Avery Weigh-Tronix

Model E1070 Indicator

E1070

Service Manual

ENGLISH

43099-0010A e1 May 30, 2006

Caution

CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

ATTENTION: IL Y A DANGER D'EXPLOSION S'IL Y A REMPLACEMENT INCORRECT DE LA BATTERIE, REMPLACER UNIQUEMENT AVEC UNE BATTERIE DU MÊME TYPE OU D'UN TYPE ÉQUIVALENT RECOMMANDÉ PAR LE CONSTRUCTEUR. METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS DU FABRICANT.

CAUTION: THE POWER SUPPLY CORD IS USED AS THE MAIN DISCONNECT DEVICE, ENSURE THAT THE SOCKET-OUTLET IS LOCATED/INSTALLED NEAR THE EQUIPMENT AND IS EASILY ACCESSIBLE

ATTENTION: LE CORDON D'ALIMENTATION EST UTILISÉ COMME INTERRUPTEUR GÉNÉRAL. LA PRISE DE COURANT DOIT ÊTRE SITUÉE OU INSTALLÉE À PROXIMITÉ DE L'ÉQUIPEMENT ET ÊTRE FACILE D'ACCÉS".

IMPORTANT

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

Table of Contents

Introduction 5
Front Panel 5
Keys 6
Annunciators 7
Error Messages 8
Accessing the Menus 9
User Menu 10
Service Menu 12
CAL submenu for analog scales 12
SCALE submenu 16
APP submenu 27
Master Reset 27
Extra Info: Print Format Editing 32
Thermal Labels Print Formats 34
SERIAL submenu 38
TEST submenu 49
AUDIT submenu 54
INPUT submenu 55
OUTPUT submenu 57
OPTION submenu 58
Supervisor Menu 86
DATE (Set date) 87
HOUR (Set time) 87
SETUP (Setup menu) 88
TEST 101
(Test menu) 101
AUDIT (Audit counters) menu 105
SensorComm Hardware Configuration and Calibration 106
Enable SensorComm 106
Enable/Configure Weigh-Bars 107
CAL submenu for SensorComm scales 108
CORNER (SensorComm Cornering) 108
GHOST (Ghost Calibration Factors) 109
SensorComm Error Messages 110
Appendix A: Remote Display Functionality 111
Appendix B: Mainboard Network LED Diagnostics 115
Appendix C: Network Connections 116
Appendix D: Complete Menu Structures 118
Technical Illustrations 121

Specifications

Power requirements
- 85-265 Volts AC @ 0.3Amp maximum
- 50/60 Hz

Excitation
- +/- 5 volts DC
- Supports up to eight 350-ohm weight sensors

Analog signal input range
- +/-60 mV

Analog signal sensitivity
- 0.2 µV/V/divisions minimum
- 1.0 µV/V/divisions recommended

Calibration

2 to 5 points stored

Operational keys
- *Twenty-two keys:* Tare, Select, Zero, Print, Units, F1, Clear, Mode, Escape, Enter, On/Off, Decimal, 0-9 numeric

Operational annunciators
- Center of Zero, Motion, Gross, Net, Tare,
- Under/Target//Over
- Units of measure (LB, KG)
- Print, OP1, OP2, OP3, Pt Tare

Display
- Six-digit, seven-segment, 0.8-inch high, LED

Display rate
- Selectable (1, 2, 5, 10)

Analog to digital conversion rate
- 100 times per second

Unit of measure
- Pounds, kilograms, custom

Capacity selections
- 999,999 with decimal located from zero to five places

Incremental selections
- Multiples and sub-multiples of 1, 2, 5

Configurable selections
- Zero range, motion detection, automatic zero tracking, five-point linearization.

Time and date/RAM
- Battery backed up real time clock and RAM standard

Internal resolution
- 53,687,100 counts per mV/V per second

Harmonizer™ digital filtering
- Fully configurable to ignore noise and vibration

Standard inputs
- Three logic level inputs for: Zero, Print, Tare, Units, F1, Start and Stop

Standard outputs
- 10/100 Ethernet (Modbus/TCP, TCP/IP, SMTP, DHCP, Ethernet/IP)
- PROFIBUS DP
- DeviceNet
- Three cutoff outputs
- Two serial ports
  - RS-232/422/485 (SensorComm) selectable
  - RS-232 or 20mA current loop

Serial Command Inputs/Outputs
- Configurable serial response to ASCII character input
- SMA protocol, Broadcast, Enquire, RD-4100, E-series remote display

Self diagnostics
- Display, keys, inputs, outputs, serial port, A to D converter

Circuitry protection
- RFI, EMI, and ESD protection

Options
- Analog output/Pulse input
- ControlNet™
- TIU3
- Remote I/O
- Washdown remote foot control

Operating applications
- General weighing, Accumulation, Batching, Counting, Checkweighing, Peak measurement, Remote display

Operating temperature
- 14 to 104° F (-10 to 40° C) approved
- -40 to 140° F (-40 to 60° C) non-legal
- Up to 95% non-condensing humidity

Enclosure
- Stainless steel NEMA 6/4X

Dimensions
- 9.25" W x 9.25" H x 4.5" D (without mounting bracket)
- 9.75" W x 11" H x 7" D (with mounting bracket)

Weight
- 8.5 lb, 4 kg

Agencies
- NTEP CC#04-031 Class III/IIIL:10,000 divisions
- OIML Cert. #R/76/1992-GB1-E410
- Canadian Weights and Measures pending
- UL/CUL
- CE marked

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Introduction

About This Manual

This manual covers the information you need to configure and service your Model E1070 Indicator.

Major sections of this manual are headed by titles in a black bar like *Introduction* above. Subheadings appear in the left column. Instructions and text appear on the right side of the page. Occasionally notes, tips, and special instructions appear in the left column.

Front Panel

Attention

Plug the Model E1070 into properly grounded socket-outlet of the correct voltage, installed near the equipment and easily accessible. Never use the unit without an appropriate earthground connection.

Any computer based system should have a separate, grounded power circuit. We recommend one for the Model E1070.

See the System Block Diagram or Main Board Assembly pages in the technical illustrations at the back of this manual for wiring instructions.

The front panel, shown in Figure 1, consists of the keys and display.

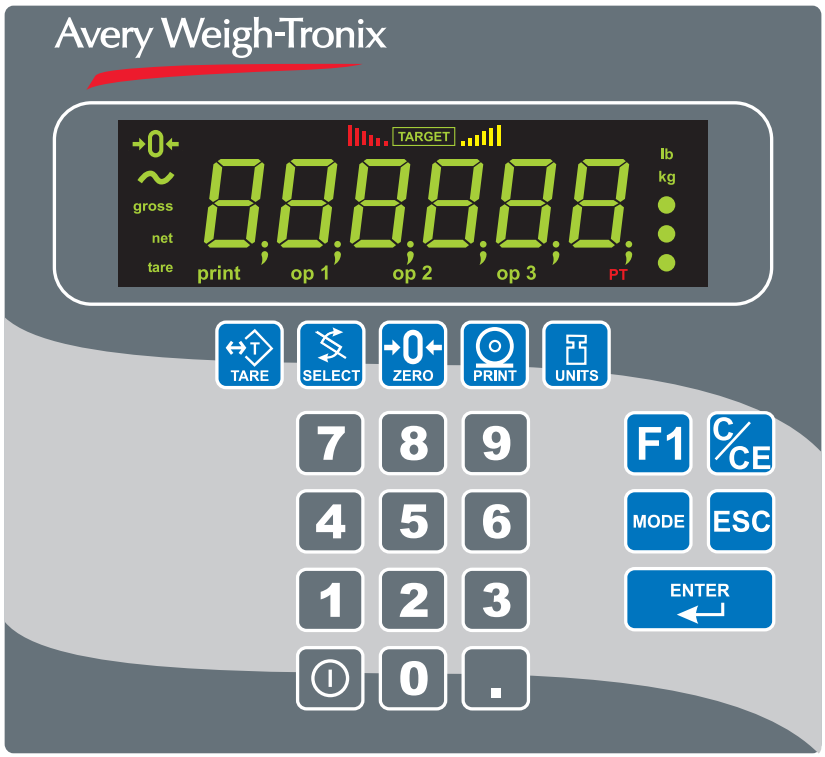


Figure 1
E1070 front panel

Keys

Never press a key with anything but your finger. Damage to the overlay may result if sharp or rough objects are used.

The functions of the keys on the front panel are listed below.

Press the **TARE** key to perform a tare function. Also acts as a left arrow key when in the menu structure.

Press the **SELECT** key to toggle between Gross, Tare, Net, Count, Gross Accumulator, Net Accumulator, Transaction Counter, Piece Weight, and Peak. Dependent on the current application. Press and hold to access the cutoffs (trips) menu. Also acts as an up arrow key when in the menu structure.

Press the **ZERO** key to zero the display.

Press the **PRINT** key to send information to a peripheral device through one of the Comm ports. Also acts as a down arrow key when in the menu structure.

Press the **UNITS** key to scroll through the available units of measure while in normal operating mode. Also acts as a right arrow key when in the menu structure.

Press the **F1** key to select application specific choices. Also used to access PLU memory channels.

Press the **C/CE** key to clear entries.

Press the **MODE** key to scroll through the activated applications. Press and hold for 3-5 seconds to see the name of the currently active application.

Press the **ESC** key to escape, or abort, a function or return to normal operation mode.

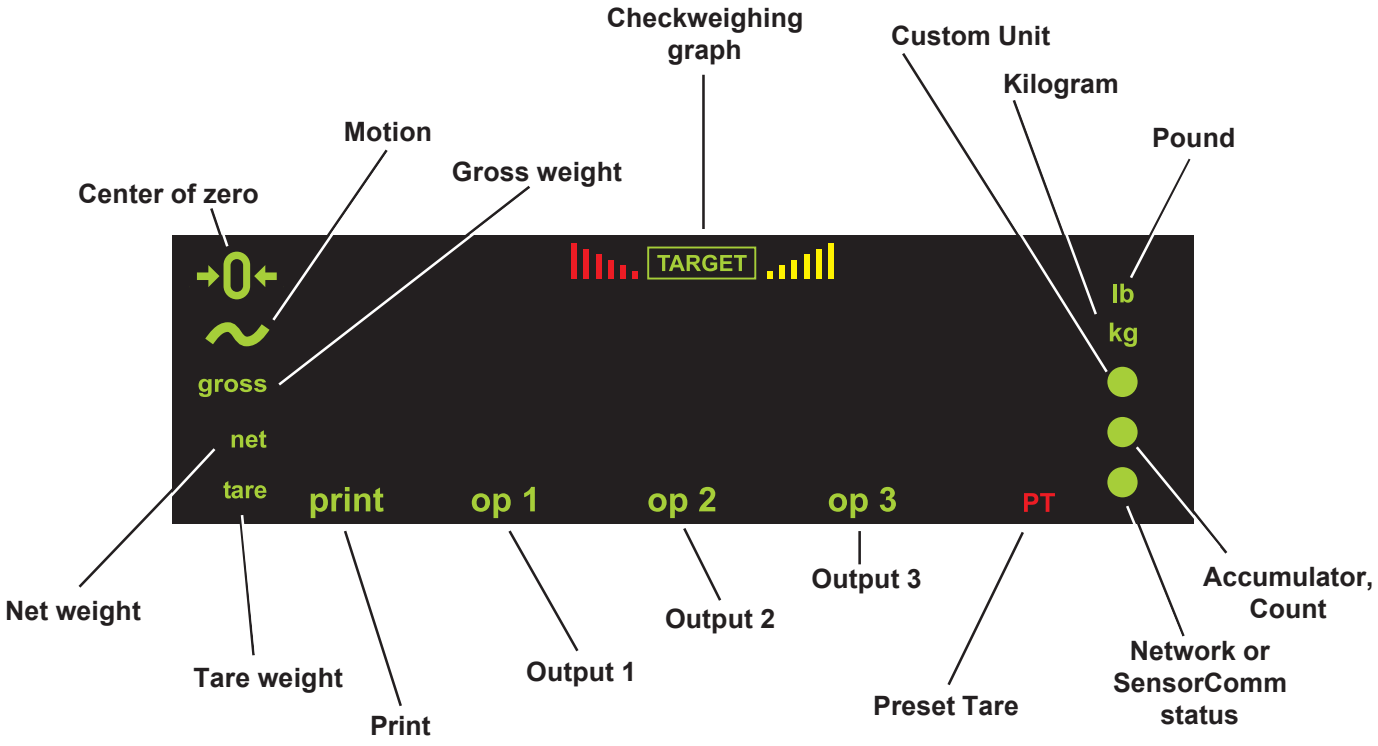
Press the **ENTER** key to accept displayed choices.

Press and release the **ON/OFF** key to turn the unit on. Press and hold the key until the unit turns off.

Use the numeric keypad to enter values.

Annunciators

There are several annunciators around the edge of the display. The illustration below explains each one.



Bottom LED color when configured for:

SCOM (SensorComm):
Red – a cell has been ghosted. Check the ghost log.
Green – a sensorcomm error has occurred. Print the error log.
Off – Scale is functioning normally.

Network 1 or 2:
Red – A network error has occurred. Check the network settings on the indicator and PLC, and reboot the indicator.
Green – The network connection has been established.
Amber – The network is ready for a connection, but no connection has been established.

Center of Zero	Lights when weight on the scale is within the zero range
Motion	Lights during scale motion.
Gross	Lights when gross weight is displayed
Net	Lights when net weight is displayed
Tare	Lights when tare weight is displayed
Print	Lights when print format sent through serial port
OP 1	Lights when output one is activated
OP 2	Lights when output two is activated
OP 3	Lights when output three is activated
PT	Lights when preset tare is active
Network & SensorComm Status	This is a configurable light to show status of the Net work 1, Network 2 or SensorComm. See note at left.
Accumulator, Count	Lights when an accumulation occurs and while in the count and peak applications
Custom Unit	Lights when a custom unit of measure is active
KG	Lights when kilograms is the active unit of measure
LB	Lights when pounds is the active unit of measure
Checkweigher	Lights when checkweighing application is active

Error Messages

The following are displays you may see if problems occur or if invalid operations are attempted with your indicator:

Display	Description
--------	Overrange weight. Scale is overloaded.
_______	Underrange weight. Scale is underloaded.
CAn't	The unit cannot perform a function. Displayed only while key is held down.
SEALEd	Displayed while a key is pressed when attempting to modify a sealed selection without edit privileges.

When you are in the *Linearity* menu item in the Service menu, you may see the following errors:

Linear points must be done in order from lightest weight to heaviest.

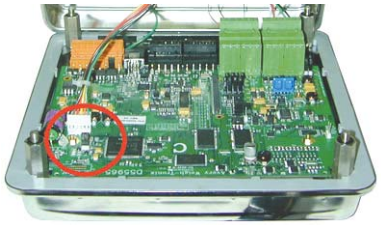
Display	Description
Err 0	Out of ascending order.
Err 1	Entered value is less than 1% of scale capacity.
Err 2	Entered value causes resolution of greater than 100,000 divisions.

When you are in the *Span* menu item in the Service menu, you may see the following errors:

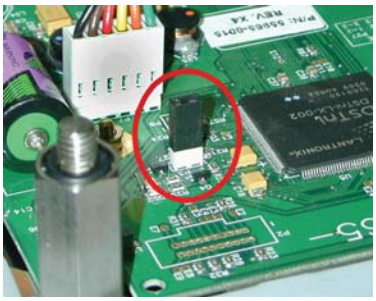
Display	Description
Err 0	Entered value is greater than the configured scale capacity.
Err 1	Entered value is less than 1% of scale capacity.
Err 2	Entered value causes resolution greater than 100,000 divisions
Err 3	No ADC counts OR in Overload OR in Underload } All these relate to mV/V input

Menu Structure

The indicator must be unsealed to change anything in the Service menu. Placing a jumper on P3 in the enclosure unseals the indicator. See photos below.



Sealed



Unsealed

There are several menus you use to setup or service the Model E1070. You access the menus through the front panel. Each menu is briefly described here. For in depth information about a menu, go to that menu's section in this manual.

User menu (password is 111)

The first menu covered in this manual is the **User** menu. This menu allows the user to:

- view software part numbers and revision level
- view mV/V output of the scale
- test the display and buttons
- test the serial ports
- audit the number of configurations and calibrations performed on the indicator

Service menu (password is 0701)

The second menu covered is the **Service** menu. In it you can:

- calibrate the scale system
- configure the metrological functions of the indicator
- enable or disable available applications
- configure serial ports
- test the display and buttons, test the serial ports, test the inputs and outputs
- audit the number of configurations and calibrations performed on the indicator
- configure inputs and outputs and options

Supervisor menu (password is 1793)

The third menu is the **Supervisor** menu. This section lets you:

- set time and date
- clear and/or print data gathered by each application
- choose special modes of operation for applications
- test the display and buttons, test the serial ports, test the inputs and outputs, analog output, pulse counter input and networks
- audit the number of configurations and calibrations performed on the indicator
- configure recipes, ingredients, sample mode, over/under values

Accessing the Menus

You must begin to key in the password within 10 seconds or the display returns to normal operation mode.

1. Access the menus by pressing and holding the **ESC** key for 3-5 seconds. See note on upper left of this page.

   PASS_ is displayed.

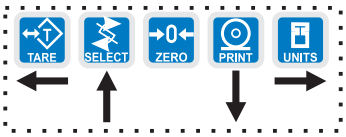
2. Key in the password of the menu you want to enter and press **ENTER**.

   The first item in that menu is displayed.

3. Use the navigation keys shown in the box near each menu to move through the menu.

User Menu

While in a menu, the fan graphs at the top of the display flash as a reminder.



The User menu lets you test various functions of the indicator. The User menu is shown in Figure 2.

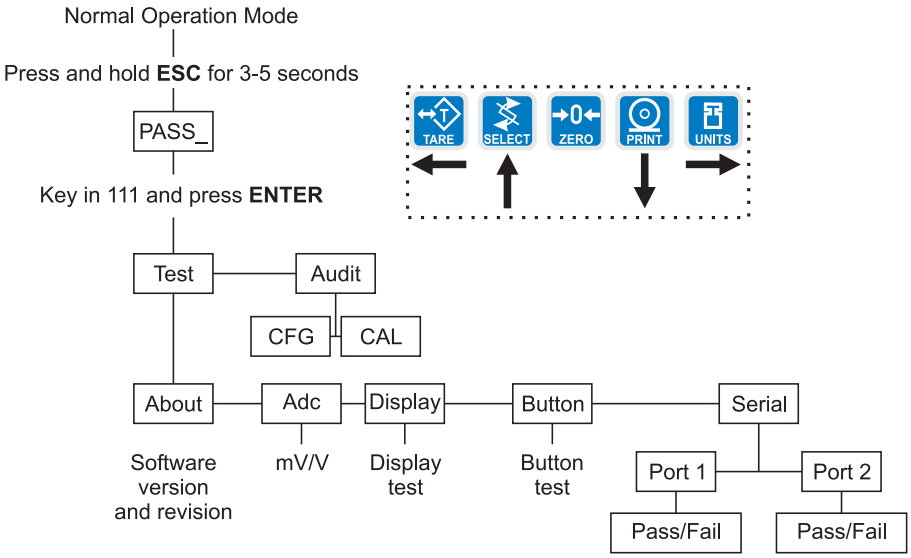


Figure 2
User menu flowchart

Following are specific instructions for the User menu.

1. Access the User menu by pressing and holding the **ESC** key for 3-5 seconds.

   PASS_ is displayed.

2. Key in the User menu password (111) and press **ENTER**.

   TEST is displayed.

3. Press the **PRINT** key.

   ABOUT is displayed. Press the **PRINT** key then the **UNITS** key repeatedly to view the part number and revision level for the software found in your indicator.

   Press **SELECT** key to return to ***ABOUT***.

4. Press the **UNITS** key…

   ADC is displayed. This stands for the analog to digital converter value in mV/Vs.

5. Press the **PRINT** key…

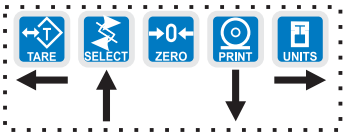
   The mV/V value coming into the indicator is displayed. This should change as weight on the scale changes. Press the ZERO key to zero the mV/V reading prior to diagnostics.

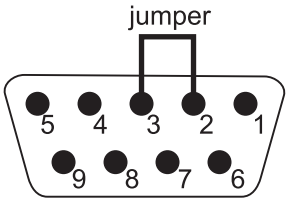
6. Press the **SELECT**…

   ADC is displayed.

7. Press the **UNITS** key…

   DISP is displayed. This is the display test item.





Serial port connector

8. Press the **PRINT** key to perform a dynamic test of the display…

   Display lights all digits and annunciators and continues to flash.

9. Press **ESC** key to stop the dynamic test.
10. Press the **UNITS** key…

    BUTTON is displayed. This is the button test item.

11. Press the **PRINT** key to perform a button test. Each key you press will be reflected on the display screen to confirm the button is functioning correctly. The **ESC** key is excluded from this test. It is used to stop the testing and return to the menu item
12. Press **ESC** key to stop the button test.

    BUTTON is displayed.

13. Press the **UNITS** key…

    SERIAL is displayed. This is the serial test item.

14. Press the **PRINT** key to access the serial test.

    PORT1 is displayed. If you jumper the transmit and receive lines on the serial port, as shown at left, and press the **PRINT** key, the display should show ***PASS***. If there is a problem the display will show ***FAIL***.

    Repeat this for PORT 2.

15. Press the **SELECT** key to exit the serial test.

    SERIAL is displayed.

16. Press the **SELECT** key…

    TEST is displayed.

17. Press the **UNITS** key…

    AUDIT is displayed.

18. Press the **PRINT** key…

    CFG is displayed. This stands for the configuration audit counter.

19. Press the **PRINT** key to see the number of times the configuration has been altered on this indicator.

Calibration and configuration counters cannot be reset.

20. Press the **SELECT** or **ENTER** key…

    CFG is displayed.

21. Press the **UNITS** key…

    CAL is displayed. This stands for the calibration audit counter.

22. Press the **PRINT** key…

    The number of times the indicator has been calibrated is displayed.

23. Press **ESC** twice to return to normal operation mode.

This completes the User menu.

Service Menu

Password for the Service menu is 0701.

While in a menu, the fan graphs at the top of the display flash as a reminder.

The first level of the Service menu is shown in Figure 3. Under these items you can do most of the configuration and calibration procedures to ready the indicator for use. Other items are covered in the Supervisor menu section later in this manual.

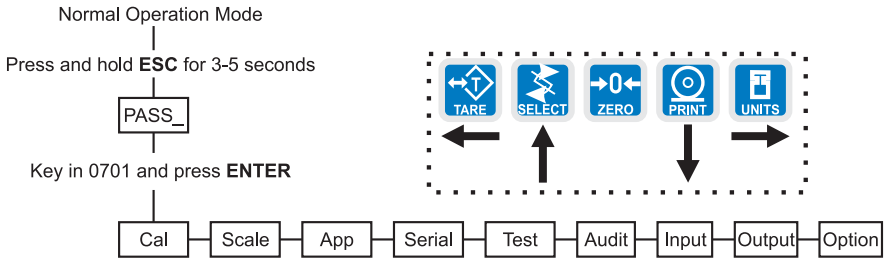


Figure 3
Service menu top level flowchart

Since the whole Service menu is quite large, it has been broken up into its individual submenus. Each submenu is illustrated in this section followed by specific instructions for that submenu.

CAL submenu for analog scales

If your system is using analog scales, use the menu shown in Figure 4. If your system is configured for SensorComm under the Service Menu>Scale> Source menu item, follow the CAL menu, Figure 15, in the section titled *CAL submenu for SensorComm scale* later in this manual.

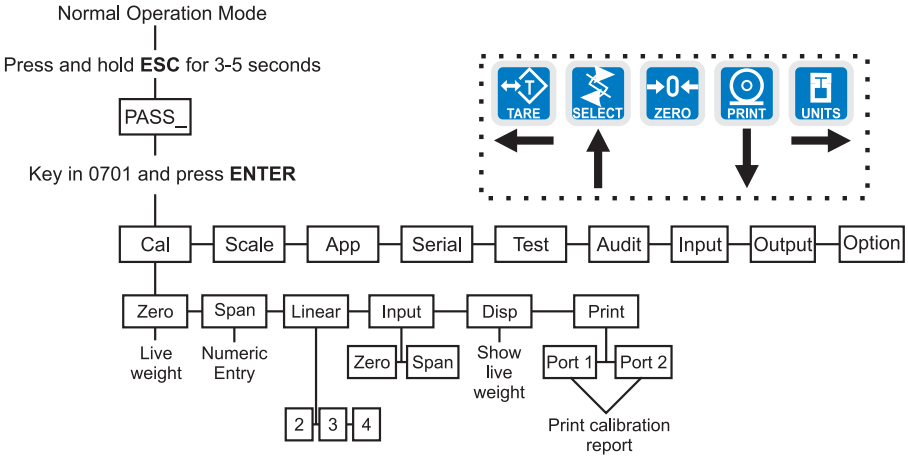


Figure 4
CAL submenu for analog scales

1. Access the Service menu…

   CAL is displayed.

2. Press the **PRINT** key…

   ZERO is displayed. Use this item to set the zero reference for the indicator/scale.

ZERO
(Setting Zero Reference Point)

Press the **ESC** *key to abort calibration.*

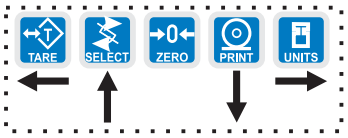
Press the **ESC** *key to abort calibration.*

3. Remove all weight from the scale and press the **ENTER** key…
   Live weight is shown.

4. Press the **ENTER** key to perform the zero procedure…
   BUSY is briefly displayed then the live weight which should be ***0***.

5. Press the **ENTER** key to save and return to the ZERO menu item…
   ZERO is displayed.

SPAN
(Setting Span)



1. Press the **UNITS** key…
   SPAN is displayed. Use this item to set the span for the indicator/scale.

2. Press the **PRINT** key…
   Current capacity is displayed.

3. Key in a new span weight value and press **ENTER**
   or
   press **ENTER** to accept current span weight value…
   The live weight is displayed.

4. Place the correct span weight on the scale and press **ENTER** when weight is stable.
   BUSY is briefly displayed then the weight.

5. Press the **ENTER** key to accept the calibration and return to the SPAN menu item…
   SPAN is displayed.

6. Press **ESC** to exit to normal weighing mode (You will be prompted to save the changes. Press **ENTER** to save changes)
   OR go to step 1 below.

LINEAR
(Linearization)

1. Press the **UNITS** key…
   LINEAR is displayed. Use this item to set extra calibration points.

2. Press the **PRINT** key…
   2 is displayed. This represents cal point 2.

3. Press the **ENTER** key to set this calibration point…
   A numeric value is displayed.

Linear points must be done in order from lightest weight to heaviest.

4. Key in a weight value for this calibration point and press the **ENTER** key.
   Live weight on the scale is displayed.

5. Place the test weight for this calibration on the scale and press **ENTER**.
   Busy is briefly displayed and then ***2***.

6. Press the **UNITS** key to move to the next calibration point…

   3 is displayed.

7. Repeat steps 3-6 for cal point 3 and 4.

   When you are done ***4*** will be displayed.

8a. Press the **SELECT** key to return to the LINEAR menu item.
OR

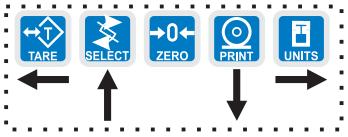
8b. Press the **ESC** key to return to normal operating mode. You will be prompted to save the changes. Press **ENTER** to save them or the **ESC** key to abort the save process and return to normal operating mode without saving calibration.

INPUT
(Input Calibration)

Use this item to hand enter zero and span calibration factors. This is useful if one indicator fails and is replaced with another but no test weights are available. Linearization factors **cannot** be entered.

To use this item you must have recorded the calibration factors from your previously installed E1070 indicator.

Calibration factors can be viewed under CAL>INPUT or you can print them out using the CAL>PRINT menu item.



1. Press the **UNITS** key…

   INPUT is displayed.

2. Press the **PRINT** key…

   ZERO is displayed.

3. Press the **PRINT** key…

   A numeric value is displayed.

4. Key in the zero factor from your previous indicator and press the **ENTER** key.

   BUSY is briefly displayed, then ***ZERO***.

5. Press the **UNITS** key…

   SPAN is displayed.

6. Press the **PRINT** key…

   A numeric value is displayed.

7. Key in the span factor from your previous indicator and press the **ENTER** key…

   A span weight is displayed.

8. Accept the span weight by pressing the **ENTER** key or key in a new span weight and press the **ENTER** key to accept it…

   BUSY is briefly displayed, then ***SPAN***.

9. Press the **SELECT** key to return to the INPUT menu item.

DISP
(Live Weight Display)

1. Press the **UNITS** key…

   DISP is displayed. Use this item to view the live weight on the scale without exiting the Service menu.

2. Press the **PRINT** key…

   The live weight is displayed.

3a. Press the **SELECT** key…

   DISP. is displayed.

   OR

3b. Press the **SELECT** key to move to the top of the Service menu…

   CAL is displayed.

PRINT
(Print a Calibration Report)

1. Press the **UNITS** key…

   PRINT is displayed. This item lets you print a calibration report. The information printed can be very useful in case of service issues later.

2. Press the **PRINT** key…

   PORT 1 is displayed. The other choice is ***PORT 2***. This allows you to choose a port through which the calibration report is printed.

3. Toggle between the choices using the **TARE** or **UNITS** key and press **ENTER** when your choice is displayed…

   The report is printed and the display returns to ***PRINT***.

4a. Press the **SELECT** key to return to the ***CAL*** item of the Service menu and continue with the Service menu instructions in the next section

   OR

4b. Press the **ESC** key to return to normal operation mode.

   SAVE is displayed.

5. Press the **ENTER** key to save changes or press the **ESC** key to exit the menu without saving.

This completes the CAL section of the Service menu for analog scales. If you have a SensorComm system, see the section *SensorComm Hardware Configuration and Calibration* for calibration and configuration information.

The next Service menu item, SCALE, is covered in the *SCALE Submenu* section.

SCALE submenu

Use this section of the Service menu for scale configuration. Figure 5 shows the flowchart of this menu item. Follow the directions and explanations below to set up these items.

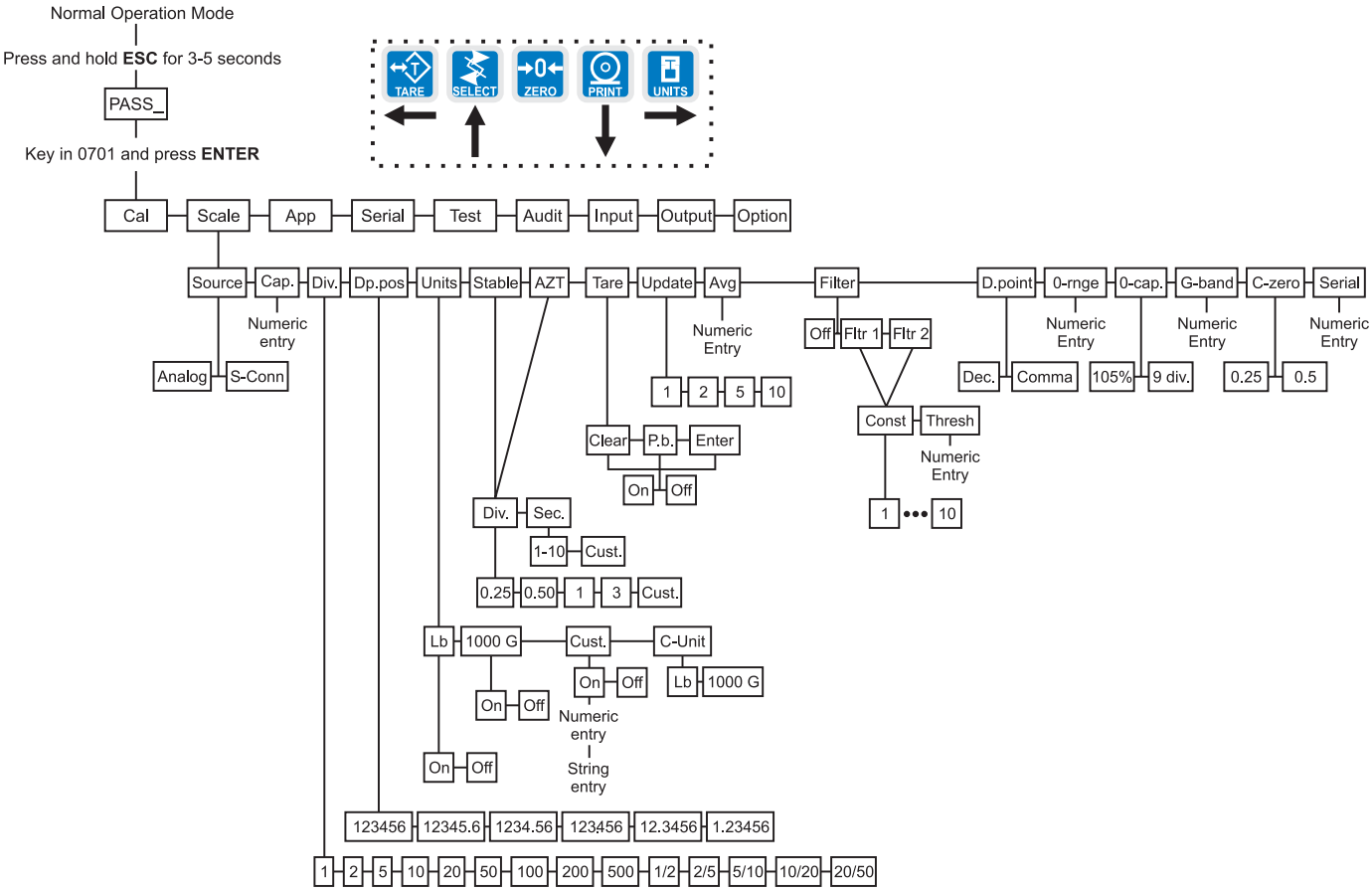


Figure 5
Scale submenu flowchart

Source (Analog or SensorComm)

Calibration instructions for Analog scales are in the section—**CAL submenu for analog scales**

Calibration instructions for SensorComm scales are in the section—**CAL submenu for SensorComm scales**

1. Access the Service menu…

   CAL is displayed.

2. Press the **UNITS** key…

   SCALE is displayed.

3. Press the **PRINT** key…

   SOURCE is displayed. Use this item to choose between an analog or SensorComm based system.

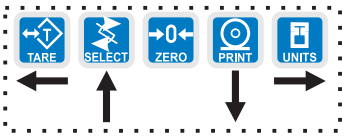
4. Press the **PRINT** key…

   The current setting is displayed.

5. Toggle between the Analog and Scom (North America only) choices using the **TARE** or **UNITS** key. When your choice is displayed press the **ENTER** key…

   SOURCE is displayed.

CAP.
(Capacity)



1. Press the **UNITS** key…

   CAP. is displayed. Use this item to set the capacity for the scale.

2. Press the **PRINT** key…

   The current capacity value is shown.

3. Press **ENTER** to accept this value or key in a new capacity and press **ENTER**…

   CAP. is displayed.

DIV.
(Division)

This item and the next one, ***DP.POS.***, set the division size.

1. Press the **UNITS** key…

   DIV. is displayed. This stands for the division value of your displayed weight.

2. Press the **PRINT** key…

   The current division value is shown.

3. Scroll through the choices by using the **TARE** or **UNITS** key.

   Pick from the following values; 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 value for the first half of the capacity and the second number is the division value 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 value of 5 and a decimal position of 12345.6, your division size will be .5.

4. When your choice is displayed, press **ENTER**.

   DIV. is displayed.

DP.POS.
(Decimal point position)

Use this item to set the decimal point position in the displayed weight.

1. Press the **UNITS** key…

   DP.POS. is displayed. This stands for decimal point position.

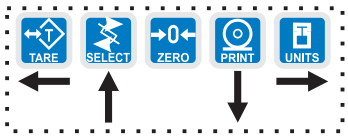
2. Press the **PRINT** key…

   The current decimal point position is shown. Choices available are; 123456, 12345.6, 1234.56, 123.456, 12.3456 and 1.23456.

3. Scroll through the choices by using the **TARE** or **UNITS** key. When your choice is displayed, press **ENTER**.

   DP.POS. is displayed.

UNITS
(Unit of measure)



You can have up to three units of measure active. They are lbs, kgs, or a custom unit of measure.

Follow these steps:

1. Press the **UNITS** key…

   UNITS is displayed.

2. Press the **PRINT** key…

   LB is displayed.

3. Turn each unit of measure ON or OFF by scrolling to the unit by using the **TARE** or **UNITS** key and pressing the **PRINT** key…

   The current state of the unit is displayed.

4. For lbs and kgs, toggle between ON or OFF by using the **TARE** or **UNITS** key. Press **ENTER** when your choice is displayed…

   Display returns to ***LBS*** or ***1000G***.

   If you choose to activate the custom unit of measure you will be prompted for a multiplier which defines the custom unit in relation to the calibration unit of measure and a string entry for a unit label. See note at left. Key the multiplier in and press **ENTER** to enter the value.

   String entry screen is displayed. Edit the string (up to seven characters long) to create a name for the custom unit of measure. For directions on string editing, see the section Extra Info: Print Format Editing. String editing is covered in that section.

5. Press **ENTER** key to accept the string values …

   CUST. is displayed.

6. Press the **UNITS** key…

   C-UNIT is displayed. This stands for calibration unit. Use this item to set the calibration unit of measure; lbs or kgs (1000 G).

7. Press the **PRINT** key…

   Current calibration unit is displayed. Choices are lb or 1000G.

8. Toggle between the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the choice…

   C-UNIT is displayed.

9. Press the **SELECT** key…

   UNITS is displayed.

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.

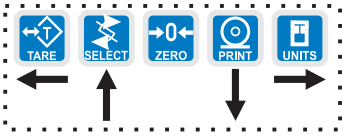
$$\frac{\text{one cal unit}}{\text{number of custom units}}$$

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.

STABLE
(Stability window)



If CUSTOM is selected, only fractional time between 0-10 seconds can be entered.

Example: 1.5 seconds, 2.25 seconds, etc.

Use this item to define the stability window in terms of ±X divisions for a period of time, in seconds, you set.

1. Press the **UNITS** key…

   STABLE is displayed.

2. Press the **PRINT** key…

   DIV. is displayed.

3. Press the **PRINT** key…

   The current division size is displayed. If a weight changes less than this number of divisions in the time period you select in the next steps, the motion light turns off and the weight is considered stable.

   You choices are 0.25, 0.5, 1, 3 and CUST. (custom)

4. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…

   DIV. is displayed for any choice other than CUST. If you pick CUST. go to step 4a. If you picked any other division size, go to step 5.

4a. If you pick a custom window size you are shown the current value. Key in a custom size and press **ENTER** to save the custom value…

   DIV. is displayed.

5. Press the **UNITS** key…

   SEC. is displayed. Use this item to set the time window for stability determination.

6. Press the **PRINT** key…

   The current time window size is displayed. If a weight changes less than this number of divisions, set above, in the time period you select, the motion light turns off and the weight is considered stable.

   You choices are 1-10 seconds and CUST. (custom)

7. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…

   SEC. is displayed for any choice other than CUST. If you pick CUST. go to step 7a. If you picked any other division size, got to step 8.

7a. If you pick a custom time you are shown the current value. Key in a custom time and press **ENTER** to save the custom value…

   SEC. is displayed.

8. Press the **SELECT** key…

   STABLE is displayed.

AZT
(Automatic Zero Tracking)

Use this item to set the division size and 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.

1. Press the **UNITS** key…

   AZT is displayed.

2. Press the **PRINT** key…

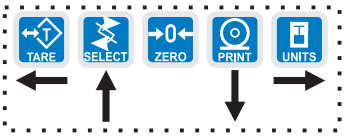
   DIV. is displayed.

3. Press the **PRINT** key…

   The current division size is displayed.

   You choices are 0.25, 0.5, 1, 3 and CUST. (custom)

For the purpose of explaining all items in the menus, these instructions show an orderly accessing of each part of the menu. You do not have to access an item in this way. Use the navigation buttons to skip around to the item you want to change or view.



4. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…

   DIV. is displayed for any choice other than CUST. If you pick CUST. go to step 4a. If you picked any other division size, got to step 5.

4a. If you pick a custom window size you are shown the current value. Key in a custom size and press **ENTER** to save the custom value…

   DIV. is displayed.

5. Press the **UNITS** key…

   SEC. is displayed. Use this item to set the time window for stability determination.

6. Press the **PRINT** key…

   The current time window size is displayed.

   You choices are 1-10 seconds and CUST. (custom)

7. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…

   SEC. is displayed for any choice other than CUST. If you pick CUST. go to step 7a. If you picked any other division size, got to step 8.

7a. If you pick a custom time you are shown the current value. Key in a custom time and press **ENTER** to save the custom value…

   SEC. is displayed.

If CUSTOM is selected, only fractional time between 0-10 seconds can be entered.

Example: 1.5 seconds, 2.25 seconds, etc.

8. Press the **SELECT** key…

   AZT is displayed.

TARE
(Tare parameters)

Use this item to set the tare function parameters;

Clear tare — If you enable (ON) this item, the tare will be automatically cleared when the weight falls below the value set under the G-Band menu item.

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

Enter tare — If you enable this item (ON), you can enter a known tare weight by keying in a weight and pressing the **TARE** key.

Follow these steps to set the tare item:

1. Press the **UNITS** key…
   TARE is displayed.
2. Press the **PRINT** key…
   CLEAR is displayed.
3. Press the **PRINT** key…
   ON or ***OFF*** is displayed. Use this to enable or disable the Clear tare item.
4. Toggle between the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…
   CLEAR is displayed.
5. Press the **UNITS** key…
   P.B. is displayed.
6. Press the **PRINT** key…
   ON or ***OFF*** is displayed. Use this to enable or disable the Pushbutton tare item.
7. Toggle between the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…
   P.B. is displayed.
8. Press the **UNITS** key…
   ENTER is displayed.
9. Press the **PRINT** key…
   ON or ***OFF*** is displayed. Use this to enable or disable the Enter tare item.
10. Toggle between the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…
    ENTER is displayed.
11. Press the **SELECT** key…
    TARE is displayed.

UPDATE
(Display Update Rate)

Use this item to set the number of display updates/second. Choices are 1, 2, 5 and 10 times/second. **10 is the default value.**

1. Press the **UNITS** key…

   UPDATE is displayed.

2. Press the **PRINT** key…

   Current update rate is displayed. Choices are 1, 2, 5 and 10 times per second.

3. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice. .

   UPDATE is displayed.

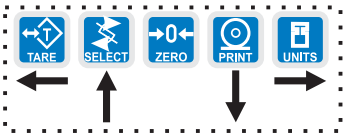
The AVG and FILTER menu items discussed below are best explained by an example of how the filtering works on this indicator.

Filtering is used to counteract vibration of the scale. The A-D weight conversion happens 100 times per second in the E1070. AVG is the number of conversions you want to average. For example, if you pick 50, the unit will average the weight values from the last 50 conversions or ½ second and uses that value for displayed data.

If you turn the filtering on you need to set the Constant. Typical values are between 1-10. Set the number low for small vibration problems and higher for more dampening effect.

The purpose of the Threshold is so the indicator will respond quickly to large weight changes. Threshold is the amount of weight change, in calibration units, beyond which the filter will be temporarily disabled. For example, if you set this to 10 lbs, a weight change over 10 pounds occurring during the sample time (½ sec. in our example) will disable the filter until the weight change during the sample time drops below 10 lbs.

AVG
(Averaging of A-D)



AVG is the number of conversions you want to average for the weight that is displayed. **20 is the default value.**

1. Press the **UNITS** key…

   AVG is displayed.

2. Press the **PRINT** key…

   The current value is displayed.

3. Press **ENTER** to accept the current value

   OR

   Key in a new value, between 0 and 512, and press **ENTER** to accept it…

   BUSY is briefly displayed, then ***AVG***.

FILTER
(Noise filtering)

Use this item to set the noise filtering parameters.

1. Press the **UNITS** key…

   FILTER is displayed.

2. Press the **PRINT** key…

   Current setting is displayed. Choices are ***OFF***, ***FLTR 1*** and ***FLTR 2***.

   Off means no filtering. FLTR 1 filtering is slower response to weight in a longer time period with improved accuracy. FLTR 2 filtering is faster response to weight in a short time.

3. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…

   If you choose ***OFF***, display returns to ***FILTER***. You can continue to the next menu item (d.Point).

   If you choose ***FLTR 1*** or ***2***, continue to step 4.

4. With ***FLTR 1*** or ***FLTR 2*** displayed, press the **PRINT** key…

   CONST is displayed. This stands for Constant and is one of two filtering parameters you need to set.

5. Press the **PRINT** key…

   Current value is displayed. For the Constant value you can pick a value between 1 and 10. Set the number low for small vibration problems and use a higher setting for more dampening effect.

6. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…

   CONST is displayed.

A THRESHOLD setting of 0 will turn filtering on all the time.

7. Press the **UNITS** key…

   THRESH is displayed. This stands for Threshold, the 2nd filtering parameter.

   Threshold causes the indicator to respond quickly to large weight changes. Threshold is the amount of weight change, in calibration units, beyond which the filtering will be temporarily disabled. For example, if you set this to 10 lbs, a weight change over 10 pounds occurring during the sample time will disable the filtering until the weight change during the sample time drops below 10 lbs.

8. Press the **PRINT** key…

   Current value is displayed.

9. Key in a value. Press the **ENTER** key…

   THRESH is displayed.

10. Press the **SELECT** key…

    FLTR 1 or ***FLTR 2*** is displayed.

11. Press the **SELECT** key…

    BUSY is displayed briefly then ***FILTER***. Whichever filter you set up becomes the active filter for the indicator.

D.POINT (Decimal point)

Use this item to toggle between decimal point and a comma for the fraction delimiter for the display. For example, if you pick ***DEC*** the display will show 10.5. If you pick ***COMMA***, the display will show 10,5.

Example:
decimal = 000.00
comma = 000,00

1. Press the **UNITS** key…

   D.POINT is displayed.

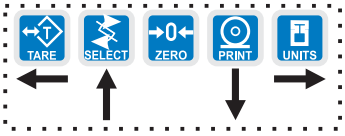
2. Press the **PRINT** key…

   The current setting is displayed.

3. Toggle between the choices, ***DEC*** or ***COMMA***, by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the choice…

   D.POINT is displayed.

0-RANGE
(Zero range)



Use this item to key in a percentage of capacity, within which the **ZERO** key will zero the scale.

1. Press the **UNITS** key…
   0-RNGE is displayed.
2. Press the **PRINT** key…
   The current setting is displayed. This is a percentage of capacity.
3. Key in a new value and press **ENTER** to accept the value
   OR
   Press the **ENTER** key to accept the displayed choice…
   0-RNGE is displayed.

O-CAP.
(Over capacity range)

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

1. Press the **UNITS** key…
   O-CAP. is displayed.
2. Press the **PRINT** key…
   The current setting is displayed.
3. Toggle between the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the choice…
   O-CAP. is displayed.

G-BAND
(Gross zero band)

Use this item to set the gross zero band. This is a parameter used to trigger the tare clear function covered previously in the Scale submenu.

You can enter values between 0 and 100 divisions.

1. Press the **UNITS** key…
   G-BAND is displayed.
2. Press the **PRINT** key…
   The current setting is displayed.
3. Key in a new value and press **ENTER** to accept the value
   OR
   Press the **ENTER** key to accept the displayed choice…
   G-BAND is displayed.

C-ZERO
(Center of zero window)

This item is to set the window size for the center-of-zero annunciator. You can choose between ±¼ and ±½ division. When the weight falls within the window size, the center-of-zero annunciator lights.

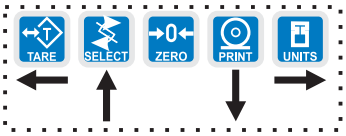
1. Press the **UNITS** key…
   C-ZERO is displayed.
2. Press the **PRINT** key…
   The current setting is displayed.
3. Toggle between the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the choice…
   C-ZERO is displayed.

SERIAL
(Serial number entry)

Use this item to enter the serial number for your indicator. This value is used in some serial outputs and reports for record keeping purposes.

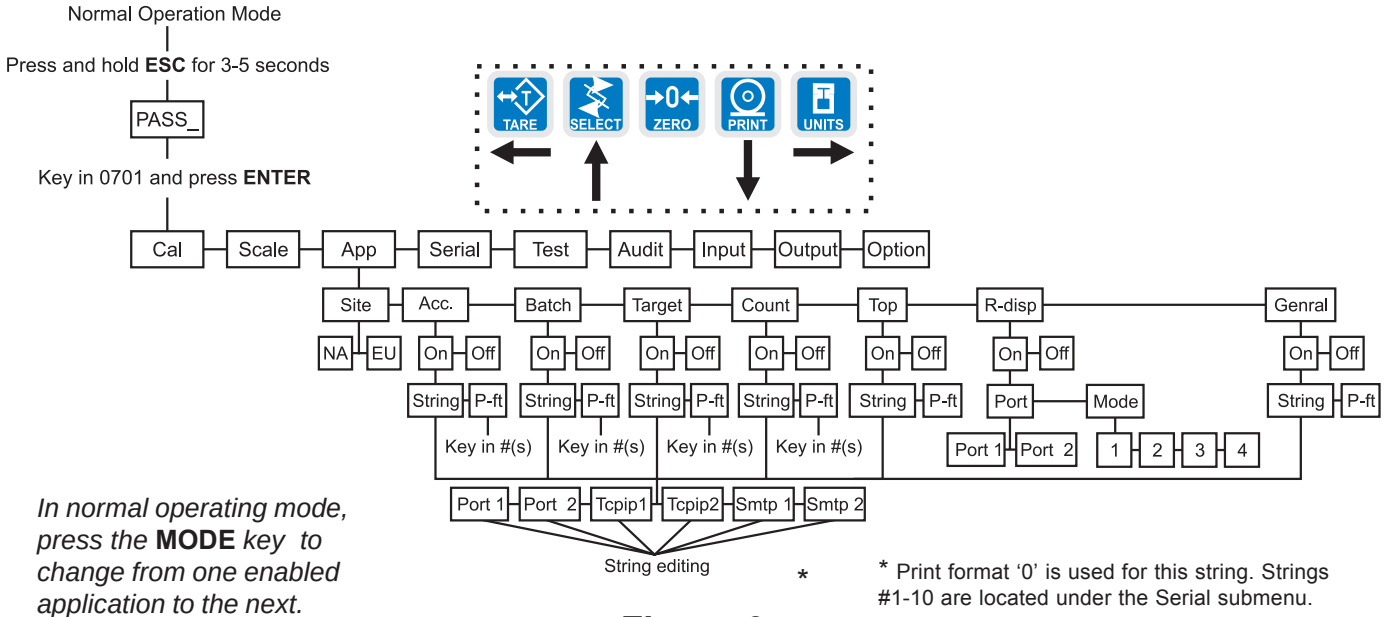
1. Press the **UNITS** key…
   SERIAL is displayed.
2. Press the **PRINT** key…
   The current setting is displayed.
3. Key in the serial number of your indicator and press **ENTER** to accept the value
   OR
   Press the **ENTER** key to accept the displayed choice…
   SERIAL is displayed.
4. This completes the SCALE portion of the Service menu. You can exit to normal weighing mode or continue on to the next menu item, APP. To exit, go to step 5. To continue, go to step 7.
5. Press the **ESC** key.
   SAVE is displayed.
6. Press **ENTER** to save the changes you've made
   OR
   Press **ESC** to abort the changes…
   Display returns to normal operation mode.
7. Press the **SELECT** key…
   SCALE is displayed.
8. Press the **UNITS** key…
   APP is displayed.

The serial number of your indicator can be found on the affixed tag on the outside of the indicator case.



APP submenu

The next section of the Service menu is the APP submenu. See Figure 6. This menu lets you choose the default parameters for your location and also lets you enable or disable each application available in this indicator. Under each enabled application you can edit the default print format (#0) and choose which formats (#0-10) to print and through which port. You can configure the extra formats (#1-10) in the SERIAL submenu item in the Service menu.



* Print format '0' is used for this string. Strings #1-10 are located under the Serial submenu.

In normal operating mode, press the **MODE** *key to change from one enabled application to the next.*

Figure 6
APP (applications) submenu

Follow these steps to access each item in the APP menu and to understand what they do and how to set them:

Applications are enabled in the Service menu but you do each application's setup in the Supervisor menu.

1. Access the Service menu…
   CAL is displayed.

2. Press the **UNITS** key twice…
   APP is displayed.

SITE
(Setting site defaults)

3. Press the **PRINT** key…
   SITE is displayed.

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

Master Reset

4. Press the **PRINT** key…
   Current setting is displayed.

5. Toggle between the choices by using the **TARE** or **UNITS key** and press the **ENTER** key to accept the displayed choice. .
   SITE is displayed.

   See note at left.

If you change the site setting and save the change, then change it back to the original site and save, the defaults will be reset to factory defaults.

This will not affect calibration, print formats or recipes.

ACC
(Accumulator application)

1. Press the **UNITS** key…

   ACC. is displayed. This stands for the Accumulator application.

2. Press the **PRINT** key…

   ON or ***OFF*** is displayed, depending on the current setting.

3. Press the **SELECT** key to back out of this item without enabling it
   OR
   Press the **ENTER** key to enable this application…

   STRING is displayed. This is where you can choose a port to print through and view and/or edit the default print format.

If you choose TCPIP1 or SMTP1, Net 1 under OPTION>NETS must be set to E-net-1 or E-net-4.

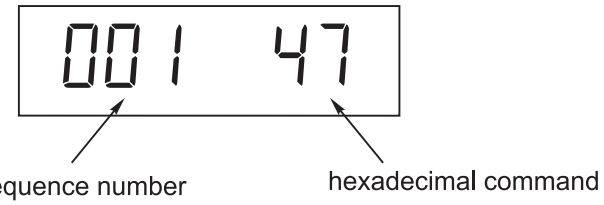
If you choose TCPIP2 or SMTP2, Net 2 under OPTION>NETS must be set to E-net-1 or E-net-4.

4. With ***STRING*** displayed, press the **PRINT** key…

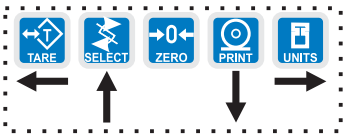
   The current port setting appears. Choices are Port 1, Port 2, TCPIP1, TCPIP2, SMTP 1 or SMTP 2. See note at left.

5. Toggle between the choices by using the **TARE** or **UNITS** key and press **ENTER** to accept the displayed choice. .

   A string of numbers appears. See note at left and example below.



There are default print formats for each application. These are all given a format number = 0.



These numbers represent the default print format in numbered sequence of hexadecimal commands. Each hexadecimal command represents one printing character or print command. These numbers allow you to customize the print output of the indicator.

See the *Extra Info: Print Format Editing* section for full explanation and instruction on modifying a print format.

6. Modify the print format as needed and press the **ENTER** key when finished. .

   STRING is displayed.

You can exit the Service menu at any time by pressing the **ESC** *key. When* ***SAVE*** *appears on screen you can press* **ESC** *to lose any changes or press* **ENTER** *to save the changes and return to normal operating mode.*

7. Press the **UNITS** key…

   P-FT is displayed. This stands for print format. You can send one or more print formats through a port each time the **PRINT** key is pressed. This is the item you use to define which formats get printed.

8. Press the **PRINT** key…

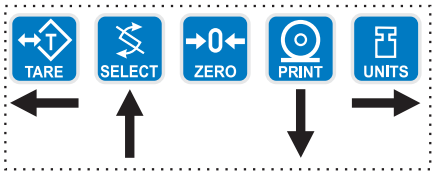
   Numeric entry screen is displayed.

When you key in a 1 followed by a 0, the indicator is smart enough to know this is a 10 not separate 1 and 0 formats.

Always enter format numbers in ascending order.

9. Key in the format numbers you want printed. See note at left. For example, to print formats 0, 1, and 4, key in 014 and press the **ENTER** key. To print the 0, 1, 3, and 10 formats, key in 01310 and press the **ENTER** key…

   P-FT is displayed.



10. Press the **SELECT** key…
    ACC. is displayed.

11. Press the **UNITS** key…
    BATCH is displayed.

BATCH
(Batch application)

1. From previous step 11, press the **PRINT** key…
   Repeat steps 2-9 from the *ACC (Accumulator application)* section to set up the Batch application.

2. Press the **SELECT** key…
   BATCH is displayed.

In normal operating mode, press the **MODE** *key to change from one enabled application to the next.*

3. Press the **UNITS** key…
   TARGET is displayed.

TARGET
(Checkweighing application)

1. Press the **PRINT** key…
   Repeat steps 2-9 from the *ACC (Accumulator application)* section to set up the Target application.

2. Press the **SELECT** key…
   TARGET is displayed.

3. Press the **UNITS** key…
   COUNT is displayed.

COUNT
(Counting application)

1. Press the **PRINT** key…
   Repeat steps 2-9 from the *ACC (Accumulator application)* section to set up the Target application.

You can exit the Service menu at any time by pressing the **ESC** *key. When* ***SAVE*** *appears on screen you can press* **ESC** *to lose any changes or press* **ENTER** *to save the changes and return to normal operating mode.*

2. Press the **SELECT** key…
   COUNT is displayed.

3. Press the **UNITS** key…
   TOP is displayed.

TOP
(Peak hold application)

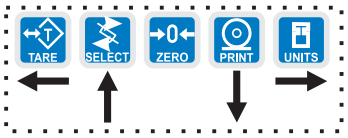
1. Press the **PRINT** key…
   Repeat steps 2-9 from the *ACC (Accumulator application)* section to set up the Target application.

2. Press the **SELECT** key…
   TOP is displayed.

3. Press the **UNITS** key…
   R-DISP is displayed.

R-DISP
(Remote Display)

In normal operating mode, press the **MODE** *key to change from one enabled application to the next.*



1. From previous step 3 in section *TOP (Peak hold application)*, press the **UNITS** key…

   R-DISP is displayed. This stands for remote display. Use this item to set up your indicator as a remote display for another indicator.

2. Press the **PRINT** key…

   ON or ***OFF*** is displayed, depending on the current setting.

3. Press the **PRINT** key…

   PORT is displayed. Use this item to select which port the master indicator will use to communicate with this remote display.

4. Press the **PRINT** key…

   The current port selection is displayed.

5. Toggle between the choices by using the **TARE** or **UNITS** key. Press the **ENTER** key when your choice is displayed…

   PORT is displayed.

6. Press the **UNITS** key…

   MODE is displayed. Use this item to configure how the remote will operate.

7. Press the **PRINT** key…

   Current mode value is displayed.

   MODE 1 Indicator displays gross annunciator, weight and units annunciator. This is an emulation of the RD4100 remote display.

   MODE 2 Indicator does the same thing as Mode 1 plus annunciators reflect the main display status.

   MODE 3 Indicator acts as Mode 1 plus the following keys work; **TARE**, **SELECT**, **ZERO**, **PRINT** and **UNITS**.

   MODE 4 Indicator acts the same as in Mode 3 plus all the annunciators reflect the main display status

8. Scroll through the choices using the **TARE** or **UNITS** key. When your choice is displayed, press the **ENTER** key…

   MODE is displayed.

GENRAL
(General Weighing Application)

1. Press the **SELECT** key repeatedly until…

   R-DISP is displayed.

2. Press the **UNITS** key…

   GENRAL is displayed. This is the general weighing application. Repeat steps 2-9 from the *ACC (Accumulator application)* section to set up the General weighing application. This is the default application for the indicator upon arrival from the factory.

3. Press the **SELECT** key…

   GENRAL is displayed.

4. Press the **ESC** key to exit the Service menu…

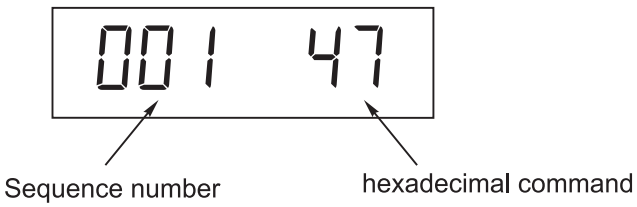
   SAVE is displayed.

5. Press **ENTER** to save your changes or press **ESC** to abort any changes made in the Service menu…

   BUSY flashes until the indicator returns to normal operation mode.

This completes the APP menu.

Extra Info:
Print Format Editing



The first three numbers are the sequence of the print commands. The last two characters are the hexadecimal number for the print command.

Use the keys as described in Figure 7 to scroll through the sequence and change the hex. character value.

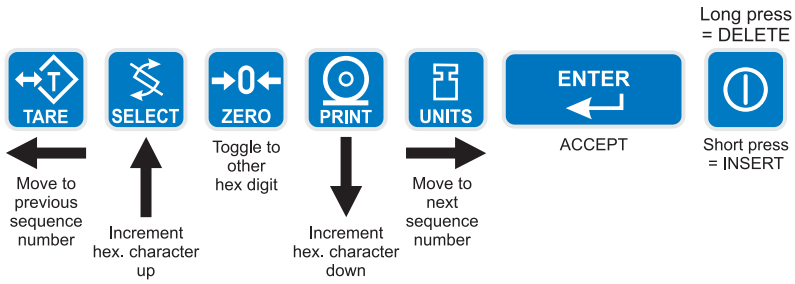


Figure 7
Key legend for hex editing

TARE key- moves to the previous sequence number
SELECT key - increments hex character up
ZERO key- Toggles between first and second hex digit
PRINT key- decrements hex character down
UNITS key- moves right through the print string
ENTER key- Accepts print string and exits edit mode
ON/OFF key- A short key press inserts a new character in front of the displayed character. Press and hold to delete the currently displayed hex character.

Hex values of 7F (127 decimal) and below are printable characters and can be seen in Table 1. Hex values from 80 (128 decimal) to FF (255 decimal) is for print command tokens and can be seen in Table 2. See note at left.

The default print formats for each application is shown on the next page.

Attention

FF is the hex. value for End of String (EOS). When this value is entered in a print format, any values beyond this in the sequence are ignored and the display will wrap back to the 001 item.

You can overwrite the FF value and use up to the maximum string length if so desired. In the E1070 the maximum sequence length is 256. However, the last character in the print format must be FF. Be sure to add the FF character if it is removed.

Print Formats 1-8 are for the Zebra Thermal printer. See examples on the following pages.

Print Formats 9-15 are for a standard ASCII characters for use with dot matrix printer.

Print Formats 9 & 10

```
G  123456 lb

{ACT}{DSP}{UN}<CR><LF>{EOS}
```

Accumulator (Print Format 11), Batching (12) and Checkweigher (13) all use the following:

```
G  123456 lb

{ACT}{DSP}{UN}<CR><LF>{EOS}
```

Counting, Print Format 14

```
Piece Count:      48

Piece Count: {CNT}<CR><LF>{EOS}
```

Peak Print Format 15

```
123456 lb

{PWT} {UN}<CR><LF>{EOS}
```

Remote Display Print Format 16

```
G  123456 lb

{ACT} {DSP} {UN}<CR><LF>{EOS}
```

The following are the default print formats are for the corresponding “Mode” setting in the serial port configuration menu.
17 Port 1 Enquire (HEX05)
18 Port 1 Broadcast
19 Port 1 RD4100
20 Port 2 Enquire (HEX05)
21 Port 2 Broadcast
22 Port 2 Remote display

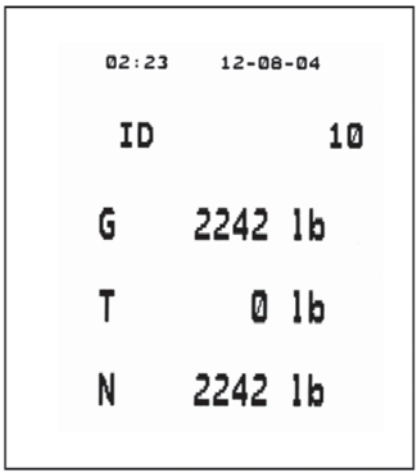
```
G  123456 lb

{ACT} {DSP} {UN}<CR><LF>{EOS}
```

Thermal Labels Print Formats

Format 1, 2 & 3

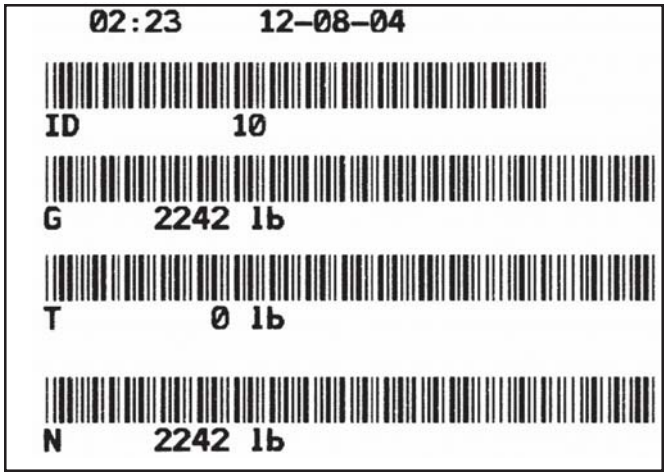
```
Time  Date
G     Gross Weight
T     Tare Value
N     Net Weight
```

Format 1 label 1.25” Wide x 1.00” Long
Format 2 label 2.50” Wide x 4.00” Long
Format 3 label 4.00” Wide x 6.00” Long



Print Format 4, same as above with barcode.

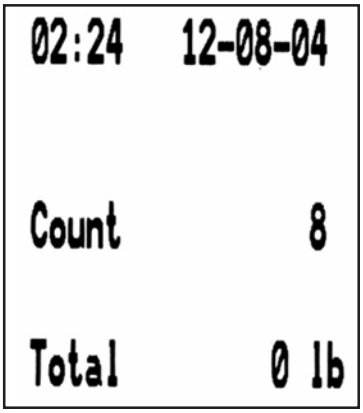
Label Size:
2.50” Wide
4.00” Long



Print Formats 5, 6 & 7

```
Time  Date
PLU Totals Information
Gross Total Accumulator
```

Format 5 label 1.25” Wide x 1.00” Long
Format 6 label 2.50” Wide x 4.00” Long
Format 7 label 4.00” Wide x 6.00” Long



Print Format 8, same as above with barcode.

Label Size
2.50” Wide
4.00” Long

Table 1
Printable characters chart

Code #	Cont. Char.	Print Char.	Hex	Code #	Cont. Char.	Print Char.	Hex	Code #	Cont. Char.	Print Char.	Hex
0	NUL		00	045	-	-	2D	090	Z	Z	5A
01	SOH	☺	01	046	.	.	2E	091	[	[	5B
02	STX	☻	02	047	/	/	2F	092	\	\	5C
03	ETX	♥	03	048	0	0	30	093	]	]	5D
04	EOT	♦	04	049	1	1	31	094	^	^	5E
05	ENG	♣	05	050	2	2	32	095	_	_	5F
06	ACK	♠	06	051	3	3	33	096	`	`	60
07	BEL		07	052	4	4	34	097	a	a	61
08	BS		08	053	5	5	35	098	b	b	62
09	HT		09	054	6	6	36	099	c	c	63
010	LF	LF	0A	055	7	7	37	0100	d	d	64
011	VT	♂	0B	056	8	8	38	0101	e	e	65
012	FF	FF	0C	057	9	9	39	0102	f	f	66
013	CR	CR	0D	058	:	:	3A	0103	g	g	67
014	S0	♫	0E	059	;	;	3B	0104	h	h	68
015	S1	☼	0F	060	<	<	3C	0105	i	i	69
016	DLE	4	10	061	=	=	3D	0106	j	j	6A
017	DC1	3	11	062	>	>	3E	0107	k	k	6B
018	DC2	ø	12	063	?	?	3F	0108	l	l	6C
019	DC3	Ø	13	064	@	@	40	0109	m	m	6D
020	DC4	ß	14	065	A	A	41	0110	n	n	6E
021	NAK	§	15	066	B	B	42	0111	o	o	6F
022	SYN		16	067	C	C	43	0112	p	p	70
023	ETB	—	17	068	D	D	44	0113	q	q	71
024	CAN	↑	18	069	E	E	45	0114	r	r	72
025	EM	↓	19	070	F	F	46	0115	s	s	73
026	SUB	→	1A	071	G	G	47	0116	t	t	74
027	ESC	←	1B	072	H	H	48	0117	u	u	75
028	FS	—	1C	073	I	I	49	0118	v	v	76
029	GS	—	1D	074	J	J	4A	0119	w	w	77
030	RS	5	1E	075	K	K	4B	0120	x	x	78
031	US	6	1F	076	L	L	4C	0121	y	y	79
032	SP		20	077	M	M	4D	0122	z	z	7A
033	!	!	21	078	N	N	4E	0123	{	{	7B
034	"	"	22	079	O	O	4F	0124	|	|	7C
035	#	#	23	080	P	P	50	0125	}	}	7D
036	$	$	24	081	Q	Q	51	0126	~	~	7E
037	%	%	25	082	R	R	52	0127	DEL	□	7F
038	&	&	26	083	S	S	53				
039	'	'	27	084	T	T	54				
040	(	(	28	085	U	U	55				
041	)	)	29	086	V	V	56				
042	*	*	2A	087	W	W	57				
043	+	+	2B	088	X	X	58				
044	,	,	2C	089	Y	Y	59				

Table 2

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

SERIAL submenu

The next section of the Service menu is the SERIAL submenu. See Figure 8. This menu lets you choose the configure the serial ports and create custom print formats #1-10.

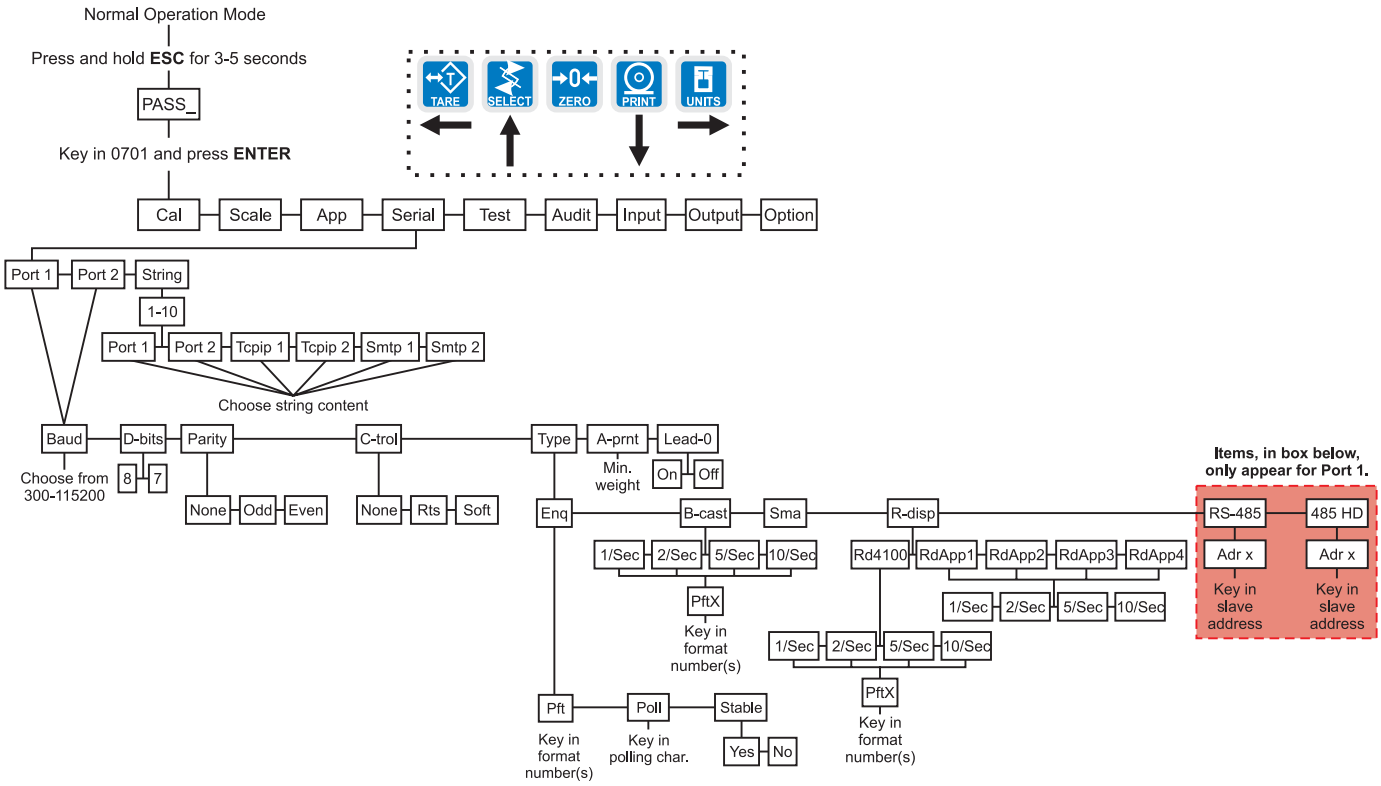


Figure 8
SERIAL (serial communication) submenu

The default serial port parameters are 9600 baud, 8 databits, no parity and 1 stop bit.

Stop bits for the serial communication are preset to 1 stop bit. This is not configurable.

Follow these steps to access each item in the SERIAL menu and to understand what they do and how to set them:

1. Access the Service menu…

   CAL is displayed.

2. Press the **UNITS** key repeatedly until…

   SERIAL is displayed.

3. Press the **PRINT** key…

   PORT 1 is displayed.

Port 1 or Port 2

4. Scroll through the other choices, ***PORT 2*** and ***STRING***, by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice. If you choose ***PORT 1*** or ***PORT 2***, continue with the rest of this step. If you choose ***STRING***, go to the section *STRING (Custom print formats)*.
   All the port configuration items are identical for Port 1 and Port 2 except port 1 has two additional TYPE selections (RS-485 and 485HD). Use the following steps to configure each port.

   BAUD is displayed.

   Use this item to set the baud rate.

BAUD
(Baud rate)

5. Press the **PRINT** key …

   Current baud rate is displayed. Choices are from 300 to 115,200. Default is 9600.

6. Scroll the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice. .

   BAUD is displayed.

D-BITS
(Data bits)

1. Press the **UNITS** key…

   D-BITS is displayed. Use this item to set the data bits value.

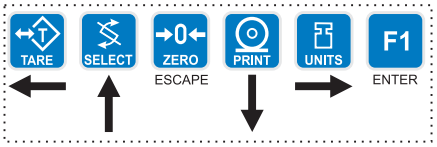
2. Press the **PRINT** key…

   7 or ***8*** is displayed.

3. Toggle between the choices by using the **TARE** or **UNITS key** and press the **ENTER** key to accept the displayed choice. .

   D-BITS is displayed.

PARITY
(Parity setting)



1. Press the **UNITS** key…

   PARITY is displayed. Use this item to set parity.

2. Press the **PRINT** key…

   NONE, ***ODD*** or ***EVEN*** is displayed.

3. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice. .

   PARITY is displayed.

C-TROL
(Handshakecontrol)

1. Press the **UNITS** key…

   C-TROL is displayed. Use this item to set parity. Use this item to set the handshake control.

2. Press the **PRINT** key…

   NONE, ***RTS*** or ***SOFT*** (Xon/Xoff) is displayed.

3. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice. .

   C-TROL is displayed.

TYPE
(Serial port mode)

1. Press the **UNITS** key…

   TYPE is displayed. Use this item to set the port mode.

2. Press the **PRINT** key…

   Current setting is displayed. These are the choices you scroll through in step 3:

   ENQ This stands for enquire. When an appropriate enquire code is sent to the indicator, the configured print format is sent through the port.

   B-CAST This stands for broadcast. If this is enabled, the indicator will send out the configured print format at the configured rate whenever scale weight is stable.

   SMA Scale Manufacturer's Association protocol. See Table 3.

   R-DISP This stands for remote display. If this is enabled, you can pick the type of remote display info to send and the rate the info is sent. This choice sends info continuously, regardless of the motion on the scale.

   RS-485 SMA protocol over an RS-485 multidrop connection (Port 1 only)

   485 HD SMA protocol over an RS-485 half-duplex multidrop connection (Port 1 only)

Choosing R-DISP in the Serial menu will configure the HOST indicator. The remote display indicator is configured by selecting the R-DISP application in the APP submenu.

3. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice. .

   If you pick:

   ENQ go to *ENQ* section below
   B-CAST go to *B-CAST* section below
   SMA go to *SMA* section below
   R-DISP go to *R-DISP* section below
   RS-485 (for port 1 only) go to *RS-485* section below
   485 HD go to *485 HD* section below

ENQ

1. With ***ENQ*** displayed, press the **PRINT** key. There are 3 items that can be changed when the Enquire mode is selected. Use the **TARE** and/or **UNITS** keys to scroll through the following items:

   P-ft Change the print format(s) that will be printed when the enquire character is received through the serial port. Press the **PRINT** key wit***h P-ft*** displayed. ***PftX*** is displayed. The ***X*** stands for the current print format setting. Press **ENTER** to accept this format or key in a new format or formats and press the **ENTER** key to accept.

   POLL Change the ASCII character that the indicator will respond to. Press the **PRINT** key with ***POLL*** displayed. The current character represented as a decimal number

will be displayed. (Example: for a carriage return (Hex: 0D) 13 will be displayed) Press the **ENTER** key to accept the character that is displayed or key in the decimal equivalent for the desired character and press the **ENTER** key.

Stable Change the stability setting for the Enquire mode. This can be set to ***YES*** which will require that there is no motion on the scale for a response to be sent or ***NO***. Press the **PRINT** key with ***Stable*** displayed. Either ***YES*** or ***NO*** will be displayed depending on the previous setting. Use the **TARE** or **UNITS** key to toggle between ***YES*** or ***NO***. When the desired setting is displayed use the **ENTER** key to accept.

When all three items have been set correctly, press the **SELECT** key to exit the Enquire submenu.

B-CAST

1. With ***B-CAST*** displayed, press the **PRINT** key…

   Current update rate is displayed. Choices are 1/sec, 2/sec, 5/sec, and 10/sec.

2. Scroll through the choices using the **TARE** or **UNITS** key. Press the **ENTER** key when your choice is displayed…

   PFTX is displayed. The ***X*** stands for the current print format setting.

3. Press the **ENTER** key to accept this format or key in a new format or formats and press the **ENTER** key to accept…

   B-CAST is displayed.

SMA

1. With ***SMA*** displayed, press the **PRINT** key…

   The SMA protocol is selected and ***TYPE*** is displayed.

Table 3
SMA protocol

Command Sent to Indicator	**Result**
<LF>W<CR>	Weight returned if no motion. Dashes displayed if motion on scale.
<LF>P<CR>	Weight returned if no motion. Dashes displayed if motion on scale.
<LF>Z<CR>	Scale zeros itself if no motion. Dashes displayed if motion on scale.
<LF>T<CR>	Scale tares itself and returns G or N weight if no motion. Dashes displayed if motion on scale.
<LF>T<xxxxxx.xxx><CR>	Scale attempts to take the <xxxxxx.xxx> data as the tare weight and returns G or N weight if no motion. Dashes displayed if motion on scale.
<LF>M<CR>	Returns the tare weight if no motion. Dashes displayed if motion on scale.
<LF>C<CR>	Clears the tare weight if no motion. Dashes displayed if motion on scale.
<LF>U<uuu><CR>	Sets the unit of measure label to uuu Example: lb_ (_ =space) Works for lb or kg only, not custom units.
<LF>D<CR>	Runs scale diagnostics and sends diagnostic message
<LF>A<CR>	Sends the SMA compliance level. See note at left.

The A and B commands are related. An A command must be sent before the first B command is sent. Multiple B commands can be sent after the A command and each one will return a different piece of data. If a B command returns a '?' or END response, an A command is needed to reset the B command

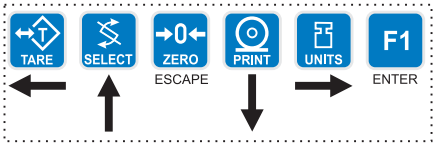
The I and N commands are related. An I command must be sent before the first N command is sent. Multiple N commands can be sent after the I command and each one will return a different piece of data. If an N command returns a '?' or END response, an I command is needed to reset the N command

***ESC** is the only command that the scale receives which does not follow the standard <LF>c<CR> protocol and does not have a response.*

<LF>B<CR>	1st B sent returns manufacturer 2nd B sent returns model software # 3rd B sent returns the software revision level 4th B sends an END 5th or more sends a ?
<LF>U<CR>	Toggles the units of measure if no motion. Dashes displayed if motion on scale.
<LF>I<CR>	Sends the SMA compliance level as ***SMA:compliance level / revision level***
<LF>N<CR>	1st N sends the scale type; ***S*** or ***C***. ***TYP:S*** = scale, ***TYP:C*** = Classifier 2nd N sends ***CAP:uuu:c..c:n:d*** where ***uuu*** = unit of measure ***c..c*** = full capacity of this range. If multi-interval is not enabled, this is the scale capacity. ***n*** = Least significant count-by digit ***d*** = decimal point position: 0 = none 1 = XXXX.X 2 = XXX.XX 3 = XX.XXX…etc. 3rd N sends the following if multi-interval is enabled: the same info as the 2nd N except for the upper range of the multi-interval. 3rd N sends the following if the multi-interval is disabled: List of the SMA level 2 commands that are implemented: ***CMD:PTMCU*** Last valid N sends ***END*** Subsequent N commands will return a '?' response.
ESC	This reboots the indicator
<LF>XP<num><CR>	Request a print format to be printed, 0-10
<LF>XT<cutoff><xxxx.xx><CR> Set a cutoff/trip weight.	Attempts the take <xxxx.xx> as the weight for cutoff #<cutoff>. The indicator will respond with: <LF>XT<cutoff><xxxx.xx>Set<CR> if the cutoff weight was accepted or <LF>XTFail<CR> if the cutoff weight could not be set to the value specified. Cutoff =1-3. Weight limited to scale cap.

<LF>XT<cutoff><CR> Request a cutoff/trip weight.	The indicator will respond with: <LF>XT<cutoff><xxxx.xx><CR> where <xxxx.xx> is the weight for cutoff number <cutoff>. or <LF>XTError<CR> if the cutoff number specified is invalid. Cutoff =1-3. Weight limited to scale cap.
<LF>XC<channel><CR> Set the PLU channel.	Attempts to set the PLU channel to <channel>. The indicator responds with: <LF>XC<channel>Set<CR> if the channel number was valid. Or <LF>XCFail<CR> if the channel number was invalid. Valid channel numbers are 0-10.
<LF>XC<CR> Request the PLU current channel.	The indicator will respond with: <LF>XC<channel><CR>
<LF>XI<id><CR> Set the ID number of current PLU channel.	The indicator will respond with: <LF>XI<id>Set<CR>
<LF>XI<CR> Request the id number of the current PLU channel.	The indicator will respond with: <LF>XI<id><CR>
<LF>XK<lower limit>,<upper limit><CR> Set the checkweigher lower and upper limit.	The indicator will respond with: <LF>XK<lower limit>,<upper limit>Set<CR> if the limits where set successfully. Or <LF>XKFail<CR> if the limit values were invalid.
<LF>XK<CR> Request the checkweigher lower and upper limit values.	The indicator will respond with: <LF>XK<lower limit>,<upper limit><CR>
<LF>XE<pcwt><CR> Set the piece weight for the Counting application.	The indicator will respond with: <LF>XE<pcwt>Set<CR>
<LF>XE<CR> Request the piece weight for the Counting application.	The indicator will respond with: <LF>XE<pcwt><CR>

R-DISP



1. With ***R-DISP*** displayed, press the **PRINT** key…

   Current setting is displayed. Use this item to choose what style of output you want for this indicator as a master indicator going to a remote display. Choices are RD4100, RDAPP1, RDAPP2, RDAPP3 and RDAPP4.

   RD4100 Select this to emulate output to an RD-4100. You can pick a print format to be sent to the remote display. If you pick format #0 a default G XXXXXX lb format will be sent.

   RDAPP1 Select this to send G XXXXXX lb

   RDAPP2 Select this to send the same as RDAPP1 + annunciators

   RDAPP3 Select this to send the same as RDAPP1 + will accept the keys presses from the remote (TARE, SELECT, ZERO, PRINT, UNITS)

   RDAPP4 Select this to send the same as RDAPP2 + accepts the keys presses from the remote (TARE, SELECT, ZERO, PRINT, UNITS)

2. Scroll through the choices using the **TARE** or **UNITS** key. Press the **ENTER** key when your choice is displayed…

   Current update rate is displayed. Choices are 1/sec, 2/sec, 5/sec, and 10/sec. This is the update rate

3. Scroll through the choices using the **TARE** or **UNITS** key. Press the **ENTER** key when your choice is displayed…

   If you chose RD4100: ***PFTX*** is displayed. The ***X*** stands for the current print format setting. Press the **ENTER** key to accept this format or key in a new format or formats and press the **ENTER** key to accept.

   Otherwise: ***R-DISP*** is displayed.

RS-485

This section applies only if you are configuring Port 1:

1. With ***RS485*** displayed, press the **PRINT** key.

   adr XX is displayed. This is the slave address of the indicator.

2. Press the **ENTER** key to accept the displayed address or key in a new value then press **ENTER**.

   RS-485 mode is very similar to SMA mode, but the transmission is over an RS-485 multidrop connection instead of over RS-232 hardware. There is a slight difference in the protocol as well. The master must send the slave address as part of the request. For example, instead of sending:

   <LF>W<CR> to the indicator,

   <LF><sadd>W<CR> must be sent.

   <sadd> is the slave address of the indicator that the master wants a response from. If the slave address sent to an indicator matches the configured slave address, the indicator will respond with the slave address as part of the response. All SMA responses begin with a <LF>. The slave address will be the character immediately following the <LF>.

485 Hd

1. With ***485 Hd*** displayed, press the **PRINT** key.

   Adr XX is diplayed. This is the slave address of the indicator

2. Press the **ENTER** key to accept the displayed address or key in a new value then press **ENTER**.

   485 Hd mode is essentially the same as RS-485 mode, but the transmission is over a Half-Duplex (2-wire connection) instead of the Full-Duplex connection that must be in place for RS-485 mode. The protocol is exactly the same a RS-485 mode (the slave address is sent with the commands and responses). See the RS-485 description (above) for complete details.

When you are done with the TYPE menu item and ***TYPE*** is displayed, do one of the following:

Return to normal operation—

1. Press the **ESC** key…

   SAVE is displayed.

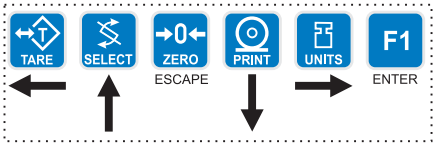
2. Press **ESC** to abort the save and return to normal operation mode
   OR
   Press the **ENTER** key to save the changes and return to normal operation mode

OR

Continue with the Serial submenu—

1. Press the **UNITS** key to move on to the next Serial menu item which is A-PRNT.

A-PRINT
(Autoprint minimum trigger weight)



1. Press the **UNITS** key…

   A-PRNT is displayed. Use this item to set a minimum weight, as a percentage of capacity, under which the indicator will send out the configured print format when the weight is stable (no motion). Set a value of 0 to disable the autoprint function.

2. Press the **PRINT** key…

   Current setting is displayed.

3. Key in your weight choice and press the **ENTER** key to accept…

   A-PRNT is displayed.

LEAD-0
(Leading zero)

1. Press the **UNITS** key…

   LEAD-0 is displayed. Use this item to turn a leading zero on or off for all system variables.

2. Press the **PRINT** key…

   ON or ***OFF*** is displayed.

3. Toggle between the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice. .

   LEAD-0 is displayed.

4. Press the **SELECT** key…

   PORT 1 or ***2 is*** displayed.

5. Repeatedly press the **UNITS** key until…

   STRING is displayed.

STRING
(Custom print formats)

Use the String item to create customized print formats. The default print format is always = 0 and it is edited under the APP menu item.

Use the STRING menu to create formats #1-10. These formats are called from application specific settings or from Serial menu item settings.

1. Press the **PRINT** key…

   1 is displayed. This is the print format number.

2. Scroll through the list of 1-10 using the **TARE** or **UNITS** key and press **ENTER** to select the displayed choice…

   The current destination is displayed. This may be:
   Port 1, serial port #1

   Port 2, serial port #2

   TCPIP1 if you want to send the format(s) through network connection #1 (net1 must be configured as Enet1 or Enet4)

   TCPIP2 if you want to send the format(s) through network connection #2 (net2 must be configured as Enet1 or Enet4)

   SMTP1 if you want to send the format(s) as an email through network connection #1 (net1 must be configured as Enet1 or Enet4)

   SMTP2 if you want to send the format(s) as an email through network connection #2 (net2 must be configured as Enet1 or Enet4)

3. Scroll through the choices shown above by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…

   A string is displayed. Refer to the section *Extra Info: Print Format Editing* to understand how to edit strings.

4. When you are done editing a string press the **ENTER** key…

   The print format number is displayed.

5. Do 6a or 6b:

6a. Repeat steps 2-6.

6b. Press the **SELECT** key to return to the ***SERIAL*** display…

   SERIAL is displayed. This completes the SERIAL submenu.

7. Press the **UNITS** key to go to the TEST submenu
   OR
   press **ESC** to return to normal operation mode…

   If you press **ESC,** ***SAVE*** is displayed.

8. Press **ENTER** to save the changes or the **ESC** key to abort the save process and return to normal operating mode.

TEST submenu

The next section of the Service menu is the TEST submenu. See Figure 9. This menu lets you view indicator information and test the display, keypad, serial ports, inputs and outputs.

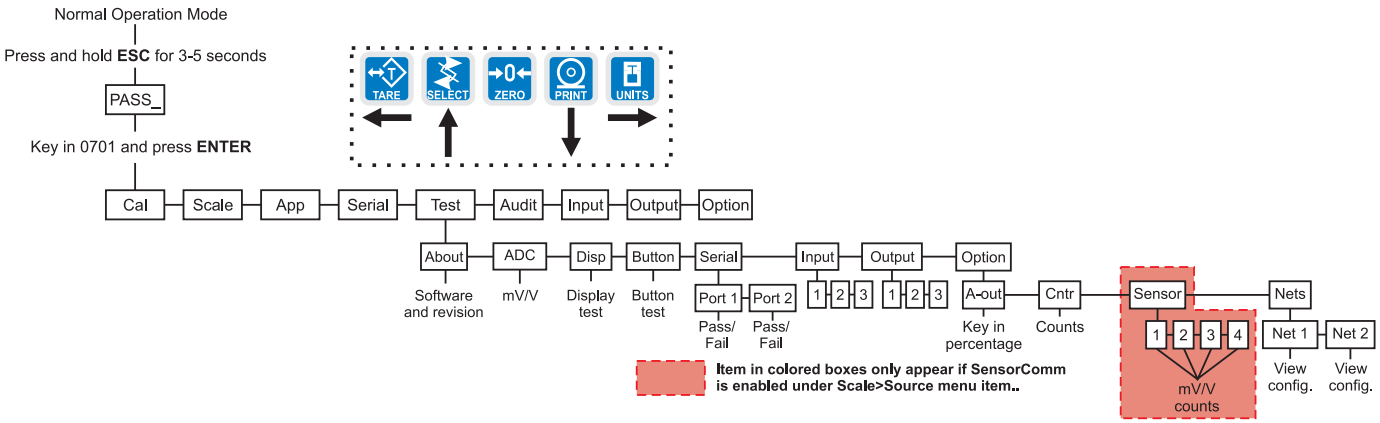


Figure 9
TEST (diagnostic) submenu

Follow these steps to access each item in the Test submenu and to understand what they do and how to set them:

1. Access the Service menu…

   CAL is displayed.

2. Press the **UNITS** key repeatedly until…

   TEST is displayed.

ABOUT (Indicator information)

3. Press the **PRINT** key…

   ABOUT is displayed. Use this item to view the part number and revision level for the software found in your indicator.

4. Press the **PRINT** key…

   The first part of the software part number is displayed.

5. Press the **UNITS** key…

   The second part of the software part number is displayed.

ADC (Analog scale test)

6. Press the **UNITS** key…

   The software revision level is displayed.

7. Press **SELECT** key to return to ***ABOUT***.
8. Press the **UNITS** key…

   ADC is displayed. This stands for the analog to digital converter value in mV/Vs.

9. Press the **PRINT** key…

   The mV/V value coming into the indicator is displayed.

10. Press the **SELECT**…

    ADC is displayed.

DISP (Display test)

11. Press the **UNITS** key…

    DISP is displayed. This is the display test item.

12. Press the **PRINT** key to perform a dynamic test of the display.

13. Press the **ESC** key once to stop the dynamic test…

    The display may flash one or two more times and then ***DISP*** will be displayed.

BUTTON (Key test)

14. Press the **UNITS** key…

    BUTTON is displayed. This is the button test item.

15. Press the **PRINT** key to perform a button test. Each key you press will be reflected on the display screen to confirm the button is functioning correctly.

16. Press the **ESC** key to stop the button test.

    BUTTON is displayed.

SERIAL (Serial port test)

17. Press the **UNITS** key…

    SERIAL is displayed. This is the serial test item.

18. Press the **PRINT** key to access the serial test.

    PORT1 is displayed. If you jumper the transmit and receive lines on the serial port and press the **PRINT** key, the display should show ***PASS***. If there is a problem the display will show ***FAIL***.

    Repeat this for PORT 2.

19. Press **SELECT** key to return to the SERIAL item…

    SERIAL is displayed.

INPUT (Input test)

17. Press the **UNITS** key…

    INPUT is displayed. This is the input test item.

18. Press the **PRINT** key to access the test.

    1 2 3 is displayed. ***1*** stands for input 1, etc.

19. If you jumper pins 1 and 2 of the I/O connector on the bottom of the indicator…

    1 becomes ***0*** until the jumper is removed.

    To test input 2, jumper pins 1 and 3. ***2*** becomes ***0*** until the jumper is removed.

    To test input 3, jumper pins 1 and 4. ***3*** becomes ***0*** until the jumper is removed.

20. Press the **SELECT** key…

    INPUT is displayed.

OUTPUT (Output test)

21. Press the **UNITS** key…

    OUTPUT is displayed. This is the output test item.

22. Press the **PRINT** key to access the test.

    1 is displayed. This stands for output 1.

23. Press the **PRINT** key…

    The display toggles between ***ON*** and ***OFF***. This will toggle the output off and on. Monitor the output to see that it is turning off and on. Use a Trips Interface Unit (TIU3) or other output device.

24. Stop the test by pressing the **SELECT** key…

    1 is displayed.

25. Press the **UNITS** key…

    2 is displayed.

26. Repeat steps 23 and 24 for outputs 2 and 3…
27. Press the **SELECT** key…

    OUTPUT is displayed.

OPTION (Option tests)

28. Press the **UNITS** key…

    OPTION is displayed.

A-OUT test

29. Press the **PRINT** key…

    A-OUT is displayed. This stands for the analog output test.

30. Press the **PRINT** key…

    A numeric entry screen is displayed.

31. Key in a percentage between 0 and 100 and press the **ENTER** key…

    The analog output will put out that percentage of voltage. For example: If you have output set from 0 to 10V and you key in a percentage of 25, the analog output voltage should read 2.5 volts. You can continue to key in other percentages, press **ENTER** and check the analog output voltage.

32. When you are finished testing the analog output, press the **ESC** key…

    A-OUT is displayed.

CNTR test

33. Press the **UNITS** key…

    CNTR is displayed. This checks the pulse counter.

34. Press the **PRINT** key to check the counter…

    0 is displayed if the pulse counter is inactive. If pulse input are occurring the display will show the increasing pulse counts.

SENSOR test

35. Press **SELECT** or **ENTER** to stop the test…

    CNTR is displayed.

36. Press the **UNITS** key…

    SENSOR is displayed. Use this to test the function of each weight sensor attached via SensorComm.

This test can be used to properly adjust the deadload of the scale. Each sensor should have similar mV/V outputs if the physical load on the scale is equally distributed.

37. Press the **PRINT** key…

    1 is displayed.

38. Scroll through the available weight sensor numbers by pressing the **TARE** or **UNITS** key. Press the **ENTER** key when the sensor you want to test is displayed…

    mV/V output of the selected sensor is displayed.

39. Apply weight to the scale to verify the mV/V level changes.
40. Press the **ENTER** key to exit the test…

    Sensor number is displayed.

41. Repeat steps 38 through 40 for each sensor you want to test.
42. Press the **SELECT** key…

    SENSOR is displayed.

NETS test

43. Press the **UNITS** key…

    NETS is displayed.

44. Press the **PRINT** key…

    NET 1 is displayed.

45. Toggle between Net 1 or Net 2 using the **TARE** or **UNITS** key and press **PRINT** when the network you want to view is displayed.

    The first screen of network configuration information is displayed.

46. Repeatedly press the **PRINT** key to view all the configuration information. The display will return to ***NET 1*** or ***NET 2*** when you've seen all the information.

This completes the TEST submenu. Press the **SELECT** key until ***TEST*** is displayed and then press the **UNITS** key to go to the AUDIT submenu

To return to normal weighing mode, press **ESC**. If you press **ESC** you will be prompted to save any changes made. Press **ESC** to abort any changes or press **ENTER** to save changes.

AUDIT submenu

The next section of the Service menu is the AUDIT submenu. See Figure 10. This menu lets you view configuration and calibration audit counters. These counters cannot be changed, only viewed.

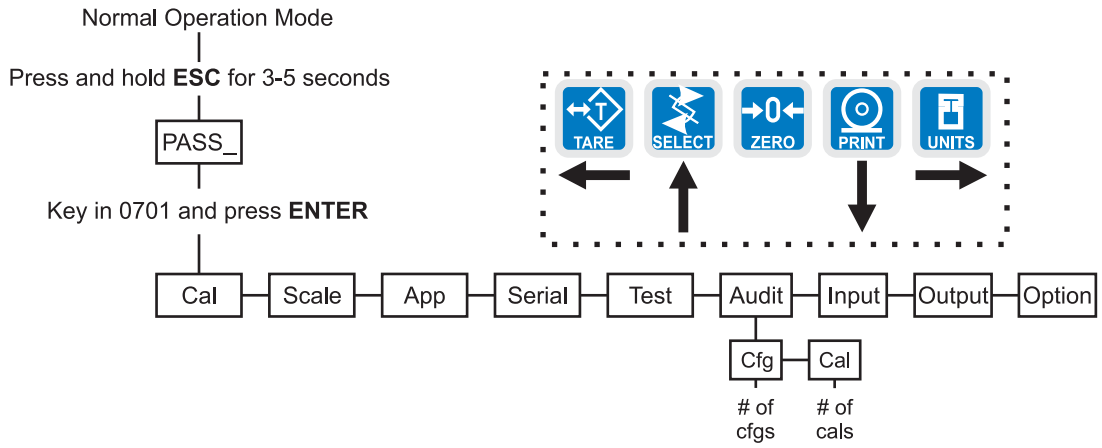


Figure 10
AUDIT submenu

Follow these steps to access each item in the AUDIT menu:

1. Access the Service menu…

   CAL is displayed.

2. Press the **UNITS** key repeatedly until…

   AUDIT is displayed.

CFG (Configuration audit counter)

3. Press the **PRINT** key…

   CFG is displayed. This stands for the Configuration audit counter. Use this item to see how many times this indicator has been configured.

4. Press the **PRINT** key…

   A number is displayed. This is the number of times this indicator has been configured.

5. Press **SELECT**…

   CFG is displayed.

CAL (Calibration audit counter)

6. Press the **UNITS** key…

   CAL is displayed. This stands for the Calibration audit counter. Use this item to see how many times this indicator has been calibrated.

7. Press the **PRINT** key…

   A number is displayed. This is the number of times this indicator has been calibrated.

8. Press the **SELECT** key twice…

   AUDIT is displayed.

This completes the AUDIT submenu. Press the **UNITS** key to go to the INPUT submenu or press **ESC** to return to normal weighing mode.

INPUT submenu

The next section of the Service menu is the INPUT submenu. See Figure 11. This menu lets you configure the inputs of the indicator.

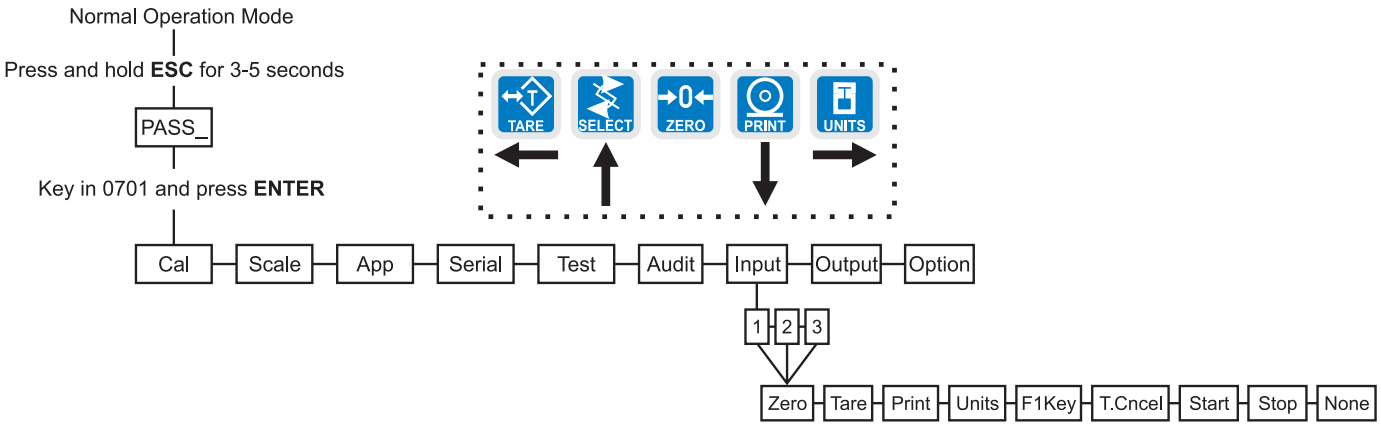


Figure 11
INPUT submenu

Follow these steps to access and configure the inputs:

1. Access the Service menu…

   CAL is displayed.

2. Press the **UNITS** key repeatedly until…

   INPUT is displayed.

3. Press the **PRINT** key…

   1 is displayed. This stands for input #1. You can scroll to each input by using the **TARE** or **UNITS** key. When you access each input, by pressing the **PRINT** key, you get to choose from this list of input types:

NONE	Input does nothing
ZERO	Input zeroes the scale
TARE	Input tares the scale
PRINT	Input causes the print function to occur
UNITS	Input toggles the unit of measure
F1KEY	Input performs current F1 function
T.CNCEL	Input clears the tare
START	Starts a batch/fill if the batching application is active
STOP	Stops a batch/fill if the batching application is active

4. Scroll through the choices by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…

   The input #is displayed.

5. Repeat steps 3 and 4 for each input.
6. Press the **SELECT** key to return to the INPUT menu item…

   INPUT is displayed.

This completes the INPUT submenu. Press the **UNITS** key to go to the OUTPUT submenu or press **ESC** to return to normal weighing mode.

OUTPUT submenu

The next section of the Service menu is the OUTPUT submenu. See Figure 12. This menu lets you configure the outputs of the indicator. Outputs must be enabled to use the cutoff (trips) operation in each of the applications. If the batch application is enabled, outputs are automatically enabled.

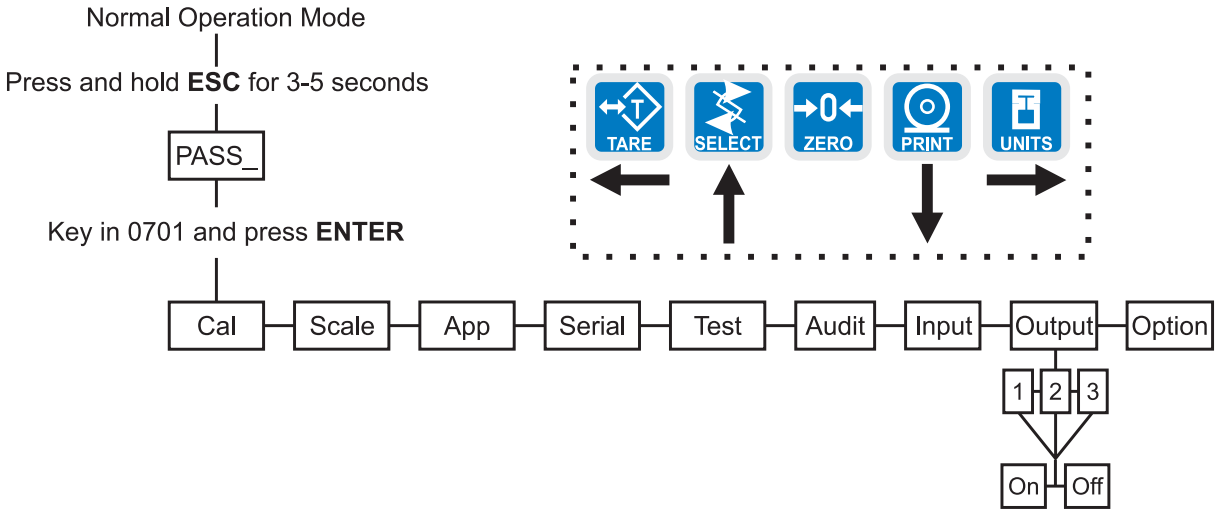


Figure 12
OUTPUT submenu

Follow these steps to access and configure the outputs:

1. Access the Service menu…

   CAL is displayed.

2. Press the **UNITS** key repeatedly until…

   OUTPUT is displayed.

3. Press the **PRINT** key…

   1 is displayed. This stands for output #1. You can scroll to each output by using the **TARE** or **UNITS** key. Access each output, by pressing the **PRINT** key, and enable or disable the output by selecting ***ON*** or ***OFF***.

4. Toggle between ***ON*** and ***OFF*** by using the **TARE** or **UNITS key** and press the **ENTER** key to accept the displayed choice…

   The output #is displayed. Repeat for the other outputs.

5. Press the **SELECT** key to return to the OUTPUT menu item…

   OUTPUT is displayed.

OPTION submenu

The next section of the Service menu is the OPTION submenu. See Figure 13. This menu lets you configure analog output, a pulse counter, Sensor-Comm and networks.

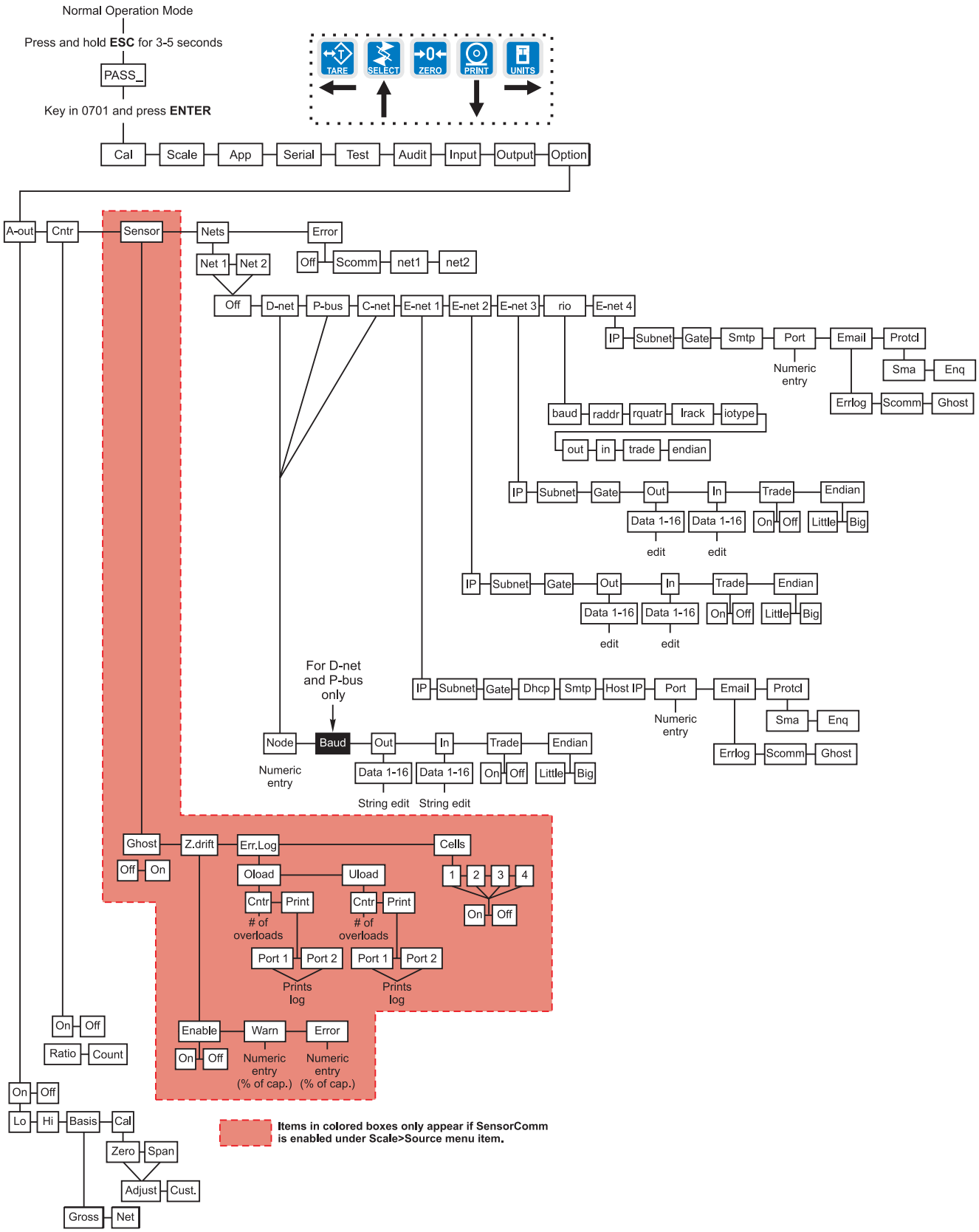


Figure 13
OPTION submenu

A-OUT (Analog Output)

Follow these steps to access and configure the options:

1. Access the Service menu…

   CAL is displayed.

2. Press the **UNITS** key repeatedly until…

   OPTION is displayed.

3. Press the **PRINT** key…

   A-OUT is displayed. This is the analog output menu item.

4. Press the **PRINT** key…

   ON or ***OFF*** is displayed. ON enables analog output. OFF disables it.

5. Toggle between ON and OFF by using the **TARE** or **UNITS** key and press the **ENTER** key to accept the displayed choice…

   If you pick OFF, ***A-OUT*** is displayed and you can continue to the next menu item, **CNTR**.

   If you pick ON, continue to step 6.

6. Press the **PRINT** key…

   LO is displayed. Use this to set the weight which is equal to the lowest analog output.

7. Press the **PRINT** key…

   Current value is displayed.

8. Key in a value and press **ENTER**…

   LO is displayed.

9. Press the **UNITS** key…

   HI is displayed. This is the weight at which the analog output will be at maximum.

10. Press the **PRINT** key…

    Current value is displayed.

11. Key in a value and press **ENTER**…

    HI is displayed.

12. Press the **UNITS** key…

    BASIS is displayed. Use this to choose if output is based on gross or net weight.

13. Press the **PRINT** key…

    GROSS or ***NET*** is displayed.

14. Toggle between the choices by using the **TARE** or **UNITS** key. Press **ENTER** when your choice is displayed…

    BASIS is displayed.

15. Press the **UNITS** key…

    CAL is displayed. Use this to calibrate the analog output.

16. Press the **ENTER** key…

    ZERO is displayed. Use this to set the analog output zero point.

17. Press the **PRINT** key…

    ADJUST is displayed. Use this to adjust the zero output up or down by pressing the **SELECT** (up) or **PRINT** (down) key. Each key press changes the output by 0.25% of available range for the output.

    When you are done, press the **ENTER** key and go to step 21.

    If you need to change the zero output by a custom amount, press the **ENTER** key and go to step 18.

18. To change the zero output by a custom amount, from the ***ADJUST*** display, press the **UNITS** key…

    CUST. is displayed.

19. Press the **PRINT** key…

    A numeric entry screen appears.

20. Enter a custom amount, in percentage of available range for the output, and press the **ENTER** key…

    CUST. is displayed.

21. Press the **SELECT** key…

    ZERO is displayed.

22. Press the **UNITS** key…

    SPAN is displayed. Use this to set the analog output span point.

23. Repeat steps 17-20 to adjust span.
24. Repeatedly press the **SELECT** key until…

    A-OUT is displayed.

CNTR
(Pulse counter)
Optional circuitry required

Follow these steps to configure the pulse counter.

1. Press the **UNITS** key…

   CNTR is displayed. This stands for the pulse counter option. Use this item to enable and enter a factor for converting pulses into your unit of measure.

2. Press the **PRINT** key…

   ON or ***OFF*** is displayed.

3. Toggle between the choices by pressing the **TARE** or **UNITS** key. When your choice is displayed, press the **ENTER** key…

   RATIO or ***COUNT*** is displayed. ***RATIO*** lets you enter a value equal to your pulse counter's pulses per unit of volume. ***COUNT*** lets you view the actual accumulated pulse count.

4. Toggle between the choices by pressing the **TARE** or **UNITS** key. When your choice is displayed, press the **ENTER** key…

   If you pick ***RATIO***, you can key in a factor.

   If you pick ***COUNT***, the display shows the accumulated actual pulse counts. See note at left.

   In either case, press the **ENTER** key and the display will return to ***RATIO*** or ***COUNT***.

You can key in a value under COUNT if you wish to pre-load or reload a set number of pulses into the accumulator. This may be handy if you've experienced a pulse counter input error.

5. Repeatedly press the **SELECT** key until…

   CNTR is displayed.

SENSOR
(SensorComm setup)
This section only appears if SensorComm is chosen as the scale source

1. Press the **UNITS** key…

   SENSOR is displayed. Use this item to configure the Sensor-Comm.

2. Press the **PRINT** key…

   GHOST is displayed. Use this to enable or disable Ghost function.

3. Press the **PRINT** key…

   ON or ***OFF*** is displayed.

4. Toggle between the choices by pressing the **TARE** or **UNITS** key. When your choice is displayed, press the **ENTER** key…

   GHOST is displayed.

5. Press the **UNITS** key…

   Z.DRIFT is displayed. Use this to set levels of zero drift that will trip warnings and errors.

6. Press the **PRINT** key…

   ENABLE is displayed.

7. Press the **PRINT** key…

   ON or ***OFF*** is displayed.

8. Toggle between the choices by pressing the **TARE** or **UNITS** key. When your choice is displayed, press the **ENTER** key…

   ENABLE is displayed.

9. Press the **UNITS** key…

   WARN is displayed. Use this to set the zero drift as a percentage of total capacity which will cause a warning to be logged.

10. Press the **PRINT** key…

    Numeric entry screen appears.

11. Enter a number, in percentage of total capacity, and press **ENTER** to accept it…

    WARN is displayed.

12. Press the **UNITS** key…

    ERROR is displayed. Use this to set the zero drift as a percentage of total capacity which will cause an error to be logged.

13. Press the **PRINT** key…

    Numeric entry screen appears.

14. Key in a number, in percentage of total capacity, and press **ENTER** to accept it…

    ERROR is displayed.

15. Press the **SELECT** key…

    Z.DRIFT is displayed.

16. Press the **UNITS** key…

    ERR.LOG is displayed. Use this to view error logs for the Sensor-Comm system.

17. Press the **PRINT** key…

    OLOAD is displayed. This is the overload counter.

18. Toggle between ***OLOAD*** and ***ULOAD*** (overload) by using the **TARE** or **UNITS** key and press **ENTER** when your choice is displayed…

    Under both ***OLOAD*** and ***ULOAD*** are choices to view the counter (***CNTR***) or print (***PRINT***) the report.

19. Toggle between ***CNTR*** and ***PRINT*** by using the **TARE** or **UNITS** key and press **ENTER** when your choice is displayed…

    If you chose ***CNTR***, the overload or underload count will be displayed.

    If you chose ***PRINT***, you can choose the port to print through and press **ENTER**. The counter value for overload or underload will be printed.

20. When you are done with the error log section, press the **SELECT** key repeatedly until…

    ERR.LOG is displayed.

21. Press the **UNITS** key…

    CELLS is displayed. Use this to check the mV/V level of each cell.

22. Press the **PRINT** key…

    1 is displayed. This stands for cell 1.

23. Press the **PRINT** key…

    ON or ***OFF*** is shown for the chose cell.

24. Toggle between the choices by using the **TARE** or **UNITS** key and press F1 to select the displayed choice…

    1 is displayed.

Cells must be enabled in order (1-4). Only one scale can be connected to the SensorComm box.

25. Press the **UNITS** key to scroll to the next cell.
26. Repeat steps 22 through 25 for each cell you need to enable.
27. Repeatedly press the **SELECT** key until…

    SENSOR is displayed.

NETS
(Network setup)

1. From previous step 27, press the **UNITS** key…

   NETS is displayed. Use this to set up the networks that are used with the indicator.

2. Press the **PRINT** key…

   Net1 is displayed.

Only one Ethernet type connection can be used at a time. i.e. E-net 1 or E-net 2 or E-net 3 or E-net 4. Also, Enet 3 cannot be used with DeviceNet™.

3. Press the **PRINT** key again to setup network connection number 1, or press the **TARE** or **UNITS** key to change to net2.
4. With either ***net1*** or ***net2*** on the display, press the **PRINT** key…

   The network type is displayed. The selections for network type are;

off	no network configured
d-net	DeviceNet™
P-bus	PROFIBUS®
C-net	ControlNet™
E-net1	Ethernet TCP/IP Client
E-net2	Ethernet Modbus/TCP
E-net3	Ethernet IP
rio	Remote I/O
E-net4	Ethernet TCP/IP Server

   The default selection is off.

5. Use the **TARE** and **UNITS** keys to scroll through the network types until the desired selection is displayed. Press the **PRINT** key…

   If you pick ***d-net*** go to the section titled DEVICENET™.
   If you pick ***P-bus*** go to the section titled PROFIBUS®.
   If you pick ***C-net*** go to the section titled CONTROLNET.
   If you pick **E-net1** go to the section titled ETHERNET TCP/IP Client
   If you pick **E-net2** go to the section titled ETHERNET MODBUS TCP
   If you pick **E-net3** go to the section titled ETHERNET IP
   If you pick **rio** go to the section titled Remote IO
   If you pick **E-net4** go to the section titled ETHERNET TCP/IP Server

(NETS) DEVICENET™

1. If ***D-NET*** (DeviceNet™) was selected in step 5 above…

   NODE will appear on the display.

2. Press the **PRINT** key.

   The node address that is currently set is displayed.

3. Key in the desired node address for the DeviceNet™ connection, or press **ENTER** to accept the node address that is currently configured.

   NODE will reappear on the display.

4. Press the **UNITS** key

   BAUD is displayed.

5. Press the **PRINT** key to configure the baud rate…

   The current baud rate is displayed. This may be “125”(125k), “250”(250k), or “500”(500k).

6. Scroll through the choices by pressing the **TARE** or **UNITS** key. Press the **PRINT** key when the value you want is displayed…

   BAUD is displayed.

7. Press the **UNITS** key…

   OUT is displayed.

8. Press the **PRINT** key…

   DATA 1 is displayed.

9. Press the **PRINT** key…

   The display will show something change to “000 FF”, or something similar. The 000 is the type of output and the FF is the output token. A list of output tokens and types is shown in Table 4.

10. Use the **TARE** or **UNITS** key to change the output type. Use the **SELECT** or **PRINT** key to change the output token. When the desired type and token appear on the display, press the **ENTER** key.

    DATA 1 is displayed.

11. You can configure up to 16 items of information to output from the indicator. Press the **UNITS** key…

    Display changes to ***DATA 2***.

12. Repeat steps 9 and 10 above to configure up to 16 data items.

13. Press the **SELECT** key…

    OUT is displayed.

14. Press the **UNITS** key…

    IN is displayed.

15. Press the **PRINT** key.

    DATA 1 is displayed.

16. Press the **PRINT** key…

    The display will show something change to “000 FF”, or something similar. The 000 is the type of input and the FF is the input token. A list of input tokens and types is shown in Table 4.

17. Use the **TARE** or **UNITS** key to change the input type. Use the **SELECT** or **PRINT** key to change the input token. When the desired type and token appear on the display, press the **ENTER** key…

    DATA 1 is displayed.

18. You can configure up to 16 items of information to input into the indicator. Press the **UNITS** key…

    DATA 2 is displayed.

19. Repeat steps 16 and 17 above to configure up to 16 data items.

20. Press the **SELECT** key.

    IN is displayed.

21. Press the **UNITS** key.

    TRADE is displayed.

22. Press the **PRINT** key to configure word swapping.

    Word swapping only affects the output and/or input data if a long, unsigned long, or floating point data type is used. These three data types are each made up of 4 bytes or 2 16-bit words. Word swapping will change the order that the 16-bit words are output/input. The display will show either ***ON*** or ***OFF***.

23. Use the **TARE** or **UNITS** key to toggle between the choices. When the desired selection appears on the display, press either the **ENTER** or **PRINT** key…

    TRADE is displayed.

24. Press the **UNITS** key.

    ENDIAN is displayed.

25. Press the **PRINT** key.

    The current setting is displayed. Choices are ***LITTLE*** or *BIG*.

26. Use the **TARE** or **UNITS** key to toggle between the choices. When the desired selection appears on the display, press either the **ENTER** or **PRINT** key…

    ENDIAN is displayed.

27. This completes the DeviceNet™ configuration. Press the **ESC** key to exit the service menu.

(NETS) PROFIBUS®

1. If you selected ***P-BUS*** (PROFIBUS®) at the beginning of the NETS setup…

   NODE will appear on the display.

2. Press the **PRINT** key.

   The node address that is currently set is displayed.

3. Key in the desired node address for the PROFIBUS® connection, or press **ENTER** to accept the node address that is currently configured.

   NODE will reappear on the display.

4. Press the **UNITS** key…

   BAUD is displayed.

5. Press the **PRINT** key to configure the baud rate…

   The current baud rate is displayed. This my be:
   Auto - the correct baud rate is selected automatically (default)
   9.6 - 9.6K
   19.2 - 19.2K
   187.5 - 187.5K
   500 - 500K
   1.5 - 1.5M
   6 - 6M
   12 - 12M

6. Scroll through the choices by using the **TARE** or **UNITS** key. Press the **PRINT** key when the value you want is displayed…

   BAUD is displayed.

7. Press the **UNITS** key

   OUT is displayed.

8. Press the **PRINT** key…

   DATA 1 is displayed.

9. Press the **PRINT** key…

   The display will show something change to “000 FF”, or something similar. The 000 is the type of output and the FF is the output token. A list of output tokens and types is shown in Table 4.

10. Use the **TARE** or **UNITS** key to change the output type. Use the **SELECT** or **PRINT** key to change the output token. When the desired type and token appear on the display, press the **ENTER** key.

    DATA 1 is displayed.

11. You can configure up to 16 items of information to output from the indicator. Press the **UNITS** key…

    Display changes to ***DATA 2***.

12. Repeat steps 6 and 7 above to configure up to 16 data items.

13. Press the **SELECT** key…

    OUT is displayed.

14. Press the **UNITS** key…

    IN is displayed.

15. Press the **PRINT** key.

    DATA 1 is displayed.

16. Press the **PRINT** key…

    The display will show something change to “000 FF”, or something similar. The 000 is the type of input and the FF is the input token. A list of input tokens and types is shown in Table 4.

17. Use the **TARE** or **UNITS** key to change the input type. Use the **SELECT** or **PRINT** key to change the input token. When the desired type and token appear on the display, press the **ENTER** key…

    DATA 1 is displayed.

18. You can configure up to 16 items of information to input into the indicator. Press the **UNITS** key…

    DATA 2 is displayed.

19. Repeat steps 13 and 14 above to configure up to 16 data items.

20. Press the **SELECT** key.

    IN is displayed.

21. Press the **UNITS** key.

    TRADE is displayed.

22. Press the **PRINT** key to configure word swapping.

    Word swapping only affects the output and/or input data if a long, unsigned long, or floating point data type is used. These three data types are each made up of 4 bytes or 2 16-bit words. Word swapping will change the order that the 16-bit words are output/input. The display will show either ***ON*** or ***OFF***.

23. Use the **TARE** or **UNITS** key to toggle between the choices. When the desired selection appears on the display, press either the **ENTER** or **PRINT** key…

    TRADE is displayed.

24. Press the **UNITS** key.

    ENDIAN is displayed.

25. Press the **PRINT** key.

    The current setting is displayed. Choices are ***LITTLE*** or *BIG*.

26. Use the **TARE** or **UNITS** key to toggle between the choices. When the desired selection appears on the display, press either the **ENTER** or **PRINT** key…

    ENDIAN is displayed.

27. This completes the PROFIBUS® configuration. Press the **ESC** key to exit the service menu.

(NETS) CONTROLNET
(Optional circuitry required)

1. If you selected ***C-NET*** (ControlNet™) at the beginning of the NETS setup. .

   NODE will appear on the display.

2. Press the **PRINT** key.

   The node address that is currently set is displayed.

3. Key in the desired node address for the ControlNet™ connection, or press **ENTER** to accept the node address that is currently configured.

   NODE will reappear on the display.

4. Press the **UNITS** key

   OUT is displayed.

5. Press the **PRINT** key…

   DATA 1 is displayed.

6. Press the **PRINT** key…

   The display will show something change to “000 FF”, or something similar. The 000 is the type of output and the FF is the output token. A list of output tokens and types is shown in Table 4.

7. Use the **TARE** or **UNITS** key to change the output type. Use the **SELECT** or **PRINT** key to change the output token. When the desired type and token appear on the display, press the **ENTER** key.

   DATA 1 is displayed.

8. You can configure up to 16 items of information to output from the indicator. Press the **UNITS** key…

   Display changes to ***DATA 2***.

9. Repeat steps 6 and 7 above to configure up to 16 data items.

10. Press the **SELECT** key…

    OUT is displayed.

11. Press the **UNITS** key…

    IN is displayed.

12. Press the **PRINT** key.

    DATA 1 is displayed.

13. Press the **PRINT** key…

    The display will show something change to “000 FF”, or something similar. The 000 is the type of input and the FF is the input token. A list of input tokens and types is shown in Table 4.

14. Use the **TARE** or **UNITS** key to change the input type. Use the **SELECT** or **PRINT** key to change the input token. When the desired type and token appear on the display, press the **ENTER** key…

    DATA 1 is displayed.

15. You can configure up to 16 items of information to input into the indicator. Press the **UNITS** key…

    DATA 2 is displayed.

16. Repeat steps 13 and 14 above to configure up to 16 data items.

17. Press the **SELECT** key.

    IN is displayed.

18. Press the **UNITS** key.

    TRADE is displayed.

19. Press the **PRINT** key to configure word swapping.

    Word swapping only affects the output and/or input data if a long, unsigned long, or floating point data type is used. These three data types are each made up of 4 bytes or 2 16-bit words. Word swapping will change the order that the 16-bit words are output/input. The display will show either ***ON*** or ***OFF***.

20. Use the **TARE** or **UNITS** key to toggle between the choices. When the desired selection appears on the display, press either the **ENTER** or **PRINT** key…

    TRADE is displayed.

21. Press the **UNITS** key.

    ENDIAN is displayed.

22. Press the **PRINT** key.

    The current setting is displayed. Choices are ***LITTLE*** or *BIG*.

23. Use the **TARE** or **UNITS** key to toggle between the choices. When the desired selection appears on the display, press either the **ENTER** or **PRINT** key…

    ENDIAN is displayed.

24. This completes the ControlNet™ configuration. Press the **ESC** key to exit the service menu.

(NETS) ETHERNET 1 TCP/IP Client

1. If you selected ***E-NET1*** (ETHERNET 1 TCP/IP Client) at the beginning of the NETS setup…

   IP is displayed.

2. Press the **PRINT** key to configure the IP address of the indicator…

   The first octet of the IP address is shown.

3. Key in the desired number for the first octet of the IP address. (###. xxx. xxx. xxx)…

   The second octet of the IP address is shown.

4. Repeat step 3 above for all 4-octet numbers of the IP address. (###. ###. ###. ###). After all four parts of the IP address have been entered.

   IP is displayed.

5. Press the **UNITS** key…

   SUBNET is displayed.

6. Press the **PRINT** key to enter the Subnet mask. This will be a numeric entry in four parts just like the ip address. (###. ###. ###. ###)

7. After all four parts of the subnet mask have been entered…

   SUBNET is displayed.

8. Press the **UNITS** key…

   GATE is displayed.

9. Press the **PRINT** key to enter the gateway address. This will be a numeric entry in four parts just like the ip address. (###. ###. ###. ###)

10. After all four parts of the gateway have been entered…

    GATE is displayed.

11. Press the **UNITS** key…

    DHCP is displayed.

12. Press the **PRINT** key…

    ON or ***OFF*** is displayed.

13. Press the **UNITS** or **TARE** key to toggle between the choices.

    If you are connecting to a DHCP server and want the server to automatically assign an IP address to the indicator, you should select ON. The IP address, Subnet mask, and Gateway do not need to be entered. Otherwise choose OFF to use the (static) IP address, Subnet mask, and Gateway that have been entered.

    When the desired selection is on the display, press the PRINT key…

    DHCP is displayed.

14. Press the **UNITS** key…

    SMTP is displayed.

15. If you are connecting to a mail server and you plan to send e-mails from the indicator, press the **PRINT** key to enter the IP address of the (host) mail server. This will be a numeric entry in four parts (###. ###. ###. ###) just like the IP address. The E-tools PC application must be used to enter the indicators user name, domain name, recipient address, and sender address.
16. After all four parts of the SMTP Address have been entered…

    SMTP is displayed.

17. Press the **UNITS** key…

    HOST IP is displayed.

18. Press the **PRINT** key to enter the IP Address of the server (host) that you will be connecting to. This will be a numeric entry in 4 parts (###. ###. ###. ###) just like the indicator's IP address.
19. After all four parts of the Host IP Address have been entered…

    HOST IP is displayed.

20. Press the **UNITS** key…

    PORT is displayed.

21. Press the **PRINT** key to enter the port number of the indicator. This is a numeric entry (####). After the Port number has been entered…

    PORT is displayed.

22. Press the **UNITS** key…

    EMAIL is displayed.

23. If you want the indicator to automatically send an email when an error occurs, press the **PRINT** key to configure this…

    ERR.LOG is displayed.

24. Press the **PRINT** key…

    ON or ***OFF*** is displayed.

25. Use the **UNITS** or **TARE** key to toggle between "on" and "off". To send an email when an overload or underload occurs on the scale, select ON. Otherwise select OFF. Press either the **PRINT** or **ENTER** key to accept your selection…

    ERR.LOG is displayed.

26. Press the **UNITS** key…

    S-COM is displayed.

27. Press the **PRINT** key…

    ON or ***OFF*** is displayed.

28. Press **UNITS** or **TARE** to toggle between "on" and "off". If the indicator is being connected to a SensorComm junction box and you want to send an email when a SensorComm error occurs, select ON. Otherwise select OFF. Press either the **PRINT** or **ENTER** key to accept your selection…

    S-COM is displayed.

29. Press the **UNITS** key…

    GHOST is displayed.

30. Press the **PRINT** key…

    ON or ***OFF*** is displayed.

31. If the indicator is being connected to a SensorComm junction box and Ghosting is enabled and you want to send and email when a cell is ghosted, select ON. Otherwise select OFF. Toggle to your choice and press either the **PRINT** or **ENTER** key to accept your selection…

    GHOST is displayed.

32. Press the **SELECT** key, then the **UNITS** key….

    ProtcL is displayed.

33. Press the **PRINT** key…

    SMA or ***Enq*** is displayed.

34. Toggle between the two choices using the **TARE** and **UNITS** keys. When the desired choice is shown, press the **PRINT** key to select it.

    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 this manual for details.

    Enq If Enq is chosen you will be prompted to key in a polling character. This can be any value from 0 to 255. Example: if the desired polling character is a carriage return, enter 13 for the polling character. After the polling character is keyed in, press the ENTER key and the display will return to protcL. 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). See the Service-App and Service-Serial sections of this manual for details on setting up the print formats.

35. This completes the Ethernet TCP/IP configuration. Press the **ESC** key to exit the service menu.

(NETS) ETHERNET 2 Modbus TCP

1. If E-net2 (Ethernet ModbusTCP) at the beginning of the NETS setup…

   IP is displayed.

2.. Press the **PRINT** key to configure the IP address of the indicator…

   The first octet of the IP address is shown.

3. Use the numeric enter method to enter the desired number for the first octet of the IP address. (###. xxx. xxx. xxx)…

   The second octet of the IP address is shown.

4. Repeat step 4 for all 4 octet numbers of the IP address. (###. ###. ###. ###). After all four parts of the IP address have been entered…

   IP is displayed.

5. Press the **UNITS** key…

   SUBNET is displayed.

6. Press the **PRINT** key to enter the Subnet mask. This will be a numeric entry in four parts just like the ip address. (###. ###. ###. ###). After all four parts of the subnet mask have been entered…

   SUBNET is displayed.

7. Press the **UNITS** key…

   GATE is displayed.

8. Press the **PRINT** key to enter the gateway address. This will be a numeric entry in four parts just like the ip address. (###. ###. ###. ###) After all four parts of the gateway have been entered…

   GATE is displayed.

9. Press the **UNITS** key…

   OUT is displayed.

10. Press the **PRINT** key…

    DATA 1 is displayed.

11. Press the **PRINT** key…

    The display will show something change to ***000 FF***, or something similar. The 000 is the type of output and the FF is the output token. A list of output tokens and types is shown in Table 4.

12. Press the **TARE** or **UNITS** key to scroll through the output types. Press the **SELECT** or **PRINT** key to change the output token. When the desired type and token appear on the display, press the **ENTER** key…

    DATA 1 is displayed.

13. You can configure up to 16 items of information to output from the indicator. Press the **UNITS** key to make the display change to ***DATA 2***. Repeat steps 11 through 13 above to configure up to 16 data items.

14. Press the **SELECT** key…

    OUT is displayed.

15. Press the **UNITS** key…

    IN is displayed.

16. Press the **PRINT** key…

    DATA 1 is displayed.

17. Press the **PRINT** key…

    The display will show something change to ***000 FF***, or something similar. The 000 is the type of input and the FF is the input token. A list of input tokens and types is shown in Table 4.

18. Use the **TARE** or **UNITS** key to change the input type. Use the **SELECT** or **PRINT** key to change the input token.

19. When the desired type and token appear on the display, press the **ENTER** key…

    DATA 1 is displayed.

20. You can configure up to 16 items of information to input into the indicator. Press the **UNITS** key to make the display change to ***DATA 2***. Repeat steps 16 through 19 above to configure up to 16 data items.

21. Press the **SELECT** key…

    IN is displayed.

22. Press the **UNITS** key…

    TRADE is displayed.

23. Press the **PRINT** key to configure word swapping.

    Word swapping only affects the output and/or input data if long, unsigned long, or floating point data types are used. These three data types are each made up of 4 bytes or 2 16-bit words. Word swapping will change the order that the 16-bit words are output/input. The display will show either “on” or “off”.

24. Press the **TARE** or **UNITS** key to toggle between ON and OFF. When the desired selection appears on the display, press either the **ENTER** or **PRINT** key…

    TRADE is displayed.

25. Press the **UNITS** key…

    ENDIAN is displayed.

26. Press the **PRINT** key…

    LITTLE or ***BIG*** is displayed.

27. Press the **TARE** or **UNITS** key to toggle between LITTLE and BIG. When the desired selection appears on the display, press the **ENTER** or **PRINT** key…

    ENDIAN is displayed.

28. This completes the Modbus/TCP configuration. Press the **ESC** key to exit the service menu.

(NETS) ETHERNET 3 Ethernet IP (Raw sockets)

1. If E-net3 (Ethernet IP) was chosen at the beginning of the NETS setup. .

   IP is displayed.

2.. Press the **PRINT** key to configure the IP address of the indicator…

   The first octet of the IP address is shown.

3. Use the numeric enter method to enter the desired number for the first octet of the IP address. (###. xxx. xxx. xxx)…

   The second octet of the IP address is shown.

4. Repeat step 4 for all 4 octet numbers of the IP address. (###. ###. ###. ###). After all four parts of the IP address have been entered…

   IP is displayed.

5. Press the **UNITS** key…

   SUBNET is displayed.

6. Press the **PRINT** key to enter the Subnet mask. This will be a numeric entry in four parts just like the ip address. (###. ###. ###. ###). After all four parts of the subnet mask have been entered…

   SUBNET is displayed.

7. Press the **UNITS** key…

   GATE is displayed.

8. Press the **PRINT** key to enter the gateway address. This will be a numeric entry in four parts just like the ip address. (###. ###. ###. ###) After all four parts of the gateway have been entered…

   GATE is displayed.

9. Press the **UNITS** key…

   OUT is displayed.

10. Press the **PRINT** key…

    DATA 1 is displayed.

11. Press the **PRINT** key…

    The display will show something change to ***000 FF***, or something similar. The 000 is the type of output and the FF is the output token. A list of output tokens and types is shown in Table 4.

12. Press the **TARE** or **UNITS** key to scroll through the output types. Press the **SELECT** or **PRINT** key to change the output token. When the desired type and token appear on the display, press the **ENTER** key…

    DATA 1 is displayed.

13. You can configure up to 16 items of information to output from the indicator. Press the **UNITS** key to make the display change to ***DATA 2***. Repeat steps 11 through 13 above to configure up to 16 data items.

14. Press the **SELECT** key…

    OUT is displayed.

15. Press the **UNITS** key…

    IN is displayed.

16. Press the **PRINT** key…

    DATA 1 is displayed.

17. Press the **PRINT** key…

    The display will show something change to ***000 FF***, or something similar. The 000 is the type of input and the FF is the input token. A list of input tokens and types is shown in Table 4.

18. Use the **TARE** or **UNITS** key to change the input type. Use the **SELECT** or **PRINT** key to change the input token.

19. When the desired type and token appear on the display, press the **ENTER** key…

    DATA 1 is displayed.

20. You can configure up to 16 items of information to input into the indicator. Press the **UNITS** key to make the display change to ***DATA 2***. Repeat steps 17 through 20 above to configure up to 16 data items.

21. Press the **SELECT** key…

    IN is displayed.

22. Press the **UNITS** key…

    TRADE is displayed.

23. Press the **PRINT** key to configure word swapping.

    Word swapping only affects the output and/or input data if long, unsigned long, or floating point data types are used. These three data types are each made up of 4 bytes or 2 16-bit words. Word swapping will change the order that the 16-bit words are output/input. The display will show either “on” or “off”.

24. Press the **TARE** or **UNITS** key to toggle between ON and OFF. When the desired selection appears on the display, press either the **ENTER** or **PRINT** key…

    TRADE is displayed.

25. Press the **UNITS** key…

    ENDIAN is displayed.

26. Press the **PRINT** key…

    LITTLE or ***BIG*** is displayed.

27. Press the **TARE** or **UNITS** key to toggle between LITTLE and BIG. When the desired selection appears on the display, press the **ENTER** or **PRINT** key…

    ENDIAN is displayed.

28. This completes the Ethernet IP configuration. Press the **ESC** key to exit the service menu.

(NETS) Remote I/O

1. If rio (Remote I/O) was selected in step 5 above…

   Baud appears on the display.

2. Press the **PRINT** key.

   The current baud rate is displayed. This may be “57.6” (57.6k), “115.2” (115.2k), or “230.4” (230.4k).

3. Scroll through the choices by pressing the **TARE** or **UNITS** key. Press the **PRINT** key when the value you want is displayed.

   BAUD is displayed.

4. Press the **UNITS** key

   RADDR is displayed.

5. Press the **PRINT** key to configure the rack address…

   The current rack address is displayed.

6. Key in the desired rack address. This value may be between 0 and 59. Press the **F1** key when the correct rack address has been entered.

   RADDR is displayed.

7. Press the **UNITS** key

   RSIZE is displayed.

8. Press the **PRINT** key to configure the rack size.

   The current rack size is displayed. This may be “1/4”,”1/2”, “3/4”, or “full”.

9. Scroll through the choices by pressing the **TARE** or **UNITS** key. Press the **PRINT** key when the value you want is displayed.

   RSIZE is displayed.

10. Press the **UNITS** key

    RQUATR is displayed.

11. Press the **PRINT** key to configure the starting quarter.

    The current setting for starting quarter is displayed. This may be “1st”,”2nd”, “3rd”, or “4th”.

12. Scroll through the choices by pressing the **TARE** or **UNITS** key. Press the **PRINT** key when the value you want is displayed.

    RQUATR is displayed.

13. Press the **UNITS** key

    LRACK is displayed.

14. Press the **PRINT** key to configure the last rack setting.

    The current setting for last rack is displayed. This will be “yes” or “no”.

15. Toggle between “yes” and “no” with the **TARE** or **UNITS** key. Press the **PRINT** key when the value you want is displayed.

    LRACK is displayed.

16. Press the **UNITS** key

    IOTYPE is displayed.

17. Press the **PRINT** key to configure the IO Type.

    The current setting for IO Type is displayed. This will be ***cyclic*** or ***block***.

18. Toggle between the choices with the **TARE** or **UNITS** key. Press the **PRINT** key when the value you want is displayed.

    IOTYPE is displayed.

19. Press the **UNITS** key…

    OUT is displayed.

20. Press the **PRINT** key…

    DATA 1 is displayed.

21. Press the **PRINT** key.

    The display will show something change to “000 FF”, or something similar. The 000 is the type of output and the FF is the output token. A list of output tokens and types is shown in Table 4.

22. Use the **TARE** or **UNITS** key to change the output type. Use the **SELECT** or **PRINT** key to change the output token. When the desired type and token appear on the display, press the **F1** key.

    DATA 1 is displayed.

23. You can configure up to 16 items of information to output from the indicator. Press the **UNITS** key.

    Display changes to ***DATA 2***.

24. Repeat steps 21 and 22 above to configure up to 16 data items.
25. Press the **SELECT** key…

    OUT is displayed.

26. Press the **UNITS** key…

    IN is displayed.

27. Press the **PRINT** key.

    DATA 1 is displayed.

28. Press the **PRINT** key.

    The display will show something change to “000 FF”, or something similar. The 000 is the type of input and the FF is the input token. A list of input tokens and types is shown in Table 4.

29. Use the **TARE** or **UNITS** key to change the input type. Use the **SELECT** or **PRINT** key to change the input token. When the desired type and token appear on the display, press the **F1** key…

    DATA 1 is displayed.

30. You can configure up to 16 items of information to input into the indicator. Press the **UNITS** key.

    DATA 2 is displayed.

31. Repeat steps 28 and 29 above to configure up to 16 data items.
32. Press the **SELECT** key.

    IN is displayed.

33. Press the **UNITS** key.

    TRADE is displayed.

34. Press the **PRINT** key to configure word swapping. Word swapping only affects the output and/or input data if a long, unsigned long, or floating point data type is used. These three data types are each made up of 4 bytes or 2 16-bit words. Word swapping will change the order that the 16-bit words are output/input.

    The display will show either ***ON*** or ***OFF***.

35. Use the **TARE** or **UNITS** key to toggle between the choices. When the desired selection appears on the display, press either the **F1** or **PRINT** key.

    TRADE is displayed.

36. Press the **UNITS** key.

    ENDIAN is displayed.

37. Press the **PRINT** key.

    The current setting is displayed. Choices are LITTLE or BIG.

38. Use the **TARE** or **UNITS** key to toggle between the choices. When the desired selection appears on the display, press either the **F1** or **PRINT** key.

    ENDIAN is displayed.

39. This completes the Remote IO configuration. Press **SELECT** to move up the menu structure or press the **ZERO** key to exit the service menu.

(NETS) ETHERNET 4 TCP/ IP Server

1. If you selected ***E-NET4*** (ETHERNET 4 TCP/IP Server) at the beginning of the **NETS** setup. .

   IP is displayed.

2. Press the **PRINT** key to configure the IP address of the indicator…

   The first octet of the IP address is shown.

3. Key in the desired number for the first octet of the IP address. (###. xxx.xxx. xxx)…

   The second octet of the IP address is shown.

4. Repeat step 3 above for all 4-octet numbers of the IP address. (###. ###. ###. ###). After all four parts of the IP address have been entered.

   IP is displayed.

5. Press the **UNITS** key…

   SUBNET is displayed.

6. Press the **PRINT** key to enter the Subnet mask. This will be a numeric entry in four parts just like the IP address. (###. ###. ###. ###)
7. After all four parts of the subnet mask have been entered…

   SUBNET is displayed.

8. Press the **UNITS** key…

   GATE is displayed.

9. Press the **PRINT** key to enter the gateway address. This will be a numeric entry in four parts just like the IP address. (###. ###. ###. ###)
10. After all four parts of the gateway have been entered…

    GATE is displayed.

11. Press the **UNITS** key…

    SMTP is displayed.

12. If you are connecting to a mail server and you plan to send e-mails from the indicator, press the **PRINT** key to enter the IP address of the (host) mail server. This will be a numeric entry in four parts (###. ###. ###. ###) just like the IP address. The E-tools PC application must be used to enter the indicator's user name, domain name, recipient address, and sender address.
13. After all four parts of the SMTP Address have been entered…

    SMTP is displayed.

14. Press the **UNITS** key…

    PORT is displayed.

15. Press the **PRINT** key to enter the port number of the indicator. This is a numeric entry (####). After the Port number has been entered…

    PORT is displayed.

16. Press the **UNITS** key…

    EMAIL is displayed.

17. If you want the indicator to automatically send an email when an error occurs, press the **PRINT** key to configure this…

    ERR.LOG is displayed.

18. Press the **PRINT** key…

    ON or ***OFF*** is displayed.

19. Use the **UNITS** or **TARE** key to toggle between ***ON*** and ***OFF***. To send an email when an overload or underload occurs on the scale, select ***ON***. Otherwise select ***OFF***. Press either the **PRINT** or **ENTER** key to accept your selection…

    ERR.LOG is displayed.

20. Press the **UNITS** key…

    S-COM is displayed.

21. Press the **PRINT** key…

    ON or ***OFF*** is displayed.

22. Press **UNITS** or **TARE** to toggle between ***ON*** and ***OFF***. If the indicator is being connected to a SensorComm junction box and you want to send an email when a SensorComm error occurs, select ***ON***. Otherwise select ***OFF***. Press either the **PRINT** or **ENTER** key to accept your selection…

    S-COM is displayed.

23. Press the **UNITS** key…

    GHOST is displayed.

24. Press the **PRINT** key…

    ON or ***OFF*** is displayed.

25. If the indicator is being connected to a SensorComm junction box and Ghosting is enabled and you want to send and email when a cell is ghosted, select ***ON***. Otherwise select ***OFF***. Toggle to your choice and press either the **PRINT** or **ENTER** key to accept your selection…

    GHOST is displayed.

26. Press the **SELECT** key, then the **UNITS** key….

    ProtcL is displayed.

27. Press the **PRINT** key…

    SMA or ***Enq*** is displayed.

28. Toggle between the two choices using the **TARE** and **UNITS** keys. When the desired choice is shown, press the **PRINT** key to select it.

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 this manual for details.

Enq – If Enq is chosen you will be prompted to key in a polling character. This can be any value from 0 to 255. Example: if the desired polling character is a carriage return, enter 13 for the polling character. After the polling character is keyed in, press the ENTER key and the display will return to protcL. 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). See the Service-App and Service-Serial sections of this manual for details on setting up the print formats.

29. This completes the Ethernet TCP/IP Server configuration. Press the **ESC** key to exit the service menu.

Table 4
Tokens

Token	Inbound to net1	Outbound from net 1	Inbound to net 2	Outbound from net 2	Token (dec.)	Token (hex)
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

TYPE #	Data Type	# of Bytes	Range of Value
0	Signed Character	1	-127 to 127
1	Unsigned Character	1	0 to 255
2	Signed Integer	2	-32767 to 32767
3	Unsigned Integer	2	0 to 65535
4	Signed Long	4	-2,147,483,647 to 2,147,483,647
5	Unsigned Long	4	0 to 4,294,967,295
6	Float	4	$1.0E^{-37}$ to $1.0E^{37}$

Network Scaling

When mapping signed characters, unsigned characters, signed integers, unsigned integers, signed longs, and unsigned longs, an outbound value may be scaled up/down depending on the division size of the scale.

Outbound Values

The following tokens may be affected by division size:

- Gross (token 0)
- Net (token 1)
- Tare (token 2)
- Peak (token 3)
- PLU Piece Weight (token 5)
- PLU Gross Accumulator (token 7)
- PLU Net Accumulator (token 8)
- PLU Tare Value (token 11)
- PLU Lower Target Weight (token 13)
- PLU Upper Target Weight (token 14)
- Recipe Ingredient Target Weight (token 16)
- Recipe Ingredient Actual Weight (token 17)

If the division size of the scale is less than 1, the value that is mapped will be scaled up by 10^X. Where X equals the number of digits to the right of the decimal point. Any floating-point values will not be scaled up.

Example:

Token = 0 (Gross)
Type = 4 (Signed Long)
Division Size = 0.01

There are two digits to the right of the decimal point so the gross weight being set out of the network connection will be multiplied by 10^2 (100). If the gross weight on the display is 110.54, you should see a value of 11054 on the network connection.

Inbound Values

The following tokens may be affected by division size:

- Tare (token 2)
- PLU Piece Weight (token 5)
- PLU Tare Value (token 11)
- PLU Lower Target Weight (token 13)
- PLU Upper Target Weight (token 14)

If the division size of the scale is less than 1, the value that is mapped will be scaled down by 10^X. Where X equals the number of digits to the right of the decimal point. Any floating-point values will not be scaled down.

Example:
Token = 2 (Tare)
Type = 4 (Signed Long)
Division Size = 0.01

There are two digits to the right of the decimal point so the tare weight coming into the indicator will be divided by 10^2 (100). If the desired tare weight is 99.56, a value of 9956 must be sent.

Error (Error Annunciator)

Follow these steps to configure the Network/Sensorcomm status annunciator.

1. With ***Error*** displayed, press the **PRINT** key…

   The current setting will be displayed. This may be Off, S-comm, net1, or net2.

2. Use the **UNITS** and **TARE** keys to change the setting, and press the **ENTER** key to accept the desired setting once it is displayed.

Off The annunciator will always remain off.

S-comm The annunciator will show the status of the Sensorcomm scale.

- Red – a cell has been ghosted. Check the ghost log.
- Green – a sensorcomm error has occurred. Check the error log.
- Off – Scale is functioning normally.

Net1 The annunciator will show the status of network #1.

Net2 The annunciator will show the status of network #2.

- Red – A network error has occurred. Check the network settings on the indicator and PLC, and reboot the indicator.
- Green – The network connection has been established.
- Amber – The network is ready for a connection, but no connection has been established.

This completes the Service menu. Press the **ESC** key to return to normal weighing mode. You will be prompted to save the changes you've made. Press the **ESC** key to abort any changes made and return to normal operating mode or press **ENTER** to accept them and return to normal operating mode. ***BUSY*** flashes on the display while the unit saves data.

Supervisor Menu

Password for the Supervisor menu is 1793.

The Supervisor menu is shown in Figure 14. Use this menu to set time and date, clear and print reports, perform diagnostic tests and view audit counters.

WARNING: Entering this menu and changing settings may affect operation of the indicator and may require a service call to correct. Be sure you want to change settings before doing so.

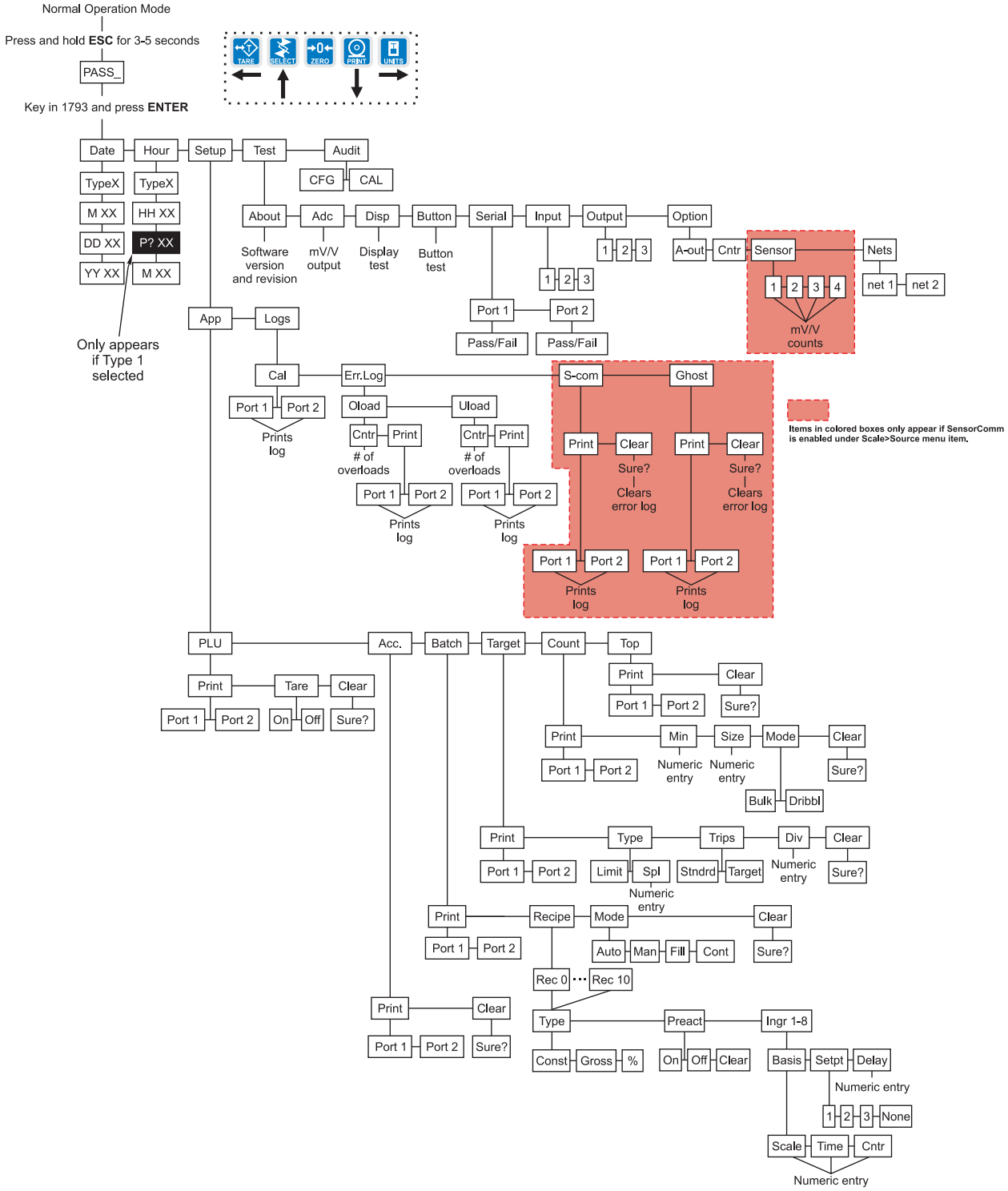
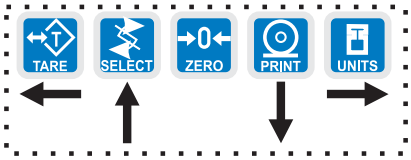


Figure 14
Supervisor menu flowchart

Password for the Supervisor menu is 1793.



DATE
(Set date)

See Figure 14 to reference the Supervisor's menu.

While in a menu, the fan graphs at the top of the display flash as a reminder.

1. Access the Supervisor menu by pressing and holding the **ESC** key for 3-5 seconds…

   PASS_ is displayed.

2. Key in the password, 1793, and press **ENTER**…

   DATE is displayed. Use this to set the current date.

3. Press the **PRINT** key…

   TYPE0 is displayed. Dates styles are listed below along with number you enter to create that style:

   0=MM/DD/YY
   1=MM/DD/YYYY
   2=DD/MM/YY
   3=DD/MM/YYYY

4. Scroll through the choices using the **TARE** or **UNITS** key and press the **ENTER** key when your choice is displayed…

   M XX is displayed. This stands for month.

5. Key in the month number (01 for Jan., 02 for Feb., …12 for Dec) and press the **ENTER** key…

   DD XX is displayed. ***DD*** stands for date and ***XX*** represents the current value.

6. Key in the date and press the **ENTER** key…

   YY XX is displayed. ***YY*** stands for year and ***XX*** represents the current value.

7. Key in the year (04=2004, etc.) and press the **ENTER** key…

   DATE is displayed.

HOUR
(Set time)

1. Press the **UNITS** key…

   HOUR is displayed. Set the time in this item.

2. Press the **PRINT** key…

   TYPE0 is displayed. Time can be in 24 hour or 12 hour styles:
   0=HH:MM
   1=HH:MM AM/PM

3. Scroll through the choices using the **TARE** or **UNITS** key and press the **ENTER** key when your choice is displayed…

   HH XX is displayed. This stands for hour and its current value.

4. Key in the hour based on the type of time you selected in step 2 and press the **ENTER** key. If you picked 0 (military time) in step 2, skip to step 5. If you picked 1 (AM/PM time) continue below…

   P? yes or ***P? no*** is displayed. ***P? yes*** for PM. ***P? no*** for AM.

5. Toggle between the choices using the **TARE** or **UNITS** key and press the **ENTER** key when your choice is displayed…

   M XX is displayed. ***M*** stands for minute and ***XX*** represents the current value.

6. Key in the minute and press the **ENTER** key…

   HOUR is displayed.

SETUP (Setup menu)

1. Press the **UNITS** key…

   SETUP is displayed. Use this submenu to print and/or clear application reports, choose operation modes or values for applications which have choices and view various function logs. Each is explained in the following steps.

APP (Application submenu)

2. Press the **PRINT** key…

   APP is displayed. As stated in the Service menu section of the manual, applications are enabled in the Service menu but you do each application's setup in this area of the Supervisor menu.

PLU (Product Look Up)

3. Press the **PRINT** key…

   PLU is displayed. This stands for Product Look Up. There are 11 PLU memory channels, numbered 0-10. Each channel contains all the parameter values and accumulator totals associated with all the different applications. This menu item lets you print out all the information in each channel, in all the applications, and/or clear the information.

The PLU report contains the following information for each of the 11 channels:

- *Channel #*
- *ID #*
- *Gross Accum.*
- *Net Accum.*
- *Count Accum.*
- *Total*
- *Tare Value*
- *Lower Limit*
- *Upper Limit*
- *Piece Weight*
- *Cutoff Wt1*
- *Cutoff Wt2*
- *Cutoff Wt3*

4. Press the **PRINT** key…

   PRINT is displayed. Use this item to print out a complete report of all application parameters and totals.

5. Press the ***PRINT*** key …

   PORT 1 or ***PORT 2*** is displayed. Use this item to select which port to use for printing the report. See note at left.

6. Toggle between ***PORT 1*** and ***PORT 2*** using the **TARE** or **UNITS** key. Press the **ENTER** key when your choice is displayed…

   The report is printed and display shows ***BUSY*** briefly then returns to ***PRINT***.

7. Press the **UNITS** key…

   TARE is displayed. Use this item to enable multichannel preset tares.

8. Press the **PRINT** key…

   ON or ***OFF*** is displayed.

9. Toggle between the choices using the **TARE** or **UNITS** key and press **ENTER** to accept the displayed choice…

   If ***ON*** is chosen, the tare value for each channel can be entered. ***0*** will be displayed. Use the **TARE** or **UNITS** key to change the channel number. Press the **ENTER** key when the correct channel number is displayed to enter the tare value for that channel.

The scale must be in the center-of-zero window for the tare weight to be accepted.

10. Press the **UNITS** key…

    CLEAR is displayed. Use this item to clear all the information stored for each application. **WARNING - Only do this if you are sure you want the information permanently removed!**

    You may want to print out the reports before clearing all the information. See step 4 above.

11. Press the **PRINT** key to clear all the information
    OR
    Skip to step 12…

    SURE? is displayed. This is asking if you are sure you want to clear the information. If you are, press the PRINT key. If you do not want to clear the data, press the **SELECT** key…

    CLEAR is displayed.

12. Press the **SELECT** key…

    PLU is displayed.

ACC Application

1. Press the **UNITS** key…

   ACC. is displayed. This stands for the accumulator application.

See Figure 14 to reference the Supervisor's menu.

2. Press the **PRINT** key…

   PRINT is displayed. Use this item to print out a complete report of accumulator totals for each PLU similar to the one shown below:

   Channel #:
   ID: 0
   Gross Accum: 0 lb
   Net Accum: 0 lb
   Total: 0

3. Press the **PRINT** key …

   PORT 1 or ***PORT 2*** is displayed. Use this item to select which port to use for printing the report.

4. Toggle between ***PORT 1*** and ***PORT 2*** using the **TARE** or **UNITS** key. Press the **ENTER** key when the choice you want is displayed…

   Display shows ***BUSY*** briefly then returns to ***PRINT***.

5. Press the **UNITS** key…

   CLEAR is displayed. Use this item to clear all the information stored for this application. **WARNING - Only do this if you are sure you want the information permanently removed!**

   You may want to print out the report before clearing all the information. See step 2 above.

6. Press the **PRINT** key to clear all the information

   OR

   Skip to step 7…

   SURE? is displayed. This is asking if you are sure you want to clear the information. If you are, press the **ENTER** key. If you do not want to clear the data, press the **SELECT** key…

   CLEAR is displayed.

7. Press the **SELECT** key…

   ACC. is displayed.

BATCH Application

1. Press the **UNITS** key…

   BATCH is displayed.

2. Press the **PRINT** key…

   PRINT is displayed. Use this item to print out a complete report of recipe information.

3. Press the **PRINT** key …

   PORT 1 or ***PORT 2*** is displayed. Use this item to select which port to use for printing the report.

4. Toggle between ***PORT 1*** and ***PORT 2*** using the **TARE** or **UNITS** key. Press the **ENTER** key when the choice you want is displayed…

   Display shows **BUSY** briefly then returns to **PRINT**.

5. Press the **UNITS** key…

   RECIPE is displayed. Use this item to create a recipe.

6. Press the **PRINT** key…

   REC 0 is displayed.

7. Press the **PRINT** key to configure recipe #0 or use the **TARE** or **UNITS** key to scroll to another recipe number. Press the **PRINT** key when the recipe you want is displayed…

   TYPE is displayed. Set the type of recipe; Constant (CONST) Gross or Percentage (%):

CONSTANT	You set the weights for each ingredient and the batch size is always the total of these ingredient weights.
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.
PERCENTAGE	You set the percentage of a total batch for each ingredient and you can pick a batch size and each ingredient amount will be calculated automatically.

8. Press the **PRINT** key…

   Current setting is displayed.

9. Toggle between the choices by pressing the **TARE** or **UNITS** key. Press the **PRINT** key when your choice is displayed…

   Your choice is selected and ***TYPE*** is displayed.

10. Press the **UNITS** key…

    PREACT is displayed. 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.

    Under this item you can turn the preact on or off, or clear a current preact.

11. Press the **PRINT** key to set the preact…

    ON or ***OFF*** is displayed.

12. Scroll through the choices (***ON***, ***OFF***, ***CLEAR***) with the **TARE** or **UNITS** key. Press **ENTER** when your choice is displayed…

    PREACT is displayed.

See Figure 14 to reference the Supervisor's menu.

13. Press the **UNITS** key…

    INGR X is displayed. ***X*** is the ingredient number. You have up to 8 ingredients for which you can set the following:

    BASIS Set whether the ingredient is based on weight (Scale), time (Time) or pulse counts (Cntr).

    SETPT Set the output you want associated with the ingredient. Choices are 1, 2 , 3 or None. Outputs must be enabled in a password protected menu. Contact your local Avery Weigh-Tronix supplier or distributor for assistance.

    DELAY Set a time delay between when a basis is met and the next ingredient action is started.

14. Press the **PRINT** key…

    BASIS is displayed.

15. Press the **PRINT** key…

    The current setting is displayed; ***SCALE***, ***TIME***, or ***CNTR***.

If **SCALE** *is chosen for the basis, you can enter a negative weight to do an "unload." The selected output will activate until the entered amount of weight is removed from the scale.*

16. Scroll through the choices with the **TARE** or **UNITS** key. Press **ENTER** when your choice is displayed…

    If you choose ***SCALE*** you are prompted to enter an ingredient weight. If you choose ***TIME***, your are prompted to enter a time value. If you choose ***CNTR***, your are prompted to enter the number of pulses.

17. Key in values and press the **ENTER** key…

    BASIS is displayed.

18. Press the **UNITS** key…

    SETPT is displayed.

19. Press the **PRINT** key…

    1 is displayed. This stands for Setpoint 1.

20. Scroll through the choices with the **TARE** or **UNITS** key. Press **ENTER** when your choice is displayed…

    SETPT is displayed.

    If you chose ***1*** this ingredient will use output #1. The same is true for the 2 and 3 choices. If you choose ***NONE***, no output will be activated when the ingredient is called by the recipe.

21. Press the **UNITS** key…

    DELAY is displayed.

22. Press the **PRINT** key…

    The current delay value in seconds is displayed.

23. Accept this value by pressing **ENTER** or key in a new value and press **ENTER**…

    DELAY is displayed. Repeat steps 13 through 23 for all the ingredients in your recipe.

24. Press the **SELECT** key twice…

    RECIPE is displayed.

See Figure 14 to reference the Supervisor's menu.

25. Press the **UNITS** key…

    MODE is displayed. Use this item to set the mode of the batching application to Automatic, Manual, Fill or Continuous batching.

    AUTO In auto mode, after the user begins the batching process the indicator will activate the OP2 output when the weight for OP1 has been reached. When the weight for OP2 is reached, OP3 will activate. This happens with no intervention from the operator.

    MAN. In manual mode, after the user begins the batching process, the user must press the F1 key to activate each subsequent output after each output weight is reached.

    FILL 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.

    CONT Continuous batching mode. This mode is very close to the Auto mode, but 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.

26. Press the **PRINT** key…

    The current mode setting is displayed.

27. Toggle between the choices by pressing the **TARE** or **UNITS** key. Press the **ENTER** key when your choice is displayed…

    MODE is displayed.

28. Press the **UNITS** key…

    CLEAR is displayed. Use this item to clear all the information stored for this application. **WARNING - Only do this if you are sure you want the information permanently removed!**

    You may want to print out the report before clearing all the information. See step 2 in this section.

29. Press the **PRINT** key to clear all the information

    OR

    Skip to step 30…

    SURE? is displayed. This is asking if you are sure you want to clear the information. If you are, press the **ENTER** key. If you do not want to clear the data, press the **SELECT** key…

    CLEAR is displayed.

30. Press the **UNITS** key…

    PRINT is displayed.

31. Press the **PRINT** key…

    PORT 1 is displayed.

32. Toggle between ***PORT 1*** and ***PORT 2*** using the **TARE** or **UNITS** key. Press the **ENTER** key when your choice is displayed…

    The recipes and batch report will be printed.

33. Press the **SELECT** key…

    BATCH is displayed.

TARGET application (Checkweighing)

1. Press the **UNITS** key…

   TARGET is displayed. Use this item to print and clear reports for the checkweigher application and to set the type of sampling to be used, Limit or Sample.

2. Press the **PRINT** key…

   PRINT is displayed. Use this item to print out a complete report of checkweigher information.

3. Press the **PRINT** key …

   PORT 1 or ***PORT 2*** is displayed. Use this item to select which port to use for printing the report.

4. Toggle between ***PORT 1*** and ***PORT 2*** using the **TARE** or **UNITS** key. Press the **ENTER** key when the choice you want is displayed…

   Display shows ***BUSY*** briefly then returns to ***PRINT***.

*You do not set the limits in this menu item. Limits are set in normal operation mode. This menu item, TYPE, allows you to set the **mode** of choosing the target weight and limits.*

To use Sample mode, both multi-interval and preset tares should be disabled. To disable multi-interval, set the scales division size to a whole number (not 1/2, 2/5, 5/10, 10/20 or 20/50). Preset tares are disabled in the Supervisor>Setup>App>PLU menu.

If target trips are used, the Gross Zero Band in the Service>Scale menu must be configured to something other than 0. The OP1, OP2, or OP3 output will not turn off until the scale returns to the gross zero band.

5. Press the **UNITS** key…

   TYPE is displayed. Use this to choose the mode of setting the target weight for the checkweighing application. You have two choices; LIMIT and SPL (sample). See note at left.

   LIMIT In this mode you enter the upper and lower limits for your item and the indicator will use those values to run the display.

   SPL In this mode you use a correct weight "product" on the scale to set the target weight. The indicator will use this weight to run the display. After SPL is chosen, a number is displayed. This is the sample tolerance. When a sample is done, the upper and lower limits will automatically be ±(sample tolerance) divisions from the target weight.

6. Toggle between the choices by pressing the **TARE** or **UNITS** key. Press the **ENTER** key when your choice is displayed…

   TYPE is displayed.

7. Press the **UNITS** key…

   TRIPS is displayed. Use this to set outputs to follow over/under/accept or to function as standard outputs.

8. Toggle between ***TARGET*** and ***STNDRD*** by using the **TARE** or **UNITS** key:

TARGET	OP1 is Under
	OP2 is Accept
	OP3 is Over
STANDARD	You can configure outputs from weigh mode. Generally Accept/Reject.

9. Press **ENTER** to accept the displayed choice…

   TRIPS is displayed.

10. Press the **UNITS** key…

    DIV is displayed.

11. To configure how many divisions will be equal to one graduation on the fan graph, press the **PRINT** key…

    A number is displayed.

12. Press **ENTER** to accept the displayed number of divisions or enter a new number and press **ENTER**…

    DIV is displayed.

13. Press the **UNITS** key…

    CLEAR is displayed. Use this item to clear all the information stored for this application. **WARNING - Only do this if you are sure you want the information permanently removed!**

    You may want to print out the report before clearing all the information. See step 2 in this section.

14. Press the **PRINT** key to clear all the information

    OR

    Skip to step 15…

    SURE? is displayed. This is asking if you are sure you want to clear the information. If you are, press the **ENTER** key. If you do not want to clear the data, press the **SELECT** key…

    CLEAR is displayed.

15. Press the **SELECT** key…

    TARGET is displayed.

Count Application

1. Press the **UNITS** key…

   COUNT is displayed. Use this item to clear and print reports for the count application.

2. Press the **PRINT** key…

   PRINT is displayed. Use this item to print out a complete report of count application information.

3. Press the **PRINT** key …

   PORT 1 or ***PORT 2*** is displayed. Use this item to select which port to use for printing the report.

4. Toggle between ***PORT 1*** and ***PORT 2*** using the **TARE** or **UNITS** key. Press the **ENTER** key when the choice you want is displayed…

   Display shows ***BUSY*** briefly then returns to ***PRINT***.

5. Press the **UNITS** key…

   MIN is displayed. Use this item to set the minimum sample weight as a percent of capacity.

6. Press the **PRINT** key…

   Current value is displayed.

7. Key in a percentage from 0-100% and press **ENTER**…

   MIN is displayed.

8. Press the **UNITS** key…

   SIZE is displayed. This is the sample size parameter. Use this to set the sample size for the counting application.

9. Press the **PRINT** key…

   Current sample size is displayed.

10. Key in a new sample size. Press **ENTER** to accept…

    SIZE is displayed.

11. Press the **UNITS** key…

    MODE is displayed. Use this to select the sampling mode; Bulk or Dribble.

    Bulk sampling — In this sampling method you place the specified number of items on the scale all at once (in bulk) and the scale automatically starts to calculate piece weight when the weight stabilizes. The count is then displayed.

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

12. Toggle between the choices by using the **TARE** or **UNITS** key. Press **ENTER** when your choice is displayed…

    MODE is displayed.

13. Press the **UNITS** key…

    CLEAR is displayed. Use this item to clear all the information stored for this application. **WARNING - Only do this if you are sure you want the information permanently removed!**

    You may want to print out the report before clearing all the information. See step 2 in this section.

14. Press the **PRINT** key to clear all the information

    OR

    Skip to step 15…

    SURE? is displayed. This is asking if you are sure you want to clear the information. If you are, press the **ENTER** key. If you do not want to clear the data, press the **SELECT** key…

    CLEAR is displayed.

15. Press **SELECT**…

    COUNT is displayed.

TOP (Peak) Application

1. Press the **UNITS** key…

   TOP is displayed. Use this item to clear and print reports for the peak application.

2. Press the **PRINT** key…

   PRINT is displayed. Use this item to print out a complete report of peak application information.

3. Press the **PRINT** key …

   PORT 1 or ***PORT 2*** is displayed. Use this item to select which port to use for printing the report.

4. Toggle between ***PORT 1*** and ***PORT 2*** using the **TARE** or **UNITS** key. Press the **ENTER** key when the choice you want is displayed…

   Display shows ***BUSY*** briefly then returns to ***PRINT***.

5. Press the **UNITS** key…

   CLEAR is displayed. Use this item to clear all the information stored for this application. **WARNING - Only do this if you are sure you want the information permanently removed!**

   You may want to print out the report before clearing all the information. See step 2 above.

6. Press the **PRINT** key to clear all the information

   OR

   Skip to step 7…

   SURE? is displayed. This is asking if you are sure you want to clear the information. If you are, press the **ENTER** key. If you do not want to clear the data, press the **SELECT** key…

   CLEAR is displayed.

7. Press the **SELECT** key…

   TOP is displayed.

8. Press the **SELECT** key…

   APP is displayed.

LOGS
(Log submenu)

9. Press the **UNITS** key…

   LOGS is displayed. The Logs menu item allows you to view, print or clear logs for the following:

   Calibration
   Overload and Underload Errors
   SensorComm Errors
   Ghost Errors

10. Press the **PRINT** key…

    CAL is displayed. You must print out this log to view it. Below is a sample of a calibration log printout:

    Calibration Log:

    ```
    Time: 23:58
    Date: 12/17/2003
    Scale Serial#: 123456
    Calibration Zero:
    0.3456 mV/V
    Calibration Span:
    2.3455 mV/V @ 3000 lb
    ```

11. Press the **F1** key to print the report…

    PORT 1 or **PORT 2** is displayed. Use this to choose which port to print through.

12. Toggle between the port choices using the **TARE** or **UNITS** key and press **ENTER** when your choice is displayed…

    Report is printed and display returns to ***CAL***.

13. Press the **UNITS** key…

    ERR.LOG is displayed.

14. Press the **PRINT** key…

    OLOAD is displayed. This is the overload counter.

15. Toggle between ***OLOAD*** and ***ULOAD*** (overload) by using the **TARE** or **UNITS** key and press **ENTER** when your choice is displayed…

    Under both ***OLOAD*** and ***ULOAD*** are choices to view the counter (***CNTR***) or print (***PRINT***) the report.

16. Toggle between ***CNTR*** and ***PRINT*** by using the **TARE** or **UNITS** key and press **ENTER** when your choice is displayed…

    If you choose ***CNTR***, the overload or underload count will be displayed.

    If you choose ***PRINT***, you can choose the port to print through and press **ENTER**. The counter value for overload or underload will be printed.

    Example:

    ```
    Overloads:
         0 overloads
         00:00 on 00-00-00

    Underloads:
         0 underloads
         00:00 on 00-00-00
    ```

17. When you are done with the error log section, press the **SELECT** key repeatedly until…

    ERR.LOG is displayed.

18. Press the **UNITS** key…

    S-COM is displayed. This is the SensorComm error log. See a sample below and the note at left.

    SensorComm Log:

    ```
         Error #1 @ 15:00 on 12-17-03
    ```

19. Press the **PRINT** key…

    PRINT is displayed.

20. Press the **PRINT** key to print the report.

    PORT 1 or ***PORT 2*** is displayed. Use this item to select which port to use for printing the report.

*See the section **SensorComm Errors** to see the list of error codes.*

The S-COM log only appears if the scale is configured as a SensorComm scale. The Ghost log will only appear if ghosting is enabled.

21. Toggle between ***PORT 1*** and ***PORT 2*** using the **TARE** or **UNITS** key. Press the **ENTER** key when the choice you want is displayed…

    Display shows ***BUSY*** briefly then returns to ***PRINT***.

22. Press the **UNITS** key…

    CLEAR is displayed. Use this to clear the log from memory.

23. Press **PRINT** to clear the log…

    SURE? is displayed.

24. Press **ENTER** to clear the log…

    CLEAR is displayed.

25. Press the **SELECT** key…

    S-COM is displayed.

26. Press the **UNITS** key…

    GHOST is displayed. This is the Ghost error log. See a sample below.

    Ghost Log:

    ```
    Ghost is not engaged.
    ```

27. Press the **PRINT** key…

    PRINT is displayed.

28. Press the **PRINT** key to print the report.

    PORT 1 or ***PORT 2*** is displayed. Use this item to select which port to use for printing the report.

29. Toggle between ***PORT 1*** and ***PORT 2*** using the **TARE** or **UNITS** key. Press the **ENTER** key when the choice you want is displayed…

    Display shows ***BUSY*** briefly then returns to ***PRINT***.

30. Press the **UNITS** key…

    CLEAR is displayed. Use this to clear the log from memory.

31. Press **PRINT** to clear the log…

    SURE? is displayed.

32. Press **ENTER** to clear the log…

    CLEAR is displayed.

33. Press the **SELECT** key…

    GHOST is displayed.

34. Repeatedly press the **SELECT** key until…

    SETUP is displayed.

    This completes the Setup submenu of the Supervisor menu. You can return to normal operation (step 35) or go to the next sub-menu item, ***TEST***, by pressing the **UNITS** key.

35. Press the **ESC** key to return to normal weighing mode. You will be prompted to save the changes you've made. Press the **ESC** key to abort any changes made or press **ENTER** to accept them and return to normal operating mode.

TEST (Test menu)

1. Proceed to the next menu by pressing the **UNITS** key…

   TEST is displayed. This menu lets you view indicator information and test the display, keypad, serial ports, inputs and outputs.

ABOUT (Indicator information)

2. Press the **PRINT** key…

   ABOUT is displayed. Press the **PRINT** key then repeatedly press the **UNITS** key to view the part number and revision level for the software found in your indicator.

   Press **SELECT** key to return to ***ABOUT***.

ADC (Analog scale test)

3. Press the **UNITS** key…

   ADC is displayed. This is the mV/V output of the connected analog scale.

4. Press the **PRINT** key…

   The mV/V value is displayed. This value should increase as weight is applied to the scale

5. Press the **SELECT** key…

   ADC is displayed.

DISP (Display test)

6. Press the **UNITS** key…

   DISP is displayed. This is the display test item.

7. Press the **PRINT** key to perform a dynamic test of the display.
8. Press the **ESC** key to stop the dynamic test…

   The display flashes a few more times then ***DISP*** is displayed.

BUTTON (Key test)

9. Press the **UNITS** key…

   BUTTON is displayed. This is the button test item.

10. Press the **PRINT** key to perform a button test. Each key you press will be reflected on the display screen to confirm the button is functioning correctly.
11. Press the **ESC** key to stop the button test.

    BUTTON is displayed.

SERIAL (Serial port test)

12. Press the **UNITS** key…

    SERIAL is displayed. This is the serial test item.

13. Press the **PRINT** key to access the serial test.

    PORT 1 is displayed.

14. Jumper the transmit and receive lines on the serial port and press the **PRINT** key…

    The display should show ***PASS***. If there is a problem the display will show ***FAIL***.

15. Press the **SELECT** key…

    PORT 1 is displayed.

16. Press the **UNITS** key…

    PORT 2 is displayed. Repeat steps 14 and 15 to test port 2.

17. Press **SELECT** key…

    SERIAL is displayed.

INPUT (Input test)

18. Press the **UNITS** key…

    INPUT is displayed. This is the input test item.

19. Press the **PRINT** key to access the test.

    1 2 3 is displayed. ***1*** stands for input 1, etc.

20. If you jumper pins 1 and 2 of the I/O connector on the bottom of the indicator…

    1 becomes ***0*** until the jumper is removed.

    To test input 2, jumper pins 1 and 3. ***2*** becomes ***0*** until the jumper is removed.

    To test input 3, jumper pins 1 and 4. ***3*** becomes ***0*** until the jumper is removed.

21. Press the **SELECT** key…

    INPUT is displayed.

OUTPUT (Output test)

22. Press the **UNITS** key…

    OUTPUT is displayed. This is the output test item.

23. Press the **PRINT** key to access the test.

    OUT 1 is displayed. This stands for output 1.

24. Press the **PRINT** key…

    The display toggles between ***ON*** and ***OFF***. This will toggle the output off and on. Monitor the output to see that it is turning off and on. Use a Trips Interface Unit (TIU3) or other output device.

25. Stop the test by pressing the **SELECT** key…

    OUT 1 is displayed.

26. Press the **UNITS** key…

    OUT 2 is displayed.

27. Repeat steps 23 and 25 for outputs 2 and 3…
28. Press the **SELECT** key…

    OUTPUT is displayed.

OPTION

29. Press the **UNITS** key…

    OPTION is displayed.

A-OUT test

30. Press the **PRINT** key…

    A-OUT is displayed. This stands for the analog output test.

31. Press the **PRINT** key…

    A numeric entry screen is displayed.

32. Key in a percentage between 0 and 100 and press the **ENTER** key…

    The analog output will put out that percentage of voltage. For example: If you have output set from 0 to 10V and you key in a percentage of 25, the analog output voltage should read 2.5 volts. You can continue to key in other percentages, press **ENTER** and check the analog output voltage.

33. When you are finished testing the analog output, press the **ESC** key…

    A-OUT is displayed.

CNTR test

34. Press the **UNITS** key…

    CNTR is displayed. This checks the pulse counter.

35. Press the **PRINT** key to check the counter…

    0 is displayed if the pulse counter is inactive. If pulse input are occurring the display will show the increasing pulse counts.

36. Press **SELECT** or **ENTER** to stop the test…

    CNTR is displayed.

SENSOR test

37. Press the **UNITS** key…

    SENSOR is displayed. Use this to test the function of each weight sensor attached via SensorComm.

This test can be used to properly adjust the deadload of the scale. Each sensor should have similar mV/V outputs if the physical load on the scale is equally distributed.

38. Press the **PRINT** key…

    1 is displayed.

39. Scroll through the available weight sensor numbers by pressing the **TARE** or **UNITS** key. Press the **ENTER** key when the sensor you want to test is displayed…

    mV/V output of the selected sensor is displayed.

40. Apply weight to the scale to verify the mV/V level changes.
41. Press the **ENTER** key to exit the test…

    Sensor number is displayed.

42. Repeat steps 38 through 40 for each sensor you want to test.
43. Press the **SELECT** key…

    SENSOR is displayed.

NETS test

44. Press the **UNITS** key…

    NETS is displayed.

45. Press the **PRINT** key…

    NET 1 is displayed.

46. Toggle between ***NET 1*** or ***NET 2*** using the **TARE** or **UNITS** key and press **PRINT** when the network you want to view is displayed.

    The first screen of network configuration information is displayed.

47. Repeatedly press the **PRINT** key to view all the configuration information. The display will return to ***NET 1*** or ***NET 2*** when you've seen all the information.
48. This completes the TEST submenu. Press the **SELECT** key until ***TEST*** is displayed.

To return to normal weighing mode, press **ESC**. If you press **ESC** you will be prompted to save any changes made. Press **ESC** to abort any changes or press **ENTER** to save changes.

AUDIT (Audit counters) menu

The next section of the Supervisor menu is the AUDIT submenu. This menu lets you view configuration and calibration audit counters. These counters cannot be changed, only viewed.

Follow these steps to access each item in the AUDIT submenu:

CFG (Configuration audit counter)

1. Press the **UNITS** key…

   AUDIT is displayed.

2. Press the **PRINT** key…

   CFG is displayed. This stands for the Configuration audit counter. Use this item to see how many times this indicator has been configured.

3. Press the **PRINT** key…

   A number is briefly displayed, then ***CFG*** is displayed. This is the number of times this indicator has been configured.

CAL (Calibration audit counter)

4. Press the **UNITS** key…

   CAL is displayed. This stands for the Calibration audit counter. Use this item to see how many times this indicator has been calibrated.

5. Press the **PRINT** key…

   A number is briefly displayed, then ***CAL*** is displayed. This is the number of times this indicator has been calibrated.

6. Press the **SELECT** key…

   AUDIT is displayed.

This completes the AUDIT submenu and the Supervisor menu. Press the **SELECT** key to return to normal weighing mode.

SensorComm Hardware Configuration and Calibration

SensorComm will only connect to communications port #1

Com Port #1 RS232, RS485 or SensorComm					
GND	TX / TXA	RTS/TXB	RX / RCA	CTS/RCB	+15VDC
BLK	RED	GRN	YLW	BLU	WHT

Main PCB jumper settings need to be set for RS485. This requires disassembly of the indicator and moving the jumper on JMP1 to pins 2 and 3. See the next section on *Disassembly and Reassembly*.

Wiring connections, at the indicator, are shown in the table above.

Refer to SensorComm installation manual for SensorComm box wiring.

Enable SensorComm

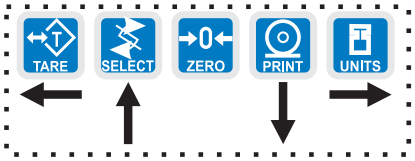
Only one SensorComm box can be connected to the indicator. The indicator can be 1000 feet from the SensorComm box.

1. Access the Service (0701) menu…
   CAL is displayed.
2. Press the **UNITS** key…
   SCALE is displayed.
3. Press the **PRINT** key…
   SOURCE is displayed.
4. Press the **PRINT** key…
   ANALOG or ***S-COM*** is displayed.
5. Press the **UNITS** key to display ***S-COM***.
6. Press the **ENTER** key…
   SensorComm is now enabled.
7. Press the **ESC** key to exit and **ENTER** to save the configuration at the prompt.

Enable/Configure Weigh-Bars

1. Access the Service (0701) menu…
   CAL is displayed.
2. Press the **TARE** key…
   OPTION is displayed.
3. Press the **PRINT** key…
   A-OUT is displayed.
4. Repeatedly press the **UNITS** key until ***SENSOR*** is displayed.
5. Press the **PRINT** key…
   GHOST is displayed.
6. Press the **TARE** key
   CELLS is displayed.
7. Press **PRINT**…
   1 is displayed.
8. Press **PRINT** …
   ON or ***OFF*** is displayed.
9. Toggle between the choices by pressing the **UNITS** or **TARE** key. Press **ENTER** to accept when ***ON*** is displayed.
10. Press **UNITS** to advance to the next cell.
11. Repeat steps 7-10 for the correct number of cells being connected.

CAL submenu for SensorComm scales



If your system is set up for a SensorComm j-box, the shaded portion of the calibration menu is the first item. See Figure 15. Follow these steps to corner the system and then continue on with the calibration procedures outlined in *CAL submenu for analog scales.*

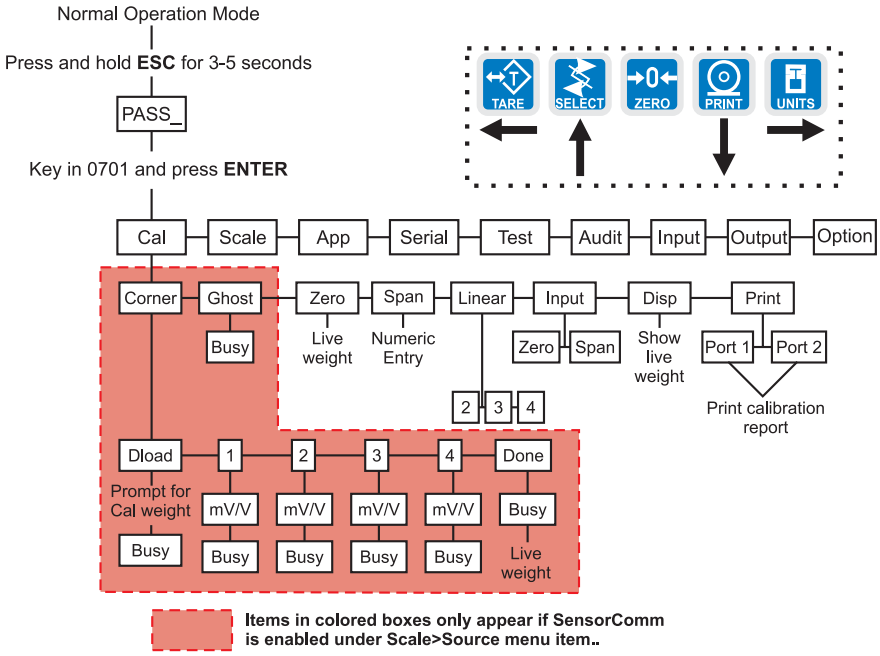


Figure 15
SensorComm cornering menu

CORNER (SensorComm Cornering)

1. Access the Service menu…

   CAL is displayed.

2. Press the **PRINT** key…

   CORNER is displayed. Use this item to corner the SensorComm system.

3. Press the **PRINT** key…

   DLOAD is displayed. This stands for deadload.

4. Press the **PRINT** key…

   Numeric entry screen is displayed.

5. Key in the size of your cornering (test) weight. Press the **ENTER** key to enter this value and to record the deadload weight…

   BUSY is briefly displayed and then ***DLOAD*** is displayed.

6. Press the **UNITS** key…

   1 is displayed. This stands for sensor #1.

7. Press the **PRINT** key…

   mV/V is displayed for sensor#1.

8. Place the cornering weight over sensor #1. Wait for the scale to stabilize then press the **ENTER** key…

   BUSY is briefly displayed and then ***1*** is displayed.

All sensors (1-4) will be displayed in Calibration. If the sensor is not enabled when you press the **PRINT** *key, the display will show* ***CANT****.*

9. Repeat steps 6 through 8 for each sensor…

   The last sensor number will be displayed.

10. Press the **UNITS** key…

    DONE is displayed.

11. Press the **ENTER**…

    BUSY is briefly displayed and then the live weight.

12. Press the **ENTER** key to finish the cornering process.

    DONE is displayed.

GHOST (Ghost Calibration Factors)

Downloading a configuration file to the E1070 may corrupt the Ghost function or cause of the loss of Ghost calibration.

13. Press **SELECT** key…

    CORNER is displayed.

14. Place a weight in the center of your scale and press the **UNITS** key…

    GHOST is displayed. Use this to calculate the ghost calibration factors the ghost function will use in case a weight sensor fails.

15. Press the **ENTER** key to calculate the calibration factors…

    Display shows ***BUSY*** then returns to ***GHOST***. The display will show ***ABORT*** if the process fails. The display will show ***CANT*** if Ghost is not enabled under OPTION>SENSOR>GHOST in this service menu.

16. Press the **UNITS** key to move to the ***ZERO*** item in the Cal menu. See the steps for this in the earlier section, *CAL submenu for analog scales*.

When you are done with the SensorComm cornering and Ghost items, you need to continue with the rest of the calibration menu. See the section after Figure 4; *ZERO (Setting Zero Reference Point)*.

SensorComm Error Messages

Table 5
SensorComm errors

All messages below which mention components are referring to components within the SensorComm product.

Error #	Error	Description of Error	Possible Cause
1	Communications error	SensorComm not responding	-Cable -SensorComm hardware failure -Indicator hardware failure
2	Power fault	+Vin, +EXC, or -EXC has fallen out of tolerance. Voltage ±5%.	-Power supply failure -Cable
3	A to D overrange	More than +5mV/V has been applied to the A to D converter	-Cable - weight sensor -Weight sensor failure -SensorComm PC board
4	A to D underrange	Less than -5mV/V has been applied to the A to D converter	-Cable - weight sensor -Weight sensor failure -SensorComm PC board
5	A to D Initialization failure	A to D converter not responding	- SensorComm PC board
6	Weight sensor overrange	The weight sensor output has exceeded the configured amount.	-Abuse of scale -Weight sensor failure
7	Weight sensor deadload shift warning	The weight sensor output has exceeded the configured amount of capacity since calibration.	-Gauging problem on the weight sensor -Mechanical issue with the scale
8	Weight sensor deadload shift error	The output of the weight sensor has increased more than a configurable percent of capacity since calibration	-Gauging problem on the weight sensor -Mechanical issue with the scale
9	Weight sensor stability	The output of 1 or more weight sensor is not in the same range as the rest of the scale.	-Mechanical issue with the scale -Weight sensor problem

Appendix A: Remote Display Functionality

Remote Display Modes: (Application Settings – Remote Indicator)

This will configure the indicator to function as a remote display to another Evolution Series indicator. Functionality of the remote display can be configured through the Service menu.

The remote display is capable of displaying weight information; Gross, Tare, or Net weight, sent from the host indicator. In addition to displaying weight, the remote display can be configured to display the scale annunciators; Motion, Center of Zero, outputs, or other application specific data. The remote display can also transmit key presses, for basic weight functions, back to the host indicator. Functions include; Print, Zero and Tare. The remote display can be configured for these individual functions or a combination of these functions.

Mode 1: Remote weight display only

The indicator will be configured for Remote Display mode without annunciators or key functions. This will disable the keypad and annunciators of the remote indicator and display whatever valid message is received from the serial port. Mode 1 contains the string:

G<SP>00000<SP>UN<CR><LF>.

The first character can be a G or N for Gross or Net weight active value. This is followed by a space <SP> and a six digit numeric weight followed by another space <SP>. The serial string will end with the current unit of scale measure <UN> and the end of message character <CR>, carriage return, followed by a line feed <LF>. Refer to Table 1 for host output protocol.

Mode 2: Remote weight display with annunciators

The host sends the same serial string as mode 1, but the addition of annunciator information will be present in the serial string from the host. Mode 2 contains the string

G<SP>00000<SP>lb<CR><AN1><AN2>…<ANn><CR><LF>

Refer to figure #1 for host output protocol. The first character can be a G or N for Gross or Net weight active value. This is followed by a space <SP> and a six digit numeric weight followed by another space <SP>. The serial string will end with the current unit of scale measure <UN> and the end of message character <CR>, carriage return. Annunciators are mapped according to the bit table, Table 2, and transmitted from the host indicator to the remote display after the end of message character.

Mode 3: Remote weight display with keypad

The indicator will be configured for Remote Display mode without annunciators. This will enable the remote display keypad and display whatever valid message is received from the serial port. Mode 3 contains the string:

G<SP>00000<SP>UN<CR><LF>

The first character can be a G or N for Gross or Net weight active value. This is followed by a space <SP> and a six digit numeric weight followed by another space <SP>. The serial string will end with the current unit of scale measure <UN> and the end of message character <CR>, carriage return, followed by a line feed <LF>. Refer to figure #1 for host output protocol.

The remote display can also transmit key presses, for basic weight functions, back to the host indicator. Functions include; Print, Zero and Tare. Refer to Table 3 for remote key press protocol.

Mode 4: Remote weight display with keypad and annunciators

The host sends the same serial string as mode 3, but the addition of annunciator information will be present in the serial string from the host. Mode 4 contains the string

G<SP>00000<SP>lb<CR><AN1><AN2>…<ANn><CR><LF>

Refer to figure #1 for host output protocol. The first character can be a G or N for Gross or Net weight active value. This is followed by a space <SP> and a six digit numeric weight followed by another space <SP>. The serial string will end with the current unit of scale measure <UN> and the end of message character <CR>, carriage return. Annunciators are mapped according to the bit table, figure #2, and transmitted from the host indicator to the remote display after the end of message character.

The remote display can also transmit key presses, for basic weight functions, back to the host indicator. Functions include; Print, Zero and Tare. Refer to Table 3 for remote key press protocol.

Remote Display Modes: (Serial Port Settings – Host Indicator)

There should be five modes of operation for the remote display Serial Port/ setting. (This only describes Remote display modes. There may be more serial modes such as RS-485, ENQ…)

Mode 4100: Remote weight display only. (Configurable serial string)

This is a serial port mode which will send a configured print format, at the display update rate, to an Avery Weigh-Tronix RD 4100 remote display. The print format can be edited to allow communications to any remote display.

Mode 1: Remote weight display only. (Fixed serial string)

Mode one sends G<SP>00000<SP>lb<CR><LF> at the display update rate. The remote indictor will display Gross or Net weight values only.

Mode 2: Remote weight display with annunciators. (Fixed serial string)

Mode two sends G<SP>00000<SP>lb<CR> <LF><AN1><AN2>…<ANn> <CR><LF> at the display update rate. The remote indicator will display weight and annunciators such as; motion, center of zero, outputs or annunciators specific to a configured application.

Mode 3: Remote weight display with keypad. (Fixed serial string)

Mode three sends G<SP>00000<SP>lb<CR><LF> at the display update rate. The remote indictor will display Gross or Net weight values only. The host indicator will accept key press commands when a key is pressed on the remote indicator configured to operate in mode three.

Mode 4: Remote display with keypad and annunciators. (Fixed serial string)

Mode four sends G<SP>00000<SP>lb<CR> <LF><AN1><AN2>…<ANn> <CR><LF> at the display update rate. The remote indicator will display weight and annunciators such as; motion, center of zero, outputs or annunciators specific to a configured application. The host indicator will accept key press commands when a key is pressed on the remote indicator configured to operate in mode three.

Table 1: Host indicator output protocol	
G<SP>00000<SP>lb<CR><LF>	Mode 1 and 3 Remote display input string
G<SP>00000<SP>lb<CR><AN1><AN2>…<ANn><CR><LF>	Mode 2 and 4 Remote display input string w/ Annunciators <ANn> represents the annunciator bytes that are available for the remote, from the host.

Table 2: Annunciator map bit table

Annunciator Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
AN1	TG0	N/A	N/A	N/A	N/A	N/A	N/A	CM1
AN2	ET	N	ROSS	G	~	->0<-	TG1	CM2
AN3	OP3	OP2	OP1	RINT	P	ARE	T	CM3
AN4	N/A	PT	N/A	N/A	N/A	N/A	N/A	CM4
AN5	Peak/Count	N/A	N/A	Cust	N/A	KG	LB	CM5
AN6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	CM6
AN7	N/A	UB1	UB2	UB3	UB4	UB5	UB6	N/A
AN8	N/A	OB1	OB2	OB3	OB4	OB5	OB6	N/A

UBx = Under Target Bars
TGx = The word target has multiple LED's under it. The x represents which LED to turn on.
Opx = Represents the outputs
N,et = Net LED's

T,are = Tare LED's
Obx = Over Target Bars
CMx = Comma's
Peak/Count = Count mode if no units, Peak mode if any unit of measure is turned on.

As you can see the annunciator "NET" is broken into two different bits. One for "N", the other for "ET". The host indicator will transmit a "1" or true in both bit positions to activate the annunciator "NET".

Example:

Transmit 20000 lb of Gross weight with Gross, Motion, and all Under bar(UB1-6) segments turned on. A typical serial string is as follows:

Mode 3&4 Serial String:

G<SP>20000<SP>lb<CR><AN1><AN2><AN3><AN4><AN5><AN6><AN7><AN8><CR><LF>

<AN1> = 0x00 <AN2> = 0x38 <AN3> = 0x00 <AN4> = 0x00
<AN5> = 0x01 <AN6> = 0x00 <AN7> = 0x3E <AN8> = 0x00

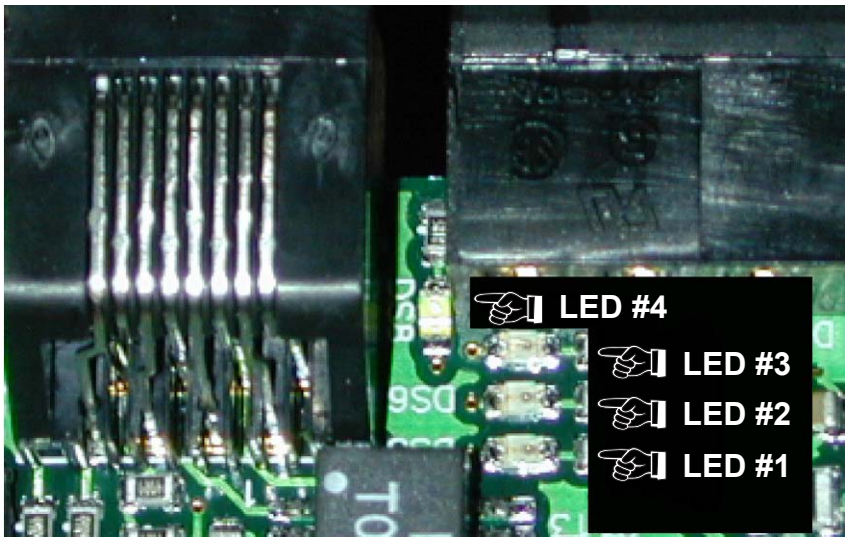
Table 3: Remote keypad press protocol	
Command	**Description of command**
Z<LF>	Emulates a Zero key press
S<LF>	Emulates a Select key press
T<LF>	Emulates a Tare key press
P<LF>	Emulates a Print key press
U<LF>	Emulates a Units key press
F<LF>	Emulates an F1 key press

Communications Timeout:

If communications is lost between the host and the remote, the remote will display “-“, middle dashes until a signal is acquired again. The timeout for this error to occur should be 5-10 seconds in duration.

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.

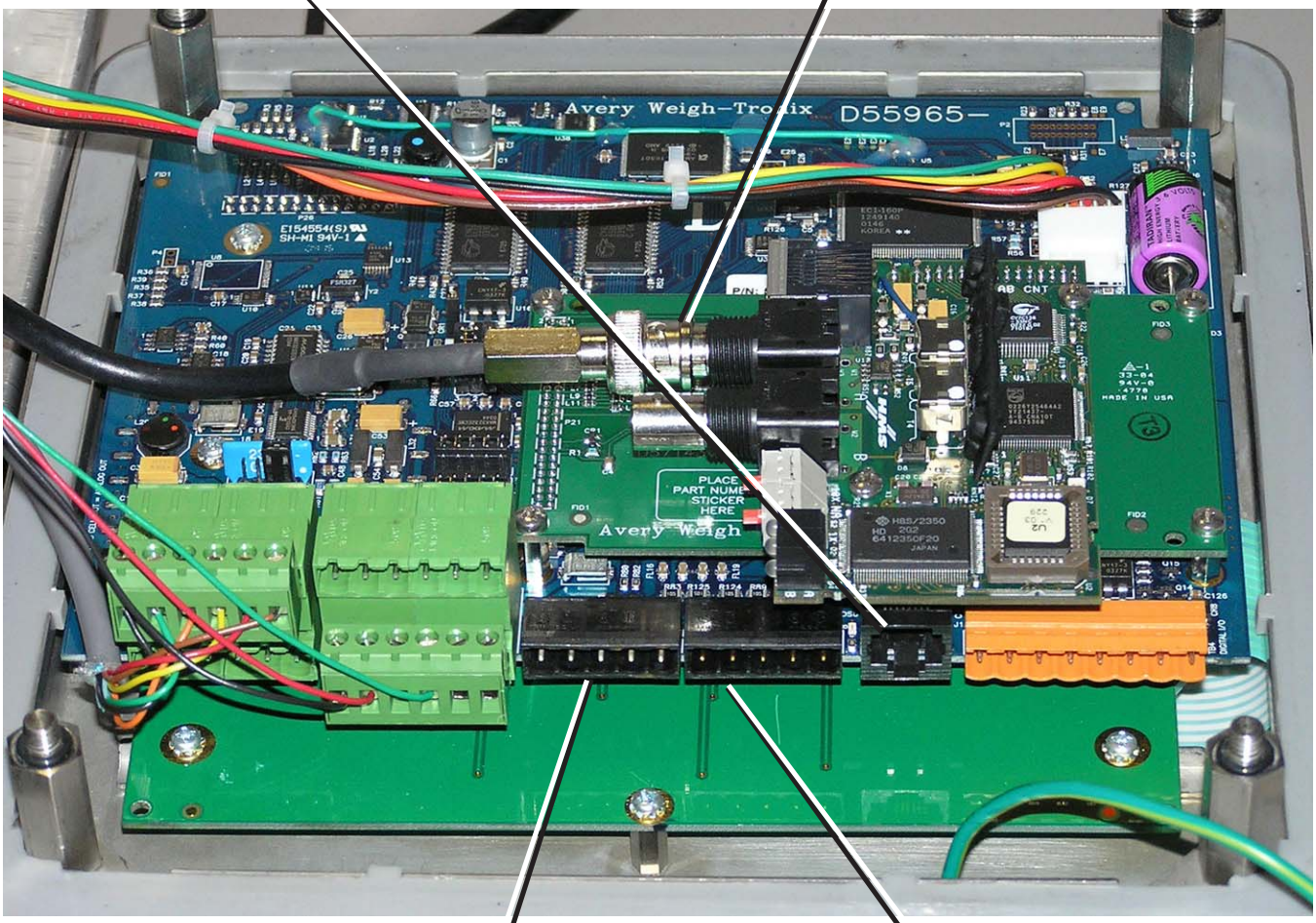


		ON	OFF
LED 1	LINK	ON-LINE	OFF-LINE
LED 2	TX	TRANSMITT ACTIVE	TRANSMITT NOT ACTIVE
LED 3	RX	RECEIVE ACTIVE	RECEIVE NOT ACTIVE
LED 4	SPEED	100M	10M

Appendix C: Network Connections

RJ-45 connector for Ethernet 10/100 interface

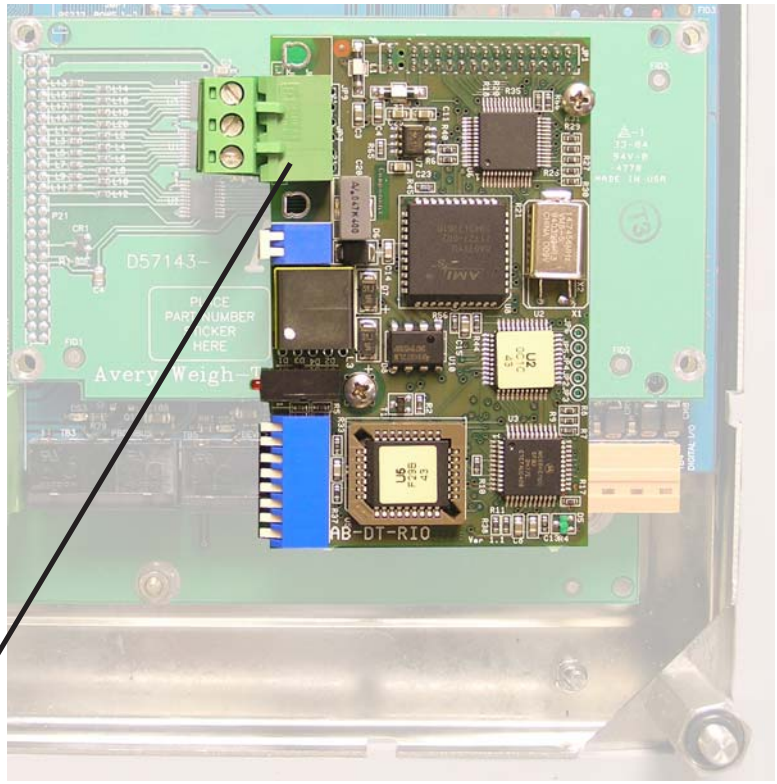
BNC bayonet connector for ControlNet interface when option card is installed. Be sure to use 50 ohm termination resistor on network. (Connector A)



PROFIBUS-DP			
DB9 - Female		Rear Panel	
Pin No.	Signal	Pin No.	Signal
6	+5.0@100mA	1	+5.0 Vdc
5	Ground	2	Ground
8	-Tx/Rx	3	-Signal
3	+Tx/Rx	4	+Signal
Housing	Shield	5	Shield

DeviceNet			
Network Bus		Rear Panel	
Pin No.	Signal	Pin No.	Signal
1	V-Bus Power	1	V -
2	CAN LOW	2	CAN -
3	Shield	3	Shield
4	CAN HI	4	CAN +
5	V + (24Vdc)*	5	V +

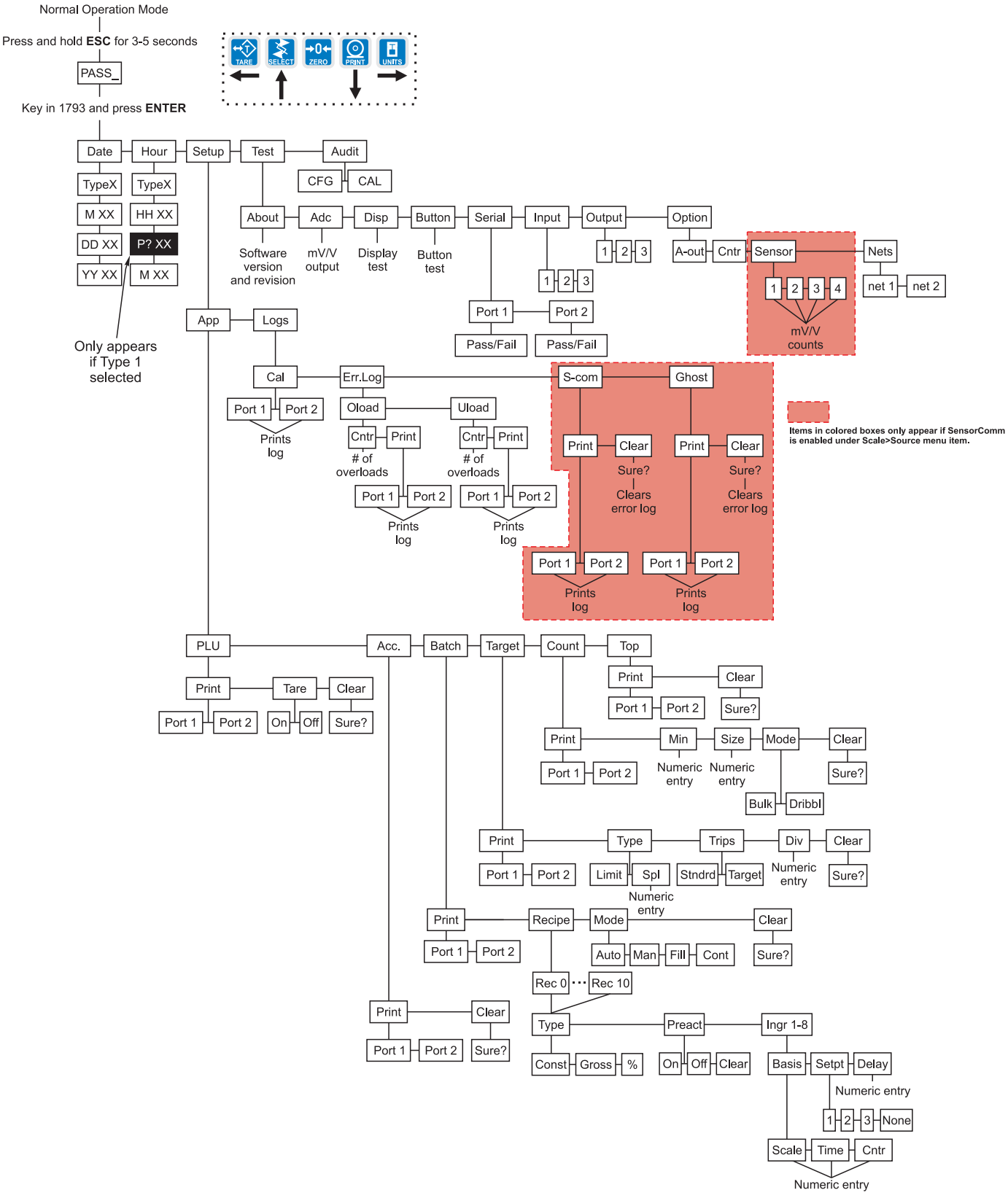
*An external power supply will be used to supply V+ power. Typically this supply will be previously installed.



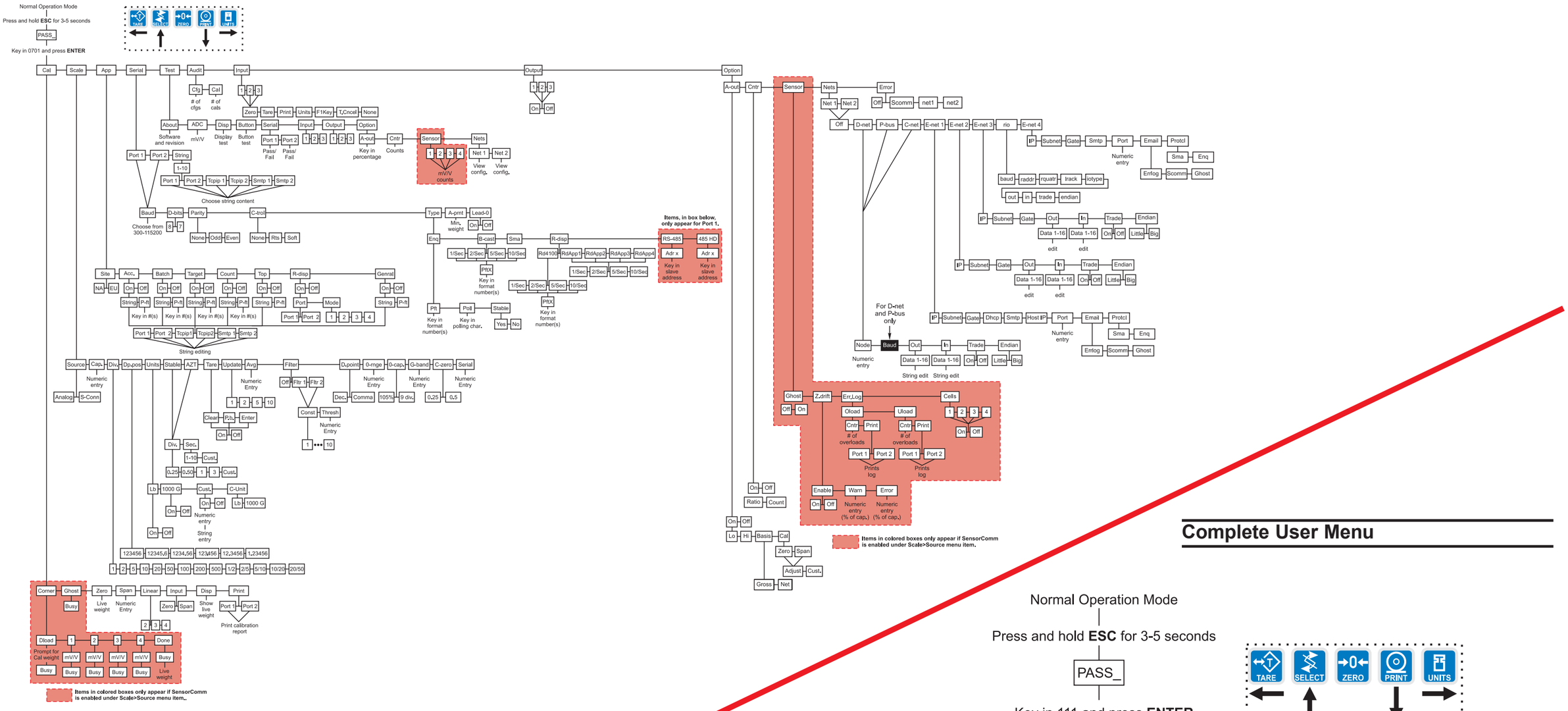
Remote I/O board and connector.

Appendix D: Complete Menu Structures

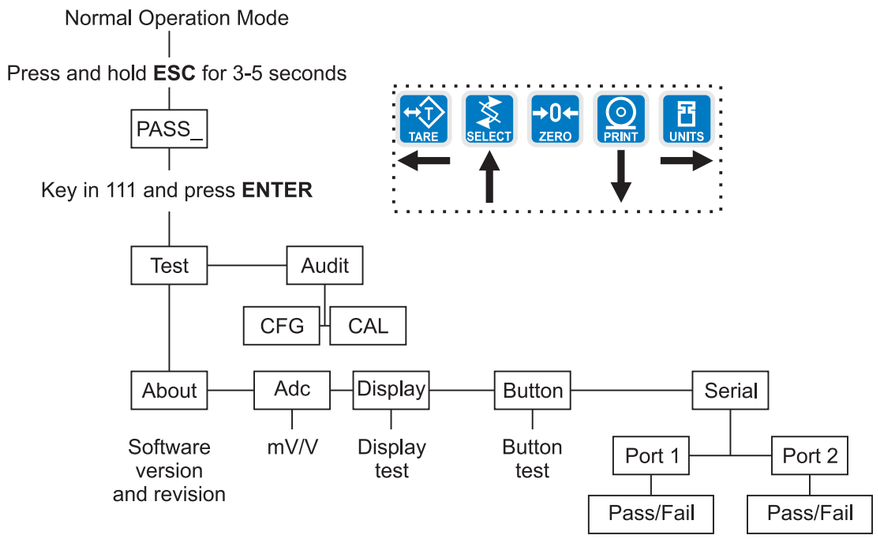
Complete Supervisor Menu



Complete Service Menu



Complete User Menu



MODEL E1070 SST INDICATOR
ENCLOSURE PARTS AND ASSEMBLY

-012	-011	-010	-009	-008	-007	-006	-005	-004	-003	-0020	-0012	ITEM NO.	SIZE	PART NO.	*	DESCRIPTION	REF. DESIG.
QUANTITY PER DASH NO.																	
BILL OF MATERIALS																	
												86					
1	1											85	A	60071-0016	*	BOARD, POWER SUPPLY	
												84					
.30'	.30'											83	A	15659-0010	*	KAPTON TAPE - .50	
1	1											82	A	60043-1076	*	TERMINAL BLOCK - 8 PIN	
4	4											81	A	60043-1050	*	TERMINAL BLOCK - 6 PIN	
2	2											80	A	60043-1043	*	TERMINAL BLOCK - 5 PIN	
1	1											79	A	60043-1027	*	TERMINAL BLOCK - 3 PIN	
												78					
												77					
2	2											76	A	68718-147	*	KNOB, PLASTIC - M6	
												75					
4	4											74	A	60062-1023	*	O-RING	
												73					
8	8											72	A	60084-0631	*	SCREW, PH - M3 x 6mm	
												71					
6	6											70	A	54011-0038	*	NUT, M4 W/EXTERNAL LOCK WASHER	
												69					
3	3											68	A	13828-823	*	NUT, ACORN M6	
												67					
												66					
												65					
4	4											64	A	375100312	*	STANDOFF - M3 x 12.5mm LONG	
												63					
1	1											62	A	55177-1041	*	NUT, LOCKING	
2	2											61	A	55177-1033	*	NUT, LOCKING	
4	4											60	A	55177-1017	*	NUT, LOCKING	
												59					
1	1											58	A	55177-0043	*	STRAIN RELIEF, HUMMEL - Ø.800 THD	
2	2											57	A	55177-0035	*	STRAIN RELIEF, HUMMEL - Ø.730 THD	
4	4											56	A	55177-0019	*	STRAIN RELIEF, HUMMEL - Ø.500 THD	
												55					
												54					
.12'	.12'											53	A	27429-1095	*	CORD, NEOPRENE - Ø9mm (Ø.354)	
												52					
.50'	.50'											51	A	27429-0014	*	CORD, NEOPRENE - Ø.25 INCHES	
												50					
2	2											49	A	26357-0038	*	WASHER, NEOPRENE - Ø.640 ID	
1	1											48	A	26357-0053	*	WASHER, NEOPRENE - Ø.765 ID	
4	4											47	A	26357-0046	*	WASHER, NEOPRENE - Ø.453 ID	
												46					
-	1											45	D	56551-0047		DECAL, MODEL/SN	
1	1											44	C	57359-0015		LABEL, NETWORK CERTIFICATION	
1	-											43	C	67856-313		RATING PLATE, E-SERIES IND-E1070	
1	1											42	A	13762-0019	*	TIE, CABLE	
												41					
1	-											40	C	67835-595-S		LABEL, WEEE	
												39					
1	1											38	C	56866-0013		COVER, INSULATION	
1	1											37	A	63834-105	*	NUT, ACORN - MODIFIED M6	
4	4											36	C	56138-0015		FOOT, RUBBER	
												35					
1	1											34	D	57655-0016		ENC, REAR - E1010/E1070 LITE	
												33					
1	1											32	D	57042-0018		GASKET, SANTOPRENE, E1010/E1070 LITE	
												31					
1	1											30	D	57657-0014		STAND, INDICATOR - E1010/E1070	
												29					
4	4											28	B	56126-0019		STANDOFF, HEX - 27.00mm LONG	
												27					
												26					
1	1											25	C	45868-0014		LABEL, GROUND	
1	1											24	B	48712-0024		ASSY, GROUND WIRE - 6.00 LONG	
												23					
												22					
1	1											21	D	57720-0017		ASSY, OVERLAY MEMBRANE - E1010/E1070	
												20					
1	1											19	D	56848-0016		ASSY, CABLE POWER	
												18					
												17					
												16					
												15					
1	1											14	D	57643-0011		PC BOARD ASSY MAIN	
												13					
												12					
												11					
1	-											10	D	49180-0025MTS		ASSY, POWER CORD - UK	
-	1											9	D	49180-0017MTS		ASSY, POWER CORD - USA	
												8					
												7					
												6					
												5					
												4					
												3					
X	-											2	D	57683-0020		ASSY, IND - MODEL E1070 UK	
-	X											1	D	57683-0012		ASSY, IND - MODEL E1070 USA	

57800	E1070 UK
57792	E1070 US
NEXT ASSY	USED ON

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* IN PART NO. COLUMN DENOTES VENDOR ITEM. SEE SOURCE OR SPECIFICATION CONTROL DRAWING.

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES (XXX) DENOTES REFERENCE DATA / [mm] DENOTES METRIC DIMENSIONS

2 PLACE DECIMALS ± .03
3 PLACE DECIMALS ± .010
ANGLES ± 1°

HOLE DIA TOLERANCES / THREADS

		INT. CLASS	EXT. CLASS
0.00 - .250	+.003/-.002	2B	2A
.251 - .500	+.005/-.003		
OVER .500	+.010/-.005		

MATERIAL: SEE BILL OF MATERIALS

FINISH: NOT APPLICABLE

MACHINING DRAWINGS: REMOVE ALL BURRS AND SHARP EDGES

MACHINED SURFACE FINISH UNLESS OTHERWISE SPECIFIED √

APPROVALS		DATE
DRAWN	Greg Abel	22 MAY 05
CHECK		
MECH ENG	Kamran Kazemi	22 MAY 05
ELEC ENG		

Avery Weigh-Tronix
1000 ARMSTRONG DRIVE
FAIRMONT, MN 56031
USA

ASSEMBLY, INDICATOR
MODEL E1070

SIZE	DWG. NO.	REV
D	57683	E

SCALE	DCN	SHEET
1/1	19736	1 OF 4

MODEL E1070 SST INDICATOR
ENCLOSURE PARTS AND ASSEMBLY

STRAIN RELIEF TORQUE VALUES					
THREAD AND LOCK NUT ITEM NO.	TORQUE in-lb (N-m)	DOME NUTS ITEM NO.	TORQUE in-lb (N-m)	HEX STANDOFF ITEM NO.	TORQUE in-lb (N-m)
60 (PG7)	12-16 (1.4 - 1.8)	56 (PG7)	8-10 (0.9 - 1.1)	28	44-53 (5.0-6.0)
61 (PG11)	23-26 (2.6 - 2.9)	57 (PG11)	18-22 (2.0 - 2.5)		
62 (PG13)	26-30 (2.9 - 3.4)	58 (PG13)	18-22 (2.0 - 2.5)		

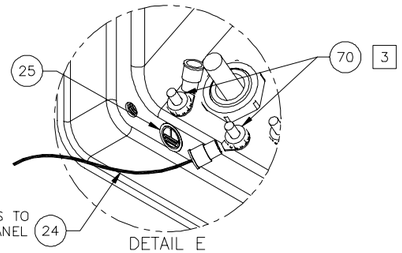
-0020	-0012	ITEM NO.	SIZE	PART NO.	*	DESCRIPTION	REF. DESIG.
		105					
		104					
		103					
		102					
		101					
REF	REF	100	A	57002-0016	*	OUTLINE DRAWING - E1070	
REF	REF	99	A	57165-0019	*	TEST PROCEDURE	
		98					
AR	AR	97	A	22395-0015	*	COMPOUND CORROSION PREVENTATIVE	
		96					
AR	AR	95	A	4905025	*	LOCTITE, P/N 638 - RED	
		94					
		93					
		92					
2	2	91	A	65127-516	*	WASHER, FRICTION - 3mm THICK	
		90					
		89					
1	1	88	A	13821-648	*	M6 NYLOC NUT SST	
		87					

BILL OF MATERIALS

SIZE	DWG. NO.	REV
D	57683	E
SCALE 1/1	DCN 19736	SHEET 2

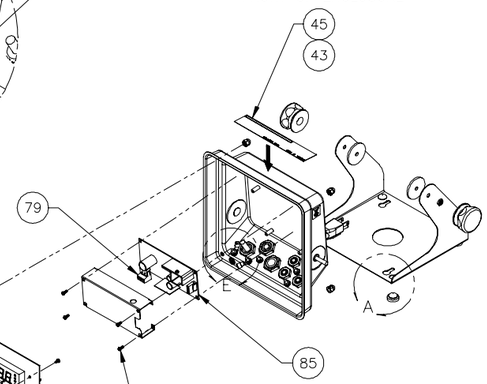
MODEL E1070 SST INDICATOR
ENCLOSURE PARTS AND ASSEMBLY

REVISIONS					
ZONE	REV	DESCRIPTION	BY	DATE	APPR
–	–	–	–	–	–

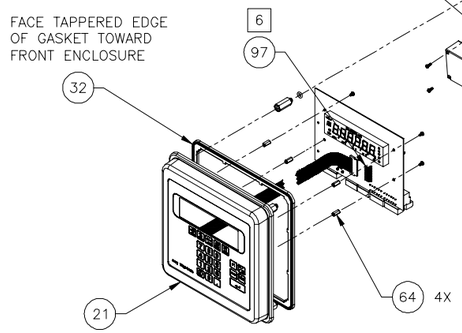


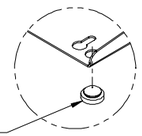
DETAIL E
SCALE 4:1

CENTER DECAL ON TOP OF REAR ENCLOSURE AS SHOWN, WITH TEXT MODEL E1070 FACING TOWARD FRONT OF ENCLOSURE



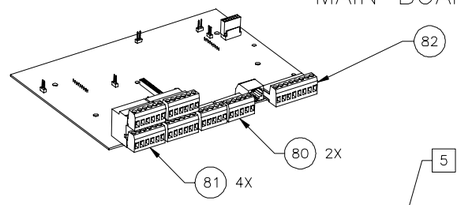
FACE TAPPERED EDGE OF GASKET TOWARD FRONT ENCLOSURE

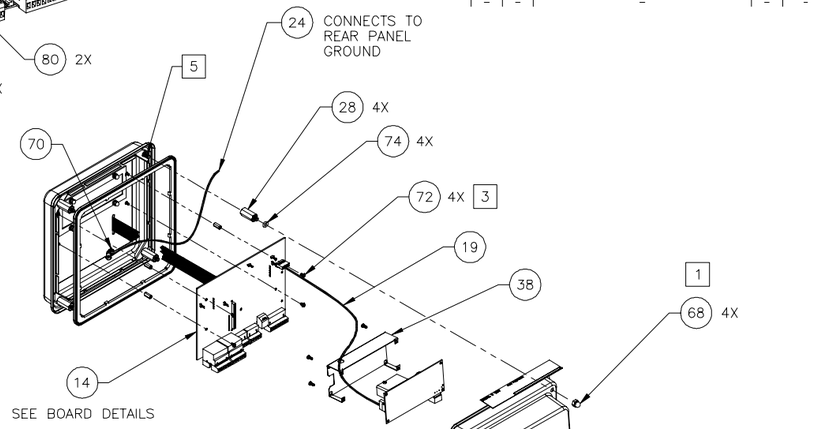


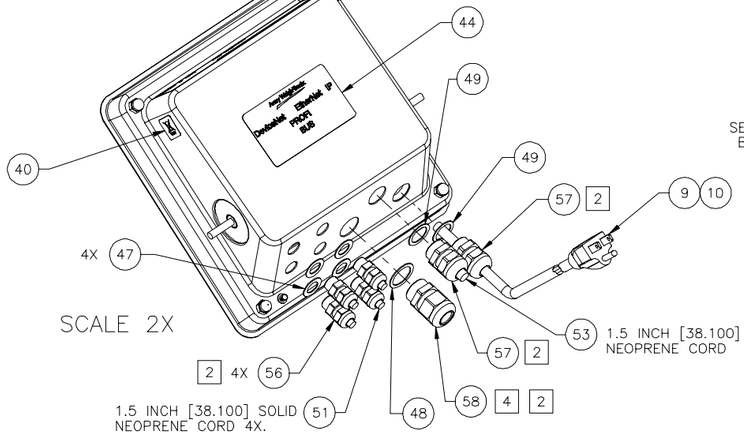


DETAIL A
SCALE 2:1
SCALE 2X

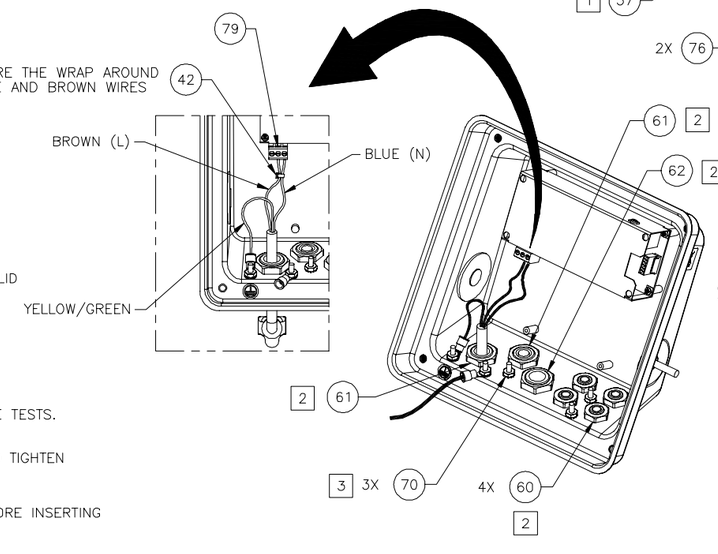
MAIN BOARD DETAIL







SCALE 2X



SCALE 2X

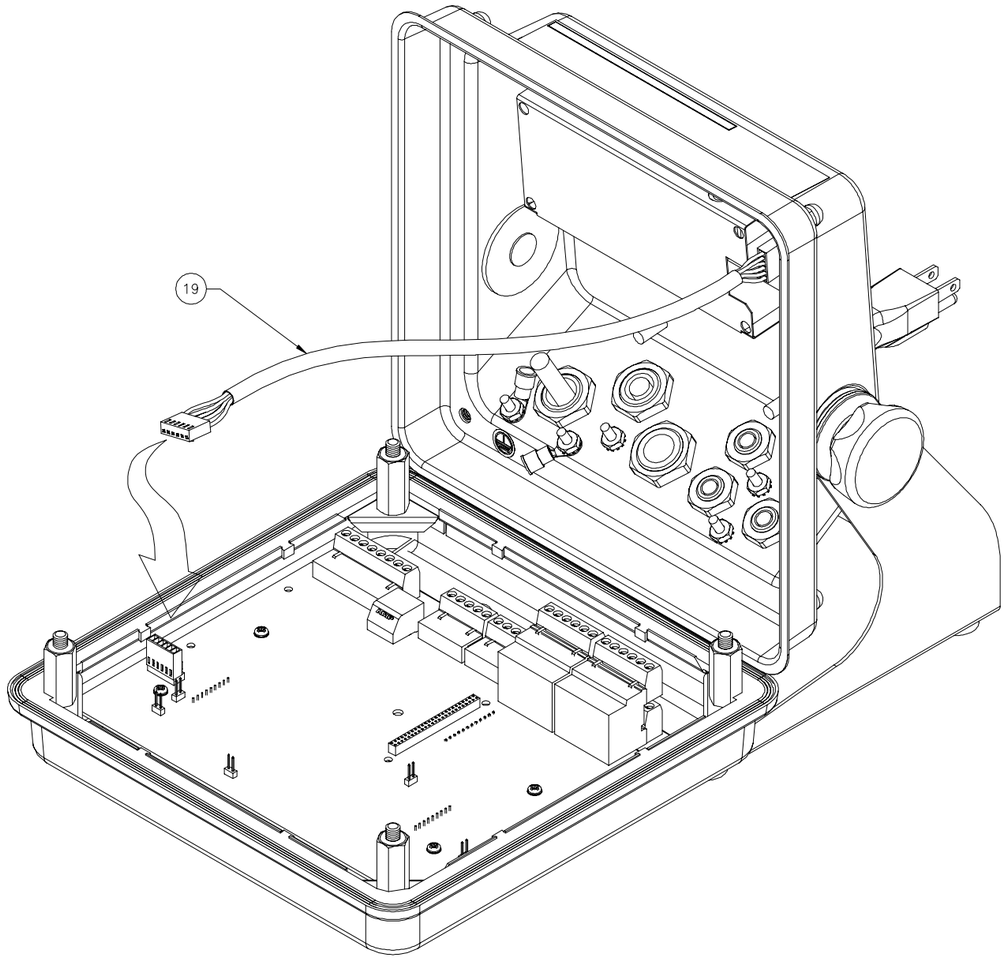
NOTES:

1. TORQUE M6 CAP NUTS ON OUTSIDE OF CASE IN A CORNER–TO–CORNER PATTERN, FIRST TO 26.4 INCH–LBS (3.0 N–m), AND THEN TO 44 INCH–LBS (5.0 N–m).
2. SEE TABLE ON SHEET 2 FOR STRAIN RELIEF TORQUE VALUES.
3. TORQUE M3 SCREWS TO 3.5 INCH–LBS (.4 N–m). TORQUE M4 NUTS TO 12 INCH–LBS (1.35 N–m).
4. USE A ø10MM PLUG FOR WATER PRESSURE TESTS.
5. APPLY LOCTITE (ITEM 95) TO THREADS AND TIGHTEN STANDOFF (ITEM 28) ONTO THREADS.
6. APPLY COMPOUND (ITEM 97) TO PINS BEFORE INSERTING RIBBON CABLE TO PINS.

SIZE	DWG. NO.	REV
D	57683	E
SCALE 1=4	DCN 19736	SHEET 3

MODEL E1070 SST INDICATOR
ENCLOSURE PARTS AND ASSEMBLY

REVISIONS					
ZONE	REV	DESCRIPTION	BY	DATE	APPR
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–
–	–	–	–	–	–

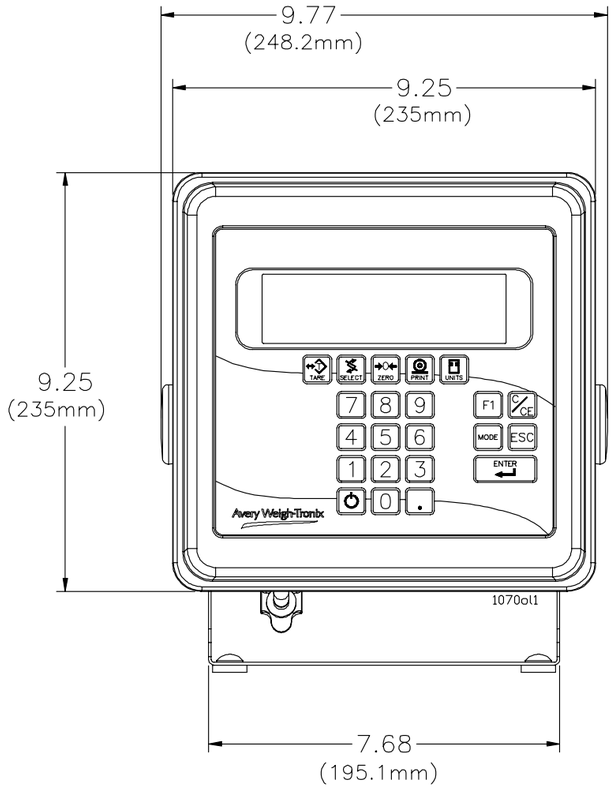


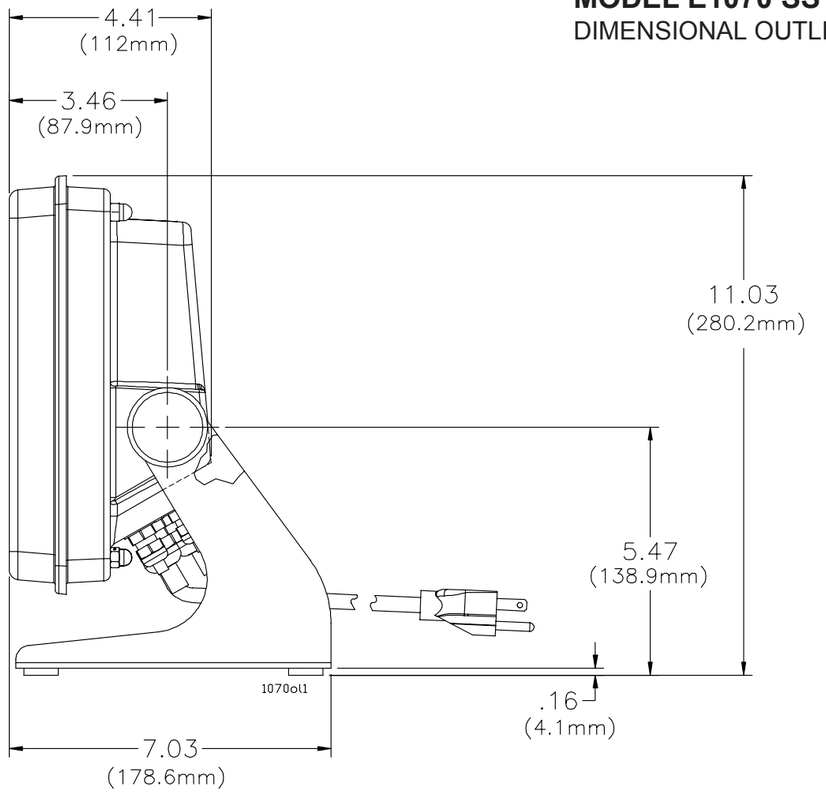
POWER CABLE DETAIL

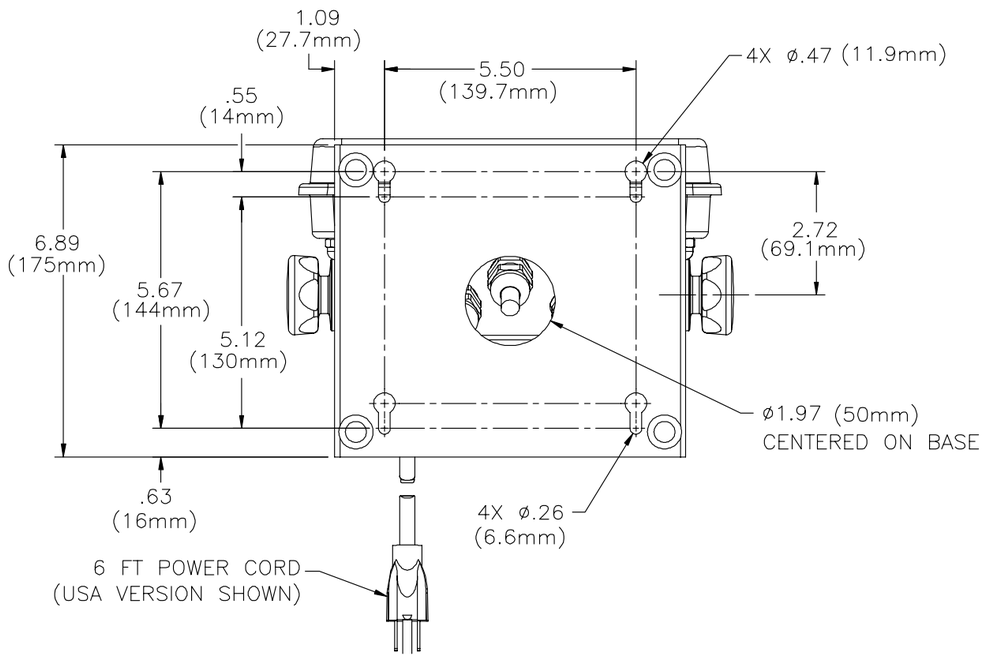
SIZE	DWG. NO.	REV
D	57683	E
SCALE 1/1	DCN 19736	SHEET 4

MODEL E1070 SST INDICATOR

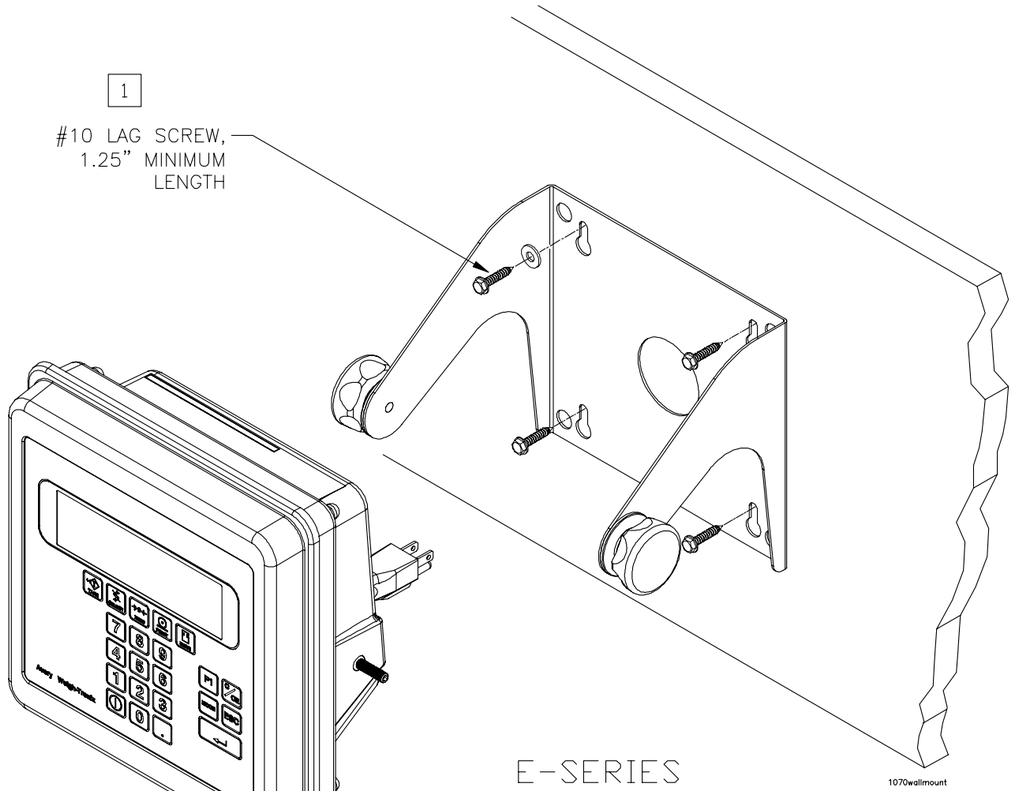
DIMENSIONAL OUTLINE DRAWING



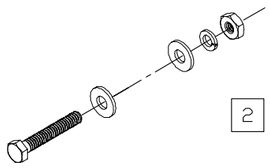


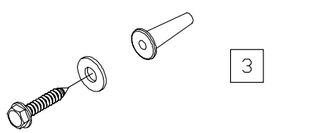


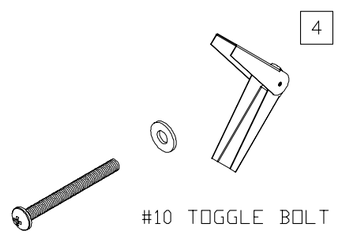
MODEL E1070 SST INDICATOR
WALL-MOUNT APPLICATION



E-SERIES
WALL-MOUNT
APPLICATION





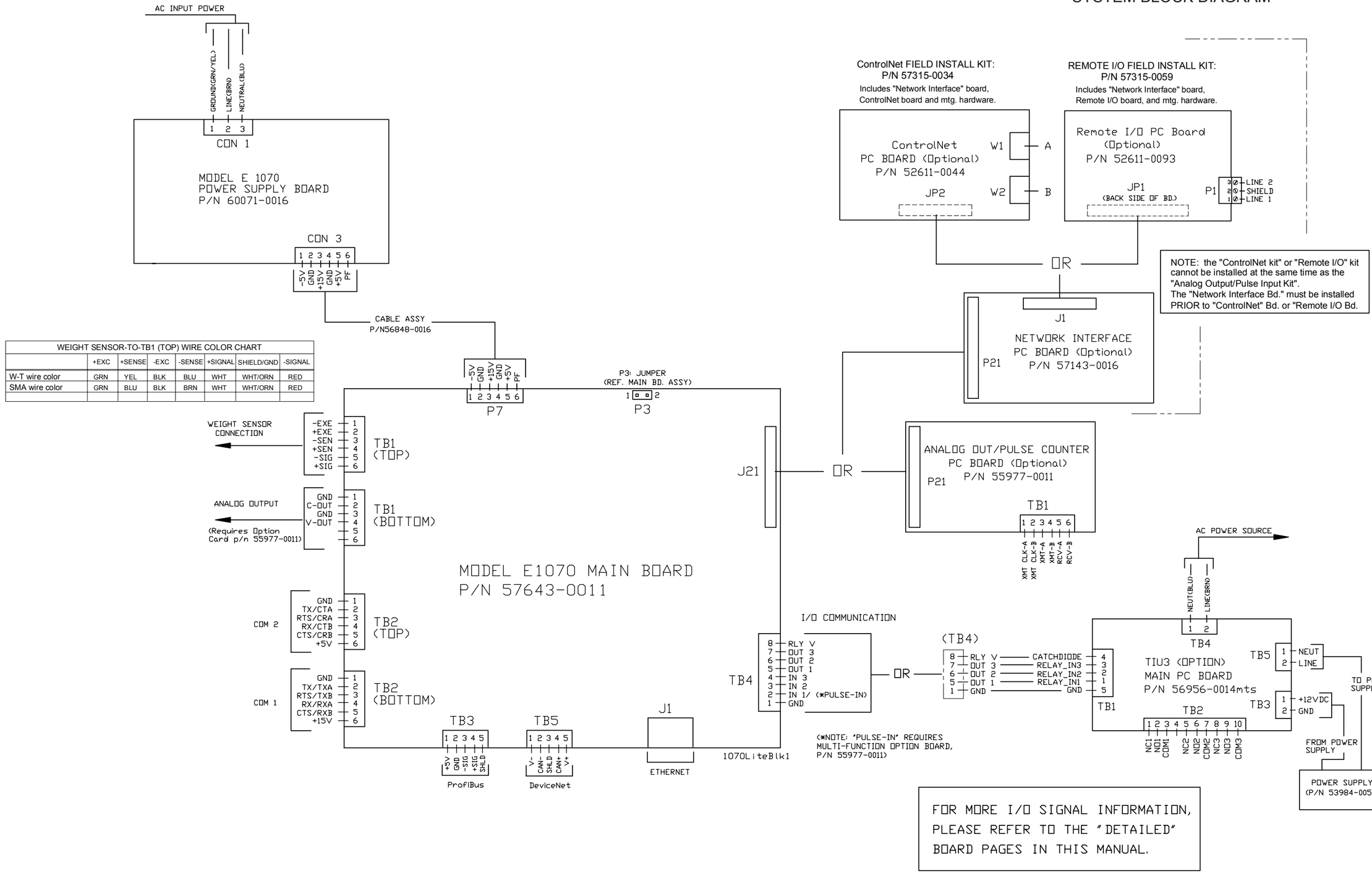


NOTES:

"E-SERIES" MINIMUM HARDWARE SPECS FOR PANEL MOUNT. (USE MFGR. RECOMMENDED HOLE SIZE FOR SELECTED FASTENER)

1. #10 LAG SCREW SUITABLE FOR SOLID WOOD OR SIMILAR MATERIAL.
2. USE BOLT, WASHERS & NUT OF SUITABLE LENGTH FOR VERTICAL/ HORIZONTAL MOUNTING ON METAL OR SIMILAR HARD SURFACE.
3. USE APPROPRIATE ANCHOR FOR CONCRETE SURFACES.
4. FOR SHEET ROCK, USE #10 TOGGLE BOLT.

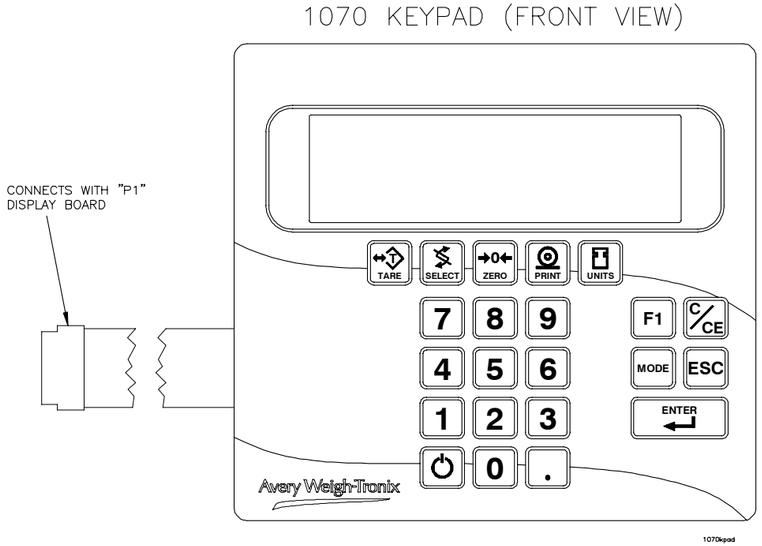
MODEL E1070 SST INDICATOR
SYSTEM BLOCK DIAGRAM

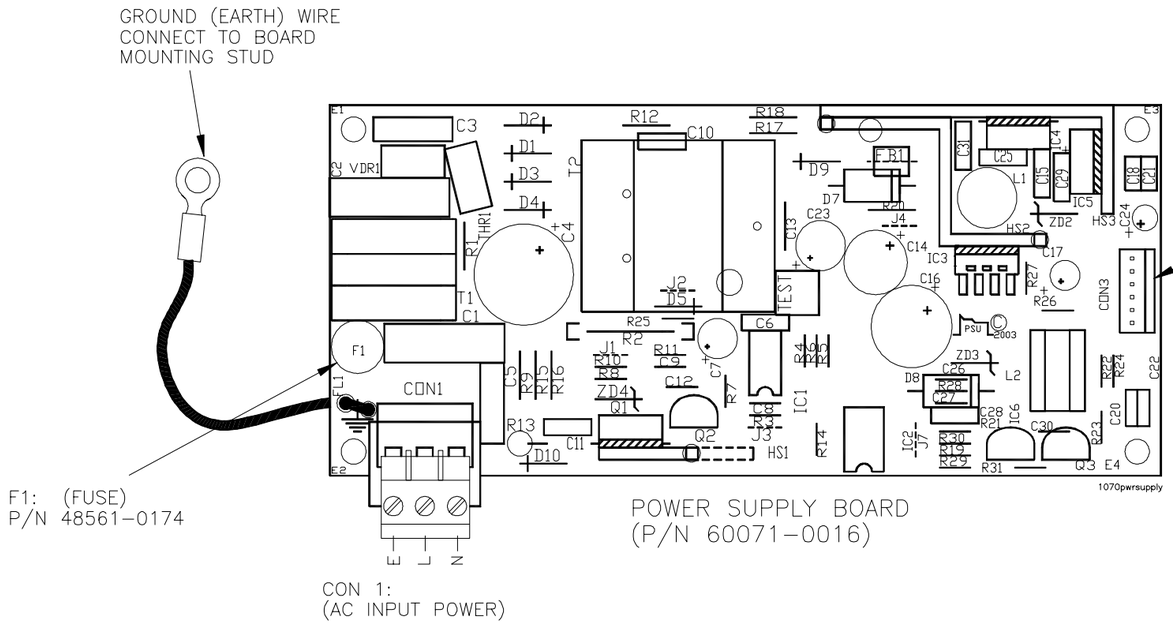


MODEL E1070 SST INDICATOR

KEYPAD & SCHEMATIC and
POWER SUPPLY BD. P/N 60071-0016

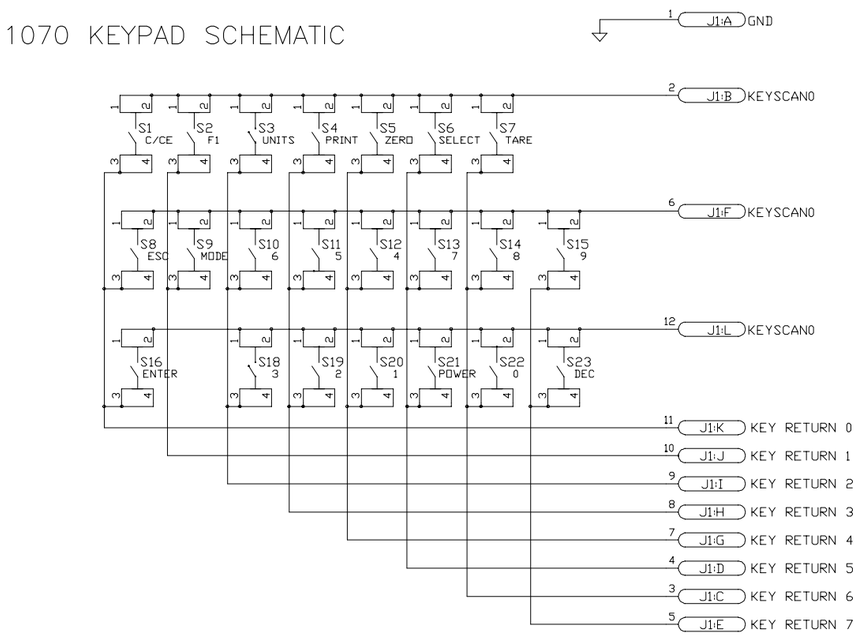
1070 KEYPAD (FRONT VIEW)





POWER SUPPLY BOARD
(P/N 60071-0016)

1070 KEYPAD SCHEMATIC



MODEL E1070 SST INDICATOR

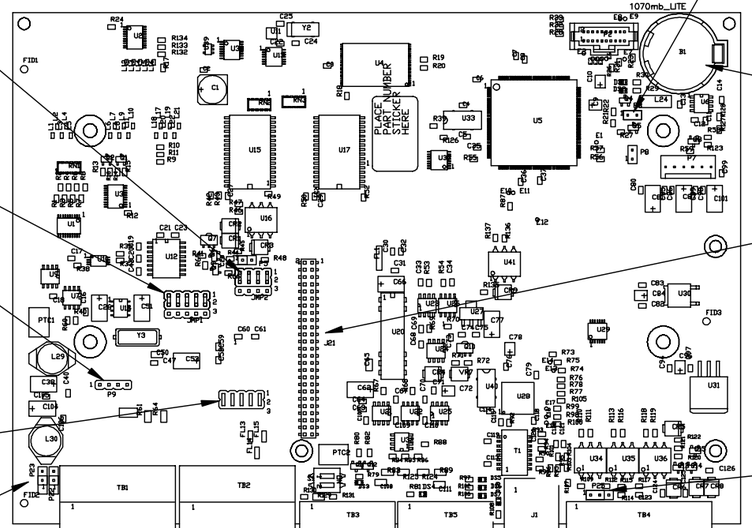
MAIN BOARD ASSY

P/N 57643-0011

(JMP2): (FOR COM 2)
4-POSITION JUMPER
BLOCK (p/n 52601-0038).
JUMPER ROW 2 & 3
(FACTORY DEFAULT)

(JMP1):
COM 1 (TB2, BOTTOM)
5-POSITION JUMPER BLOCK
(p/n 56201-0046),
JUMPER ROW 1 & 2 FOR
RS232, ROW 2 & 3 FOR RS485
AND SENSORCOMM.

COMPONENT SIDE



COMPONENT SIDE

(P3):
UNJUMPERED = SEALED
JUMPERED = UNSEALED

CAUTION !

DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED.
REPLACE BATTERY (B1) ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. LITHIUM BATTERY, 750/800mA,
W-T P/N 23957-0021.
DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

(J21):
ANALOG OUT/PULSE COUNTER
OPTION BOARD CONNECTION.

EXCITATION CHART	
(P9) JUMPER POSITION	TYPICAL EXC VOLTAGE
TYPICAL 3-4	10.0
2-3	5.1
1-2	6.25
1-2,3-4	13.75

NOTE:
P-9 JUMPER IS ONLY USED WHEN BARRIER STRIPS ARE USED.

(JMP3):
COM 2 (TB2, TOP)
5-POSITION JUMPER BLOCK
(p/n 56201-0046),
JUMPER ROW 1 & 2 FOR
RS232, ROW 2 & 3 FOR
CURRENT LOOP.

(P25):
JUMPER PINS 1 & 2 FOR INPUT #1
OR FOR PINS 2 & 3 FOR
PULSE COUNTER (OPTION).

WEIGHT SENSOR
INPUT (TB1, TOP)

REMOTE SENSING

P22 & 23 ARE JUMPERED WHEN THERE ARE NO SENSE LINES FROM WEIGHT PLATFORMS. UNJUMPERED WHEN THERE ARE SENSE LINES FROM WEIGHT PLATFORMS.

WEIGHT SENSOR (TB1, TOP)
-EXC +EXC -SEN +SEN -SIG +SIG

* ANALOG OUTPUT (TB1, BOTTOM)
GND C-OUT GND V-OUT

* REQUIRES ANALOG OUTPUT OPTION,

COM 2 (TB2, TOP)
GND TX/CTA RTS/CRA RX/CTB CTS/CRB +5V

COM 1
GND TX/TXA RTS/TXB RX/RXA CTS/RXB +15V

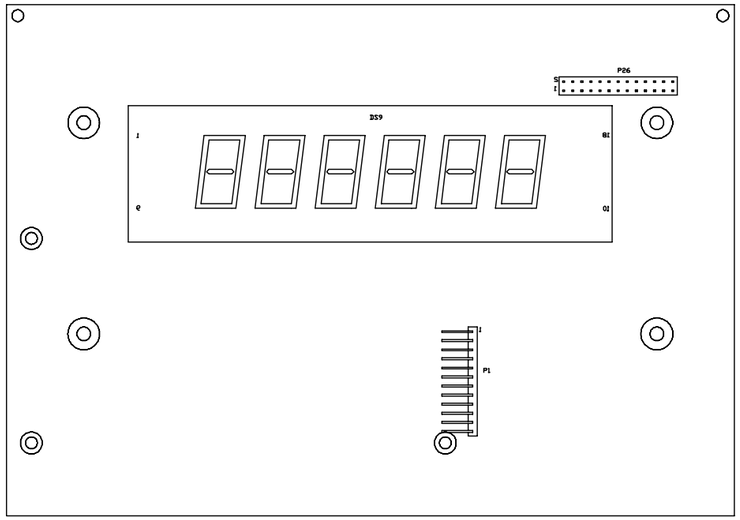
+5V GND -SIG +SIG SHLD

V- CAN- SHLD CAN+ V+

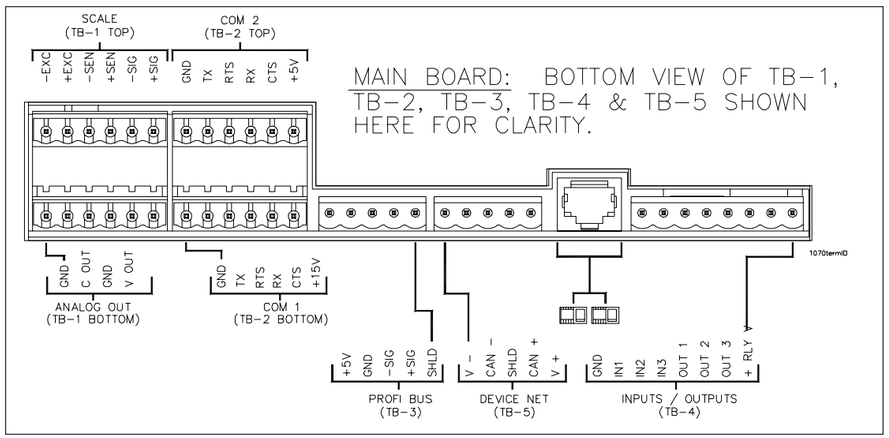
GND IN 1/PULSE-IN OUT 1 OUT 2 OUT 3 RLY

(*NOTE: 'PULSE-IN' REQUIRES ANALOG OUT/PULSE COUNTER OPTION BD., P/N 55977-0011)

(TB2, BOTTOM)



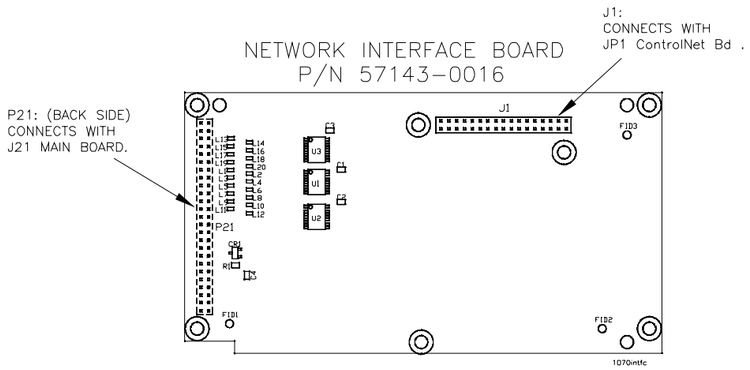
BACK SIDE (DISPLAY SIDE)



MODEL 1070 SST INDICATOR

OPTIONAL PC BOARDS

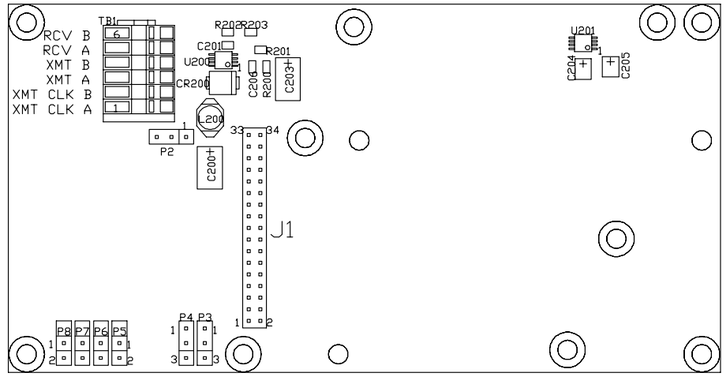
NETWORK INTERFACE BOARD
P/N 57143-0016



Analog out / Pulse Counter in PC BOARD *(OPTIONAL)*

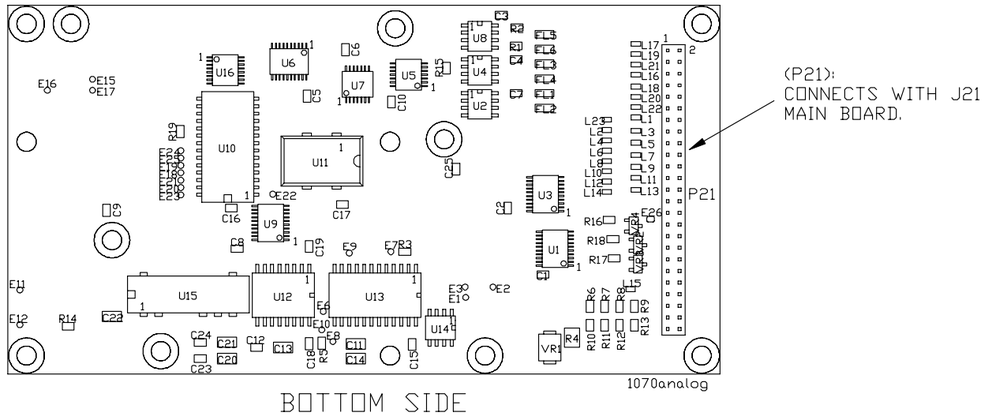
***Field Install Kit** p/n 57315-0018*

(includes Analog out/Pulse Counter Board p/n 55977-0011 & mtg. hardware)



TOP SIDE

NOTE: (ON P25, MAIN BD.)
JUMPER PINS 1 & 2 FOR
"INPUT 1", -OR-
PINS 2 & 3 FOR
"PULSE COUNTER" (OPTION).

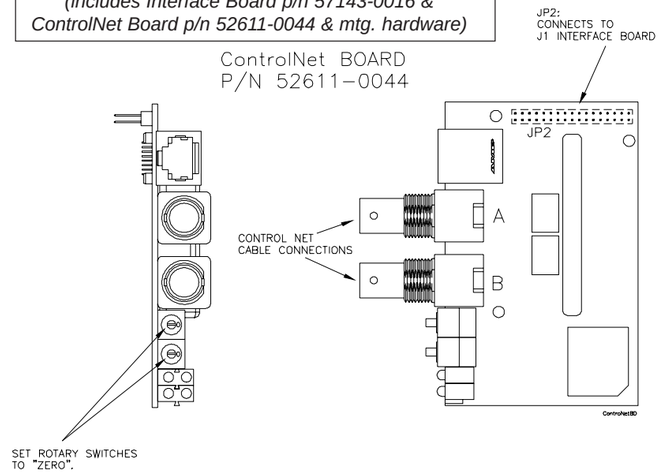


BOTTOM SIDE

ControlNet Field Install Kit** (optional) **p/n 57315-0034

(includes Interface Board p/n 57143-0016 &
ControlNet Board p/n 52611-0044 & mtg. hardware)

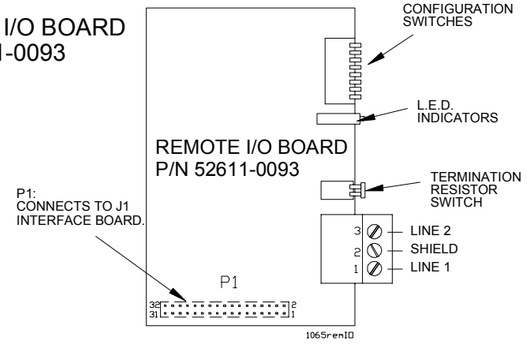
ControlNet BOARD
P/N 52611-0044



Remote I/O Field Install Kit** (optional) **p/n 57315-0059

(includes Interface Board p/n 57143-0016 &
Remote I/O Board p/n 52611-0093 & mtg. hardware)

REMOTE I/O BOARD
P/N 52611-0093



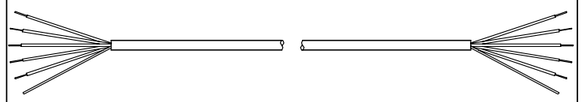
ANALOG/PULSE BOARD JUMPER CHART

OUTPUT	P3	P4	P5	P6	P7	P8	*LOAD RESISTANCE
4-20 ma	1-2	2-3	1	1	1	1	500 OHM MAX.
0-20 ma	2-3	1-2	1	1	1	1	
0-24 ma	1-2	1-2	1	1	1	1	
0-5 VDC	2-3	2-3	1-2	1	1	1	800 OHM MIN.
0-10 VDC	2-3	2-3	1	1-2	1	1	
±5 VDC	2-3	2-3	1	1	1-2	1	
±10 VDC	2-3	2-3	1	1	1	1-2	

* LOAD RESISTANCE = CABLE RESISTANCE PLUS
RESISTANCE OF INPUT UNIT.

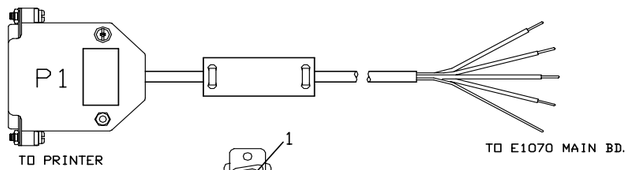
MODEL E1070 SST INDICATOR
I/O EXTERNAL CABLE IDENTIFICATION PIN-OUTS

TIU3 / EXTERNAL I/O BOARD TO E1070 INDICATOR CABLE ASSY P/N 47388-0094			
W-T WIRE COLOR	ORIGIN E1070 TERMINATION	DESTINATION TIU3 TERMINATION	SIGNAL
YELLOW	TB4-7	TB1-3	OUT 3
GREEN	TB4-5	TB1-1	OUT 1
BLACK	TB4-1	TB1-5	(LOGIC) GROUND
RED	TB4-8	TB1-4	CATCH DIODE
WHITE	TB4-6	TB1-2	OUT 2
SHIELD	GND STUD	CHASSIS	(SHIELD) GND



1070pin1

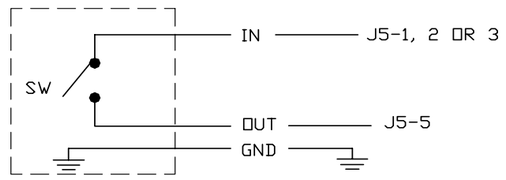
PRINTER TO E1070 INDICATOR CABLE ASSY P/N 47670-0018			
W-T WIRE COLOR	ORIGIN TERMINATION	DESTINATION MAIN BOARD (TB2 TOP -or- TB2 BOTTOM)	SIGNAL
SHIELD	P1-1	GND STUD	(CHASSIS) GND
GRN	P1-2	PIN-4	RECEIVE
RED	P1-3	PIN-2	TRANSMIT
BLK	P1-7	PIN-1	SIGNAL GND
WHT	P1-11	PIN-5	CLEAR TO SEND



1070pin1

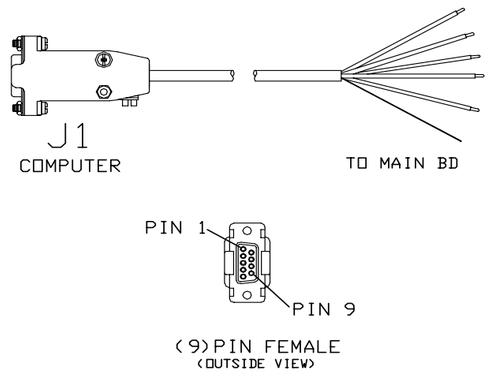
1070pin1

REMOTE INPUT WIRING CHART		
ORIGIN REMOTE INPUT	DESTINATION MAIN BOARD	SIGNAL
GND	TB4-1	GND
IN	TB4-2, 3 OR 4	INPUT 1, 2, OR 3
OUT	J5-5	GND



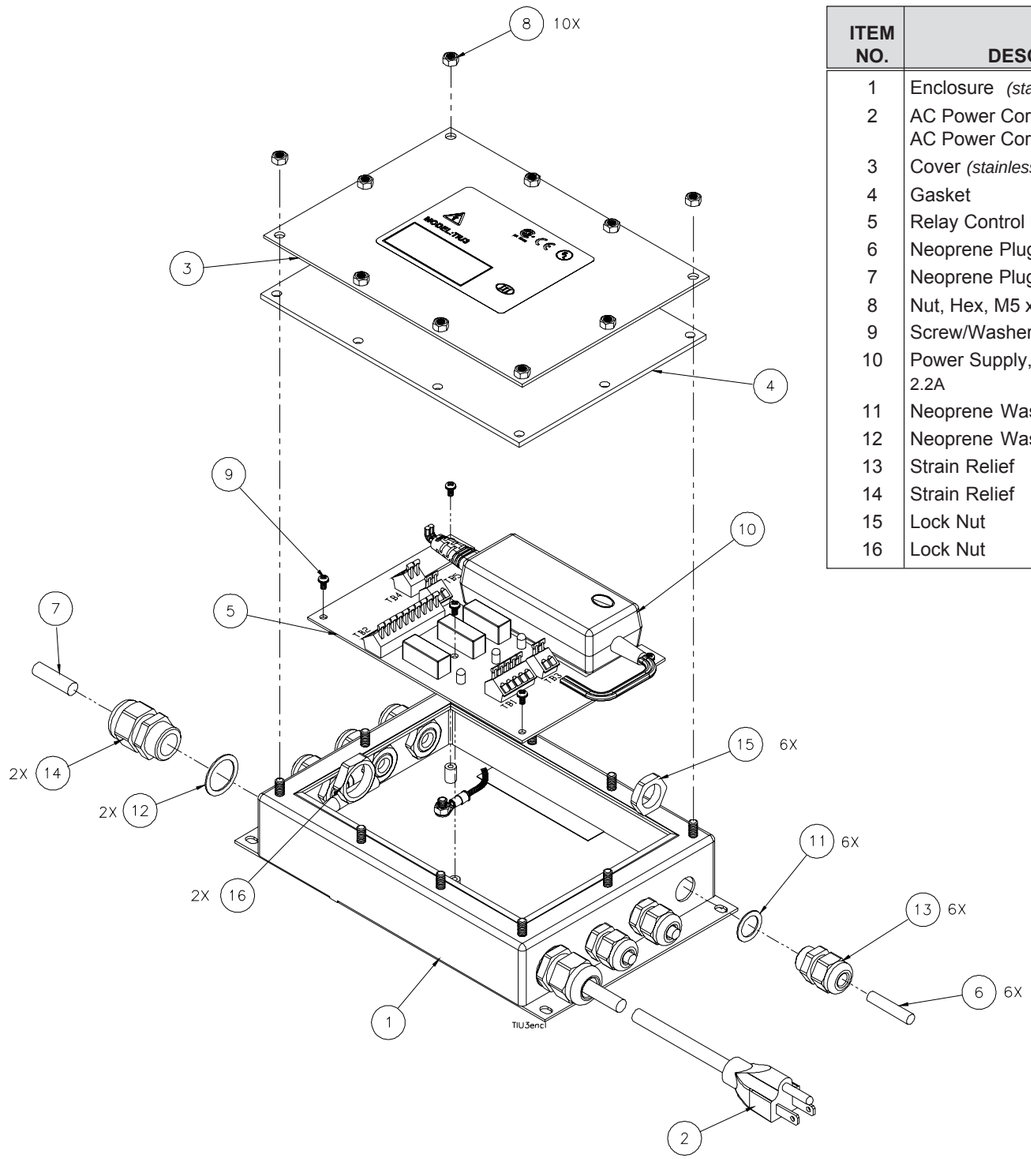
1070pin1

COMPUTER TO E1070 INDICATOR CABLE ASSY P/N 47355-0010, or -0028			
W-T WIRE COLOR	ORIGIN TERMINATION	DESTINATION MAIN BOARD (TB2 TOP -or- TB2 BOTTOM)	SIGNAL
RED	J1-2	PIN-2	TRANSMIT
GREEN	J1-3	PIN-4	RECEIVE
BLACK	J1-5	PIN-1	(SIGNAL) GND
YELLOW	J1-8	PIN-3	RTS
BROWN	J1-7	PIN-5	CTS
	SHIELD	GND STUD	(CHASSIS) GND



1070pin1

MODEL E1070 SST INDICATOR
TRIPS INTERFACE UNIT (TIU3) *(OPTIONAL)*
& ASSEMBLY



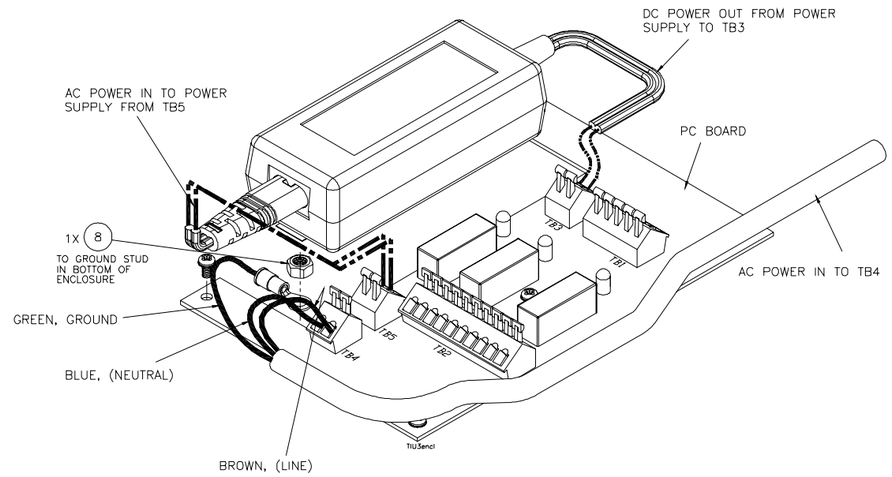
ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Enclosure *(stainless steel)*	55909-0071	1
2	AC Power Cord *(USA)* AC Power Cord *(UK)*	49180-0116mts 49180-0124mts	1 1
3	Cover *(stainless steel)*	55907-0016	1
4	Gasket	55908-0015	1
5	Relay Control PC Board Assy	56957-0013mts	1
6	Neoprene Plug *(1/4" dia.)*	27429-0014	
7	Neoprene Plug *(8mm dia.)*	27429-1087	
8	Nut, Hex, M5 x 0.8	46574-0090	11
9	Screw/Washer Assy, M3.5 x 6mm	55511-0014	5
10	Power Supply, 100-240VAC, 12VDC 2.2A	53984-0058	1
11	Neoprene Washer	26357-0020	6
12	Neoprene Washer	26357-0053	2
13	Strain Relief	55177-0027	6
14	Strain Relief	55177-0043	2
15	Lock Nut	55177-1025	6
16	Lock Nut	55177-1041	2

NOTE TORQUE SPEC:

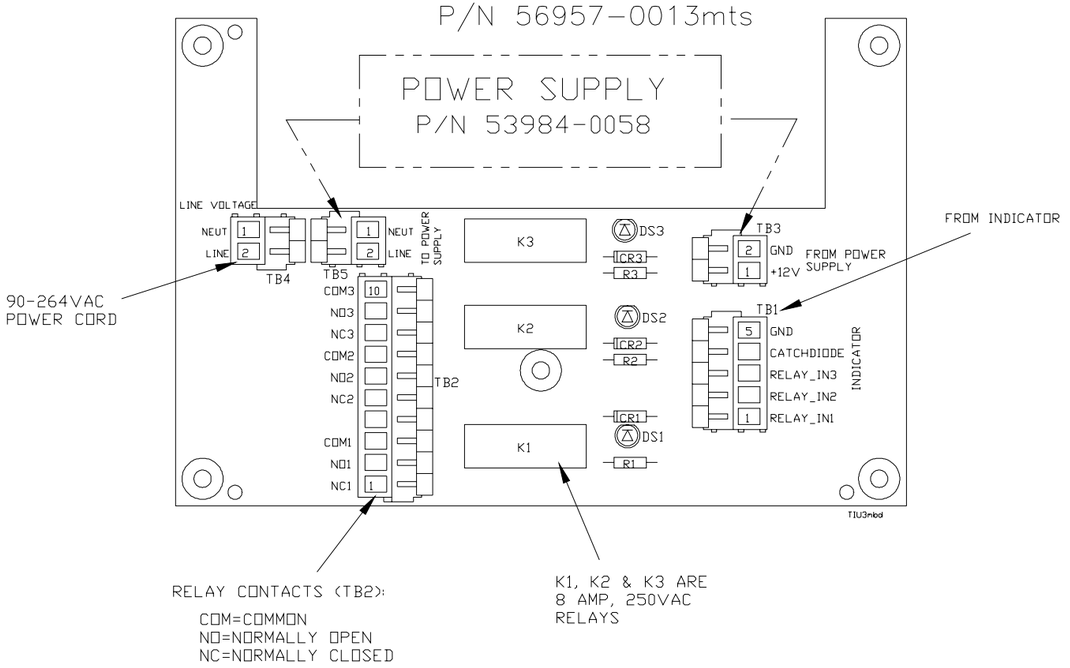
All M5 fasteners- 25.0 in. lbs., [3.0 N/m]
All M3.5 fasteners- 12.0 in. lbs., [1.35 N/m]

WIRING DETAIL

(REF: MAIN BOARD ILLUSTRATION & SYSTEM BLOCK DIAGRAM FOR MORE CONNECTION DETAILS)



TRIPS INTERFACE UNIT MAIN BOARD P/N 56957-0013mts



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Redford, MI 48239
313-255-6700
www.standardscale.com

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