Avery Weigh-Tronix

Model 1310 Indicator Service Manual

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

1310 Specifications

Power Input	Universal 85-265 VAC, 50/60Hz, 75VA
Excitation	10 Volts DC or 10 volts AC square wave capable of driving up to thirty-two 350-ohm weight sensors. Indicator is also capable of driving Quartzell™ transducers
Operational Keys	Zero, Tare, Print, Units, Select, Enter, Escape, Clear, 0-9/Alpha, Decimal Point and Five Soft Keys labeled per selected operational routine.
Operational Annunciators	Displayed symbols indicate motion, center of zero, unit of measure and more.
Display	Model 1310—Dot graphic display, 5"W x 1.33"H provides images and up to eight lines of weight and/or text. 240 x 64 dots cold cathode flourescent backlit, white on blue.
Display Characters	Application defined. 1.16" to 0.145" high.
Display rate	Selectable, from 1 in 10 seconds to 10 times per second
A to D Conversion Rate	60 times per second
Unit of Measure	Pounds, kilograms, grams, ounces, pounds and ounces and four programmable custom units
Capacity Selections	Up to 10,000,000 selectable
Incremental Selections	Multiples and sub multiples of 1, 2, 5
Decimal locations	88888888 pick any location relative to division size
Displayed Resolution	Up to 1 part in 10,000,000
Audio Output	Audio tone for key contact assurance or operational alarms
Time and Date	Battery protected real time clock is standard
Internal Resolution	1,000,000 counts analog, Quartzell™ transducer higher
Harmonizer™ digital filtering	Fully programmable to ignore noise and vibration
Memory	128K (expandable to 8MB)
Standard input and outputs	Com 1: RS232, RS-485/422, Quartzell™, SensorComm™ Com 2: RS232, 20 mA current loop Com 3: RS232, RS-485/422, Quartzell™, SensorComm™ Com 4: RS232, RS-485/422, Quartzell™, SensorComm™ (*One bi-directional signal per port*) Four set point I/O ports via OPTO 22 I/O modules 1 Analog scale input PS/2 Keyboard port
Dimensions	7.25" H x 11" W x 8.25" D (184 mm x 279 mm x 205 mm)
Available Options	- Multiple analog scale inputs, up to seven additional - Eight fully isolated, programmable analog outputs (selectable 0-20mA, 0-24mA, 4-20mA, 0-5VDC, 0-10VDC, ±5VDC, ±10VDC) - Remote expanded control interface for TTL or solid state up to 64 - OPTO 22 Generation 4 I/O Modules - Internal modem - Memory Expansion - 1, 4, 5, 8 MB (battery backed SRAM) - PC (AT) style alphanumeric keyboard - Up to sixteen pulse counter inputs - SensorComm™ Digital j-box - Traxle™ total truck and axle weighing
Fieldbus Network Interfaces	Device Net™, ProfiBus®, ControlNet™, InterBus, ModBus Plus, Ethernet 10/100 (ModBus TCP, TCP/IP (sockets), HTTP, SMTP, FTP, EtherNet/IP)
Operating Temperatures	NTEP 14 to 104° F (-10 to 40° C), 10 to 90% relative humidity
Enclosure	Stainless steel wash down enclosure NEMA 4X
Weight	17 lb, 7.7 kg
Agencies	NTEP Class III/IIIL:10,000d CC# 01-033 A1 FCC Class A

Introduction

About This Manual

This manual covers the information you need to configure and service your Model 1310 Weight Processing 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 Keys and Functions

Plug the Model 1310 into an easily accessible grounded outlet only. Never use the unit without an appropriate earth-ground connection.

Any computer based system should have a separate, grounded power circuit. We recommend one for the Model 1310.

*To increase the contrast of the display, press and hold the **DECIMAL POINT** and **7** keys until the desired contrast is reached. To decrease the contrast of the display, press and hold the **DECIMAL POINT** and **1** keys until the desired contrast is reached.*

The front panel is shown in Figure 1.

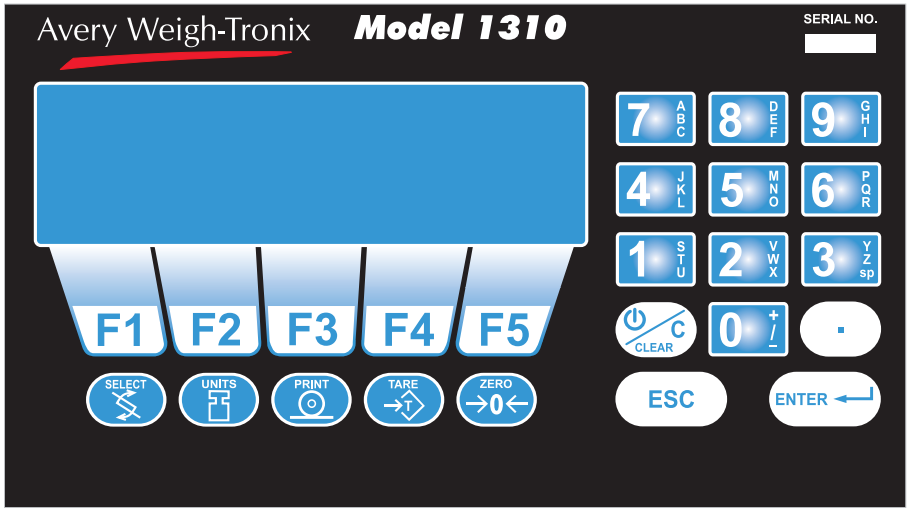


Figure 1
Model 1310 Front Panel

The keys on the front panel of the Model 1310 are of two types, hard keys and soft keys. Hard keys are labeled directly and soft key labels appear on the display. Soft keys function differently at different times so their labels change as needed. (F1-F5)

Hard Keys

Use this key to toggle UPPER and lower case alpha characters, while entering alphanumeric characters.

Below are brief descriptions for each of the hard key functions:

Repeatedly press the **SELECT** key to scroll through the available weight reading displays. (Examples - gross, net, tare, minimum, maximum, etc.)

For alpha entries, this key toggles UPPER/lower case entry (if Lowercase Enable is turned on in the configuration). If lower case is selected, "abc" will appear in the upper right of the display.

Press the **UNITS** key to scroll through the available units of measure (lb, kg, oz, etc.).

By default the print format #0 sends:

Gross
Tare
Net

They are transmitted from port one only.

Press the **PRINT** key to send data to a connected printer. By default this key performs a DOPRINT command followed by a DOACCUM command.

Press the **TARE** key to tare the current gross weight, then repeatedly press **SELECT** to scroll through the tare, gross and net weight displays.

Press the **ZERO** key to establish a zero reference. A center-of-zero icon will be displayed when the weight is within ¼ division of zero. During motion an **M** will appear below the center-of-zero icon.

ON/OFF Clear key

If the indicator is powered down via the **ON/OFF/Clear** *key or by sleep mode time-out, press this key to power the indicator back up.*

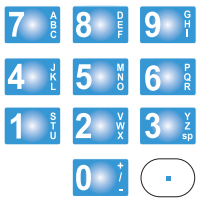
Press the **ESCAPE** key to back out of menus or cancel a numeric entry without accepting the value. Press and hold the **ESCAPE** key for 3-5 seconds to gain access to Password Entry Mode.

Press the **C(Clear)** key to clear values from the display prompts. Press and hold the **C** key for five seconds to power down the indicator.

Press the **ENTER** key to enter a keyed in value or accept a displayed choice.

Attention

If a display appears in which alpha or numeric characters can be entered, key function switches automatically so that repeated pressing of one key causes the number to appear first followed, by the alpha characters in descending order as labeled on the key. If you wait for the cursor to appear on the display and press a key, a new character is added to the previous one entered.



The alphanumeric keypad is for entering number and alpha characters. If a display for entering **numbers only** appears, you can key in the numbers using the keypad normally.

If a display appears in which alpha or numeric characters can be entered, key function switches automatically so that repeated pressing of one key causes the number to appear first, followed by the alpha characters in descending order as labeled on the key. If you wait for the cursor to appear on the display and press a key, a new character is added to the previous one entered.

Soft Keys

Soft keys are so-called because their function is not fixed. Function can change as the mode of operation changes or as the program for your particular setup changes.

Their are five soft keys (labeled F1-F5) located directly below the display. If the keys are needed during any operation, a label for each active key appears in the display directly above. There are only five key labels available at one time but this does not limit the potential usefulness of these keys. Programs can be created to enable one key to access another menu of operation with more key names and functions.

Menu Structure

There are several menus you use to setup or service the Model 1310. You access the menus described below 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 (default password is 111)

The first menu covered in this manual is the **User** menu. The most commonly changed or viewed items in this menu are time and date or software identification information.

Configuration menu (default password is 2045)

The second menu covered is the **Configuration** menu. These items deal with some of the basic functions of the Model 1310 such as filtering and analog output adjustments.

Calibration menu (default password is 30456)

The third menu is the **Calibration** menu. This section will need to be accessed only when the scale is being calibrated or if you change scale capacity or division size.

Diagnostic menu (default password is 911)

This menu is used to access several tests which can help isolate problems.

Instructions for Accessing the Menus

You must key in the password within 5 seconds of accessing the password screen or the Model 1310 returns to normal operation.

A different password is needed to access each menu. Once you access the menu you want, the display presents a series of soft key choices. By pressing the appropriate soft key and following text prompts on the display, you can set up your Model 1310 to suit your needs.

Following are the instructions you need to access the menus of the Model 1310.

1. Press and hold the **ESCAPE** key until the Model 1310 beeps. . .

   The display asks for a password and looks like Figure 2.

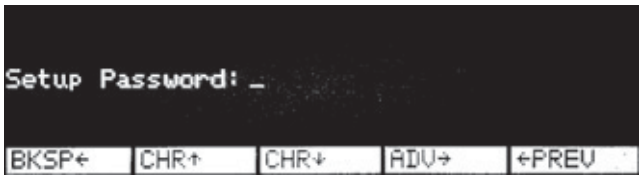


Figure 2
Password display

2. Key in the password for the menu you want to access and press **ENTER**. . .

   The soft keys for the menu appear.

After you are finished in a menu you can press the EXIT soft key to return to normal operation. You may be asked if you want to save changes you have made. Follow the instructions on the display.

Below are the details for each menu.

User Menu

IMPORTANT NOTE
The Model 1310 can be sealed for legal for trade use and the software protected from change by a hardware connection. If the system is sealed, programs cannot be downloaded or altered. If the system is not sealed, programs can be downloaded from the SimPoser software. Sealing the Model 1310 does not affect the USER menu. This menu can be accessed and changed no matter what the system seal state is.

To seal or unseal the Model 1310, remove the nylon plug on the rear of the enclosure, go to the View-Seal menu and press the button underneath to change the Seal status.

Access the User menu using the instructions found in *Instructions for Accessing the Menus*. Use the default password 111. You will see the screen shown in Figure 3.

Figure 3
User menu soft key group

Figure 4 is a flowchart showing what soft keys or choices appear as you press the soft keys shown in Figure 3.

The User menu is not affected if the indicator is sealed or unsealed.

The values under SELECT in the flowchart to the right are not saved after a power down and power up.

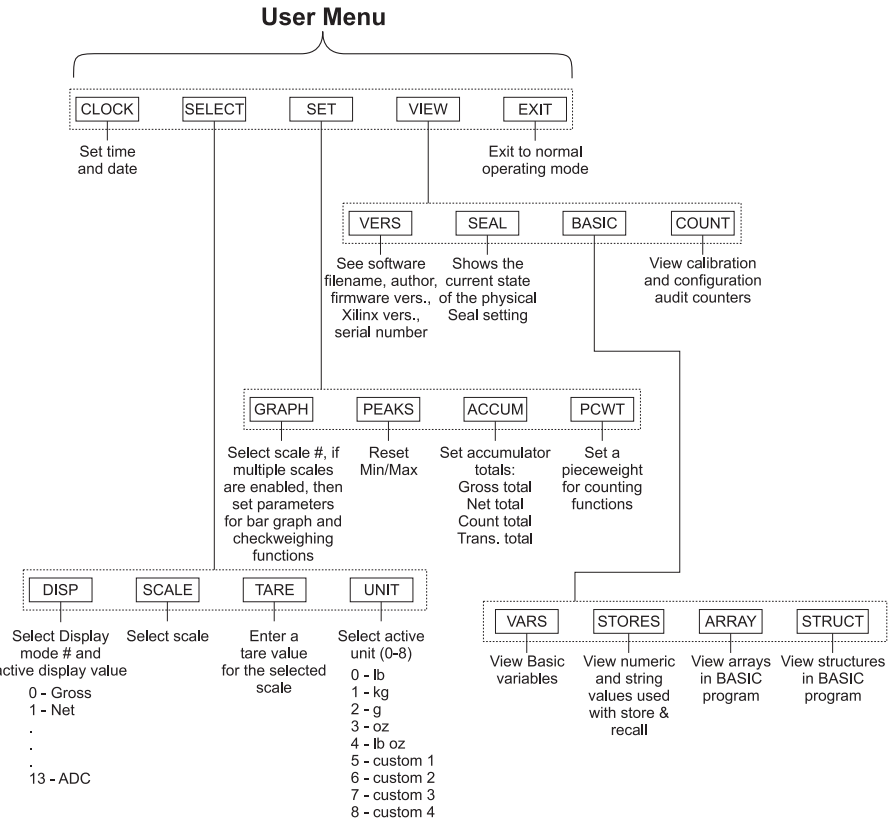


Figure 4
Soft key flowchart for User menu

User — CLOCK

Hours must be entered in military format:
23 = 11pm
13 = 1pm
1 = 1am

Press the **CLOCK** soft key to access the time and date setting function.

1. The display shows the current hour value. If this is not correct key in a new value and press **ENTER** or press **ENTER** to accept the current value. . .

   The display shows the minutes value.

2. Repeat step 1 for minutes, seconds, year, month and day. (The day of the week is calculated automatically from the four digit year.)

   Display returns to display shown in Figure 3.

User — SELECT

While in the this menu the display will show USER-SELECT in the top left to remind you of where you are in the USER menu.

Press the **SELECT** soft key to access the User—SELECT soft key group:

DISP Press this key to set the current display mode and active value

SCALE Press this key to select the scale number you want to use.

TARE Press this key to enter a known tare weight.

UNIT Press this key to select the active units of measure.

Following is a detailed description of the four functions listed above.

User — SELECT —DISP

The display mode you pick may not be the one that appears on the display. A display mode called out in the WT BASIC program overrides the setting you make through the front panel.

Variable (#11) is a variable value called out in a WT-BASIC program. ADC (#13) stands for Analog to Digital Counts.

If you press the **DISP** soft key, follow these instructions:

1. The display shows the current display mode number (1-95). Press **ENTER** to accept this value or key in a new number from the list in Appendix 1, then press **ENTER** to accept it.

   The display asks for the ACTIVE VALUE. This is the active display value.

2. Choose one of the following active display values by keying in 0-13, then press **ENTER**. . .

   The display returns to the USER-SELECT screen.

0 = Gross	4 = Max	8 = Count Total	12=Piece Weight
1 = Net	5 = Rate of Change	9 = Trans. Total	13=ADC
2 = Tare	6 = Gross Total	10=Count	
3 = Min	7 = Net Total	11=Variable	

User —SELECT —SCALE

You cannot select a scale number unless it has been activated in the SimPoser program and downloaded to the Model 1310, or enabled in the Config menu.

If you press the **SCALE** soft key the display will ask you to select a scale number. The currently active scale number is displayed. You can simply type a new scale number and press the **ENTER** key. If you have multiple scales attached to the indicator, this function chooses which scale's weight is displayed and the scale with which the yellow keys interact.

User —SELECT —TARE

If you press the **TARE** soft key the display will show the current tare value for the active scale. You may key in a new tare weight and press the **ENTER** key to override the previous tare weight.

Tare values are entered in calibration units, not the currently active unit of measure. A custom WT program is required for the tare entry to be "active unit" based.

User
—SELECT
—UNIT

If you press the **UNIT** soft key the display will ask you to key in a number (0-8) which represents the value you want to be active. Below are the nine units to choose from and the corresponding number you need to key in for this function:

0- lb	3- oz	6- custom 2
1- kg	4- lb oz	7 - custom 3
2- g	5- custom 1	8 - custom 4

Press the **ESC** key to return to the USER menu soft key group.

User —SET

Press the **SET** soft key to access the User—SET soft key group shown below:

GRAPH Press this key to set the parameters for bar graph and check-weighing functions.

PEAKS Press this key to reset the Min/Max.

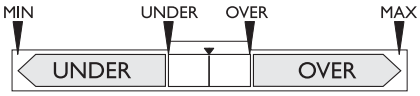
ACCUM Press this key to set the accumulator totals.

PCWT Press this key to set the pieceweight for counting functions.

Following is a detailed description of the four functions listed above.

User
—SET
—GRAPH

Variable (#11) is a variable value called out in a WT-BASIC program. ADC (#13) stands for Analog to Digital Counts.



If you press the **GRAPH** soft key, follow these instructions:

1. If multiple scales are enabled, follow step 1A. If multiple scales are not enabled, go to step 2.

1A. Key in the scale number at the ***SCALE#:*** prompt and press **ENTER**.

Go to step 2.

2. The current MIN setting is displayed. Press **ENTER** to accept this value or key in a new value and press **ENTER**. . .

The UNDER value is displayed.

3. Repeat step 2 and accept or change the value, for UNDER, OVER, MAX and BASIS values. BASIS is same as the active values (0-13) shown below.

These values now apply when using the bar graph or checkweighing display.

0 = Gross	4 = Max	8 = Count Total	12=Piece Weight
1 = Net	5 = Rate of Change	9 = Trans. Total	13=ADC
2 = Tare	6 = Gross Total	10=Count	
3 = Min	7 = Net Total	11=Variable	

User
—SET
—PEAKS

If you press the **PEAKS** soft key the display asks if you want to reset the MIN and MAX values now in memory. You are given the choice of YES or NO. After choosing the display returns to the USER-SET menu display.

User
—SET
—ACCUM

If you press the **ACCUM** soft key, follow these instructions:

1. The display shows you the current GROSS TOTAL in the accumulator. You can change this by keying in a new number and pressing **ENTER** or press **ENTER** to move to the next ACCUM value. . .

   The display shows the NET TOTAL value.

2. Repeat step 1 for NET TOTAL, COUNT TOTAL, and TRANS(action) TOTAL. . .

   The display returns to the USER-SET screen.

User
—SET
—PCWT

If you press the **PCWT** soft key the display shows the current value for the piece weight. Accept this by pressing the **ENTER** key or key in a new piece weight and press **ENTER**.

Press the **ESC** key to return to the User menu soft key group.

User —VIEW

Press the **VIEW** soft key to access the User-VIEW soft key group:

VERS Press this key to see Model 1310 firmware part number, revision information, serial number, Xilinx part number and revision. When the application program is different than factory default, you will also see information about a downloaded SimPoser program (license number, company name, version number, name of file and time and date downloaded.

SEAL Press this key to view/set the condition of the physical seal setting.

BASIC Press this key to access four more keys: VARS, STORES, ARRAY, and STRUCT. Press these to view the BASIC variables.

COUNT Press this key to view the calibration and configuration audit counters. These cannot be changed or erased.

Following is a detailed description of the functions listed above.

User
—VIEW
—VERS

If you press the **VERS** soft key you will see the following information:

- Firmware version
- Part number and revision level
- Serial number of the indicator
- XILINX version
- XILINX part number
- XILINX revision level

The information at right is visible when the Model 1310 has a non-factory default program active.

- SimPoser license number and license holder of the person that saved the file
- SimPoser license number and license holder of the person that downloaded the file
- Version of the SimPoser that created the file
- File name
- Time and date file was created

Press any key again and the User-VIEW soft key set is displayed.

User
—VIEW
—SEAL

Press the **SEAL** soft key to see the current state the physical seal setting. The display will show ***Seal Status: Sealed*** or ***Unsealed***. Press the seal switch (S1), behind the nylon plug on the rear of the enclosure, to toggle the physical seal state of the indicator.

User
—VIEW
—BASIC
—VARS

If you press the **BASIC** soft key, then the **VARS** soft key you will be able to scroll through the variables you have in your basic program. Press the **FIRST** soft key to see the first one and the **NEXT** soft key to scroll to the next one. Repeat this until you are through and press the **EXIT** soft key to return to the User—VIEW menu.

If no variables are defined the screen will show **NO VARIABLES DEFINED**.

User
—VIEW
—BASIC
—STORES

If you press the **Prev** *key when Store (0) is displayed, the display will show the max memory location. This is a good way to see how much memory is available for your WT-BASIC program.*

If you press the **BASIC** soft key, then the **STORES** soft key, follow these instructions:

1. The display asks if you want to VIEW NUMERICS?, and gives you the choice of **YES** or **NO**. If you press **YES** the display will look like this:

2. Press **PREV** (previous) to see the previous numeric record. Press **NEXT** to see the next numeric record. Press **SELECT** and the display will let you enter a specific numeric record number. When you press **ENTER** that record number will be displayed.

3. If you press **NO** in step 1 the following screen is displayed.

If you press the **Prev** *key when Store (0) is displayed, the display will show the max memory location. This is a good way to see how much memory is available for your WT-BASIC program.*

4. This screen lets you view all the strings stored in your BASIC program. View them the same way you did the numeric values.

5. Press **EXIT** to return to the User-VIEW menu.

Press **ESC** to return to the User menu. Press **EXIT** to return to normal operation. You have now seen all the parts of the User menu.

User
—VIEW
—BASIC
—ARRAY

If you press the **BASIC** soft key, then the **ARRAY** soft key, you will be able to scroll through the arrays in your BASIC program. Press the **FIRST** soft key to see the first array. Press the **NEXT** soft key to scroll to the next one. Press the **INDEX** soft key to increment the array index. Repeat this until you are through and press the **EXIT** soft key to reuturn to the User-VIEW-BASIC display.

User
—VIEW
—BASIC
—STRUCT

If you press the **BASIC** soft key, then the **STRUCT**soft key, you will be able to scroll through the structures in your BASIC program. Press the **FIRST** soft ket to see the first structure. Press the **NEXT** soft key to scroll to the next one. If the structure was defined as an array, press the **INDEX** soft key to increment the structure index. Press the **VARS** soft key to view the variables within the structure. Press the **ARRAYS** soft key to view the arrays within the structure. Press the **ESC** key to reuturn to the User-VIEW-BASIC display.

Configuration Menu

You must key in the password within 5 seconds of accessing the password screen or the Model 1310 returns to normal operation.

Access the Configuration menu using the instructions found in *Instructions for Accessing the Menus*. Use the default password 2045. You will see the screen shown in Figure 5.

Figure 5
Configuration menu display

Figure 6 is a flowchart showing what soft keys or choices appear as you press the soft keys shown in Figure 5.

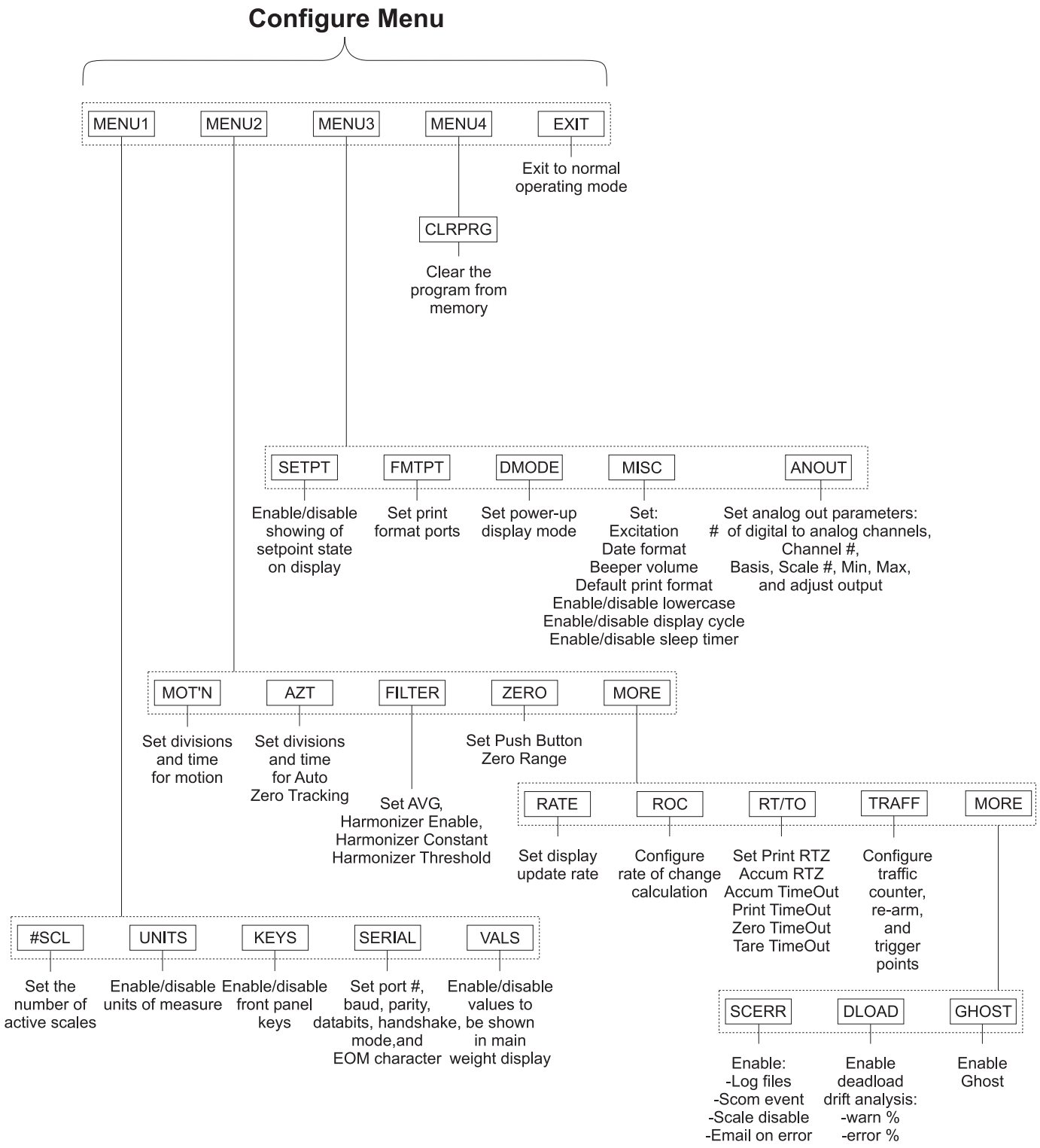


Figure 6
Soft key flowchart for Configure menu

Configure —MENU 1

Press the **MENU1** soft key to access the following soft key group:

#SCL Press this key to set number of active scales,

UNITS Use this key to enable/disable units of measure.

KEYS Use this key to enable or disable front panel keys

SERIAL Use this key to set port #, baud rate, parity, databits, handshake, mode, and EOM character.

VALS Use this key to enable/disable values to be shown in the main weight display

Following are detailed instructions for setting these parameters.

Configure —MENU1 —#SCL

If you press the **#SCL** soft key, follow these instructions:

1. The display will show the number of active scales. Accept this by pressing the **ENTER** key or key in the number of attached scales and press the **ENTER** key. . .

   The display returns to the MENU1 display.

Configure —MENU1 —UNITS

If you press the **UNITS** soft key, follow these instructions:

1. The display asks if you want to enable the LB unit of measure and shows you the current state (***ON*** or ***OFF***). If the condition is as you want it, simply press the **ENTER** key. If you want to change the condition, press the **YES** or **NO** soft key, then the **ENTER** key to move to the next unit of measure. . .

   The kilogram unit of measure is the next one shown.

Custom Units prompts for how many calibration units equal how many custom units. Example: 2000 lb = 1 ton

2. Repeat step 1 for kilograms, grams, ounces, pounds & ounces, and custom units 1 - 4. The display asks for calibration units, then the number of custom units that are equivalent. Key in the values and press **ENTER**. . .

   The display returns to the MENU1 display.

Configure —MENU1 —KEYS

If you press the **KEYS** soft key, follow these instructions:

1. The display asks if you want to enable the **SELECT** key and shows you the current state (***ON*** or ***OFF***). If the condition is as you want it, simply press the **ENTER** key. If you want to change the condition, press the **YES** or **NO** soft key, then the **ENTER** key to move to the next key. . .

   The **UNITS** key is the next one shown.

2. Repeat step 1 for UNITS, PRINT, TARE, ZERO, AUTOTARE and KEYPAD TARE . . .

   The display returns to the MENU1 display.

Configure —MENU1 —SERIAL

If you press the **SERIAL** soft key, follow these instructions:

1. The display prompts you for serial port # to configure. Press **ENTER** if displayed port is OK or key in a new port number and press **ENTER**. . .

   The baud rate is displayed.

2. Press **ENTER** to accept the baud rate or key in a new baud rate from the table below and press **ENTER**. . .

   The parity code number is displayed.

   Baud Rates

300	19,200
1200	38,400
2400	56,700
4800	115,000
9600	

3. Press **ENTER** to accept the parity or key in a new parity code number from the table below and press **ENTER**. . .

   The databits setting is displayed.

   Parity Codes

0 = NONE	3 = SET
1 = ODD	4 = CLEAR
2 = EVEN	

4. Press **ENTER** to accept the databits setting or key in the new databits value (7 or 8) and press **ENTER**. . .

   The handshake protocol code number is displayed.

CTS is a hardware handshake (ready/busy) which requires two extra wires in your cable.

Xon/Xoff is a software handshake requiring no additional hardware.

5. Press **ENTER** to accept the handshake protocol setting or key in a new code number for the handshake from the table below and press **ENTER**. . .

   The mode code number is displayed.

   Handshake Protocol Codes

0 = NONE	2 = Xon / Xoff
1 = CTS	3 = BOTH

6. Press **ENTER** to accept the mode setting or key in a new code number from the table below and press **ENTER**. . .

   The EOM (end of message) value is displayed.

   Serial Mode Control Codes

0 = BASIC control	2 = Disabled	4 = Computer
1 = Keyboard	3 = Multidrop	5 = Enquire

BASIC Control -	Control of the serial port is through the BASIC program executing in the Model 1310.
Keyboard -	Control of the serial port is through an attached keyboard.
Disabled -	The serial port is not in use for this configuration.
Multidrop -	The serial port is configured in RS-485 Multidrop mode.
Computer-	Makes certain indicator functions available via serial port.
Enquire-	This mode prints the default print format if all motion criteria are met and the EOM character is met.

*Enquire Mode must be enabled and the EOM character **MUST** be set to 5 to operate with Truck Weigh software program.*

EOM (End of Message) ASCII code #13 is carriage return.

7. Press **ENTER** to accept the EOM (End of Message) character or key in a new number from 0-255 and press **ENTER**. . .

   The display returns to the CONFIGURE-MENU1 display unless you are configuring port 2 or 4. If you are configuring port 2 or 4, you must choose from the following:

   Serial port 2: RS-232 or 20mA

   Serial port 4: RS-232

Configure —MENU1 —VALS

Press the **VALS** soft key to enable or disable the value which can be displayed on the main weight display when using the **SELECT** key. Below are the instructions for the **VALS** soft key:

1. The current setting (enabled ON or OFF) for the **GROSS** display value is displayed. Press **YES** to enable the active value or **NO** to disable this active display value, then press **ENTER** . .

   The current setting for the **NET** active value is displayed.

2. Repeat step 1 for all the display values (NET, TARE, MIN., MAX., ROC, G-TOT, N-TOT, C-TOT, #-TOT, COUNT, VALUE, PCWT and ADC. . .

   The display returns to the MENU1 display.

This completes the instructions for all the parameters of Menu1. Press **ESCAPE** to return to the main menu level.

Configure —MENU 2

These configuration items pertain to a particular scale. If you have enabled multiple scales, you will be asked which scale you want to configure. Key in the scale number, press **ENTER** and continue. If you have enabled only one scale, continue with the following instructions.

Press the **MENU2** soft key to access the following soft key group:

MOTION Use this key to set the motion detection window size in divisions and the time window in seconds. Defaults are 3d and 1 sec.

AZT Use this key to set the AZT window size in divisions and the time window in seconds. Defaults are 3d and 1 sec.

FILTER Use this key to set up the Harmonizer filtering to counteract vibration of the scale. Defaults are 12 A/Ds and Harmonizer off.

ZERO Use this key to set the zero range. This is a percent of capacity that is allowed to be zeroed when pressing the **ZERO** key. (0-100% allowed) Default is 100%.

MORE This accesses the following three soft keys.

RATE Press this key to configure the display update rate in updates per second. Default is 5 times/sec.

ROC ROC stands for Rate of Change. Press this key to set up your Model 1310 Indicator to calculate Rate of Change for flow rate, or weight/time, applications.

RT/TO Press this key to configure Print Return to Zero (RZ), Accumulator RZ, Accumulator Timeout, Print Timeout and Zero Timeout.

SensorComm Only

TRAFF Press this key to configure the traffic counter.

MORE This access the following three soft keys.

ERROR Press this key to configure the error handlers.

DLOAD Press this key to configure the zero drift error warning.

GHOST Use this key to enable/disable the Ghost feature and select the type of ghost.

Following are detailed instructions for setting these parameters.

Configure —MENU 2 —MOT'N

Use this key to set the motion detection window size in divisions and the time window in seconds.

For example: If you set divisions to 3 and seconds to 1, if the weight value does not change more than 3 divisions in one second, the scale or weight is considered stable.

If you press the **MOT'N** soft key, follow these instructions:

1. The current value for the motion window size, in divisions, is shown. Press **ENTER** to accept this value or key in a new value and press **ENTER**. . .

   The current time window in seconds is displayed.

2. Press **ENTER** to accept this time period or key in a new value and press **ENTER**. . .

   The display returns to the MENU2 display.

Configure —MENU 2 —AZT

Use this key to set the AZT window division size and time window in seconds. The division size you pick defines a range above and below zero. When scale weight is inside this range for the number of seconds you picked, ½ of the weight will be zeroed. The indicator will repeat removing ½ the weight every X seconds. X being the number of seconds you have picked.

If you press the **AZT** soft key, follow these instructions:

1. The current value for the AZT window size, in divisions, is shown. Press **ENTER** to accept this value or key in a new value and press **ENTER**. . .

   The current time window in seconds for AZT is displayed.

2. Press **ENTER** to accept this time period or key in a new value and press **ENTER**. . .

   The display returns to the MENU2 display.

Configure —MENU 2 —FILTER

Use this key to set up the Harmonizer filtering to counteract vibration of the analog scale. A full explanation is given below. See Appendix 2 for tips on using Harmonizer.

The A-D weight conversion happens 60 times per second in the Model 1310. AVG is the number of conversions you want to average. For example, if you pick 30, the unit will average the weight values from the last 30 conversions or ½ second and uses that value for displayed data.

The next choice you have is for turning the Harmonizer filtering on or off. If you turn the Harmonizer filtering on you need to set the Harmonizer 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 Harmonizer Threshold is so the indicator will respond quickly to large weight changes. Harmonizer Threshold is the amount of weight change, in calibration units, beyond which the Harmonizer 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 Harmonizer until the weight change during the sample time drops below 10 lbs.

In the SimPoser software the Harmonizer constant choices are 1 through 10. This setting is to be made in the "real world" on a working system so there are more menus available from the front panel.

Quartzell bases do not use Harmonizer and the Samples to Average value must be set to 1.

If you press the **FILTER** soft key, follow these instructions:

1. The display shows the current value for the number of samples to average. Press **ENTER** to accept this value or key in a new value and press **ENTER**. . .

   The display shows the state of the Harmonizer filtering(ON or OFF).

2. Press **YES** to enable Harmonizer or **NO** to disable the Harmonizer parameter. If you press **NO**, then **ENTER** , the display returns to the MENU2 display. If you press **YES**, then **ENTER**. , . . .

   The current Harmonizer Constant value is displayed if Harmonizer is enabled.

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

   The current Harmonizer Threshold value is displayed. This value is in calibration units.

4. Press **ENTER** to accept this value or key in a new value and press **ENTER**. . .

   The display returns to the MENU2 display.

Configure —MENU2 —ZERO

If you press the **ZERO** soft key you are prompted for a zero range. Accept the displayed value by pressing **ENTER** or key in a new one and press **ENTER**. The display returns to the MENU2 display.

Configure —MENU2 —MORE

This soft key accesses the last three soft keys in this menu. They are described below.

Configure —MENU2 —MORE —RATE

If you press the **RATE** soft key you are prompted for a display update rate. Accept the displayed value by pressing **ENTER** or key in a new one and press **ENTER**.

The following values are available: 0.1, 0.25, 0.5, 1, 2, 5 and 10. If you enter a value not in the list, the unit defaults to five.

The display returns to the MENU2—MORE display.

Configure —MENU2 —MORE —ROC

For a remote QDT base the value for ROC Samples should be 50.

ROC stands for Rate of Change. Press this key to set up your Model 1310 Indicator to calculate Rate of Change for flow rate, or weight/time, applications.

ROC Samples
The number of samples over which the rate of change of weight is determined. The Model 1310 converts weight from A to D at 60 times per second. If ROC Samples is set to 60, the Model 1310 is determining the rate of weight change over one full second.

ROC Mult
The ROC Multiplier allows you to enter a conversion factor to translate weight to some other unit of measure, such as gallons or some other weight unit based upon the calibration unit of measure.

ROC Examples:
If pounds is your calibration unit, pick a sample value of 60 and a multiplier of 1. The display will show the rate of change in pounds/second.

For gallons of water/second set the sample value at 60 and the multiplier to 0.125. Water = 8 lbs/gallon (8 lbs is close enough for our example) so their are 0.125 gallons per pound. See formula to the left.

$$\frac{\text{Cal Unit}}{\text{Custom Unit weight in Calibration Units}} = \frac{1}{8} = 0.125$$

To get gallons/minute, do not change the sample size but rather multiply the 0.125 by 60 to get a value equal to gallons/pounds/minute (7.5). The display will then show you a rate of change in gallons per minute. (This is the flow over the last second not over a whole minute's time.)

If you press the **ROC** soft key, follow these instructions:

1. The display shows the current value for SAMPLES. Press **ENTER** to accept the current value or key in a new one and press **ENTER**. . .

   The current multiplier value is displayed.

2. Press **ENTER** to accept the current value or key in a new one and press **ENTER**. . .

   The display returns to the MENU2—MORE display.

Configure —MENU2 —MORE —RT / TO

Press this key to configure Print Return to Zero (RTZ), Accum RTZ, Accum TimeOut, Print TimeOut, Zero TimeOut and Tare TimeOut.

For the RTZ functions, set the percent of capacity the weight must exceed before Print or Accum action can occur. The scale must return to zero to reset the functions.

For the TimeOut functions, set the amount of time, in seconds, the indicator will retry the function before it gives up due to motion on the scale.

If you press the **RT / TO** soft key, follow these instructions:

1. The current value for PRINT RTZ is displayed. Press **ENTER** to accept this value or key in a new value and press **ENTER**. . .

   The Accum RTZ value is displayed.

2. Repeat step 1 for Accum RTZ, Accum TimeOut, Print Timeout, Zero Timeout, and Tare Timeout. . .

   The display returns to the MENU2—MORE display.

Press the **ESC** key twice to return to the CONFIGURE display.

Configure
—MENU2
—MORE
—TRAFF

Press the **TRAFF** soft key to configure the traffic counter. Configuring the traffic counter involves setting trigger and re-arm points based on percent of scale capacity. In other words, if a weight applied to the scale exceeds the trigger point, the counter is incremented. Weight on the scale must fall below the re-arm point for the system to count the next weight above the trigger point.

If you press the **TRAFF** soft key, follow these steps:

1. Display shows current setting for the trigger point.

Trigger point default value is 25 (25%).

2. Key in new percentage (example 50 for 50% of scale capacity) and press the **ENTER** key

   or

   press the **ENTER** key to accept the current value. .

   Display shows ***%CAP REARM:*** and the current value for the re-arm point.

Re-arm default value is 2 (2%).

3. Key in new percentage (example 10 for 10% of scale capacity) and press the **ENTER** key

   or

   press the **ENTER** key to accept the current value. . .

   Display returns to **TRAFF** soft key display.

Configure
—MENU2
—MORE
—MORE
—ERROR

Press the **ERROR** soft key to enable the following:

Error logging	The SensorComm error log will record the errors as they occur.
SCOMM Error Event	WT-BASIC will queue an event on error.
E-mail on Error	An e-mail will be sent if an error occurs
Disable Scale on Error	The display will be dashed out if the scale disable is activated.

If you press the **ERROR** soft key, follow these steps:

1. Display shows ***ENABLE ERROR LOGGING?*** and the current setting (ON (default) or OFF).
2. Press the **ON** or **OFF** soft key to change the setting and press **ENTER** to accept new setting. . .

   Display shows ***ENABLE SCOMM_ERROR EVENT?*** and the current setting (ON (default) or OFF).

3. Press the **ON** or **OFF** soft key to change the setting and press **ENTER** to accept new setting. . .

   Display shows ***ENABLE E-MAIL?*** and the current setting (ON or OFF (default)).

4. Press the **ON** or **OFF** soft key to change the setting and press **ENTER** to accept new setting. . .

   Display shows ***DISABLE SCALE?*** and the current setting (ON or OFF (default)).

5. Press the **ON** or **OFF** soft key to change the setting and press **ENTER** to accept new setting. . .

   Display returns to the **ERROR** soft key screen.

Configure
—MENU2
—MORE
—MORE
—DLOAD

Press the **DLOAD** soft key to enable and configure deadload drift analysis.

This allows you to set a warning level as a percentage of scale capacity. If the deadload weight change exceeds this set percentage, a warning is displayed on the screen. You can also set an error level as a percentage of scale capacity. If the deadload weight change exceeds this set percentage, the scale returns an error.

If you press the **DLOAD** soft key, follow these steps:

1. The display shows the current setting for the warning percentage.
2. Key in a new percentage (example 1.2 for 1.2% of scale capacity) and press the **ENTER** key

   or

   press the **ENTER** key to accept the current value. . .

   Display shows the current setting for the error level.

3. Key in a new percentage (example 2.5 for 2.5% of scale capacity) and press the **ENTER** key

   or

   press the **ENTER** key to accept the current value. . .

   Display returns to the **DLOAD** soft key screen.

Configure
—MENU2
—MORE
—MORE
—GHOST

Caution

Only one failed weight sensor can be ghosted on one section in truck scale applications. Once Ghost is enabled, the system is no longer "legal" or "trade approved." The audit counters will be incremented to track this change.

In tank, hopper, and deck scale applications the weight applied must be in a constant position, i.e. the center of gravity must be constant for Ghost to work properly. Up to three out of four cells may be "Ghosted", but the accuracy and stability decreases as the number of active cells decrease.

Attention

Once a Ghost event occurs, the sensor is disabled in the SensorComm. To reactivate that sensor you must power down the indicator, fix the problem and repower the indicator.

Press the **GHOST** soft key to enable the ghost weight sensor option.

If you enable the ghost option and a weight sensor on a scale system fails, the word ***GHOST*** will appear on the display and scale weight will be estimated using the inputs from the remaining functioning weight sensors. This is useful if you must keep an operation functioning, although at a reduced accuracy, for a period of time until a replacement can be installed.

"Cell" ghost should be used for tank, hopper and deck scale applications. "Section" ghost is for truck scales.

If you press the **GHOST** soft key, follow these steps:

1. The display asks if you want to enable or disable the GHOST option. Press **YES** or **NO** to the displayed question. . .

   If you choose to disable the option the display returns to the **GHOST** soft key screen.

   If you choose to enable the option the display shows the current setting for ghosting a Cell or a Section.

2. Press the **CELL** soft key or the **SECTN** soft key to choose between them. . .

   Display returns to the **GHOST** soft key screen.

3. Be sure you perform the Ghost calibration under the Calibration menu for proper ghost function.

Configure —MENU3

When using the Showsetpt, make sure you use a display mode that will not interfere with the dots, such as display mode 16. ***After checking the setpoint operation, disable Showsetpt so the display is clear.***

Press the **MENU3** soft key to access the following soft key group:

SETPT Press this key to enable or disable viewing of setpoint state in the right corner of the weight display.

FMTPT Press this key to configure a port to use for each print format.

DMODE Press this key to pick a power-up display mode from those available in *Appendix 1: Display Samples*.

MISC Press this key to do the following: Choose the excitation for the loadcell, set default print format, choose date format preference, set beeper volume, choose uppercase or lowercase for the small font, enable or disable the display cycle using the decimal (.) key on the front panel and set up the sleep timer, auto backlight timer and enable or disable MUSTDIM.

ANOUT Press this key to set the number of digital to analog channels (DAC) and then you pick the output # and then the basis the output is based upon.

Following are detailed instructions for setting these parameters.

Configure —MENU3 —SETPT

If you press the **SETPT** soft key you are asked if you want to show set-points. Press **YES** if you want to see the setpoint state in the upper right corner of the display. Press **NO** if you do not want to see this. The display returns to the MENU3 display.

Configure —MENU3 —FMTPT

If you press the **FMTPT** soft key you are shown a format number and a port number. Press **ENTER** to accept the port number for each format or key in a new port number for up to 32 formats and press **ENTER**. (default is Format 1, Port 2) After the last entry or when you press **ESC**, the display returns to the MENU3 display.

Configure —MENU3 —DMODE

If you press the **DMODE** soft key you are asked what power up display mode you would like. Press **ENTER** to accept the displayed display number or key in a new number and press **ENTER**. Choose the display from those shown in *Appendix 1: Display Samples*.

Configure —MENU3 —MISC

If you press the **MISC** soft key, follow these steps:

1. The current excitation is displayed next to ***SELECT EXCITATION:***. If this is OK, press **ENTER**. If there is no excitation displayed, or if you want to change the excitation, press the appropriate softkey from this list of choices: DC, 300HZ, 600HZ, or 1.2KHZ. Press **ENTER** to accept the choice. . .

   The date format screen is displayed.

2. Choose the date format you want (MMDDYY, DDMMYY, or YYMMDD) and press **ENTER**. . .

   The beeper volume screen is displayed.

By default, print format 0 sends Gross, Tare and Net values out of Port #1 only.

3. Press **ENTER** to keep the displayed volume or press the soft key for: OFF, LOW, MED or HIGH. Press **ENTER** after making your choice. . .

   The default print format screen is displayed.

4. Press **ENTER** to keep the displayed default print format #0 or type in a new print format number and press **ENTER** to accept it. . .

   The current setting for the small font is shown.

5. Press **ENTER** to keep the current choice. Press **NO** to disable lower-case font on the display. Press **YES** to enable lower case letters on the display. Press **ENTER** to accept your choice. . .

   The current setting for the display cycle is shown.

6. Press **ENTER** to keep the current choice. Press **NO** to disable the decimal (.) key from cycling through the display modes. Press **YES** to enable this function. Press **ENTER** to accept your choice. . .

   The current setting for the shutdown timer is shown.

7. Press **ENTER** to keep the current setting or press the **NO** soft key to disable it or the **YES** soft key to enable it. Press **ENTER** to accept your choice.

   If you pick **YES**, you are prompted to enter a time in hours, then prompted to enable or disable a warning beeper. If no indicator activity occurs in this period of time, the indicator will turn itself off preceded by a series of warning beeps. Press **ENTER** to accept your choices. . .

   The display shows the current setting for the Auto Backlight Timer.

8. The backlight timer turns just the backlight off after a set number of minutes. Press **YES** to enable the timer and **NO** to disable it. Press **ENTER**. . .

   If you press **NO**, go to the indented part of step 9.

   If you press **YES** you are asked to set the timer length in minutes.

9. Key in the number of minutes and press **ENTER**. . .

   The display asks if you want to enable MUSTDIM? This is used for troubleshooting BASIC applications and you should refer to a BASIC programming manual for complete instructions.

   Press YES or NO and the display returns to the Configure-Menu3 soft key display.

10 Press **ESC** then **EXIT** to return to normal operation. If you changed the configuration you will be asked if you want to save changes. Press **YES** if you do. **NO**, if not.

Configure —MENU3 —ANOUT

When controlling analog outputs via WT-Basic you must configure the number of channels and enable each channel by selecting a Basis, then the Basic commands can over ride these settings in your program.

The default selection is -1 (disabled) and if no basis is chosen, when you press **ENTER***, the display returns to the MENU3 screen.*

If you press the **ANOUT** soft key, follow these steps:

1. The number of Digital to Analog Channels (DAC) is displayed. Default value is 0. Accept this value by pressing **ENTER** (display returns to **ANOUT** soft key screen) or key in a new value and press **ENTER**. . .

   Channel # is displayed.

2. This allows you to set the analog channel you wish to use. Accept this value by pressing **ENTER** or key in a new value and press **ENTER**. . .

   Basis is displayed.

3. Choose the basis for the analog output from the list below:
   -1 = Disabled
   0 = Gross Weight
   1 = Net Weight
   2 = Tare Weight
   3 = Minimum Weight
   4 = Maximum Weight
   5 = Rate of Change
   6 = Gross Weight Total
   7 = Net Weight Total
   8 = Count Total
   9 = Transaction Total
   10 = Count
   11 = Variable
   12 = Piece Weight.

   Accept this displayed value by pressing **ENTER** or key in a new value and press **ENTER**. . .

   Scale # is displayed.

4. Select which scale you want the analog output based upon. Accept this displayed value by pressing **ENTER** or key in a new value and press **ENTER**. . .

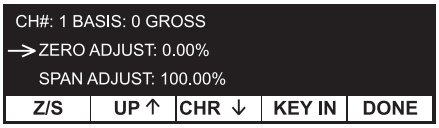
   MIN (minimum) is displayed.

5. This is the basis value which will cause the minimum output from the analog board. Accept this displayed value by pressing **ENTER** or key in a new value and press **ENTER**. . .

   MAX (maximum) is displayed.

6. This is the basis value which will cause the maximum output from he analog board. Accept this displayed value by pressing **ENTER** or key in a new value and press **ENTER**. . .

   The adjust screen shown below is displayed.



7. This screen shows the current channel # and basis. Toggle between ***ZERO ADJUST*** and ***SPAN ADJUST*** by pressing the **Z/S** soft key. The arrow points to the value you are adjusting when you use the **UP** or **DWN** soft keys. When you use the **UP** or **DWN** key, the value changes by ¼ % increments. If you press **KEY IN**, you can use the numeric keypad to enter a value for Zero and Span. Press the **DONE** key when you are finished. . .

   Display returns to the MENU3 screen. Press **ESCAPE** to return to the Main Menu level.

Configure —MENU4

WARNING: Do this only if you are sure it is absolutely necessary!

The only soft key in MENU4 is the CLRPRG key. Press this key only if you want to clear the BASIC program from the indicator memory. The only way to put the program back into the indicator is to download the file from your PC. So, if you do not have the program application file, DO NOT CLEAR IT!

Press the **ESC** key then the **EXIT** soft key to exit the Configure menu. You will be prompted to save any changes you have made. Press **YES** to save the changes. Press **NO** to exit without saving the changes. The indicator restarts.

Calibration Menu

SCL# appears as the 4th soft key if multiple scales are enabled.

Access the Calibration menu using the instructions found in *Instructions for Accessing the Menus*. Use the default password 30456. You will see the screen shown in Figure 7.

Figure 7
Calibration menu display

Figure 8 is a flowchart showing what soft keys or choices appear as you press the soft keys shown in Figure 7.

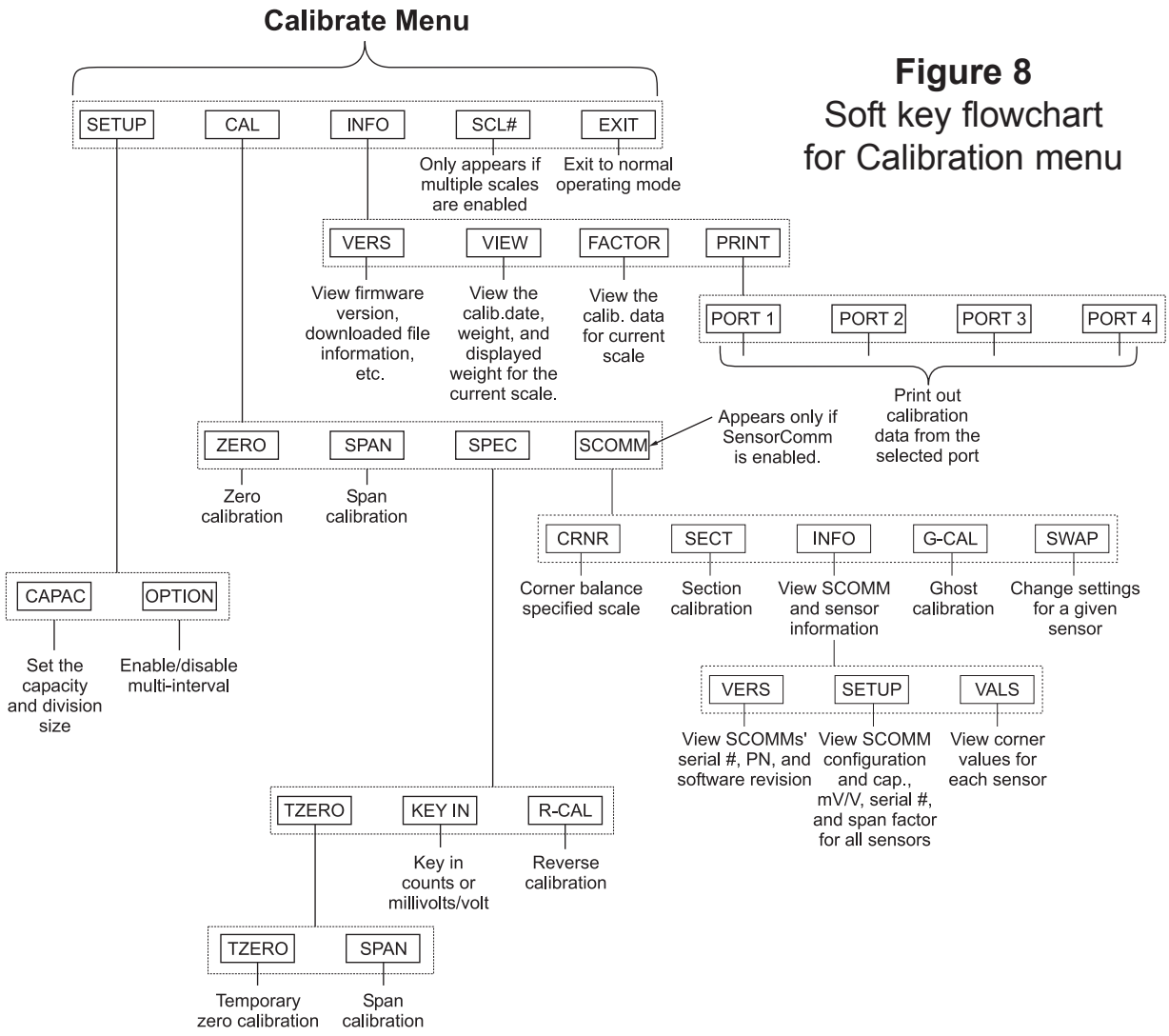


Figure 8
Soft key flowchart
for Calibration menu

Calibrate —SETUP

Press the **SETUP** soft key to access the following soft key group:

CAPAC Press this key to enter the capacity of the scale and the division size.

OPTION Press this key to enable or disable multi-interval use.

Following are detailed instructions for setting these parameters.

Calibrate —SETUP —CAPAC

If you press the **CAPAC** soft key, follow these instructions:

1. The display shows the current value for the capacity. Press **ENTER** to accept this value or key in a new capacity and press **ENTER**. . .

   The current division size is displayed.

2. Press **ENTER** to accept the division size or key in a new one and press **ENTER**. . .

   The display returns to the SETUP display.

Calibrate
—SETUP
—OPTION

Press the **OPTION** soft key to enable or disable the multi-interval option. If you enable the multi-interval option, the division size you choose under **CAPAC** applies to weight on the scale from 0 to ½ capacity. For weight on the scale from ½ capacity to full capacity the division size will double.

When multi-interval is enabled, the division used to check for stability, center of zero, and AZT is always the smaller division size. Overload and underload is always calculated based on the upper division size.

The displaying and printing division size depends on which interval the scale is in. The active interval is chosen based on net when a tare weight is active, and gross weight when a tare is not active.

When gross is displayed or printed (regardless of the tare value) the division size used depends on the interval used.

After pressing **ENTER** to accept your choice of enabling or disabling the multi-interval option, the display returns to the SETUP soft key choices.

Calibrate —CAL

Press the **CAL** soft key to access the softkey set used to set zero and span, shown below:

ZERO Use this key to set the zero reference.
SPAN Use this key to span the scale.
SPEC Use this key to access another set of soft keys for specialized calibration.

Following are detailed instructions for setting these parameters.

Calibrate
—CAL
—ZERO

If you press the **ZERO** soft key, follow these instructions:

1. The display asks you to remove all weight from the scale then press **ENTER**. . .

   After the indicator has calibrated the zero point, the display says ***DONE*** and asks you to press any key.

Press **ESC** *to abort.*

2 Above the text you will see the weight displayed. It should read zero in the increments you've chosen. If not you should perform this step again. . .

   The display returns to the CAL display.

Calibrate
—CAL
—SPAN

If you press the **SPAN** soft key, follow these instructions:

1. The current span calibration weight is displayed. Press **ENTER** to accept this weight or key in a new one and press **ENTER**. . .

   The display prompts you to apply the test weight load to the scale.

2. Apply the test weight load to the scale and press **ENTER**. . .

   The indicator determines the span and tells you when it is done. Above the text, the display should show you the correct test weight. If not perform the span again.

Press **ESC** *to abort.*

3. Press any key to return to the CAL display.

Calibrate
—CAL
—SPEC

Use the **SPEC** soft key to access three new softkeys. These soft keys are listed below.

TZERO This stands for temporary zero. This calibration procedure is useful when a scale has weight on it that is impractical to remove, such as a hopper or bin which is partially full of material. This calibration allows you to establish a temporary zero, add weights to the scale and do a span without losing the zero reference point.

KEY IN This calibration procedure allows you to key in calibration data, mV/V or counts. This means calibration data can be transferred between different indicators if one fails and no new calibration procedure need be done.

R-CAL This stands for reverse calibration. Use this procedure when it is impractical to hang weights from a full or partially full hopper or bin. You can key in a span weight, unload that weight onto another scale, perform a zero calibration and your scale is calibrated.

Following are detailed instructions for these soft keys.

Calibrate
—CAL
—SPEC
—TZERO

If you press the **TZERO** soft key, you are shown two new soft keys, **TZERO** and **SPAN**.

To perform the temporary zero spanning procedure, press the **TZERO** soft key. The indicator performs a zero function, the display says ***DONE*** and asks you to press any key. Above the text you will see the weight displayed. It should read zero in the increments you've chosen. If not you should perform this step again. The display returns to the TZERO display.

Next, press the **SPAN** soft key.

Calibration should be verified with certified test weights at your earliest convenience.

1. The current span calibration weight is displayed. Press **ENTER** to accept this weight or key in a new one and press **ENTER**. . .

   The display prompts you to apply the test weight load to the scale.

2. Add the test weight load to the scale and press **ENTER**. . .

   The indicator determines the span and tells you when it is done. Above the text, the display should show you the correct test weight. If not perform the span again.

3. Press any key to return to the **CAL-SPEC-TZERO** display.

Press **ESC** to return to the **CAL-SPEC** display.

Calibrate
—CAL
—SPEC
—KEY IN

Press the **KEY IN** soft key if you want to set up a new indicator to replace another indicator and keep the original indicator's calibration settings. To do this you must have recorded the zero counts or mV/V values of the original indicator in order to transfer that information to the new indicator. This information can be found in the Calibrate menu under the **INFO** and **FACTOR** soft keys.

If you press **KEY IN**, you are asked if you want to set up the calibration using zero counts or mV/V. Choose one.

Calibrate
—CAL
—SPEC
—KEY IN
—CNTS

If you press **CNTS**, follow these steps:

1. The display shows the current zero counts value. Key in the value from the original indicator and press **ENTER**. . .

   The display shows the current span weight.

2. Key in the span weight from the original indicator and press **ENTER**. . .

   The display shows the span counts.

3. Key in the span factor from the original indicator and press **ENTER**. . .

   Display returns to the SPEC soft keys.

Calibrate
—CAL
—SPEC
—KEY IN
—MV/V

If you press **MV/V**, follow these steps:

1. The display prompts for the cal zero mV/V value. Key in the value from the original indicator and press **ENTER**. . .

   The display shows the current cal weight.

2. Accept the displayed cal weight, if it is the same as the cal weight of the original indicator, by pressing **ENTER** or key in the correct value from the original indicator and press **ENTER**. . .

   The display shows the span mV/V.

3. Accept the displayed span mV/V, if it is the same as the span mV/V of the original indicator, by pressing **ENTER** or key in the correct value from the original indicator and press **ENTER**. . .

   Display shows the SPEC soft keys.

Calibrate
—CAL
—SPEC
—R-CAL

If you press the **R-CAL** soft key, you can perform a reverse calibration. In other words, you start with a loaded scale, remove **all** the weight from the scale for spanning, then get your zero reading. This may require a container on a separate scale into which you discharge the material.

1. Press the **R-CAL** soft key. . .

   Display shows the title *Reverse Calibration Span* and prompts you to press **ENTER**.

2. Press **ENTER**. . .

   The indicator determines span point #1 and shows ***DONE*** when finished. The display prompts you to press any key to continue.

3. Press any key. . .

   Display prompts you to enter a calibration weight. This is the weight that is currently on the scale. You will remove all this weight from the scale in step 5. This value is used for spanning the scale.

You may need to remove the weight and weigh it on another scale to determine this value.

4. Key in the calibration weight value equal to the amount to be removed from the scale in step #5 and press the **ENTER** key. . .

   The indicator prompts you: “REVERSE CALIBRATION ZERO: Remove load, Press ENTER.”

You need to remove all the weight from the scale in this step.

5. Empty the scale and press **ENTER**. . .

   The indicator acquires span point #2 and shows ***DONE*** when finished. Reference zero is acquired at this time.

6. Press any key to return to the SPEC display.

Calibrate —CAL —SCOMM

The SCOMM soft key only appears if the SensorComm option is enabled.

Use the **SCOMM** soft key to access the corner and section balancing functions and to see information on the SensorComm and associated weight sensors.

1. Press **SCOMM**, The following is displayed:

The **CRNR** key is for calibrating the scale using corner weights. See *Corner Balancing / Calibrate—CAL—SCOMM—CRNR* section below.

The **SECT** key is for calibrating the scale using section weights. See *Section Weight Adjustment / Calibrate—CAL—SCOMM—SECT* section below.

The **INFO** key lets you view SensorComm and weight sensor specifications. See the section *INFO soft key*.

The **G-CAL** key lets you set the ghost calibration. See the section *Ghost Calibration / Calibrate—CAL—SCOMM—GHOST*.

The **SWAP** key allows you to quickly and easily replace a faulty weight sensor with a new one and be confident your accuracy remains high. For instructions on swapping weight sensors, see the section called *Sensor Swap Procedure / Calibrate—CAL—SCOMM—SWAP*.

Corner Balancing

Calibrate
—CAL
—SCOMM
—CRNR

As long as you use the same weight over each sensor, the system will corner correctly. Remember, a minimum of 10% scale capacity is recommended.

1. Press **CRNR**. . .

   The following is displayed:

   This is prompting you to key in the weight you will use for the cornering weight. It is recommended you use a minimum of 10% scale capacity as your cornering weight. See note at left.

2. Remove all weight from the scale, key in your cornering weight and press **ENTER**. . .

   The following is displayed for several seconds as the average deadload is computed :

   then the following is displayed (values will vary from this example):

3. Place your cornering weight over sensor #1.

4. Press the **SET** key. . .

   The following is briefly displayed:

5. Display shows Sensor #, Counts, mV/V and the stored counts which is an average of live counts with the corner weight applied.

6. Press the **NEXT** key and repeat steps 3-6 for each sensor in the scale.

7. When all eight (in this scale example) have data stored, press **DONE**. . .

   The following is displayed:

If you make an error and try to complete the calibration procedure, the display will say: ***Cornering error -1 Any key to continue****.*

Press any key and ***Review Data?*** *is displayed along with the* ***YES*** *and* ***NO*** *soft keys. If you press* ***NO*** *it takes you back to the screen where you picked CRNR. If you press* ***YES****, it will take you back to the last cornering position.*

8. Press **NO** to abort the process and return to the following display . . .

CALIBRATE-CAL-SCOMM				
CRNR	SECT	INFO	G_CAL	SWAP

OR

Press **YES** to continue. . .

The following is displayed:

CORNER VALUES?				
NO				YES

9. Press **NO** to abort the procedure and the following is displayed. .

CALIBRATE-CAL-SCOMM				
CRNR	SECT	INFO	G_CAL	SWAP

OR

Press **YES** to finish the procedure. . .

The display shows the indicator is computing data then storing corner parameters and if the operation is successful the following is displayed:

The instrument should display the current scale weight.

10000 LB GROSS
CORNERING SUCCESSFUL
ANY KEY TO CONTINUE.

10. Press any key to continue. . .

The following is displayed:

CALIBRATE-CAL-SCOMM				
CRNR	SECT	INFO	G_CAL	SWAP

11. Press the **ESC** soft key. . .

The display returns to Calibrate-Cal shown below:

CALIBRATE-CAL				
ZERO	SPAN	SPEC	SCOMM	

12. Go to *Zero & Span Procedure* section to complete calibration.

Section Weight Adjustment

Calibrate
—CAL
—SCOMM
—SECT

For optimum section calibration, enter the Weigh Bar nominal span coefficients into the SimPoser SensorComm configuration.

As long as you use the same weight the system will adjust the sections correctly. Remember, a minimum of 10% scale capacity is recommended.

For section adjustments, it is not critical to key in an exact weight in step 2. The section weight entered is for an approximate span so you can verify the section weights without performing a full span calibration or corner balance routine.

If you make an error and try to complete the section adjustments and missed a section, the display says ***Cornering error -1 Any key to continue****. Press any key and* ***Review Data?*** *is displayed along with the YES and NO soft keys. If you press NO, it takes you back to the screen where you picked SECT. If you press YES, it will take you back to the last section adjustment position.*

1. Press **SECT**. . .

   The following is displayed:

   This screen is prompting you to key in the weight you will use for the section weight. It is recommended you use a minimum of 10% scale capacity as your section weight. See note at left.

2. Remove all weight from the scale, key in your section weight and press **ENTER**. . .

   The following is displayed for several seconds as the average deadload is computed :

   then the following is displayed (values will vary from this example):

3. Place your section weight over the section.

4. Press the **SET** key. . .

   The following is briefly displayed:

5. Display shows Section #, Counts, mV/V and the stored counts which is an average of live counts with the section weight applied.

6. Press the **NEXT** key and repeat steps 3-6 for each section in the scale.

7. When all sections have data stored, press **DONE**. . .

   The following is displayed:

8. Press **NO** to abort the process and return to the following display . . .

CALIBRATE-CAL-SCOMM				
CRNR	SECT	INFO	G_CAL	SWAP

OR

Press **YES** to continue. . .

The following is displayed:

CORNER VALUES?				
NO				YES

9. Press **NO** to abort the procedure and the following is displayed. .

CALIBRATE-CAL-SCOMM				
CRNR	SECT	INFO	G_CAL	SWAP

OR

Press **YES** to finish the procedure. . .

The display shows the indicator is computing data then storing corner parameters. When finished the following is displayed:

The instrument should display the current scale weight.

10000 LB GROSS
CORNERING SUCCESSFUL
ANY KEY TO CONTINUE.

10. Press any key to continue. . .

The following is displayed:

CALIBRATE-CAL-SCOMM				
CRNR	SECT	INFO	G_CAL	SWAP

11. Go to *Zero & Span Procedure* to complete calibration.

Zero & Span Procedure

1. Press the **ZERO** soft key. . .

   The following is displayed

2. Remove all weight from the scale and press **ENTER**. . .

   The following is briefly displayed

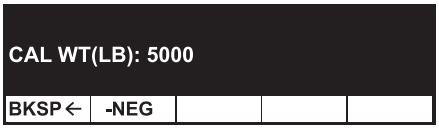
   followed by this display:

If a pulse counter is configured for a scale, a prompt will appear when you press the **SPAN** *key. The prompt asks how many pulses/unit of measure? For example, if a water meter provides 2000 pulses/gallon, enter 2000.*

3. Press any key.

4. Press the **SPAN** soft key. . .

   The following is displayed (5000 pound is just an example):

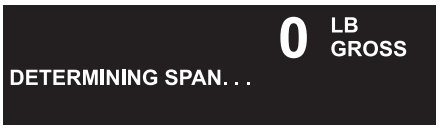


5. Press **ENTER** to accept this weight or key in a new one and press **ENTER**. . .

   The following is displayed:

6. Apply the load to the scale and press **ENTER**. . .

   The following is briefly displayed:



   then the following:

   The display shows the current weight. If not perform the span again.

7. Press any key. . .

   The following is displayed:

8. Press the **ESC** key. .

   Display returns to the *Calibrate* display.

9. Press the **EXIT** softkey. . .

   You will be prompted to save any changes made.

10. Press **NO** to exit without saving changes. Press **YES** to exit and save changes. . .

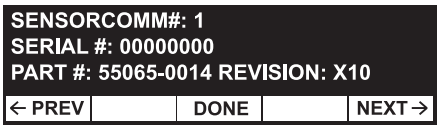
    The system is now calibrated and in normal operation mode.

11. Remember to reseal the indicator.

Calibrate
—CAL
—SCOMM
—INFO

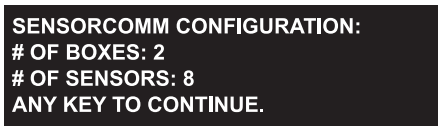
Press the **INFO** soft key to view SensorComm and weight sensor specifications.

VERS soft key — Brings up a display similar to this example:

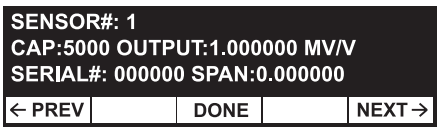


This display shows you the serial number, part number and software revision level of SensorComm #1. Press the **NEXT** or **PREV** soft key to other active SensorComm j-boxes.

SETUP soft key — Brings up a display similar to this example:

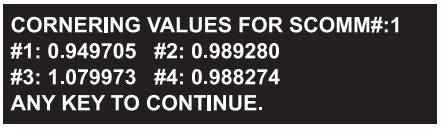


This display shows you the configuration of the SensorComm system. In this example the system has two SensorComm j-boxes with a total of eight weight sensors. Press any key and the following is displayed:



This screen lets you scroll through all the sensors using the **PREV** and **NEXT** soft keys. Information displayed for each sensor is programmed capacity, output in mV/V, serial number and span factor.

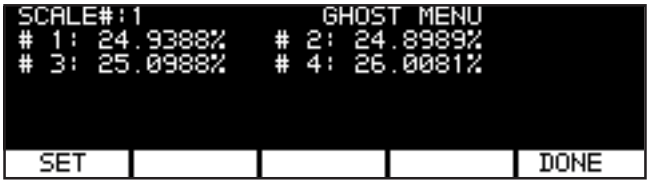
VALS soft key — Brings up a display similar to this example:



This display shows you the stored cornering values for each sensor attached to a SensorComm j-box. Press any key to see the next SensorComm values if there is another attached. Returns to VERS-SETUP-VALS soft key set after viewing the last set of values.

Calibrate
—CAL
—SCOMM
—G-CAL

GHOST must be enabled under the Config menu.



You must complete SensorComm calibration and cornering before performing *G-CAL*. For *G-CAL* to function correctly you must ***place a centered load on the scale***. Then press the **G-CAL** soft key. The percentage of the load (weight) distribution on each weight sensor is displayed. This diagnostic information may be used to correct load distribution on your weight sensors.

If you redistribute the load on your weight sensors, we recommned you recorner and recalibrate SensorComm to ensure accuracy.

Press the **SET** soft key to capture these percentages. This information is used by the indicator to calculate weights if one or more of the weight sensors become ***"Ghosted".*** To exit this screen without setting the Ghost parameters press the **DONE** soft key.

Sensor Swap Procedure

Calibrate
—CAL
—SCOMM
—SWAP

This section valid for SensorComm™ enabled systems only.

The **SWAP** key allows you to quickly and easily replace a faulty weight sensor with a new one and be confident your accuracy remains high. Follow these steps to swap weight sensors.

1. Remove power to the system.
2. Disconnect the faulty weight sensor.
3. Connect the new weight sensor.
4. Apply power.
5. Be sure indicator is unsealed, then press and hold the **ESC** key until *SETUP PASSWORD* is displayed.
6. Key in your password (default is 30456) and press **ENTER**. . .

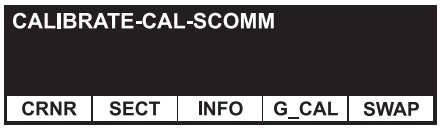
   The following is displayed:

7. Press **CAL**. . .

   The following is displayed:

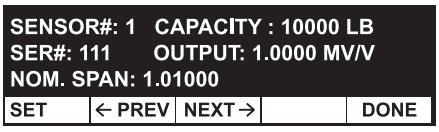
8. Press **SCOMM**,

   The following is displayed:



9. Press the **SWAP** softkey. . .

   The following is an example of what will be displayed:



   This display shows you which sensor's information is being displayed, the capacity of the weight sensor, the serial number, it's output and nominal span.

10. Select the sensor in question by scrolling the choices with the **PREV** or **NEXT** key. Press **SET** when the sensor you are replacing is displayed. . .

    The following is displayed:

SERIAL #: 111				
BKSP←	-NEG			

11. Key in the serial # of the new weight sensor and press **ENTER**. . .

    The following is displayed:

SPAN OR MV/V				
SPAN				MV/V

Nominal span and mV/V at rated output are typically located on documentation accompanying new weight sensors.

12. Press **SPAN** if you are entering the span number from a Weigh Bar. . .

    The following is displayed:

SPAN: 1				
BKSP←	-NEG			

    Key in the span value listed on the new weight sensor and press **ENTER**.

OR

Press **MV/V** to enter the MV/V value from another type of weight sensor. . .

The following is displayed:

MV/V: 1				
BKSP←	-NEG			

Key in the MV/V value listed on the new weight sensor and press **ENTER**. . .

The beginning screen is again displayed:

SENSOR#: 1 CAPACITY : 10000 LB SER#: 111 OUTPUT: 1.0000 MV/V NOM. SPAN: 1.01000				
SET	← PREV	NEXT→		DONE

13. Press **DONE** to save the changes. . .

    The display asks if you want to save the changes.

14. Press **YES** to save. Press **NO** to abort the process.

Calibrate —INFO

Press the **INFO** soft key to access the following soft key group:

VERS Press this key to view firmware and downloaded file information.

VIEW Press this key to view calibration information.

FACTOR Press this key to view the calibration data (mV/V and counts) for the current scale.

PRINT Press this key to print out calibration data from the selected serial port.

Following are detailed instructions for setting these parameters.

Calibrate —INFO —VERS

If you press the **VERS** soft key, you can see all the following information on consecutive screens as you press any key to continue. The SimPoser information will be available only if a file has been downloaded to the indicator.

- Firmware version
- Part number and revision level
- Serial number of the indicator
- XILINX version
- XILINX part number
- XILINX revision level
- SimPoser license number and license holder of the person that saved the file
- SimPoser license number and license holder of the person that downloaded the file
- Version of the SimPoser that created the file
- File name
- Time and date file was created

After viewing the last screen, the display returns to the INFO display.

Calibrate —INFO —VIEW

If you press the **VIEW** soft key, you can view the following information about calibration:

- Calibration date
- Calibration weight
- Displayed weight following calibration

Calibrate —INFO —FACTOR

If you press the **FACTOR** soft key, you can see the following:

- Serial #, Scale #, Scale type
- Capacity and Divsion
- Factory Cal Zero
- Factory Cal Factor
- CAL ZERO in mV/V
- CAL FACTOR in mV/V
- CAL ZERO in counts
- CAL FACTOR in counts per division
- CFG
- GAIN
- DAC
- AINRO
- AINNO
- URFNO

A/D converter settings

Calibrate
—INFO
—PRINT

If you press the **PRINT** soft key you are given a choice of four ports through which to print the calibration information. Pick port 1-4 and the information is transmitted and the screen returns to the INFO display.

Calibrate
—SCL#

This soft key is only available if multiscale is enabled. If you press the **SCL#** soft key you can select the scale number for the current active scale to calibrate.

Calibrate
—EXIT

Press the **EXIT** softkey to return to normal weighing operation. You will be prompted to save any changes made. Press **NO** to exit without saving changes. Press **YES** to exit and save changes.

Test Menu

There is one more menu that you can access for testing purposes. The flowchart of soft keys in the menu are shown in Figure 9.

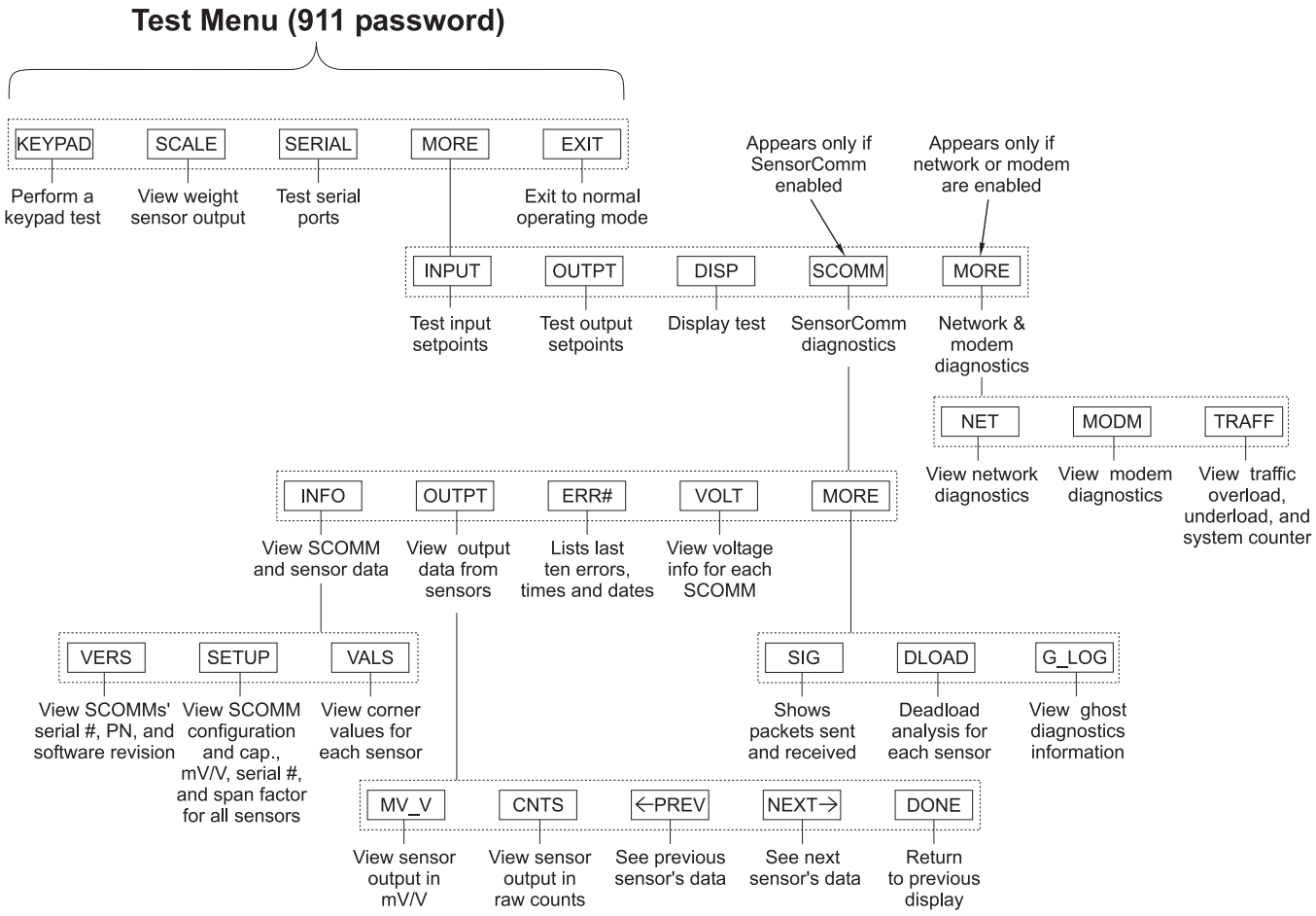


Figure 9
Flowchart of soft keys in the Test menu

Hold the **ESCAPE** key for 5 seconds then key in **911** at the prompt and press **ENTER**. These softkeys appear:

KEYPAD This test lets you check each front panel key for proper operation. Follow the instructions on the display.

SCALE This key allows you to view the cell output from a selected scale. This is disabled if SensorComm™ is active.

Zero Offsetting a Junction Box

For analog scales you will see a screen similar to this:

```
SCALE#1      A/D CONVERTER
RAW COUNTS: 5000
EQUAL TO 0.00592 MV/V
PRESS ZERO TO ZERO RAW COUNTS.
```

- a raw count value and its equivalent mV/V value. (These values should be positive and increase as weight is applied.)

Set the MV/V value as close to zero as possible by adjusting the zero pot in the junction box.

For Quartzell scales you will see a screen similar to this:

```
SCALE#1  QUARTZELL S/N: 754949
RAW COUNTS: 81654
FT  47523.301    FC  47212.416
```

This screen shows you:

- the serial number of the Quartzell in the currently selected base
- the raw counts from the cell (which should be stable ±200 counts and increase when weight is applied)
- the tension frequency (Ft) and compression frequency (Fc) Each should be as stable as the other and within 10% of each other. As weight increases the tension count should increase and the compression count should decrease.

SERIAL Use this to test your ports. Select Port #1 through 4 then short the TX and RX on the selected port. The display will change from NO LOOP to LOOP indicating the port is good. Jumper RTS to CTS to test the handshake lines.

Inputs and outputs have to be defined in the WT-BASIC program for them to work.

MORE	Accesses the following keys:
INPUT	Allows you to Activate/Deactivate any input setpoint device such as a switch or contact closure remotely and monitor it with this menu.
OUTPT	Allows you to Activate/Deactivate any output setpoints to verify correct hardware operation during installation or for trouble-shooting purposes.
DISP	This test continuously cycles the display through a test pattern.
SCOMM	Present only if SensorComm™ is active. It accesses the SensorComm diagnostics which are explained the following section, *SCOMM Soft Key*.
MORE	Only appears if a network or modem are enabled. Follow the instructions on the display. For more information on networks, reference the *Network Installation Guide* PN29806-0013. This key accesses the following keys:
NET	This diagnostic will only appear if a network option card is installed. Follow the instructions on the display. For more information reference the *Network Installation Guide* PN29806-0013..
MODM	Appears only if modem is enabled by SimPoser program. The display will show Port #, Status (see list at left), User configuration information.
TRAFF	Displays the traffic overload, underload and system counters.

Modem status list:
1 = initialize
2 = set auto answer
3 = set user config
4 = port ready
5 = dialing
6 = error
7 = connected
8 = disconnected
9 = initialize 2

SCOMM Soft Key

Refer to Figure 9 as the soft keys and functions which apply to SensorComm are explained below.

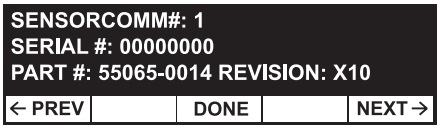
When you press the SCOMM soft key, the following keys appear:

INFO	See *INFO Soft Key* section.
OUTPT	See *OUTPT Soft Key* section.
ERR#	See *ERR# Soft Key* section.
VOLT	See *VOLT Soft Key* section.
MORE	Brings up the following keys:
SIG	See SIG Soft Key section.
DLOAD	See DLOAD Soft Key section.
G_LOG	See G_LOG Soft Key section.

INFO Soft Key

Press this key to view SensorComm and weight sensor specifications.

VERS soft key — Brings up a display similar to this example:



This display shows you the serial number, part number and software revision level of SensorComm #1. Press the **NEXT** or **PREV** soft key to other active SensorComm J-boxes.

Press the **ESC** *key to back out of most displays and return to the previous display.*

SETUP soft key

Brings up a display similar to this example:

```
SENSORCOMM CONFIGURATION:
# OF BOXES: 2
# OF SENSORS: 8
ANY KEY TO CONTINUE.
```

This display shows you the configuration of the SensorComm system. In this example the system has two SensorComm j-boxes with a total of eight weight sensors. Press any key and the following is displayed:

```
SENSOR#: 1
CAP:5000 OUTPUT:1.000000 MV/V
SERIAL#: 000000 SPAN:0.000000
| ← PREV |  | DONE |  | NEXT → |
```

This screen lets you scroll through all the sensors using the **PREV** and **NEXT** soft keys. Information displayed for each sensor is programmed capacity, output in mV/V, serial number and span factor.

VALS soft key

Brings up a display similar to this example:

```
CORNERING VALUES FOR SCOMM#:1
#1: 0.949705   #2: 0.989280
#3: 1.079973   #4: 0.988274
ANY KEY TO CONTINUE.
```

This display shows you the stored cornering values for each sensor attached to a SensorComm j-box. Press any key to see the next SensorComm values if there is another attached. Returns to VERS-SETUP-VALS soft key set after viewing the last set of values.

OUTPT Soft Key

Press this key to view the current output of each weight sensor in raw counts or mV/V. You will see a display similar to this example:

Press **DONE** *to return to the previous level display.*

```
SENSORCOMM#: 1  COUNTS MENU
#1: 500000   #2: 500000
#3: 500000   #4: 500000
| MV_V | CNTS | ← PREV | NEXT → | DONE |
```

This display shows you the current output in raw counts for each sensor attached to SensorComm #1. Press the **PREV** or **NEXT** soft key to move between multiple SensorComm j-box displays.

If you press the **CNTS** soft key, you will see a display similar to this example:

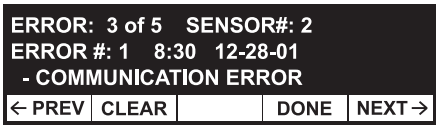
Press **DONE** *to return to the previous level display.*

```
SENSORCOMM#: 1  MV/V MENU
#1: 0.639000   #2: 0.651000
#3: 0.653000   #4: 0.660000
| MV_V | CNTS | ← PREV | NEXT → | DONE |
```

This display shows you the current output in mV/V for each sensor attached to SensorComm #1. Press the **PREV** or **NEXT** soft key to move between multiple SensorComm j-box displays.

ERR# Soft Key

Press the **ERR#** soft key to see a record of the last 10 error code numbers and the dates and the times these occurred. The screen will look similar to the example below:



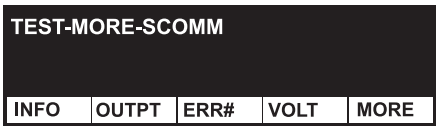
The top line tells you how many errors are in the list,which one you are viewing and the sensor on which the error occurred.

The second line shows the error number and time and date it occurred.

The third line gives you the name of the error. This corresponds to the list of errors in *Error Messages from SensorComm™*.

Press **NEXT** or **PREV** to see the entire list of error messages.

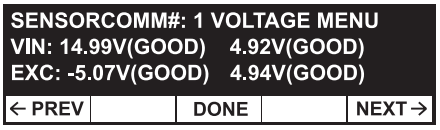
Press **CLEAR** to clear all the messages. You will be asked if you are sure and be shown **YES** and **NO** keys. If you press **NO**, the display returns to the error message screen. If you press **YES**, the display returns to the following screen:



If you press the **ERR#** key and there are no active errors, you will see this display:

VOLT Soft Key

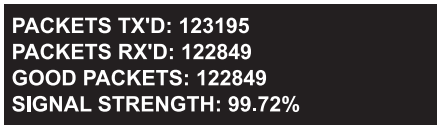
Press the **VOLT** soft key to see current Voltage In and Excitation voltage reports. The screen will look similar to the one below:



View other connected SensorComm j-boxes by using the **PREV** or **NEXT** soft key. Press **DONE** to return to the previous level display.

SIG Soft Key

Press the **SIG** soft key to see a constantly changing display similar to the example below:

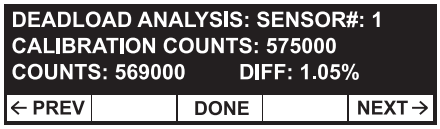


Press the **ESC** *key to back out of most displays and return to the previous display.*

This screen shows the number of packets of information sent to the Sensor-Comm system and the number received back correctly. This is a measure of the relative reliability of your communication setup. If the signal strength shows a lower percentage, chances are the system is experiencing some kind of line noise and thus, less reliable communication.

DLOAD Soft Key

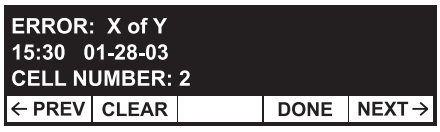
Press the **DLOAD** soft key to view the deadload analysis for each weight sensor. You will see a display similar to the example below:



This display shows the calibration counts, current raw counts and difference for sensor #1.

G_LOG Soft Key

Press the **G_LOG** soft key to view the log of error messages concerning ghosted weight sensors. See example below.



Press the appropriate softkey to scroll through the available error messages. Time and dates of errors are displayed.

X = active error

Y = Number of errors

2 = Cell number that was "ghosted"

Press the **CLEAR** soft key to clear the Ghost log. A prompt will ask if you are sure you want to clear.

Modem Diagnostic Screens

See the 1310 SimPoser installation CD for a default Hyperterminal configuration file located in the Tools folder.

By using the Hyperterminal program, which is a free utility with all Windows® operating systems, you can access a modem diagnostic menu to aid in troubleshooting. See note at left.

Following are screen samples when using the modem for diagnostics. See WT-BASIC in the *Model 1310 SimPoser User's Manual*.

Main Diagnostic Menu

When your PC connects to the Model 1310, the following screen will be echoed.

Hyperterminal settings:
57600 - baud
8 - databits
none - parity
1 - stop bit
Local character echo

```
Avery Weigh-Tronix Model 1310 Diagnostic Menu
Commands: (only first letter required, e.g. WT>>D C S 1)
-----------------------------------------------------------------
?                       This screen
Help                    This screen
Diag Counts Scale N     Counts for scale channel N, * for all scales
Diag Counts Box         Counts for all SensorComm jbox M
Diag Voltage            Voltages for SensorComm jboxes
Diag SysInfo            Traffic and over/under load counters
Diag Errors             Recent error information
Diag Ghost              Display ghost log
Value Scale N X         Display value for scale N, X=0:gross,1:net...
Settings Scale N        Settings for scale N.
Revision Box            Software revision information for SensorComm jbox
Revision Indicator      Software revision information for indicator
Quit                    Quit

WT>>
```

Type one of the commands in the left hand column at the WT>> prompt to perform a given diagnostic function. You can type the entire phrase or just the first letter in each word followed by a space to see the information listed in the right column.

Examples are shown below.

Question Mark (?) and Help commands

Type any of the following

WT>>?
WT>>H
WT>>Help (or any unrecognizable command)

and the main menu will be shown:

```
Avery Weigh-Tronix Model 1310 Diagnostic Menu
Commands: (only first letter required, e.g. WT>>D C S 1)
-----------------------------------------------------------------
?                       This screen
Help                    This screen
Diag Counts Scale N     Counts for scale channel N, * for all scales
Diag Counts Box         Counts for all SensorComm jbox M
Diag Voltage            Voltages for SensorComm jboxes
Diag SysInfo            Traffic and over/under load counters
Diag Errors             Recent error information
Diag Ghost              Display ghost log
Value Scale N X         Display value for scale N, X=0:gross,1:net...
Settings Scale N        Settings for scale N.
Revision Box            Software revision information for SensorComm jbox
Revision Indicator      Software revision information for indicator
Quit                    Quit

WT>>
```

X=
#0 Gross
#1 Net
#2 Tare
#3 Minimum
#4 Maximum
#5 Rate of Change
#6 Gross Total
#7 Net Total
#8 Count Total
#9 Transaction Total
#10 Count
#11 Value
#12 Piece Weight
#13 A to D Counts

Diag Counts Scale N command

Type the following command in either format

WT>>D C S 1
WT>>Diag Counts Scale 1

and you will see the following:

```
[Diag Counts Scale]
Scale 1
 844696 Counts @ 1.0000 mV/V


WT>>
```

Diag Counts Box command

Type the following command in either format

WT>>D C B
WT>>Diag Counts Box

and you will see the following:

```
SensorComm Chain#: 1
Box: 1
Sensor 1:   168910 Counts @ 0.2000 mV/V
Sensor 2:   168891 Counts @ 0.1999 mV/V
Sensor 3:   168949 Counts @ 0.2000 mV/V
Sensor 4:   168965 Counts @ 0.2000 mV/V
Box: 2
Sensor 1:      15 Counts @ 0.0000 mV/V
Sensor 2:      15 Counts @ 0.0000 mV/V
Sensor 3:      15 Counts @ 0.0000 mV/V
Sensor 4:      15 Counts @ 0.0000 mV/V
```

Disassembly and Reassembly

Warning

Remove Power Before Doing Any Service Work.

Warning

FIELD CABLE WIRING INSTALLATION REQUIREMENTS:

When installing field wiring connections into the Model 1310 the installer should use cable that has 300V minimum rating. The outer jacket should be stripped off only as far as necessary to make the connection inside the unit, but should not extend beyond the top of the strain relief. If there is a shield or drain wire in the cable it should be terminated with a ring terminal similar to WT P/N 16062-0050. The shield or drain wire should only be long enough to reach the nearest stud on the bottom of the Model 1310. WT additionally recommends that cable ties be used to keep the wires bundled until they get near the terminal block that they are to be connected to. Do not, however, tie any field wiring to the cable assemblies that are already in the indicator.

Following are the steps for disassembly and reassembly of the Model 1310 for service purposes.

1. Disconnect the Model 1310 from power and all peripheral equipment.
2. Remove the 14 acorn nuts holding the rear panel to the case. See Figure 10.

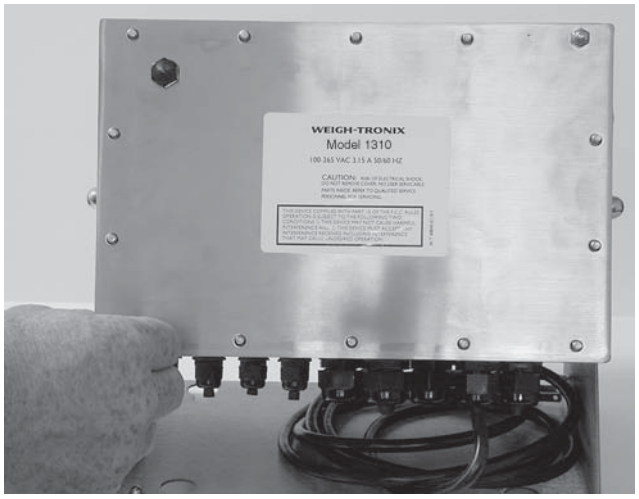


Figure 10
Removing the acorn nuts

3. Carefully pull the back from the case and lay it down. See Figure 11.

Figure 11
Back removed

3. If you need to remove the power supply board from the inside of the back cover, begin by disconnecting the power supply wires and the wires leading to the main board. Remove the eight screws holding the pc board as shown in Figure 12.

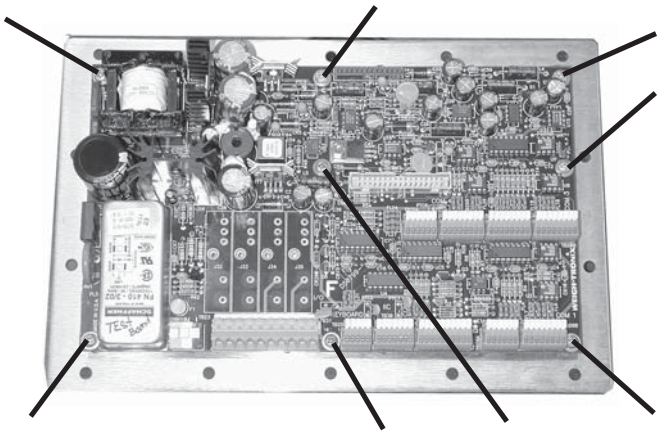


Figure 12
Power supply board
PN 50799-0018

4. If you need to remove the main board, disconnect the cables from the main board. Remove the six hold down screws on the board, as shown in Figure 13 and pull out the main board. The sixth screw is located under the ribbon cable in the photograph. Take care because there is a hidden connector between the main board and the display board beneath it. Disconnect this by pulling the main board straight back from the display board.

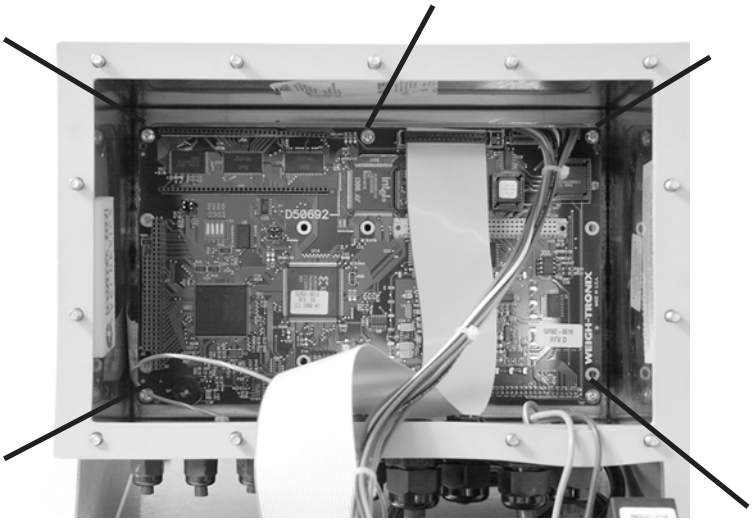


Figure 13
Main board
PN 50692-0024

5. There is a display pc board and a display module attached to the backer plate. If you need to remove the display board, disconnect the cables and remove the three standoffs and two nuts shown in Figure 14

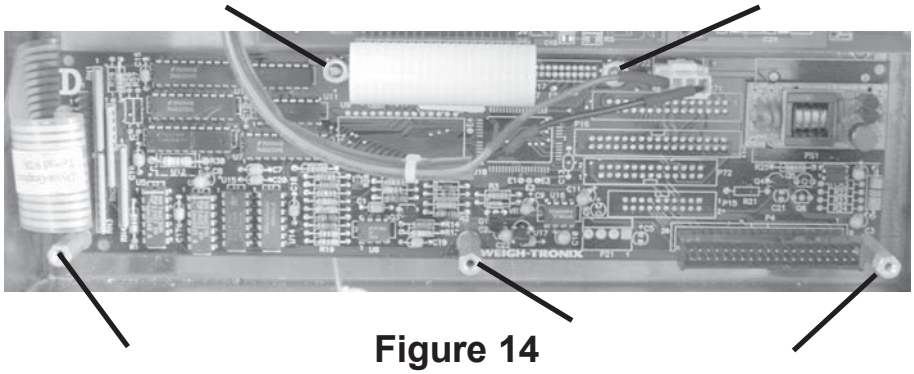


Figure 14
Display board

6. To remove the display module, disconnect the cables and remove the four screws holding the module to the backer plate and pull it from the case. See Figure 15.

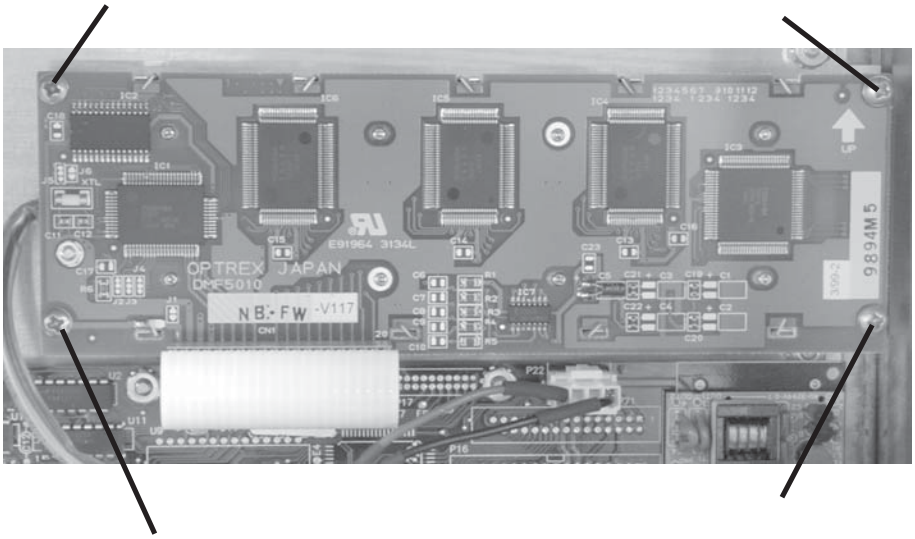


Figure 15
Display module

Replace any of the boards if needed and reassemble the unit by reversing the disassembly procedure.

Appendix 1: Ghost Information

Configure
—MENU2
—MORE
—MORE
—GHOST

Caution

Only one failed weight sensor can be ghosted on one section in truck scale applications. Once Ghost is enabled, the system is no longer "legal" or "trade approved." The audit counters will be incremented to track this change.

In tank, hopper, and deck scale applications the weight applied must be in a constant position, i.e. the center of gravity must be constant for Ghost to work properly. Up to three out of four cells may be "Ghosted", but the accuracy and stability decreases as the number of active cells decrease.

Attention

Once a Ghost event occurs, the sensor is disabled in the SensorComm. To reactivate that sensor you must power down the indicator, fix the problem and repower the indicator.

Appendix 1 is a repeat of the information on pages 27 and 45 in this manual. Refer to those sections for more information.

Press the **GHOST** soft key to enable the ghost weight sensor option.

If you enable the ghost option and a weight sensor on a scale system fails, the word ***GHOST*** will appear on the display and scale weight will be estimated using the inputs from the remaining functioning weight sensors. This is useful if you must keep an operation functioning, although at a reduced accuracy, for a period of time until a replacement can be installed.

"Cell" ghost should be used for tank, hopper and deck scale applications. "Section" ghost is for truck scales.

If you press the **GHOST** soft key, follow these steps:

1. The display asks if you want to enable or disable the GHOST option. Press **YES** or **NO** to the displayed question. . .

   If you choose to disable the option the display returns to the **GHOST** soft key screen.

   If you choose to enable the option the display shows the current setting for ghosting a Cell or a Section.

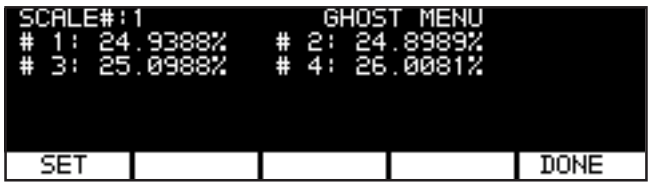
2. Press the **CELL** soft key or the **SECTN** soft key to choose between them. . .

   Display returns to the **GHOST** soft key screen.

3. Be sure you perform the Ghost calibration under the Calibration menu for proper ghost function.

Calibrate
—CAL
—SCOMM
—G-CAL

GHOST must be enabled under the Config menu.



You must complete SensorComm calibration and cornering before performing *G-CAL*. For *G-CAL* to function correctly you must ***place a centered load on the scale***. Then press the **G-CAL** soft key. The percentage of the load (weight) distribution on each weight sensor is displayed. This diagnostic information may be used to correct load distribution on your weight sensors.

If you redistribute the load on your weight sensors, we recommned you recorner and recalibrate SensorComm to ensure accuracy.

Press the **SET** soft key to capture these percentages. This information is used by the indicator to calculate weights if one or more of the weight sensors become ***"Ghosted".*** To exit this screen without setting the Ghost parameters press the **DONE** soft key.

Appendix 2: Display Samples

A scale number will appear on the display if multiple scales are configured. The samples below are shown with lower case text enabled.

Display Mode #1

Display Mode #8

Display Mode #2

Display Mode #9

Display Mode #3

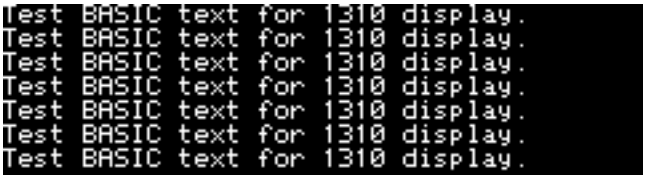
Display Mode #10

Display Mode #4

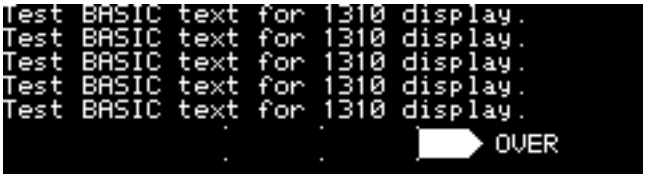
Display Mode #11

Display Mode #5

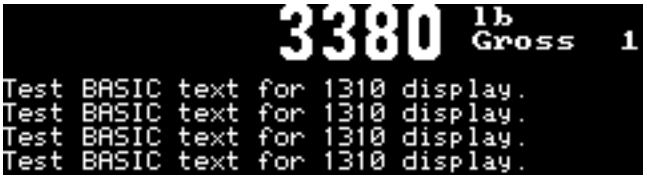
Display Mode #12



Display Mode #6

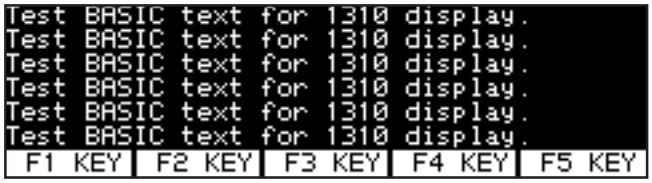


Display Mode #13



Display Mode #7

Display Mode #14



Display Mode #15

Display Mode #22

Display Mode #16

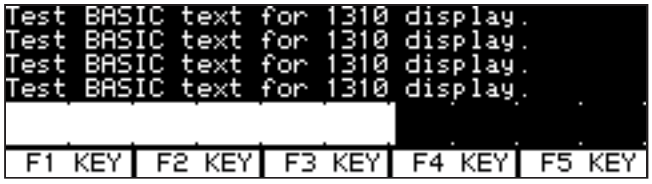
Display Mode #23

Display Mode #17

Display Mode #24

Display Mode #18

Display Mode #25

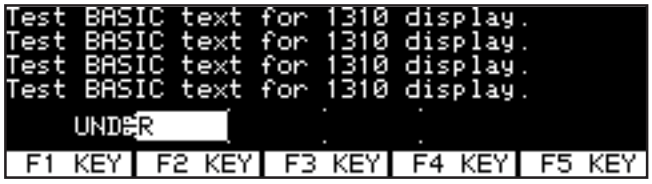


Display Mode #19

Display Mode #26

Display Mode #20

Display Mode #27



Display Mode #21

Display Mode #28

Display Mode #29

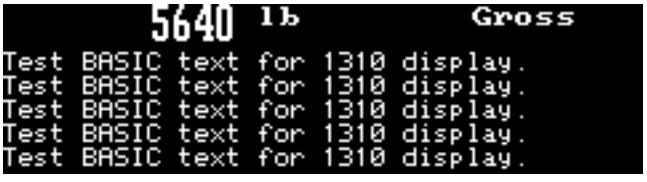
Display Mode #30

Display Mode #31

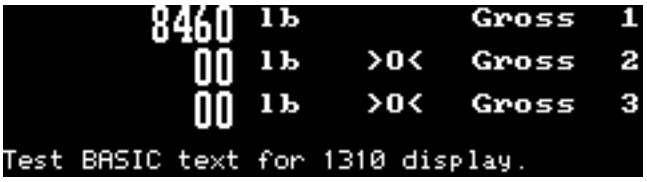
Display Mode #32

Display Mode #33

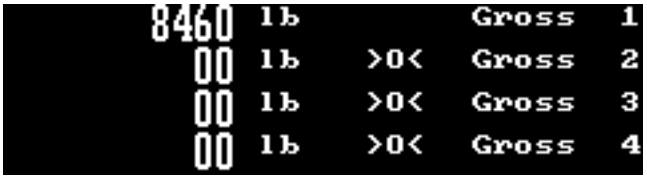
The following are multi-scale displays. If all the lines are not used for scales, they may be available for Basic text.



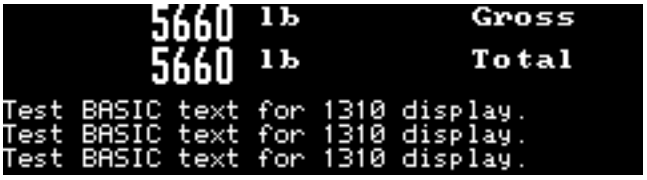
Display Mode #34 w/1 scale enabled



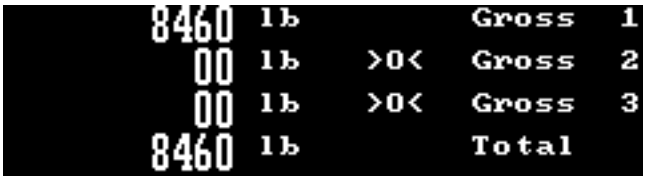
Display Mode #34 w/3 scales enabled



Display Mode #34 w/4 scales enabled

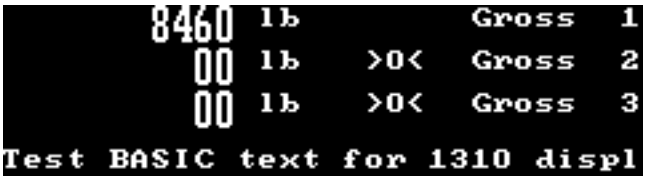


Display Mode #35 w/1 scale enabled

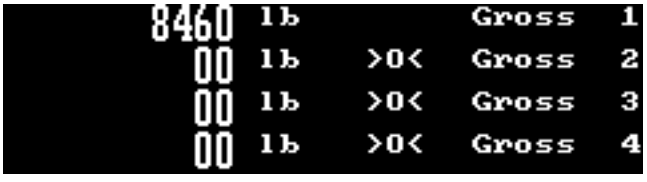


Display Mode #35 w/3 scales enabled

Display Mode #36 w/1 scale enabled

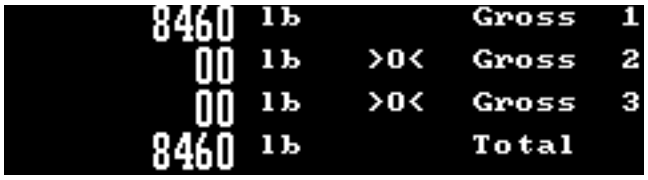


Display Mode #36 w/3 scales enabled



Display Mode #36 w/4 scales enabled

Display Mode #37 w/1 scale enabled



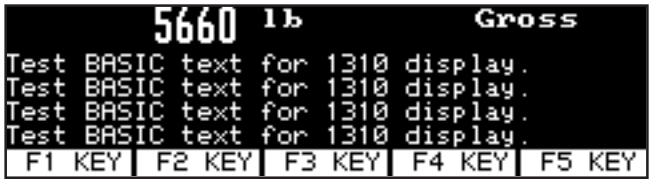
Display Mode #37 w/3 scales enabled

Display Mode #38 w/1 scale enabled

Display Mode #38 w/2 scales enabled

Display Mode #39 w/1 scale enabled

Display Mode #39 w/2 scales enabled



Display Mode #40 w/1 scale enabled

Display Mode #40 w/3 scales enabled

Display Mode #41 w/1 scale enabled

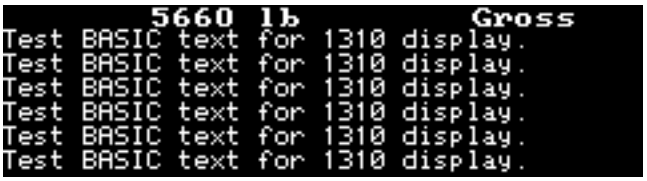
Display Mode #41 w/2 scales enabled

Display Mode #42 w/1 scale enabled

Display Mode #42 w/3 scales enabled

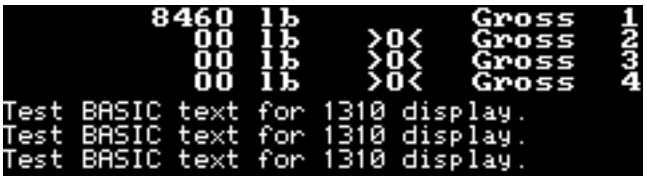
Display Mode #43 w/1 scale enabled

Display Mode #43 w/2 scales enabled



Display Mode #44 w/1 scale enabled

Display Mode #46 w/4 scales enabled

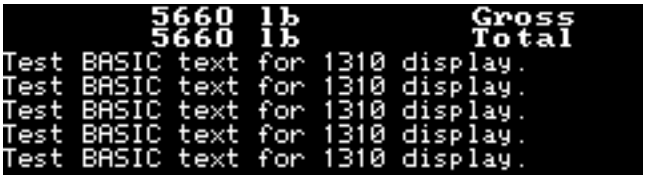


Display Mode #44 w/4 scales enabled

Display Mode #46 w/8 scales enabled

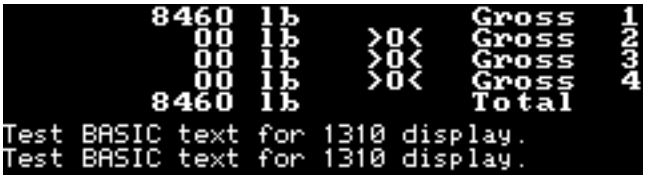
Display Mode #44 w/8 scales enabled

Display Mode #47 w/1 scale enabled



Display Mode #45 w/1 scale enabled

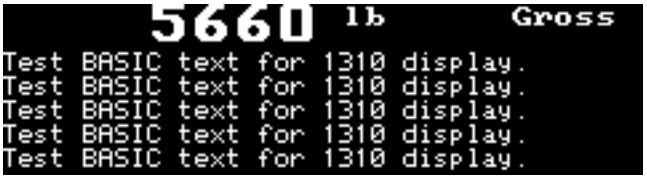
Display Mode #47 w/4 scales enabled



Display Mode #45 w/4 scales enabled

Display Mode #47 w/7 scales enabled

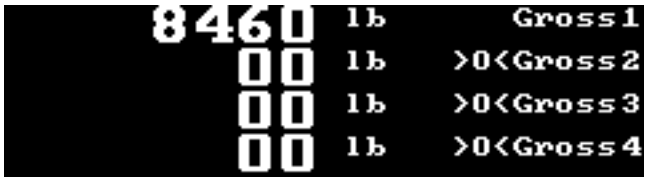
Display Mode #45 w/7 scales enabled



Display Mode #48 w/1 scale enabled

Display Mode #46 w/1 scale enabled

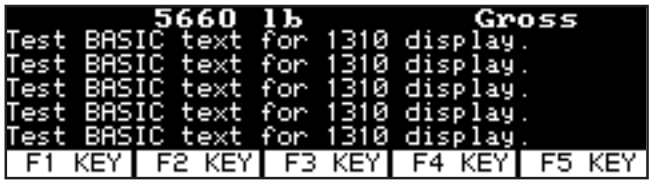
Display Mode #48 w/3 scales enabled



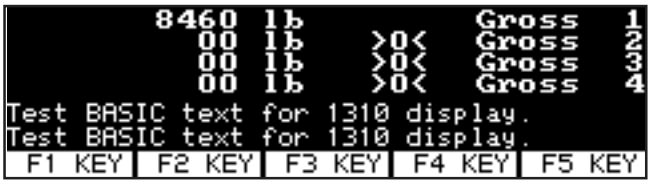
Display Mode #48 w/4 scales enabled

Display Mode #49 w/1 scale enabled

Display Mode #49 w/3 scales enabled



Display Mode #50 w/1 scale enabled



Display Mode #50 w/4 scales enabled

Display Mode #50 w/6 scales enabled

Display Mode #51 w/1 scale enabled

Display Mode #51 w/4 scale enabled

Display Mode #51 w/5 scales enabled

Display Mode #52 w/1 scale enabled

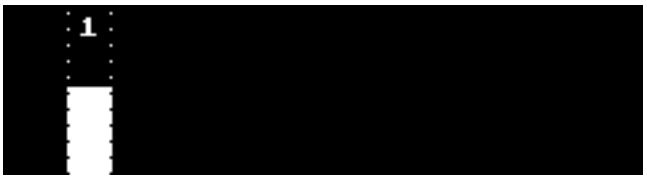
Display Mode #52 w/4 scales enabled

Display Mode #52 w/6 scales enabled

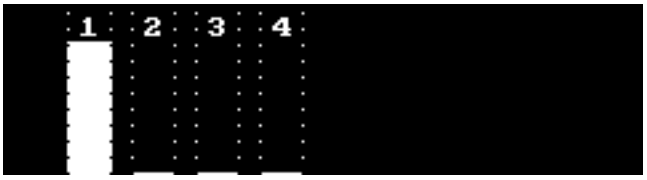
Display Mode #53 w/1 scale enabled

Display Mode #53 w/4 scales enabled

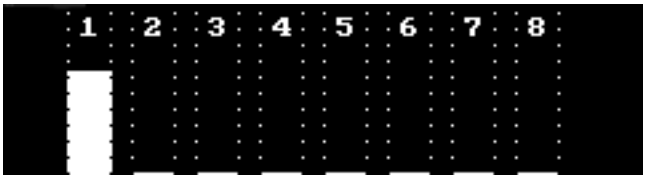
Display Mode #53 w/5 scales enabled



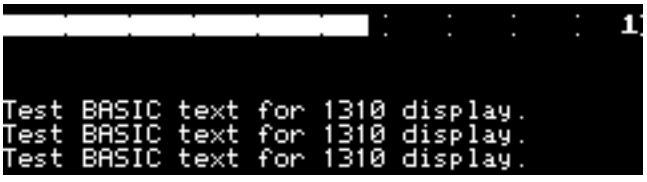
Display Mode #54 w/1 scale enabled



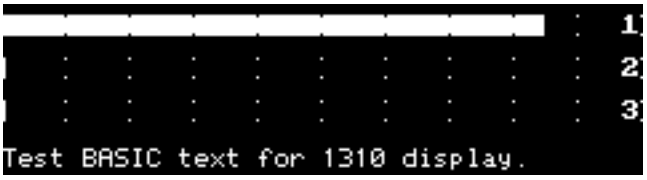
Display Mode #54 w/4 scales enabled



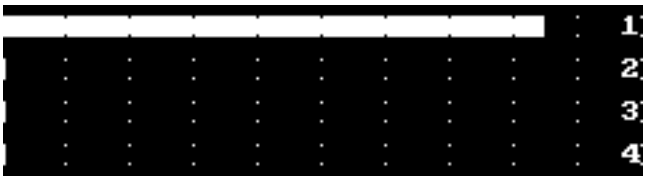
Display Mode #54 w/8 scales enabled



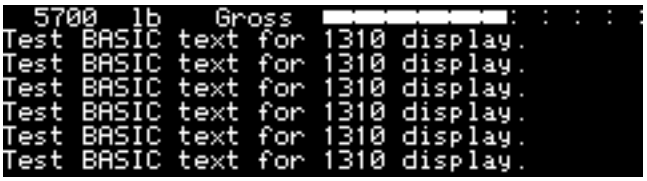
Display Mode #55 w/1 scale enabled



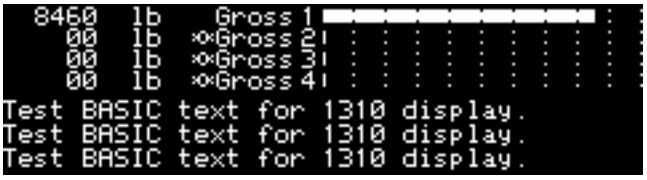
Display Mode #55 w/3 scales enabled



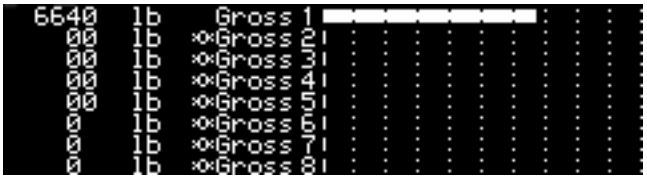
Display Mode #55 w/4 scales enabled



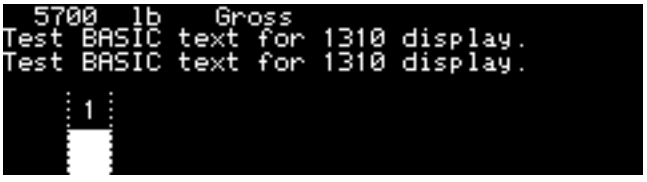
Display Mode #56 w/1 scale enabled



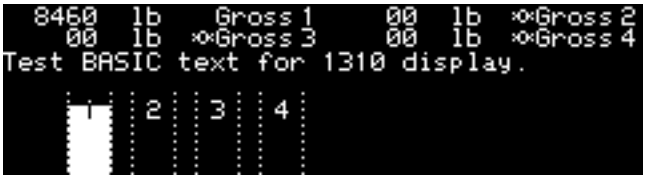
Display Mode #56 w/4 scales enabled



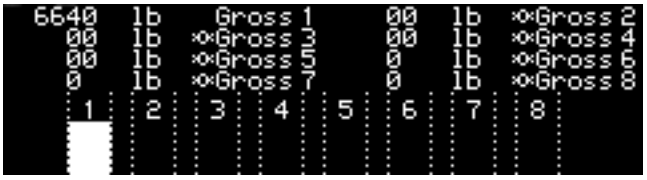
Display Mode #56 w/8 scales enabled



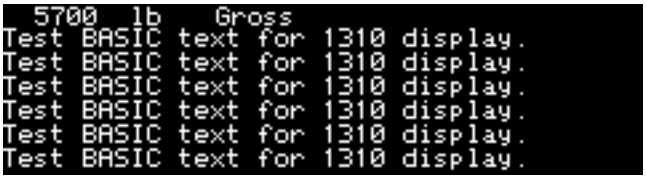
Display Mode #57 w/1 scale enabled



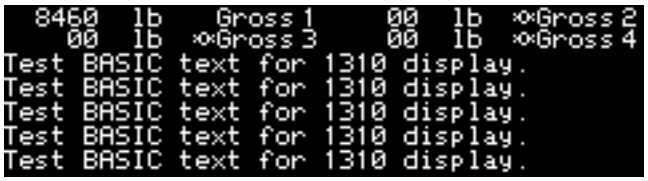
Display Mode #57 w/4 scales enabled



Display Mode #57 w/8 scales enabled

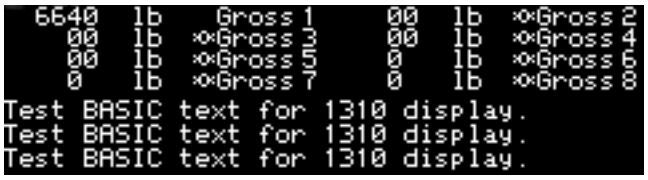


Display Mode #58 w/1 scale enabled

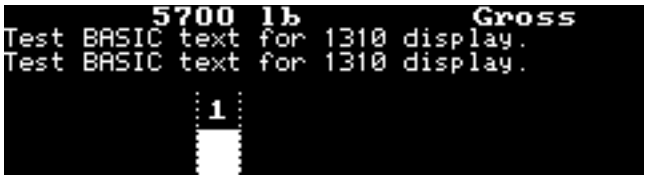


Display Mode #58 w/4 scales enabled

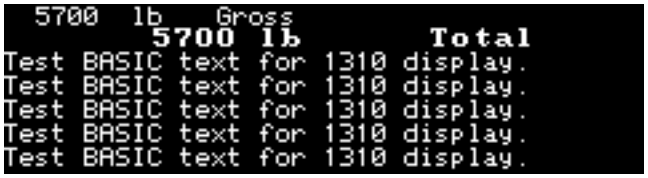
Display Mode #60 w/8 scale enabled



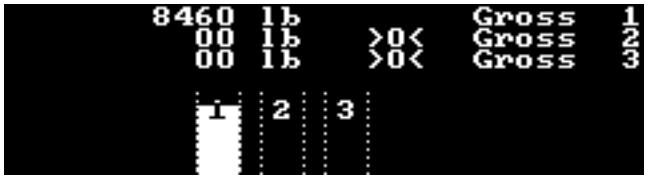
Display Mode #58 w/8 scales enabled



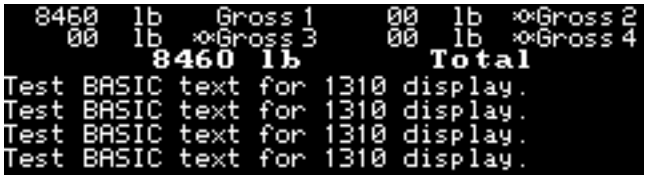
Display Mode #61 w/1 scale enabled



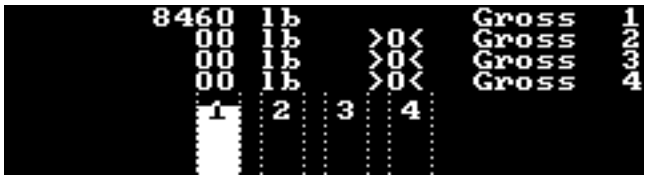
Display Mode #59 w/1 scale enabled



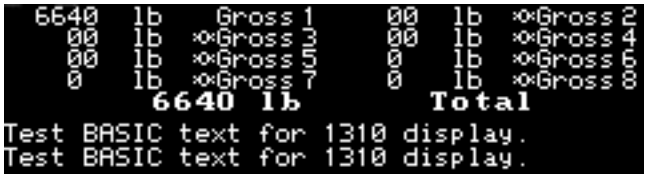
Display Mode #61 w/3 scales enabled



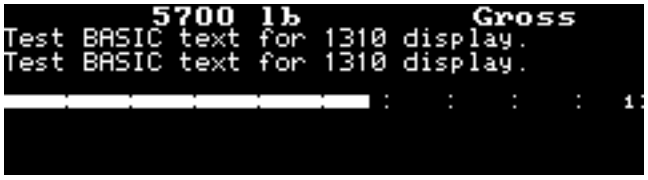
Display Mode #59 w/4 scales enabled



Display Mode #61 w/4 scales enabled

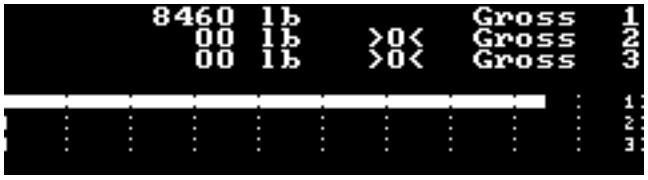


Display Mode #59 w/8 scales enabled



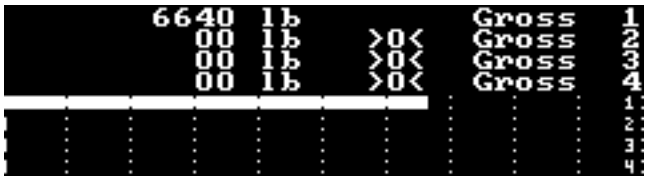
Display Mode #62 w/1 scale enabled

Display Mode #60 w/1 scale enabled



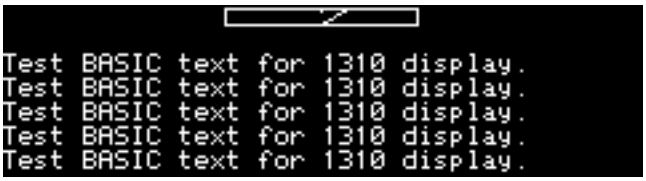
Display Mode #62 w/3 scales enabled

Display Mode #60 w/4 scales enabled

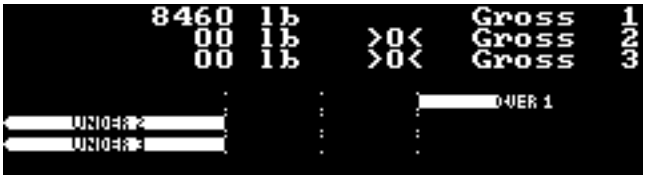


Display Mode #62 w/4 scales enabled

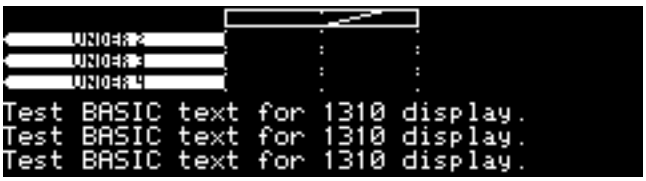
Display Mode #63 w/1 scale enabled



Display Mode #66 w/1 scale enabled

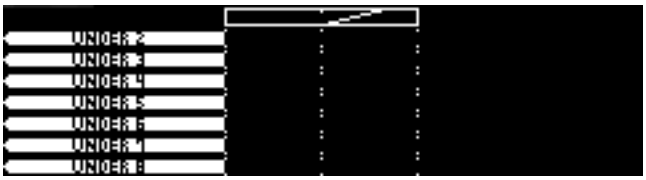


Display Mode #63 w/3 scales enabled

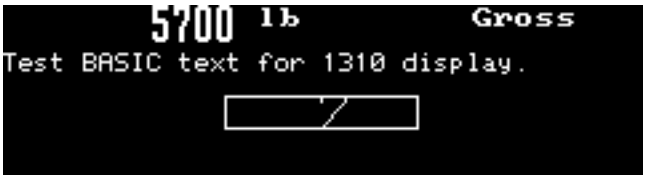


Display Mode #66 w/4 scales enabled

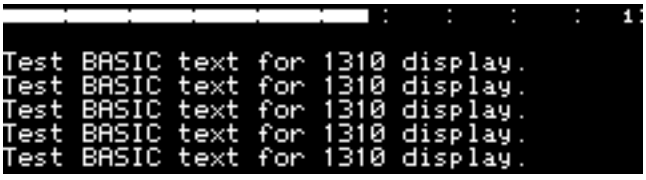
Display Mode #63 w/4 scales enabled



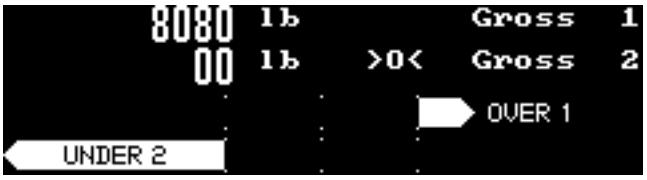
Display Mode #66 w/8 scales enabled



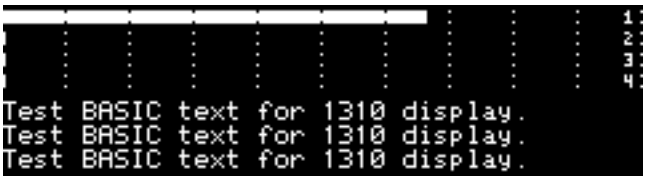
Display Mode #64 w/1 scale enabled



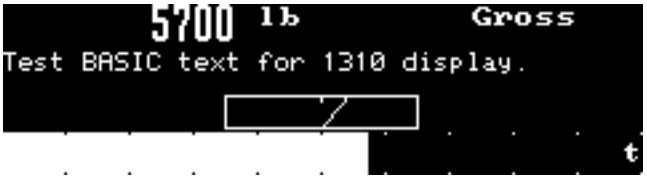
Display Mode #67 w/1 scale enabled



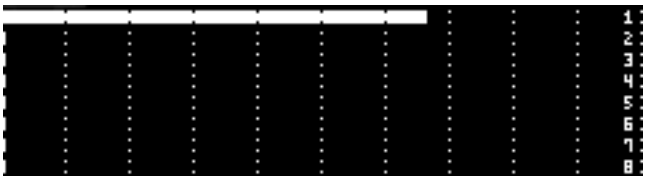
Display Mode #64 w/2 scales enabled



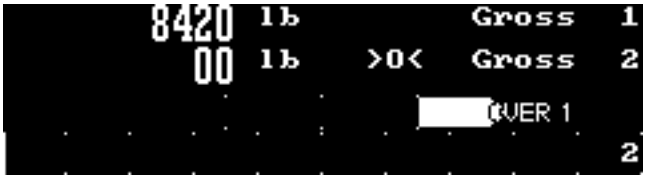
Display Mode #67 w/4 scales enabled



Display Mode #65 w/1 scale enabled



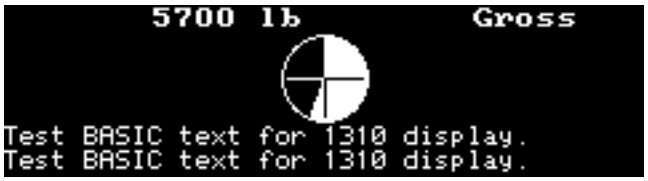
Display Mode #67 w/8 scales enabled



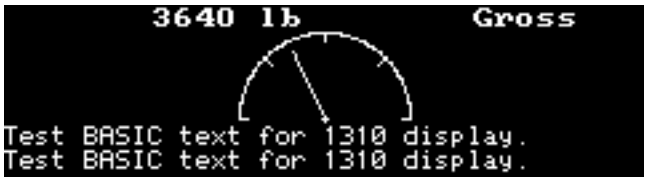
Display Mode #65 w/2 scales enabled

The following displays are all single scale displays. Checkweigher examples may show Over, Under, or Accept conditions.

The scale # appears in some of these examples because more than one scale is configured.



Display Mode #68



Display Mode #75

Display Mode #69

Display Mode #76

Display Mode #70

Display Mode #77

Display Mode #71

Display Mode #78

Display Mode #72

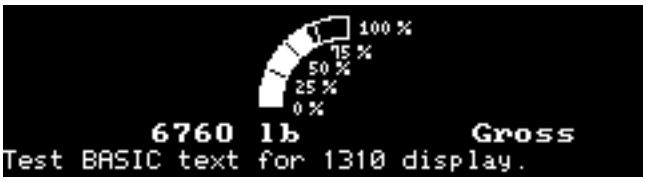
Display Mode #79

Display Mode #73

Display Mode #80

Display Mode #74

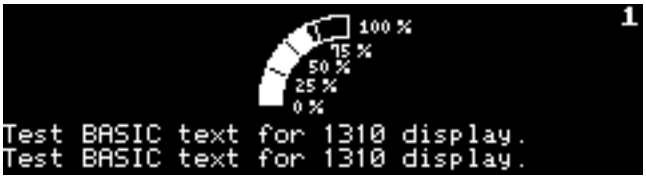
Display Mode #81



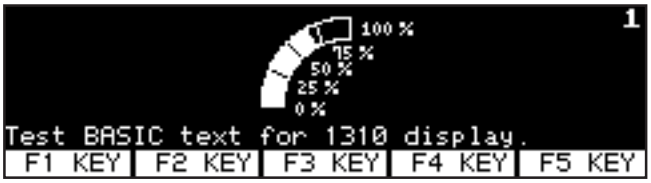
Display Mode #82

Display Mode #83

Display Mode #84



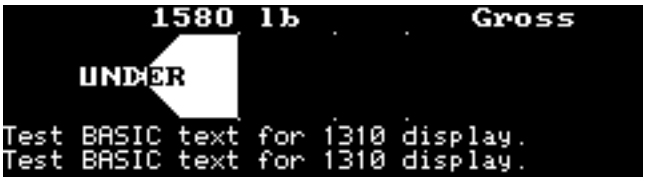
Display Mode #85



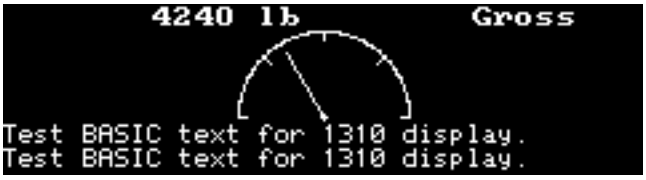
Display Mode #86

Display Mode #87

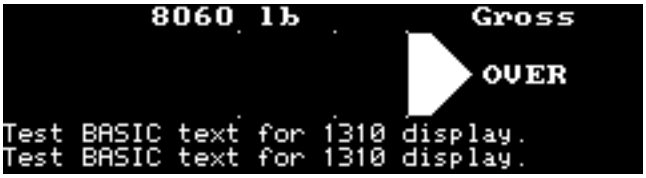
Display Mode #88



Display Mode #89 in an UNDER condition



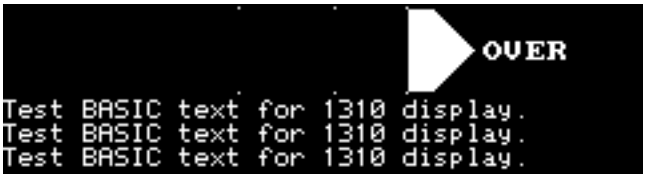
Display Mode #89 in the ACCEPT range



Display Mode #89 in an OVER condition

Display Mode #90 in an OVER condition

Display Mode #91 in an OVER condition



Display Mode #92 in an OVER condition

Display Mode #93 in an OVER condition

Display Mode #94 in an OVER condition

Display Mode #95 in an OVER condition

1310 Display Descriptions

Below are the descriptions of each display mode.

While many of the multi-scale display modes can display up to 8 scale weight values, their unique features (Total display, BASIC text, Softkeys) will be lost when exceeding the "**# of Scales**" value listed.

*# of Display #	*BASIC Scales	Text	*Softkeys	Graph	Weight Value Font Size	*Total	Description
1	1	none	No	No	3 x 8	No	1 scale
2	1	none	Yes	No	3 x 6	No	1 scale
3	1	none	Yes	Hor. bar	2 x 4	No	1 scale
4	1	none	Yes	Hor. bar	3 x 4	No	1 scale
5	1	none	Yes	Checkweigh	2 x 4	No	1 scale
6	1	Small	No	No	none	No	1 scale
7	1	Small	No	No	2 x 2	No	1 scale
8	1	Small	No	No	2 x 4	No	1 scale
9	1	Small	No	No	3 x 4	No	1 scale
10	1	Small	No	No	3 x 6	No	1 scale
11	1	Small	No	Hor. bar	2 x 4	No	1 scale
12	1	Small	No	Hor. bar	3 x 4	No	1 scale
13	1	Small	No	Checkweigh	none	No	1 scale
14	1	Small	No	Checkweigh	2 x 4	No	1 scale
15	1	Small	Yes	No	none	No	1 scale
16	1	Small	Yes	No	2 x 4	No	1 scale
17	1	Small	Yes	No	3 x 4	No	1 scale
18	1	Small	Yes	No	3 x 6	No	1 scale
19	1	Small	Yes	Hor. bar	none	No	1 scale
20	1	Small	Yes	Hor. bar	2 x 2	No	1 scale
21	1	Small	Yes	Checkweigh	none	No	1 scale
22	1	Small	No	No	none	No	1 scale
23	1	Large	No	No	2 x 4	No	1 scale
24	1	Large	No	No	3 x 6	No	1 scale
25	1	Large	No	Hor. bar	none	No	1 scale
26	1	Large	No	Checkweigh	none	No	1 scale
27	1	Large	Yes	No	none	No	1 scale
28	1	Large	Yes	Hor. bar	none	No	1 scale
29	1	Large	Yes	No	2 x 2	No	1 scale
30	1	Large	Yes	No	2 x 4	No	1 scale
31	1	Large	Yes	No	3 x 6	No	1 scale
32	1	Large	Yes	Hor. bar	2 x 2	No	1 scale
33	1	Large	Yes	Checkweigh	none	No	1 scale
34	4	Small	No	No	1 x 2	No	4 Scale multi-scale mode (Small text available with fewer scales)
35	3	Small	No	No	1 x 2	Yes	3 Scale multi-scale mode w/Total (Small text available with fewer scales)
36	4	Large	No	No	1 x 2	No	4 Scale multi-scale mode (Large text available with fewer scales)
37	3	Large	No	No	1 x 2	Yes	3 Scale multi-scale mode w/Total (Large text available with fewer scales)
38	2	Small	No	No	2 x 3	No	2 Scale multi-scale mode w/Small Text
39	2	Large	No	No	2 x 3	No	2 Scale multi-scale mode w/Large Text
40	3	Small	Yes	No	1 x 2	No	3 Scale multi-scale mode w/Softkeys (Small text available with fewer scales)
41	2	Small	Yes	No	1 x 2	Yes	2 Scale multi-scale mode w/Total w/Softkeys (Small text available with fewer scales)

*# of Display #	*BASIC Scales	Text	*Softkeys	Graph	Weight Value Font Size	*Total	Description
42	3	Large	Yes	No	1 x 2	No	3 Scale multi-scale mode w/Softkeys (Large text available with fewer scales)
43	2	Large	Yes	No	1 x 2	Yes	2 Scale multi-scale mode w/Total w/Softkeys (Large text available with fewer scales)
44	8	Small	No	No	1 x 1	No	8 Scale multi-scale mode (Small text available with fewer scales)
45	7	Small	No	No	1 x 1	Yes	7 Scale multi-scale mode w/Total (Small text available with fewer scales)
46	8	Large	No	No	1 x 1	No	8 Scale multi-scale mode (Large text available with fewer scales)
47	7	Large	No	No	1 x 1	Yes	7 Scale multi-scale mode w/Total (Large text available with fewer scales)
48	4	Small	No	No	2 x 2	No	4 Scale multi-scale mode (Small text available with fewer scales)
49	4	Large	No	No	2 x 2	No	4 Scale multi-scale mode (Large text available with fewer scales)
50	6	Small	Yes	No	1 x 1	No	6 Scale multi-scale mode w/Softkeys (Small text available with fewer scales)
51	5	Small	Yes	No	1 x 1	Yes	5 Scale multi-scale mode w/Total w/Softkeys (Small text available with fewer scales)
52	6	Large	Yes	No	1 x 1	No	6 Scale multi-scale mode w/Softkeys (Large text available with fewer scales)
53	5	Large	Yes	No	1 x 1	Yes	5 Scale multi-scale mode w/Total w/Softkeys (Large text available with fewer scales)
54	8	small	No	Vert. bars	None	No	8 Scale Vertical bar graphs
55	4	small	No	Hor. bars	None	No	4 Scale Horizontal bar graphs
56	8	small	No	Hor. bars	small (side/side)	No	8 Scale multi-scale mode w/Horizontal bar graphs (Small text available with fewer scales)
57	8	small	No	Vert. bars	small (side/side)	No	8 Scale multi-scale mode w/Vertical bar graphs (Small text available with fewer scales)
58	8	small	No	No	small (side/side)	No	8 Scale multi-scale mode w/Small Text
59	8	small	No	No	small (side/side)	Yes	8 Scale multi-scale mode w/Total (in 1 x 1 font) w/Small Text
60	8	small	No	No	small (side/side)	Yes	8 Scale multi-scale mode w/Total (in 1 x 1 font) w/Small Text w/Softkeys
61	4	small	No	Vert. bars	1 x 1	No	4 Scale multi-scale mode w/Vertical bar graphs (Small text available with fewer than 3 scales)
62	4	small	No	Hor. bars	1 x 1	No	4 Scale multi-scale mode w/Horizontal bar graphs (Small text available with fewer than 3 scales)
63	4	small	No	Checkweigh	1 x 1	No	4 Scale multi-scale mode w/Check-weigh graphs (Small text available with fewer than 3 scales)
64	2	small	No	Checkweigh	1 x 2	No	2 Scale multi-scale mode w/Check-weigh graphs (Small text available with 1scale)
65	2	small	No	Checkweigh & bar	1 x 2	No	2 Scale multi-scale mode w/ 1 Check-weigh & 1 bar graph (Small text available with 1scale)
66	8	small	No	Checkweigh	None	No	8 Scale Check-weigh graphs (Small text available with fewer than 7 scales)
67	8	small	No	Hor. bars	None	No	8 Scale Horizontal bar graphs (Small text available with fewer than 7 scales)
68	1	small	No	Pie Chart	1 x 1	No	Single Scale mode w/Pie Chart graph w/ 2 lines of small text
69	1	Large	No	Pie Chart	1 x 1	No	Single Scale mode w/Pie Chart graph w/ 2 lines of Large text
70	1	small	Yes	Pie Chart	1 x 1	No	Single Scale mode w/Pie Chart graph w/ 1 line of small text w/Softkeys
71	1	small	No	Pie Chart	None	No	Single Pie Chart graph w/ 3 lines of small text
72	1	small	Yes	Pie Chart	None	No	Single Pie Chart graph w/ 2 lines of small text w/Softkeys
73	1	Large	No	Pie Chart	None	No	Single Pie Chart graph w/ 3 lines of Large text
74	1	Large	No	Pie Chart	None	No	Single Pie Chart graph w/ 2 lines of Large text
[redacted]	[redacted]	[redacted]	[redacted]	Meter Gauge	[redacted]	[redacted]	[redacted] mode w/Meter Gauge graph w/ 2 [redacted] text
[redacted]	[redacted]	[redacted]	[redacted]	Meter Gauge	[redacted]	[redacted]	[redacted] mode w/Meter Gauge graph w/ 2 [redacted] text
[redacted]	[redacted]	[redacted]	[redacted]	Meter Gauge	[redacted]	[redacted]	[redacted] mode w/Meter Gauge graph w/ 1 [redacted] text w/Softkeys
[redacted]	[redacted]	[redacted]	[redacted]	Meter Gauge	[redacted]	[redacted]	[redacted] Gauge graph w/ 3 lines of small

*# of Display #	*BASIC Scales	Text	*Softkeys	Graph	Weight Value Font Size	*Total	Description
79	1	small	Yes	Meter Gauge	None	No	Single Meter Gauge graph w/ 2 lines of small text w/Softkeys
80	1	Large	No	Meter Gauge	None	No	Single Meter Gauge graph w/ 3 lines of Large text
81	1	Large	No	Meter Gauge	None	No	Single Meter Gauge graph w/ 2 lines of Large text w/Softkeys
82	1	small	No	Curved bar	1 x 1	No	Single Scale mode w/Curved bar graph w/ 1 line of small text
83	1	Large	No	Curved bar	1 x 1	No	Single Scale mode w/Curved bar graph w/ 1 line of Large text
84	1	None	Yes	Curved bar	1 x 1	No	Single Scale mode w/Curved bar graph w/ Softkeys
85	1	small	No	Curved bar	None	No	Single Curved bar graph w/ 2 lines of small text
86	1	small	Yes	Curved bar	None	No	Single Curved bar graph w/ 1 line of small text w/Softkeys
87	1	Large	No	Curved bar	None	No	Single Curved bar graph w/ 2 lines of Large text
88	1	Large	No	Curved bar	None	No	Single Curved bar graph w/ 1 line of Large text w/Softkeys
89	1	small	No	L. Checkweigh	1 x 1	No	Single Scale mode w/Large Check-weigh graph w/ 2 lines of small text
90	1	Large	No	L. Checkweigh	1 x 1	No	Single Scale mode w/Large Check-weigh graph w/ 2 lines of Large text
91	1	small	Yes	L. Checkweigh	1 x 1	No	Single Scale mode w/Large Check-weigh graph w/ 1 line of small text w/Softkeys
92	1	small	No	L. Checkweigh	None	No	Single Large Check-weigh graph w/ 3 lines of small text
93	1	small	Yes	L. Checkweigh	None	No	Single Large Check-weigh graph w/ 2 lines of small text w/Softkeys
94	1	Large	No	L. Checkweigh	None	No	Single Large Check-weigh graph w/ 3 lines of Large text
95	1	Large	No	L. Check-weigh	None	No	Single Large Check-weigh graph w/ 2 lines of Large text w/Softkeys

Appendix 3: Tips on Using Harmonizer

Do not use Harmonizer with QDT (Quartzell) bases.

We recommend the following values as a starting point for Harmonizer filtering:

Display Update = 10 sec
Ave. = 48 A-Ds
Constant = Level 4
Threshold = Zero

To find the best settings for your filter needs, follow the steps listed below.

1. **What to Do:** Determine the amount of positive and negative force exerted by the vibration on the scale.

   How to Do It: Set Threshld to 0.0, Constant to OFF, and Samples to Average to 1.0 A-Ds. Return to weigh mode and observe the weight swings. Record the difference between the highest and lowest displayed weight values. Add 30 to 50% to this value. This is a good starting value for the Threshld setting. Do not set your indicator to this value until told to in step 7.

2. Setting the Average to higher values increases the filtering effect.

   What to Do: Set Threshld to 0.0, Constant to OFF and Samples to Average to 12 A-Ds. Check the stability of the scale.

   How to Do It: Save changes and exit to normal weight mode. Observe the Center of Zero light. If it is on all the time your scale is stable within ¼ division. If the Center of Zero light blinks more filtering is required. Go to step 3.

3. Repeat step 2 but increase the Samples to Average by 12 A-Ds. Keep repeating steps 2 and 3 until the scale is stable or you've tried the entire range of Samples to Average (60 A-Ds). If the scale is still not stable go to step 4.

4. Setting the Constant to higher values increases the filtering effect.

   What to Do: Set Threshld to 0.0, Constant to 1.0 and Samples to Average to 60 A-Ds. Check the stability of the scale.

   How to Do It: Save changes and exit to normal weight mode. Observe the Center of Zero light. If it is on all the time your scale is stable within ¼ division. If the Center of Zero light blinks more filtering is required. Go to step 5.

5. Repeat step 4 but increase the Constant by 1.0. Keep repeating steps 4 and 5 until the scale is stable or you've tried the entire range of Constant (10). If the scale is still not stable, decrease your display update rate and start over at step 1 using the new, slower display rate.

6. After the Constant value is established you may wish to lower the Samples to Average value to improve display response time.

7. After a final value for Constant and Samples to Average has been set, enter the Threshld value established in step 1. If this value is too small your scale will act as if the filtering is off or not working. Increase the Threshld value until your scale stabilizes.

   If the Threshld value is too high your scale will react slowly to weight changes.

   When Harmonizer is properly adjusted the scale will be stable at zero and will rapidly display a stable test weight value.

Appendix 4: Error Messages

Error Messages from the SensorComm™

If your Model 1310 is connected to a SensorComm™ digital j-box, you may see the error messages listed in the table below. Also listed is a description of the error and possible causes. These may help with servicing. Error messages will appear in the upper right corner of the display window as shown in the example of error message #8 shown below.

All error 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 -1310 hardware falure
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 failure
4	A to D underrange	Less than -5mV/V has been applied to the A to D converter	-Cable -Weight sensor failure
5	A to D Initialization failure	A to D converter not responding	-Component failure -Power supply problems
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 output of the weight sensor is greater than a configurable percent of capacity since calibration	-Gauging problem on the weight sensorf -Mechanical issuse 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 issuse 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 issuse with the scale -Weight sensor problem

Error Message from the Ghost Feature

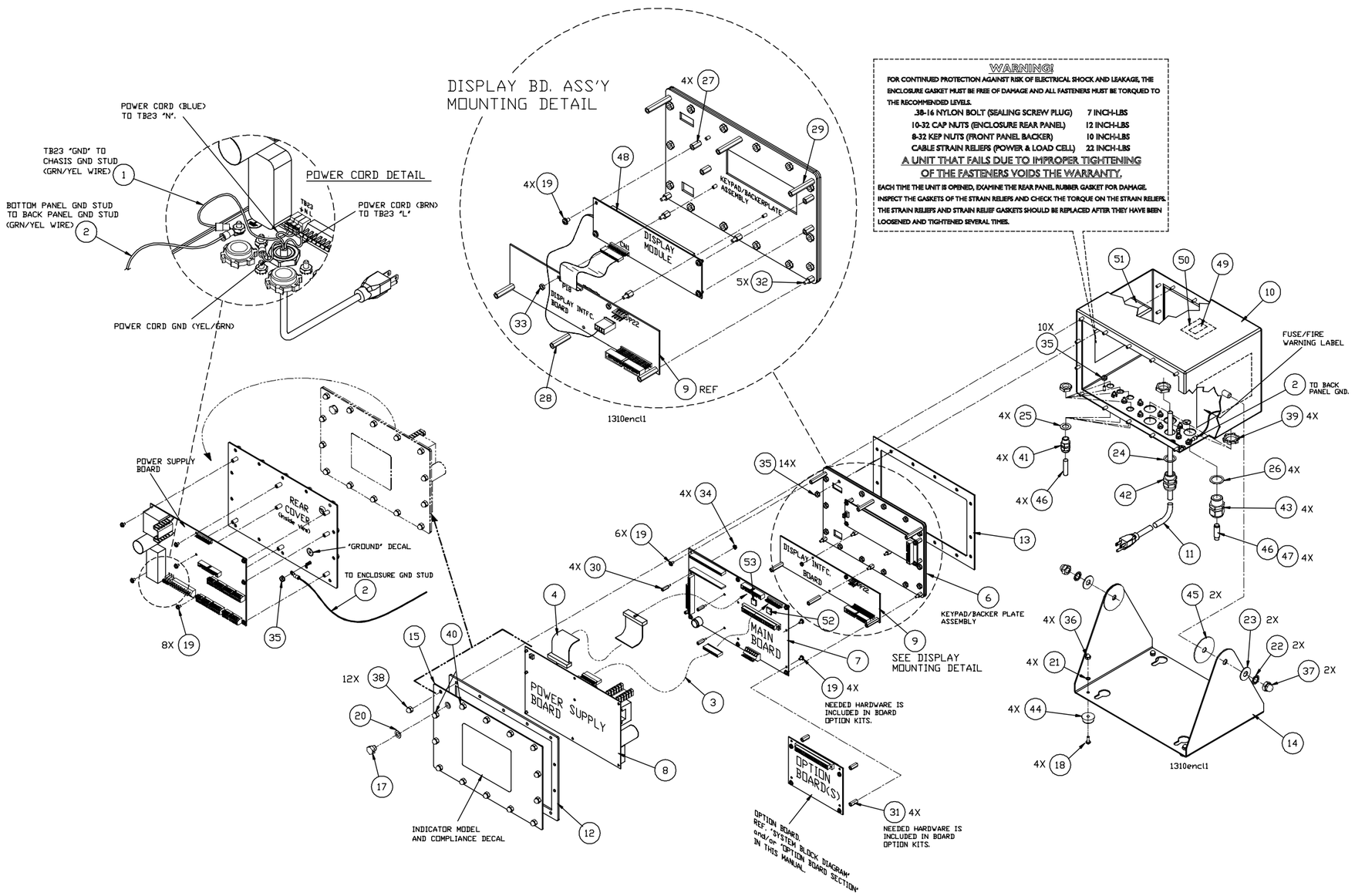
You may see an error message when the Ghost feature is enabled.

The display at left tells you the Ghost option is functioning and that Cell X has failed.

MODEL 1310 INDICATOR

ENCLOSURE PARTS AND ASSEMBLY

(Standard Version Enclosure)

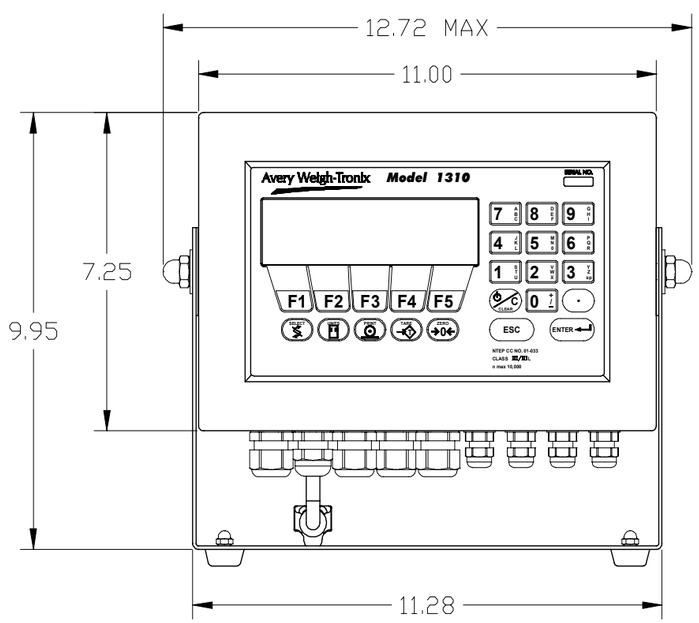


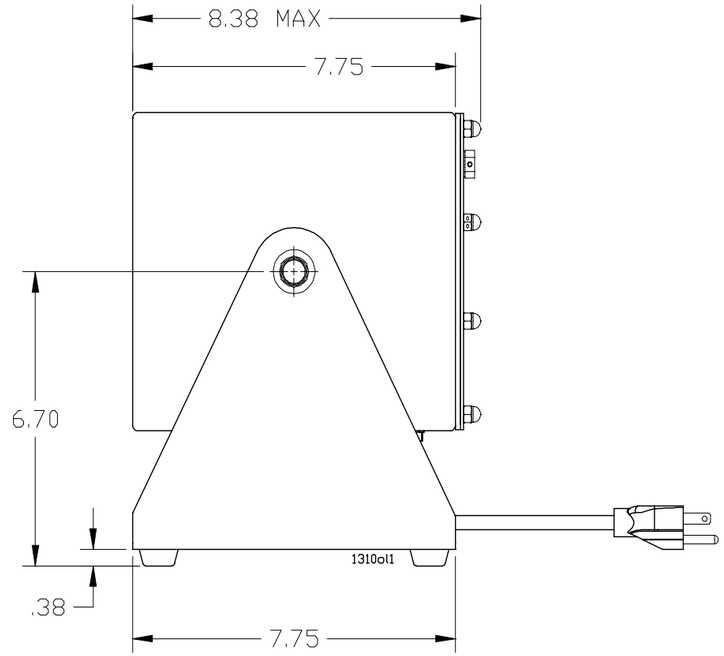
ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Ground Wire Assy *(enclosure-to-power supply bd.)*	48712-0065	1
2	Ground Wire assy *(enclosure to rear cover)*	48712-0016	1
3	Power Cable assy *(power supply bd. to main bd.)*	52944-0018	1
4	Interface Cable assy *(power supply bd. to main bd.)*	52945-0017	1
5	-----No Part-----	----	---
6	Keypad /Backer plate assembly	53676-0036	1
7	Main Pc Bd assy	50692-0024	1
8	Power Supply board w/ Serial I/O	50799-0018	1
9	Display pc Board assembly	51631-0034	1
10	Enclosure	52938-0032	1
11	Power Cord kit *(USA)*	49180-0116mts	1
12	Rear Cover Gasket	52939-0015	1
13	Bezel (front) Gasket	52940-0012	1
14	Stand Bracket	52941-0029	1
15	Rear Cover	52942-0028	1
16	--------no part------	--------	---
17	Nylon Plug *(threaded)*	1019-11926	1
18	Screw#8 x 7/16"L	14473-0363	4
19	Screw/Washer assy, #6 x 1/4"L	26380-0021	22
20	Flat Washer *(neoprene)*	1030-12680	1
21	Lock Washer, #8	14474-0040	4
22	Tooth Washer. 3/8"	15698-0179	2
23	Flat Washer, 3/8"	16163-0066	2
24	Washer *(neoprene)*	26357-0038	1
25	Washer *(neoprene)*	26357-0046	4
26	Washer *(neoprene)*	26357-0053	4
27	Standoff, #6 x 5/8"L *(f/f)*	14510-0772	4
28	Standoff, #6 x 1 1/8"L *(f/f)*	14510-0814	3
29	Standoff, #6 x 1 1/2"L *(f/f)*	14510-0848	3
30	Standoff, #4 x 9/16"L *(m/f)*	15437-0191	4
31	Standoff, #6 x 11/16"L *(f/f)*	14510-5011	4
32	Standoff, #6 x 5/16"L *(m/f)*	15437-5026	5
33	Nut, #6	16064-0033	2
34	Kep Nut, #4	1025-00107	4
35	Kep Nut, #8	1025-00125	25
36	Cap Nut, #8	15771-0039	4
37	Cap Nut, 3/8"	15771-0070	2
38	Cap Nut, #10	15786-0016	12
39	Locking Nut, 1/2" *(notched)*	17777-0021	4
40	Cap Nut, #10 *(modified)*	26513-0013	2
41	Strain Relief *(w/nut)*	15257-0024	4
42	Strain Relief *(w/nut)*	15257-0040	1
43	Strain Relief *(used w/lock nut, item no. 39)*	15257-0057	4
44	Rubber Foot	15349-0024	4
45	Neoprene Washer	19563-0025	2
46	Neoprene Cord *(plug)* for strain relief *(1/4" dia)*	27429-0014	8" long
47	Neoprn. Tubing, 1/4" ID x 1/16" wall *(used w/ item 46)*	45089-0017	4" long
48	Display Module *(BL LCD)*	48622-1021	1
49	Foam Tape, 2-side sticky, 1/2" x 1" *(used w/ item 50)*	1045-05982	1
50	Dessicant Bag	1088-12126	1
51	Corrosion Vapor Emitter	48680-0014	1
52	Standard Model 1310 E-Prom *(U17)*	52957-0020	1
53	Standard Model 1310 E-Prom *(U18)*	52957-0012	1

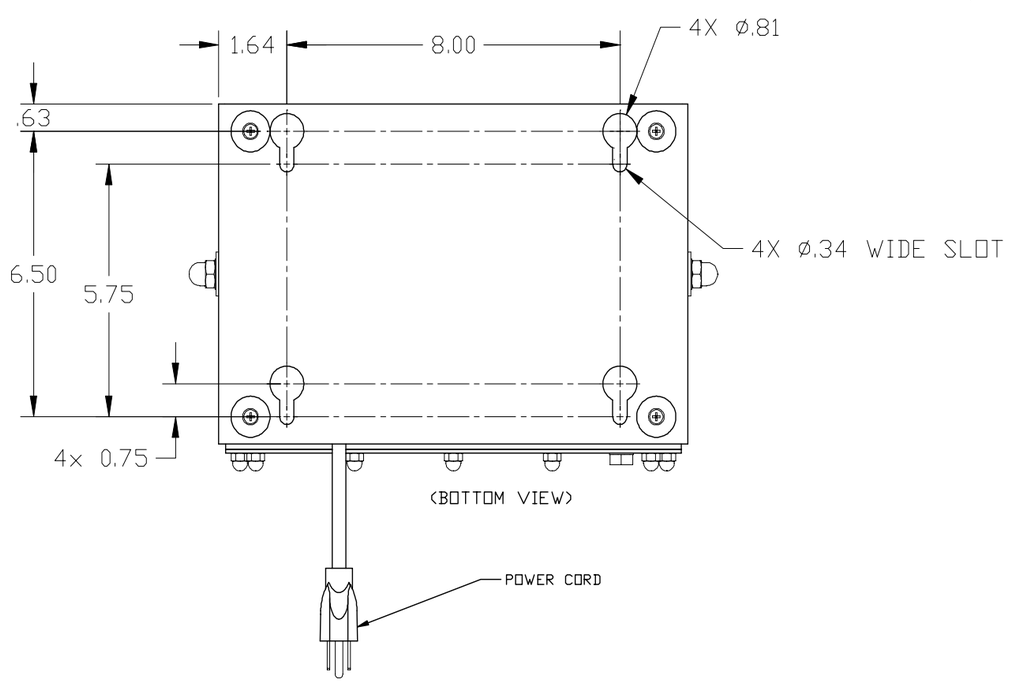
MODEL 1310 INDICATOR ENCLOSURE

OUTLINE DRAWING

(Standard Version W/ Stand Shown)



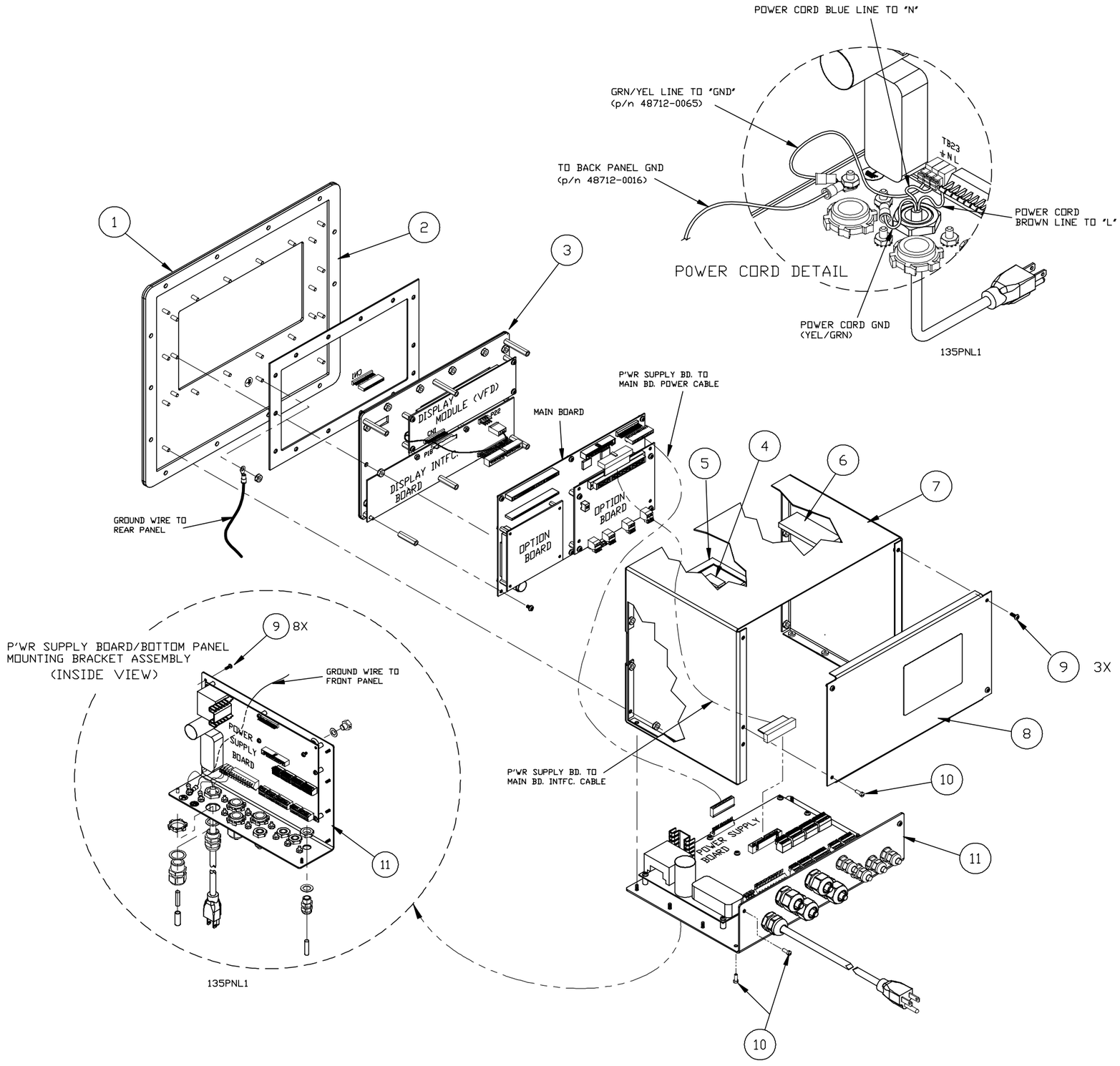




MODEL 1310 INDICATOR

(Panel Mount Version Enclosure)

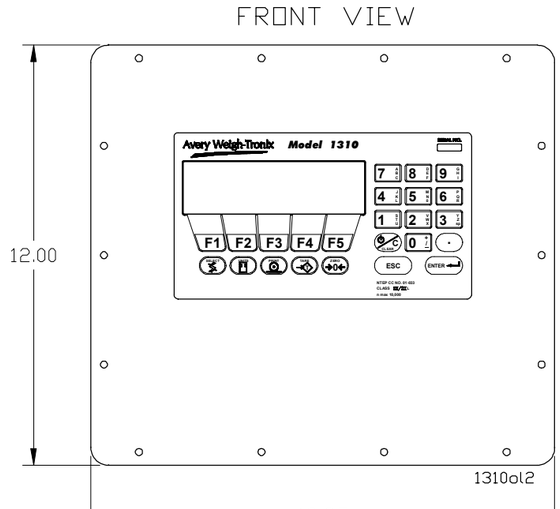
PARTS AND ASSEMBLY

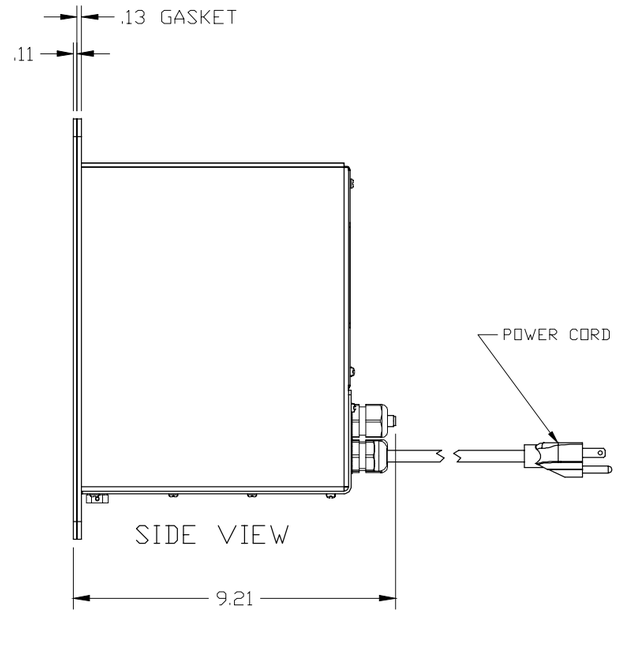


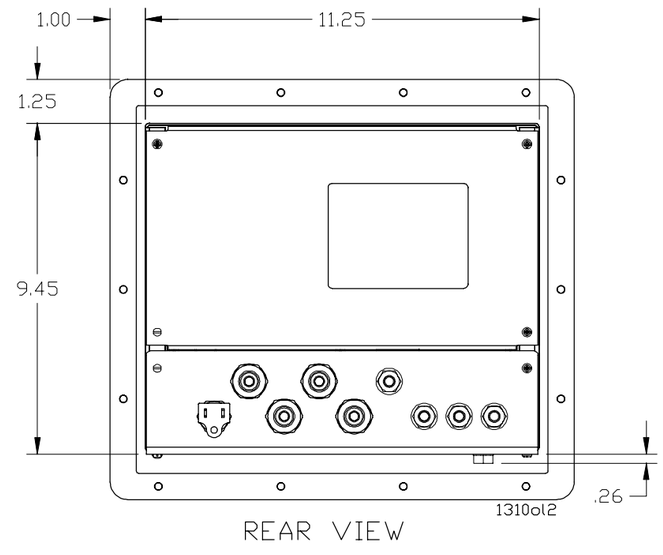
(Parts listed are for the "panel mount version" and may be different form the "standard version". For all other parts in common, ref. the "standard Version" parts list in this manual).

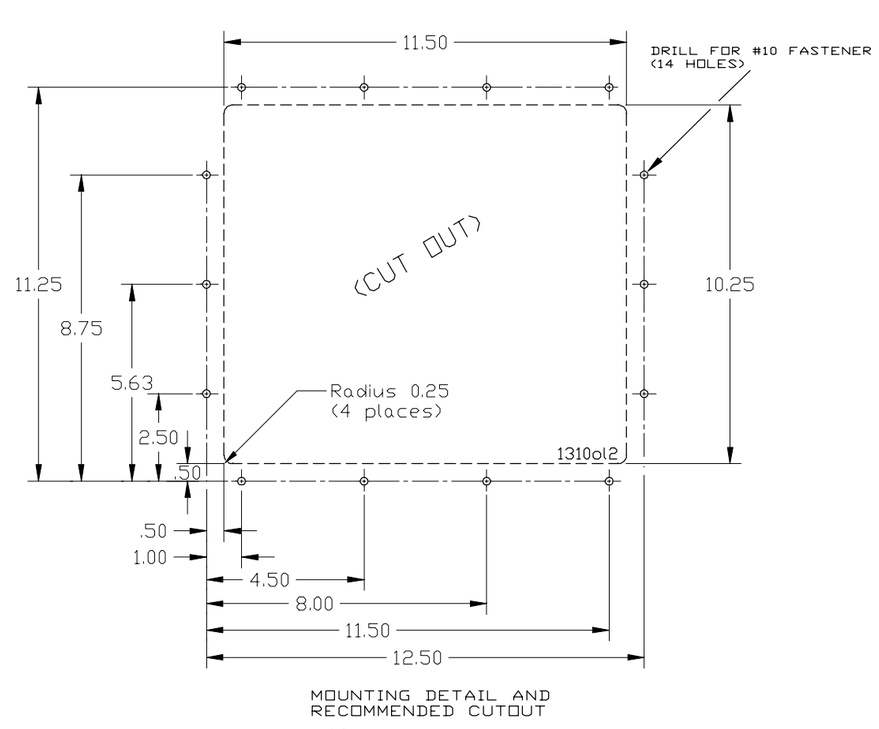
ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Panel Mount Front Plate assy	53862-0014	1
2	Front Plate Gasket	47754-0017	1
3	Keypad/Backer Plate Assy (disply & intfc bd. not incl.)	53676-0036	1
4	Foam Tape, 2-side sticky, ½"w x 1"L (used w/ item 5)	1045-05982	1
5	Dessicant bag	1088-12126	1
6	Corrosion Vapor Emitter	48680-0014	1
7	Model1310 Enclosure (panel mount version)	53863-0013	1
8	Rear Cover	53865-0011	1
9	Screw, pn hd, #6 x 32 x 5/16"L	14473-0231	11
10	Screw, fill Hd, #6 x 32 x 3/8"L	15711-0248	3
11	Bottom Panel Mtg Bracket	53864-0012	1

MODEL 1310 INDICATOR PANEL MOUNT
OUTLINE DRAWING AND MOUNTING DETAIL

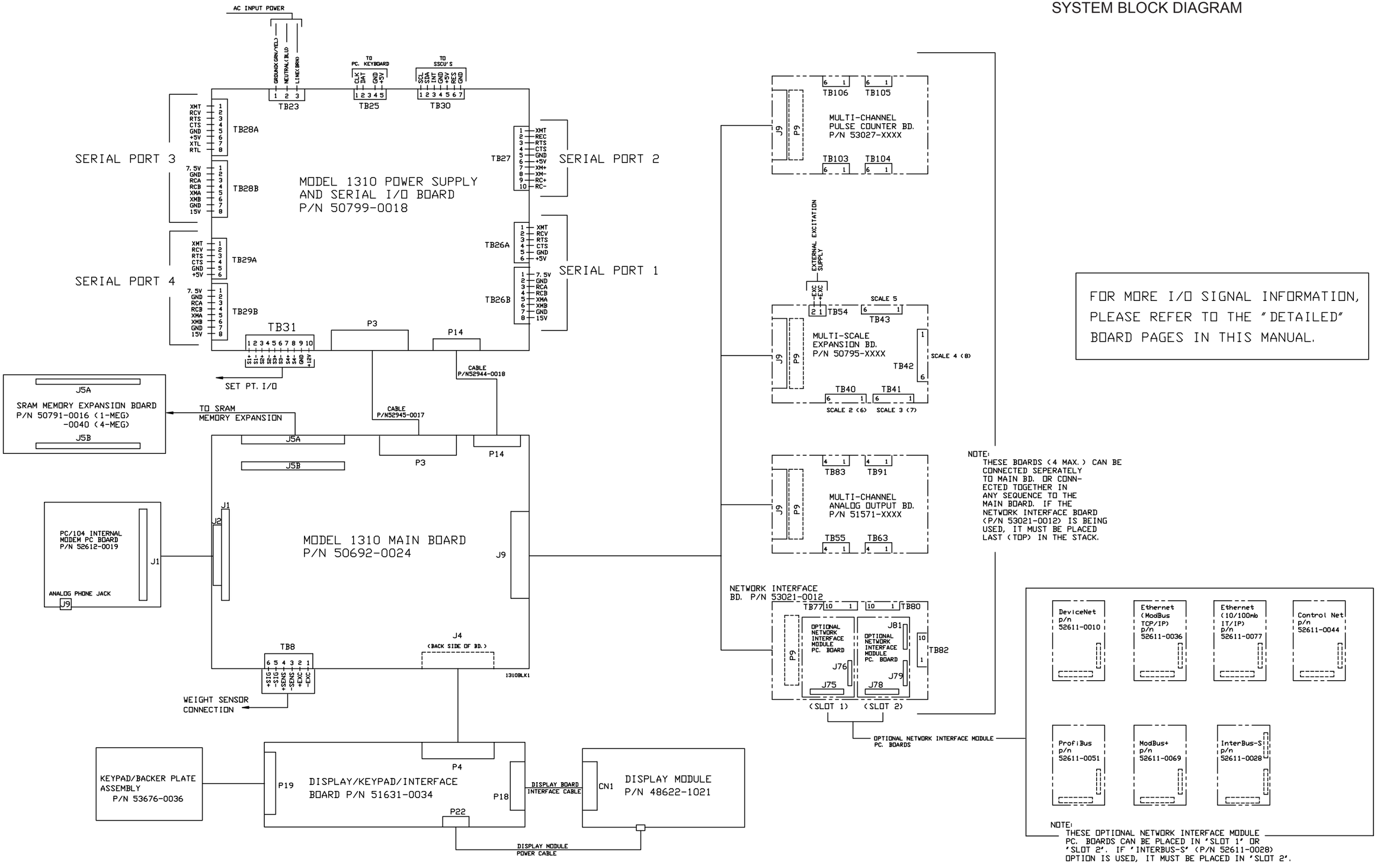








MODEL 1310 INDICATOR
SYSTEM BLOCK DIAGRAM

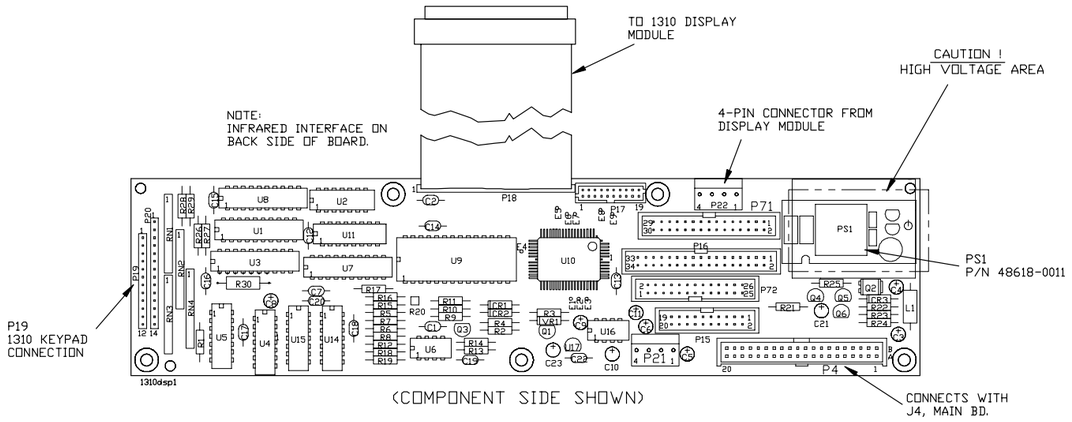


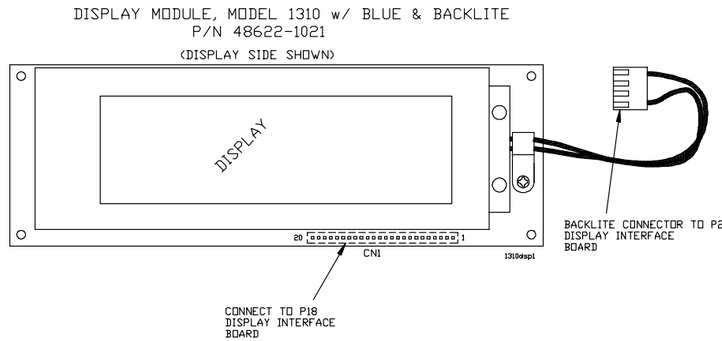
FOR MORE I/O SIGNAL INFORMATION, PLEASE REFER TO THE "DETAILED" BOARD PAGES IN THIS MANUAL.

MODEL 1310 INDICATOR

DISPLAY/KEYPAD INTERFACE BOARD

P/N 51631-0034 & DISPLAY MODULE P/N 48622-1021

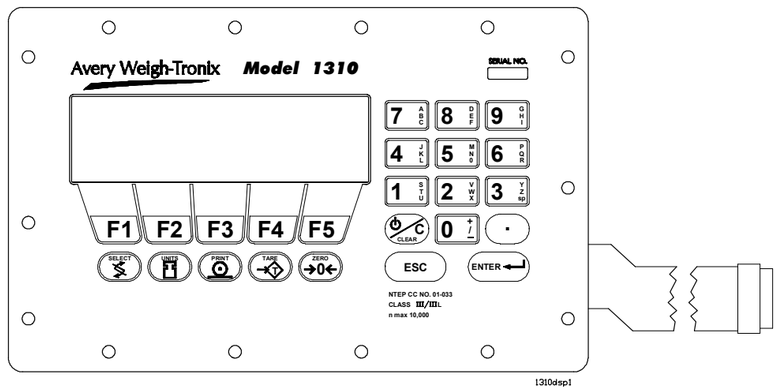


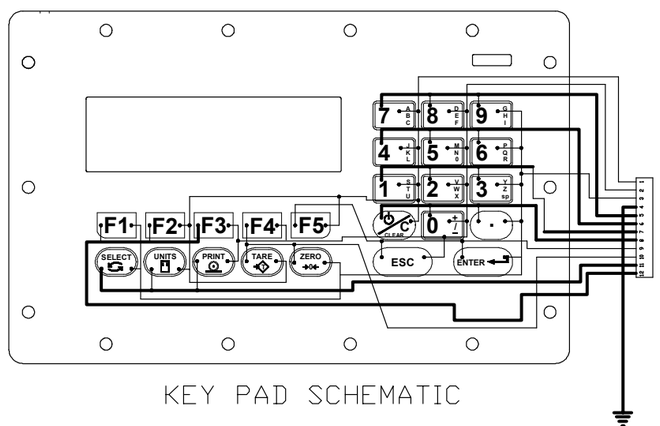


MODEL 1310 INDICATOR

KEYPAD/BACKER PLATE ASSY

P/N 53676-0036

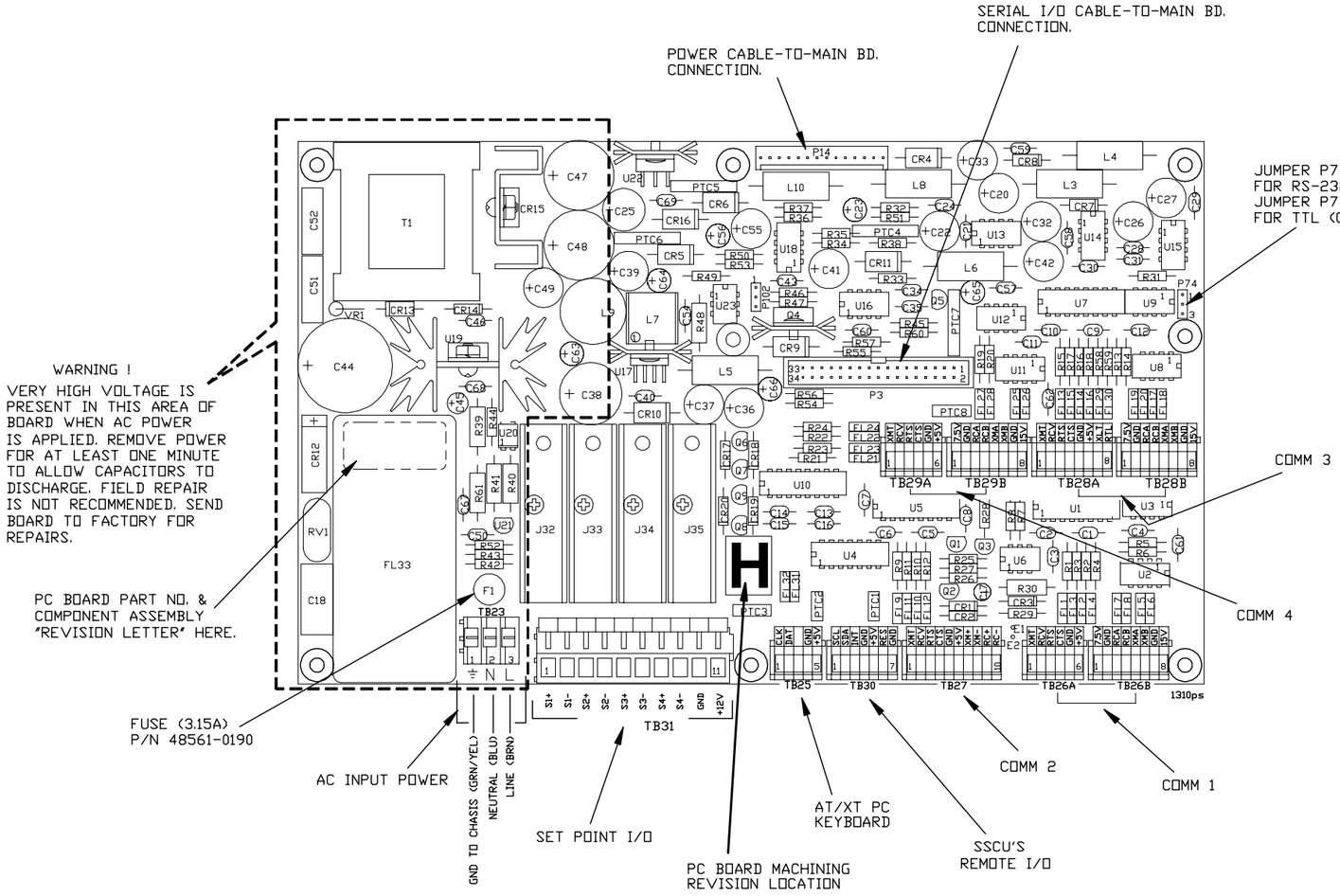




KEY PAD SCHEMATIC

MODEL 1310 INDICATOR

POWER SUPPLY & SERIAL I/O PC BOARD,
P/N 50799-0018 *-AND-*
TERMINAL PIN-OUT CHARTS



POWER SUPPLY BOARD		
TB25-pin no.	***PC-KEYBOARD***	NOTES
1	CLOCK	(do not ground)
2	DATA	(do not ground)
3	NOT USED	
4	GROUND	
5	(+) 5.0 VDC	(do not ground)

POWER SUPPLY BOARD		
TB30-pin no.	***SSCU***	NOTES
1	SERIAL CLOCK	(do not ground)
2	SERIAL DATA	(do not ground)
3	INTERRUPT	(do not ground)
4	GROUND	
5	(+) 5.0 VDC	(do not ground)
6	RESET	(do not ground)
7	(SHIELD) GROUND	

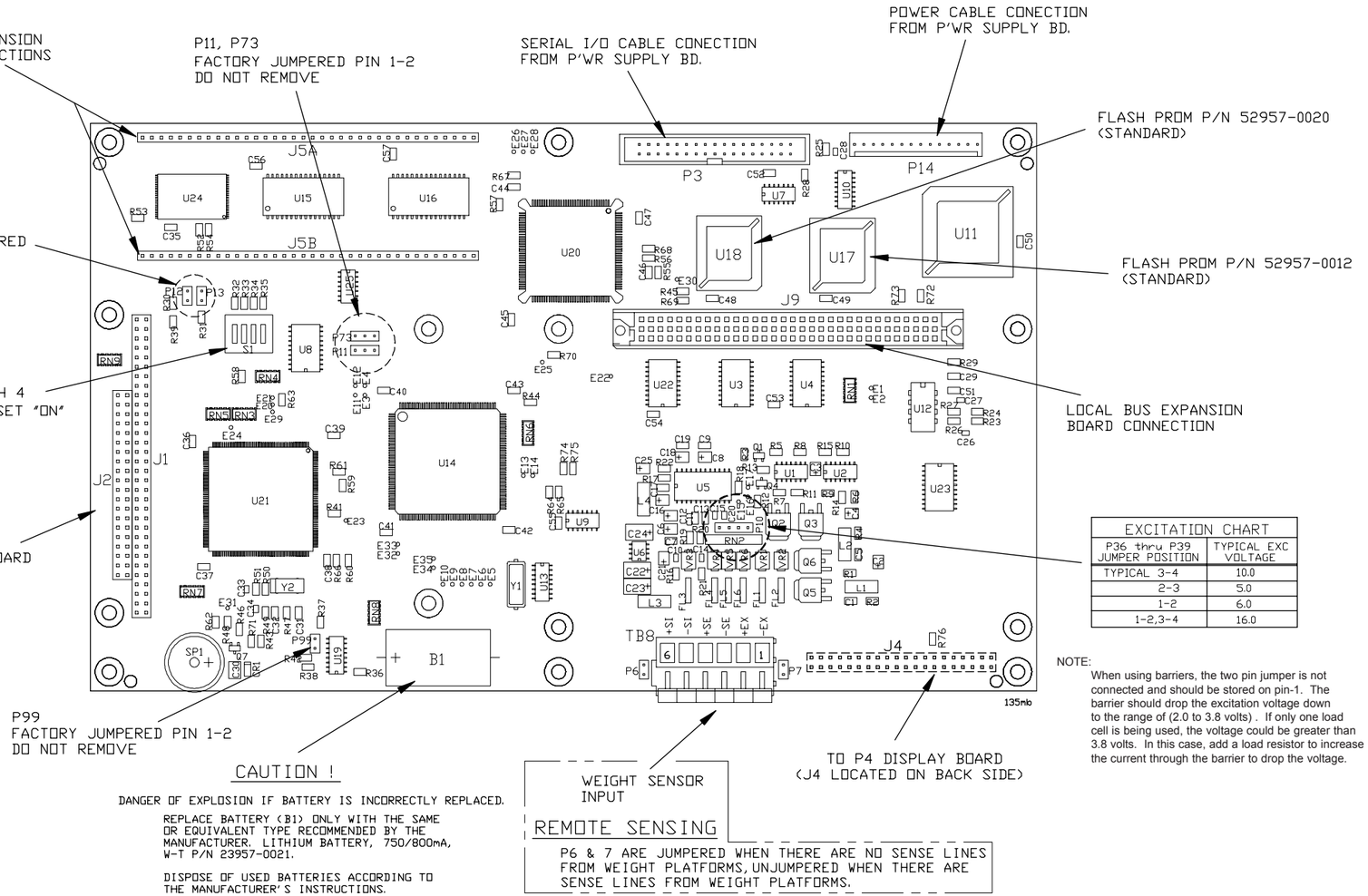
POWER SUPPLY BD			
TB26-A pin no.	***COMM #1***	**SIGNAL**	NOTES
1	TRANSMIT	RS-232	Data Out (do not ground)
2	RECEIVE	RS-232	Data In (do not ground)
3	RTS	RS-232	Hardware Handshaking out (do not ground)
4	CTS	RS-232	Hardware Handshaking in (do not ground)
5	GROUND	RS-232	
6	(+) 5.0 VDC		(do not ground)
TB26-B pin no.			
1	(+) 7.5 VDC	QDT	(do not ground)
2	GROUND	QDT, RS422/485	
3	RECEIVE-A	QDT, RS422/485	Data In (do not ground)
4	RECEIVE-B	QDT, RS422/485	Data In (do not ground)
5	TRANSMIT-A	QDT, RS422/485	Data Out (do not ground)
6	TRANSMIT-B	QDT, RS422/485	Data Out (do not ground)
7	GROUND	QDT, RS422/485	
8	(+) 15 VDC		(do not ground)

POWER SUPPLY BD			
TB27-A pin no.	***COMM #2***	**SIGNAL**	NOTES
1	TRANSMIT	RS-232	Data Out (do not ground)
2	RECEIVE	RS-232	Data In (do not ground)
3	RTS	RS-232	Hardware Handshaking out (do not ground)
4	CTS	RS-232	Hardware Handshaking in (do not ground)
5	GROUND	RS-232	
6	(+) 5.0 VDC		(do not ground)
7	TRANSMIT(+)	CURRENT LOOP	Data Out (do not ground)
8	TRANSMIT(-)	CURRENT LOOP	Data Out (do not ground)
9	RECEIVE (+)	CURRENT LOOP	Data In (do not ground)
10	RECEIVE (-)	CURRENT LOOP	Data In (do not ground)

(pin-out charts continued on next page.....)

MODEL 1310 INDICATOR
MAIN PC BOARD

P/N 50692-0024 *(.....pin-out charts continued from previous page)*



EXCITATION CHART	
P36 thru P39 JUMPER POSITION	TYPICAL EXC VOLTAGE
TYPICAL 3-4	10.0
2-3	5.0
1-2	6.0
1-2,3-4	16.0

NOTE:
When using barriers, the two pin jumper is not connected and should be stored on pin-1. The barrier should drop the excitation voltage down to the range of (2.0 to 3.8 volts) . If only one load cell is being used, the voltage could be greater than 3.8 volts. In this case, add a load resistor to increase the current through the barrier to drop the voltage.

POWER SUPPLY BD			
TB28-A pin no.	***COMM #3***	**SIGNAL**	NOTES
1	TRANSMIT	RS-232	Data Out (do not ground)
2	RECEIVE	RS-232	Data In (do not ground)
3	RTS	RS-232	Hardware Handshaking out (do not ground)
4	CTS	RS-232	Hardware Handshaking in (do not ground)
5	GROUND	RS-232, *TTL, KB	
6	(+) 5.0 VDC	*TTL, KB	(do not ground)
7	XTL	*TTL	Data Out (do not ground)
8	RTL	*TTL, KB	Data In (do not ground)
TB28-B pin no.			
1	(+) 7.5 VDC	QDT	(do not ground)
2	GROUND	QDT, RS422/485	
3	RECEIVE-A	QDT, RS422/485	Data In (do not ground)
4	RECEIVE-B	QDT, RS422/485	Data In (do not ground)
5	TRANSMIT-A	QDT, RS422/485	Data Out (do not ground)
6	TRANSMIT-B	QDT, RS422/485	Data Out (do not ground)
7	GROUND	QDT, RS422/485	
8	(+) 15 VDC		(do not ground)

*TTL connections for TUFF KEY keyboard (KB) or other TTL serial connections, (ie radio link).
Jumper P74_1 to P74-2 for RS-232--------Jumper P74-2 to P74-3 for TTL (comm #3 only).

POWER SUPPLY BD			
TB29-A pin no.	***COMM #4***	**SIGNAL**	NOTES
1	TRANSMIT	RS-232	Data Out (do not ground)
2	RECEIVE	RS-232	Data In (do not ground)
3	RTS	RS-232	Hardware Handshaking out (do not ground)
4	CTS	RS-232	Hardware Handshaking in (do not ground)
5	GROUND	RS-232	
6	(+) 5.0 VDC		(do not ground)
TB29-B pin no.			
1	(+) 7.5 VDC	QDT	(do not ground)
2	GROUND	QDT, RS422/485	
3	RECEIVE-A	QDT, RS422/485	Data In (do not ground)
4	RECEIVE-B	QDT, RS422/485	Data In (do not ground)
5	TRANSMIT-A	QDT, RS422/485	Data Out (do not ground)
6	TRANSMIT-B	QDT, RS422/485	Data Out (do not ground)
7	GROUND	QDT, RS422/485	
8	(+) 15 VDC		(do not ground)

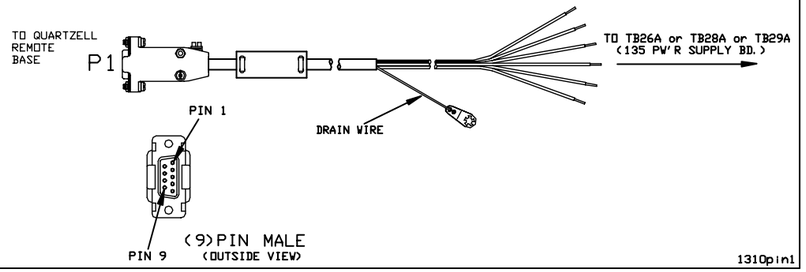
MAIN BOARD		
TB8-pin no.	***Weight Sens Interface***	NOTES
1	-EXCITATION	(do not ground)
2	+EXCITATION	(do not ground)
3	-SENSE	(do not ground)
4	+SENSE	(do not ground)
5	-SIGNAL	(do not ground)
6	+SIGNAL	(do not ground)

POWER SUPPLY BD			
TB31-pin no. *(REV "E" & OLDER)*	**TB31-pin no.** *(REV. "F" & LATER)*	**SETPOINT INTERFACE**	NOTES
1	10	+12VDC	(do not ground)
2	1	+SETPOINT 1	
3	2	-SETPOINT 1	
4	3	+SETPOINT 2	
5	4	-SETPOINT 2	
6	5	+SETPOINT 3	
7	6	-SETPOINT 3	
8	7	+SETPOINT 4	
9	8	-SETPOINT 4	
10	9	GROUND	

1310 TO QUARTZELL REMOTE BASE CABLE ASSY P/N 49385-LENGTH

W-T WIRE COLOR	ORIGIN TERMINATION	DESTINATION TERMINATION (TB26B or TB28B or TB29B)	SIGNAL
GREEN	P1-7	PIN-5	XMT A
YELLOW	P1-3	PIN-6	XMT B
WHITE	P1-8	PIN-3	REC A
BLUE	P1-2	PIN-4	REC B
RED	P1-1	PIN-1	+7.5 V
BLACK	P1-5	PIN-2	LOGIC GROUND
SHIELD	SHELL	GND STUD	SHIELD

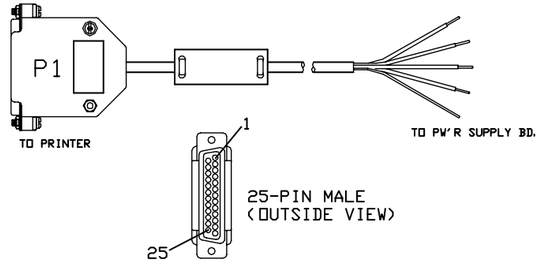
SIGNAL NAMES ARE FROM INDICATOR



1310pin1

PRINTER TO 1310 INDICATOR CABLE ASSY P/N 47670-0018

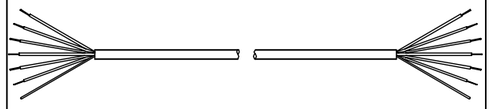
W-T WIRE COLOR	ORIGIN TERMINATION	DESTINATION PW'R SUPPLY BOARD (TB26A or TB27 or TB28A or TB29A)	SIGNAL
SHIELD	P1-1	GND STUD	(CHASSIS) GND
GRN	P1-2	PIN-2	RECEIVE
RED	P1-3	PIN-1	TRANSMIT
BLK	P1-7	PIN-5	SIGNAL GND
WHT	P1-11	PIN-4	CLEAR TO SEND
BLK	P1-4	PIN-3	RTS



1310pin1

SSCU / EXTERNAL I/O BOARD TO 1310 INDICATOR CABLE ASSY P/N 47388-0011

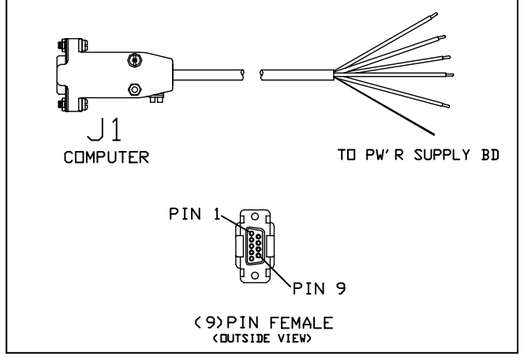
W-T WIRE COLOR	ORIGIN TERMINATION	DESTINATION TERMINATION	SIGNAL
ORANGE	TB30 (1)P/S BD	TB-35-OR-TB37 (1)	SERIAL CLOCK
YELLOW	TB30 (2)P/S BD	TB-35-OR-TB37 (2)	SERIAL DATA
GREEN	TB30 (3)P/S BD	TB-35-OR-TB37 (3)	$\overline{\text{INTERRUPT}}$
BLACK	TB30 (4)P/S BD	TB-35-OR-TB37 (4)	(LOGIC) GROUND
RED	TB30 (5)P/S BD	TB-35-OR-TB37 (5)	+5 VOLTS
BROWN	TB30 (6)P/S BD	TB-35-OR-TB37 (6)	$\overline{\text{RESET}}$
SHIELD	GND STUD	CHASSIS	(SHIELD) GND



1310pin1

COMPUTER TO 1310 INDICATOR CABLE ASSY P/N 47355-0010 AND/OR -0028

W-T WIRE COLOR	ORIGIN TERMINATION	DESTINATION PW'R SUPPLY BOARD (TB26A or TB27 or TB28A or TB29A)	SIGNAL
RED	J1-2	PIN-1	TRANSMIT
GREEN	J1-3	PIN-2	RECEIVE
BLACK	J1-5	PIN-5	(SIGNAL) GND
YELLOW	J1-8	PIN-3	RTS
BROWN	J1-7	PIN-4	CTS
	SHIELD	GND STUD	(CHASSIS) GND



1310pin1

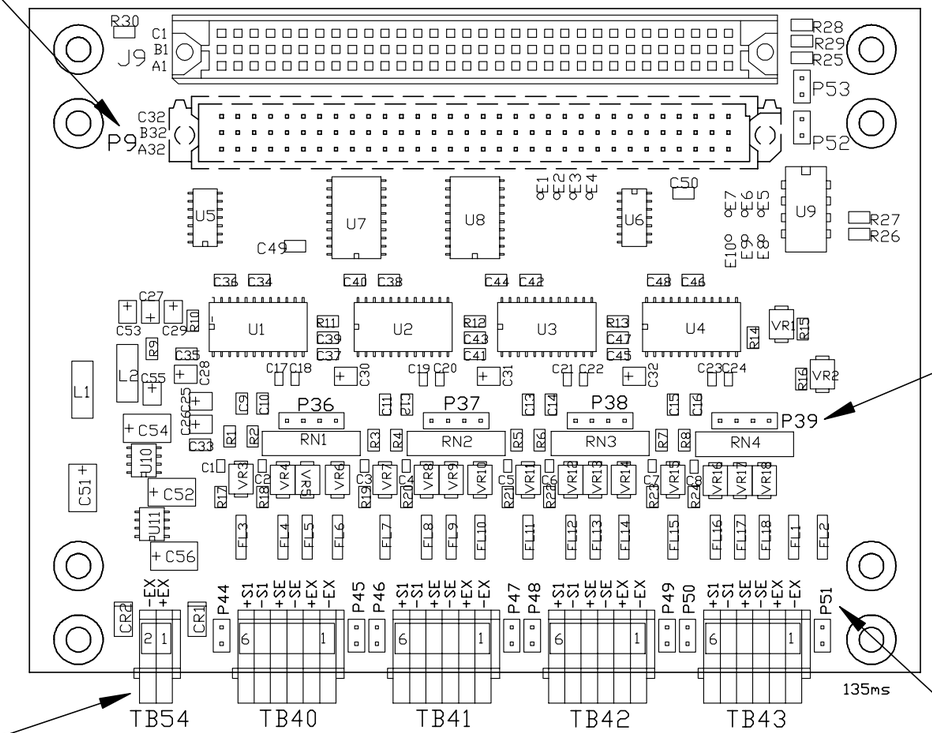
MODEL 1310 INDICATOR MULTI-SCALE PC BOARD *(OPTIONAL)*
P/N 50795: **-0012** (2(6) SCALE INTERFACE), **-0020** (3(7) SCALE INTERFACE), **-0038** (4(5) SCALE INTERFACE), **-0046** (5 SCALE INTERFACE).

MULTI -SCALE BOARD WITH EXTERNAL J-BOX ASSEMBLY ***"FIELD INSTALL KIT"***
(Kit includes: Multi-Scale board p/n 50795-xxxx, appropriate scale j-box assembly and mtg. hardware).

FIELD KIT P/N:

52959-1018 (One additional scale unit) (2 scale)
52959-1026 (Two additional scale units) (3 scale)
52959-1034 (Three additional scale units) (4 scales)
52959-1042 (Four additional scale units) (5 scales)
52959-1067 (Five additional scale units) (6 scales)
52959-1075 (Six additional scale units) (7 scales)

P9 (BACK SIDE OF BD) CONNECTS DIRECTLY TO J9, MAIN BD.



INTERNAL POWER SOURCE:
JUMPER P52 & P53

EXTERNAL POWER SOURCE:
P52 & P53 NOT JUMPERED

EXCITATION CHART	
P36 thru P39 JUMPER POSITION	TYPICAL EXC VOLTAGE
TYPICAL 3-4	10.0
2-3	5.0
1-2	6.0
1-2,3-4	16.0

INPUT FOR EXTERNAL PWR SOURCE FOR MORE THAN 32, 350 OHM WEIGHT SENSORS (+12 VDC WITH ISOLATED GND.)

SCALE 2(6) SCALE 3(7) SCALE 4(8) SCALE 5

SCALE 1
(ON MAIN BD)

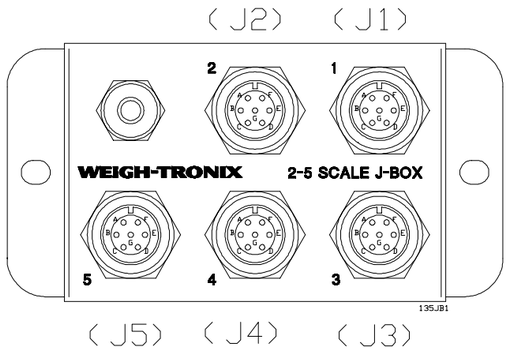
REMOTE SENSING:
JUMPER P44, P45, P46, P47, P48, P49, P50, P51 WHEN THERE ARE NO SENSE LINES FROM WEIGHT PLATFORMS.
NOT JUMPERED WHEN THERE ARE SENSE LINES FROM WEIGHT PLATFORMS.

MODEL 1310 SCALE J-BOX ASSEMBLY *(2 THRU 5 SCALES)*

P/N 47404: -0011 *(2-SCALES)*, **-0029** *(3-SCALES)*, **-0037** *(4-SCALES)*, **-0045** *(5-SCALES).*

NOTE:

PIN 'G' ON ALL CONNECTORS (J1 THRU J8) SHARE A COMMON SHIELD WIRE WHICH IS CONNECTED TO ONE OF THE INDICATOR ENCLOSURE STUDS.



SCALE 1

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MAIN PC. BOARD P/N 50692-0016		
BLACK	TB8-1	J1-D	-EXC-1
GREEN	TB8-2	J1-B	+EXC-1
BLUE	TB8-3	J1-E	-SENSE-1
YELLOW	TB8-4	J1-F	+SENSE-1
RED	TB8-5	J1-A	-SIGNAL-1
WHITE	TB8-6	J1-C	+SIGNAL-1
BLACK	GND-1	J1-G	SHIELD-1

SCALE 2

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 2 THRU 5		
WHT/BRN	TB40-1	J2-D	-EXC-2
BROWN	TB40-2	J2-B	+EXC-2
WHT/BLK	TB40-3	J2-E	-SENSE-2
ORANGE	TB40-4	J2-F	+SENSE-2
GRAY	TB40-5	J2-A	-SIGNAL-2
VIOLET	TB40-6	J2-C	+SIGNAL-2
BLACK	GND-1	J2-G	SHIELD-2
SHIELD		GND-1	DRAIN WIRE

SCALE 3

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 2 THRU 5		
WHT/BRN	J2-D	J3-D	-EXC-3
BROWN	J2-B	J3-B	+EXC-3
WHT/BLU	TB41-3	J3-E	-SENSE-3
WHT/RED	TB41-4	J3-F	+SENSE-3
WHT/GRN	TB41-5	J3-A	-SIGNAL-3
WHT/YEL	TB41-6	J3-C	+SIGNAL-3
BLACK	J2-G	J3-G	SHIELD-3

SCALE 4

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 2 THRU 5		
WHT/BRN	J3-D	J4-D	-EXC-4
BROWN	J3-B	J4-B	+EXC-4
WHT/BLK/RED	TB42-3	J4-E	-SENSE-4
WHT/VIO	TB42-4	J4-F	+SENSE-4
WHT/BLK/BRN	TB42-5	J4-A	-SIGNAL-4
WHT/GRA	TB42-6	J4-C	+SIGNAL-4
BLACK	J3-G	J4-G	SHIELD-4

SCALE 5

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 2 THRU 5		
WHT/BRN	J4-D	J5-D	-EXC-5
BROWN	J4-B	J5-B	+EXC-5
WHT/BLK/BLU	TB43-3	J5-E	-SENSE-5
WHT/BLK/ORN	TB43-4	J5-F	+SENSE-5
WHT/BLK/GRN	TB43-5	J5-A	-SIGNAL-5
WHT/BLK/YEL	TB43-6	J5-C	+SIGNAL-5
BLACK	J4-G	J5-G	SHIELD-5

NOTE:

JUMPERING EXCITATION VOLTAGES TO SENSE LINES MAY BE ACCOMPLISHED IN TWO WAYS. EITHER AT THE JUNCTION BOX OF REMOTE BASE, -OR- ON THE MULTI-SCALE BOARD USING SENSE JUMPERS. SCALE #2 & SCALE #6 SUPPLY EXCITATION VOLTAGE TO ALL ADDITIONAL SCALES ON THE APPROPRIATE MULTI-SCALE BOARDS BY WAY OF THEIR SENSE LINES.

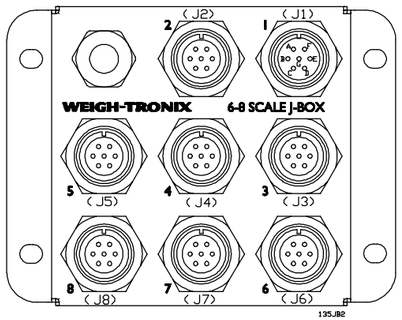
MODEL 1310 SCALE J-BOX ASSEMBLY

(6 THRU 8 SCALES)

P/N 47405: -0010 *(6-SCALES)*, **-0028** *(7-SCALES)*, **-0036** *(8-SCALES).*

NOTE:

PIN 'G' ON ALL CONNECTORS (J1 THRU J8) SHARE A COMMON SHIELD WIRE WHICH IS CONNECTED TO ONE OF THE INDICATOR ENCLOSURE STUDS.



NOTE:

JUMPERING EXCITATION VOLTAGES TO SENSE LINES MAY BE ACCOMPLISHED IN TWO WAYS. EITHER AT THE JUNCTION BOX OF REMOTE BASE, -OR- ON THE MULTI-SCALE BOARD USING SENSE JUMPERS. SCALE #2 & SCALE #6 SUPPLY EXCITATION VOLTAGE TO ALL ADDITIONAL SCALES ON THE APPROPRIATE MULTI-SCALE BOARDS BY WAY OF THEIR SENSE LINES.

SCALE 1

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MAIN PC. BOARD P/N 50692-0016		
BLACK	TB8-1	J1-D	-EXC-1
GREEN	TB8-2	J1-B	+EXC-1
BLUE	TB8-3	J1-E	-SENSE-1
YELLOW	TB8-4	J1-F	+SENSE-1
RED	TB8-5	J1-A	-SIGNAL-1
WHITE	TB8-6	J1-C	+SIGNAL-1
SHIELD	GND STUD	J1-G	SHIELD-1

SCALE 2

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 2 THRU 5		
WHT/BRN	TB40-1	J2-D	-EXC-2
BROWN	TB40-2	J2-B	+EXC-2
WHT/BLK	TB40-3	J2-E	-SENSE-2
ORANGE	TB40-4	J2-F	+SENSE-2
GRAY	TB40-5	J2-A	-SIGNAL-2
VIOLET	TB40-6	J2-C	+SIGNAL-2

SCALE 3

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 2 THRU 5		
	J2-D	J3-D	-EXC-3
	J2-B	J3-B	+EXC-3
WHT/BLU	TB41-3	J3-E	-SENSE-3
WHT/RED	TB41-4	J3-F	+SENSE-3
WHT/GRN	TB41-5	J3-A	-SIGNAL-3
WHT/YEL	TB41-6	J3-C	+SIGNAL-3

SCALE 4

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 2 THRU 5		
	J3-D	J4-D	-EXC-4
	J3-B	J4-B	+EXC-4
WHT/BLK/RED	TB42-3	J4-E	-SENSE-4
WHT/VIO	TB42-4	J4-F	+SENSE-4
WHT/BLK/BRN	TB42-5	J4-A	-SIGNAL-4
WHT/GRA	TB42-6	J4-C	+SIGNAL-4

SCALE 5

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 2 THRU 5		
	J4-D	J5-D	-EXC-5
	J4-B	J5-B	+EXC-5
WHT/BLK/BLU	TB43-3	J5-E	-SENSE-5
WHT/BLK/ORN	TB43-4	J5-F	+SENSE-5
WHT/BLK/GRN	TB43-5	J5-A	-SIGNAL-5
WHT/BLK/YEL	TB43-6	J5-C	+SIGNAL-5

SCALE 6

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 6 THRU 8		
WHT/BRN/YEL	TB40-1	J6-D	-EXC-6
WHT/ORN	TB40-2	J6-B	+EXC-6
WHT/BRN/ORN	TB40-3	J6-E	-SENSE-6
WHT/BLK/VIO	TB40-4	J6-F	+SENSE-6
WHT/BRN/RED	TB40-5	J6-A	-SIGNAL-6
WHT/BLK/GRA	TB40-6	J6-C	+SIGNAL-6

SCALE 7

W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 6 THRU 8		
	J6-D	J7-D	-EXC-7
	J6-B	J7-B	+EXC-7
WHT/BRN/GRA	TB41-3	J7-E	-SENSE-7
WHT/BRN/GRN	TB41-4	J7-F	+SENSE-7
WHT/BRN/VIO	TB41-5	J7-A	-SIGNAL-7
WHT/BRN/BLU	TB41-6	J7-C	+SIGNAL-7

SCALE 8

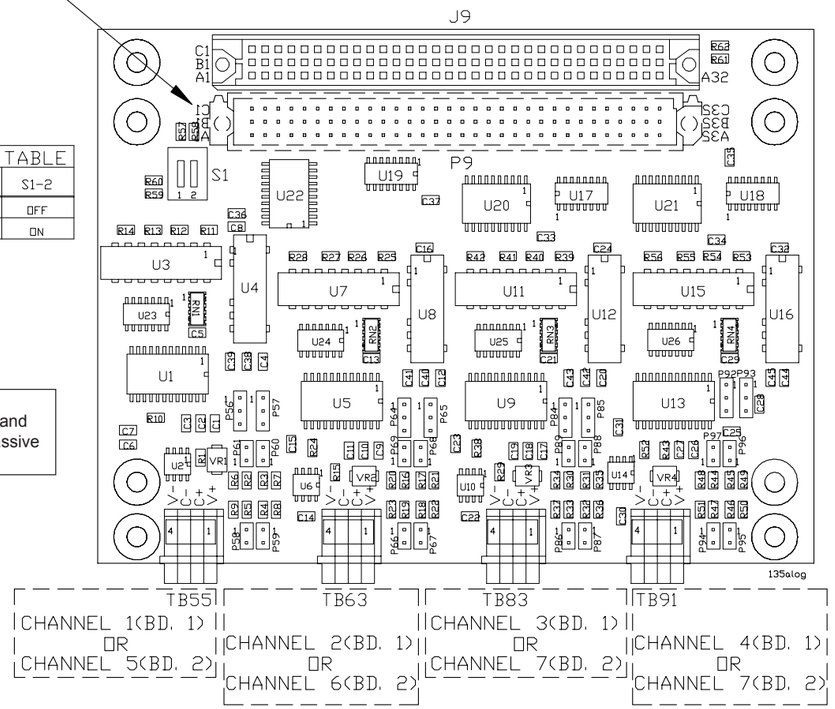
W-T COLOR	ORIGIN	DESTINATION	SIGNAL
	MULTI-SCALE BD P/N 50795, SCALE 6 THRU 8		
	J7-D	J8-D	-EXC-8
	J7-B	J8-B	+EXC-8
WHT/RED/BLU	TB42-3	J8-E	-SENSE-8
WHT/RED/ORN	TB42-4	J8-F	+SENSE-8
WHT/RED/GRN	TB42-5	J8-A	-SIGNAL-8
WHT/RED/YEL	TB42-6	J8-C	+SIGNAL-8

MODEL 1310 INDICATOR
MULTI-CHANNEL ANALOG OUTPUT BOARD *(OPTIONAL)*

P/N 51571: -0010 *(1-CHANNEL)*, **-0028** *(2-CHANNEL)*,
-0036 *(3-CHANNEL)*, **-0044** *(4-CHANNEL)*

MULTI-CHANNEL ANALOG OUTPUT BOARD ***FIELD INSTALL KIT***
(Includes PC board and mounting hardware)
P/N 52959: -1158 *(Single Channel)*, **-1166** *(Dual Channel)*,
-1174 *(Three Channel)*, **-1182** *(Four Channel)*

P9 (ON BACKSIDE OF BD.)
CONNECTS WITH
J9, MAIN BD.



"S1" SWITCH TABLE		
ANALOG OUTPUT	S1-1	S1-2
BD.#1, channels 1-4	OFF	OFF
BD.#2, channels 5-8	OFF	ON

NOTE:
This is an active device only, and *Cannot be configured* as a passive Device.

JUMPER POSITION BY OUTPUT

TYPE OF OUTPUT	OUTPUT 1						OUTPUT 2						OUTPUT 3						OUTPUT 4						LOAD RESISTANCE
	P56	P57	P58	P59	P60	P61	P64	P65	P66	P67	P68	P69	P84	P85	P86	P87	P88	P89	P92	P93	P94	P95	P96	P97	
4 TO 20MA	1-2	2-3	2	–	–	–	1-2	2-3	2	–	–	–	1-2	2-3	2	–	–	–	1-2	2-3	2	–	–	–	615 OHM MAX
0 TO 20MA	2-3	1-2	2	–	–	–	2-3	1-2	2	–	–	–	2-3	1-2	2	–	–	–	2-3	1-2	2	–	–	–	615 OHM MAX
0 TO 24MA	1-2	1-2	2	–	–	–	1-2	1-2	2	–	–	–	1-2	1-2	2	–	–	–	1-2	1-2	2	–	–	–	510 OHM MAX
0 TO 5V	2-3	2-3	1-2	–	–	–	2-3	2-3	1-2	–	–	–	2-3	2-3	1-2	–	–	–	2-3	2-3	1-2	–	–	–	384 OHM MIN
0 TO 10V	2-3	2-3	–	1-2	–	–	2-3	2-3	–	1-2	–	–	2-3	2-3	–	1-2	–	–	2-3	2-3	–	1-2	–	–	883 OHM MIN
+/-5V	2-3	2-3	–	–	1-2	–	2-3	2-3	–	–	1-2	–	2-3	2-3	–	–	1-2	–	2-3	2-3	–	–	1-2	–	384 OHM MIN
+/-10V	2-3	2-3	–	–	–	1-2	2-3	2-3	–	–	–	1-2	2-3	2-3	–	–	–	1-2	2-3	2-3	–	–	–	1-2	883 OHM MIN

MODEL 1310 INDICATOR
MULTI-CHANNEL PULSE COUNTER BOARD *(OPTIONAL)*

P/N 53027: -0016 *(1-CHANNEL)*, **-0024** *(2-CHANNEL)*,
-0032 *(3-CHANNEL)*, **-0040** *(4-CHANNEL)*

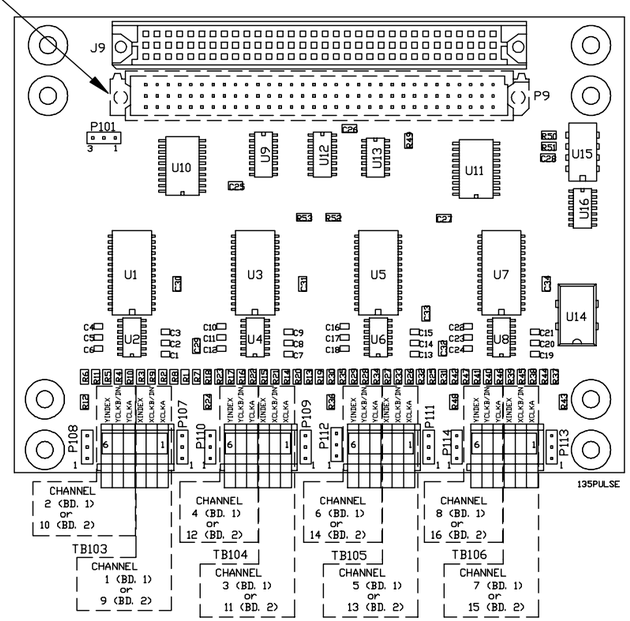
MULTI-CHANNEL PULSE COUNTER BOARD ***FIELD INSTALL KIT***
(Includes PC board and mounting hardware)
P/N 52959: -1315 *(Two Channel input)*, **-1349** *(Eight Channel input)*

JUMPER POSITION BY CHANNEL

DIRECTION SOURCE	CHANNEL 1 OR 9	CHANNEL 2 OR 10	CHANNEL 3 OR 11	CHANNEL 4 OR 12	CHANNEL 5 OR 13	CHANNEL 6 OR 14	CHANNEL 7 OR 15	CHANNEL 8 OR 16
	P107	P108	P109	P110	P111	P112	P113	P114
*EXTERNAL	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
INTERNAL	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3

*FACTORY INSTALLED

P9 (ON BACKSIDE OF BOARD)
CONNECTS WITH J9 MAIN BOARD
OR OTHER OPTION BDS.



PIN NO.	TB SIGNAL DESCRIPTIONS	
1 (XCLKA)	PULSE INPUT MUST BE TTL	
2 (XCLKB/DN)	DIRECTION INPUT	GND= COUNT UP +5V = COUNT DOWN
3 (XINDEX)	ENABLE INPUT	GND= ENABLED +5V = DISABLED
4 (YCLKA)	PULSE INPUT MUST BE TTL	
5 (YCLKB/DN)	DIRECTION INPUT	GND= COUNT UP +5V = COUNT DOWN
6 (YINDEX)	ENABLE INPUT	GND= ENABLED +5V = DISABLED

NOTE:
Pulse imputs ***must*** be TTL level (0-5 VDC).

ModBus /TCP Ethernet *(P/N 52611-0036)*

Field Install Kit: *p/n 52959-1216*

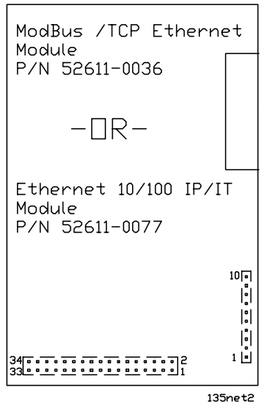
-OR-

Ethernet 10/100mb IP/IT *(P/N 52611-0077)*

NETWORK INTERFACE MODULE PC BOARD *(OPTIONAL)*

Field Install Kit: *p/n 52959-1257*

(includes Network Interface Board p/n 53021-0012 & mtg. hardware)



ADDRESS SETTING

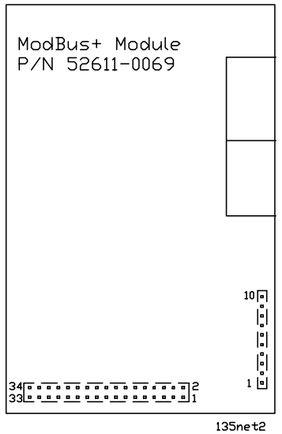
MODBUS/TCP ETHERNET					
TB77 TB80 PIN NO.	SIGNAL	RJ 45		DB-9 FEMALE	
		PIN NO.	SIGNAL	PIN NO.	SIGNAL
1	GND	----	----	----	----
2	NC	----	----	----	----
3	NC	----	----	----	----
4	NC	----	----	----	----
5	TD+	1	TD+	8	TD+
6	TD-	2	TD-	3	TD-
7	RD+	3	RD+	7	RD+
8	NC	----	----	----	----
9	RD-	6	RD-	2	RD-
10	NC	----	----	----	----

ModBus Plus

NETWORK INTERFACE MODULE PC BOARD *(OPTIONAL)*

Field Install Kit *p/n 52959-1240*

(includes Network Interface Board p/n 53021-0012 & mtg. hardware)

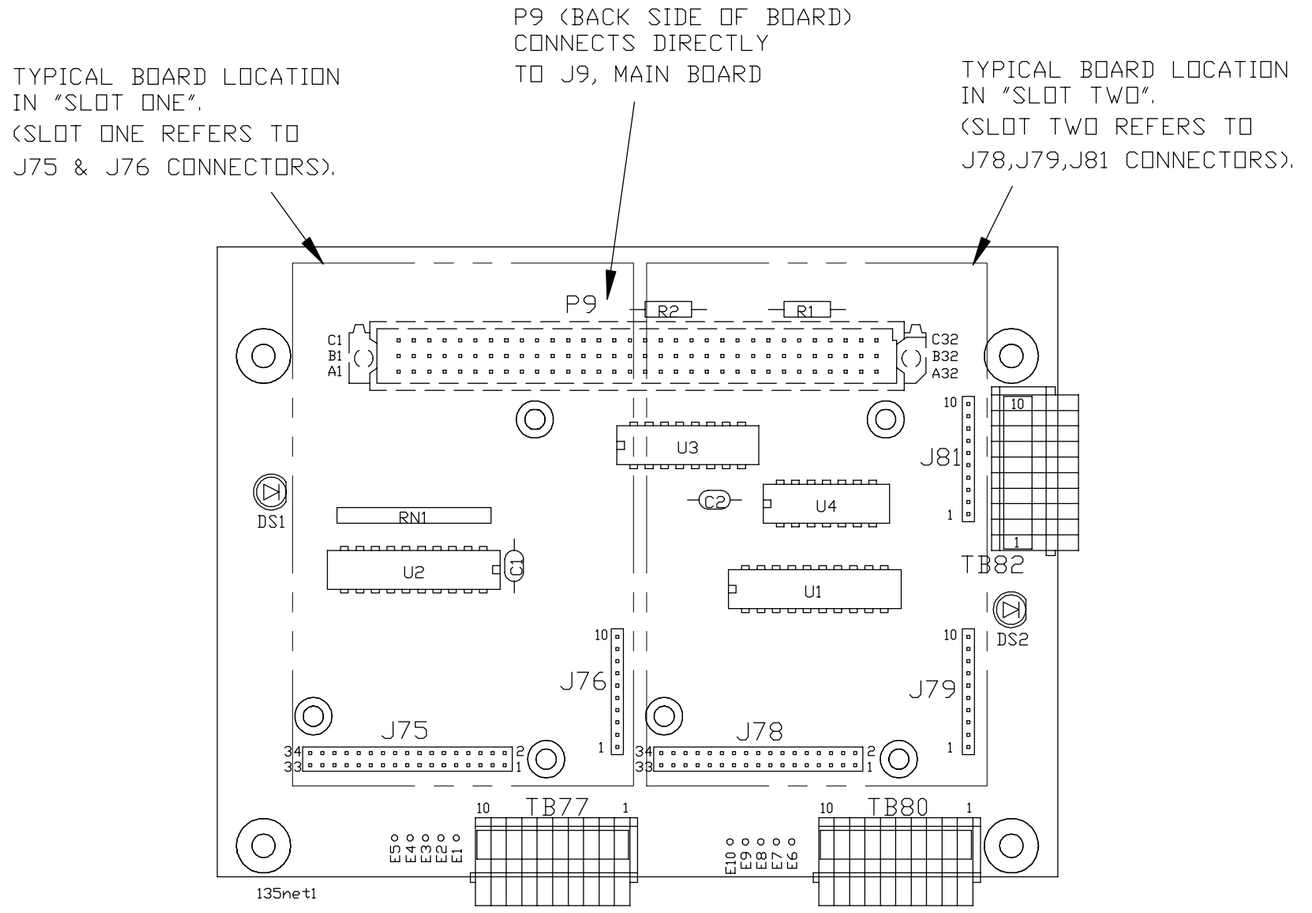


ADDRESS SETTING

MODBUS+			
TB77 TB80 PIN NO.	SIGNAL	DB-9 FEMALE	
		PIN NO.	SIGNAL
1	PE		HOUSING
2	NC		
3	NC		
4	NC		
5	NC		
6	LINE A	3	LINE A
7	NC		
8	NC		
9	LINE B	2	LINE B
10	SHIELD	1	SHIELD

MODEL 1310 INDICATOR NETWORK INTERFACE BOARD *(OPTIONAL)*

P/N 53021-0012

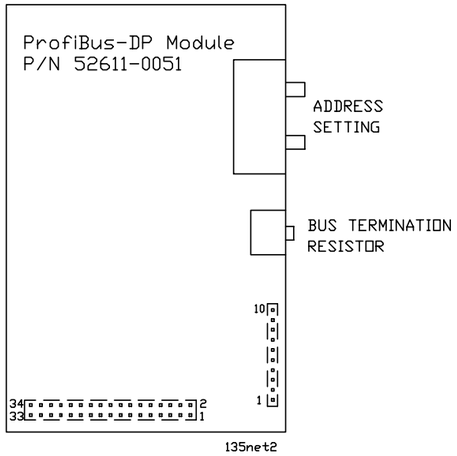


ProfiBus-DP

NETWORK INTERFACE MODULE PC BOARD *(OPTIONAL)*

Field Install Kit *p/n 52959-1232*

(includes Network Interface Board p/n 53021-0012 & mtg. hardware)



PROFIBUS-DP			
TB77 TB80 PIN NO.	SIGNAL	DB-9 FEMALE PIN NO.	DB-9 FEMALE SIGNAL
1	SHIELD		HOUSING
2	GND*	5	GND*
3	RTS*	4	RTS*
4	NC		
5	A-LINE TX/RX	8	A-LINE
6	B-LINE RX/TX	3	B-LINE
7	N/C		
8	+5V BUS*	6	+5V BUS*
9	NC		
10	NC		

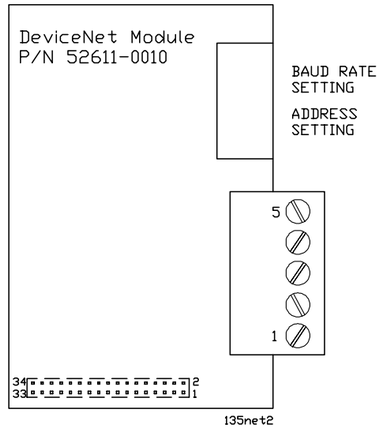
* +5V AND GND ARE USED FOR BUS TERMINATION AND OPTICAL TRANCEIVERS. RTS IS USED BY SOME EQUIPMENT TO DETERMINE THE DIRECTION OF THE TRANSMISSION.

DeviceNet

NETWORK INTERFACE MODULE PC BOARD *(OPTIONAL)*

Field Install Kit *p/n 52959-1190*

(includes Network Interface Board p/n 53021-0012 & mtg. hardware)



DEVICE NET (PLUGGABLE CONNECTOR)	
PIN NO.	SIGNAL
1	V- (BUS POWER GND)
2	CAN_LOW
3	SHIELD
4	CAN_HI
5	V+ (+24VDC)*

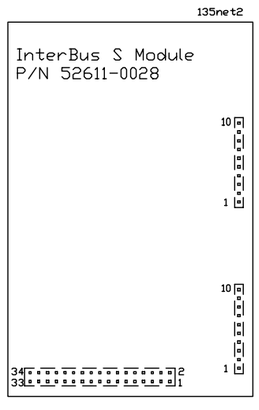
* AN EXTENDED POWER SUPPLY WILL BE USED TO SUPPLY V+ POWER. TYPICALLY THIS SUPPLY WILL BE PREVIOUSLY INSTALLED.

InterBus S

NETWORK INTERFACE MODULE PC BOARD *(OPTIONAL)*

Field Install Kit *p/n 52959-1208*

(includes Network Interface Board p/n 53021-0012 & mtg. hardware)



INTERBUS S			
TB82 (BUS OUT) PIN NO.	SIGNAL	DB-9 MALE PIN NO.	DB-9 MALE SIGNAL
1	PE		HOUSING
2	GND		
3	NC		
4	RBST	9	RBST
5	NC		
6	GND	3, 5	GND
7	/DI2	7	/DI2
8	/DO2	6	/DO2
9	DI2	2	DI2
10	DO2	1	DO2

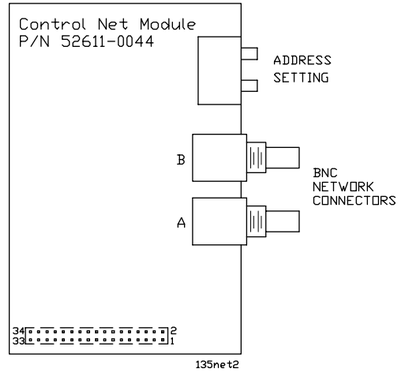
INTERBUS S			
TB80 (BUS IN) PIN NO.	SIGNAL	DB-9 FEMALE PIN NO.	DB-9 FEMALE SIGNAL
1	PE		HOUSING
2	DO1	1	DO1
3	DI1	2	DI1
4	/DO1	6	/DO1
5	/DI1	7	/DI1
6	GND	3	GND
7	NC		
8	NC		
9	NC		
10	NC		

Control Net

NETWORK INTERFACE MODULE PC BOARD *(OPTIONAL)*

Field Install Kit *p/n 52959-1224*

(includes Network Interface Board p/n 53021-0012 & mtg. hardware)

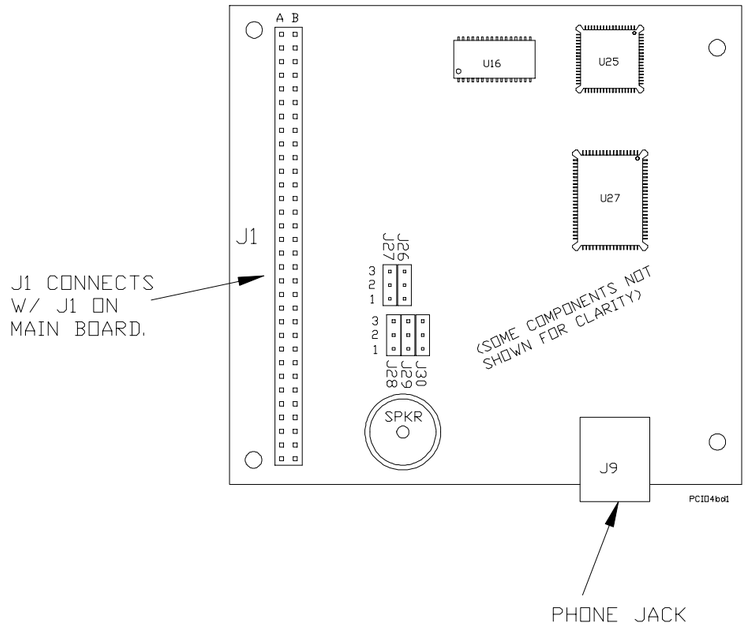


MODEL 1310 INDICATOR

PC/104 INTERNAL MODEM PC BOARD *(OPTIONAL)*

BOARD ONLY P/N 52612-0019

(Field Install Kit p/n 52960-1015)



NOTE:
In the SimPoser manual (p/n 29751-0018) reference the Weigh-Tronix basic command "modem" for information on Addressing and actuating the PC/104 comm port controls.

PC104 MODEM JUMPER CHART			
	J26	**J27**	**J28**
PC/104 COM 3 (port#13)	Pins 1-2	Pins 2-3	Pins 2-3
PC/104 COM 4 (port#14)	Pins 2-3	Pins 2-3	Pins 1-2

NOTE: For all other jumper terminals no jumpers are required. Extra jumpers are stored on pin 1 of any terminal available.

MODEL 1310 INDICATOR

SRAM MEMORY EXPANSION PC BOARD *(OPTIONAL)*

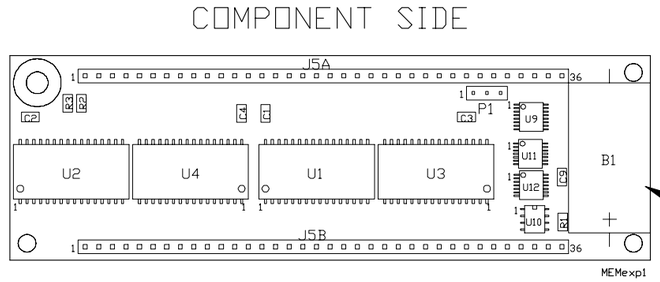
BOARD P/N 50791-0016 (1-MEG)

-0040 (4-MEG)

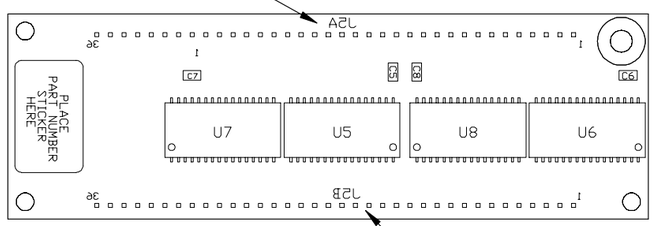
Field Install Kit *p/n 52961-1014 (1-MB)*

52961-1048 (4-MB)

COMPONENT SIDE



CONNECT WITH J5A MAIN BD.



BACK SIDE

CONNECT WITH J5B MAIN BD.

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.

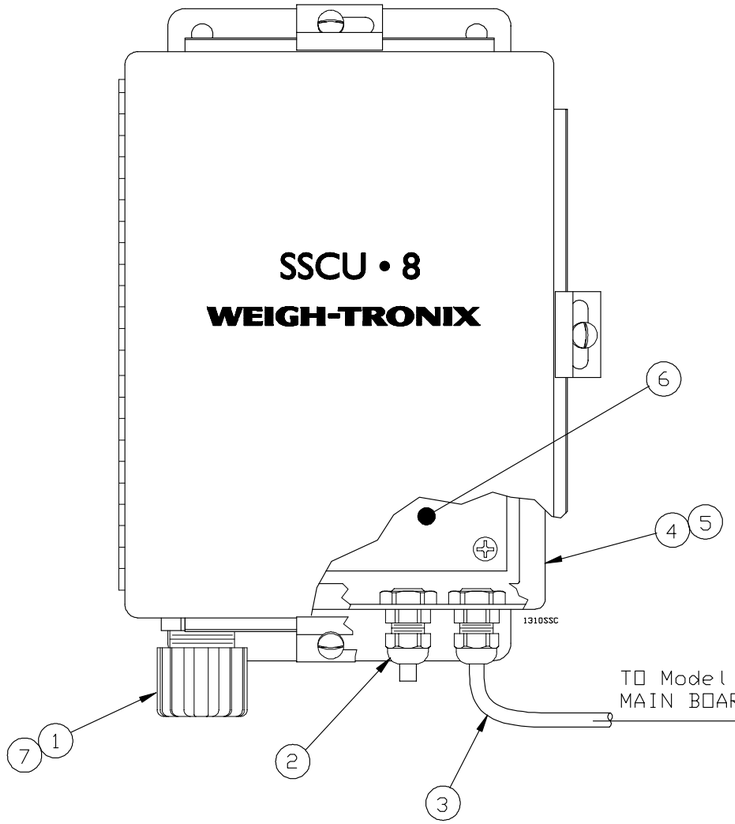
DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

P1 JUMPER SETTINGS	
2-3	when adding one board
1-2	when adding 2nd board

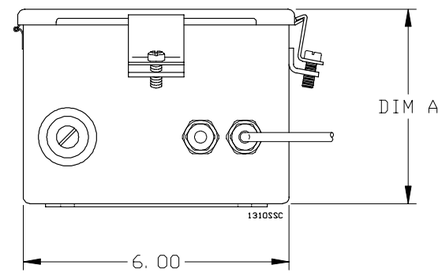
MODEL 1310 INDICATOR

SOLID STATE CONTROL UNIT (SSCU-8) *(0PTIONAL)*

PARTS AND ASSEMBLY

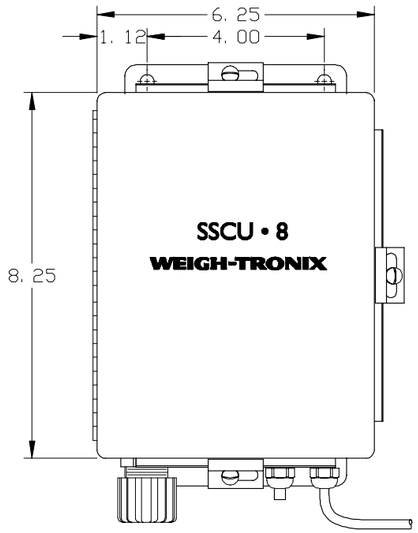


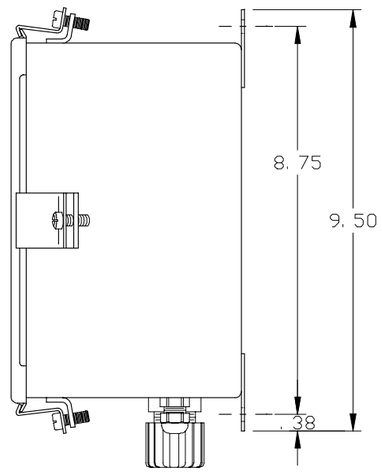
DATA CHART		
PART NO.	DIM 'A'	DESCRIPTION
47192-0017	4. 38	STAINLESS
47192-0025	3. 87	PAINTED CARBON



(BOTTOM VIEW)

ITEM NO.	DESCRIPTION	W-T P/N	QTY
1	Strain Relief	22380-0053	1
2	Strain Relief	15257-0024	2
3	Cable (sscu-to-Model-1310)	47388-0011mts	1
4	Enclosure (steel, painted)	47665-0015	1
5	Enclosure (stainless)	47665-0023	1
6	Remote Exp. Control I/O pc Board	47183-0018mts	1
7	Lock Nut (self sealing)	22381-0011	1





MODEL 1310 INDICATOR
REMOTE EXPANDED CONTROL:
I/O BOARD *(OPTIONAL)* P/N 47183-0018mts

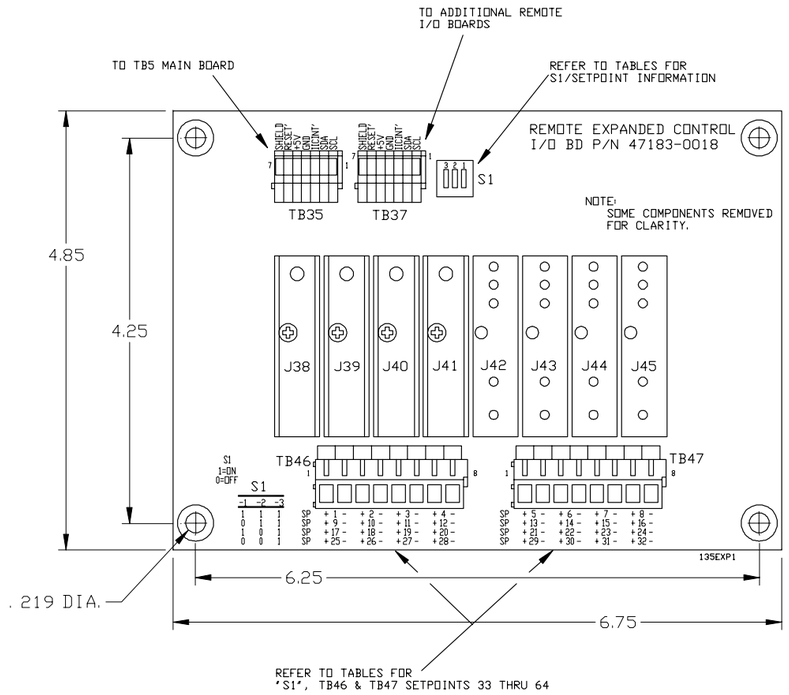


Table 1: Setpoints 33 thru 40

SW1 (1)ON	(2)ON	(3)OFF
SETP0INT #	TB #	PIN #
33 (+)	46	1
33 (-)	46	2
34 (+)	46	3
34 (-)	46	4
35 (+)	46	5
35 (-)	46	6
36 (+)	46	7
36 (-)	46	8
37 (+)	47	1
37 (-)	47	2
38 (+)	47	3
38 (-)	47	4
39 (+)	47	5
39 (-)	47	6
40 (+)	47	7
40 (-)	47	8

Table 2: Setpoints 41 thru 48

SW1 (1)ON	(2)ON	(3)OFF
SETP0INT #	TB #	PIN #
41 (+)	46	1
41 (-)	46	2
42 (+)	46	3
42 (-)	46	4
43 (+)	46	5
43 (-)	46	6
44 (+)	46	7
44 (-)	46	8
45 (+)	47	1
45 (-)	47	2
46 (+)	47	3
46 (-)	47	4
47 (+)	47	5
47 (-)	47	6
48 (+)	47	7
48 (-)	47	8

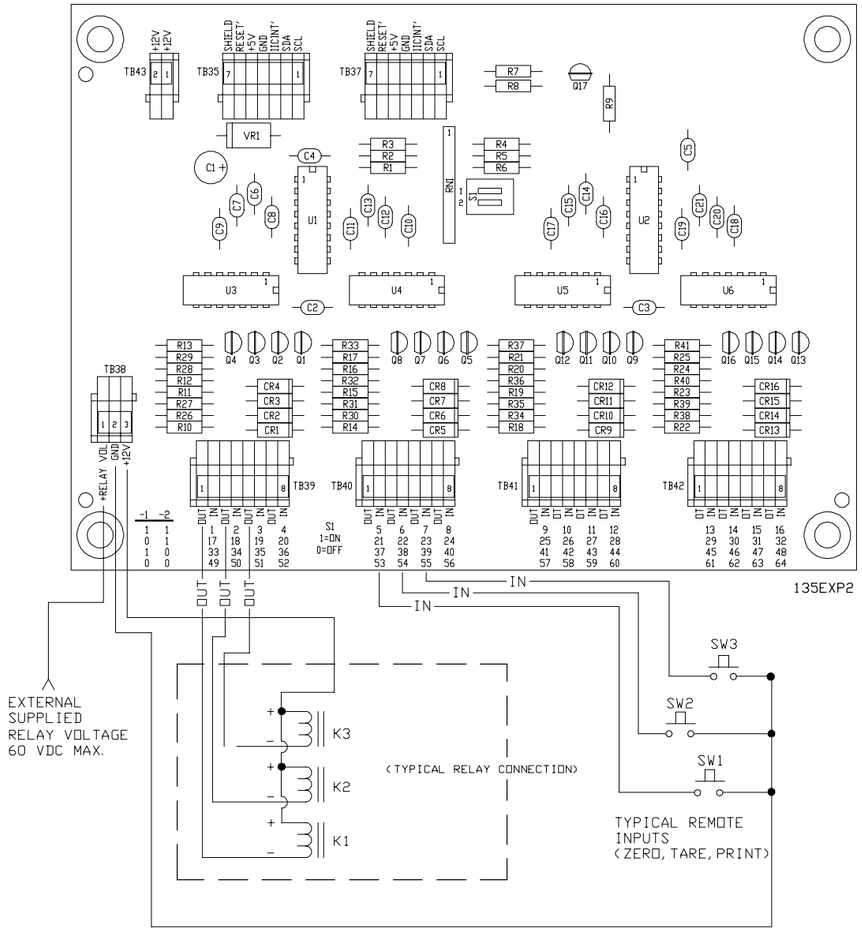
Table 3: Setpoints 49 thru 56

SW1 (1)ON	(2)ON	(3)OFF
SETP0INT #	TB #	PIN #
49 (+)	46	1
49 (-)	46	2
50 (+)	46	3
50 (-)	46	4
51 (+)	46	5
51 (-)	46	6
52 (+)	46	7
52 (-)	46	8
53 (+)	47	1
53 (-)	47	2
54 (+)	47	3
54 (-)	47	4
55 (+)	47	5
55 (-)	47	6
56 (+)	47	7
56 (-)	47	8

Table 4: Setpoints 57 thru 64

SW1 (1)ON	(2)ON	(3)OFF
SETP0INT #	TB #	PIN #
57 (+)	46	1
57 (-)	46	2
58 (+)	46	3
58 (-)	46	4
59 (+)	46	5
59 (-)	46	6
60 (+)	46	7
60 (-)	46	8
61 (+)	47	1
61 (-)	47	2
62 (+)	47	3
62 (-)	47	4
63 (+)	47	5
63 (-)	47	6
64 (+)	47	7
64 (-)	47	8

MODEL 1310 INDICATOR
EXTERNAL (16) CUTOFF
EXPANSION BOARD *(OPTIONAL)*
P/N 49853-0013

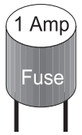


Setpoint Operation

If setpoints 1 thru 4 are programmed in SimPoser as inputs, the physical location for these will always be on the power supply TB31. The setpoint location for setpoints 1 thru 4 on the option card(s) will then be invalid, and do not function.

If setpoints 1 thru 4 are programmed in SimPoser for outputs, the TB31 location on the power supply board will act in parallel to the physical location of setpoints 1 thru 4 (set by switches on remote expanded control PCBs) on the option card(s).

When only using OPTO modules (4 maximum) on the power supply board without any setpoint option cards, they can be used as either inputs or outputs. We recommend low voltage OPTO modules on the power supply board.



Opto-22 Output Module Fuse Table

W-T P/N 46618	Rated Current (amp)	Wickmann TR5-F P/N	W-T P/N 46618	Rated Current (amp)	Wickmann TR5-F P/N
-0015	.050	19373K-50A	-0122	.630	19373K-630A
-0023	.063	19373K-63A	-0130	.800	19373K-800A
-0031	.080	19373K-80A	-0148	1.0	19373K-1A
-0049	.100	19373K-100A	-0155	1.25	19373K-1,25A
-0056	.125	19373K-125A	-0163	1.6	19373K-1,6A
-0064	.160	19373K-160A	-0171	2.0	19373K-2A
-0072	.200	19373K-200A	-0189	2.5	19373K-2,5A
-0080	.250	19373K-250A	-0197	3.15	19373K-3,15A
-0098	.315	19373K-315A	-0205	4.0	19373K-4A
-0106	.400	19373K-400A	-0213	5.0	19373K-5A
-0114	.500	19373K-500A	-0221	6.3	19373K-6,3A

The OPTO-22 Generation 4 I/O modules can be used on the power supply board (max. 4) or on the optional Remote Expanded Control Interface Boards (max. 64).

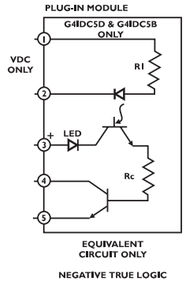
P/N 48552	OPTO-22 P/N	I/O Type AC or DC Input or Output	Color	External circuit voltage range	External circuit Max. Current	Turn on time msec.	Turn off time msec.	I/O operating temperature range
-0019	G4IDC5D	DC only (input)	White	2.5-28 vdc only	30mA	1.0	1.5	-30°Cto 70°C
-0027	G4IDC5B	DC only (input)	White	4.0-16 vdc only	45mA	0.05	0.1	-30°Cto 70°C
-0035	G4IDC5	AC/DC (input)	White	12-32	25mA	5	5	-30°Cto 70°C
-0043	G4IDC5G	AC/DC (input)	White	35-60	25mA	10	15	-30°Cto 70°C
-0050	G4IAC5	AC/DC (input)	Yellow	90-140	11mA	11	20	-30°Cto 70°C
-0068	G4IAC5A	AC/DC(input)	Yellow	180-280	6.5mA	2	20	-30°Cto 70°C
-0076	G4ODC5	DC ouput N.O. Normally Open	Red	5-60 vdc only	3A@45°C 2A@70°C	100	750	-30°Cto 70°C
-0084	G4ODC5A	DC (output) N.O. Normally Open	Red	5-200 vdc only	1A@45°C 0.55A@70°C	100	750	-30°Cto 70°C
-0092	G4OAC5	AC (output) N.O. Normally Open	Black	12-140 AC only	3A@45°C 2A@70°C	---	---	-30°Cto 70°C
-0100	G4OAC5A	AC (output) N.O. Normally Open	Black	24-280 AC only	3A@45°C 2A@70°C	---	---	-30°Cto 70°C
-0118	G4OAC5A5	AC (output) N.C. Normally Closed	Black	24-280 AC only	3A@45°C 2A@70°C	---	---	-30°Cto 70°C
-0126	G4ODC5R	AC/DC (output) N.O. Dry contact Normally Open	Red	130VAC/100VDC	1.5A	500	500	0°C to 70°C
-0134	G4ODC5R5	AC/DC (output) N.C. Dry contact Normally Closed	Red	130VAC/100VDC	1.5A	500	500	0°C to 70°C

Each I/O module has an LED that lights indicating an active state. The output modules also have a replaceable fuse for circuit protection. These modules are LOW CURRENT devices. Refer to OPTO-22 data specifications for additional information.

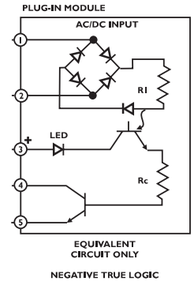
Below is a diagram of the different I/O control modules:

A	B	C	D	E
48552-0019	48552-0035, 48552-0043	48552-0076	48552-0092	48552-0126
48552-0027	48552-0050, 48552-0068	48552-0084	48552-0100	48552-0134
			48552-0118	

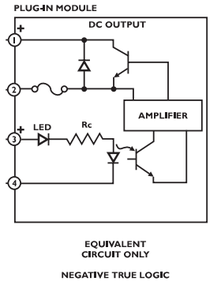
A



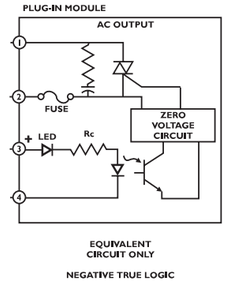
B



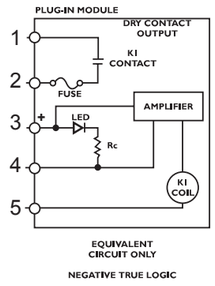
C



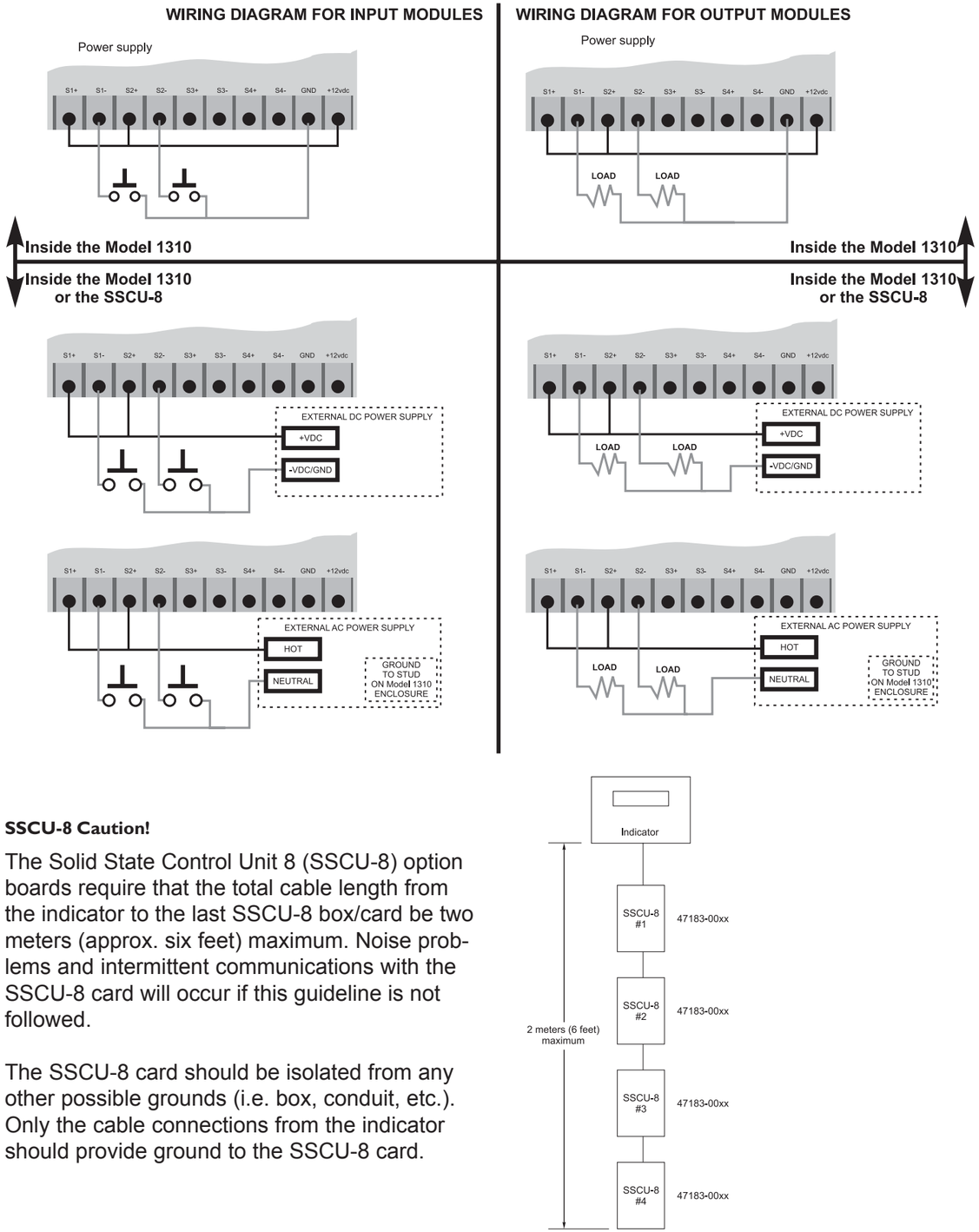
D



E



Rev. G and higher power supply boards:



SSCU-8 Caution!

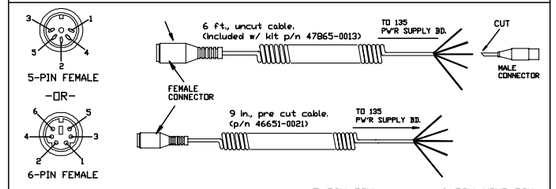
The Solid State Control Unit 8 (SSCU-8) option boards require that the total cable length from the indicator to the last SSCU-8 box/card be two meters (approx. six feet) maximum. Noise problems and intermittent communications with the SSCU-8 card will occur if this guideline is not followed.

The SSCU-8 card should be isolated from any other possible grounds (i.e. box, conduit, etc.). Only the cable connections from the indicator should provide ground to the SSCU-8 card.

XT/AT PC KEYBOARD-TO MODEL 1310 CONNECTION

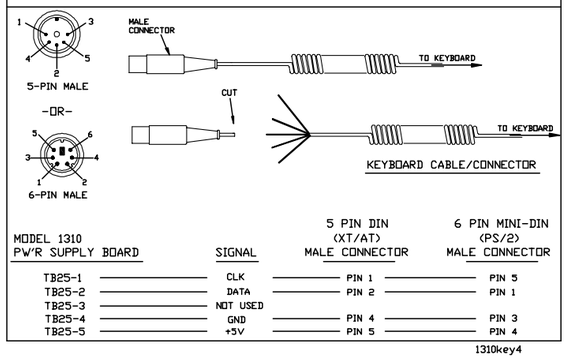
1. Remove the back panel from the Model 1310 enclosure.
2. Insert the cut end of cable through water-tight connector at bottom of enclosure and pull cable into enclosure.
3. Strip covering back from cable to reveal five seperate wires.
4. Connect keyboard wires to "TB25" on Power Supply Board (ref. Pwr. Supply Bd. page in this manual) as shown in pin-out chart (see below). Note: connector gender (male/female) as this greatly effects pin number locations. Wire color may vary due to on going color changes from vendors. Use pin-out chart for pin I.D.
5. Turn S1-4 (located on main board) to the "ON" position.

EXTENSION CABLE (5-pin, 6 ft. uncut) P/N 46651-0013
EXTENSION CABLE (5-pin, 9 in. pre cut) P/N 46651-0021
EXTENSION CABLE (6-pin, 6 ft. uncut) P/N 46651-0039
EXTENSION CABLE (6-pin, 9 in. pre cut) P/N 46651-0047



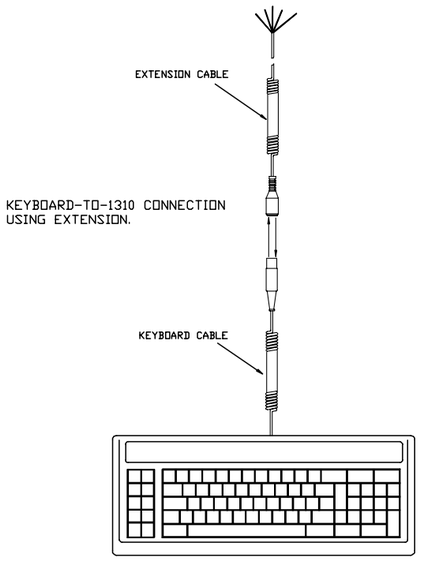
MODEL 1310 PW'R SUPPLY BOARD	SIGNAL	5 PIN DIN (XT/AT) FEMALE CONNECTOR	6 PIN MINI-DIN (PS/2) FEMALE CONNECTOR
TB25-1	CLK	PIN 1	PIN 5
TB25-2	DATA	PIN 2	PIN 1
TB25-3	NOT USED		
TB25-4	GND	PIN 4	PIN 3
TB25-5	+5V	PIN 5	PIN 4

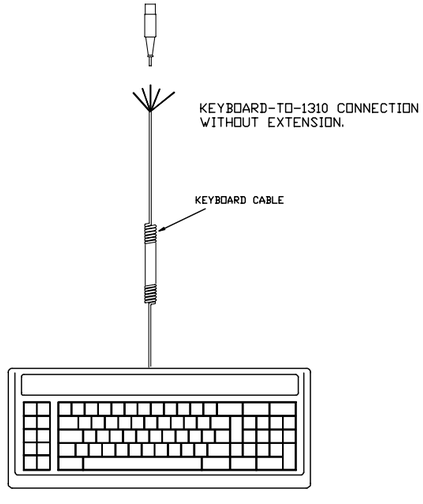
KEYBOARD CABLE PIN-OUT CHART



MODEL 1310 PW'R SUPPLY BOARD	SIGNAL	5 PIN DIN (XT/AT) MALE CONNECTOR	6 PIN MINI-DIN (PS/2) MALE CONNECTOR
TB25-1	CLK	PIN 1	PIN 5
TB25-2	DATA	PIN 2	PIN 1
TB25-3	NOT USED		
TB25-4	GND	PIN 4	PIN 3
TB25-5	+5V	PIN 5	PIN 4

1310key4





MODEL 1310 INDICATOR-TO-PC KEYBOARD CABLE CONNECTIONS

TTL KEYBOARD-TO-Model 1310 CONNECTION

1. Remove the back panel from the Model 1310 enclosure.
2. Insert the cut end of cable through water-tight connector at bottom of enclosure and pull cable into enclosure.
3. Strip covering back from cable to reveal five seperate wires.
4. Install jumper on pins 2-3 of P74 on Power Supply Bd. (ref Power Supply Bd page in this manual).

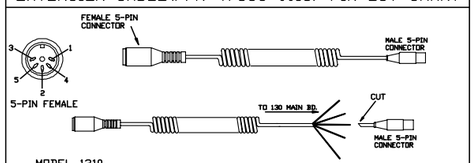
   NOTE: A port set in keyboard mode can still output to a printer or remote display. However, a designated keyboard port cannot accept input other than the keyboard.

* 5. Connect wires at COM 3, TB28A as shown in pin-out chart below. (ref Power Supply Bd page in this manual).

6. Set baud rate on keyboard to match indicator.

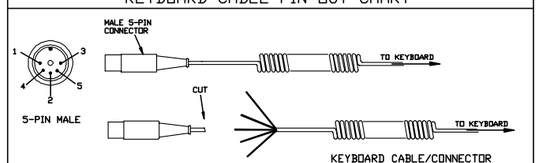
* Wire color not shown due to ongoing color changes from our vendor. Use pin-out chart for pin I.D.

EXTENSION CABLE(P/N 47865-0013) PIN-OUT CHART



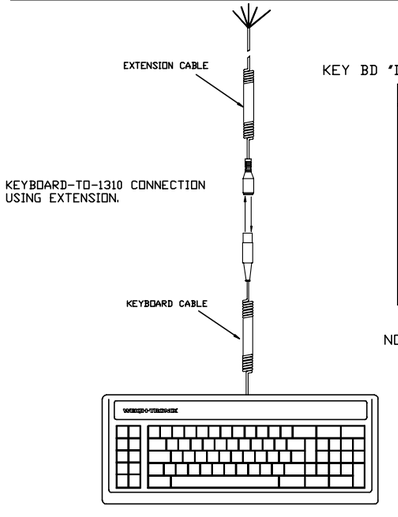
MODEL 1310 PW'R SUPPLY BOARD	SIGNAL	CONNECTOR
TB28A-6	(+5V)	PIN 5
TB28A-5	(GND)	PIN 4
NOT USED	NOT USED	PIN 3
TB28A-8	(DATA)	PIN 2
NOT USED	NOT USED	PIN 1
	CHASSIS GND	SHIELD

KEYBOARD CABLE PIN-OUT CHART

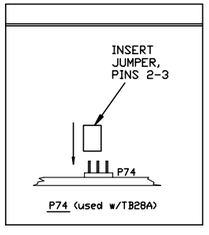


MODEL 1310 PW'R SUPPLY BOARD	SIGNAL	CONNECTOR
TB28A-6	(+5V)	PIN 5
TB28A-5	(GND)	PIN 4
NOT USED	NOT USED	PIN 3
TB28A-8	(DATA)	PIN 2
NOT USED	NOT USED	PIN 1

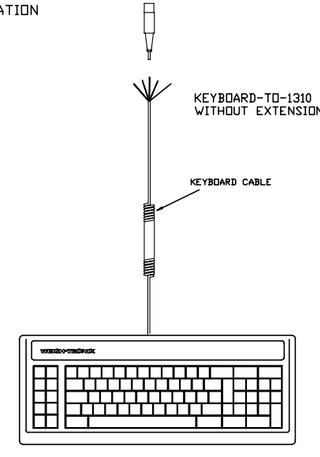
1310key1

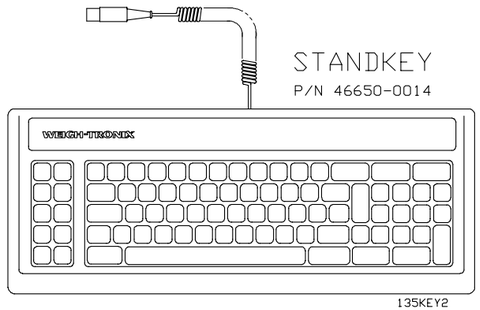


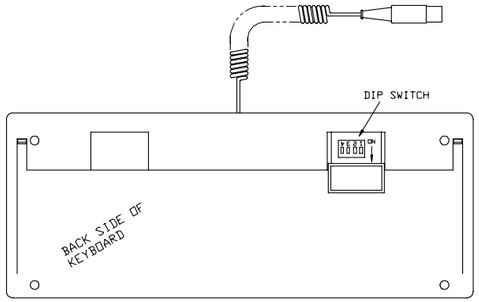
KEY BD 'DATA WIRE' ASS'Y INSTALLATION

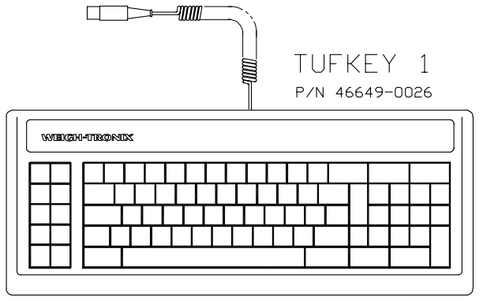


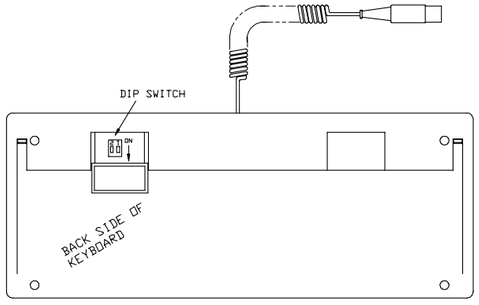
NOTE:
FOLLOWING KEYBOARD CONNECTION,YOU MUST PLACE THE APPROPRIATE SERIAL PORT IN KEYBOARD MODE.

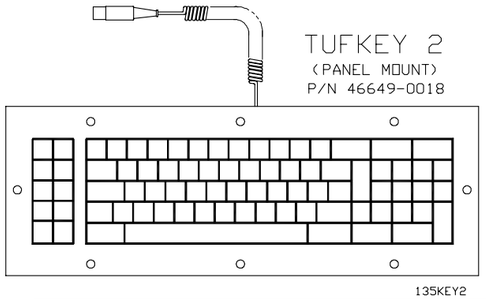


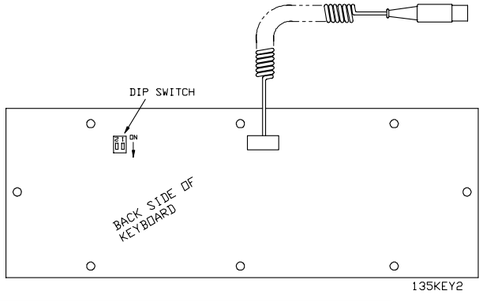












KEYBOARD SPECIFICATIONS

ENVIRONMENTAL: 32°f to 130°f (0°c to 55°c).

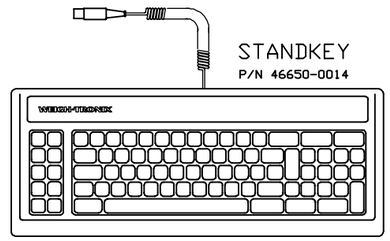
COMMUNICATION OUTPUT: 1 start bit , 8 data bits , 1 stop bit, , selectable baud rates, TTL Asynchronous Serial.

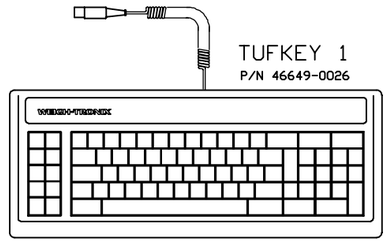
WEIGHT: 2 lb/.9 kg nominal .

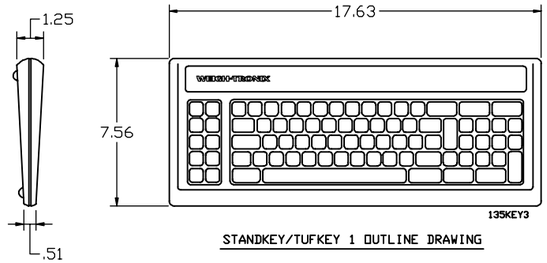
BAUD RATE	STANDKEY SWITCH SETTINGS			
	1	2	3	4
300	ON	OFF	OFF	OFF
1200	OFF	OFF	ON	OFF
9600	ON	OFF	OFF	OFF

BAUD RATE	STANDKEY SWITCH SETTINGS	
	1	2
300	ON	ON
1200	ON	OFF
9600	OFF	ON

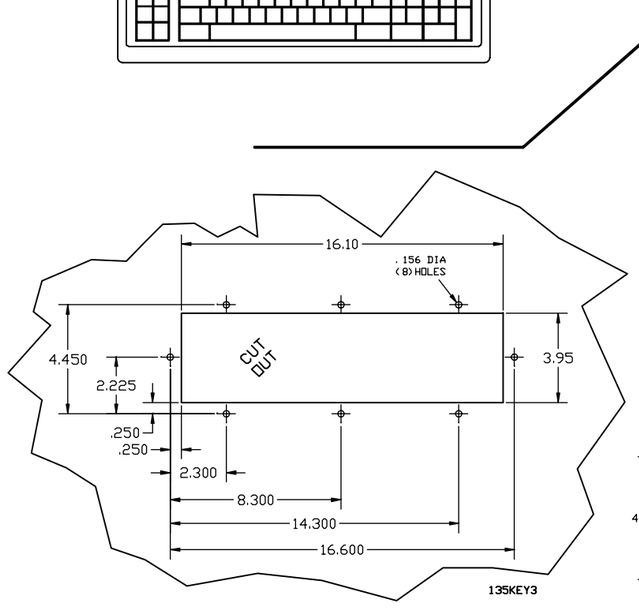
MODEL 1310 INDICATOR REMOTE TTL KEYBOARD OPTION *-AND-* TTL KEYBOARD OUTLINE DRAWINGS



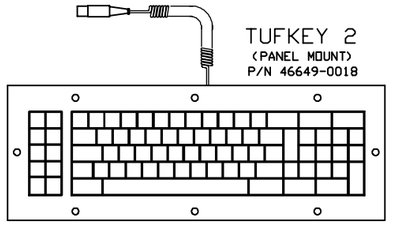


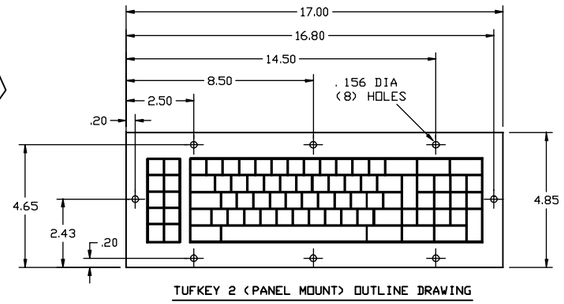


STANDKEY/TUFKEY 1 OUTLINE DRAWING



RECOMMENDED PANEL MOUNT KEYPAD DETAIL (TUFKEY 2)





TUFKEY 2 (PANEL MOUNT) OUTLINE DRAWING

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