Avery Weigh-Tronix

E1070 e-tools™ Software

etools™

The Power of Intelligence

E1070 e-tools™

User Instructions

Table of Contents

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

Introduction

Welcome to the Avery Weigh-Tronix® e-tools™ software manual. This software makes configuration of the Evolution™ series of indicators 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 model E1070 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

Starting e-tools

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

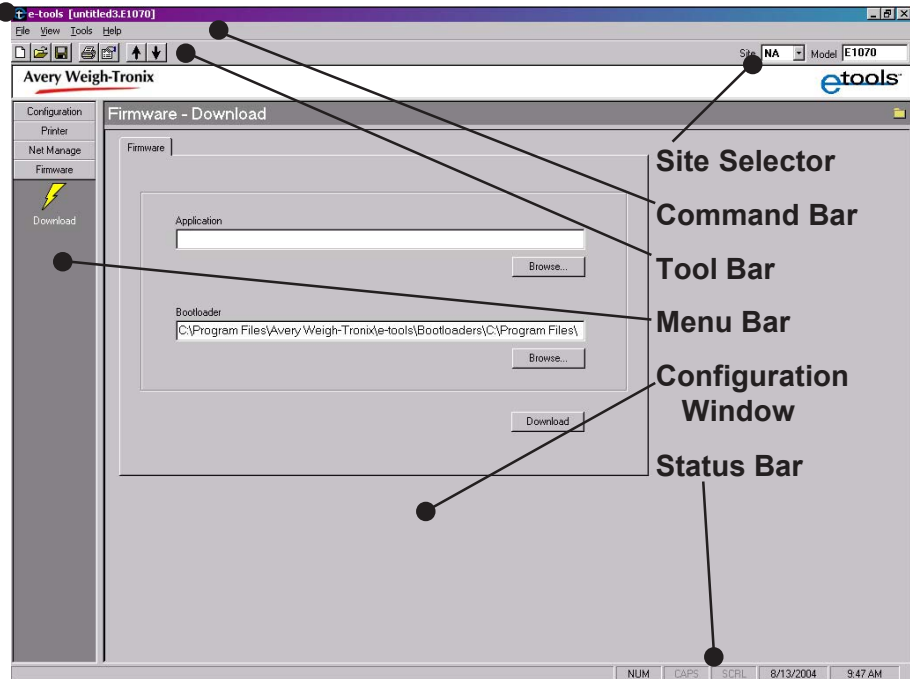The program will start and you will see the following window:

Choose your indicator model from this drop down box.

Choose E1070 for this manual, then click on **Run**.

The following window is displayed:

If you click on the Avery Weigh-Tronix logo, the AWT web site will open.

Site Selector

Command Bar

Tool Bar

Menu Bar

Configuration Window

Status Bar

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

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

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.

Command Bar

The command bar has the following commands:

File   View   Tools   Help

File

If you click **File** the following drop down menu appears:

From this list you can:

File	
New	• create a new file
Open...	• open an existing file
Close	• close an open file.
Upload Data...	• upload a configuration file from an indicator
Download Data...	• download a configuration file to an indicator
Save...	• save an open file
Save As...	• save an open file under a different name
Print Setup...	• setup the printing or a configuration report
Print...	• print a configuration report
Recent Files ▶	• choose from a list of recent files
Exit	• close the program

View

If you click **View** the following drop down menu appears:

View

✔ Toolbar   Click Toolbar to toggle the toolbar on and off

✔ Status Bar   Click Status Bar to toggle the status bar on and off

Tools

If you click **Tools** the following drop down menu appears:

Tools

Options... ——————— Click here to open the Options dialog box

Reports... ——————— Click here to print a configuration report

Clear Recent Files ——— Click here to clear recent files

Help

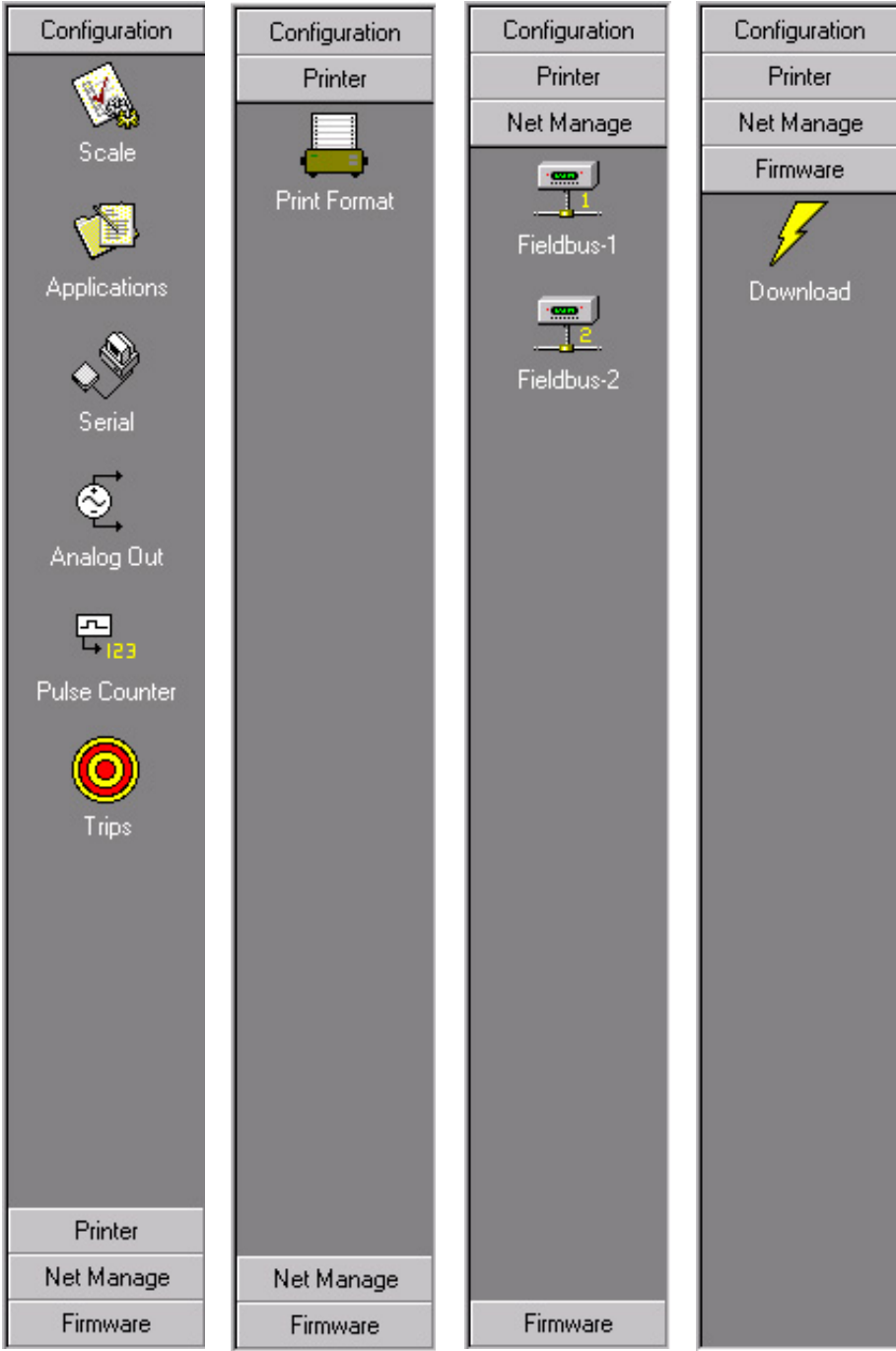If you click **Help** the following drop down menu appears:

Help

Users Manual ——— Click here to open the user's manual (PDF)

About... ——— Click here to see software information

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.

Configuration	Configuration	Configuration	Configuration
	Printer	Printer	Printer
Scale		Net Manage	Net Manage
			Firmware
Applications	Print Format	Fieldbus-1	Download
		Fieldbus-2	
Serial			
Analog Out			
Pulse Counter			
Trips			
Printer	Net Manage		
Net Manage	Firmware	Firmware	
Firmware			

Configuration Window

When you click on a menu bar icon, the related configuration dialog box appears in the configuration window. Below is an example:
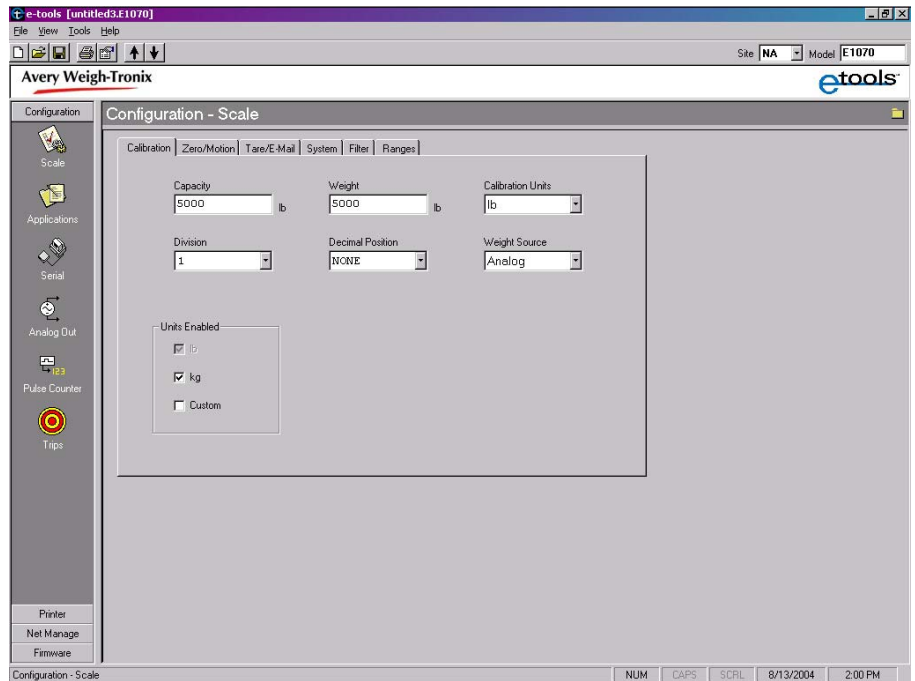
It is in these dialog boxes that you choose all the configuration parameters for your indicator and scale setup.

When all your parameters are set, you connect your PC serial port to the serial port of the indicator and click the **download** (down arrow) button on the button bar. The file is sent to the indicator and all the new parameters take effect.

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 high-lighted) you can press the **DELETE** key 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.

Creating and Downloading 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
- download the file to the indicator

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

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.
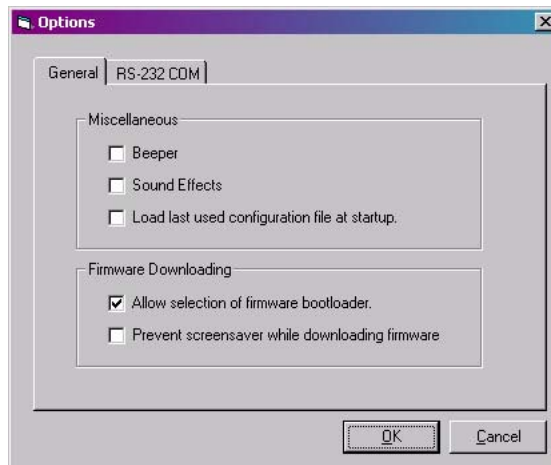
Site NA ▼ Model E1070
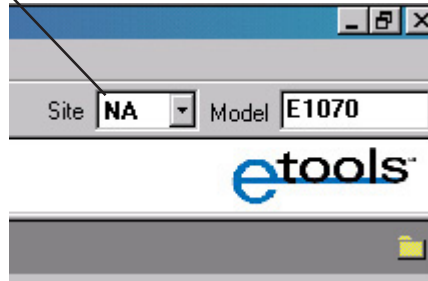
etools

Choose the location where the indicator will be used. Choosing the correct one will set defaults to your location's requirements.

Setting Options

General tab

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

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.

RS-232 COM tab

Click the RS-232 COM tab.
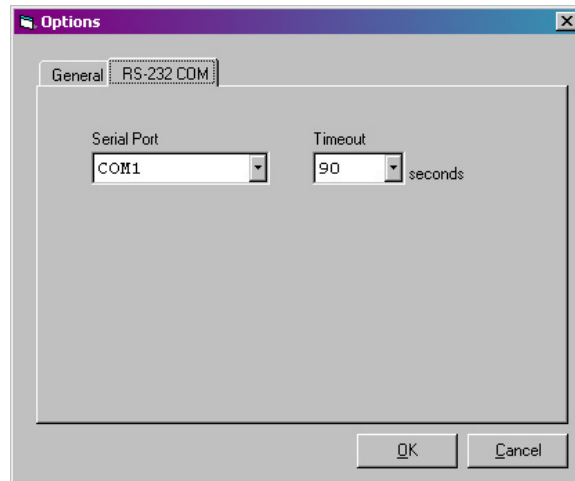
Choose the serial port through which your computer will download the files. Set a timeout for how long the system will try to download before the attempt is aborted.
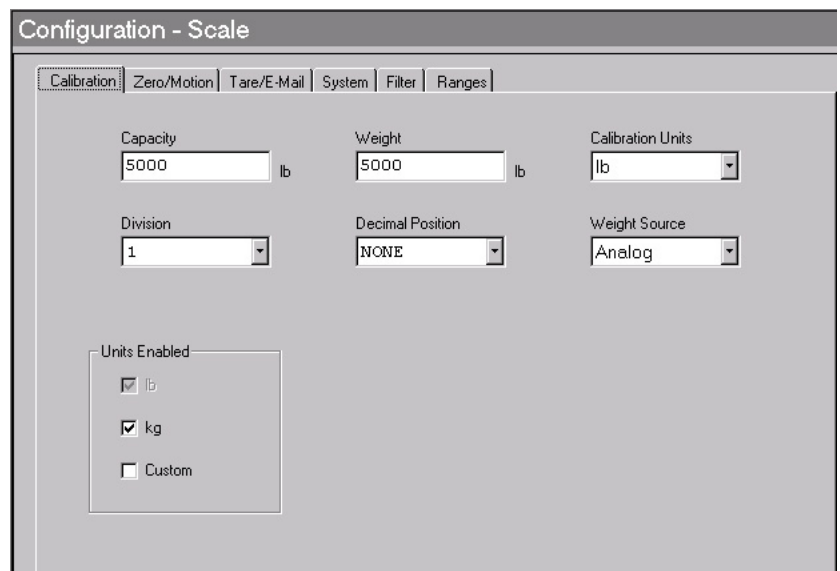
CONFIGURING - Configuration Button

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

- Scale
- Applications
- Serial
- Analog out
- Pulse Counter
- Trips

Each is explained in detail below.

Scale Icon

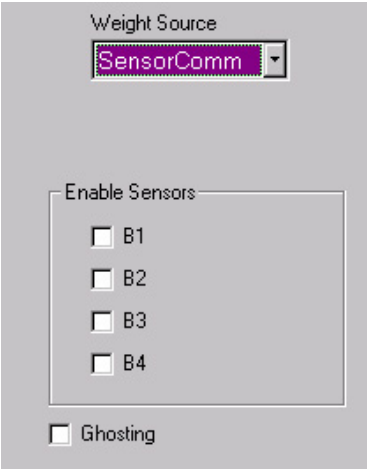Click on the Scale icon and the following dialog box appears:

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, 500, 1/2, 2/5, 5/10, 10/20, 20/50.

The fraction choices are for use as dual range divisions. The first number is the division size for the first half of the capacity and the second number is the division size for the 2nd half of the capacity.

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.

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 manuals for complete information.

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.

one cal unit
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.

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 large note in the left column of this page.

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 note at left.

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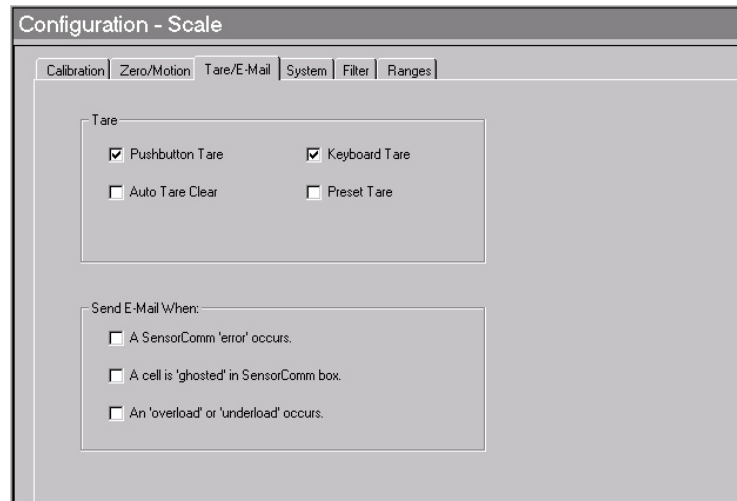
AZT and Motion
Common Division selections:
0.25
0.5
1.0
2.0
3.0

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 will be automatically cleared when the weight falls below the value set under **Gross Zero Band** discussed on the previous page.

Keyboard Tare   If you enable this item you can key in a tare weight and press the **TARE** key to activate the tare value.

Preset Tare   If you enable this item you can use a tare that is held in the PLU memory channels.

Send Email When: Select any or all instances when an email notice is sent by the indicator. Email is setup in the Networks 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 Sensor-Comm 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.

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.

Averages
Set the number of A to D counts to be averaged for display or printed weight. Choose values between 0 and 100 from the drop down list.

Filter enable
Choose disable to disable filtering or choose single pole or three pole filtering. See note at left.
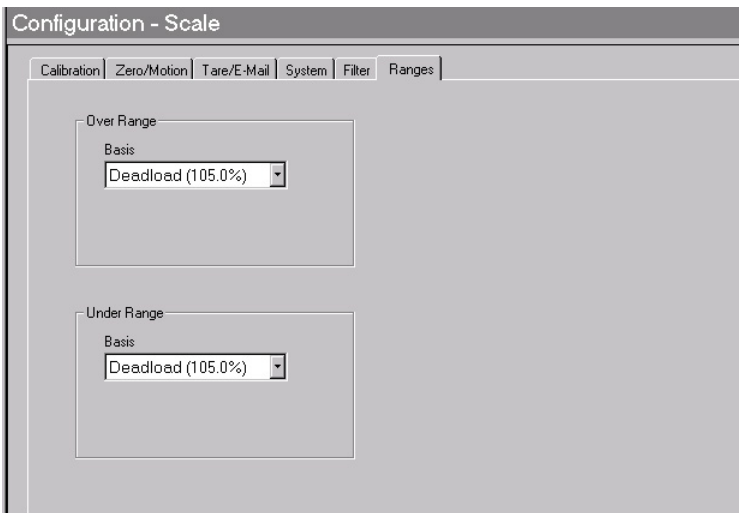
Filter settings
If you enable filtering *Filter Settings* appears. For the Constant value you can pick a value between 1 and 10. Set the number low for small vibration problems and higher for more dampening effect.

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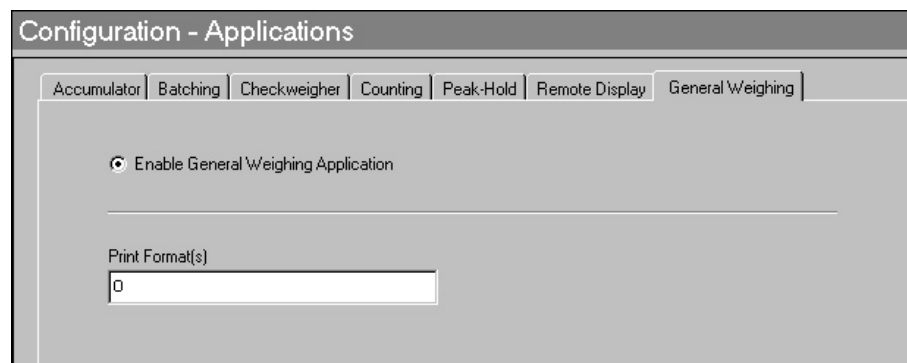
Use this item to set the point at which under range (lower) dashes or over range (upper) dashes are displayed. You can choose between 105% of capacity or 9 divisions over capacity.

This completes the Scale section of the configuration.

Application Icon

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

These 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 E1070. 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 or Continuous 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.
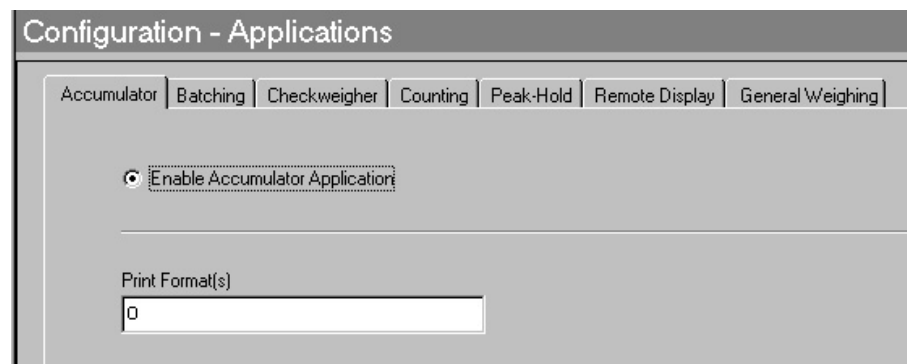
Continuous
Continuous batching mode. This mode is very close to the Auto mode. In continuous mode, another batch is started immediately after the previous batch has finished. In Auto mode, the user must press the **F1** key to start each batch.

*To terminate the filling process, press the **F1** key. All outputs will turn off, and the process will start over when the **F1** key is pressed again.*

Press the **F1** key to start the filling process.

1. a. If output 1 is enabled, and the net weight on the scale is below the value of the output, output 1 will come on.
   b. If output 2 is enabled, and the net weight on the scale is below the value of the output, output 2 will come on.
   c. If output 3 is enabled, and the net weight on the scale is below the value of the output, output 3 will come on.

2. Each output will remain on until its output value is met.

3. The filling process can be restarted by pressing the **F1** key.

Select Recipe Number:
When you pick a recipe 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, time or pulse counts.
    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.

    Counts If an ingredient basis is counts from a pulse counter, the output activates for the number of pulse counts 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:
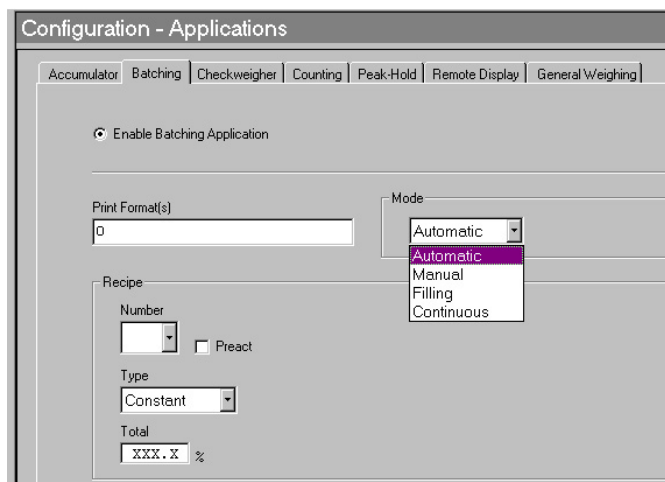

Choose Print Format(s):
Type in the print formats (0-10) that are to be printed when the **PRINT** button is pressed during normal operation. Multiple print formats must be typed in ascending order.

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

Enable or disable the checkweigher graph on the indicator display.

Choose Limits or Sample mode:

Limits Mode User enters the upper and lower limits for the item and the indicator will use those values to run the display. See illustration below. Each graduation equals one division by default but, this can be changed in the Display Graduation box.
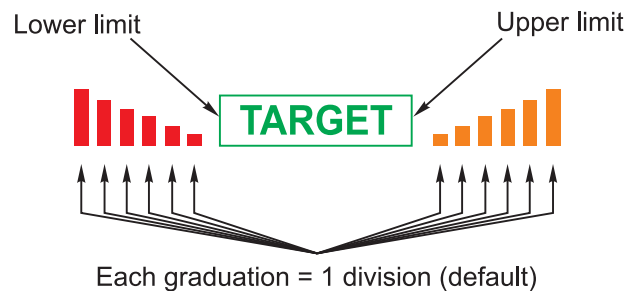
Sample Mode If you pick Sample Mode, the Target Window box, shown below, appears in the dialog box.

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. Type in a target division size other than the default, 1. Each fan graph segment is equal to 1 scale division but, this can be changed in the Display Graduation box.

The TARGET light stays lit if weight is within the upper and lower limits.

Each graduation = 1 division (default)
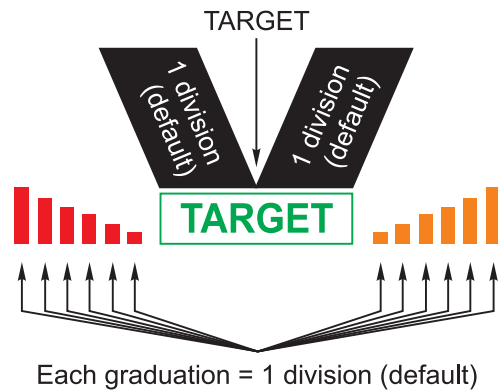
Configure Outputs: Choose between Standard and Target.

Standard: Configure the outputs using the **F1** key and keying in the OP1, OP2 and OP3 values.

Target: Outputs are set according to the selected target weights. Output 1 activates when the Under condition is met. Output 2 activates when the Accept condition is met and Output 3 activates when the Over condition is met.

Display Graduations: Chose how many divisions each fan graph segment is equal to.

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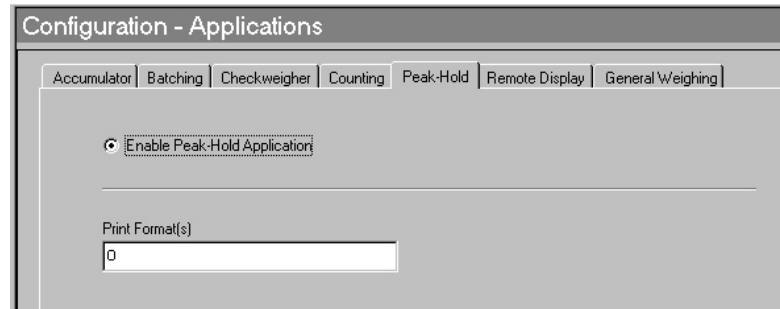
Set the default sample size to prompt the operator to place on the scale.

Peak-Hold tab

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

Configuration - Applications

| Accumulator | Batching | Checkweigher | Counting | Peak-Hold | Remote Display | General Weighing |

◉ Enable Peak-Hold Application

Print Format(s)

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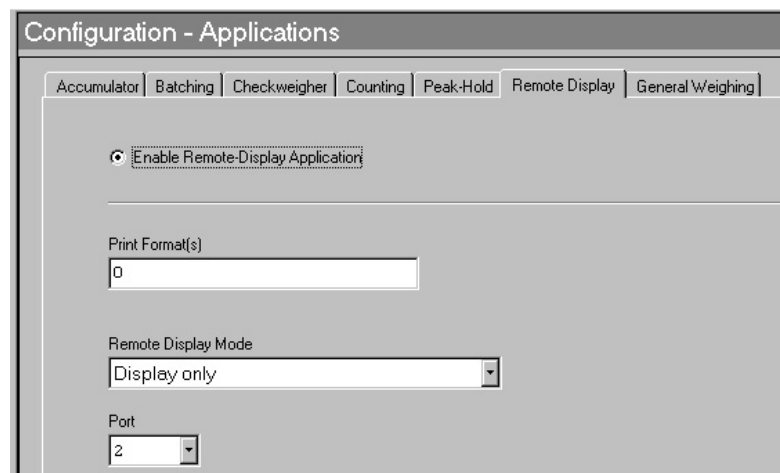
Choose Print Format(s):
Type in the print formats (0-10) that are to be printed when the **PRINT** button is pressed during normal operation. Multiple print formats **must** be typed in ascending order.

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:

Configuration - Applications

| Accumulator | Batching | Checkweigher | Counting | Peak-Hold | Remote Display | General Weighing |

◉ Enable Remote-Display Application

Print Format(s)

`0`

Remote Display Mode

Display only

Port

`2`

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.

This concludes the Application Icon section.

Serial Icon

*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.

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

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
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 in Appendix 1 of this manual.
>
> ***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 HD	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 is 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.

Analog Output Icon
(requires indicator option)

Click the Analog Output icon on the Menu Bar. If you enable analog output the following window appears:

Set the Basis:
Choose what the output will be based one; 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.

Pulse Counter Icon
(requires indicator option)
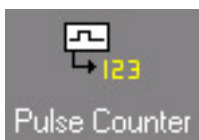
Pulse Counter

Click the Pulse Counter icon. If you enable the pulse counter you will see the window shown below.

You need to set the ratio.

Set the ratio:
Enter the ratio of pulses/calibration unit of measure. For example: You have a device which pulses 3,000 times / gallon of water. Water weighs approximately 8 lbs/gallon. Your equation would be 3000/8 = 375. This is the value to enter in the Ratio box.

Trips Icon

Trips

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

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 left margin.

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.

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.

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
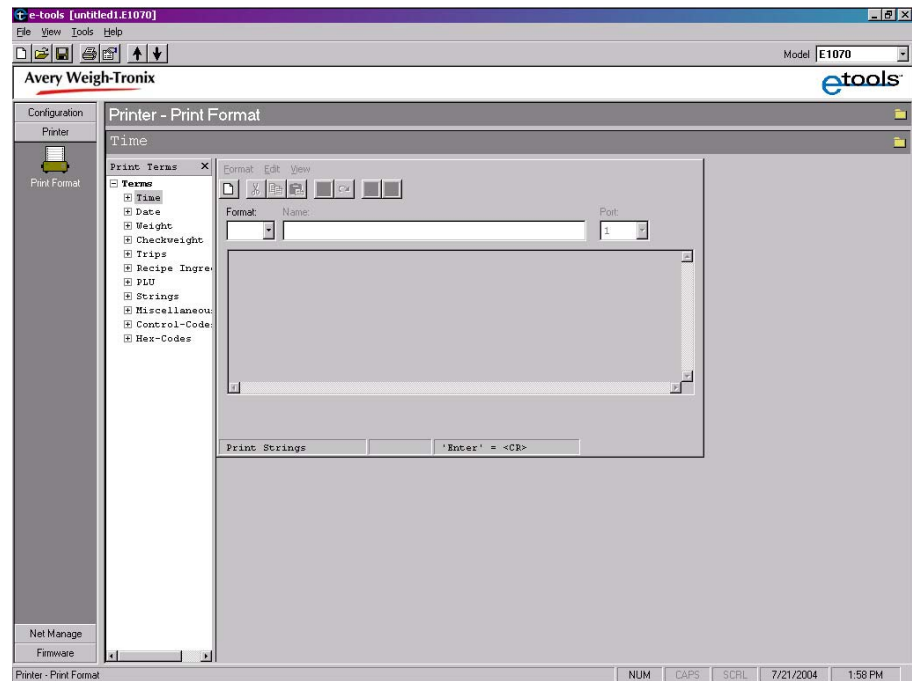
Click on the new file icon to start a new print format.
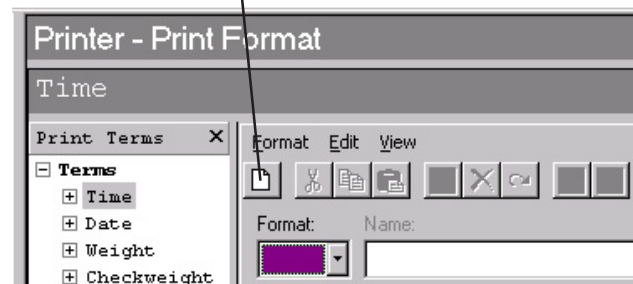
The screen should look similar to this:

Editing Window

E1070 e-tools™ Software User's Manual
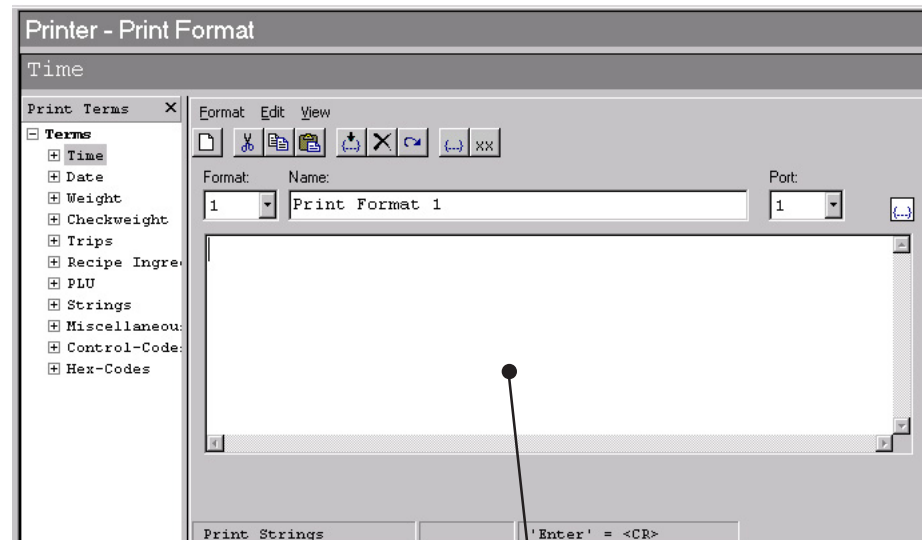
The print format command bar is illustrated below with explanations for the functions of each.

Duplicates what these six keys do plus assigns default insert when **ENTER** key is pressed on your keyboard

Duplicates what these two keys do

Opens a new format

Format   Edit   View

Cut   Copy   Paste   Inserts selected term   Deletes selected term   Move insert pointer to end   Show strings   Show tokens
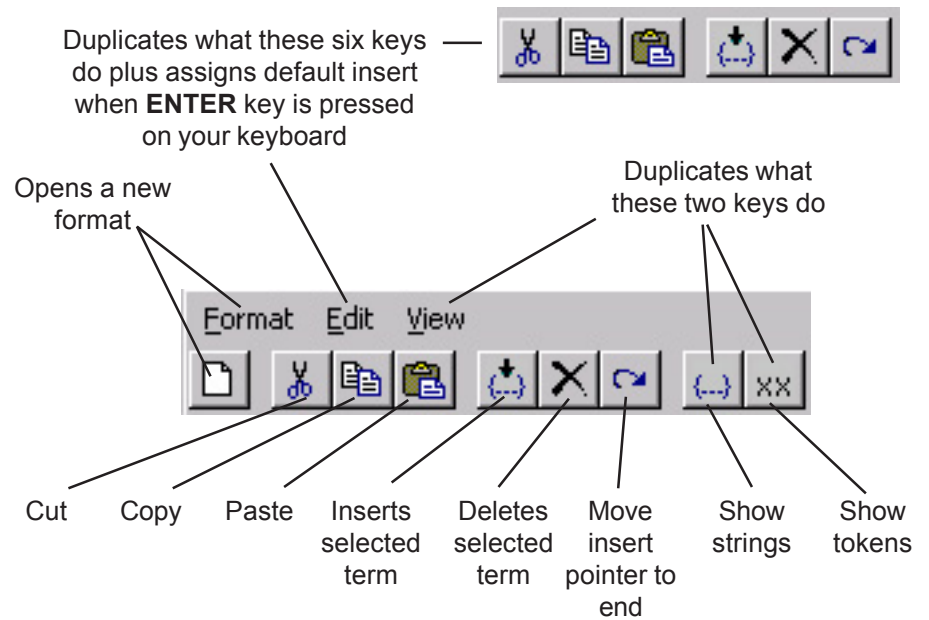
Creating a Print Format

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.
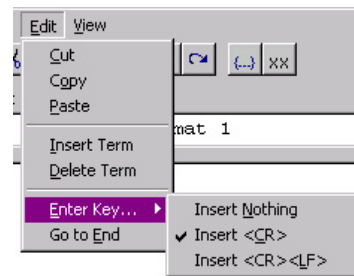
Edit   View
Cut
Copy
Paste
Insert Term
Delete Term
Enter Key...   ▶   Insert Nothing
Go to End   ✓ Insert <CR>
Insert <CR><LF>

mat 1

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

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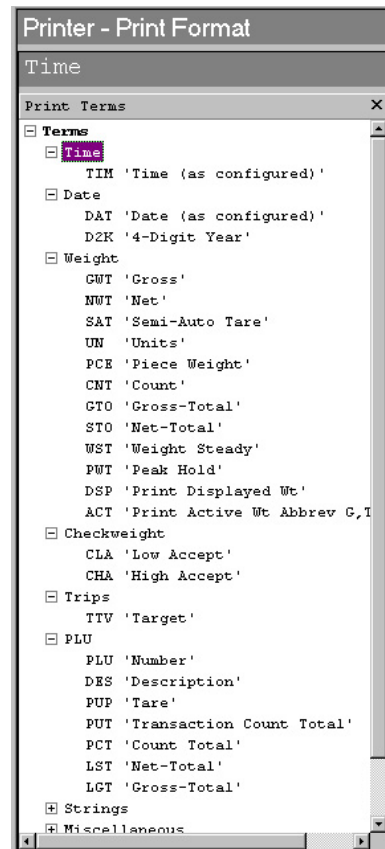
7. Double click a term to insert it at the cursor position or click on a term and click the Insert Term button.

8. Press the **ENTER** key when necessary to enter the carriage returns and/or line feeds you picked in step 4. See sample below:
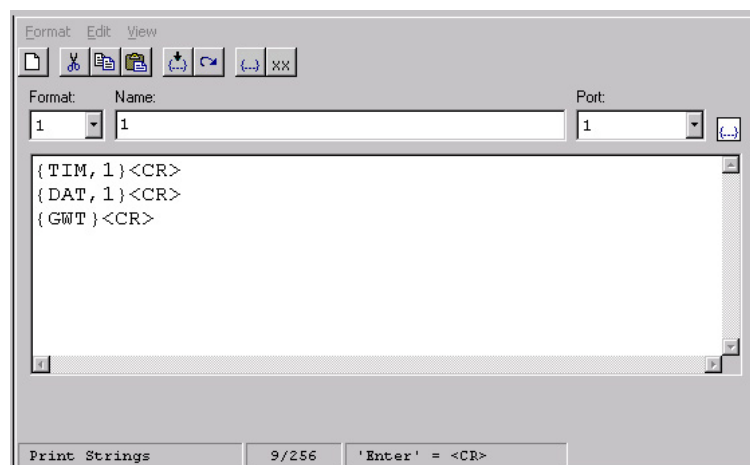
9. When you are finished laying out the look of the format you can go to the next format you want to create or continue with creating your configuration file.

CONFIGURING - Net Mange Button

These files are needed to configure the PLC so it will communicate to the E1070 indicator:

PROFIBUS® - AWTX0913.GSD

DeviceNet™ - E1070_Dnet_EnetIP.EDS

ControlNet® - ABS_CNT_V_1_5.EDS

EtherNet-3 (EtherNet/IP™) - E1070_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\e-tools\networks.

When you click the Net Manage button 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.
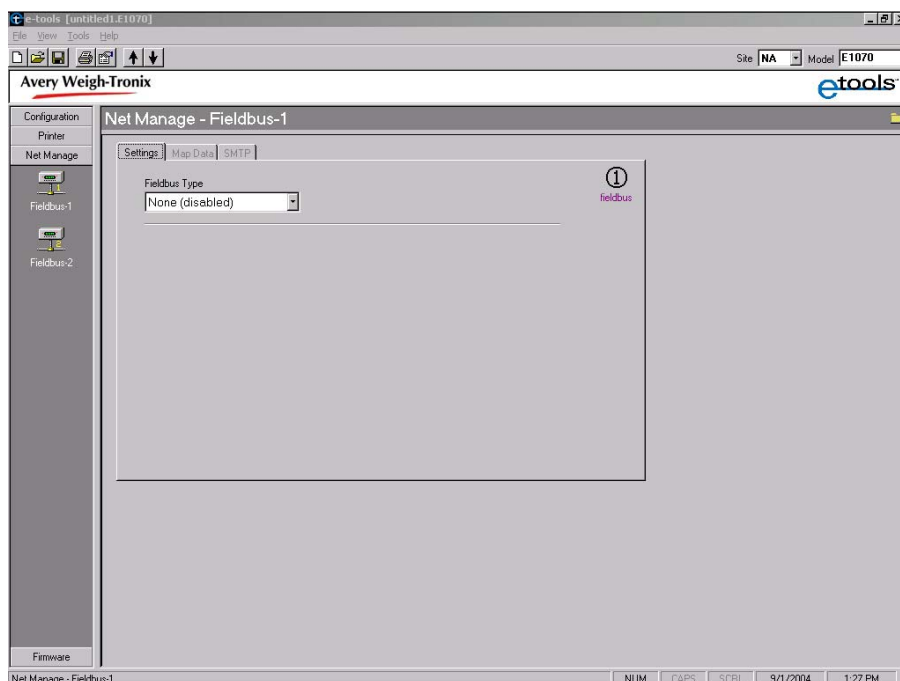
You can choose from Fieldbus-1 or Fieldbus-2. With either of these you can configure the networks shown in the illustration below:
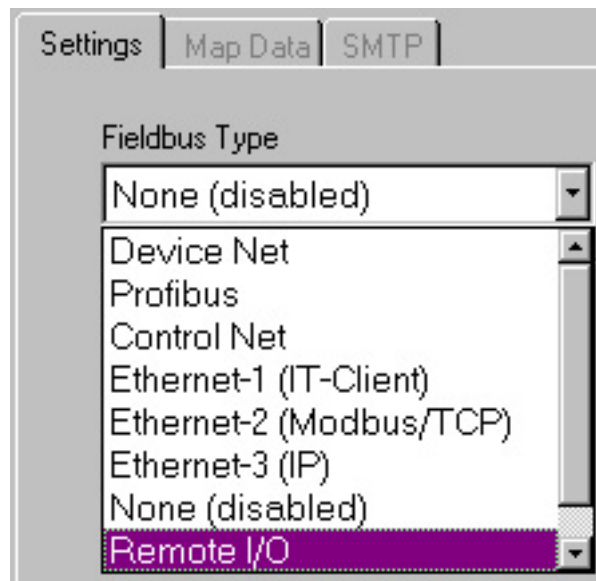
Pick the network from the drop down list and the appropriate boxes will appear and/or appropriate tab(s) will activate. Follow the steps in the next pages to configure each network.

DeviceNet™

Click on DeviceNet™ in the drop down list to configure a DeviceNet network. The window looks like this:
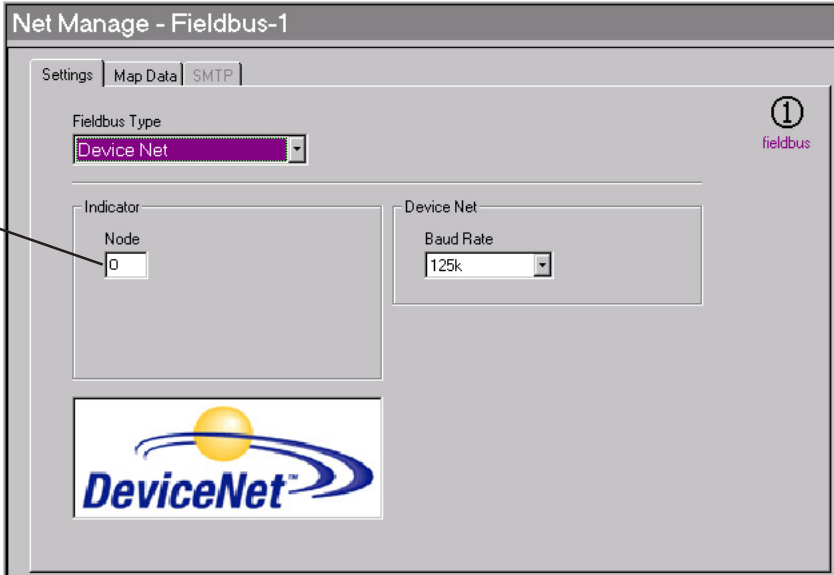
Valid nodes for DeviceNet are 0 to 63.

If an address greater than 63 is used, the indicator will set the node to 63 after the download.

Select Indicator node:
Key in the node for the indicator. Acceptable values are 0 to 63. See note at left.

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:

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

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

Click here for a drop down list of network tokens. See Appendix C for full list.

Choose Endian Format (Big or Little) here.

Click here for a drop down list of Data Types.

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 $1.0E^{37}$

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PROFIBUS®   PROFI® BUS (logo)

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

Net Manage - Fieldbus-1

Settings | Map Data | SMTP

Fieldbus Type
Profibus ▼

① fieldbus

Indicator

Node
0

PROFI® PROCESS FIELD BUS BUS (logo)

Valid nodes for PROFIBUS are 0 to 63.

If an address greater than 63 is used, the indicator will set the node to 63 after the download.

Select indicator node:
Key in the node for the indicator. Acceptable values are 0 to 63. See note at left.

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.

Net Manage - Fieldbus-1

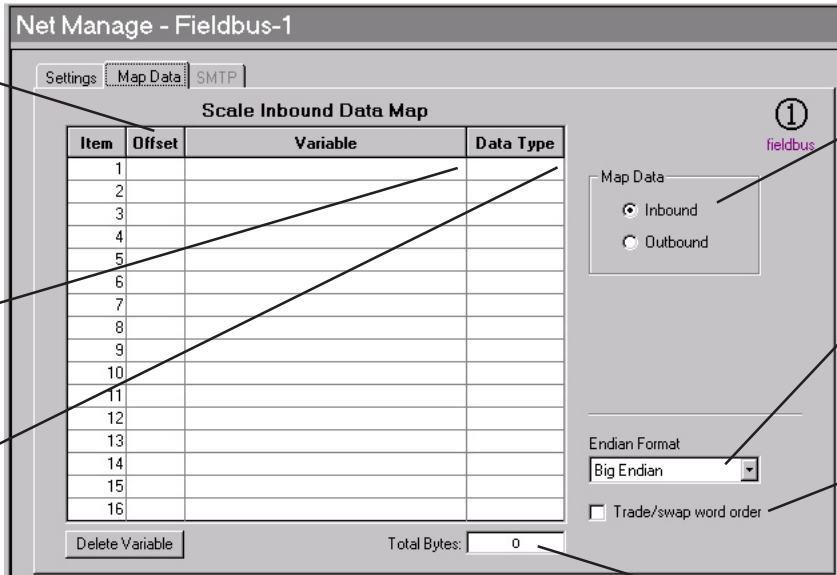*Settings | Map Data | SMTP*

Scale Inbound Data Map

Item	Offset	Variable	Data Type
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

① fieldbus

Map Data
◉ Inbound
◯ Outbound

Endian Format
Big Endian ▼

☐ Trade/swap word order

Delete Variable   Total Bytes: 0

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

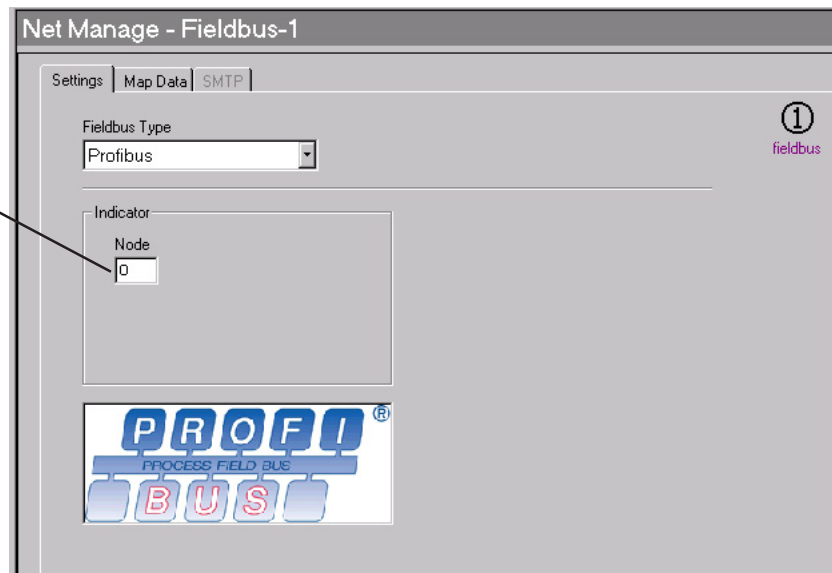*Choose Endian Format (Big or Little) here.*

Click here to trade/swap the word order

Click here for a drop down list of network tokens. See Appendix C for full list.

Click here for a drop down list of Data Types.

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 $1.0E^{37}$

ControlNet®
(requires indicator option)

Click on **ControlNet** in the drop down list to configure a ControlNet network. The window looks like this:
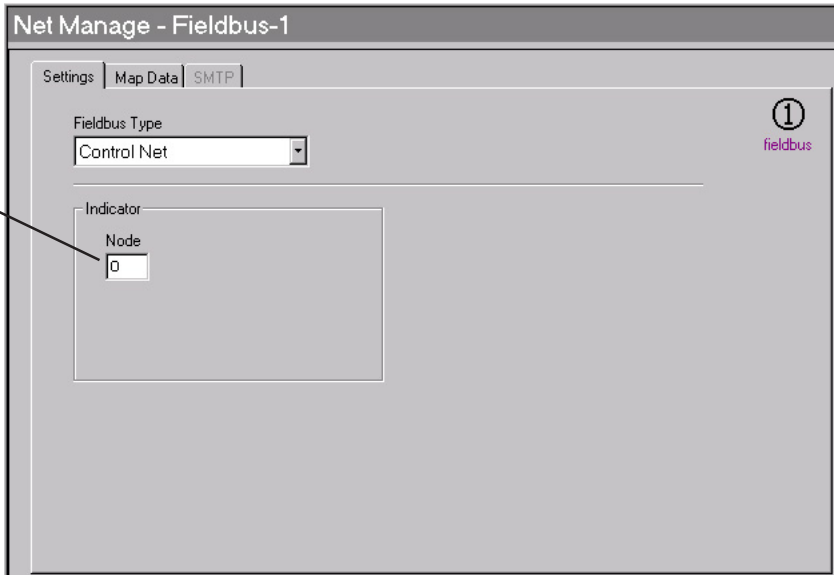
Valid nodes for ControlNet are 0 to 63. Node zero is reserved for hardware addressing (i.e. switch settings) done on the PC-card for this fieldbus interface.

If an address greater than 63 is used, the indicator will set the node to 63 after the download.
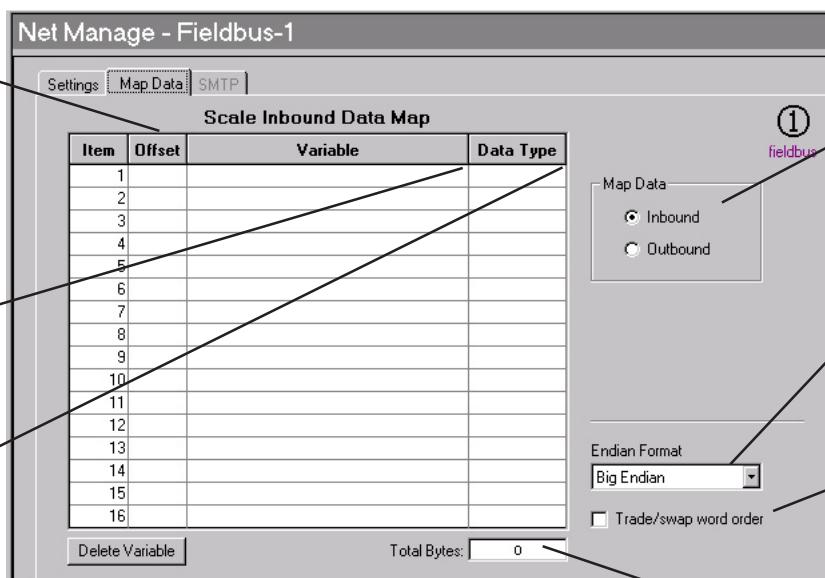
Select Indicator node:
Key in the node for the indicator. Acceptable values are 0 to 63. See note at left.

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 drop down list of network tokens. See Appendix C for full list.

Click here for a drop down 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 $1.0E^{37}$

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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:

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.

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 E1070 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:

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

Key in the User Name for the indicator.

Key in the Domain Name for the indicator.

Key in the email address for the indicator.

Key in the email recipient's address.

Key in the subject of the email.

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.

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 drop down list of network tokens. See Appendix C for full list.

Click here for a drop down 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 $1.0E^{37}$

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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.

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 drop down list of network tokens. See Appendix C for full list.

Click here for a drop down list of Data Types.

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

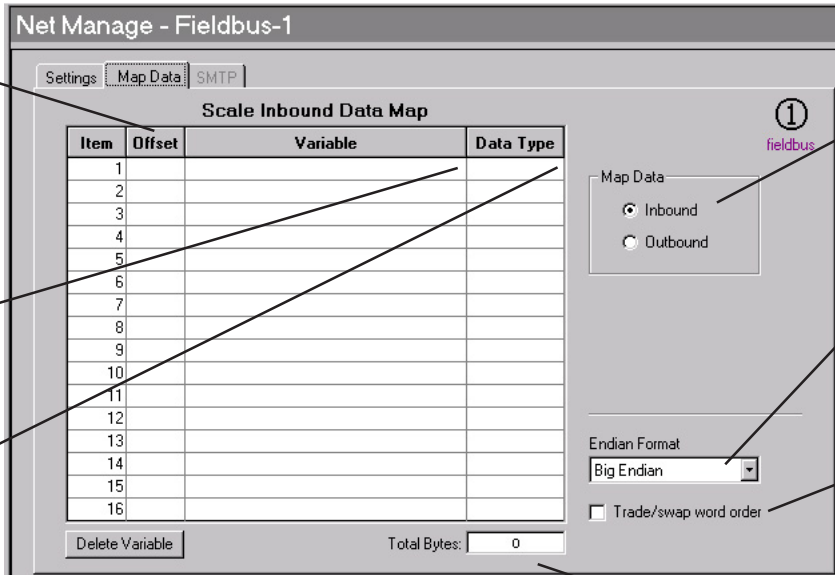*Choose Endian Format (Big or Little) here.*

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 $1.0E^{37}$

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.

Net Manage - Fieldbus-1

Settings | Map Data | SMTP

Fieldbus Type
Remote I/O

Rack
Address: 0   Size: Full
Start Quarter: First   Last: NO

Settings
Baud Rate: 57.6k   RIO Mode: Cyclic

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. See note at left.

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.

Net Manage - Fieldbus-1

Settings | Map Data | SMTP

Scale Inbound Data Map

Item	Offset	Variable	Data Type
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Delete Variable   Total Bytes: 0

Map Data
○ Inbound
○ Outbound

Endian Format
Big Endian

☐ Trade/swap word order

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

Click here for a drop down list of network tokens. See Appendix C for full list.

Click here for a drop down list of Data Types.

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 $1.0E^{37}$

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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.

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 E1070 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:

Key in the User Name for the indicator.

Key in the Domain Name for the indicator.

Key in the email address for the indicator.

Key in the email recipient's address.

Key in the subject of the email.

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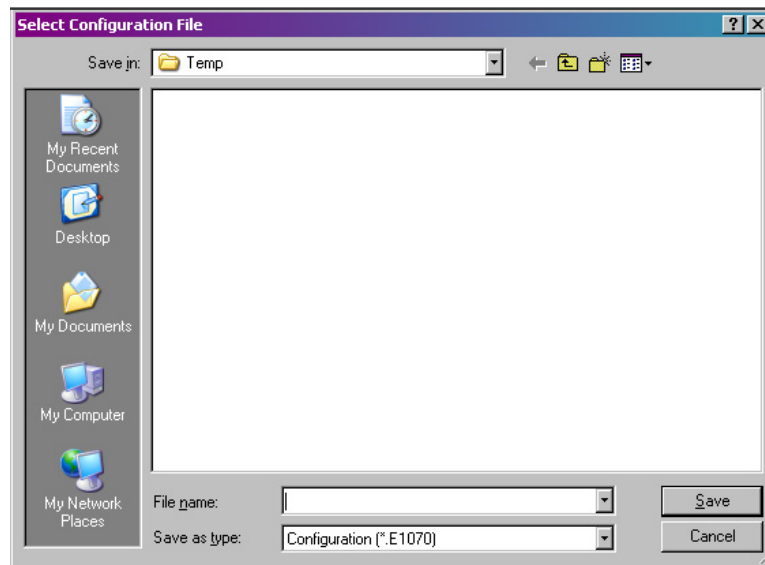
Type in a file name and click Save to save it to the folder of your choice. The file name does not need to include a file type. E-tools will automatically save your configuration file as specified by the indicator choice, shown in *Save as type:* drop down box.

Downloading a File

Indicator must be unsealed for a file to be downloaded to it. See the Service Manual *for details.*

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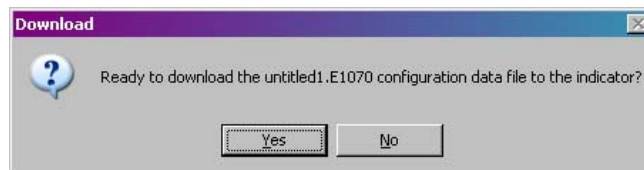
4. Verify that the indicator is turned on and in weigh mode.

5. Click **Yes** to download the indicator configuration. The following screen will appear and the indicator will display the word **bUSy**.
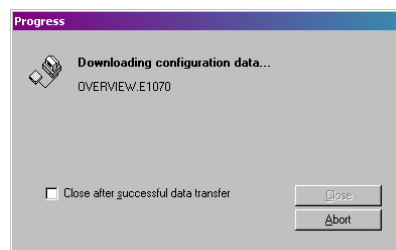
6. Once the download is complete, the window will change to show a Pass or Fail condition.
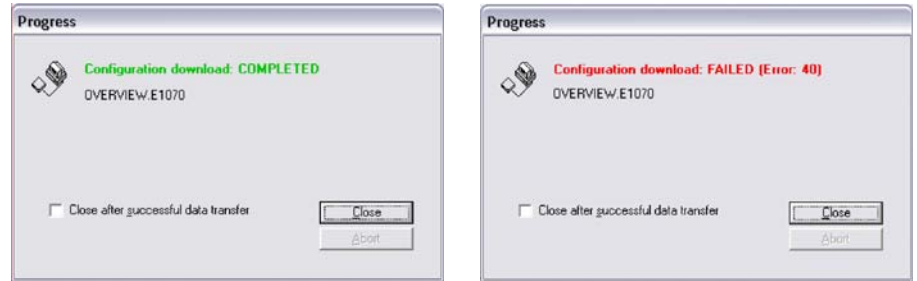
7. Once configuration download is complete the indicator is ready to be calibrated.

Uploading a File

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.
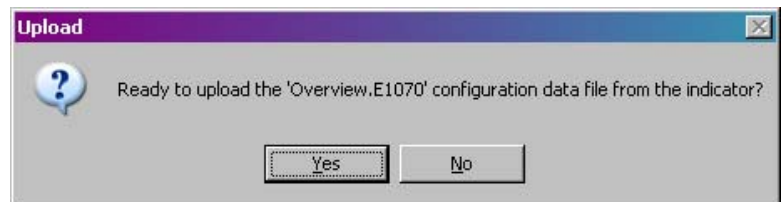
4. To upload an indicator configuration from the indicator to E-tools, connect the indicator to the PC.

5. Open the E-tools program and click the Upload Configuration button on the Tool Bar. <insert upload icon here>

6. The following message will be displayed:
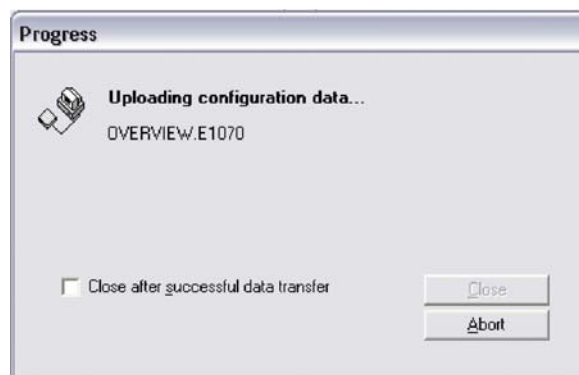
7. Once the upload is complete, the window will change to show a Pass or Fail condition.
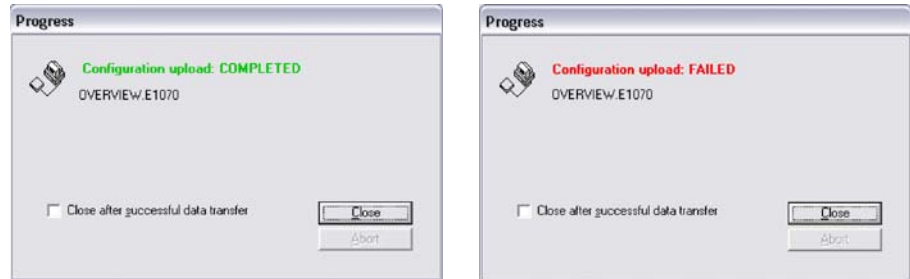
8. After uploading the indicator configuration it is recommended to save the file. Refer to section Saving a File for detailed instructions. The indicator configuration can now be viewed and edited as needs demand.

Downloading Firmware

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.

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

1. Turn off power to the indicator by pressing the power key.

2. Select the Firmware tab in E-tools, then choose Download. The following is displayed:
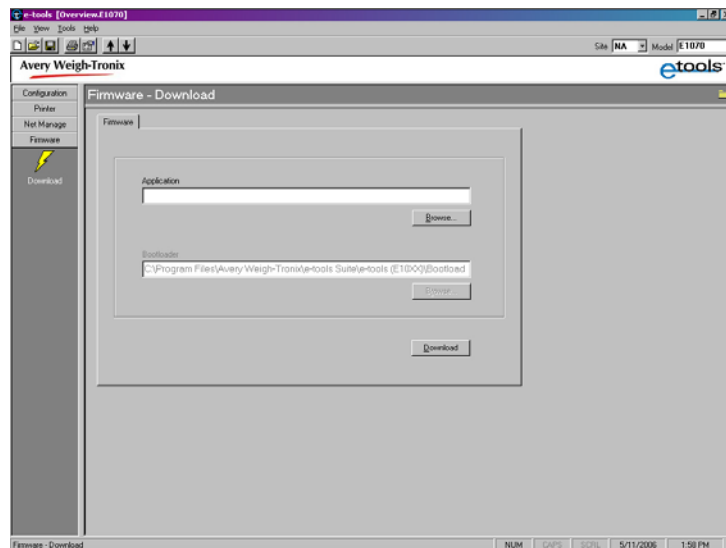
3. Use the Browse button to select the desired version of firmware to download into the indicator.

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.

Warning

Firmware download to the indicator may take several minutes.

ANY INTERRUPTION OF THE SERIAL COMMUNICATION PROCESS COULD RESULT IN THE NEED TO RETURN THE UNIT TO THE FACTORY TO BE RESET.

Before proceeding we recommend that you check the serial cable and disable all screensavers and automatic power savers (hibernation) features.

Click 'OK' to proceed with the download or 'Cancel' to abort.

[OK]   [Cancel]

6. Click Cancel to abort firmware download or select OK to download firmware.

7. After selecting OK, press the power button on the indicator until the file size is displayed.

8. While downloading firmware, a progress bar appears to indicate file download.

Progress

Downloading application firmware...

60249-0021B.HEX

7 %

File Size: 159,459   11,192/159,459

☐ Close after successful data transfer   [Close]

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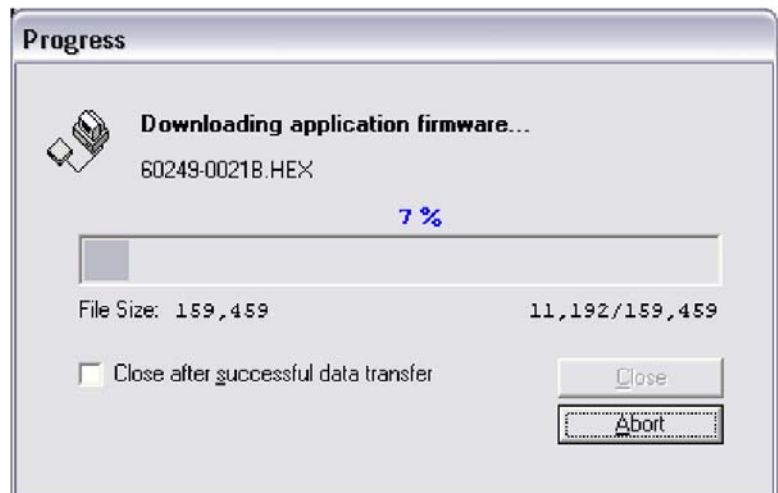
9. After the download is complete, cycle power on the indicator.

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
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.
148	94	PCE	Piece Weight	Count	
149	95	CNT	Current Count Value	Count	
151	97	GTO	Gross Accumulator	Weight	
153	99	STO	Net Accumulator	Weight	
155	9B	PLU	PLU NumberData	PLU	

Dec	HEX	Token	Application	Group	Parameter
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	
242	F2	PWT	Peak Hold Weight value	Weight	
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: Mainboard Network LED Diagnostics

The network LEDs shown in the photo below are found next to the RJ45 Ethernet connector on the main PC board. Below the photo is a table showing what each LED's condition means.
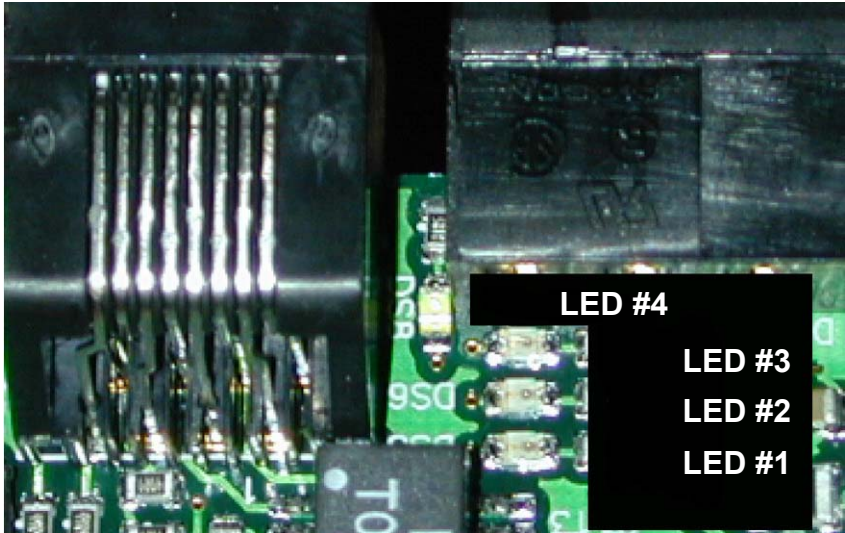
		ON	OFF
LED 1	LINK	ON-LINE	OFF-LINE
LED 2	TX	TRANSMITT ACTIVE	TRANSMITT NOT ACTIVE
LED 3	RX	RECEIVE ACTIVE	RECEIVE NOT ACTIVE
LED 4	SPEED	100M	10M

Appendix C: Network Tokens

Token	Inbound to net1	Outbound from net 1	Inbound to net 2	Outbound from net 2	Token (decimal value)	Token (hex value)
Gross		X		X	0	00
Net		X		X	1	01
Tare	X	X	X	X	2	02
Peak		X		X	3	03
Count		X		X	4	04
PLU Piece weight	X	X	X	X	5	05
PLU number	X	X	X	X	6	06
PLU Gross Accumulator		X		X	7	07
PLU Net Accumulator		X		X	8	08
PLU Total counter		X		X	9	09
PLU Count Accumulator		X		X	10	0A
PLU Tare value	X	X	X	X	11	0B
PLU ID	X	X	X	X	12	0C
PLU Lower Target weight	X	X	X	X	13	0D
PLU Upper Target weight	X	X	X	X	14	0E
Recipe Ingredient number		X		X	15	0F
Recipe Ingredient target weight		X		X	16	10
Recipe Ingredient actual weight "when target is met		X		X	17	11
Motion/Weigher Steady		X		X	18	12
Center of Zero/zero balance		X		X	19	13
Overload		X		X	20	14
Underload		X		X	21	15
Input1-3	X	X	X	X	22	16
Output 1-3	X	X	X	X	23	17
Serial number		X		X	24	18
Watchdog counter		X		X	25	19
Remote zero	X		X		26	1A
Remote tare	X		X		27	1B
Remote print	X		X		28	1C
Remote accumulate	X		X		29	1D
Bridge1	X**	X*	X*	X**	30	1E
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

* Bridge tokens that are inbound to net2 can be outputs for net1
** Bridge tokens that are inbound to net1 can be outputs for net2

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