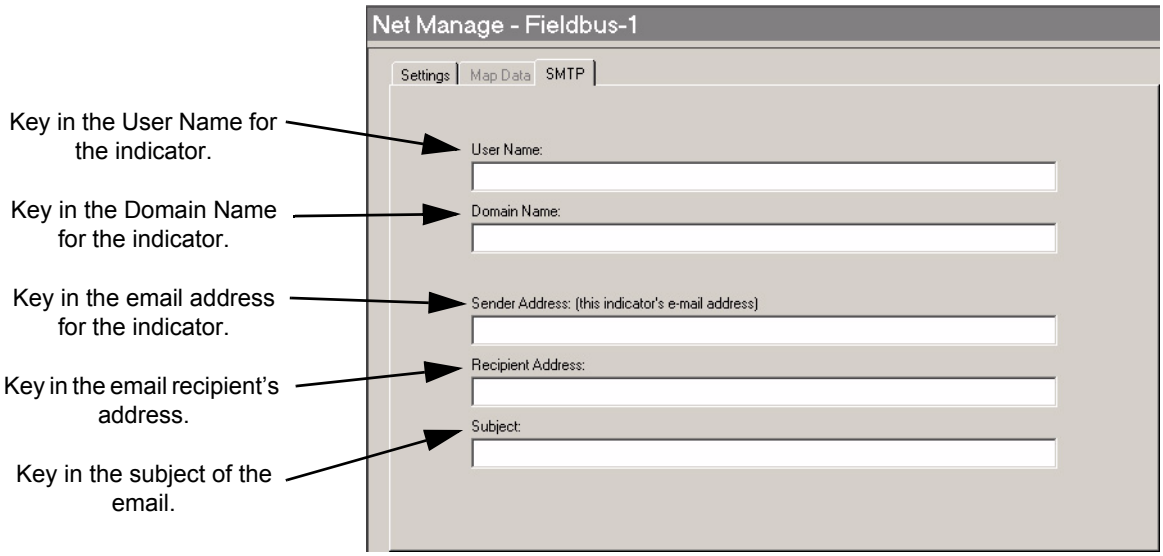
Key in the IP address for the host IP, SMTP, Gateway, Subnet and key in the port number that the indicator and the remote host will be connected on.

Set Socket Mode:

SMA The SMA protocol over the Ethernet connection. This is the exact same protocol used on the serial ports. See the Service-Serial section of the *Model 1080 Service Manual* for details.

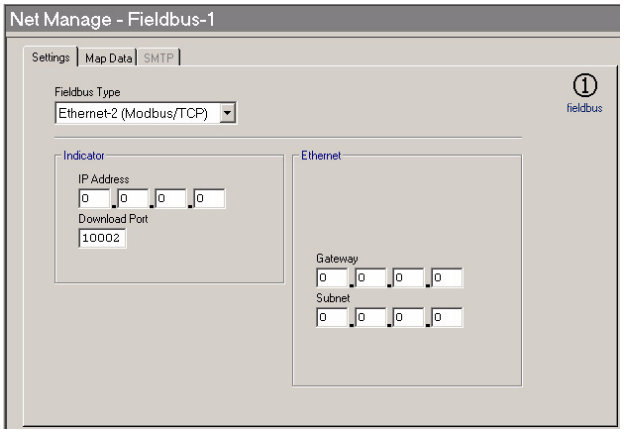
Polled If Polled is chosen you will be prompted to select a polling character. Choices from 0 to 255. When the polling character is received on the Ethernet connection, the indicator will act as if the **PRINT** key has been pressed (all of the formats-to-print will be sent out of the configured port). If you want the print format(s) to be sent back on the Ethernet connection, the print formats must be configured for tcpip1 (net1) or tcpip2 (net2).

Click the SMTP tab and the following is displayed:



3.5.4 EtherNet-2 (Modbus/TCP)

Click on EtherNet-2 (Modbus/TCP) in the drop down list to configure a EtherNet-2 (Modbus/TCP) network. The window looks like this:



Select Indicator IP Address:
Key in the IP address for the indicator.

Download Port:
Key in the network port used to download the configuration changes via Ethernet.

Gateway:
Key in the Gateway.

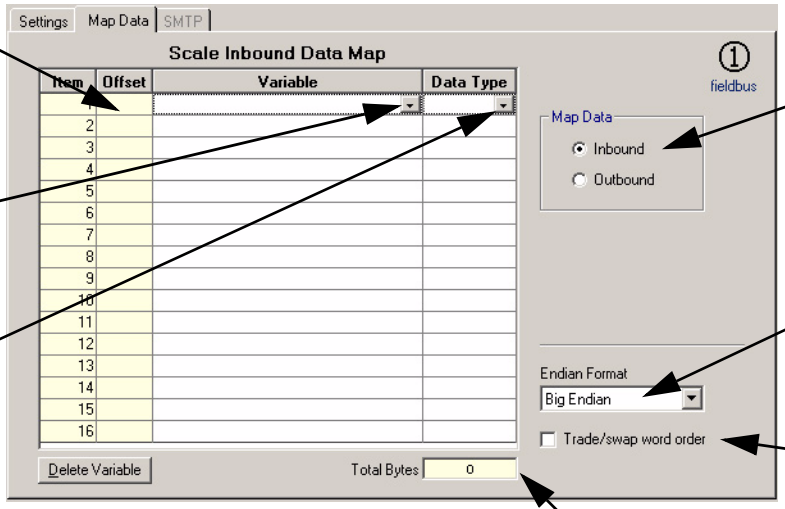
Subnet:
Key in the Subnet.

Click the Map Data tab and the following is displayed:

This shows the "spacing" of each piece of data as it will show up on the PLC.

Click here for a dropdown list of network tokens. See Appendix B for full list.

Click here for a dropdown list of Data Types.



Choose to create the Inbound Data Map or Outbound Data Map by selecting your choice here.

Choose Endian Format (Big or Little) here.

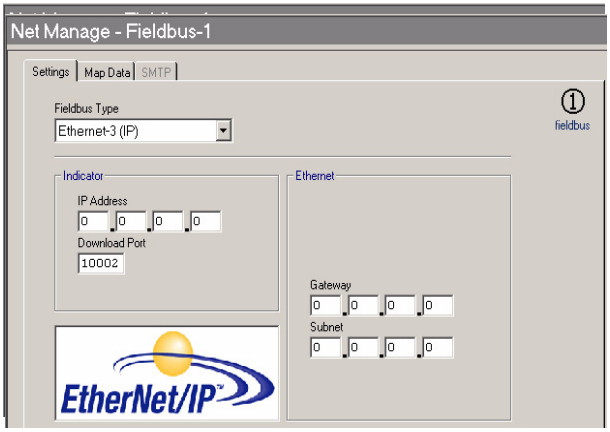
Click here to trade/swap the word order

This shows the total number of bytes used by the indicator. This information is required by the PLC programmer and is automatically calculated.

Data Type	Type #	Data	# of Bytes	Range of Value
S8	0	Signed Char.	1	-127 to 127
U8	1	Unsigned Char.	1	0 to 255
S16	2	Signed Integer	2	-32767 to 32767
U16	3	Unsigned Integer	2	0 to 65535
S32	4	Signed Long	4	-2,147,483,647 to 2,147,483,647
U32	5	Unsigned Long	4	0 to 4,294,967,295
FLOAT	6	Float	4	1.0E-37 to 1.0E37

3.5.5 EtherNet-3 (Modbus/IP)

Click on **EtherNet-3 (Modbus/IP)** in the drop down list to configure a EtherNet-3 (Modbus/IP) network. The window looks like this:



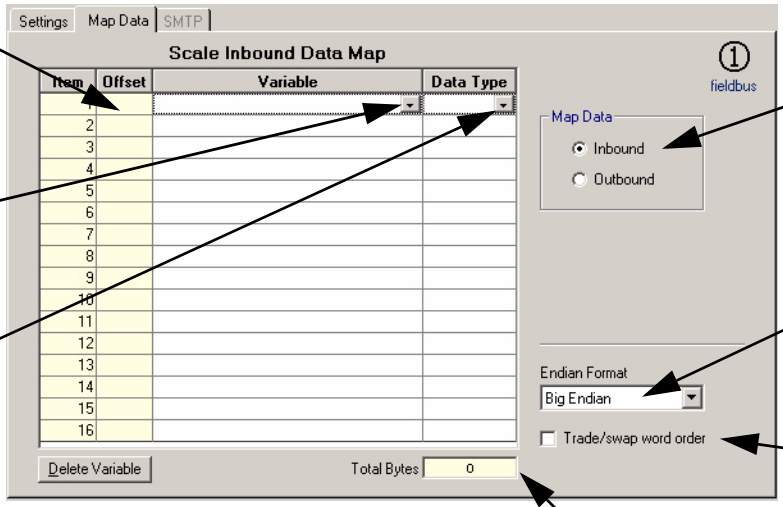
Select Indicator IP Address:
Key in the IP address for the indicator.

Download Port:
Key in the network port used to download the configuration changes via Ethernet.

Gateway:
Key in the Gateway.

Subnet:
Key in the Subnet.

Click the Map Data tab and the following is displayed:



This shows the "spacing" of each piece of data as it will show up on the PLC.

Click here for a dropdown list of network tokens. See Appendix B for full list.

Click here for a dropdown list of Data Types.

Choose to create the Inbound Data Map or Outbound Data Map by selecting your choice here.

Choose Endian Format (Big or Little) here.

Click here to trade/swap the word order

This shows the total number of bytes used by the indicator. This information is required by the PLC programmer and is automatically calculated.

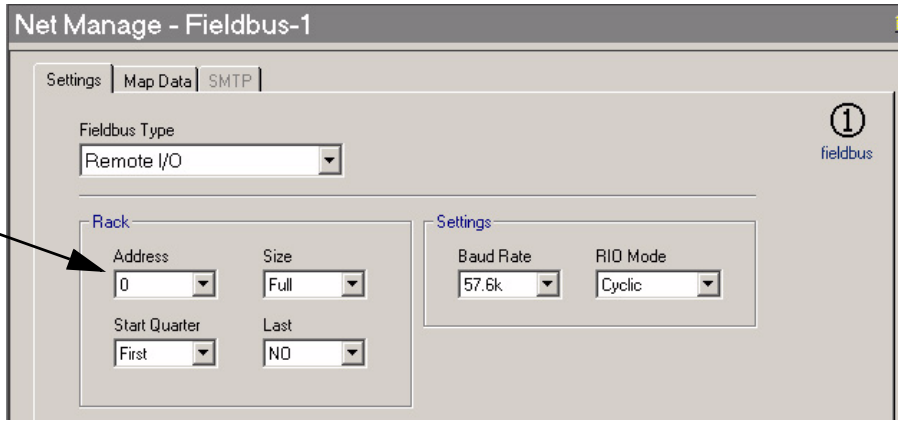
Data Type	Type #	Data	# of Bytes	Range of Value
S8	0	Signed Char.	1	-127 to 127
U8	1	Unsigned Char.	1	0 to 255
S16	2	Signed Integer	2	-32767 to 32767
U16	3	Unsigned Integer	2	0 to 65535
S32	4	Signed Long	4	-2,147,483,647 to 2,147,483,647
U32	5	Unsigned Long	4	0 to 4,294,967,295
FLOAT	6	Float	4	1.0E-37 to 1.0E37

3.5.6 Remote I/O

Click on **Remote I/O** in the drop down list to configure a remote I/O network. The window looks like this:

Valid addresses for Remote I/O are 0 to 59.

If an address greater than 59 is used, the indicator will set the address to 59 after the download.



Select Rack information:
Address acceptable values are 0 to 59.
Size can be 1/4, 1/2, 3/4 or Full.
Start Quarter can be First, Second, Third or Fourth.
Last can be NO or YES.

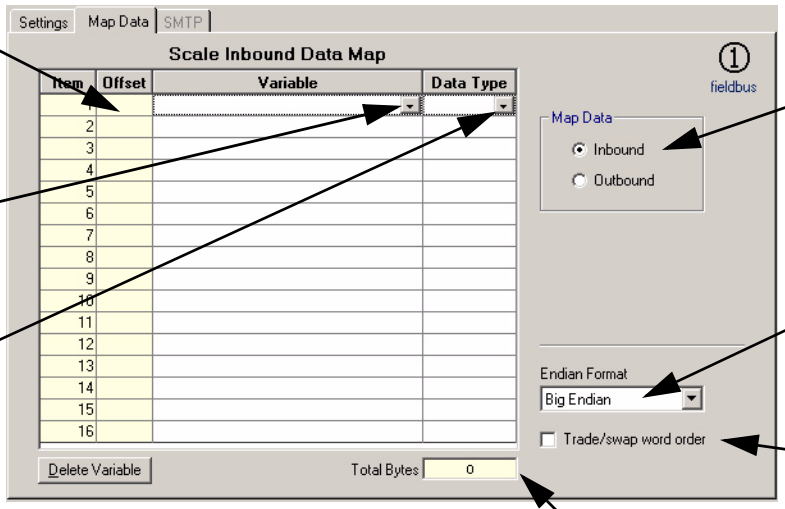
Select Remote I/O settings:
Baud Rate can be 57.6K, 115.2K or 230.4K
Remote I/O mode is Block or Cyclic

Click the Map Data tab and the following is displayed:

This shows the "spacing" of each piece of data as it will show up on the PLC.

Click here for a dropdown list of network tokens. See Appendix B for full list.

Click here for a dropdown list of Data Types.



Choose to create the Inbound Data Map or Outbound Data Map by selecting your choice here.

Choose Endian Format (Big or Little) here.

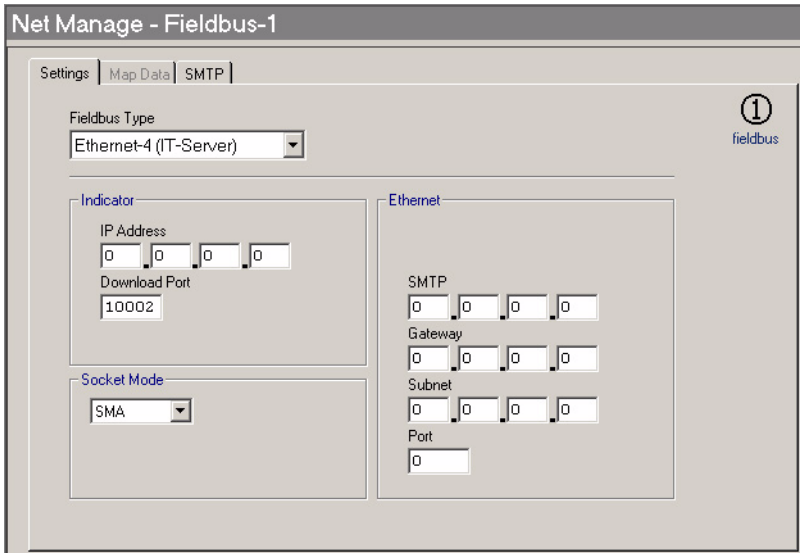
Click here to trade/swap the word order

This shows the total number of bytes used by the indicator. This information is required by the PLC programmer and is automatically calculated.

Data Type	Type #	Data	# of Bytes	Range of Value
S8	0	Signed Char.	1	-127 to 127
U8	1	Unsigned Char.	1	0 to 255
S16	2	Signed Integer	2	-32767 to 32767
U16	3	Unsigned Integer	2	0 to 65535
S32	4	Signed Long	4	-2,147,483,647 to 2,147,483,647
U32	5	Unsigned Long	4	0 to 4,294,967,295
FLOAT	6	Float	4	1.0E-37 to 1.0E37

3.5.7 EtherNet-4 (IT Server)

Click on EtherNet-4 (IT Server) in the drop down list to configure an EtherNet-4 (IT Server) network. The window looks like this:



Select Indicator IP Address:
Key in the IP address for the indicator. If you enable DHCP (Dynamic Host Configuration Protocol), the IP address for the indicator is not required.

Download Port:
Key in the network port used to download the configuration changes via Ethernet.

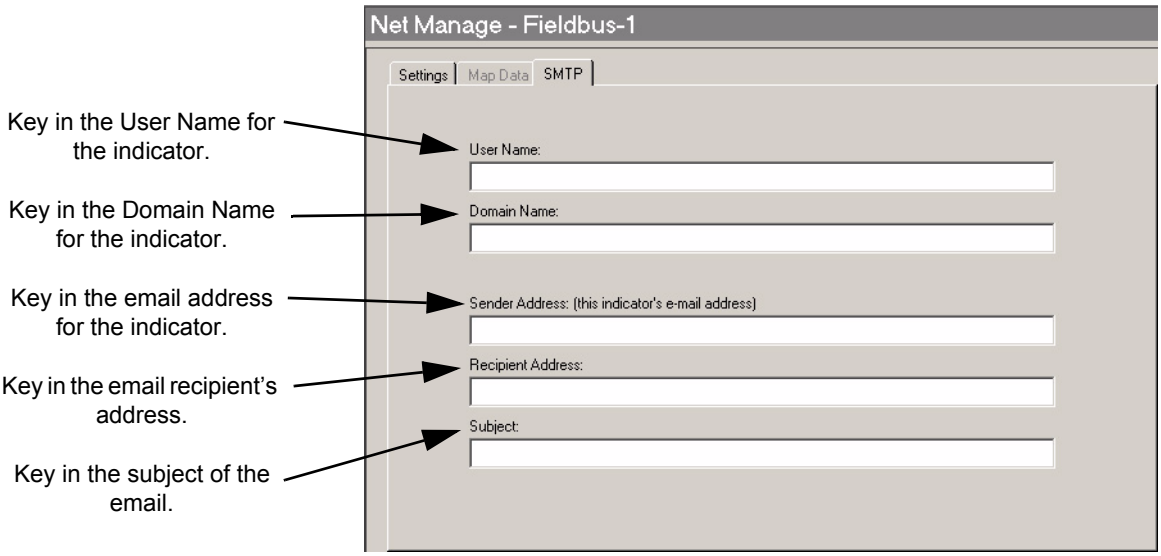
Select Ethernet Addresses:
Key in the IP address for the host IP, SMTP, Gateway, Subnet and key in the port number that the indicator and the remote host will be connected on.

Set Socket Mode:

SMA The SMA protocol over the Ethernet connection. This is the exact same protocol used on the serial ports. See the Service-Serial section of the 1080 Service Manual for details.

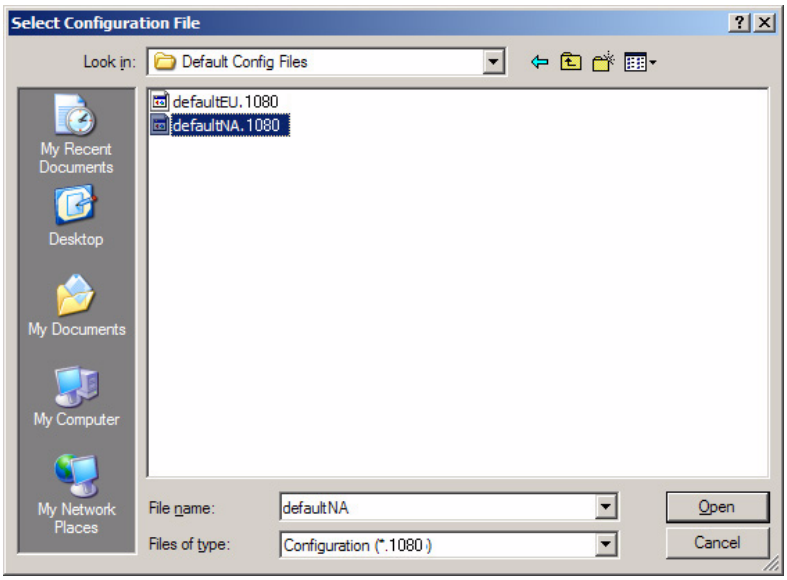
Polled If Polled is chosen you will be prompted to select a polling character. Choices from 0 to 255. When the polling character is received on the Ethernet connection, the indicator will act as if the PRINT key has been pressed (all of the formats-to-print will be sent out of the configured port). If you want the print format(s) to be sent back on the Ethernet connection, the print formats must be configured for tcpip1 (net1) or tcpip2 (net2).

Click the SMTP tab and the following is displayed:



3.6 Saving the File

When you have finished configuring all the items you can save the file by clicking on the File Save button, , on the Tool Bar. This dialog box is displayed:



Type in a file name and click Save to save it to the folder of your choice. The file name does not need to include a file type. E-tools will automatically save your configuration file as specified by the indicator choice, shown in Save as type: drop down box.

4 Ethernet Industrial Protocols

4.1 Ethernet IP Explicit Messaging

4.1.1 AWTX Input Point Object (Data Out)

Class Code: 64 hex

Table 4.1

Class Attributes	Supported services for this attribute (hex)	Data Type
NA		

Table 4.2

Instance Attributes	Supported services for this attribute (hex)	Data Type	Instances
03 (Value)	0E (Get_Attribute_Single)	SINT, INT, DINT, USINT, UINT, UDINT, REAL (based on network config in indicator	17 - all enabled data items in one message. 1-16 (”out” data item x in indicator is bound to instance x)

4.1.2 AWTX Output Point Object (Data In)

Class Code: 65 hex

Table 4.3

Class Attributes	Supported services for this attribute (hex)	Data Type
NA		

Table 4.4

Instance Attributes	Supported services for this attribute (hex)	Data Type	Instances
03 (Value)	10 (Set_Attribute_Single)	SINT, INT, DINT, USINT, UINT, UDINT, REAL (based on network config in indicator	17 - all enabled data items in one message. 1-16 (”out” data item x in indicator is bound to instance x)

4.2 Ethernet IP Implicit Messaging

4.2.1 AWTX Assembly Instance for PLC Configuration

Input:	100
Output:	112
Configuration:	128

4.3 ModBus/TCP

4.3.1 Starting Register Locations for PLC Configuration

Input Read Only	30001
Input Read/Write	40001
Output Read/Write	40101

Read only values are mirrored at the Read/Write location.

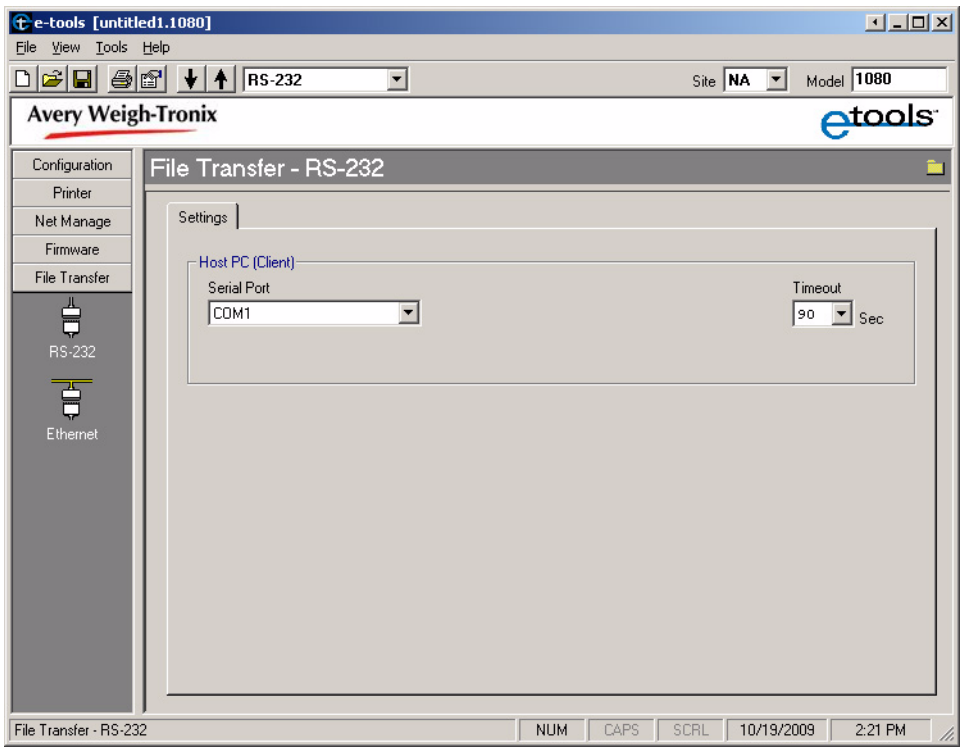
5 Downloading a Configuration File

5.1 File Transfer

After the configuration file is created and saved (previous section) you need to finish the process by downloading the file to the indicator.

5.1.1 RS-232 Button

Select the RS-232 serial communications port which will be used for configuration file upload and download. This is also the RS-232 serial communications port which will be used to upgrade the indicator firmware.



Indicator must be unsealed so a file can be downloaded. See the Service Manual for details.

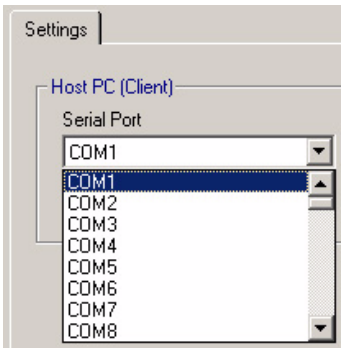
Each Avery Weigh-Tronix 1080 weight indicator using File Transfer MUST be configured through the front panel or through RS-232 serial download to activate Ethernet-1 (IT-Client) or Ethernet-4 (IT-Server) prior to Configuration File Transfer operation.

Settings tab

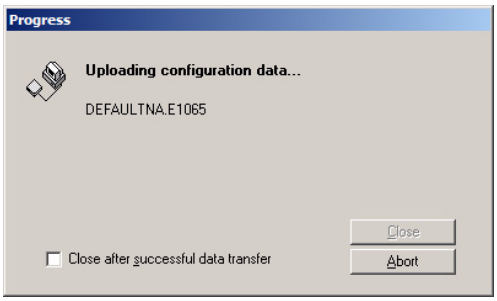
Host PC (Client)

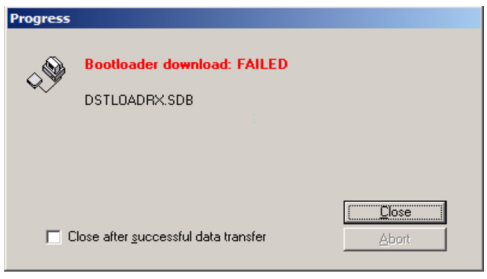
The Host PC is the computer which has E-Tools installed on it and which will upload or download the configuration file to the indicator.

Serial Port — Drop down box which will allow the selection of the RS-232 serial port which e-tools will use. Available options are COM 1 to COM 255. These options allow the selection of any internal hardware serial port hardware or externally connected USB to Serial adapters.



Timeout — This is the time, in seconds, which any upload or download is allowed to begin data transfer. If timeout occurs the upload or download will fail and a window will show one of the errors shown below.

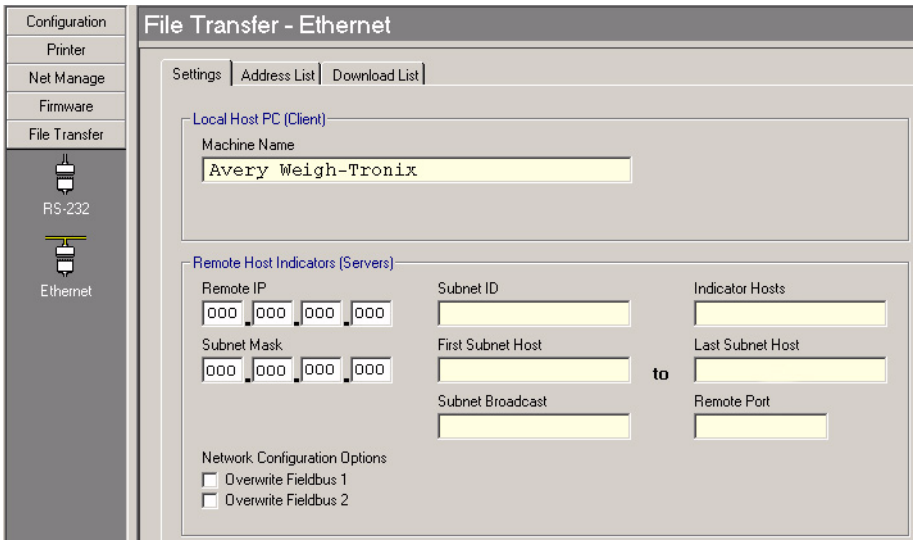




5.1.2 Ethernet button

Settings Tab

The Settings tab contains information about the PC network and remote host indicators.



Local Host PC (Client)

Machine Name — Machine Name, also known as Computer Name within Microsoft Windows, is the network name of the host computer. This setting is only displayed by e-tools and cannot be modified within e-tools.

Remote Host Indicators (Servers)

Remote IP — Enter the IP address of the remote server indicator. If there is no remote server indicator leave this field blank.

Subnet Mask — Enter the Subnet mask of the remote server indicator. If there is no remote server indicator leave this field blank.

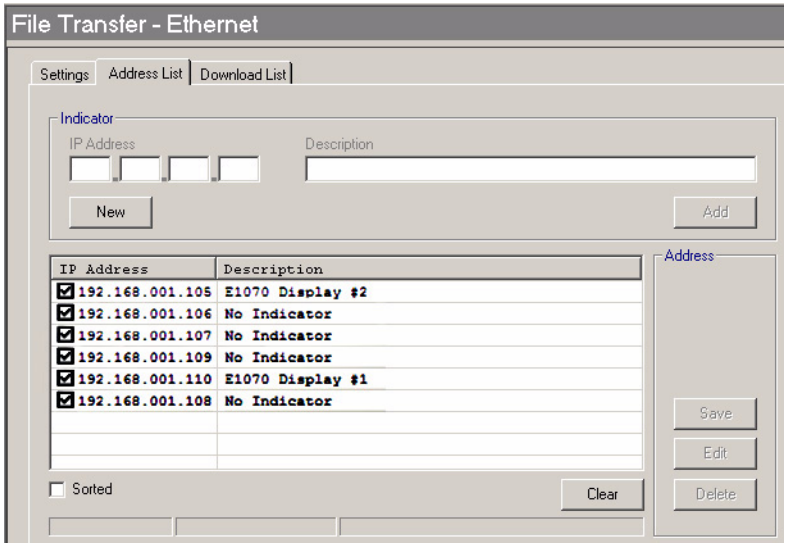
Network Cofiguration Options — Check a box to overwrite Fieldbus 1 or Fieldbus 2 configurations under **Net Mangage**. **See the note below.**

WARNING: This will overwrite IP address and Subnet Mask.

Subnet ID, Indicator Hosts, First Subnet Host, Last Subnet Host and Subnet Broadcast and Remote Port are filled in by e-tools when the Remote IP address and Subnet Mask are entered.

Address List tab

The Address List contains the IP addresses and Description for all of the indicators.



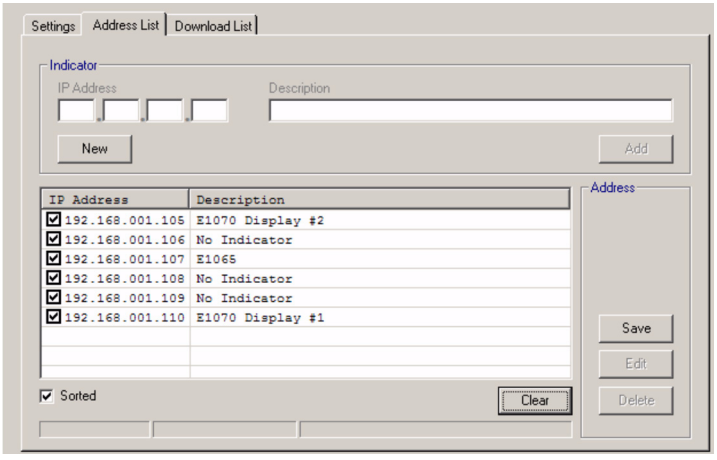
Indicator

New Select the **NEW** button to enter an IP address and Description for the indicator.

Add Once an IP address and device description is entered press the **Add** key to add the indicator to the Address list.

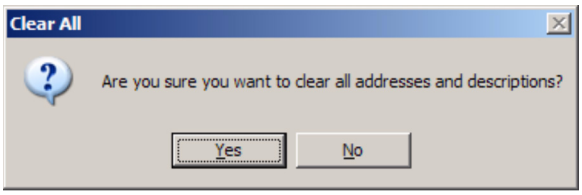
Address List

Sorted Check this box to sort the entire Address List by IP address. This will reorganize the Address List from lowest first octet to highest first octet.



Check the box next to the IP address to select that IP for download when using Address List (Selected) in the Download List.

Clear Select **Clear** to delete the address list which is stored as a text file in the e-tools installation directory. When you press **Clear**, a second window will allow you to cancel the CLEAR command. Select **YES** to clear the entire file or **NO** to cancel.



Addresses are stored in C:\Program files\Avery Weigh-Tronix\ e-tools Suite\e-tools (E10XX)\ HOSTINFO.TXT

Save Once all the IP addresses and Descriptions have been added to the Address List select the **SAVE** button. The Save button will write the Address List to the text file. This text file is opened by e-tools on initialization.

Save address book before exiting e-tools or Address List modifications will be lost.

Edit Select an IP address from the Address List and then select the **EDIT** button. Editing allows the IP address and Description to be modified.

Delete Select an IP address from the Address List and press the **DELETE** button to remove the IP address and Description from the Address List.

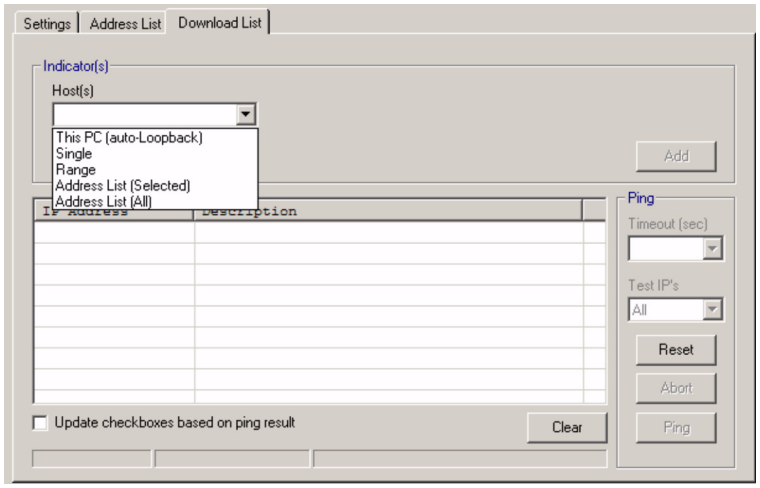
Download List tab

Indicator(s)

Select method of download over Ethernet from drop down box.

Host(s)

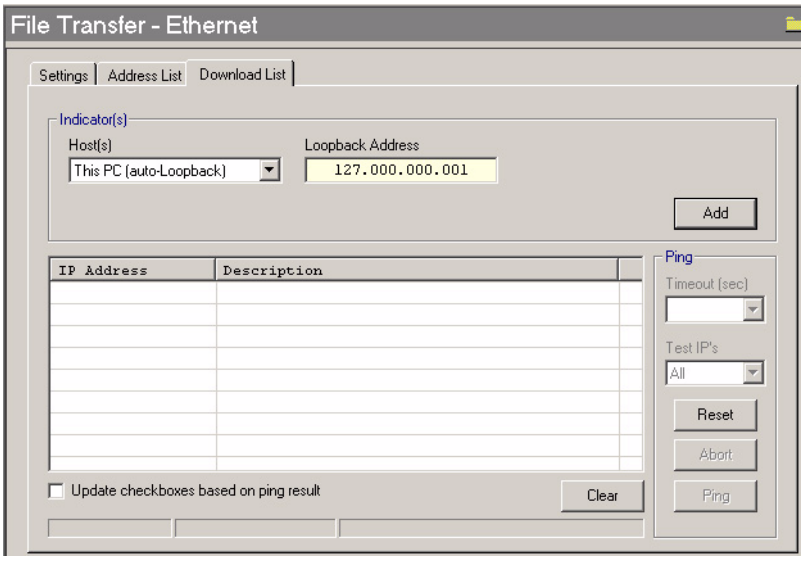
Select which method is to be used for configuration download over Ethernet.



METHOD	DESCRIPTION	ADDRESS
This PC (auto-Loop back)	Internal auto – loop back test	127.0.0.1
Single	Manually enter the IP address of a single indicator	User Defined
Range	Manually enter the starting IP address and the ending IP address. All addresses will be added to the Download List	User defined
Address List (Selected)	All selected IP addresses from the address list will be downloaded.	From Address List
Address List (All)	All IP addresses from the Address List will be downloaded. If an IP address is not present, single downloads will FAIL and download will continue to the next IP address.	From Address List

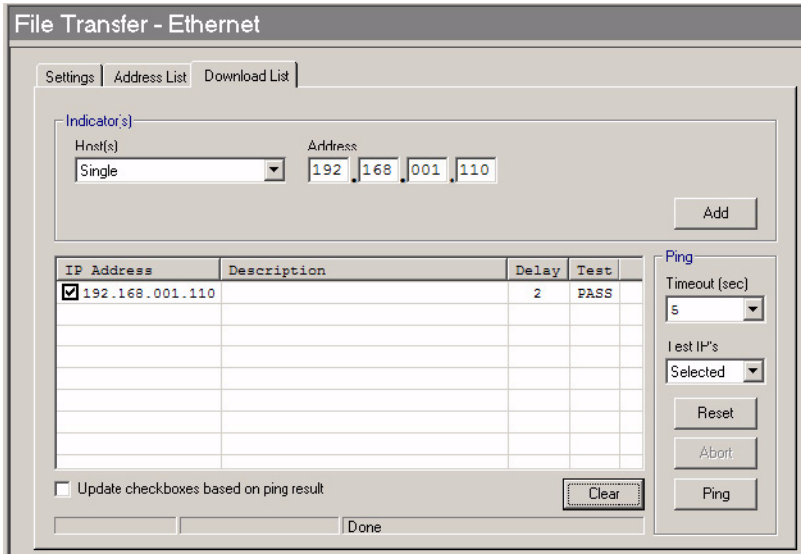
This PC(auto-Loop back)

This is an internal auto–loop back test which can be used to check the PC Ethernet connection function. An IP address of 127.0.0.1 is assigned in the Download List. This IP address can not be modified. A configuration download will FAIL if this IP address is used. The PING function will return a PASS or FAIL to verify function of the network interface card (NIC).



Single

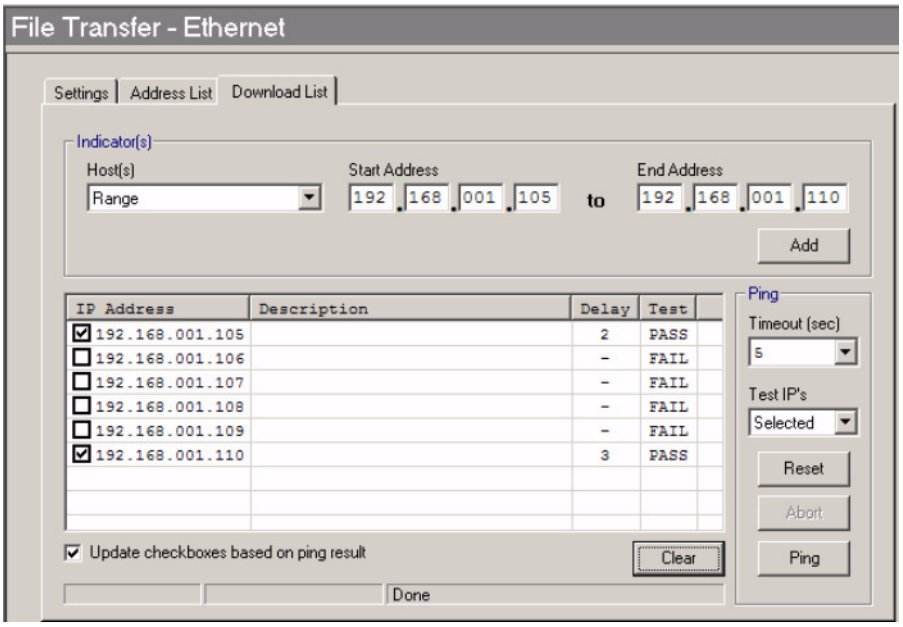
Select **SINGLE** and an Address window appears. Enter the IP address of the indicator to be downloaded to and press the **ADD** button to add the IP address to the Download list. Multiple IP addresses may be added to the Download List. These IP addresses are not stored in the address list and will be lost when e-tools application is shutdown.



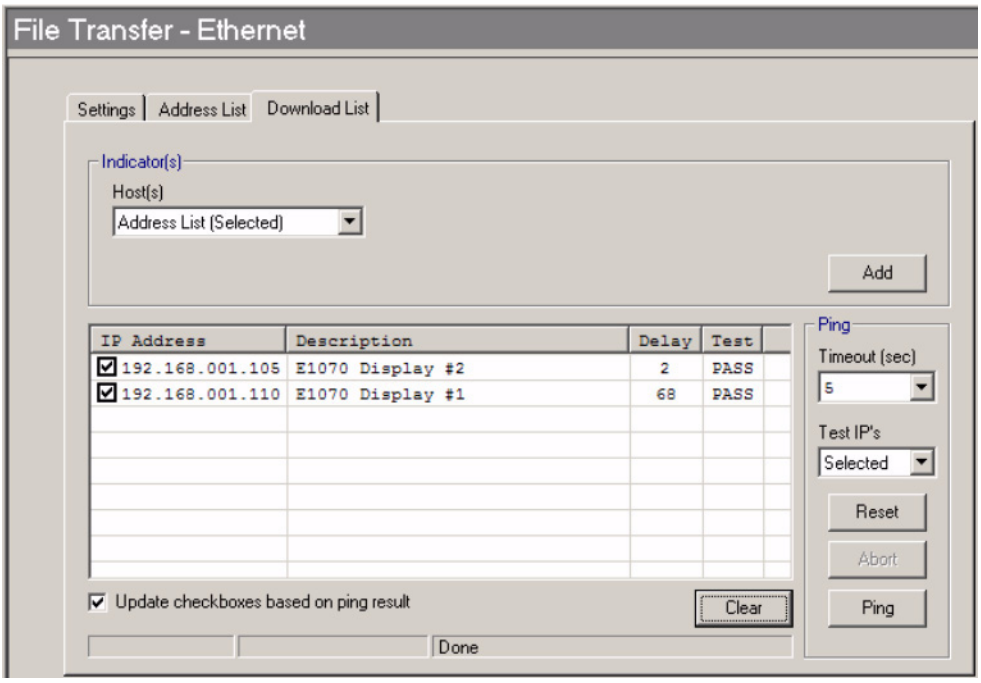
Selecting the checkbox "Update checkboxes based on ping results" will select only the indicators found before download.

Range

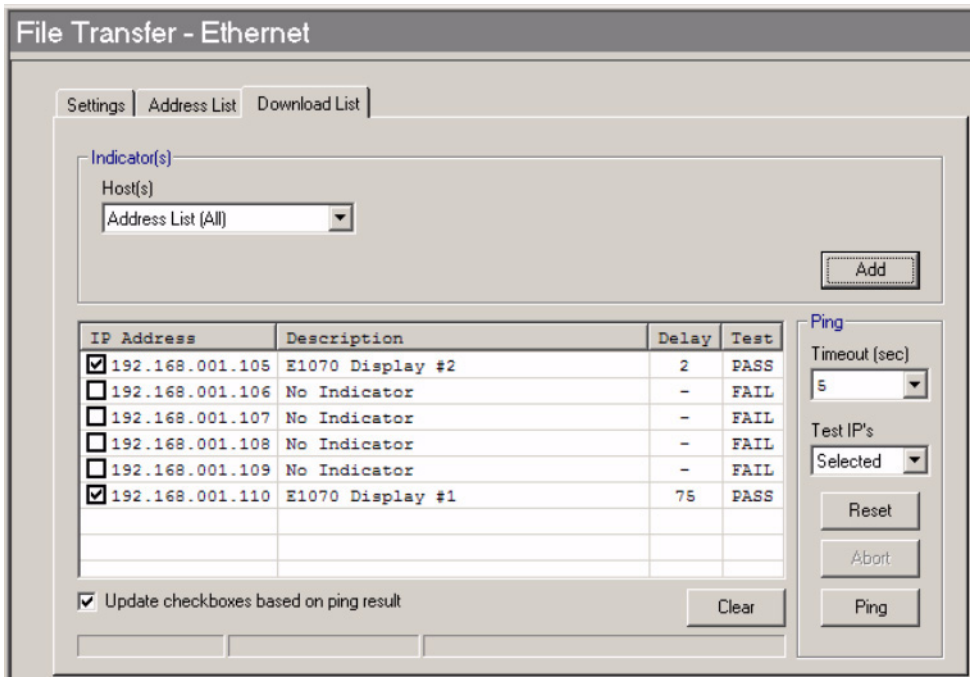
Select **RANGE** and a Start Address to End Address window appears. This will allow a configuration download to all indicators in between these IP addresses. These IP addresses are not stored in the address list and will be lost when e-tools application is shutdown.

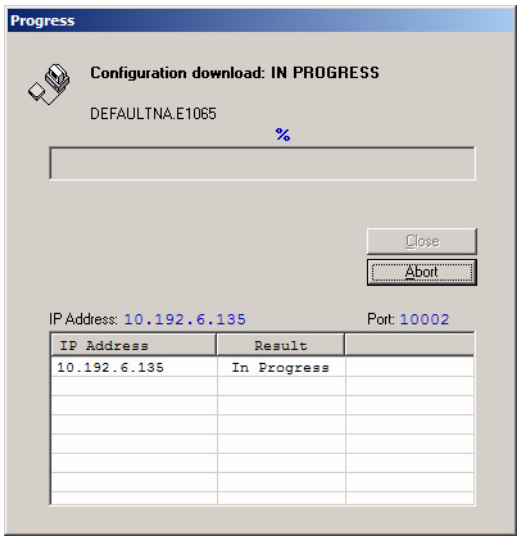


Address List (Selected) This will add any IP address from the Address List with a checkmark next to it into the Download List.



Address List (All) This will add every IP address from the Address List into the Download List. Configuration files will be downloaded to all IP addresses. If the download FAILS it will be marked in the Results box of the Progress window as an ERROR.





Ping

Use the PING functionality to test the network connection between the PC and each indicator. This allows the verification of the connection before the configuration download is attempted.

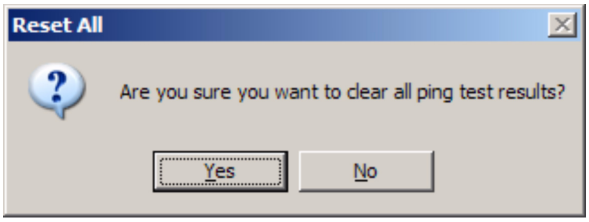
Timeout (sec) Set the Timeout, in seconds, the PC will attempt to send and receive packets during the ping request.

Test IP's

All Select All to ping all IP addresses in the Download List regardless of checkbox status.

Selected Selected will only ping the IP addresses in the Download List which are selected by the checkbox next to the IP Address.

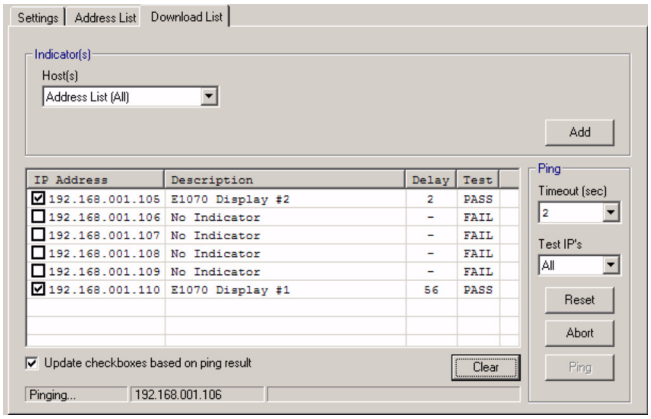
Reset Choose **Reset** to clear ping results in the DELAY and TEST columns within the Download List. When **Reset** is selected a window will appear asking to verify clearing the ping results.



Abort Choose **Abort** to stop the ping test.

Ping

Select **Ping** to initiate network diagnostics. Ping will send out a request to all IP addresses within the Download List. Any IP address which has an indicator connected, and configured properly, will respond to the ping request. The data from the ping request will be displayed in the Download List. The Ping request determines if the connection will PASS or FAIL. If the connection is a PASS, the time, in milliseconds, will be displayed in the DELAY column of the Download List.

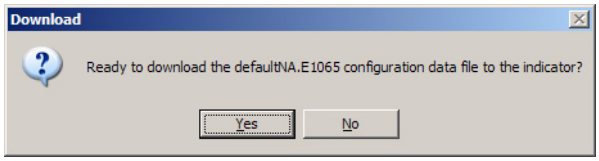


The next step in the process is downloading the finished file to your indicator.

1. Connect the PC to the indicator, which requires the configuration, via the chosen serial communications port on the computer.

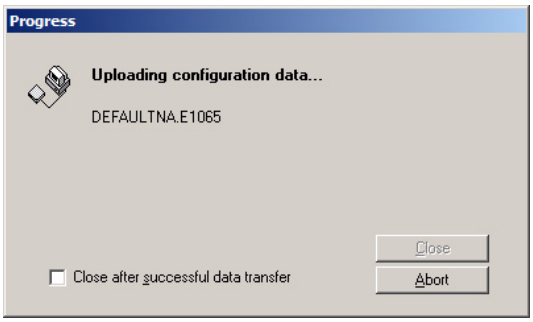
2. Click the Download Configuration icon. 

3. The following message will be displayed:

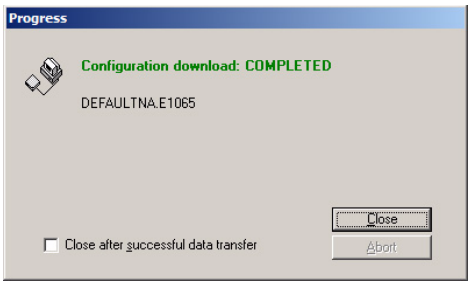


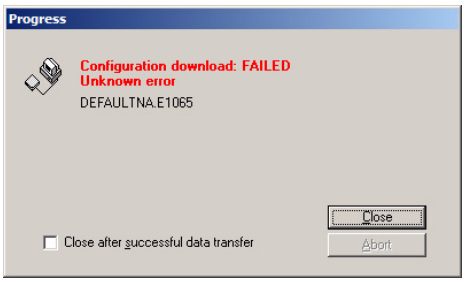
4. Verify that the indicator is turned on and in weigh mode.

5. Click **Yes** to download the indicator configuration. The following screen will appear and the indicator will display the word ***bUSy***.



6. Once the download is complete, the window will change to show a Pass or Fail condition.





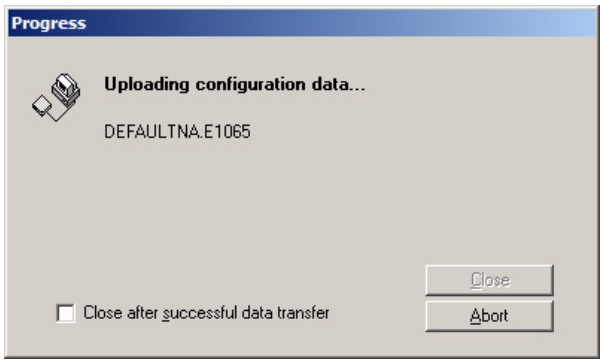
7. Once configuration download is complete the indicator is ready to be calibrated.

5.2 Uploading a File

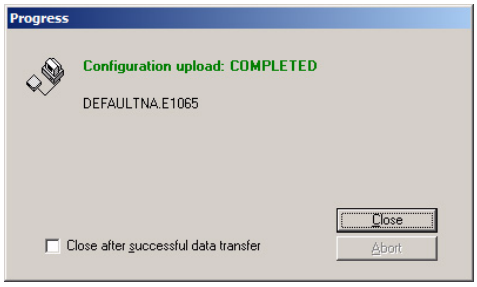
Configurations can only be uploaded by using an RS-232 connection. Ethernet is only capable of downloading new configurations to network enabled indicators.

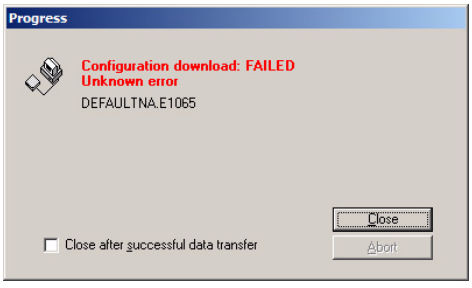
Indicator must be unsealed for a file to be uploaded from it. See the Service Manual for details.

1. To upload an indicator configuration from the indicator to E-tools, connect the indicator to the PC.
2. Open the E-tools program and click the Upload Configuration button on the Tool Bar. 
3. The following message will be displayed.



4. Once the upload is complete, the window will change to show a Pass or Fail condition.





5. After uploading the indicator configuration it is recommended to save the file. Refer to section Saving a File for detailed instructions. The indicator configuration can now be viewed and edited as needs demand.

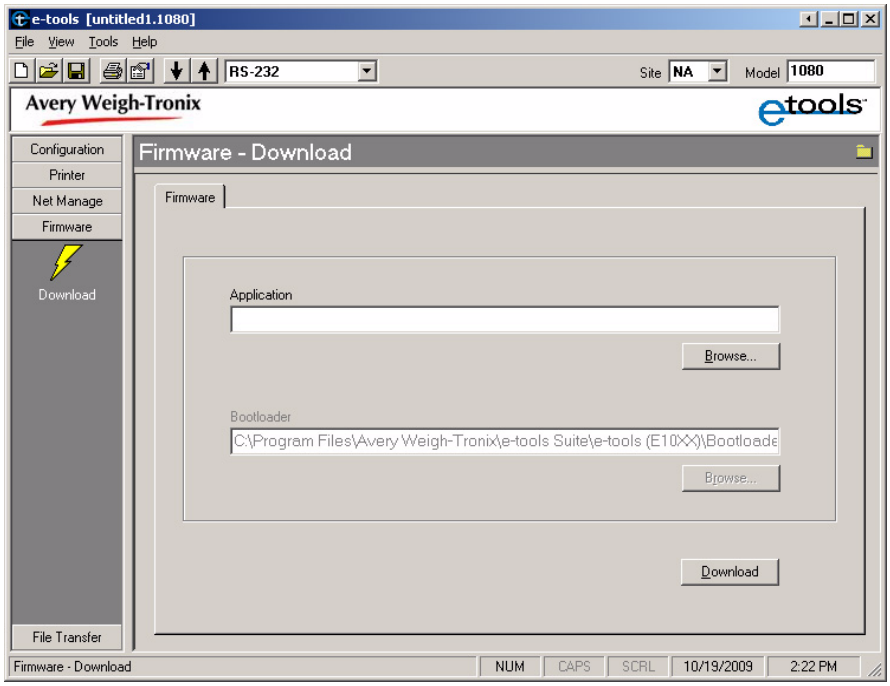
5.3 Downloading Firmware

Firmware can be downloaded via an RS-232 or ethernet connection. See either *RS-232 Button* *on page 57* or *Ethernet button* *on page 59*

This item allows you to download new firmware to the indicator's microprocessor when needed for proper servicing.

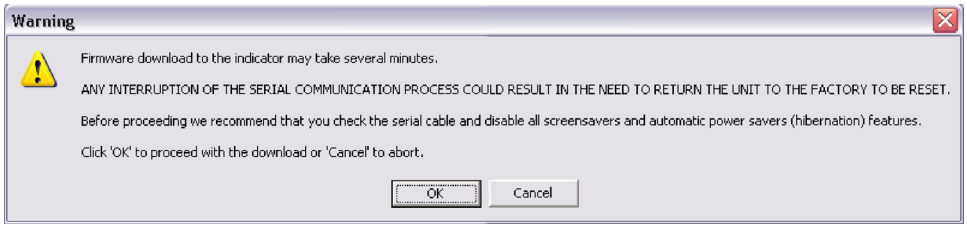
CAUTION: Be sure to turn off any screensavers before downloading new firmware or enable the "Prevent screensaver while downloading firmware" option in the TOOLS>OPTIONS dialog box.

1. Remove power to the indicator by unplugging it.
2. Select the Firmware tab in E-tools, then choose Download. The following is displayed:

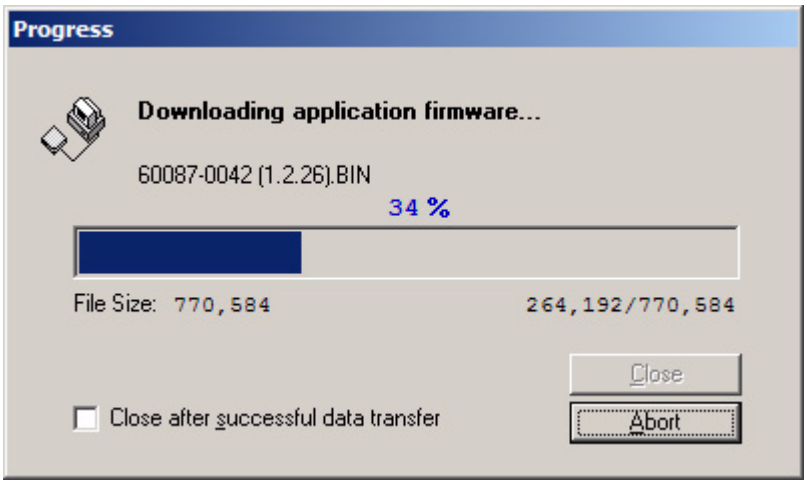


3. Use the Browse button to select the desired version of firmware to download into the indicator.
4. Use the browser window to find and select the appropriate firmware for download, then click the Download button.

5. **Caution**: The user will be warned to check all connections. The indicator uses flash memory, any interruption in power or communications may damage the flash memory.



6. Click **Cancel** to abort firmware download or select **OK** to download firmware.
7. After selecting **OK**, plug in the indicator and the downloading will begin.
8. While downloading firmware, a progress bar appears to indicate file download.



9. After the download is complete, cycle power on the indicator.

Appendix A: Print Format Commands

Printing Commands Chart					
Dec	**HEX**	**Token**	**Application**	**Group**	**Parameter**
128	80	GWT(,n)	Gross Weight [1]	Weight	OPTIONAL, (ASCII) Range: (‘2’-‘9’), Indicator Default: ‘6’
129	81	NWT(,n)	Net Weight [1]	Weight	OPTIONAL, (ASCII) Range: (‘2’-‘9’), Indicator Default: ‘6’
131	83	SAT(,n)	Semi-Auto Tare [1]	Weight	OPTIONAL, (ASCII) Range: (‘2’-‘9’), Indicator Default: ‘6’
132	84	UN	Units	Weight	
135	87	ID	Scale Serial Number	Misc	
136	88	TIM,x	Time	Time	MANDATORY (DECIMAL) Range: (0-2), Editor Default:1 0= Format as set/active in indicator 1= hh:mm 2= hh:mm AM/PM
137	89	DAT,x	Date	Date	MANDATORY, (DECIMAL) Range: (0-4), Editor Default:1 0= Format as set/active in indicator 1= MM/DD/YY 2= MM/DD/YYYY 3= DD/MM/YY 4= DD/MM/YYYY
138	8A	TTV,n	Target Value	Trip	MANDATORY, (HEX #s) Range: (‘31’-‘33’), Editor Default: ‘1’ For target weights
140	8C	AXL	Last axle weight	Vehicle	
142	8E	CLA(,n)	Checkweigher ‘Low Accept’ value [1]	Checkweight	OPTIONAL, (ASCII) Range: (‘2’-‘9’), Indicator Default: ‘6’
143	8F	CHA(,n)	Checkweigher ‘High Accept’ value [1]	Checkweight	OPTIONAL, (ASCII) Range: (‘2’-‘9’), Indicator Default: ‘6’
144	90	RAV,n	Active Recipe Ingredient x ‘Actual’ value	Recipe	MANDATORY, (HEX #s) Range: (‘31’-‘38’), Editor Default: ‘1’ For target weights in recipe
145	91	RTV,n	Active Recipe Ingredient x ‘Target’ value	Recipe	MANDATORY, (HEX #s) Range: (‘31’-‘38’), Editor Default: ‘1’ For preact values in recipe
146	92	RPV,n	Active Recipe Ingredient x ‘Preact’ value	Recipe	MANDATORY, (HEX #s) Range: (‘31’-‘38’), Editor Default: ‘1’ For target weights in recipe
147	93	RIU,n	Active Recipe Ingredient x units	Recipe	MANDATORY, (HEX #s) Range: (‘31’-‘38’), Editor Default: ‘1’ For ingredient units (lb or kg for weight based ingredients; sec for time based ingredients; cnts or gallons for pulse counter based ingredients). To be printed after the target or actual ingredient value.

Printing Commands Chart					
Dec	**HEX**	**Token**	**Application**	**Group**	**Parameter**
148	94	PCE	Piece Weight	Count	
149	95	CNT	Current Count Value	Count	
151	97	GTO	Gross Accumulator	Weight	
152	98	GTU	Clears G, T or N Accum in print	Misc.	
153	99	STO	Net Accumulator	Weight	
155	9B	PLU	PLU NumberData	PLU	
156	9C	DES	PLU ID	PLU	
162	A2	DIS	Remote Display Status	Miscellaneous	
170	AA	VER	Software Version Number	Miscellaneous	
173	AD	WST	Weight Steady	Weight	
178	B2	PUP	Tare associated with the PLU	PLU	
184	B8	PUT	PLU Totals Information	PLU	
188	BC	PCT	PLU Count Total	PLU	
189	BD	LST	Net Accumulator	PLU	
190	BE	LGT	Gross Accumulator	PLU	
200	C8	DSP(,n)	Print the displayed weight	Weight	OPTIONAL, (ASCII) Range: (‘2’-‘9’), Indicator Default: ‘6’
215	D7	NULL	Null Token	Strings	
216	D8	ACT	Print the active value (‘G’ for gross, ‘N’ for net, ‘T’ for tare)	Weight	
230	E6	DRT	Remote display token-Axle mode	Vehicle	
231	E7	HST	Active Value-Axle mode	Vehicle	
233	E9	AXT	Axle total	Vehicle	
242	F2	PWT	Peak Hold Weight value	Weight	
246	F6	MWR	Axle index	Vehicle	
253	FD	HEX,xx	Following number will be transmitted by value. Also, use this selection to transmit a NUL as well.	Hex-Codes	MANDATORY, (ASCII-HEX) Range: (00 – FF), Editor Default: 00
254	FE	TEX	Reserved for future use as a ‘token extender’	-----	
255	FF	EOS	End of String	String	

Notes:

These tokens can be optionally followed by an ASCII 2 to 9 to specify the number of weight digits (including decimal point). If no specifier is given it defaults to 6 digits (+ decimal point) (equivalent to ASCII 6).

Further, parameter values may be ASCII digits (i.e. range ‘0’ thru ‘9’) or DECIMAL values (i.e. range 0 thru 255). In all cases, parameters consume one byte. In the term/token table parameters are indicated as follows:

Optional, (ASCII) - (,n)
Optional, (Decimal) - (,x)

Mandatory, (ASCII) - ,n
Mandatory, (Decimal) - ,x

Appendix B: Network Tokens

Token	Inbound to net1	Outbound from net 1	Inbound to net 2	Outbound from net 2	Token (dec.)	Token (hex)	Description
Gross		X		X	0	00	Output GROSS weight to the network.
Net		X		X	1	01	Output NET weight to the network.
Tare	X	X	X	X	2	02	Input TARE weight value from the network or output TARE weight to the network.
Peak		X		X	3	03	Output PEAK weight to the network. Only used with the TOP application
Count		X		X	4	04	Output the piece COUNT to the network. Only used with the COUNT application.
PLU Piece weight	X	X	X	X	5	05	Input PLU PIECE WEIGHT from network or output PLU PIECE WEIGHT to network. Allows selection of PLU for a COUNT application or returns the PLU PIECE WEIGHT to the network.
PLU number	X	X	X	X	6	06	Input PLU NUMBER from network or output PLU NUMBER to network
PLU Gross Accumulator		X		X	7	07	Output PLU GROSS ACCUMULATED WEIGHT to network. Used with ACCUM application.
PLU Net Accumulator		X		X	8	08	Output PLU NET ACCUMULATED WEIGHT to network. Used with ACCUM application
PLU Total counter		X		X	9	09	Output PLU TOTAL COUNTER to network
PLU Count Accumulator		X		X	10	0A	Output PLU ACCUMULATED PIECE COUNT to network. Used with COUNT application.
PLU Tare value	X	X	X	X	11	0B	Input PLU TARE WEIGHT from network or output PLU TARE WEIGHT to network.
PLU ID	X	X	X	X	12	0C	Input PLU ID from network or output PLU ID to network. Select preconfigured PLU's from the network or will return the active PLU ID.
PLU Lower Target weight	X	X	X	X	13	0D	Input PLU LOWER TARGET WEIGHT from network or output PLU LOWER TARGET WEIGHT to network. Used with CHECKWEIGHER application
PLU Upper Target weight	X	X	X	X	14	0E	Input PLU UPPER TARGET WEIGHT from network or output PLU UPPER TARGET WEIGHT to network. Used with CHECKWEIGHER application
Recipe Ingredient number		X		X	15	0F	Output ingredient number for the selected recipe to the network. Used with BATCH application.
Recipe Ingredient target weight		X		X	16	10	Output the configured ingredient target weight value for the selected recipe. Used with BATCH application.

Token	Inbound to net1	Outbound from net 1	Inbound to net 2	Outbound from net 2	Token (dec.)	Token (hex)	Description
Recipe Ingredient actual weight		X		X	17	11	Output the actual weight the of the ingredient. Used with the BATCH application.
Motion/Weigher Steady		X		X	18	12	Output to the network to determine the stability of the scale. 0 = MOTION -1 = STABLE
Center of Zero/ zero balance		X		X	19	13	Output to the network to determine if the scale is at Center of Zero. 0 = NOT CoZ -1 = CoZ
Overload		X		X	20	14	Output to network to determine if the scale has an OVERLOAD condition. 0 = Not O.L. 1 = O.L.
Underload		X		X	21	15	Output to thenetwork to determine if the scale has an UNDERLOAD condition. 0 = Not U.L. 1 = U.L.
Input1-3	X	X	X	X	22	16	Trigger an indicator INPUT from the network or output the status of an indicator INPUT to the network. Bit0 set – input1 active Bit1 set – input2 active Bit2 set – input 3 active
Output 1-3	X	X	X	X	23	17	Set the OUTPUT value from the network or output the OUTPUT status to the network. Bit0 set – output1 active Bit1 set – output2 active Bit3 set – ouput3 active
Serial number		X		X	24	18	Output the indicator serial number, unique ID, to the network.
Watchdog counter		X		X	25	19	Output the value of the WATCHDOG counter to the network. Enables the operator to verfiy scale is functioning.
Remote zero	X		X		26	1A	Allows the network to perform a ZERO operation. ZERO operation dependant upon indicator configuration.
Remote tare	X		X		27	1B	Allows the network to perform a TARE operation. TARE operation dependant upon indicator configuration.
Remote print	X		X		28	1C	Allows the network to perform a PRINT operation. PRINT operation dependant upon indicator configuration.
Remote accumulate	X		X		29	1D	Allows the network to perform a ACCUM operation. ACCUM operation dependant upon indicator configuration.

Token	Inbound to net1	Outbound from net 1	Inbound to net 2	Outbound from net 2	Token (dec.)	Token (hex)	Description
Bridge1	X**	X*	X*	X**	30	1E	Network BRIDGE tokens. These allow data to be mapped from NETWORK#1 to NETWORK#2 or from NETWORK#2 to NETWORK#1. * Bridge tokens which are INBOUND on Net 2 can be OUTBOUND on Net 1. ** Bridge tokens which are INBOUND on Net 1 can be OUTBOUND on Net 2.
Bridge2	X**	X*	X*	X**	31	1F	
Bridge3	X**	X*	X*	X**	32	20	
Bridge4	X**	X*	X*	X**	33	21	
Bridge5	X**	X*	X*	X**	34	22	
Bridge6	X**	X*	X*	X**	35	23	
Bridge7	X**	X*	X*	X**	36	24	
Bridge8	X**	X*	X*	X**	37	25	
Bridge9	X**	X*	X*	X**	38	26	
Bridge10	X**	X*	X*	X**	39	27	
Bridge11	X**	X*	X*	X**	40	28	
Bridge12	X**	X*	X*	X**	41	29	
Bridge13	X**	X*	X*	X**	42	2A	
Bridge14	X**	X*	X*	X**	43	2B	
Bridge15	X**	X*	X*	X**	44	2C	
Bridge16	X**	X*	X*	X**	45	2D	
Indicator Healthy		X		X	46	2E	Output of 2 bytes to the network indicating any faults in the indicator. When no errors, the value output to the network is 0xFFFF. Byte#1: Bit#0 = Any Fault Bit#1 = ADC Error Bit#2 = SRAM ErroR Bit#3 = EEPROM Error Bit#4 = N/A Bit#5 = Overload Bit#6 = Underload Bit#7 = N/A Byte#2: bit#0 - bit#7 is not used at this time.
Inmotion Specials		X		X	47	2F	
Inmotion Special		X		X	48	30	
Weight for Setpoint #1	X	X	X	X	49	31	Input from network to change the weight of OUTPUT#1 or an output to the network to view the weight value of OUTPUT#1
Weight for Setpoint #2	X	X	X	X	50	32	Input from network to change the weight of OUTPUT#2 or an output to the network to view the weight value of OUTPUT#2
Weight for Setpoint #3	X	X	X	X	51	33	Input from network to change the weight of OUTPUT#3 or an output to the network to view the weight value of OUTPUT#3

Appendix C: e-tools Error Messages

1	MDF file does not exist
2	CFG file does not exist
4	Communications port close failed
5	Invalid ASCII token found when converting print formats
6	Invalid print token found when converting print formats
7	Unable to establish upload connection to indicator
8	Upload failed because of an invalid packet
9	A timeout occurred when uploading configuration
10	An error occurred when downloading configuration
11	Invalid keyword
14	Error processing file keyword line
15	Error processing parameters for keyword
16	Error processing an ASCII token
17	Error processing a print token
18	MDF keyword parameters are invalid
19	Error reading .MDF file
20	Error reading .CFG file
21	Error writing .CFG file
22	Download error
23	Error processing structures to configuration array
24	Error processing a configuration array to structures
25	Error processing a configuration keyword line
26	Error processing configuration lines
27	Searched for an invalid print token
28	Invalid print format found processing print format parameters
29	Error processing .CFG lines
30	Error processing the first line of the .CFG file
31	Error initializing the .CFG array
32	Error saving the .CFG file
33	Error creating a packet to transmit to the indicator
34	Error processing an uploaded packet
35	Invalid print format index specified
36	Invalid hex code conversion attempted
39	Error occurred processing EMODELS.TXT file
40	No response or NAK to download packet transmission
41	Invalid print format token parameter found
42	Error processing an extended print token
43	Invalid extended print token found during conversion
44	Error when transferring a new configuration to the old format
45	Error occurred when transferring an old configuration to the new format
46	Error occurred when processing print format order
47	The ENDPFORDER was not found in the MDF file
48	Timeout occurred when waiting for indicator upload/download prompt

Standard Scale & Supply Company
25421 Glendale Avenue
Redford, MI 48239
313-255-6700
www.standardscale.com

Avery Weigh-Tronix