882IS/882IS Plus

Intrinsically Safe Indicator/Controller
Version 1.0

Technical Manual

RICE LAKE®
W E I G H I N G   S Y S T E M S

Contents

*Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at **www.ricelake.com/training** or obtained by calling 715-234-9171 and asking for the training department.*

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1.0 Introduction

This manual provides information on installation, configuration, calibration and servicing of the 882IS and 882IS Plus indicator. The installer should be familiar with requirements for installation of equipment in hazardous areas. Refer to the 882IS Conditions of Use in Hazardous Locations document, PN 191698, for the intrinsic safety certification and classification, specific conditions of use and system limitations and restrictions for the 882IS.

Configuration and calibration of the indicator can be accomplished using the indicator front panel keys, the EDP command set or Revolution® configuration utility. See for information about configuration methods.

Manuals and additional resources are available from the Rice Lake Weighing Systems website at **www.RiceLake.com**

Warranty information can be found on the website at **www.ricelake.com/warranties**

1.1 Overview

The standard 882IS unit is equipped with a tilt stand base for tabletop or wall mounting applications and the 882IS Plus additionally is equipped with a numeric keypad.

Standard Features include:

- Drives up to four x 350Ω or eight x 700Ω load cells
- Seven-digit, seven-segment LCD display with 121 x 24 dot matrix messaging area and white LED backlight
- Stainless steel NEMA IP66 enclosure
- Numeric keypad (882IS Plus only)
- Two configurable digital inputs
- Semi-automatic (push button) zero setting and (push button) tare
- Automatic zero tracking
- Gross/Net display
- Unit switching (lb, oz, kg, g, T, t)
- Power saving features
- Remote printer capability
- RS-422
- Duplex fiber-optic port allowing for electrically-isolated communication with the IO module
  - Ethernet TCP/IP interface for 10Base-T/100Base-TX network communications
  - USB interface device
  - Expansion slot for one option card
  - RS-232/RS-422

1.2 Options

Options for the 882IS are listed below.

Part Number	Description
180831	Battery option, IS6V2
194191	Battery charger, IS6V2, 100-240 VAC NEMA 5-15, North American plug
194189	Battery charger, IS6V2, 100-240 VAC, EU plug
194192	Battery charger, IS6V2, 100-240 VAC, UK plug
180837	Power supply, 882IS mb-EPS-100-240-X2 VAC, dual output 6.8 VDC 200 mA
195109	Power supply, 882IS mb-EPS-100-240-X2 VAC, dual output 6.8 VDC 200 mA, 1/2in NPT-M20
179668	Cable, M12 power 22 inch hazardous location (for battery version)
179669	Cable, M12 power 10 foot hazardous location
179670	Cable, M12 power 50 foot hazardous location
179671	Cable, M12 power 100 foot hazardous location
179678	Tilt stand, 882IS battery option
163751	Tilt stand, 882IS
177709	882IS IO module
78026	Fiber optic, duplex cable 100 ft
78027	Fiber optic, duplex cable 200 ft

Table 1-1. 882IS Options

1.3 Safety

Safety Signal Definitions:

⚠ DANGER	*Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. Includes hazards that are exposed when guards are removed.*
⚠ WARNING	*Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death. Includes hazards that are exposed when guards are removed.*
⚠ CAUTION	*Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.*
IMPORTANT	*Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.*

General Safety

Do not operate or work on this equipment unless this manual has been read and all instructions are understood. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals.

⚠ WARNING

Failure to heed could result in serious injury or death.

Some procedures described in this manual require work inside the indicator enclosure. These procedures are to be performed by qualified service personnel only.

Do not allow minors (children) or inexperienced persons to operate this unit.

Do not operate without the enclosure completely assembled.

Do not use for purposes other than weight taking.

Do not place fingers into slots or possible pinch points.

Do not use this product if any of the components are cracked.

Do not exceed the rated specification of the unit, see Section 6 on page 80.

Do not make alterations or modifications to the unit.

Do not remove or obscure warning labels.

Do not submerge.

1.4   FM Approval

The 882IS is a FM Entity approved for:

- Classes I, II and III
- Division 1
- Groups A, B, C, D, E, F and G
- Class I, Zone 0, AEx/EX ia IIC
- Zone 0/20
- Zone 20 AEx ia IIIC
- IP66
- T-rating T4 = 14°F to 104°F (-10°C to 40°C)

Only devices that have FM Entity Approval with proper entity parameters may be used unless specifically listed in this manual or control drawings, PN 77412, 180848 and 182301, as part of the Rice Lake Weighing System's FM systems approval. Failure to comply with this voids the FM approval.

This classification of hazardous materials are different in the US and European standards, because of this, the safety class of the 882IS is declared in the US standards: Class I, II, III, DIV1 and Groups A-G.

Substitution of components may impair intrinsic safety.

To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.

Disconnect all power to this unit before installing, servicing or cleaning. Failure to do so could result in bodily harm and/or property damage.

The 882IS indicator has been certified by UL (U.S., Canada, ATEX and IECEx) with a temperature rating of 14°F to 104°F (-10°C to 40°C) for use in hazardous environments where the auto ignition temperature of the hazardous material is below the rating.

Do not install, disconnect or perform any service on this equipment before power has been switched off or the area has been secured as non-hazardous by personnel authorized to do so by the responsible person on-site.

1.5   Hazardous Location Labels

The following labels will be affixed to the 882IS and 882IS Plus indicators.

Figure 1-1. 882IS and 882IS Plus Indicator Label

Figure 1-2. IS6V2 Battery Label

Figure 1-3. mb-EPS-100-240-X2 Power Supply Label

1.6   Operating Modes

The three modes of operation for the 882IS are described below.

Weigh Mode

In this mode, the indicator displays gross or net weights to indicate the type of weight value displayed, and annunciators to indicate scale status.

Setup Mode

Most of the procedures described in this manual, including setup and calibration, require the indicator to be in setup mode. To enter setup mode, remove the fillister head screw from the bottom of the enclosure. Insert a non-conductive tool into the access hole and press the setup switch once. the indicator display changes to show the word *Scale*.

IMPORTANT	*Breaking the seal to enter the configuration mode will void a Legal for Trade unit.*

The 882IS also has an Audit Trail that can track changes to setup and calibration, allowing the setup switch to be bypassed with Jumper JP4 on the CPU board. If Audit Trail is enabled, setup mode can then be accessed through the user setup mode.

User Setup Mode

User setup mode (accessed by pressing the **Menu** key) is used to:

- View the audit trail, set time & date
- View or clear the accumulator value
- View the current tare value
- Enter setup/configuration mode (if audit trail is enabled)

1.7 Front Panel Display

Figure 1-4 shows the 882IS Plus front panel display and Table 1-2 describes the key functions.

The numeric or weight portion of the display consists of the seven-segmented LCD digits and below that, is a messaging area of the display which is the dot matrix and can display two-line non-configurable messages (ie: error messages).

The symbols on the keys in Figure 1-4 (representing up, down, enter, left, right) describe the key functions when in configuration/setup mode. The keys are used to navigate through menus, select digits within numeric values, and increment/decrement values. See Section 3.2 on page 24 for information about using the front panel keys in configuration mode.
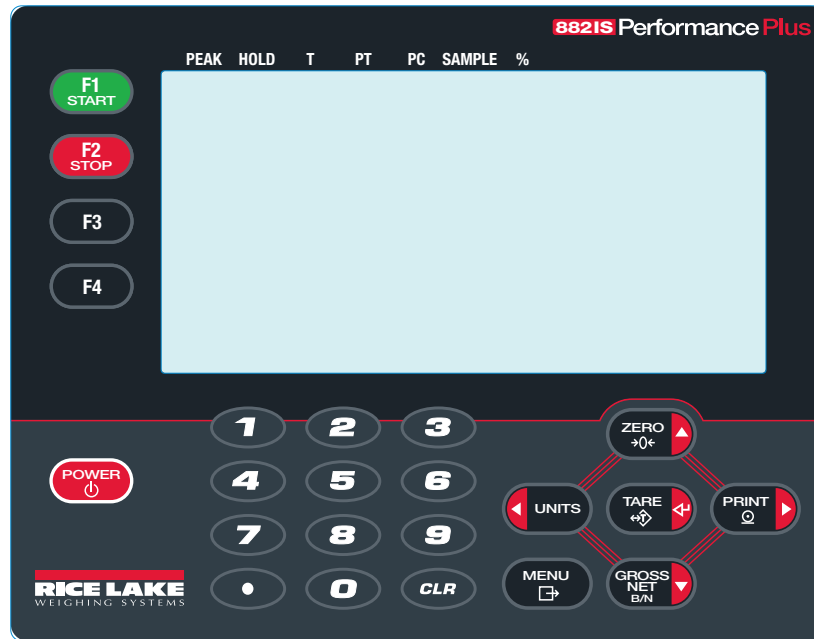
Figure 1-4. 882IS Plus Front Panel Display

Key	Function
ZERO →0← ▲	The **Zero** key sets the current gross weight to zero Also used as the up key to navigate menus
PRINT ⊙ ▶	The **Print** key sends an on-demand print format out a communications port, provided the conditions for standstill are met. If enabled in configuration, *Print* may display while the unit prints Also used as the right key to navigate menus or to select another digit when editing a value
GROSS NET B/N ▼	The **Gross/Net** key toggles the weight display between gross and net mode. If a tare value has been entered or acquired, the net value is the gross weight minus the tare. Gross mode is shown by the **Gross/Brutto** annunciator; net mode is shown by the **Net** annunciator. Also used as the down key to navigate menus
MENU ↦	The **Menu** key allows access the user setup menu. This key also acts as the cancel key when editing parameter values, or as an exit key when in the configuration or user setup menus
◀ UNITS	The **Units** key switches the weight display to an alternate unit, defined in the format menu, see Figure 3-6 on page 27. Units Available: lb, kg, oz, metric ton, ton, gram Also used to navigate to different menus or to toggle to another digit when editing a value
TARE ↔ ◁	The **Tare** key performs one of several predetermined Tare functions dependent on the mode of operation selected in the *Tare Function* parameter. This key also acts as enter for numeric or parameter entry.
POWER ⏻	The **Power** key turns the unit on or off. Press and hold to turn on, press momentarily to turn off.

Table 1-2. 882IS Key Functions

Key	Function
F1 START	Future enhancement
F2 STOP	Future enhancement
F3	Future enhancement
F4	Future enhancement
CLR	The **Clear** key clears the current value during a numeric entry (available in the 882IS Plus)
●	The **Decimal Point** key inserts a decimal point where necessary (available in the 882IS Plus)
0-9	The numeric keypad can be used to enter values (available in the 882IS Plus)

Table 1-2. 882IS Key Functions

Annunciator	Function
Gross/Brutto	Gross or Brutto weight mode
Net	Net weight mode
→0←	Center of Zero - Indicates that the current gross weight reading is within +/- 0.25 display divisions of the acquired zero, or is within the center of zero band. A display division is a resolution of the displayed weight value, or the smallest incremental increase or decrease that can be displayed or printed.
◣◢	Standstill - The scale is at a standstill or within the specified motion band. Some operations including zero, tare and printing can only be done when the standstill LCD is on.

PEAK   HOLD   T   PT   PC   SAMPLE   %

Peak Hold	Future enhancement
T	Indicates that a tare has been acquired and stored by the system
PT	Indicates that a preset tare weight has been keyed in or entered via the EDP command
PC	Future enhancement
Sample	Future enhancement
%	Future enhancement

Table 1-3. Annunciator Functions

1.8   General Navigation

The front panel keys are used to navigate through the menus in configuration mode (see Section 3.0 on page 23).

- **⊳UNITS** and **PRINT⊳** move left and right (horizontally) in a menu level

- **ZERO▲** and **GROSS NET B/N▼** move up and down (vertically) to different menu levels

- **TARE** serves as an enter key for selecting parameter values within the menus

Press **⊳UNITS** or **PRINT⊳** to scroll left or right until the desired menu group appears on the display. Press **GROSS NET B/N▼** to move down to the sub-menu or parameter to be edited. When moving through the menu parameters, the current selected value appears first on the display.

Edit Parameter Values

To change a parameter value, scroll left or right to view the values for that parameter. When the desired value appears on the display, press **TARE** to select the value and move back up one level. To edit numerical values, use the navigation keys to select the digit and to increment or decrement the value. Alternatively, use the numeric keypad (882IS Plus), to enter the digits. The decimal point will begin flashing if a decimal value is allowed. Use the navigation keys, to move the decimal point left or right. Press **TARE** when done.

1.9   Indicator Operations

Basic 882IS operations are summarized below.

1.9.1   Toggle Gross/Net Mode

Press **GROSS NET B/N▼** to toggle the display mode between gross and net.

> **Note** *Net mode is available when a tare value has been entered or acquired (Net = Gross minus Tare). If a tare has not been entered or acquired, the display remains in gross mode. The B (Brutto), G (Gross) or NET icons on the LCD indicate the current mode.*

1.9.2   Toggle Units

Press **⊳UNITS** to switch between primary and secondary units. The current units are displayed on the LCD.

1.9.3   Zero Scale

1. In gross mode, remove all weight from the scale and wait for ◣ ◢ to display.

2. Press **ZERO▲**. →0← displays and indicates the scale is zeroed.

> **Note** *The scale must be stable and within the configured zero range for the scale to be zeroed. If the scale cannot be zeroed, No zero will display.*

1.9.4   Acquire Tare

1. Place a container on the scale and wait for ◣ ◢ to display.

2. Press **TARE** to acquire the tare weight of the container. The Net weight is displayed and the **T** annunciator displays to show the tare value is entered.

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1.9.5 Remove Tare Value

1. Remove all weight from the scale and wait for ◣ ◢ . The display reads →0←.

2. Press ⬭ZERO⬭ to zero the scale if needed.

3. Press ⬭TARE⬭ (or ⬭ZERO⬭ in OIML mode). The display shifts to gross weight and the Gross icon is lit.

> **Note** *If keyed tares are allowed, press ⬭TARE⬭ to open the keyed tare prompt. To clear the tare, press ⬭TARE⬭ again.*

1.9.6 Preset Tare (Keyed Tare)

> **Note** *Tare mode must be set to keyed or both for the preset tare feature to function.*

1. With the scale empty and zero weight on the display, press ⬭TARE⬭. One flashing *0* displays with the focused digit flashing.
2. Key in the value using the keypad on the 882IS Plus (see).
   - Press ◁ or ▷ to select the digit
   - Press △ or ▽ to increment or decrement the value
   - Press ⬭TARE⬭ to move to the decimal point entry
   - Press ◁ or ▷ to adjust the decimal point placement
   - Press ⬭TARE⬭ when the value is correct

The display will change to the Net mode and *PT* lights to show the preset tare was entered.

> **Note** *Entering a keyed tare of zero will remove the stored tare value.*

1.9.7 Print Ticket

1. Wait for ◣ ◢ to light.

2. Press ⬭PRINT⬭ to send data to the configured communications port.

1.9.8 Front Panel User Setup

Press ⬭MENU⬭ to enter user setup mode. Use user setup mode to:

- View audit trail information
- Enter configuration mode if audit trail is enabled
- View or clear the accumulator
- View the current tare value
- Time and date
- Test menu

1.9.9 Displaying Audit Trail Information

The Audit Trail Configuration and Calibration counters can be viewed in user setup mode.

1. Press ⬭MENU⬭. *Audit* displays.
2. Press ▽ to display the Legally Relevant Firmware version.
3. Press ▷ to display *Calibration*.

4. Press ▽ to view the Calibration Counter.

5. Press **MENU** to return to **Calibration**.

6. Press ▷ to display **Configuration**.

7. Press ▽ to view the Configuration Counter.

8. Press **MENU** to return to **Configuration**.

9. Press **MENU** to return to the weigh mode.

1.9.10 Display Accumulator

Enable the accumulator before use in weigh mode. Once enabled, weight (net weight if a tare is in the system) is accumulated whenever a print operation is performed using the **Print** key, digital input, or **KPRINT** EDP command. The scale must return to below the threshold value before the next accumulation.

1. Press **MENU** to enter the user setup mode, **Audit** is displayed.

2. Press ◁ or ▷ until **Accumulator** is displayed.

> **Note** *Accumulator is only displayed if the accumulator is enabled. See Section 3.2.3 on page 25. The Print operation only performs one accumulation, and only if the weight is above the accumulator threshold. Weight must return to below the accumulator threshold value before another accumulation is allowed.*
>
> *The EDP command SC.THRESH#n is configured in the setup menu. See Section 3.2.3 on page 25.*

3. Press ▽. **View** is displayed.

4. Press ▽ to view the current accumulator value.

5. While the accumulator value is displayed, press **PRINT** to print the value.

6. Press **MENU** to return to the weigh mode.

1.9.11 Clear the Accumulator

1. Press **MENU** to enter the user setup mode. **Audit** is displayed.

2. Press ◁ or ▷ until **Accumulator** is displayed.

3. Press ▽, then press ◁ or ▷ until **Clear Accumulator** is displayed.

4. Press **TARE** to clear the accumulator. **Clear** will display briefly and display returns to **Clear Accumulator**.

5. Press **MENU** to return to the weigh mode.

1.9.12 Display Tare

When a tare value is displayed, the Gross and Net icons will be off and →0← is lit. To display a tare:

1. Press **MENU**.

2. Press ▷ to **Tare** and press ▽ to view the current tare value.

3. Press **MENU** twice to return to weigh mode.

If there is not a tare in the system, the value displayed is zero and the Gross and Net icons are turned off.

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2.0   Installation

This section describes procedures for connecting power, load cells, digital inputs and data communications cables to the 882IS indicator.

⚠️   ⚠️ **WARNING**   **IMPORTANT**

* *Use anti-static protection for grounding and to protect components from electrostatic discharge (ESD) when working inside the indicator enclosure.*

* *Procedures requiring work inside the indicator must be performed by qualified service personnel only.*

* *Disconnect the indicator from power source before opening enclosure.*

* *Component level repair, excluding board-swapping, is not permitted on FM Approved equipment by anyone other than the manufacturer. It is mandatory to return 882IS to Rice Lake Weighing Systems for repairs.*

* *The entire indicator must be shipped back to Rice Lake Weighing Systems for repair. Please contact a local dealer or Rice Lake Weighing Systems to obtain a return material authorization (RMA). There are no user serviceable parts within the 882IS except CPU board replacement. All repairs are to be performed by qualified service personnel only.*

2.1   Unpacking and Assembly

Immediately after unpacking, visually inspect the 882IS to ensure all components are included and undamaged. The shipping carton should contain the indicator and manual. If any parts were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately.

2.2 Product Dimensions
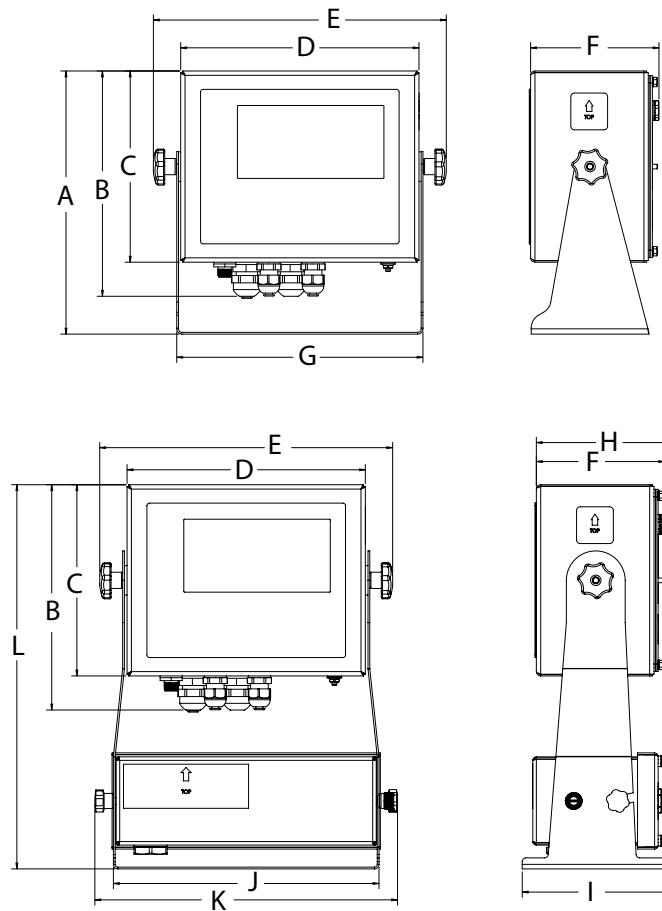
Figure 2-1. 882IS Product Dimensions (universal and optional battery versions shown)

Dimensions Without Battery	
A	8.94 inch (227.1 mm)
B	7.66 inch (194.6 mm)
C	6.50 inch (165.1 mm)
D	8.10 inch (205.7 mm)
E	9.96 inch (253 mm)
F	4.36 inch (110.7 mm)
G	8.37 inch (212.6 mm)
Dimensions with Optional Battery and Tilt Stand	
H	4.64 inch (117.9 mm)
I	5.00 inch (127 mm)
J	9.03 inch (229.4 mm)
K	10.29 inch (261.4 mm)
L	130.06 inch (331.7 mm)

Table 2-1. 882IS Product Dimensions

2.3   Hazardous Area Installation of the 882IS

The following information is provided to help the installer with the correct installation of the 882IS system. See the following diagram of a typical intrinsically safe system.
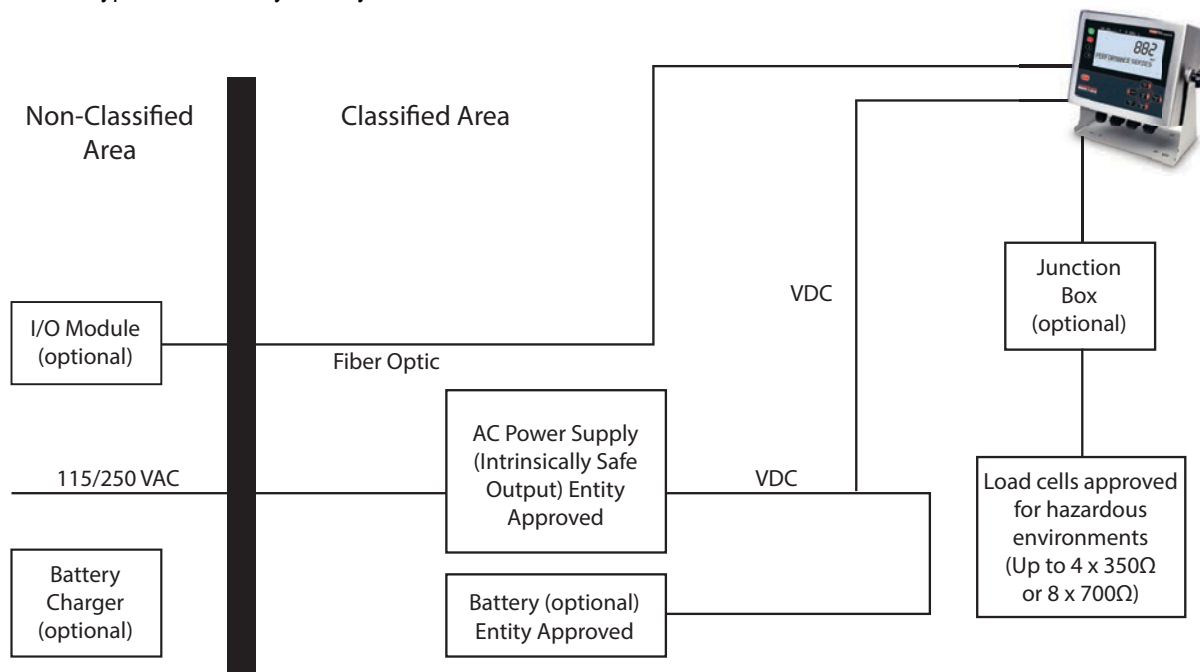
Figure 2-2. Intrinsically Safe System Diagram Example

2.4   Mounting Instructions

The 882IS includes a universal mount. The universal mount can be mounted on a wall, tabletop or any flat surface.

Note *The universal mount comes attached to the 882IS. Rice Lake Weighing Systems recommends removing the 882IS from the universal mount prior to mounting.*

Figure 2-3. Mounting the 882IS

1.   Using the mount as a template, mark the screw locations.
2.   Drill holes for the screws.
3.   Secure the universal mount using the appropriate length 1/4" or M6 hardware (not included).

Reattach the 882IS to the universal mount.

2.4.1 Backplate Removal

Remove the backplate of the universal mount assembly to gain access to the inside of the enclosure and CPU board.
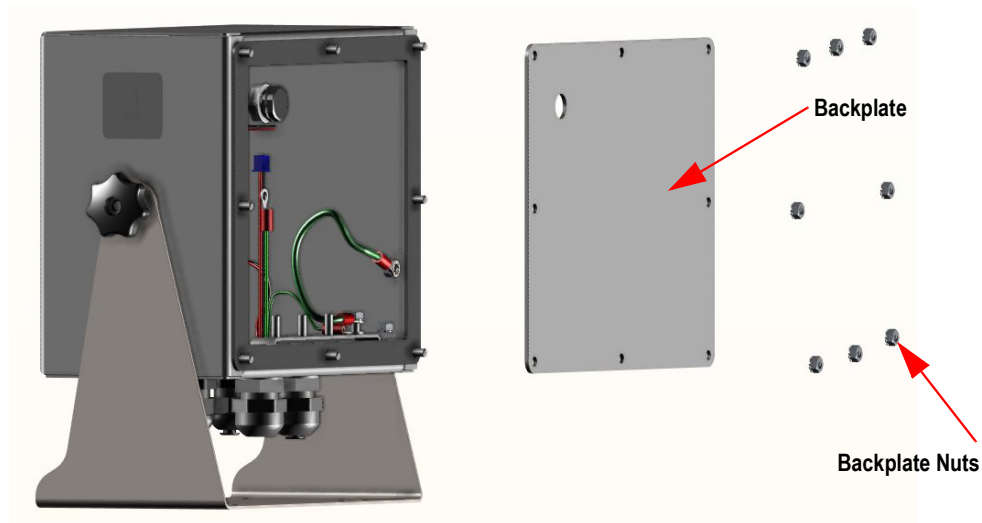
Figure 2-4. Remove Enclosure Backplate

4. Remove the eight nuts that attach the backplate to the enclosure.
5. Remove the backplate.

⚠️ **WARNING** *Disconnect power to the indicator prior to removing the backplate.*

2.5 Cable Connections on the 882IS

The 882IS has four cord grips at the bottom of the enclosure for cabling into the enclosure. One stainless steel cord grip is used for the power supply and other cord grips are for the load cell cable, communications and the fiber optic cable. Two of the four cord grips come with a plug installed to prevent moisture from entering the enclosure. Depending on the application, remove the plug from the cord grip that will be used and install cables as required. Figure 2-5 shows the recommended 882IS cord grip assignments.
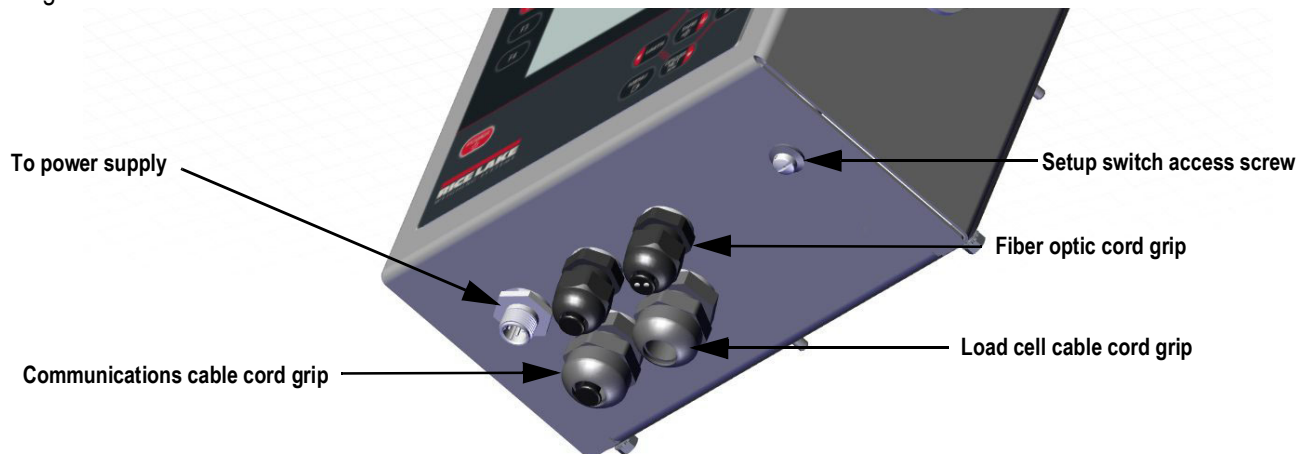
Figure 2-5. Recommended Cord Grip Assignments

2.5.1 Power Supply to Indicator

⚠️ **WARNING**   *Do not under any circumstances, connect or disconnect the DC wire from the indicator while the AC power is applied to the power supply. This will cause the power supply fuse to blow.*

The 882IS must be powered by an FM-approved Rice Lake power supply or optional battery. The power requirements of the 882IS indicator are as follows:

- Minimum input voltage - 5.8 VDC
- Maximum input voltage - 7.9 VDC
- Peak current consumption - .25 W
- Average input current (with four load cells) 100-175 mA

The DC power cable should be attached to connector J3 (Figure 2-11 on page 19).

2.5.2 AC Power Wiring

Units are powered by an FM-approved power supply. 100-240 VAC into Rice Lake Weighing Systems' mb-EPS-100-240-X2 intrinsically safe power supply (PN 180837) is recommended. See the mb-EPS-100-240-X2 Power Supply Instruction sheet (PN 194894) for information on wiring and power specifications.

2.5.3 Battery Option

The optional IS6V2 battery (PN 180831) provides an intrinsically safe battery that can replace the power supply. The battery is approved for use in hazardous environments. A low battery error message displays on the 882IS to indicate that the battery needs to be recharged. Charge the battery a minimum of 12 hours. A yellow indicator light on the battery charger will remain on (in high current charging mode), until the battery is charged at about 70%, at which point the charger switches to a float charge mode and the LED turns off.

To keep the battery at full capacity, it is recommended to leave the battery connected to the charger, in float charge mode, until ready to use. The battery can remain on the charger in float charge mode indefinitely without damaging the battery. See IS6V2 Battery Charging Instruction sheet (PN 194893) for instructions on charging the battery.

Load Cell Size	Quantity of Cells	Estimated Operating Time
350 Ohm Load Cell	1	80 - 95 hours
	4	60 - 80 hours
700 Ohm Load Cell	1	85 - 100 hours
	4	70 - 90 hours

Table 2-2. Estimated Battery Operating Times

📝 **Note**   *While connected to the DC battery pack with the indicator off, the 882IS still draws a small amount of current that will shorten battery run time. To preserve battery life, disconnect the battery when not in use.*

2.5.4   Load Cells

To attach a cable from a load cell or junction box, route the cable to the J1 connector. Wire the load cell cable from the load cell or junction box to connector J1 as shown in Table 2-3. If using 6-wire load cell cable (with sense wires), open the unit (see Section 2.4.1 on page 14) and remove jumpers JP1 and JP2.

📝 Note   *For 4-wire installation, leave jumpers JP1 and JP2 on (see* Figure 2-11 on page 19*).*

Connector	Pin	Function
J1	1	+SIG
	2	–SIG
	3	+SENSE
	4	–SENSE
	5	+EXC
	6	–EXC
For 6-wire load cell connections, remove jumpers JP5 and JP6.		

Table 2-3. J1 Pin Assignments

📝 Note   *The shield wire will attach to the ground clamp on the backplate.*

2.5.5   Cable Shield Grounding

Except for the power cord, all cables routed through the cord grips must be shield grounded against the enclosure.

- Use hardware provided in the parts kit to install shielding clamps on the grounding studs at the bottom of the enclosure
- Install only the necessary amount of shielding clamps for the cord grips to be used; finger tighten nuts at this time
- Route cables through the cord grips and shielding clamps to determine the cable lengths required to reach the appropriate cable connectors
- Mark the cables to remove the insulated jackets and shielding as described in the next two sections

Foil Shielded Cable
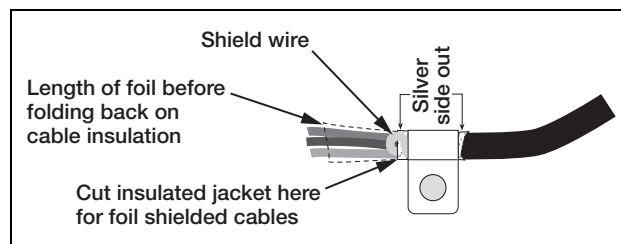
Figure 2-6. Foil Shielded Cable

1. Strip the insulated jacket and foil 1/2" (15 mm) past the shielding clamp.
2. Strip another 1/2" of the insulated jacket, leaving the foil shielding exposed.
3. Fold the foil shielding back on the cable where the cable passes through the clamp.
4. Ensure the silver (conductive) side of the foil is turned outward.
5. Wrap the shield wire around the cable so it contacts the foil where the cable passes through the clamp.
6. Torque the shielding clamp nut to 10 in-lb (1.13 N-m) so the clamp is around the cable and contacting the shield wire.

Braid Shielded Cable
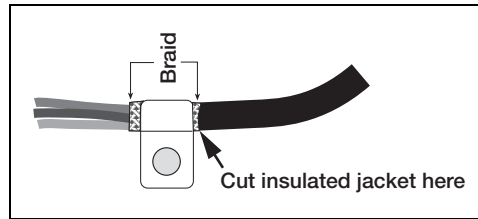
Figure 2-7. Braid Shielded Cable

1. Strip the insulated jacket and braided shielding from a point just past the shielding clamp.
2. Strip another 1/2" (15 mm) of the insulated jacket, leaving the braid exposed where the cable passes through the clamp.
3. Tighten the shielding clamp nut.

2.5.6 882IS Enclosure Grounding

Proper grounding must be done between the power supply and the backplate of the indicator. The preferred grounding method is illustrated in Figure 2-8*.*
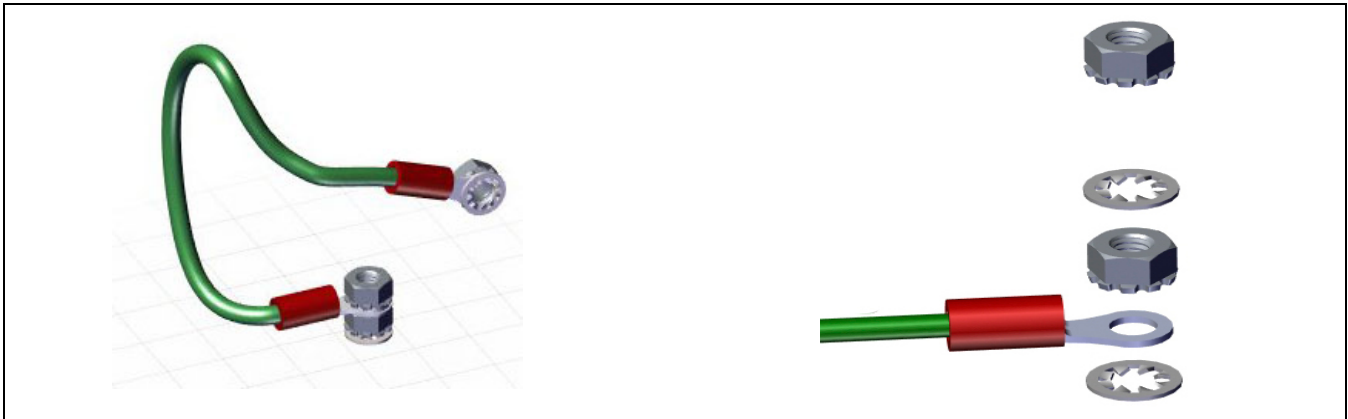
Figure 2-8. Grounding Bond

2.5.7 CPU Board Replacement

1. Disconnect power to the indicator.
2. Remove the backplate from the enclosure. See Section 2.4.1 on page 14.

📝 **Note** *Label connections for re-installation of board.*

3. Disconnect cables from the CPU board.
4. Remove the four screws from the CPU board.
5. Lift the CPU board out of the enclosure.

To install the new board, reverse the above procedure. Be sure to reinstall cable ties to secure all cables inside the indicator enclosure.

DC Cable Grounding in 882IS

Except for the power cord, all cables routed through cord grips should be grounded against the indicator enclosure, including the DC cable. Do the following to ground the DC cable.

Attaches to the inside of the enclosure backplate
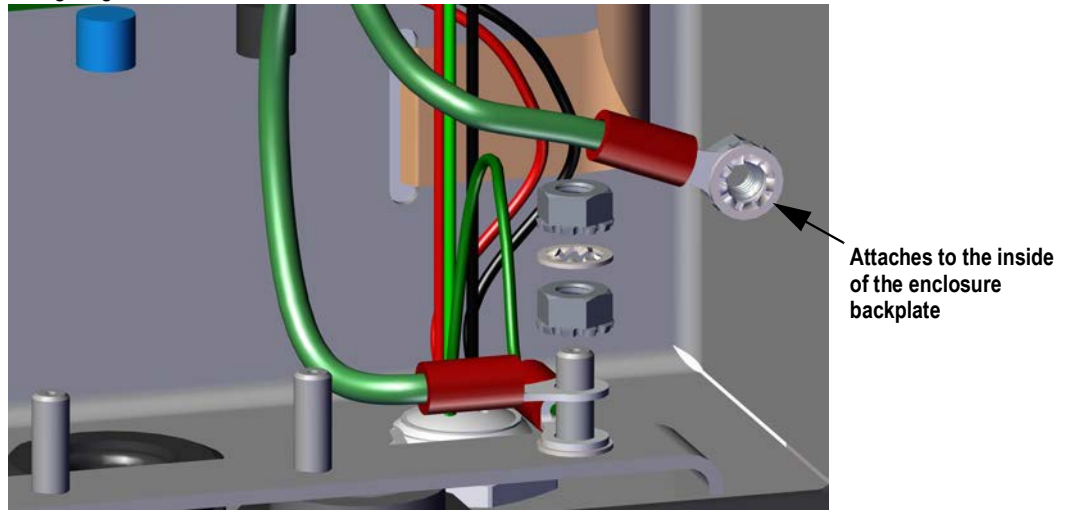
Figure 2-9. DC Grounding Stackup

1. Run three (not included) 22-16 AWG wires (5-10 mm diameter) up through the cord grip.
2. One wire will be terminated (grounded) at a stud near the cord grip using the grounding stackup (Figure 2-9).
3. Run the other two wires up the side of the indicator and connect the three pin plug (PN 15888) to the power supply board as shown in Figure 2-10 and Table 2-3.

J4 Power
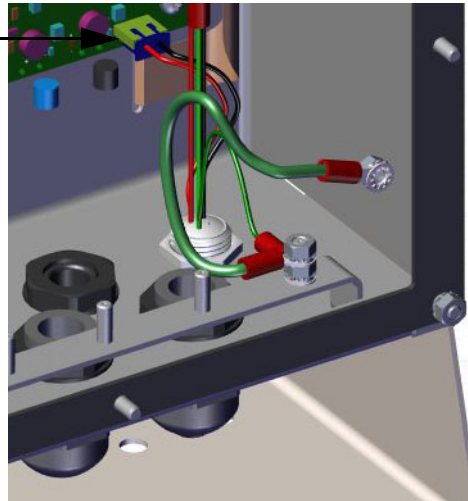
Figure 2-10. Connect DC Wiring

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2.5.8 Serial Communications – Port 1 (COM)

Connector J3A (see Figure 2-11) provides connections for the four-wire RS-422 serial communications. Table 2-4 shows the pin assignments.

Pin	RS-422
1	GND
2	DRX (-)
3	DRX (+)
4	DTX (-)
5	DTX (+)

Table 2-4. J3A Pin Assignments (Port 1 Serial Communications)

2.6   CPU Board
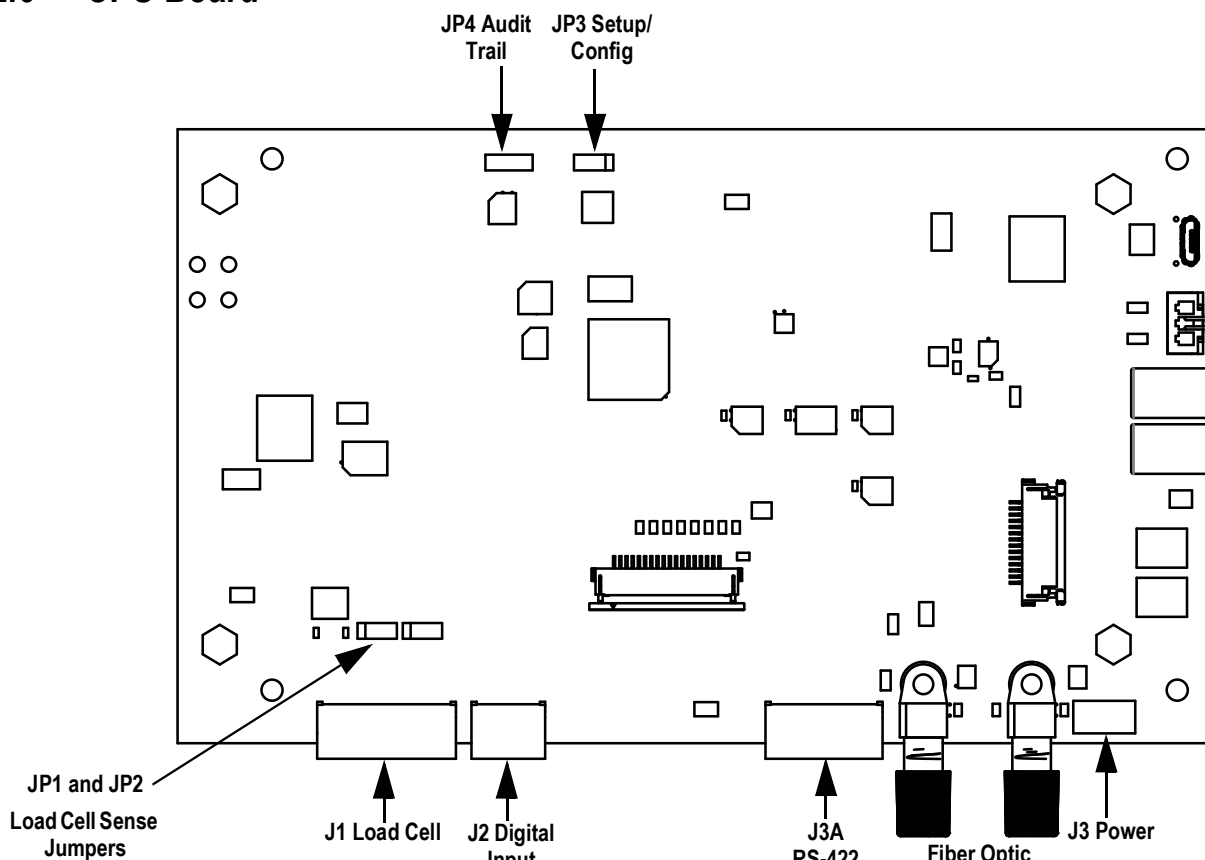
Figure 2-11. 882IS CPU Board

Connector	Description
J1	Load Cell Connection
J2	Digital Input
J3A	Communication RS-422
J4	Power Connection
JP1	Load Cell Sense
JP2	
JP3	Configuration/Setup
JP4	Audit Trail

Table 2-5. CPU Board Connectors

2.7 Audit Trail

The 882IS includes an audit trail feature that keeps track of the calibration count and the configuration count.

On the top of the CPU board is a 3-pin jumper (JP4) that enables or disables this feature. If the jumper is set to on, the 882IS allows entry to the setup and calibration menus using only the front panel **Menu** key.
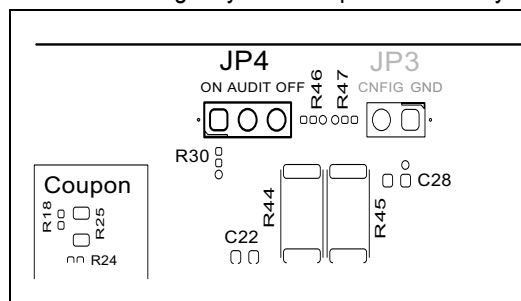
Figure 2-12. Audit Trail Jumper Position

- To use the audit trail and allow the use of the **Menu** key to enter the configuration and calibration mode, place the jumper in the **On** position
- To prevent the use of the **Menu** key to enter the configuration and calibration mode, instead requiring use of the externally seal-able setup switch located inside the enclosure (see Figure 3-1 on page 23), place the jumper in the **Off** position

The audit trail counters will operate in either position of the audit jumper.

2.8 Digital Inputs

Digital inputs can be set to provide many indicator functions, including all keypad functions except MENU. Digital inputs are active low (0 VDC) and inactive high (5 VDC). Use the Digital Inputs menu (Section 3.2.15 on page 37) to configure the digital inputs.

Table 2-6 shows the digital inputs pin assignments for connector J2.

Connector	Pin	Signal
J2	1	GND
	2	DI2
	3	DI1

Table 2-6. J2 Pin Assignments (Digital Inputs)

2.9 Backplate Attachment

Once cabling is complete, reattach the backplate ground wire to the backplate. Position the backplate over the enclosure and install the eight backplate nuts. Use the torque pattern shown in Figure 2-13 to prevent distorting the backplate gasket. Torque nuts to 15 in-lb (1.7 N-m).
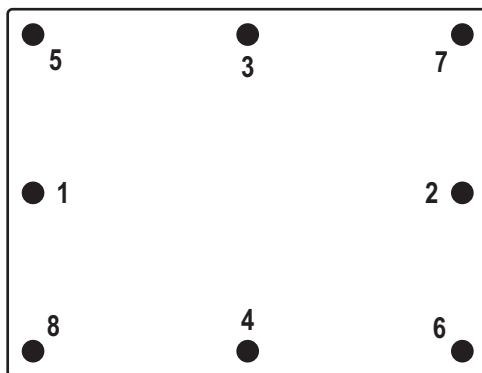
Figure 2-13. Torque Pattern

2.10 Legal for Trade Sealing

In certain Legal for Trade applications, it may be necessary to seal the indicator to restrict access from the setup switch. Use the following steps to seal the indicator.

1. Place the sealing wire through the fillister head screws on the backplate, then through the fillister head screw at the bottom of the indicator, as shown in Figure 2-14.

2. Seal the wire to secure.
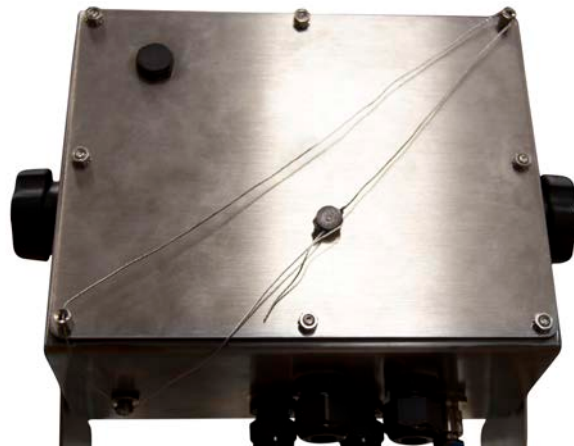
Figure 2-14. Sealing the Indicator

2.11 IO Module Option Cards

The following interfaces are available through an IO module connected to the 882IS via fiber optics.

Connector J8 is reserved for the option cards. Table 2-7 lists the options available for the 882IS indicator. Each kit includes instructions for installing and setting up the option.

Option Kit Part Number	Option	Manual Part Number
179156	Analog Output	156858
179158	EtherCat	195260
179159	EtherNet/IP	
179160	ProfiNet	
179161	Modbus TCP	
179162	DeviceNet	
179163	Profibus DP	

Table 2-7. Available Option Cards

2.12 Rechargeable Battery Usage

The 882IS uses an optional, FM approved, rechargeable, IS6V2 battery (PN 180831). When the battery voltage on connector J3 reaches approximately 5.55 volts, the indicator display shows ***Low Battery Life Replace or Charge***. Replace/recharge the battery when this warning is displayed to prevent data loss before a complete shutdown. Battery life will vary depending on use and power saving mode. To preserve battery life, disconnect the battery when not in use.

> **Note** *Even if the 882IS is turned off, the indicator still draws a small amount of power while connected.*

Detailed information on IS6V2 battery pack can be found in the installation addendum (PN 194893).

2.13 Replacement Parts
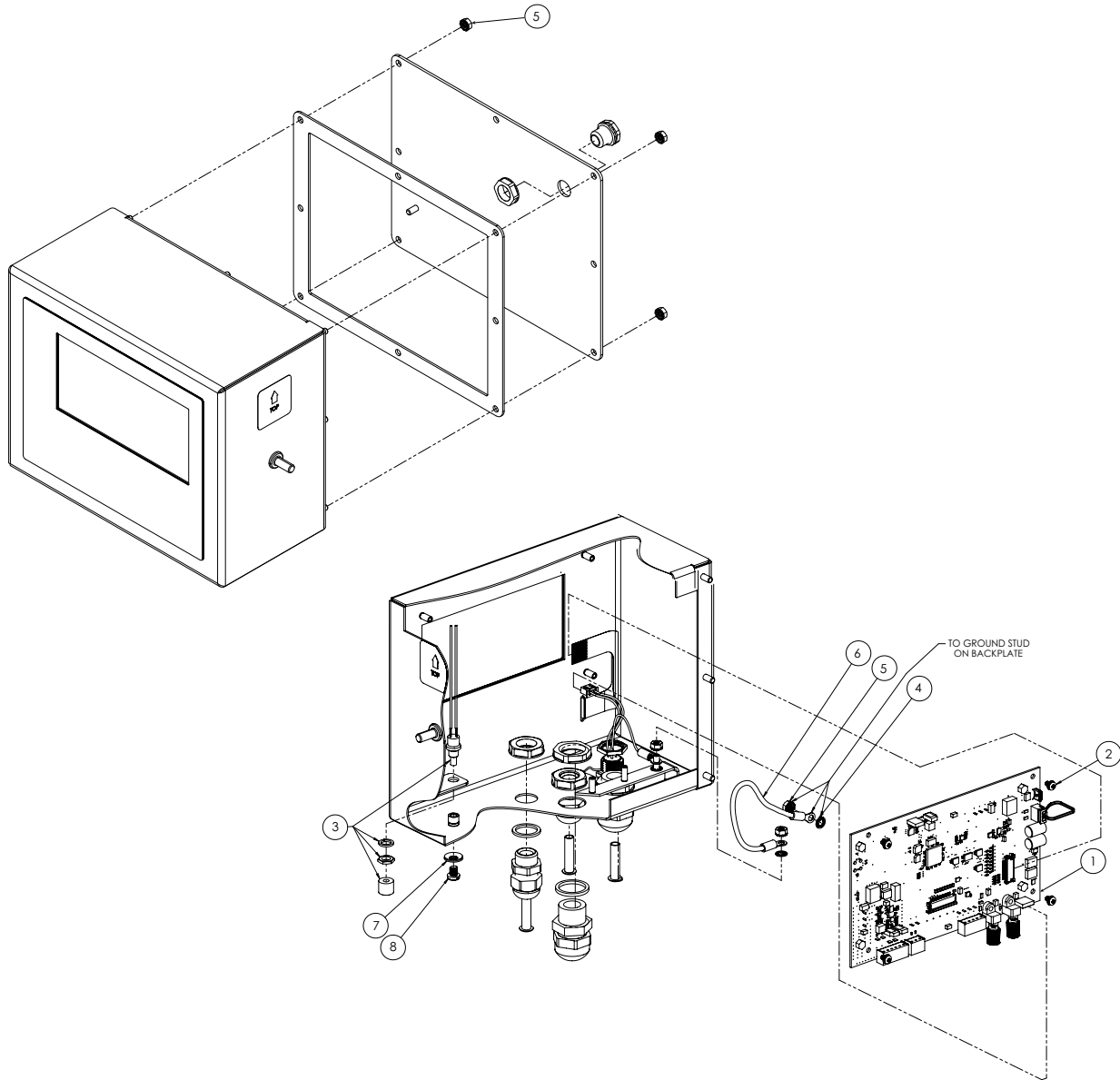
Figure 2-15. 882IS Indicator Parts Drawing

Item No.	Part No.	Description	177707 882IS Plus Qty	180829 882IS Qty
1	174791	Board Assembly, CPU 882IS Display, ROHS Compliant	1	1
2	180824	Machine Screw, Phillips Pane Head 18-8 sst	4	4
3	44845	Setup Switch Assembly	1	1
4	180856	Washer, M4 Internal Tooth SST	3	3
5	180826	Nut, Kep External Tooth Lock Washer 18-8 SST	7	7
6	15601	Ground Wire 6 inch w/ Number 8 Eye Connector	1	1
7	46381	#10 Bonded Sealing Washer, 18-8 Stainless Steel	1	1
8	180861	Screw, Machine Slotted Drilled Cheese Head, SST	1	1

Table 2-8. 882IS Replacement Parts

3.0   Configuration

To configure the 882IS indicator, the indicator must be placed in setup mode. The setup switch is accessed through a small hole on the bottom of the enclosure. Insert a non-conductive tool into the access hole and press the setup switch to put the indicator into setup mode.*Scale* displays.

> **IMPORTANT** *Use caution when inserting the non-conductive tool into the bottom of the enclosure. Only press the tool in about 3/4 inch (19 mm) to engage the setup switch. Do not use excessive force that may damage the switch.*

> **Note** *If the audit trail is enabled, setup mode may be accessed by pressing* (MENU).

Figure 3-1. Bottom View – Setup Switch Access

When the indicator is placed in setup mode, the word **Scale** displays. The Scale menu is the first of eight second-level menus used for configuring the indicator. Detailed descriptions of these menus are given in Section 3.2.2 on page 25.

When setup is complete, press (MENU) to return to the weigh mode.

3.1   Configuration Methods

The 882IS indicator can be configured by using the front panel keys to navigate through a series of configuration menus or by sending commands or configuration data to the data communication port. Configuration using the menus is described in Section 3.2 on page 24.

Configuration using a data communication port can be accomplished using either the EDP command set (see Section 6.0 on page 53) or the Revolution configuration utility (see Section 5.2 on page 51).

3.2 User Setup Menu

The 882IS indicator can be configured using a series of menus accessed through the indicator front panel. Table 3-1 summarizes the functions of the user setup menu.

Audit	Setup	Test	Time & Date	Accumulator	Tare

Figure 3-2. 882IS Menu Layout

Menu	User Menu Function
Audit	Audit Trail - Displays the (LRV) legally relevant firmware version, configuration count and calibration count. See Section 3.2.1
Setup	Used to enter configuration mode, if audit trail is enabled. See Section 3.2.2 on page 25
Test	System test functions. See Section 3.3 on page 44
Time & Date	Used to view or set time and date. See Section 3.4 on page 44
Accumulator	View, print or clear the current accumulator value, if enabled. See Section 3.5 on page 44
Tare	Views the current tare value. See Section 3.6 on page 44

Table 3-1. 882IS Plus Menu Summary

The following sections provide graphic representations of the 882IS menu structures. In the actual menu structure, the settings under each parameter are arranged horizontally. To save page space, menu choices are shown in vertical columns. The factory default setting appears at the top of each column in **bold** letters. Parameters shown surrounded by a dotted-line box only appear under the special circumstances explained inside each box.

Most menu diagrams are accompanied by one or more tables that describe all parameters and parameter values associated with that menu.

3.2.1 Audit Menu

Audit

LRV1.00	Calibration	Configuration
	number	number
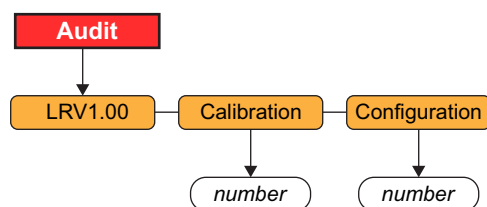
Figure 3-3. Audit Menu Structure

Menu	Description
LRV	Legally relevant firmware version (read only)
Calibration	Displays total calibration events (read only)
Configuration	Displays total configuration events (read only)

Table 3-2. Audit Menu Parameters

3.2.2 Setup Menu
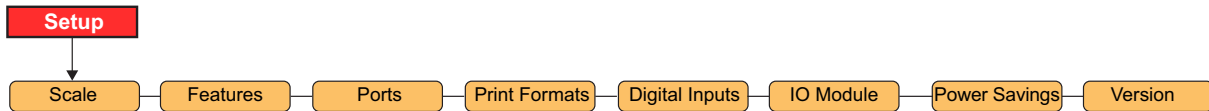
Figure 3-4. Setup Menu Structure

Menu	Description
Scale	Use the Scale menu to configure and calibrate the scale. See Figure 3-5 for the Scale menu structure
Features	Use the Features menu to set miscellaneous system attributes. See Figure 3-9 for the Features menu structure
Ports	Use the Ports menu to configure communication ports. See Figure 3-13 for the Ports menu structure
Print Format	Use the Print Format menu to set the print format used for header, gross, net and accumulator formats See Figure 3-16 for the Print Format menu structure
Digital Inputs	Use the Digital Inputs menu to assign digital output functions. See Figure 3-17 for the Digital IO menu structure
IO Module	Use the IO Module menu to configure the IO module features (if installed). See Figure 3-22 for the IO Module menu structure
Power Savings	Use the power savings menu to configure the power saving mode, wake threshold, backlight control and battery support
Version	Use the Version menu to display the installed firmware version number. See Figure 3-23 for the Version menu structure

Table 3-3. Setup Menu Parameters

3.2.3 Scale Menu
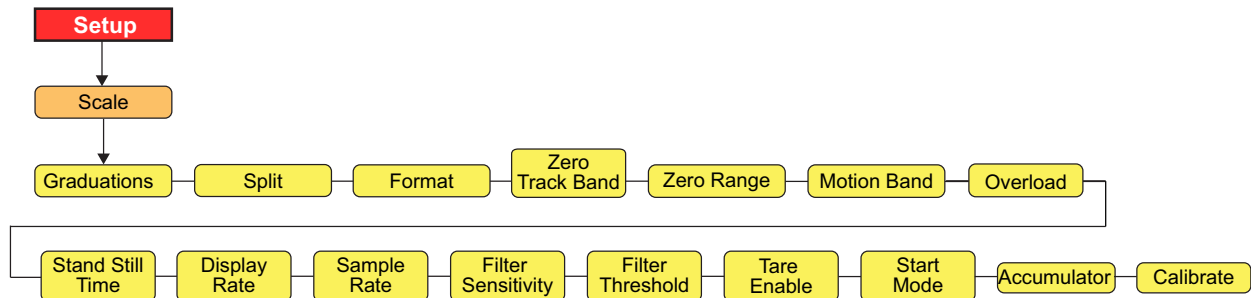
Figure 3-5. Scale Menu Structure

Menu	Choices	Description
Graduations	**10000** 1-100000	Graduations – specifies the number of full scale graduations if Split=OFF. (For multi-range and multi-interval scales (SPLIT is not Off), the Graduations value is derived from the capacity and display divisions specified for the range or interval.) The value entered must be in the range 1–100000 and should be consistent with legal requirements and environmental limits on system resolution. To calculate Graduations, use the formula: Graduations = *Capacity / Display Divisions*. Display divisions are specified under the Format submenu.
Split	**OFF** 2RNG 3RNG 2INTVL 3INTVL	Multi-range/Interval – specifies whether the scale is full-range (OFF), multi-range (2RNG, 3RNG), or multi-interval (2INTVL, 3INTVL). For multi-range and multi-interval scales, see the submenu shown in Figure 3-7 and parameter descriptions in Table 3-6.
Format	**Primary** Format	See Figure 3-7 for menu structures. For standard scales see "*If SPLIT = OFF*", for multi-range/interval scales see "*If SPLIT = 2RNG, 3RNG, 2INTVL, or 3INTVL*" or secondary format.
Zero Track Band	**0** 0.0-100	Zero Track Band – automatically zeros the scale when within the range specified, as long as the weight is within the Zero Range and scale is at standstill. Specify the zero tracking band in ± display divisions. The maximum legal value varies depending on local regulations.

Table 3-4. Scale Menu Parameters

Menu	Choices	Description
Zero Range	**1.900000** 0.0-100	Zero Range – selects the range within which the scale can be zeroed. The 1.900000 default value is ±1.9% around the calibrated zero point, for a total range of 3.8%. Indicator must be at standstill to zero the scale. Maximum legal value varies depending on local regulations.
Motion Band	**1** 0-100	Motion Band – sets the level, in display divisions, at which scale motion is detected. If motion is not detected for the time defined by the standstill parameter, the standstill symbol lights. Some operations, including print, tare, and zero, require the scale to be at standstill. Maximum legal value varies depending on local regulations. If this parameter is set to 0 the standstill annunciator is always lit; operations normally requiring standstill (zero, tare, print) are performed regardless of scale motion. If 0 is selected, Zero Track Band must also be set to 0.
Overload	**FS+2%** FS+1D FS+9D FS FS+Percentage	Overload – Determines the point at which the display blanks and an out-of-range error message is displayed. Maximum legal value varies depending on local regulations. If FS+Percentage is selected, a sub-menu is enabled. At FS+Percentage, press the down arrow to access the *Enter Percentage* parameter. Press the down arrow at Enter Percentage to view the current value. Edit as needed. Values are 0.0 - 150.0
Standstill Time	**10** 1-65535	Standstill Time – specifies the length of time the scale must be out of motion, in 0.1-second intervals, before the scale is considered to be at standstill.
Display Rate	**1** 1-80	Display update rate – Specifies the display update rate, in the number of 100-millisecond intervals between updates.
Sample Rate	**60HZ** 120HZ 7.5HZ 15HZ 30HZ	Sample rate – Selects measurement rate, in samples per second, of the analog-to-digital converter. Lower sample rate values provide greater signal noise immunity. A setting of 120 Hz may be too fast to provide the desired stability in some static weighing applications.
Filter Sensitivity	**LIGHT** MEDIUM HEAVY	Digital filtering sensitivity – the amount of influence the current A/D cycle has on the running averaged value. The Light setting will respond quicker to an applied weight to immediately impact the displayed value. Medium and Heavy settings are for applications where weighing times are longer and expected weight changes are larger.
Filter Threshold	**0** 0-99999	Digital filter cutout threshold – controls the response of the filter and must be set above the noise disturbances in the system. Value is in grads. If set to zero there is no filtering.

Tare Enable	**BOTH**
	NOTARE
	PBTARE
	KEYED
		Tare function – Enables or disables push-button and keyed tare.
		    BOTH – Both push-button and keyed tares are enabled
		    NOTARE – No tare allowed (gross mode only)
		    PBTARE – Push-button tares enabled
		    KEYED – Keyed tare enabled

Start Mode	**GO**
	DELAY
		Start mode.
		    GO - The indicator goes into operation immediately after a brief power up display test.
		    DELAY - The indicator performs a power up display test, then enters a 30-second warm up period. If no motion is detected during the warm up period, the indicator becomes operational when the warm up period ends; if motion is detected, the delay timer is reset and the warm up period repeated.

Accumulator	**OFF** ON	Accumulator – specifies if the scale accumulator is enabled or disabled. If enabled, accumulation occurs every time a print operation is performed, while the weight is above zero, as long as the weight returns to a value lower than the threshold between print operations.
Calibrate	**WZERO** WVAL WSPAN WLIN REZERO LAST TEMP	Calibration – See Figure 3-8 for descriptions, and see Section 4.0 for calibration procedures.

Table 3-4. Scale Menu Parameters (Continued)

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3.2.4 Scale Format Menu - if Split = Off
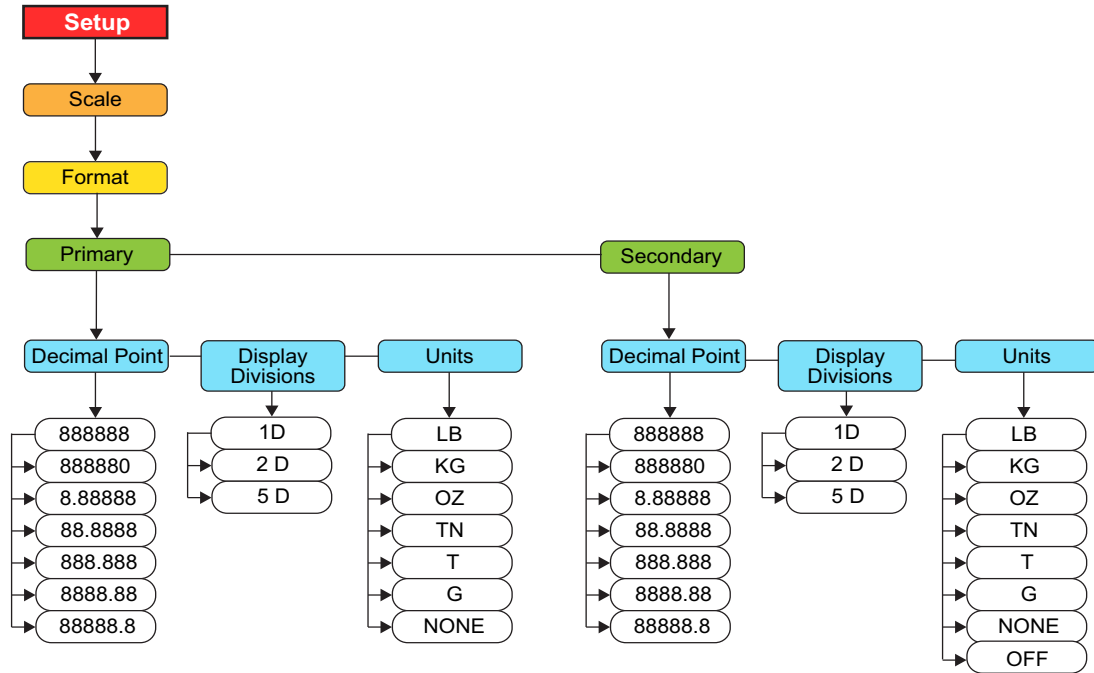
Figure 3-6. Format Menu Structure

Menu	Choices	Description
Primary	**Decimal Point** Display Divisions Units	Primary Units – Settings determine the scale capacity and specifies the decimal point, display division and units used
Secondary	**Decimal Point** Display Divisions Units	Secondary Units – Settings determine the Secondary, or Alternate, units value, decimal location, and display division size

Decimal Point	**888888**
	888880
	8.88888
	88.8888
	888.888
	8888.88
	88888.8
		Decimal Point Location – when combined with the display divisions, specifies the location of the decimal point or dummy zeroed in the unit display
		    Defaults:
		      Primary – 888888
		      Secondary – 88888.8

Display Divisions	**1D**
	2D
	5D
		Display Divisions – when combined with the decimal point location, specifies the minimum division size for the displayed weight
		Example: (88888.8 X 1D) X 5000 grads = 500 lb scale, counting by 1
		Defaults:
		  Primary – 1D
		  Secondary – 5D

Units	LB
	KG
	OZ
	TN
	T
	G
	NONE
	OFF
		Units – Specifies units for displayed and printed weight
		      LB = pound – Primary default
		      KG = kilogram – Secondary default
		      OZ = ounces
		      TN = short ton
		      T = metric ton
		      G = gram
		      NONE = no units icon is shown on the display and no units text is included in print or stream output
		      OFF = prevents the 882IS from displaying secondary units

Table 3-5. Format Menu Parameters

3.2.5 Scale Format Menu - if split = 2 RNG, 3 RNG, 2 INTVL, 3 INTVL
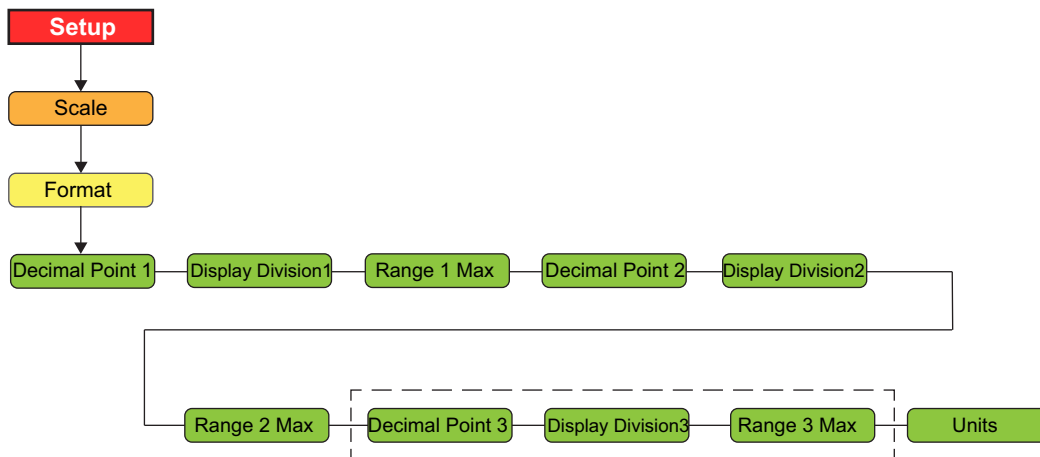
Figure 3-7. Split Format Menu Structure

Menu	Choices	Description

Decimal Point-1
Decimal Point-2
Decimal Point-3
	888888
	888880
	8.88888
	88.8888
	888.888
	8888.88
	88888.8
		Decimal Point Location – Specifies the location of the decimal point or dummy zeroed in the unit display
		Defaults:
		  Decimal point 1 - 888888
		  Decimal point 2 - 88888.8
		  Decimal point 3 - 8888.88

Display Divisions 1
Display Divisions 2
Display Divisions 3
	1D
	2D
	5D
		Display Divisions – when combined with the decimal point location, specifies the minimum division size for the displayed weight
		Defaults:
		  Display divisions 1 - 1D
		  Display divisions 2 and display divisions 3 - 5D

Range 1 Max Range 2 Max Range 3 Max	Decimal	Range Max - specifies the upper weight limit of the given interval or range Defaults: Range 1 max - 2000.0 Range 2 max - 5000.0 Range 3 max - 10000.0

Units	
	LB
	KG
	OZ
	TN
	T
	G
	NONE
		Units – Specifies units for displayed and printed weight
		    LB = pound
		    KG = kilogram
		    OZ = ounces
		    TN = short ton
		    T = metric ton
		    G = gram
		    NONE = no unit icon is shown on the display and no units text is included in print or stream format

Table 3-6. Split Format Menu Parameters

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3.2.6 Calibration Menu
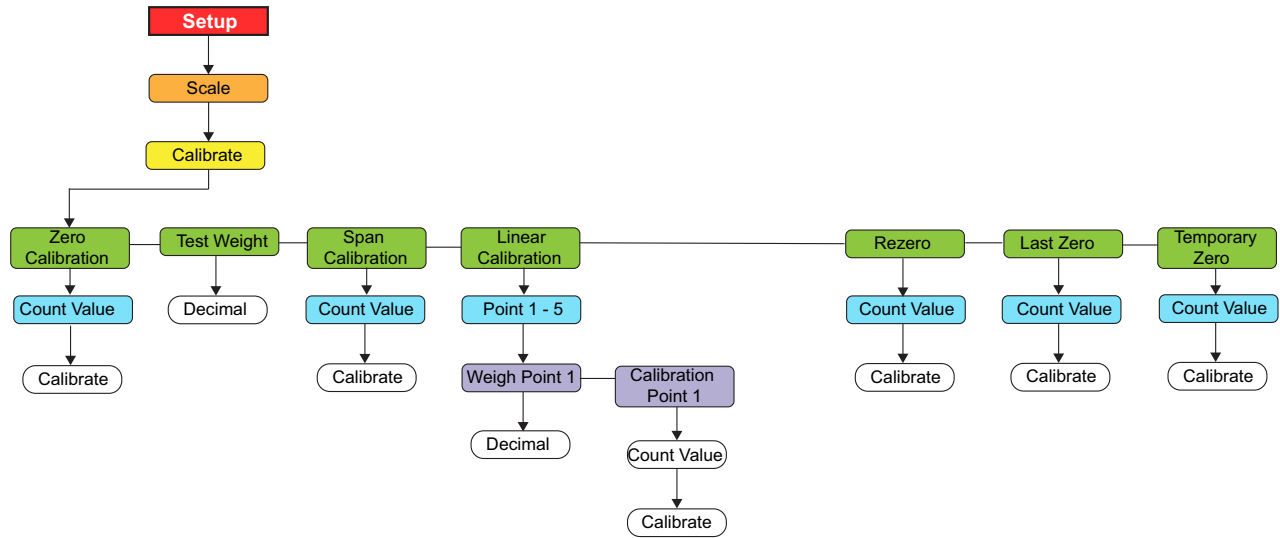
Figure 3-8. Calibration Menu Structure

Menu	Choices	Description
Zero Calibration	—	Press **Enter** to display previous A/D raw counts. Press **Enter** again to perform a zero calibration, press **Menu** to cancel
Test Weight	0.00001 — 9999999.0	Press **Enter** to display and edit the test weight value
Span Calibration	—	Press **Enter** to display previous A/D raw counts. Press **Enter** again to perform a span calibration, press **Menu** to cancel
Linear Calibration	Point-1 — Point-5	Press **Enter** to display and edit test weight and calibration values for up to five linearization points. Perform linear calibration only after Zero calibration and Span calibration have been performed
Rezero	—	Press **Enter** to remove an offset value from the zero and span calibrations. ***Note: Use Rezero only after Zero Calibration and Span Calibration have been set. See Section 4.1 on page 45 for more information about using Rezero.***
Last	—	Press **Enter** to recall the last established push button zero to allow calibration without removing weight from scale. See Section 4.2 on page 47.
Temporary Zero	—	Press **Enter** to temporarily zero the displayed weight from a loaded scale. See Section 4.3 on page 47.

Table 3-7. Calibration Menu Parameters

3.2.7   Features Menu
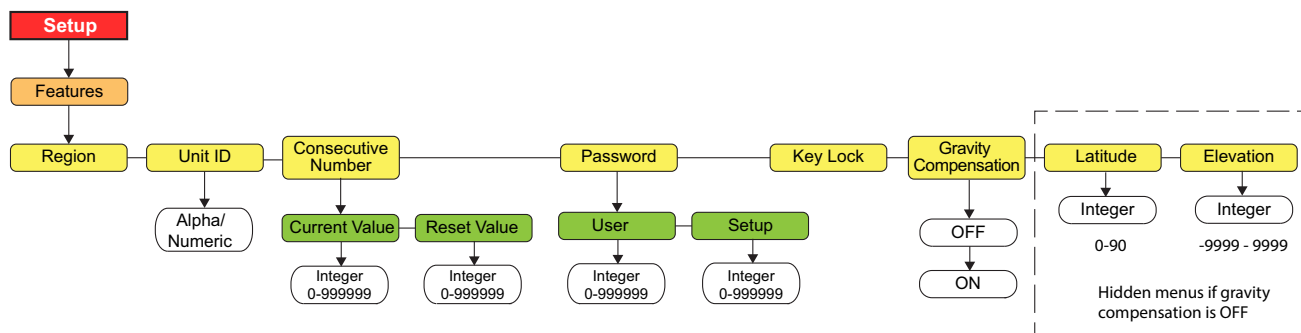
Figure 3-9. Features Menu

Menu	Choices	Description
Region	**Regulation** Regulation Word Decimal Format	Selects regional settings. See Level 3 sub menus, Figure 3-10 on page 31
Unit ID	000000	Sets the unit ID, a string of up to 6 ASCII characters, which can be set via serial port or keypad. This will be used in place of the <UID> token in a print format. The default value is "1."
Consecutive Number	**Current Value** Reset Value	Allows sequential numbering for print operations. The consecutive number value is incremented following each print operation that includes <CN> in the ticket format. When the consecutive number is reset, it is reset to the Reset value specified in the parameter.
Password	**User** Setup	Sets a password to access the Setup menu, or certain sub-menus in the User menu. Specify a non-zero value to enable the password. The Setup password protects the entire Setup menu, and when set is required even when attempting entry into the Setup menu using the setup switch. The User password restricts access to the Time/Date and Accumulator sub-menus in the User menu. Passwords can be overridden by loading new firmware, or entering 999999. ***Note: Overriding passwords will clear configuration and calibration settings. To preserve settings (i.e., ID information), use Revolution software to upload the data to a PC, then download it back to the 882IS after the password override is performed.***
Keylock	**Zero** Gross Net Units Print Tare Menu Numeric Keypad Function Key	Disables the listed keys. Select Lock to disable the key, and Unlock to enable the key
Gravity Compensation	**Off** On	Gravity compensation enable/disable
Latitude	**45** 0-90	Press **Enter** to display and edit the latitude in degrees for gravity adjustment to calibration (Gravity compensation must be set to On)
Elevation	**345** -9999 to +9999	Press **Enter** to display and edit the elevation in meters for gravity adjustment to calibration (Gravity Compensation must be set to On)

Table 3-8. Features Menu Parameters

3.2.8 Region Menu
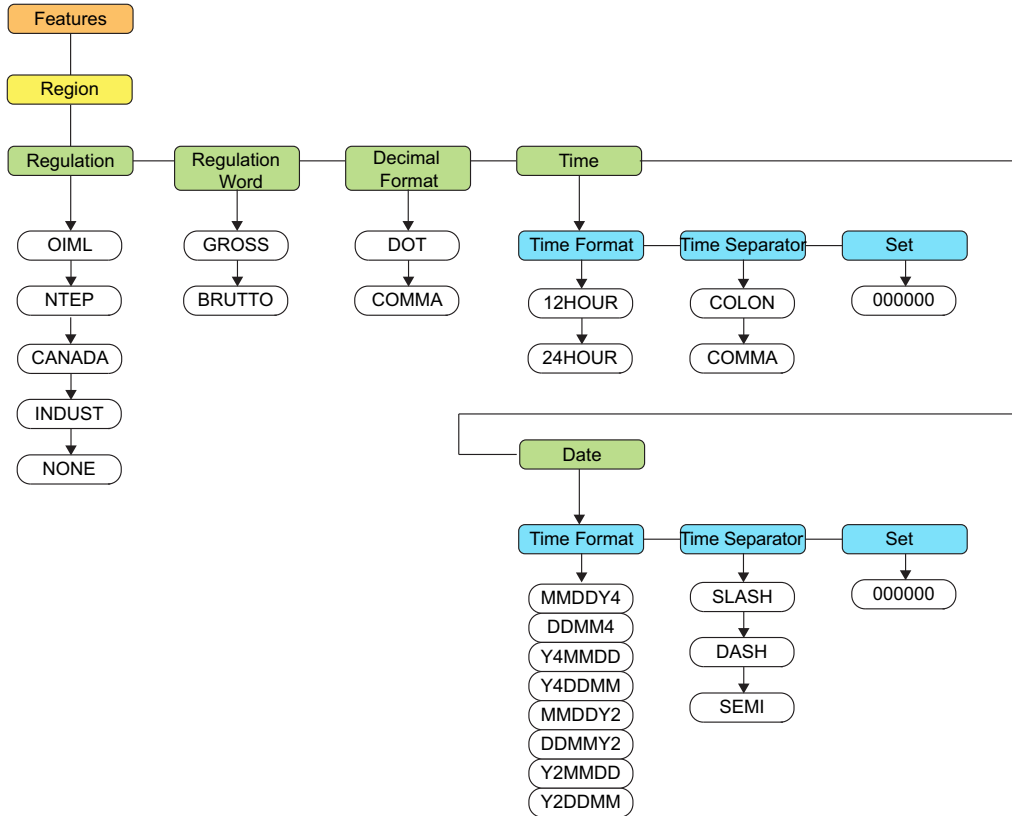
Figure 3-10. Region Menu Structure

Menu	Choices	Description
Regulation	OIML **NTEP** Canada Industrial None	Regulatory mode – Specifies the regulatory agency having jurisdiction over the scale site ***Note:The value specified for Regulation affects the function of the front panel Tare and Zero keys.*** • OIML, NTEP, and CANADA modes allow a tare to be acquired at any weight greater than zero. NONE allows tares to be acquired at any weight value. • OIML, NTEP, and CANADA modes allow a tare to be cleared only if the gross weight is at no load. NONE allows tares to be cleared at any weight value. • NTEP and OIML modes allow a new tare to be acquired even if a tare is already present. In CANADA mode, the previous tare must be cleared before a new tare can be acquired. • NONE, NTEP and CANADA modes allow the scale to be zeroed in either gross or net mode as long as the current weight is within the specified Zero Range. In OIML mode, the scale must be in gross mode before it can be zeroed; pressing the **Zero** key in net mode will zero the scale and clear the tare, if weight is within the specified Zero Range. • Selecting a particular Regulation will default the sub-parameters items to match. The user can then change the sub-parameters as they wish NOTE: changing the sub-parameters may violate local regulations.
Regulation Word	**Gross** Brutto	Sets the term displayed when weighing in gross mode. Selecting BRUTTO replaces the *Gross* annunciator with *Brutto*
Decimal Format	**Dot** Comma	Specifies whether decimal numbers are displayed using a period (DOT) or a comma
Time	**Time Format** Time Separator Set	Allows selection of time format and time separator character
Date	**Date Format** Date Separator Set	Allows selection of date format and date separator character

Table 3-9. Region Menu Parameters

3.2.9   Region - Regulation - Indust
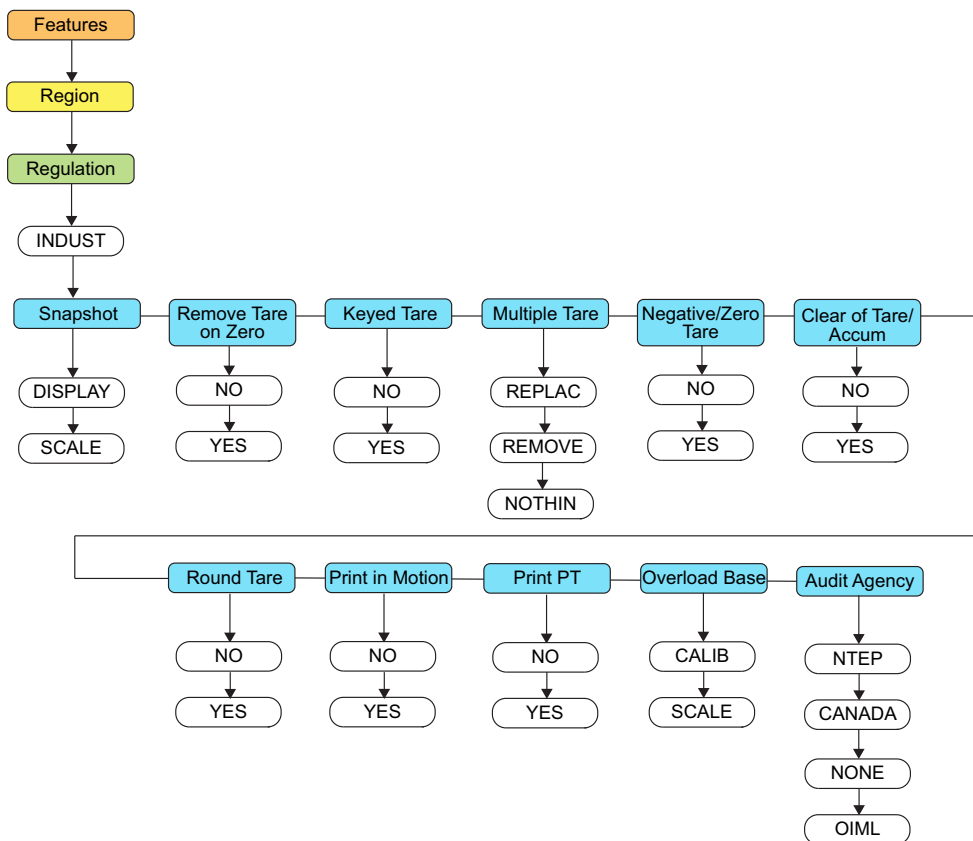
Figure 3-11. Region Regulation Menu Structure

Menu	Choices	Description
Snapshot	**Display** Scale	Display or scale weight source
Remove Zero Tare	**No** Yes	Remove tare on **Zero**
Keyed Tare	Yes No	Always allow keyed tare
Multiple Tare	**Replace** Remove Nothing	Replaces existing Tare when the Tare key is pressed
Negative/Zero Tare	**No** Yes	Allow negative or zero tare
Clear of Tare/Accumulator	**Yes** No	Allow **Clear** key to clear tare/accumulator
Round Tare	**Yes** No	Round semi-automatic (pushbutton) tare to the nearest display division
Print in Motion	**No** Yes	Allow print while in motion
Print Preset Tare	**No** Yes	Add PT to keyed tare print
Overload Base	**Calibrate** Scale	Uses either the calibrated zero or the scale zero for overload calculation
Audit Agency	**NTEP** CANADA NONE OIML	Regulatory agencies

Table 3-10. Region Regulation Parameters

3.2.10   Keylock Menu
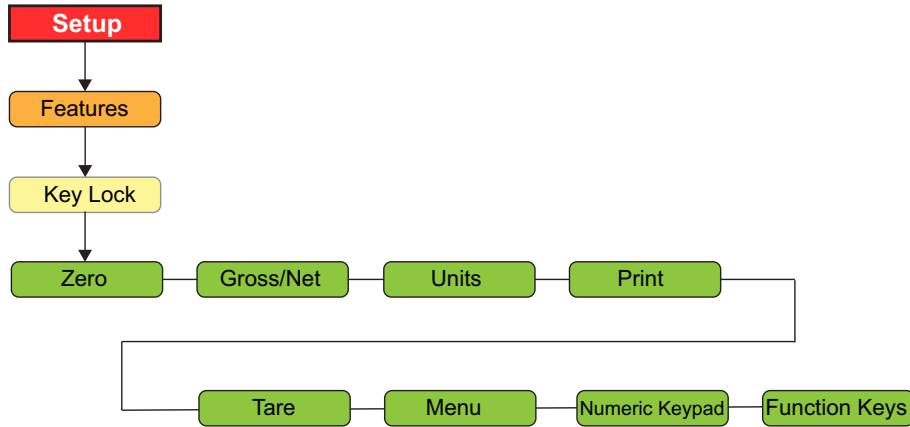
Figure 3-12. Keylock Menu Structure

Menu	Description
Zero	Lock or unlock individual keys; *Settings:* **UNLOCK** *(default), LOCK*
Gross/Net	***NOTE: The Num parameter locks or unlocks all of the numeric keys. The numeric keys cannot be individually controlled.***
Units	
Print	
Tare	
Menu	
Numeric Keypad	
Function Keys	

Table 3-11. Keylock Menu Parameters

3.2.11   Setup Ports Menu
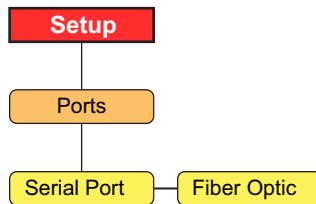
Figure 3-13. Ports Menu Structure

See for Serial Ports menu choices and for Fiber Optic Ports menu choices.

3.2.12 Ports - Serial Ports Menu
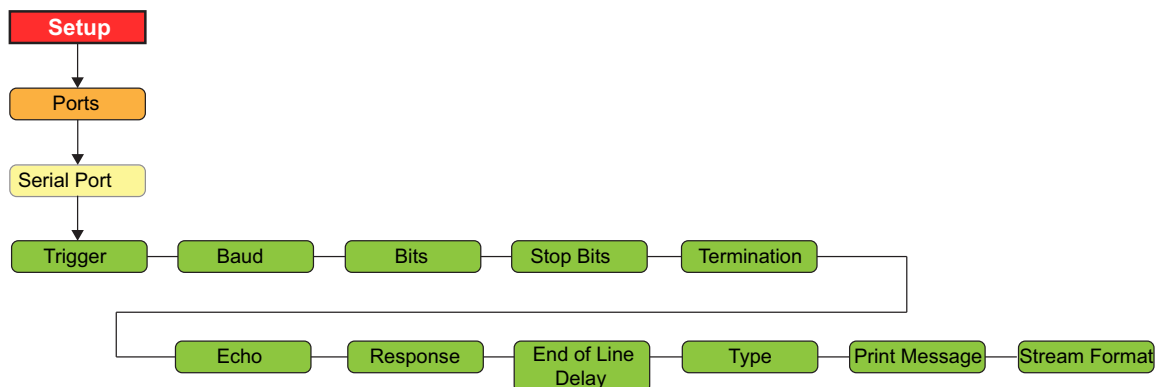
Figure 3-14. Serial Ports Menu Structure

Menu	Choices	Description
Trigger	Command	Setting Trigger to command allows operation of EDP commands and can print
	Stream Industrial	Stream Industrial scale data – data is updated up to the configured sample rate. Allows operation of EDP commands and printing
	Stream Legal for Trade	Stream Legal for Trade data – data is updated at the configured display update rate. Allows operation of EDP commands and printing
	Remote	Configures the port to operate as a serial scale input. See Menu Structure if Trigger is set to REMOTE below
Baud	**9600** 19200 28800 38400 57600 115200 1200 2400 4800	Port baud rate
Bits	**8None** 7Even 7Odd	Port data bits and parity
Stop Bits	**1** 2	Stop Bits – selects the number of stop bits transmitted and the number of stop bits expected to be received by the port
Termination	**CR/LF** CR	Termination – selects the termination character(s) for data sent from the port carriage return (CR) line feed (LF)
Echo	**On** Off	Specifies whether characters received by the port are echoed back to the sending unit
Response	**On** Off	Response – specifies whether the port transmits replies to serial commands
End of Line Delay	**0** 0-255	End of Line Delay - specifies, in 0.1 second intervals, the delay between transmitted lines of data
Type	422	Specifies the physical type of serial
Print Message	**On** Off	Print message – displays a message when a print is transmitted on this port
Stream Format	<2><P><W7.> <U><M><S> <CR><LF>	Stream format – specifies the stream format used for streaming output of scale data (Trigger=STRLFT or STRIND) or specifies the expected input for a serial scale (Trigger=REMOTE)

Table 3-12.   Serial Ports Menu Parameters

3.2.13 Ports - Fiber Optics Menu
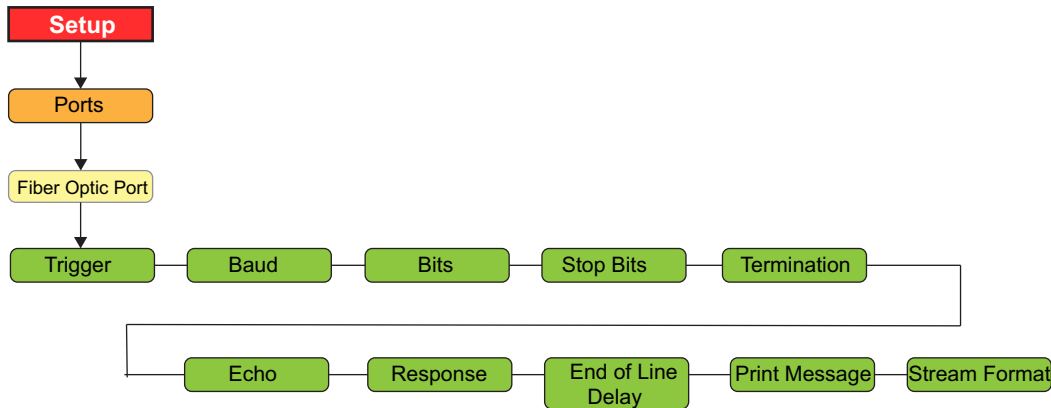
Figure 3-15. Fiber Optics Menu Structure

Menu	Choices	Description
Trigger	Command	Setting Trigger to command allows operation of EDP commands and can print
	Stream Industrial	Stream Industrial scale – data is updated up to the configured sample rate. Allows operation of EDP commands and printing
	Stream Legal for Trade	Stream Legal for Trade – data is updated at the configured display update rate. Allows operation of EDP commands and printing
	Remote	Configures the port to operate as a serial scale input. See Menu Structure if Trigger is set to REMOTE below
Baud	**9600** 19200 28800 38400 57600 115200 1200 2400 4800	Port baud rate
Bits	**8None** 7Even 7Odd	Port data bits and parity
Stop Bits	**1** 2	Stop Bits – selects the number of stop bits transmitted and the number of stop bits expected to be received by the port
Termination	**CR/LF** CR	Termination – selects the termination character(s) for data sent from the port
Echo	**On** Off	Specifies whether characters received by the port are echoed back to the sending unit
Response	**On** Off	Response – specifies whether the port transmits replies to serial commands
End of Line Delay	**0** 0-255	End of Line Delay - specifies, in 0.1 second intervals, the delay between transmitted lines of data
Print Message	**Off** On	Print message – displays a message when a print is transmitted on this port
Stream Format	<2><P><W7.> <U><M><S> <CR><LF>	Stream format – specifies the stream format used for streaming output of scale data (Trigger=STRLFT or STRIND) or specifies the expected input for a serial scale (Trigger=REMOTE).

Table 3-13.   Fiber Optics Menu Parameters

3.2.14   Print Format Menu

See for information about custom print formatting.
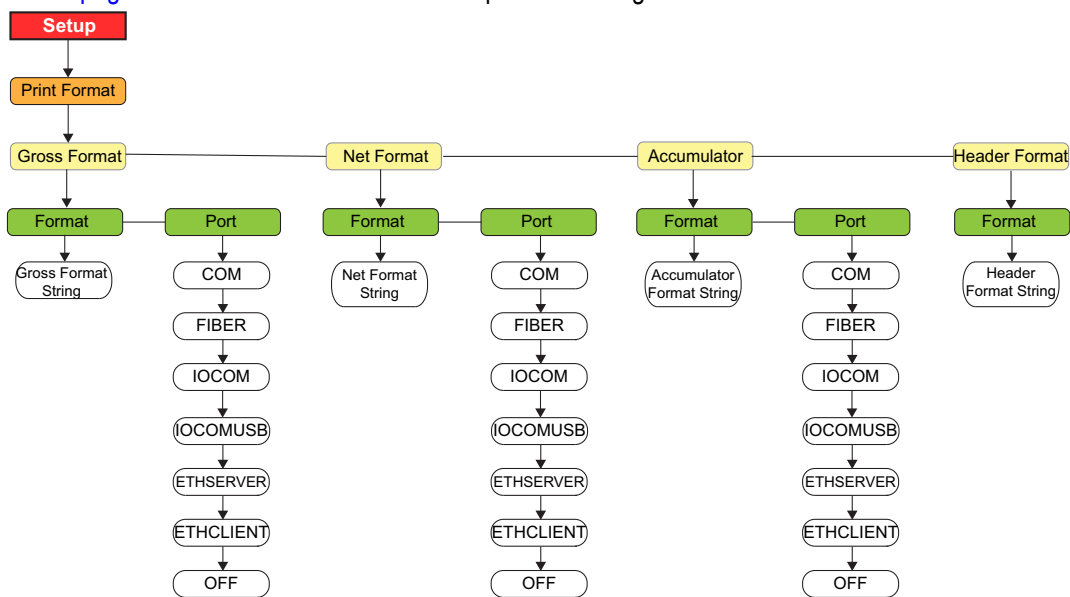
Figure 3-16. Print Format Menu Structure

Menu	Choices	Description
Gross Format	Format	Alphanumeric, Max Length: 1000 Weigh mode, no tare in system, GROSS<G><NL2><TD><NL>
	Port	The communications port the print data will be sent to: COM, FIBER, IOCOM, IOCOMUSB, ETHSERVER, ETHCLIENT, OFF.
Net Format	Format	Alphanumeric, Max Length: 1000 Weigh mode, tare in system, GROSS<G><NL>TARE<SP><T><NL>NET<SP2><N><NL2><TD><NL>
	Port	The communications port the print data will be sent to: COM, FIBER, IOCOM, IOCOMUSB, ETHSERVER, ETHCLIENT, OFF
Accumulator	Format	Alphanumeric, Max Length: 1000 Accumulator enabled and displayed, ACCUM<A><NL><DA><TI><NL>
	Port	The communications port the print data will be sent to: COM, FIBER, IOCOM, IOCOMUSB, ETHSERVER, ETHCLIENT, OFF
Header Format	Format	Alphanumeric, Max Length: 300
		Must be inserted into other print format COMPANY NAME<NL>STREET ADDRESS<NL>CITY, ST ZIP<NL2>

Table 3-14. Print Format Menu Parameters

3.2.15   Digital Inputs Menu
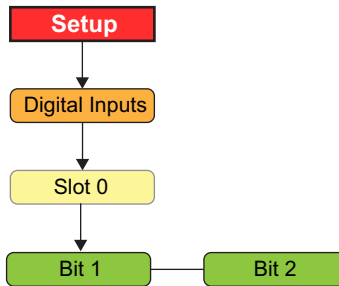
Figure 3-17. Digital Inputs Menu Structure

Menu	Choices	Description
Level 2 submenus		
Slot 0	Bit 1 Bit 2	Select the bit to set the function
Slot 0 submenu		

Bit 1
Bit 2
	Off
	Print
	Zero
	Tare
	Units
	Clear
	DSPTAR
	DSPACC
	NT/GRS
	CLRCN
	KBDLOC
	GROSS
	NET
	PRIM
	SEC
	CLRTAR
	CLRACC
		Specifies the function activated by Bits 1–2.
		  • PRINT, ZERO, TARE, UNITS, NT/GRS provide the same functions as the five front panel keys
		
		  • DSPTAR displays the tare
		  • DSPACC displays the current accumulator value
		
		  • CLRCN resets the consecutive number to the value specified on the Reset value parameter (Features menu)
		  • KBDLOC locks the keyboard
		  • GROSS, NET, PRIM and SEC select gross or net weight display, and primary or secondary units display modes
		
		  • CLRTAR clears the current tare
		  • CLRACC clears the accumulator

Table 3-15. Digital Input Menu Parameters

3.2.16 IO Module Menu

IO Module - Ports Menu
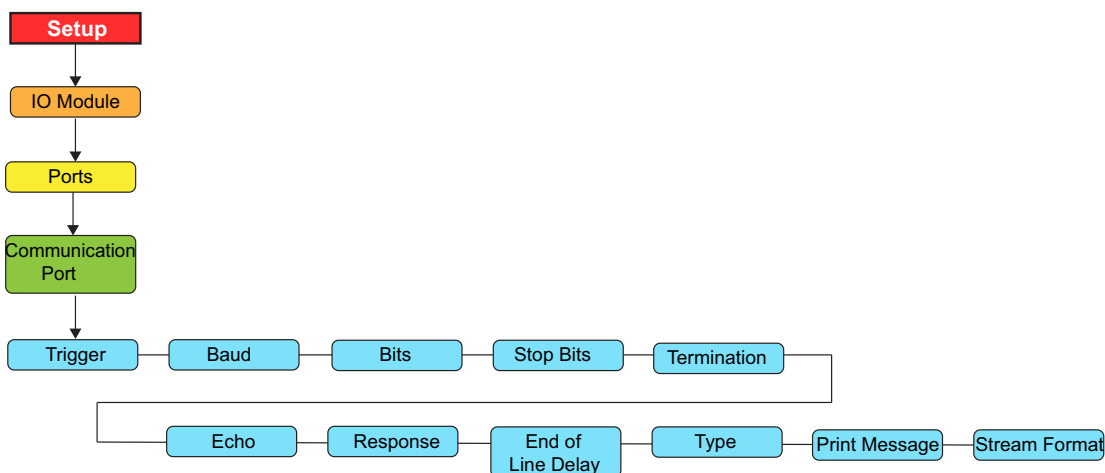
Figure 3-18. IO Module Ports Menu Structure

Menu	Choices	Description
Trigger	Command	Setting Trigger to command allows operation of EDP commands and can print
	Stream Industrial	Stream Industrial scale – data is updated up to the configured sample rate. Allows operation of EDP commands and printing
	Stream Legal for Trade	Stream Legal for Trade – data is updated at the configured display update rate. Allows operation of EDP commands and printing
	Remote	Configures the port to operate as a serial scale input. See Menu Structure if Trigger is set to REMOTE below
Baud	**9600** 19200 28800 38400 57600 115200 1200 2400 4800	Port baud rate
Bits	**8None** 7Even 7Odd	Port data bits and parity
Stop Bits	**1** 2	Stop Bits – selects the number of stop bits transmitted and the number of stop bits expected to be received by the port
Termination	**CR/LF** CR	Termination – selects the termination character(s) for data sent from the port
Echo	**On** Off	Specifies whether characters received by the port are echoed back to the sending unit
Response	**On** Off	Response – specifies whether the port transmits replies to serial commands
End of Line Delay	**0** 0-255	End of Line Delay - specifies, in 0.1 second intervals, the delay between transmitted lines of data
Type	422	Specifies the physical type of serial
Print Message	**Off** On	Print message – displays a message when a print is transmitted on this port
Stream Format	<2><P><W7.> <U><M><S> <CR><LF>	Stream format – specifies the stream format used for streaming output of scale data (Trigger=Stream Legal for Trade or Stream industrial) or specifies the expected input for a serial scale (Trigger=REMOTE).

Table 3-16. IO Module Ports Menu Parameters

IO Module - USB
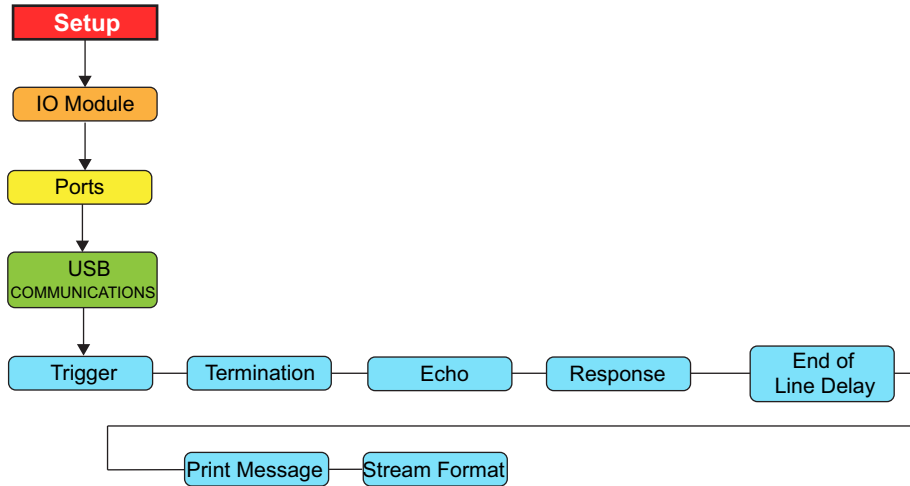
Figure 3-19. IO Module USB Menu Structure

Menu	Choices	Description
Trigger	Command	Setting Trigger to command allows operation of EDP commands and can print
	Stream Industrial	Stream Industrial scale – data is updated up to the configured sample rate. Allows operation of EDP commands and printing
	Stream Legal for Trade	Stream Legal for Trade – data is updated at the configured display update rate. Allows operation of EDP commands and printing
	Remote	Remote - Configures the port to operate as a serial scale input. See Menu Structure if Trigger is set to REMOTE below
Termination	**CR/LF** CR	Termination – selects the termination character(s) for data sent from the port
Echo	**On** Off	Specifies whether characters received by the port are echoed back to the sending unit
Response	**On** Off	Response – specifies whether the port transmits replies to serial commands
End of Line Delay	**0** 0-255	End of Line Delay - specifies, in 0.1 second intervals, the delay between transmitted lines of data
Print Message	**Off** On	Print message – displays a message when a print is transmitted on this port
Stream Format	<2><P><W7.> <U><M><S> <CR><LF>	Stream format – specifies the stream format used for streaming output of scale data (Trigger=Stream Legal for Trade or Stream industrial) or specifies the expected input for a serial scale (Trigger=REMOTE).

Table 3-17. IO Module USB Menu Parameters

IO Module - EtherNet
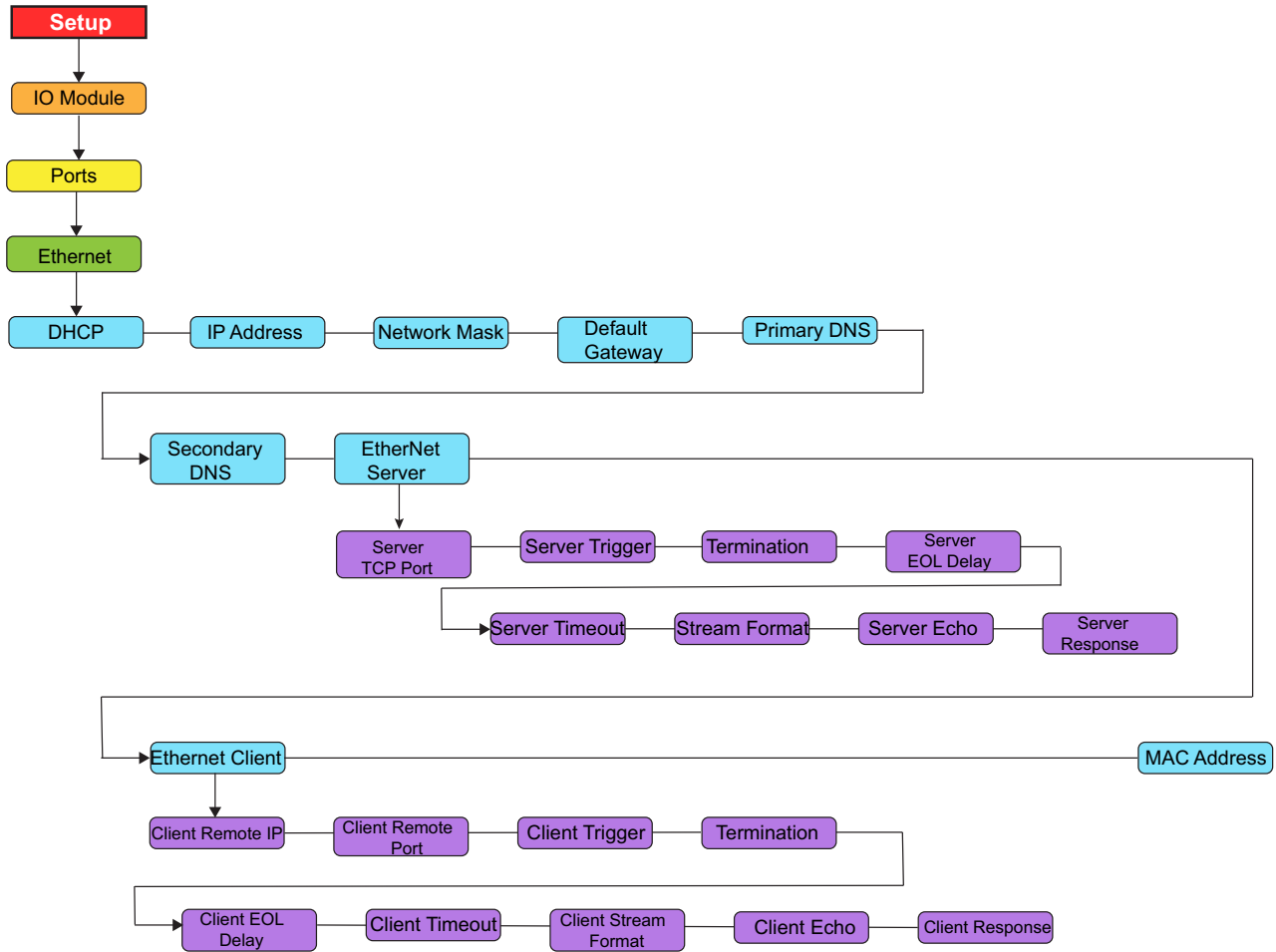
Figure 3-20. IO Module EtherNet Menu Structure

Menu	Description

DHCP	Dynamic Host Configuration Protocol; *Settings: ON (default), OFF*
	    If DHCP is *ON*, the five parameters below are configured and set automatically by the network's DHCP server;
	    If DHCP is *OFF*, the five parameters below must be manually configured as needed

IP Address	IP address *(000.000.000.000)*
Netmask	Netmask *(000.000.000.000)*
Default Gateway	IP address for the Default Gateway; *(000.000.000.000)*
Primary DNS	IP address for the primary DNS server; *(000.000.000.000)*
Secondary DNS	IP address for the secondary DNS server; *(000.000.000.000)*
EtherNet Server	See sub-menu parameters below
EtherNet Client	See sub-menu parameters below
Mac Address	The MAC address for this device; (Read Only)
Server/Client Sub-menu	
Client Remote IP Address	Client only: the IP address of the remote server of the IO module is connecting to *(000.000.000.000)*
Server TCP Port	The port on the 882IS IO module for a remote client to connect to
Server Trigger	
Termination	Selects the termination characters for data sent from the port
Server EOL Delay	Specifies, in 0.1 second intervals, the delay between transmitted lines of data

Table 3-18. IO Module EtherNet Menu Parameters

Menu	Description
Server Timeout	The connection is closed if there is no activity before the set time - 0 disables the inactivity disconnect. Enter value: 0-65535 seconds, **0 (default)**
Stream Format	Specifies the stream format used for streaming output of scale data (Trigger=Stream Legal for Trade or Stream industrial) or specifies the expected input for a serial scale (Trigger=REMOTE).
Server Echo	Specifies whether characters received by the port are echoed back to the sending unit; Settings: **OFF (default)**, ON
Server Response	Specifies whether the port transmits replies to serial commands; *Settings:* **ON (default)***, OFF* **NOTE: If an external device (such as a printer), that may transmit unexpected data (such as a paper low message), is connected to the 882IS the response parameter should be set to OFF to prevent a reply from the 882IS from confusing the external device.**
Client Remote Port	Client only: the TCP port number of the remote server of the IO module is connecting to; *Enter value: 1-65535, 1 (default)*
Client Trigger	Select the operation of the port; *Settings:* *COMMAND (default) – allows operation of EDP commands and will print* *STRIND – stream industrial scale – data is transmitted up to the configured A/D sample rate; Will also accept EDP commands and printing* *STRLFT – stream legal for trade scale data is transmitted at the configured display update rate; Will also accept EDP commands and printing*
Termination	Selects the termination character(s) for data sent from the port; *Settings: CR/LF (default), CR*
Client End of Line Delay	Specifies the delay between transmitted lines of data, in 0.1 second intervals; *Enter value: 0-255, 0 (default)*
Client Timeout	Connection is closed if there is no activity before the set time; 0 disables the inactivity disconnect; *Enter value: 0-65535 (seconds), 0 (default)*
Client Stream Format	Specifies the client stream format used for streaming output of scale data (Trigger=Stream Legal for Trade or Stream industrial) or specifies the expected input for a serial scale (Trigger=REMOTE).
Client Echo	Specifies whether characters received by the port are echoed back to the sending unit; *Settings: OFF (default), ON*
Client Response	Specifies whether the port transmits replies to serial commands; *Settings: ON (default), OFF* **NOTE: If an external device (such as a printer), that may transmit unexpected data (such as a paper low message), is connected to the 882IS the response parameter should be set to OFF to prevent a reply from the 882IS from confusing the external device.**

Table 3-18. IO Module EtherNet Menu Parameters (Continued)

IO Module - Option Card
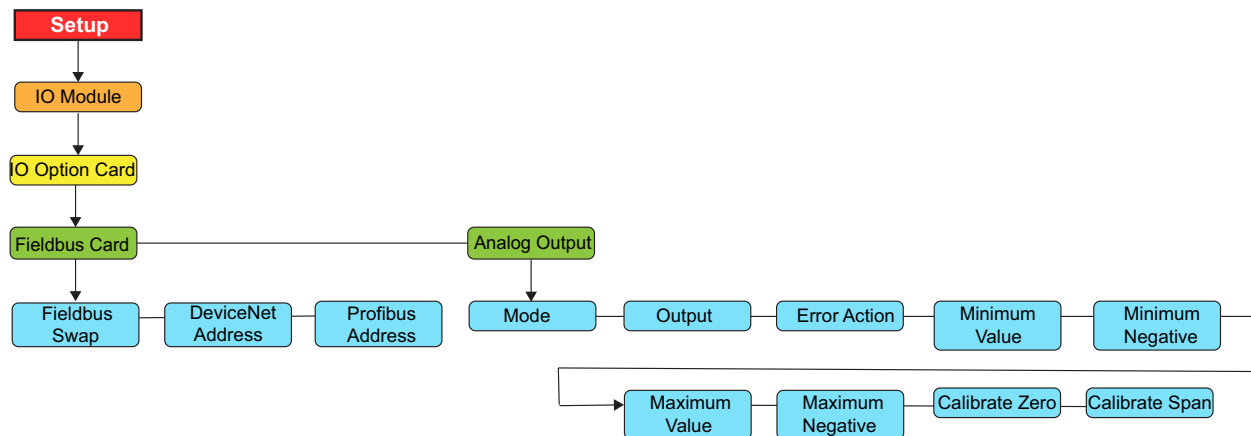
Figure 3-21. IO Module Option Card Menu Structure

Menu	Choice	Description
Fieldbus Card	Fieldbus Swap	Specifies byte-swapping used for the fieldbus card; Settings: NONE, BYTE, BOTH (Default for DeviceNet is **BYTE**; default for all other cards is **NONE)**
	DeviceNet Address	Is the address given to a DeviceNet option card. Range 1-64, **63** (default)
	Profibus Address	Is the address given to a Profibus option card. Range 1-126, **126** (default)
Analog Output	Mode	Mode – specifies the weight data tracked by the analog output; Settings: **GROSS** (default), NET
	Output 1-10V 0-20mA 4-20mA	Selects whether the analog output supplies voltage (**0-10 V - default**), current (0-20mA) or current (4-20mA).
	Error Action	Error Action – specifies how the analog output responds to system error conditions; Settings: • **FULLSC** (default) – set to full value (10 V or 20 mA) • HOLD – hold current value • ZEROSC – set to zero value (0 V or 4 mA)
	Minimum Value	Specifies the minimum weight value tracked by the analog output; enter value: 0–9999999, **000000** (default)
	Minimum Negative	Specify ON if the minimum weight (MIN parameter) is a negative value; Settings: **OFF** (default), ON
	Maximum Value	Specifies the maximum weight value tracked by the analog output; Enter value: 0–9999999, **10000** (default)
	Maximum Negative	Specify ON if the maximum weight (MAX parameter) is a negative value; Settings: **OFF** (default), ON
	Calibrate Zero	Calibrate Zero – edit the value to match the reading on the multimeter to perform a calibration
	Calibrate Span	Calibrate Span – edit the value to match the reading on the multimeter to perform a calibration

Table 3-19. IO Module Analog Output Option Card Menu Parameters

3.2.17 Power Savings Menu
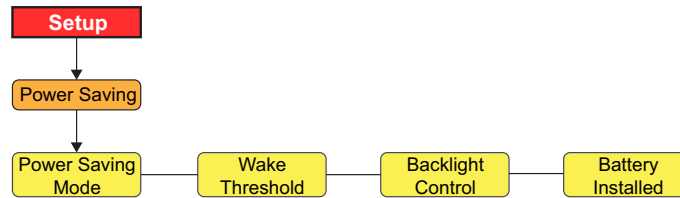
Figure 3-22. Power Savings Structure

Menu	Choices	Description
Level 2 submenus		
Power Saving Mode	Off Light Medium Aggressive	No power saving performed Turns off backlight Turns off backlight and blanks the display Turns off backlight, blanks the display and turns off the excitation If configured for NTEP and the Power Savings Mode is set to aggressive; a weight change will not wake the indicator. Only a key press or receipt of serial data will wake the indicator from NTEP Aggressive
Wake Threshold	0.0 - 9999999.0	Once asleep, if the primary weight goes above the value, the indicator wakes. A value of 0 prevents the indicator from waking due to a weight change. Only a keypress or serial command will wake the unit.
Backlight Control	On Off	Manually controls whether the backlight is on or off
Battery Installed	No Yes	Manually controls whether the indicator is being powered by a battery. Power saving functionality is only activated if the battery installed is set to yes

Table 3-20. Power Savings Menu Parameters

3.2.18 Version Menu

The Version menu is used to check the firmware version installed in the indicator and set the indicator configuration to factory defaults.
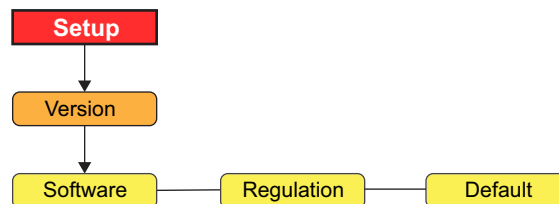
Figure 3-23. Version Menu Structure

Menu	Choices	Description
Software	VX.XX.XX	Displays firmware version number
Regulation	LVR X.XX	Displays the Legally Relevant firmware version number
Default	No Yes	Performs a reset of all the indicator parameters to factory default settings ***IMPORTANT** All configuration and load cell calibration data will be lost.*

Table 3-21. Version Menu Parameters

3.3 Test Menu
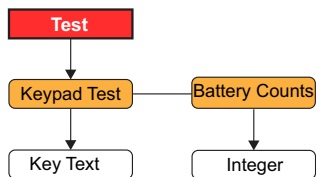
Figure 3-24. Test Menu Structure

Menu	Choices	Description
Keypad Test	--	Allows the 882IS and 882IS Plus keypad to be tested. Key presses are displayed and also transmitted on the COM port
Battery Counts	35064 (5.8V = 3/4 charge after barrier)	View the current battery voltage as counts. The value shown at left is approximate. Expect the voltage to drop as it passes through the protection barrier. The count value is an estimate of the battery voltage as measured at J3 (after the protection barrier) and is therefore not equal to the true battery voltage as measured at the battery terminals (inside the sealed battery box).

Table 3-22. Test Menu Parameters

3.4 Time and Date
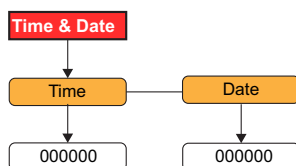
Figure 3-25. Time and Date Menu Structure

Menu	Choices	Description
Time	--	View or set the time
Date	--	View or set the date

Table 3-23. Time and Date Menu Parameters

3.5 Accumulator Menu
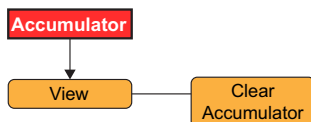
Figure 3-26. Accumulator Menu Structure

Menu	Choices	Description
View	--	Views the current accumulator value, if enabled
Clear Accumulator	--	Clears the current accumulator value, if enabled

Table 3-24. Accumulator Menu Parameters

3.6 Tare
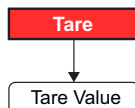
Figure 3-27. Tare Menu Structure

Menu	Choice	Description
Tare	--	Views the current tare value

Table 3-25. Tare Menu Parameter

4.0   Calibration

The 882IS can be calibrated using the front panel, EDP commands, or Revolution configuration utility.

Calibration consists of the following steps:

- Zero calibration
- Entering the test weight value
- Span calibration
- Optional five-point linearization
- Optional rezero calibration for test weights using hooks or chains
- Optional last zero calibration
- Optional temporary zero calibration

📝 **Note**   *The 882IS requires the Zero Calibration and Span Calibration to be calibrated. The linearity points are optional; they must fall between zero and span, but must not duplicate zero or span. During calibration, Tare acts as a data entry confirmation key. It also acts as an Enter key, and accepts the value if calibration was successful*
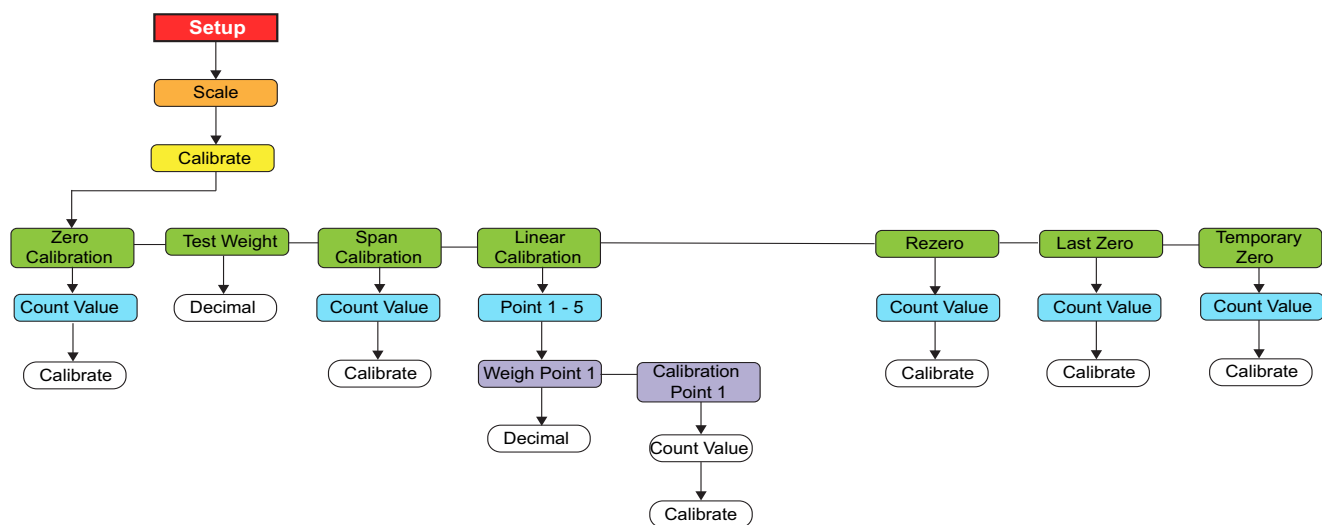
Figure 4-1. Calibration Menu

4.1   Front Panel Calibration

1. Put the indicator in setup mode, see Figure 3-1 on page 23, (or use **MENU** if audit trail is enabled), and navigate to *Calibrate* (see Figure 4-1).

2. Press **TARE** or ▽ to go to the *Zero Calibration* parameter.

📝 **Note**   *Zero Calibration is used for most normal calibrations with an empty scale. If a special situation exists, where a Last Zero or Temporary Zero are used, refer to Section 4.2 or Section 4.3 for more information before performing a Zero Calibration.*

3. Press **TARE** or ▽ to view the previously captured A/D count value for zero.

4. Remove all weight from the scale. If the test weights require hooks or chains, place the hooks or chains on the scale for zero calibration.

5. Press **TARE** to perform zero calibration.

📝 **Note**   *Press* **MENU** *to leave without performing a calibration.*

6. The indicator displays *Calibrating, Please Wait* while calibration is in progress. When complete, *Test Weight* displays.

> **Note** *To view the new zero A/D count, press* ◀ UNITS *then repeat Step 3, but instead of pressing Enter while viewing the value, press* MENU ⤶ *to exit.*

7. With *Test Weight* displayed, press TARE ⤶ to display the stored calibration weight value.

8. Edit the value using the keypad on the 882IS Plus or the numeric entry method for the 882IS.

• Press ◁ or ▷ to select the digit

• Press △ or ▽ to increment or decrement the value

• press TARE ⤶ when the value is correct

• Press ◁ or ▷ to move the decimal point position

9. Press TARE ⤶ to store the *Test Weight* value and advance to *Span Calibration*.

10. With *Span Calibration* displayed, press TARE ⤶ or ▽ to view the previously captured A/D count value for span.

11. Place calibration weights on the scale equal to test weight value.

12. Press TARE ⤶ to perform span calibration.

> **Note** *If calibration of span is not required, press* MENU ⤶ *to exit.*

13. Press TARE ⤶ the indicator displays *Calibrating, Please Wait* while calibration is in progress. When complete, *Linear Calibration* displays.

> **Note** *To view the new span A/D count, press* ◀ UNITS *then repeat Step 9, but instead of pressing Enter while viewing the value, press Menu to exit.*

14. Press MENU ⤶ when calibration is complete, to return to weigh mode.

4.1.1 Five-Point Linearization

Five-point linearization (using the Linear Calibration parameter) provides increased scale accuracy by calibrating the indicator at up to five additional points between the zero and span calibrations. Linearization is optional: if choosing not to perform linearization, skip the *Linear Calibration* parameter; if linearization values have previously been entered, these values are reset to zero during zero calibration. To perform linearization, follow the procedure below.

> **Note** *Linear Calibration points must be less than the Span Calibration point.*

1. With *Linear Calibration* displayed, press TARE ⤶ ,*Point-1* displays.

2. Press ▽ again, *Weigh Point 1* displays.

3. Press ▽ to display the value of the weigh point.

4. Edit the value using the keypad on the 882IS Plus or the or the numeric entry method for the 882IS.

• Press ◁ or ▷ to select the digit

• Press △ or ▽ to increment or decrement the value

• Press TARE ⤶ when the value is correct (the decimal point will be set in the following step).

• Press ◁ or ▷ to move the decimal point position

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5. Press ⬡ to confirm value. The indicator displays *Calibration Point 1*.

6. Place test weights on the scale and press ⬡. The indicator displays the previously captured A/D counts for the linearization point.

7. Press ⬡ again to calibrate. The indicator displays *Calibrating, Please Wait* while calibration is in progress. When complete, *Weight Point 1* is displayed.

8. Press △ to *Point-1*, then press ▷ to *Point-2*.

9. Repeat for up to five linearization points. To exit the linearization parameters, press △ to return to *Linear Calibration*.

10. Press ⬡ when calibration is complete, to return to the weigh mode.

4.1.2 Rezero

The rezero function is used to remove a calibration offset when an apparatus is used to hang the test weights. If no chains or hooks were used to hang the test weights during calibration, remove the test weights and press △ to return to the *Calibrate* menu.

1. With *Rezero* displayed, press ⬡ or ▽ to access the rezero function.

2. Remove all weight from the scale. If the test weights require hooks or chains, place the hooks or chains on the scale for zero calibration. The indicator displays the AD count from the previous zero calibration.

3. With all weight removed, press ⬡ to rezero the scale. This function acquires a new ZERO calibration value.

   The indicator displays *Calibrating, Please Wait* while the zero and span calibrations are adjusted. When complete, *Last Zero* displays.

📝 **Note** *For more information on LAST or TEMP see Section 4.2 or Section 4.3.*

4. Press ⬡ to return to weigh mode.

4.2 Last Zero

Last zero (typically platform scales) replaces the original captured zero with the last push button zero prior to a calibration and does not need to remove the test weights.

📝 **Note** *To use this feature a pushbutton zero must have been taken while the scale was empty while in the weigh mode.*

Perform a normal calibration, except instead of using Zero Calibration to capture the zero point of an empty scale, select *Last Zero* to use the last pushbutton zero. The test weight does not need to be removed from the scale.

4.3 Temporary Zero

Temporary zero (typically tank scales) is only a reference for a span calibration, and allows the original zero to be retained after a span adjustment has been done.

📝 **Note** *This procedure assumes the previously calibrated zero point is still accurate.*

Perform a normal calibration, except instead of using *Zero Calibration* to capture the zero point of an empty scale, select *Temporary Zero.* After calibrating the temporary zero, enter into Test Weight the value of the test weights added to the scale (just the test weights, not the product loaded on the scale). Then perform the span calibration.

4.4 Adjusting Final Calibration (Trimming)

Calibration may be affected by environmental factors including wind, vibration, and angular loading. For example, if the scale is calibrated with 1000 lb, a strain test may determine that at 2000 lb the calibration is 3 lb high. In this case, final calibration can be adjusted by changing the test weight to 998.5 lb. This adjustment provides a linear correction of 1.5 lb per 1000 lb.

4.5   Gravity Compensation

This feature is used to compensate for the variance in gravitational pull from one location to another. To calibrate with gravity compensation, the Gravity Compensation parameter under the *Features* menu must be set to ON (see Section 3.2.7 on page 30), and the Latitude and Elevation (elevation in meters, relative to sea level) parameters set before calibrating the indicator.

If the indicator is later installed at a different location, gravity compensation can be applied to a pre-calibrated indicator by adjusting the Latitude and Elevation parameters.

4.6   EDP Command Calibration

To calibrate the indicator using EDP commands an indicator or IO Module port must be connected to a terminal or personal computer. See Section 2.5 on page 14 for cable connections.

> **Note**   *The indicator will respond with OK if the value of the parameter was valid, or the command executed properly. If the indicator responds with ??, then either the value for the parameter was invalid, or the command could not be executed*

Once the indicator is connected to the sending device, do the following:

1. Place the indicator in setup mode and remove all weight from the scale platform. If the test weights require hooks or chains, place the hooks or chains on the scale for zero calibration.

2. Send the SC.WZERO#1 command to calibrate zero. The indicator displays *Calibrating, Please Wait* while calibration is in progress.

3. Place test weights on the scale and use the SC.WVAL#1 command to enter the test weight value in the following format:

    SC.WVAL#1=*nnnnnn*<CR>

4. Send the SC.WSPAN#1 command to calibrate span. The indicator displays *Calibrating, Please Wait* while calibration is in progress.

5. Up to five linearization points can be calibrated between the zero and span calibration values. Use the following commands to set and calibrate a single linearization point:

    SC.WLIN.V1#1=*nnnnn*<CR>
    SC.WLIN.C1#1<CR>

    The SC.WLIN.V1#1 command sets the test weight value (*nnnnn*) for linearization point 1. The SC.WLIN.C1#1 command calibrates the point. Repeat using the SC.WLIN.Vn#1 and SC.WLIN.Cn#1 (where 'n' is the linearity point number) commands as required for additional linearization points.

6. To remove an offset value, clear all weight from the scale, including hooks or chains used to hang test weights, then send the SC.REZERO#1 command. The indicator displays *Calibrating, Please Wait* while the zero and span calibrations are adjusted.

7. Send the KMENU or KEXIT EDP command to return to weigh mode.

4.7   Revolution® Calibration

To calibrate the indicator using Revolution, an indicator port must be connected to a PC running the Revolution configuration utility.

1. Place the indicator in configuration mode (display reads *Scale*) and remove all weight from the scale platform.

2. From Revolution, select *File » New*.
    The *Select Indicator* dialog box appears.

3. Select 882IS module which matches the firmware of the indicator and click **OK**.

4. From the *Communications* menu, select *Connect.*

5. From the left pane, expand the *Scale* selection and select the **Scale** button.

6. From the *Tools* menu, select *Calibration Wizard*.

7. Select *Next* to begin the Calibration Wizard.

8. Select whether or not to perform a standard calibration or a standard with multi-point linearization and select *Next*.

Figure 4-2. Scale Button

9. In the text box, enter the test weight value be to used for span calibration.

10. Select the check box if using chains or hooks during the calibration, then select *Next.*

11. Remove all weight from the scale and select *Click to Calibrate Zero* to begin zero calibration. If the test weights require an apparatus to hang, place it on the scale for zero calibration.

12. When zero calibration is complete, the Calibration Wizard prompts to place test weights on the scale. Place the test weights on the scale, then select *Click to Calibrate Span*.

13. If choosing to perform linear calibration, the Calibration Wizard now displays prompts (1–5). Enter the weight value for Linear Point #1, place test weights on scale and select *Measure*. Repeat for additional linearization points, then select *Next*.

14. If the check box for using chains or hooks is selected, the Calibration Wizard prompts to perform a Re-zero. Remove the apparatus used to hang the weights, and select *Click to Calibrate Re-Zero*.

15. With the weights removed, the new and old calibration settings are displayed. To accept the new values, select *Finish*. To exit and restore the old values, select *Cancel.*
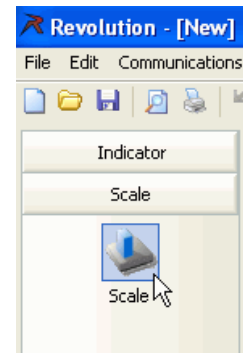
5.0 Using Revolution®

The Revolution utility provides functions used to support configuration, calibration, customizing and backup of the 882IS configuration settings using a PC.

Calibration values, scale configuration and print ticket formatting can be configured, saved and restored to the 882IS using Revolution.

The indicator's operating firmware can also be updated using Revolution.

> **Note** *For system requirements visit the Rice Lake Weighing Systems website.*

5.1 Communication With the Indicator

Communicating to the 882IS can be accomplished in the following ways:

- Using a serial connection to the indicator serial (COM) port through J3
- Using a USB connection and Virtual Comm Port to the indicator's USB Micro Device (USBCOM) port through J4
- Using a TCP/IP connection through the Ethernet Port (J6)

After making the physical connection to a PC, select the Options in the Tools menu and configure the communications settings as needed to match the communications method that is being used:

- RS-422 – Select the COM port that it will be connected to. Settings can be configured manually to match the indicator's current settings, or check the box for "Auto Detect Settings" to have Revolution automatically detect the settings.
- USB – Select RS-422 as the communication mode, the USB connection appears as a standard COM port to Revolution. Note that the comm port for the USB connection will only show in the list of available ports if the indicator is physically connected, and powered on. The settings for baud rate, data and stop bits, and parity do not apply for a USB connection, and do not need to be set to any specific value.
- TCP/IP – Requires the IP address and TCP Port of the indicator. Enter the IP Address and Port during the communications connection.

To open the communication connection, click on Connect under the Communications menu, or the Connect button in the toolbar. Revolution will attempt to establish communications with the indicator.

> **Note** *If Revolution does not detect the indicator, check the:*
>
> *Physical connections*
>
> *Communications settings in Revolution*
>
> *Current settings of the communications port in the indicator*
>
> *Indicator communications port Trigger parameter is set to Command*
>
> *If Revolution displays a Version Error, the indicator version of firmware does not match the module used in Revolution. A connection can be forced, but some parameters may not be enabled if they were not originally supported in that module.*

5.2   Configuration

The Revolution configuration utility provides the preferred method for configuring the 882IS indicator. Revolution runs on a PC to set configuration parameters for the indicator. When Revolution configuration is complete, configuration data is downloaded to the indicator.

5.2.1   New Configuration File

1.   Select *New File* on the toolbar (*NEW* under the file menu can also be used).
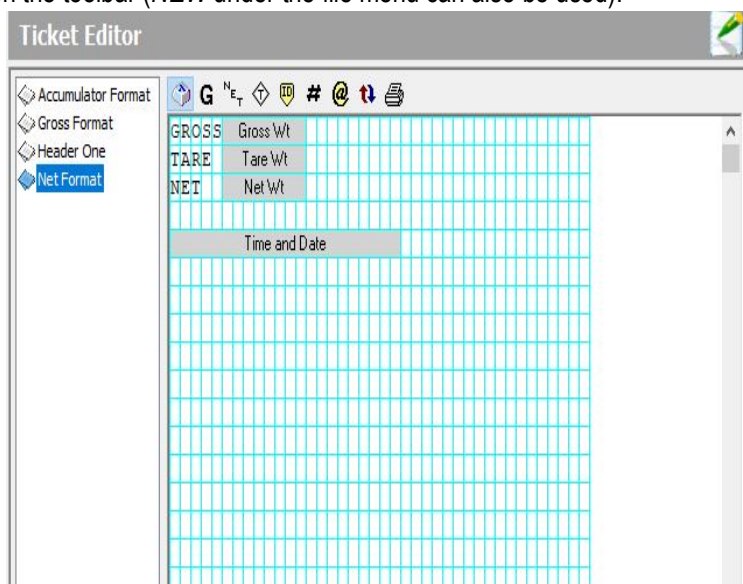
Figure 5-1. Revolution Main Screen

2.   Select the icon for the indicator with the appropriate firmware version for which the configuration file is to be created.

3.   Revolution will create a default configuration file. Edit the settings, upload the indicator's current settings, or download the default settings to the indicator.

5.2.2   Open an Existing Configuration File

1.   Select *Open File* on the tool bar (*Open* under the file menu can also be used).

2.   Navigate to the *.rev file to open then click the **OK** button.

3.   Revolution opens the file, selecting the correct indicator module to use with it. Edit the settings, or download the settings to the indicator.

5.2.3   Saving a Configuration File

1.   Select *Save File* on the tool bar (**Save** under the file menu can also be used).

•   If the file is new, enter a name when requested.

•   If the file already exists, confirm to overwrite the previous file.

•   Select cancel to exit the save process without saving.

•   Select *Save As* under the file menu if saving to a different file name.

Downloading to the Indicator

The ***Download Configuration*** function on the Revolution Communications menu allows a Revolution configuration file (with or without scale calibration data), ticket formatsto be downloaded to a connected indicator in configuration mode.

The ***Download Section*** function on the Communications menu allows download of only the currently displayed section, such as the communications port configuration.

Because less data is transferred using ***Download Section***, it is typically faster than a full configuration download, but there is an increased possibility that the download may fail due to dependencies on other objects. If the download fails, try performing a complete download using the ***Download Configuration*** function*.*

Uploading Configuration to Revolution

The *Upload Configuration* function on the Revolution Communications menu allows the existing configuration of a connected indicator to be saved to a file on the PC. Once saved, the configuration file provides a backup that can be quickly restored to the indicator if needed. Or, the file can be edited within Revolution and downloaded back to the indicator.

5.3   Revolution Help

The menu bar in Revolution contains a Help system for further assistance in using Revolution software.

The Help system contains an index of help topics and a search function. The search function allows the user to search with a keyword. When a keyword is typed into the search text box, Help searches its Index and finds the closest related topic in the help system.

6.0   EDP Commands

The 882IS indicator can be controlled by a personal computer or terminal using the EDP commands, which can simulate front panel key press functions, display and change setup parameters, and perform reporting functions.

6.1   The EDP Command Set

The EDP command set can be divided into seven groups: key press commands, reporting commands, the *RESETCONFIGURATION* special function command, parameter setting commands, weigh mode commands, error conditions commands.

When the indicator processes an EDP command, it responds with the message *OK*. The *OK* response verifies that the command was received and has been executed. If the command is unrecognized or cannot be executed, the indicator responds with *??*.

The following sections list the commands and command syntax used for each of these groups.

6.1.1   Key Press Commands

Key press EDP commands (Table 6-1) simulate pressing the keys on the front panel of the indicator. These commands can be used in both setup and weighing mode. Several of the commands serve as "pseudo" keys, providing functions that are not represented by a key on the front panel.

For example, to enter a 15-pound tare weight using EDP commands:

1. Type K1 and press **Enter** (or **RETURN**).
2. Type K5 and press **Enter**.
3. Type KTARE and press **Enter**.

Command	Function
KMENU	Press the Menu key
KZERO	Press the Zero key
KUNITS	Press the Units key
KPRINT	Press the Print key
KTARE	Press the Tare key
KGROSSNET	Press the Gross/Net key
KGROSS	Go to gross mode
KNET	Go to net mode
KDISPACCUM	Display ACCUM (pseudo key)
KDISPTARE	Display tare (pseudo key)
KCLR	Press the Clear key (pseudo key)
KCLRTAR	Clear tare from system (pseudo key)
KLEFT	In menu mode, move left in the menu
KRIGHT	In menu mode, move right in the menu
KUP	In menu mode, move up in the menu
KDOWN	In menu mode, move down in the menu
KSAVE	In menu mode, saves the current configuration (pseudo key)
KEXIT	In menu mode, saves the current configuration then exits to weigh mode (pseudo key)
K0–K9	Press number 0 (zero) through 9

Command	Function
KDOT	Press the decimal point (.)
KENTER	Press the Enter key (pseudo key)
KLOCK	Lock specified front panel key. For example, to lock the Zero key, enter KLOCK=KZERO. (pseudo key)
KUNLOCK	Unlock specified front panel key. For example, to unlock the Print key, enter KUNLOCK=KPRINT. (pseudo key)
KESCAPE	Exits the selected parameter. Returns to weigh mode if a parameter is not selected (functions identical to the Menu key in menu mode) (pseudo key)
KPRIM	Change to primary units (pseudo key)
KSEC	Change to secondary units (pseudo key)

Table 6-1. EDP Key Press Commands

6.1.2   Reporting Commands

Reporting commands (Table 6-2) send specific information to the EDP port. These commands can be used in both configuration mode and weigh mode.

Command	Function
AUDITJUMPER	Returns the state of the audit jumper. A response of **OK** indicates the jumper is in the **On** position. A response of "??" indicates the jumper is in the **Off** position
BUILD	Returns the date and time of the software build
DUMPALL	Returns a list of all parameter values
DUMPAUDIT	Returns a list of audit trail information
DUMPETH	Returns a list of all parameter values pertaining to the EtherNet
VERSION	Returns the 882IS firmware version
P	Returns the current displayed weight with units identifier
IOMODULEVERSION	Returns the IO module firmware version, if attached. If no IO module is attached/detected, NONE is returned

Table 6-2. EDP Reporting Commands

6.1.3   The RESETCONFIGURATION Command

The RESETCONFIGURATION command can be used in configuration mode to restore all configuration parameters to their default values.

This command is equivalent to using the DEFAULT function in configuration mode.

Note *All load cell calibration settings are lost when the RESETCONFIGURATION command is run.*

6.1.4   Parameter Setting Commands

Parameter setting commands allow the display or change of the current value for a particular configuration parameter (Tables 6-3 through 6-22).

Current configuration parameter settings can be displayed in either configuration mode or weigh mode using the following syntax:

    command<CR>

Most parameter values can be changed in configuration mode only.

Use the following command syntax when changing parameter values:

    command=value<CR>

where value is the new value you want to assign to the parameter. Use no spaces before or after the equal (=) sign. If an incorrect command has been typed in, the response will be *??*.

For example, to set the motion band parameter to 5, type the following:

    SC.MOTBAND#1=5D<CR>

For parameters with selectable values, enter the command and equal sign followed by a question mark:

    command=?<CR>

to see a list of those values. The indicator must be in configuration mode to use this function.

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6.1.5 Scales Menu

Command	Menu	Description	Choices / Range
SC.ACCUM#1	Accumulator	Accumulator of weighments	OFF, ON
SC.DFTHRH#1	Digital Filter Threshold	Digital filter cutoff threshold	0-99999
SC.DSPRATE#1	Display Update Rate	Display Update Rate (in 0.1 sec intervals)	1-80
SC.DFSENS#1	Digital Filter Sensitivity	Digital filter cutoff sensitivity	LIGHT,MEDIUM,HEAVY
SC.GRADS#1	Graduations	Graduations to determine capacity	1 - 100000
SC.MOTBAND#1	Motion Band	Motion Band (in display divisions)	0-100
SC.OVRLOAD#1	Overload	Overload point based on capacity	FS+2%, FS+1D, FS+9D, FS
SC.OVRLOAD_VAL#1	Enter Percentage	Overload point based on percentage of capacity	0.0 - 150.0
SC.PWRUPMD#1	Powerup Mode	Power Up Mode	GO, DELAY
SC.RANGE1.MAX#1	Range-1 Max	Maximum weight for first range or interval	0.0 - 999999.0
SC.RANGE2.MAX#1	Range-2 Max	Maximum weight for second range or interval	0.0 - 999999.0
SC.RANGE3.MAX#1	Range-3 Max	Maximum weight for third range or interval	0.0 - 999999.0
SC.SMPRAT#1	Sample Rate	Scale Sample Rate	7.5HZ, 15HZ, 30HZ, 60HZ, 120HZ, 240HZ, 480HZ, 960HZ
SC.SPLIT#1	Multi Ranges	Specifies full range, multi-range, or multi-interval	OFF, 2RNG, 3RNG, 2INTVL, 3INTVL
SC.SSTIME#1	Standstill Time	Stand still time (in 0.1 sec intervals)	1 - 65535
SC.TAREFN#1	Tare Function	Tare Function	BOTH, NOTARE, PBTARE, KEYED
SC.THRESH#1	Accumulator Threshold	Accumulator Zero Threshold	0-999999
SC.ZRANGE#1	Zero Range	Zero range (in %)	0.0 - 100.0
SC.ZTRKBND#1	Zero Track Band	Zero track band (in divisions)	0.0 - 100.0

Table 6-3. Scale EDP Commands

6.1.6 Format Menu

Command	Menu	Description	Choices / Range
If SPLIT = 2RNG, 3RNG, 2INTVL, 3INTVL			
SC.PRI.DECPNT#1	DP Location-1	Decimal point location for first range or interval	888888, 888880, 8.88888, 88.8888, 888.888, 8888.88, 88888.8
SC.SEC.DECPNT#1	DP Location-2	Decimal point location for second range or interval	888888, 888880, 8.88888, 88.8888, 888.888, 8888.88, 88888.8
SC.TER.DECPNT#1	DP Location-3	Decimal point location for third range or interval. Only available in 3RNG or 3INTVL	888888, 888880, 8.88888, 88.8888, 888.888, 8888.88, 88888.8
SC.PRI.DSPDIV#1	Range-1 DD	Range/Interval (1 division size)	1D, 2D, 5D
SC.SEC.DSPDIV#1	Range-2 DD	Range/Interval (2 division size)	1D, 2D, 5D
SC.TER.DSPDIV#1	Range-3 DD	Range/Interval (3 division size) Only available in 3RNG or 3INTVL.	1D, 2D, 5D
If SPLIT = OFF			
SC.PRI.UNITS#1	Primary Units	Specifies primary units for displayed and printed weight	LB, KG, OZ, TN, T, G, NONE
SC.SEC.UNITS#1	Secondary Units	Specifies secondary units for displayed and printed weight	LB, KG, OZ, TN, T, G, NONE

Table 6-4. Format EDP Commands

6.1.7   Calibration Menu

Command	Menu	Description	Choices / Range
SC.WZERO#1	Calibrate Zero	Perform zero calibration	n/a
SC.WSPAN#1	Calibrate Span	Perform span calibration	n/a
SC.LC.CD#1	Zero Counts	Get/Set Calibration Zero value	-8388607 to 8388607
SC.LC.CW#1	Gain Counts	Get/Set Calibration Gain value	-8388607 to 8388607
SC.LC.CZ#1	Zero Counts	Get/Set Calibration Zero value	-2147483646 to 2147483647
SC.REZERO#1	Rezero	Perform Calibration Re-Zero	n/a
SC.WLIN.C1#1	Calibration Point - 1	Calibrate linearization point 1	n/a
SC.WLIN.C2#1	Calibration Point - 2	Calibrate linearization point 2	n/a
SC.WLIN.C3#1	Calibration Point - 3	Calibrate linearization point 3	n/a
SC.WLIN.C4#1	Calibration Point - 4	Calibrate linearization point 4	n/a
SC.WLIN.C5#1	Calibration Point - 5	Calibrate linearization point 5	n/a
SC.WLIN.F1#1	MultiPoint Cal-1	Raw count value for linearization point 1	-2147483646 to 2147483647
SC.WLIN.F2#1	MultiPoint Cal-2	Raw count value for linearization point 2	-2147483646 to 2147483647
SC.WLIN.F3#1	MultiPoint Cal-3	Raw count value for linearization point 3	-2147483646 to 2147483647
SC.WLIN.F4#1	MultiPoint Cal-4	Raw count value for linearization point 4	-2147483646 to 2147483647
SC.WLIN.F5#1	MultiPoint Cal-5	Raw count value for linearization point 5	-2147483646 to 2147483647
SC.WLIN.V1#1	Cal Point-1 Weight	Test weight value for linearization point 1	0.0 - 999999.0
SC.WLIN.V2#1	Cal Point-2 Weight	Test weight value for linearization point 2	0.0 - 999999.0
SC.WLIN.V3#1	Cal Point-3 Weight	Test weight value for linearization point 3	0.0 - 999999.0
SC.WLIN.V4#1	Cal Point-4 Weight	Test weight value for linearization point 4	0.0 - 999999.0
SC.WLIN.V5#1	Cal Point-5 Weight	Test weight value for linearization point 5	0.0 - 999999.0
SC.WVAL#1	Test Weight	Test weight value for standard gain calibration	0.00001 - 999999.0

Table 6-5. Calibration EDP Commands

> **Note**
> *The menu items, CAL1 – CAL5 are used to do the calibration. A value cannot be keyed in.*
> *The SC.WLIN.Fx#1 EDP commands can be used to view and edit the value but they do not perform the calibration. Use the SC.WLIN.Cx#1 commands to perform the calibration.*

6.1.8   Ports COM Menu

Command	Menu	Description	Choices / Range
EDP.BAUD#1	Baud	Port baud rate	*1200, *2400, *4800, 9600, 19200, 28800, 38400, 57600, 115200 *not available on port 3
EDP.BITS#1	Bits	Port data bits and parity	8NONE, 7EVEN, 7ODD
EDP.ECHO#1	Echo	Specifies whether characters received by the port are echoed back to the sending unit	OFF, ON
EDP.EOLDLY#1	End of Line Delay	Port end-of-line delay in 0.1 sec intervals	Range: 0 - 255
EDP.TYPE#1	Type	Specifies RS-232 or RS-422 communication	232, 422
EDP.PRNMSG#1	Print Message	Print message	OFF, ON
EDP.RESPONSE#1	Response	Response	OFF, ON
EDP.SFMT#1	Stream Format	Stream format	Alphanumeric, max Length: 200
EDP.STOPBITS#1	Stop Bits	Stop Bits	1, 2
EDP.TERMIN#1	Termination	Termination character	CR/LF, CR
EDP.TRIGGER#1	Trigger	Selects the operation of the port	COMAND, STRLFT, STRIND, REMOTE

Table 6-6. Ports (COM) EDP Commands

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6.1.9 Stream Tokens Menu

Command	Description	Default	Choices / Range
STR.GROSS	String transmitted for the <M> token for gross weight	G	Alphanumeric, Max Length: 8
STR.INVALID	String transmitted for the <S> token when weight is invalid	I	Alphanumeric, Max Length: 2
STR.MOTION	String transmitted for the <S> token when scale is in motion	M	Alphanumeric, Max Length: 2
STR.NEG	Character transmitted for the <P> token when the weight is negative	-	NONE, SPACE, -
STR.NET	String transmitted for the <M> token for net weight	N	Alphanumeric, Max Length: 8
STR.OK	String transmitted for the <S> token when the scale is ok	" "	Alphanumeric, Max Length: 2
STR.POS	Character transmitted for the <P> token when the weight is positive	SPACE	NONE, SPACE, +
STR.PRI	String transmitted for the <U> token for primary units	L	Alphanumeric, Max Length: 8
STR.RANGE	String transmitted for the <S> token when the scale is out of range	O	Alphanumeric, Max Length: 2
STR.SEC	String transmitted for the <U> token for secondary units	K	Alphanumeric, Max Length: 8
STR.TARE	String transmitted for the <M> token for tare weight	T	Alphanumeric, Max Length: 8
STR.ZERO	String transmitted for the <S> token when the scale is at center of zero	Z	Alphanumeric, Max Length: 2

Table 6-7. Stream Tokens EDP Commands

6.1.10 Feature Menu

Command	Menu	Description	Choices / Range
DATEFMT	Date Format	Date Format	MMDDYY, DDMMYY, YYMMDD, YYDDMM, **MMDDY4**, DDM-MY4, Y4MMDD, Y4DDMM
DECFMT	Decimal Format	Decimal Format	DOT, COMMA
GRAVADJ	Gravity Adjust	Must be enabled for latitude and elevation	OFF, ON
LAT.LOC	Latitude	Latitude (Gravity adjust must be set to ON)	0-90
ELEV.LOC	Elevation	Elevation (Gravity adust must be set to ON)	-9999-9999
UID	Unit ID	Unit Identifier	Alphanumeric, Max Length: 6

Table 6-8. Feature EDP Commands

6.1.11 Regulatory Menu

Command	Menu	Description	Choices / Range
REGWORD	Regulatory Word	Term printed when weighing in gross mode	GROSS, BRUTTO
REGULAT	Regulatory	Regulatory agency having jurisdiction over the scale site	NONE, OIML, NTEP, CANADA, INDUST
REG.AGENCY	Audit Agency	Audit trail agency format	NONE, OIML, NTEP, CANADA
REG.BASE	Overload Base	Zero preference for overload calculation CALIB - Calibrated zero SCALE - Pushbutton zero	CALIB, SCALE
REG.CTARE	Clear Tare	CLEAR key – clear tare/accumulator while viewing	NO, YES
REG.RTARE	Round Tare	Round push button tare to nearest Display Division.	YES,NO
REG.KTARE	Keyed Tare	Keyed tare	NO, YES
REG.MTARE	Multiple Tare Action	Multiple tare action	NOTHIN, REPLAC, REMOVE
REG.NTARE	Negative Tare	Negative or zero tare	NO, YES
REG.PRTMOT	Print Motion	Print while in motion	NO, YES
REG.PRINTPT	Add PT to Print	Add "PT" to keyed tare print	NO, YES
REG.SNPSHOT	Select Weight Source	Selects display or scale weight source	DISPLAY, SCALE
REG.ZTARE	Zero Tare	Remove tare on ZERO	NO, YES

Table 6-9. Regulatory EDP Commands

6.1.12 Passwords Menu

Command	Menu	Description	Choices / Range
PWD.USER	User	Used to protect items in the top level menu	Range: 0 - 999999
PWD.SETUP	Setup	Used to protect items in the setup menu	Range: 0 - 999999

Table 6-10. Password EDP commands

Note *The EDP commands can be used to set the passwords but they will not return the current password setting.*

6.1.13 Keypad Lock Menu

Command	Menu	Description	Choices / Range
KEYLCK.FUNCTION	Function Keys	Lock or unlocks the Function Keys	LOCK, UNLOCK
KEYLCK.GROSSNET	Gross/Net	Locks or unlocks the Gross/Net Key	LOCK, UNLOCK
KEYLCK.MENU	Menu	Locks or unlocks the Menu Key	LOCK, UNLOCK
KEYLCK.NUMERIC	Numeric Keypad	Locks or unlocks the Numeric Keypad Keys	LOCK, UNLOCK
KEYLCK.PRINT	Print	Locks or unlocks the Print Key	LOCK, UNLOCK
KEYLCK.TARE	Tare	Locks or unlocks the Tare Key	LOCK, UNLOCK
KEYLCK.UNITS	Units	Locks or unlocks the Units Key	LOCK, UNLOCK
KEYLCK.ZERO	Zero	Locks or unlocks the Zero Key	LOCK, UNLOCK

Table 6-11. Keypad Lock EDP Commands

6.1.14 Print Format Menu

The Menu items (except for HDRFMT) are listed by the format and the sub-parameters.

Command	Menu	Description	Choices / Range
ACC.FMT	Accumulator | Format	Accumulator enabled and displayed	Alphanumeric, Max Length: 1000
ACC.PORT	Accumulator | Port	Accumulator print port	COM, FIBER, IOCOM, IOCOMUSB, ETHSERVER, ETHCLIENT, OFF
GFMT.FMT	Gross Format | Format	Weigh mode, no tare in system	Alphanumeric, Max Length: 1000
GFMT.PORT	Gross Format | Port	Weigh mode, no tare in system, print port	COM, FIBER, IOCOM, IOCOMUSB, ETHSERVER, ETHCLIENT, OFF
HDRFMT1	Header Format	Must be inserted into other print format	Alphanumeric, Max Length: 300
NFMT.FMT	Net Format | Format	Weigh mode, tare in system	Alphanumeric, Max Length: 1000
NFMT.PORT	Net Format | Port	Weigh mode, tare in system, print port	COM, FIBER, IOCOM, IOCOMUSB, ETHSERVER, ETHCLIENT, OFF

Table 6-12. Print Format EDP Commands

Note *See Section 7.2 on page 63 for more detailed information on print format commands.*

6.1.15 Digital I/O Configuration Menu

Command	Menu	Choices / Range
DIO.b#s	BIT x	OFF, PRINT, ZERO, TARE, UNITS, CLEAR, DSPACC, DSPTAR, NT/GRS, CLRCN, OUTPUT, KBDLOC, GROSS, NET, PRIM, SEC, CLRTAR, CLRACC

Table 6-13. Digital I/O Configuration EDP Commands

Note *Digital inputs and outputs are specified by bit number (b = 1 or 2) and slot number (s = 0).*

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6.1.16 Weigh Mode Commands

The weigh mode commands (Table 6-14) transmit data to a data communications port on demand. The SX, EX, and all the X weight retrieval commands are valid only in normal operating mode; all other commands are valid in either setup or weigh mode.

see for error command definitions.

Command	Function
AT	Acquire tare
DISPLAYMSG#n	Displays a message on the indicated line (n). Example: DISPLAYMSG#3=abc
SX#1	Start serial port streaming. If port is configured to stream on port #3. (3=Ethernet Server)
SX	Start serial port streaming for the port receiving the command, if port is configured to stream.
EX#1	Stop serial port streaming for the port receiving the command, if port is configured to stream. 1=COM, 2=FiberOptic
EX	Stop serial port streaming for the port receiving the command, if port is configured to stream.
RS	Reset system. This is a soft reset. Used to reset the indicator without resetting the configuration to the factory defaults.
S	Sends a single stream frame from the scale to the port in the format defined by the Stream Format parameter of the port receiving the command.
XA#1	Transmit accumulator value in displayed units for scale n
XA	Transmit accumulator value in displayed units for selected scale
XAP#1	Transmit accumulator value in primary units for scale n
XAS#1	Transmit accumulator value in secondary units for scale n
XG#1	Transmit gross weight in displayed units for scale n
XG	Transmit gross weight in displayed units for selected scale
XG2	Transmit gross weight in non-displayed units for selected scale
XGP#1	Transmit gross weight in primary units for scale n
XGS#1	Transmit gross weight in secondary units for scale n
XN#1	Transmit net weight in displayed units for scale n
XN	Transmit net weight in displayed units for selected scale
XN2	Transmit net weight in non-displayed units for selected scale
XNP#1	Transmit net weight in primary units for scale n
XNS#1	Transmit net weight in secondary units for scale n
XT#1	Transmit tare weight in displayed units for scale n
XT	Transmit tare weight in displayed units for selected scale
XT2	Transmit tare weight in non-displayed units for selected scale
XTP#1	Transmit tare weight in primary units for scale n
XTS#1	Transmit tare weight in secondary units for scale n
XE	Returns a decimal representation of any error conditions
XEH	Returns a hexadecimal representation of any error conditions

Table 6-14. Weigh Mode EDP Commands

📝 **Note** *The 882IS only supports one scale therefore X commands are displayed with a #1.*

6.1.17   Power Commands

Command	Menu	Description	Choices/Range
BACKLIGHT	Backlight Control	Manual control of whether the backlight is ON or OFF	OFF, ON
BATTERYINSTALLED	Battery Installed	Manual control of whether the indicator is being powered by a battery (yes) or not (no)	NO, YES
POWERSAVINGMODE	Power Saving Mode	Selects which type of automatic power saving is to be performed after 30 seconds of no activity (scale motion, keypress, or serial command received). OFF=none, LIGHT=turns off backlight, MEDIUM=turns off backlight and display, AGGRESSIVE=turns off backlight, excitation and display	OFF, LIGHT, MEDIUM, AGGRESSIVE
WAKETHRESHOLD	Wake Threshold	Once asleep, if the primary weight goes above this value the indicator will wake. A value of 0 will prevent indicator from waking due to a weight change - only a keypress or serial command will wake the unit	0.0 - 9999999.0

Table 6-15. Power EDP Commands

6.1.18   Setup Mode Commands

Command	Menu	Description	Choice/Range
RESETCONFIGURATION	Default	Resets all configuration parameters to their default values and clears the scale calibration	--

Table 6-16. Setup Mode Commands

The RESETCONFIGURATION command can be used in configuration mode to restore all configuration parameters to their default values.

This command is equivalent to using the DEFAULT function in configuration mode.

📝 **Note** *All load cell calibration settings are lost when the RESETCONFIGURATION command is run.*

6.1.19   Analog Output Parameters

Command	Menu	Description	Choice/Range
ALG.ERRACT#n	Error Action	Specifies how the analog output responds to system error conditions	FULLSC: Sets to full value (10 V or 20 mA) HOLD: Holds the last value ZEROSC: Sets to zero value (0 V or 4 mA)
ALG.MAX#n	Maximum Value	Specifies the maximum weight value tracked by the analog output	0.000001 - 9999800.0
ALG.MAXNEG#n	Maximum Negative	Specifies ON if the maximum weight (MAX parameter) is a negative value	ON: The maximum valued is negative OFF: The maximum value is positive
ALG.MIN#n	Minimum Value	Specifies the minimum weight value tracked by the analog output	0.0 - 9999800.0
ALG.MINNEG#n	Minimum Negative	Specifies ON if the minimum weight (MIN parameter) is a negative value	ON: The minimum value is negative OFF: The minimum value is positive
ALG.MODE#n	Mode	Specifies the weight data, Gross or Net, tracked by the analog output	GROSS: Tracks the gross weight NET: Tracks the net weight
ALG.OUTPUT#n	Output	Specifies the output type: 0-10 V, 0-20 mA, or 4-20 mA output NOTE: This parameter must be set before calibrating the analog output.	0-10 V: 0-10 volt output 0-20 mA: 0-20 mA output 4-20 mA: 4-20 mA output

Table 6-17. Analog Output Parameters

6.1.20   Analog Output Commands

Command	Menu	Description	Choice/Range
ALG.ENTERSPANCAL#n	n/a	Enters the mode for calibrating the analog output span. This is needed only if calibrating through EDP commands	OK or ??
ALG.EXITSPANCAL#n	n/a	Exits the mode for calibrating the analog output span. This is needed only if calibrating through EDP commands. This must be done before the results of the calibration are implemented	OK or ??
ALG.ENTERZEROCAL#n	n/a	Enters the mode for calibrating the analog output span. This is needed only if calibrating through EDP commands	OK or ??
ALG.EXITZEROCAL#n	n/a	Exits the mode for calibrating the analog output span. This is needed only if calibrating through EDP commands. This must be done before the results of the calibration are implemented	OK or ??
ALG.SPAN#n	Calibrate Span	Enter the observed output value to calibrate the analog output span. Use a multimeter to monitor the analog output value	0.0 - 30.0
ALG.ZERO	Calibrate Zero	Enter the observed output value to calibrate the analog output zero. Use a multimeter to monitor the analog output value	0.0 - 30.0

Table 6-18. Analog Output Commands

6.1.21   Test Commands

Command	Menu	Description	Choice/Range
BATTERYCOUNTS	Battery Counts	The A2D count value taken from the battery that is used as an indicator of battery life	32600 (5.45 V - critical error voltage) - 36000 (6.05 V - fully charged battery) These count ranges are approximate

Table 6-19. Test Commands

7.0   Print Formatting

The 882IS provides four print formats. Formats *Gross Format* and *Net Format* will be printed based on the current mode of operation when the **Print** key is pressed (see Table 7-2 on page 63). *Header Format* can be inserted into any other print format using the <H1> formatting token. The *Accumulator Format* is printed if the accumulator is enabled and the print key is pressed while viewing the accumulator value.

Each print format can be customized to include up to 1000 characters of information (300 for *Header Format*), such as company name and address. Use the indicator front panel (*Print Format* menu), EDP commands, or the Revolution® configuration utility to customize the print formats.

7.1   Print Formatting Tokens

Table 7-1 lists tokens that can be used to format the 882IS print formats. Tokens included in the format strings must be enclosed between < and > delimiters. Any characters outside of the delimiters are printed as text. Text characters can include any ASCII character that can be printed by the output device.

Tokens	Description	Ticket Format Gross Format/Net Format/ Accumulator Format
<G>	Gross weight in displayed units (See notes 1 and 2 below)	✓
<N>	Net weight in displayed units (See notes 1 and 2)	✓
<T>	Tare weight in displayed units (See notes 1 and 2)	✓
<A>	Accumulated weight in displayed units	✓
<AC>	Number of accumulator event (5-digit counter)	✓
<AT>	Time of last accumulator event	✓
<AD>	Date of last accumulator event	✓
<TI>	Time	✓
<DA>	Date	✓
<TD>	Time and date	✓
<UID>	Unit ID number (See note 3)	✓
<CN>	Consecutive number (See note 3)	✓
<H1>	Ticket header (HDRFMT)	✓
<NLnn>	New line (nn = number of termination (<CR/LF> or <CR>) characters) (See note 4)	✓
<nnn>	ASCII character (nnn = decimal value of ASCII character). Used for inserting control characters (STX, for example) in the print stream.	✓
<SPnn>	Space (nn = number of spaces) (See note 4)	✓
<SU>	Toggle weight data format (formatted/unformatted) (See note 5)	✓
<CR>	Carriage return character	✓
<LF>	Line feed character	✓

NOTES:

1. Gross, net, and tare weights are 8 digits in length, including sign and decimal point, followed by a space and a one- to five-digit units identifier. Total field length with units identifier is 10-14 characters. Depending on what units are configured, the units identifier will be lb, kg, oz, tn, t, or g.

2. Gross, net, tare, and accumulator weights can be printed in any configured weight units by adding the following modifiers to the gross, net, tare, and accumulator weight commands: /P (primary units), /D (displayed units), /S (secondary units), /T (tertiary units). If not specified, the current displayed units (/D) is assumed. Example: To format a ticket to show net weight in secondary units, use the following command: <N/S>.

3. Unit ID and consecutive number (CN) fields are 1–6 characters in length, as required.

4. If nn is not specified, 1 is assumed. Value must be in the range 1–99.

5. After receiving an SU token, the indicator sends unformatted data until the next SU token is received. Unformatted data omits decimal points, leading and trailing characters.

Table 7-1. Print Format Tokens

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7.2 Default Print Formats

Table 7-2 shows the default print formats for the 882IS and lists the conditions under which each print format is used.

Format	Default	Used When
GROSS FORMAT | FMT	GROSS<G><NL2><TD><NL>	Weigh mode, no tare in system
GROSS FORMAT| PORT	COM	Defines the communication port that the format will be sent to.
NET FORMAT | FMT	GROSS<G><NL>TARE<SP><T><NL>NET<SP2><N><NL2><TD><NL>	Weigh mode, tare in system
NET FORMAT | PORT	COM	Defines the communication port that the format will be sent to.
ACCUMULATOR FORMAT | FORMAT	ACCUM<A><NL><DA> <TI><NL>	Accumulator enabled and displayed.
ACCUMULATOR FORMAT | PORT	COM	Defines the communication port that the format will be sent to.
HEADER FORMAT | FORMAT	COMPANY NAME<NL> STREET ADDRESS<NL>CITY,ST ZIP<NL2>	The **Header Format** is used to specify header information that can be used by the other print formats. The contents of the **Header Format** can be inserted into any other print format using the <H1> formatting token.

NOTES: In OIML and CANADA modes, the letters PT (preset tare) are automatically inserted after the printed tare weight.

Table 7-2. Default Print Formats

7.3 Customizing Print Formats

The following sections describe procedures for customizing print formats using the EDP commands, the front panel (**Print Format** menu), and the Revolution configuration utility.

7.3.1 Using the EDP Commands

With a personal computer, terminal, or remote keyboard attached to the 882IS, the EDP command set can be used to customize the print format strings.

To view the current setting of a format string, type the name of the print format, followed by .FMT, and press **Enter**. For example, to check the current configuration of the **Gross Format**, type **GFMT.FMT** and press **Enter**. The indicator responds by sending the current configuration for the gross format:

> GROSS<G><NL2><TD><NL>

To change the format, use the format EDP command followed by an equals sign (=) and the modified print format string. For example, to add the name and address of a company to the gross format, send the following EDP command:

> GFMT.FMT=RICE LAKE WEIGHING SYSTEMS<NL>230 W COLEMAN ST<NL>RICE LAKE WI 54868<NL2><G> GROSS<NL>

A ticket printed using this format might look like the following:

> RICE LAKE WEIGHING SYSTEMS
> 230 W COLEMAN ST
> RICE LAKE WI 54868
>
>
>   1345 LB GROSS

The ticket above could also be formatted by specifying the company address information in the **Header Format** ticket format, then substituting the <H1> token for the address in the **Gross Format** ticket format:

> HDRFMT1=RICE LAKE WEIGHING SYSTEMS<NL>230 W COLEMAN ST<NL>RICE LAKE WI 54868<NL2>GFMT=<AE><G> GROSS<NL>

> **📝 Note** | *The HDRFMT1 command does not require the .FMT.*

7.3.2 Using the Front Panel

If there is no access to equipment for communication through the communication ports or when working at a site where such equipment cannot be used, the **Print Format** menu (see Section 3.2.14 on page 36) can be used to customize the print formats. Using the **Print Format** menu, edit the print format strings by changing the decimal values of the ASCII characters in the format string.

> **📝 Note** | *Edit the format using the Alphanumeric Entry Procedure, see* Section 1.9*.*

Some special characters cannot be displayed on the 882IS front panel (see the ASCII character chart on page 77) and are shown as blanks. The 882IS can send or receive any ASCII character; the character printed depends on the particular ASCII character set implemented for the receiving device.

7.3.3 Using Revolution®

The Revolution configuration utility provides a print formatting grid with a tool bar. The grid allows the construction of the print format without the formatting tokens (<NL> and <SP>) required by the front panel or EDP command methods. Using Revolution, type text directly into the grid, then select weight value fields from the tool bar and place them where they are to appear on the printed ticket.

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Figure 7-1 shows an example of the Revolution print formatting grid.
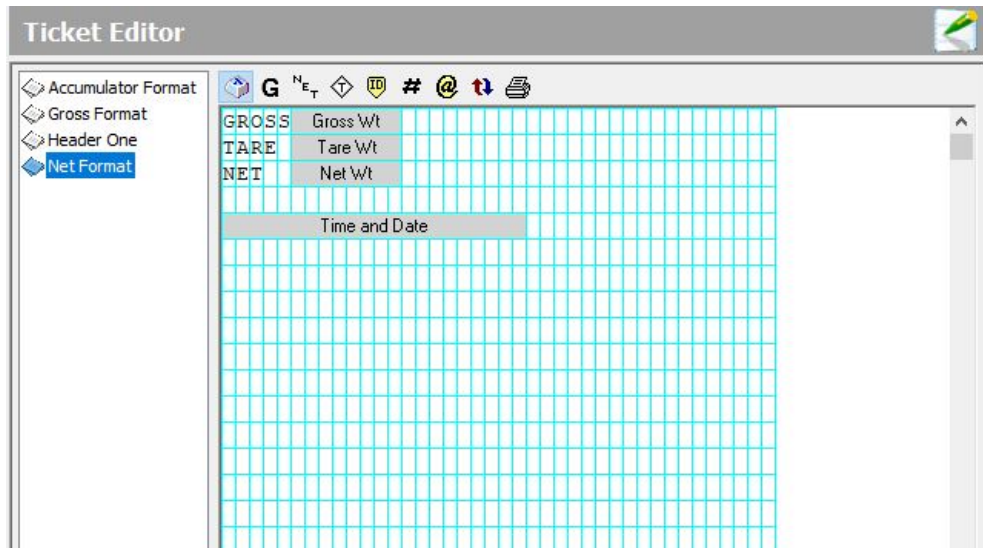
Figure 7-1. Revolution Print Format Grid

8.0   IO Module

The 882IS IO Module is an external device designed for use with the 882IS and 882IS Plus digital weight indicators. When placed in the safe area, its fiber optic interface allows it to provide remote functions for indicators in hazardous environments. The 882IS IO Module provides access to the indicator through the following:

- USB device connection
- EtherNet
- One comm port (RS-232 or RS-422)
- One option card slot

8.1   IO Module Disassembly

The 882IS IO module enclosure must be opened to connect cables for communications.

> ⚠ **WARNING**   *The IO module does not have an On/Off switch. Before opening the unit, ensure power to the unit is disconnected.*

8.1.1   AC Wiring

The IO Module is to be permanently mounted (safe area) with a readily accessible disconnect device incorporated in the building installation wiring. All wiring is to be done in accordance with the National Electric Code (NEC).

8.1.2   RS-232/RS-422 Communications

To attach a PC or other device to the 882IS' RS-232 or the two-wire RS-422 ports, select RS-422 standard in the indicator Serial menu for the IO Module. See Table 8-1 for information on connecting RS-422 communications.

Pin	RS-232	RS-422
1	GND	GND
2	RX	B
3	TX	A

Table 8-1. J3 Pin Assignments (Port 1 Serial Communications)

8.2   USB Device Communications – Port 2

The fiber optic port can be used to connect to the IO module. It can also:

- Connect to a PC or other indicator using fiber optics to RS-232 adapter
- Connect directly to another 882IS when one of the units is being used as a serial scale

> 📝 **Note**   *If using Windows 7 or later, and the PC is connected to the Internet, the operating system may be able to install the drivers without any interaction.*

Before the USB Device Port can be used, drivers must be installed on the PC.

1.   Have power applied to the PC and to the indicator.

2.   Connect a USB cable from the PC to the micro USB connector (J4) on the 882IS IO Module. The PC recognizes that a device has been connected and will attempt to install the drivers needed to make it work. Those drivers can be downloaded from the Rice Lake Weighing Systems' website at **www.RiceLake.com**

3.   When the individual drivers are installed, a new COM Port designation is assigned for each physical USB port the 882IS is connected to on the PC.

For example, if the PC already has two physical RS-232 COM Ports, they most likely are designated COM1 and COM2. When connecting the indicator to a USB port on the PC, it will be assigned the next available port designation, or in this case, COM3. When plugging into the same physical USB port on the PC, the port designation will again be COM3. If plugging into another physical USB port on the PC, it will be assigned the next available designation, in this case COM4.

After the drivers are installed, use Windows Device Manager to determine the COM Port designation that was assigned to the USB port. Or open the application that is to be used with the 882IS, such as Revolution, and see which ports are available.

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Configuration of the USB Device Port is done in the USB Communications sub-menu under IO MODULE PORTS in configuration mode (Section 3.2.13 on page 35).

The port can be configured as either a demand port for EDP commands and printing, or a data streaming port. Other settings include the termination character(s); enabling echoes and responses; adjust the end-of-line delay; and whether or not the indicator displays a 'print' message when a print format sends data out the port.

> **Note** *If a computer application has an open communications connection through the USB Device Port, and the physical cable connection is interrupted, a soft reset is performed on the indicator or power is cycled to the indicator; the connection in the computer application must be disconnected and reconnected again before it will continue to communicate with the indicator.*
>
> *For the USB Device Port, it does not matter what the settings are for Baud, Data Bits, Parity and Stop Bits in the computer software. The port will communicate in the same way regardless of these settings.*
>
> *This port is not a host port and is not intended to be connected to other devices such as keyboards, memory sticks or printers.*

8.3   Ethernet Communications

The 882IS features Ethernet TCP/IP 10Base-T/100Base-TX communication using a standard RJ45 connector (J6 – see Figure 8-1). It can support two simultaneous connections, one as a server, the other as a client.

Through an Ethernet network, software applications are able to communicate with the 882IS using the EDP command set (see Section 6.0 on page 53), or data can be streamed continuously from the indicator, or printed on demand.

The Ethernet port supports both DHCP and manual configuration of settings such as the IP and subnet. In addition, the TCP Port number, Primary and Secondary DNS, and the Default Gateway can be configured using the Ethernet sub-menu of the Ports setup menu. For more information on configuring the Ethernet port see Section 3.2.12 on page 34.

Physical connection to the 882IS Ethernet port can be made directly from a PC to the 882IS (AdHoc Network), or through a network router or switch. The port supports auto-sensing MDI/MDIX cable configuration, so either straight-through or crossover cables can be used.

The RJ45 Ethernet jack on the 882IS houses two LEDs to indicate the status and speed of the connection.

Yellow LED (left) indicates the status of the connection:

- Off for no link
- On for a link
- Blinking if there is activity

Green LED (right) is:

- Off for a 10Base-T connection
- On for a 100Base-TX connection

Yellow LED   **Green LED**
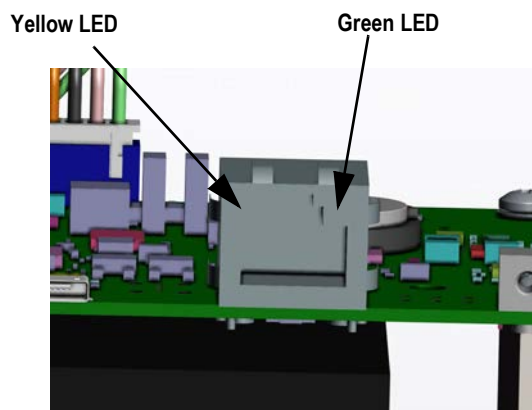
Figure 8-1. RJ45 Ethernet Jack

9.0   Appendix

9.1   Error Messages

The 882IS indicator provides a number of error messages. When an error occurs, the message is shown on the indicator display. Error conditions can also be checked remotely by using the XE EDP command as described in Section 9.3.

9.1.1   Displayed Error Messages

The 882IS provides a number of front panel error messages to assist in problem diagnosis. Table 9-1 lists these messages and their meanings.

Error Message	Description	Solution
‾ ‾ ‾ ‾ ‾ ‾	Over range	Check for improper load cell wiring, configuration, calibration, scale hardware problems.
_ _ _ _ _ _	Under range	
_ _ _ _ _ _ (center dashes)	A/D out of range Or if using local/remote (serial scale) - loss of serial scale data.	
CFGERR	Configuration error on power up if there was an error loading configuration	Press the **Enter** key to reboot the indicator.
ERROR	Internal program error	Check configuration.
HWFERR	Hardware failure error on failure to write to the EEPROM any error (except for a battery error or an accumulation over range error) when exiting the menu	Press the **Enter** key to reboot the indicator.
NOTARE	Tare is prevented because of regulatory mode settings, the configuration of the TAREFN parameter, motion on the scale, etc.	Change regulatory mode settings or the TAREFN parameter.
RANGE	A numeric value entered in configuration is out of the acceptable range. The error is displayed momentarily – then parameter being edited is displayed so the value can be corrected.	Re-enter a value that is in range for the parameter being edited.
NO ZERO	Zero is prevented (due to regulatory mode settings, motion on the scale, zero range settings)	Check zero settings and for motion.

Table 9-1. 882IS Error Messages

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9.2   Using the HARDWARE Command

The HARDWARE serial command can be used to verify that installed option cards are recognized by the system. The HARDWARE command returns a three-digit card code, representing the card installed:

Code	Card Type
000	No card installed
153	Analog Output Card
170	Fieldbus Option Card

Table 9-2. HARDWARE Command Option Card Type Codes

If an installed card is not recognized (HARDWARE command returns code of 000), ensure that the card is seated properly. Reinstall the card, if necessary, then cycle the power to read the configuration again. If the card is still not recognized, try a different option card.

9.3   ERROR Commands Output

The XE and XEH commands return a representation of any existing error conditions as described in the following table. If more than one error condition exists, the number returned is the sum of the values representing the error conditions. The XE command returns the value as a decimal representation and the XEH command returns the value as a hexadecimal representation.

XE Error Code (decimal)	Description	XEH Error Code (hexadecimal)
0	No Errors	0x00000000
1	Configuration Signature Error	0x00000001
2	Parameter Checksum Error	0x00000002
4	Loadcell Data Checksum Error	0x00000004
8	Print Format Checksum Error	0x00000008
64	Battery Power Low Voltage Error	0x00000040
32768	Gravity Compensation Error	0x00008000
65536	A/D Physical Error	0x00010000
131072	Tare Storage Checksum Error	0x00020000
262144	Accumulator Overflow Error	0x00040000

Table 9-3. Error Commands Output

9.4   Status Messages

The EDP command **P** can be used to provide status about the indicator.

• The **P** EDP command returns whatever is currently shown in the indicator's primary display area.

PPPPPPP uu

where:

• ***PPPPPPP*** is the information shown on the primary display

• ***uu*** is the 2-digit units annunciator

If the indicator is in an underrange or overload condition, the weight value is replaced with ***&&&&&&*** (overload) or ***::::::*** (underrange).

9.5 TARE and ZERO Key Functions

The function of the front panel **Tare** and **Zero** keys depend on the value specified for the Regulation parameter in the Features menu, see Figure 3-9 on page 30.

Table 9-4 describes the function of these keys for each of the regulatory modes.

| Regulation Parameter Value | Weight on Scale | Tare in System | Front Panel TARE Key or KTARE command (Tare Enable – tare function setting) | | | Front panel ZERO key or KZERO command |
			KEYED	PBONLY	BOTH	
NTEP	zero or negative	No	Keyed prompt (1)	No Action	Keyed prompt (1)	Zero
		Yes	Keyed prompt (2)	Clear tare	Keyed prompt (2)	Zero
	positive	No	Keyed prompt (1)	Tare	Tare	Zero
		Yes	Keyed prompt (2)	Tare	Tare	Zero
CANADA	zero or negative	No	Keyed prompt (1)	No Action	Keyed prompt (1)	Zero
		Yes	Keyed prompt (2)	Clear tare	Keyed prompt (2)	Zero
	positive	No	No Action	Tare	Tare	Zero
		Yes	No Action	No Action	No Action	Zero
OIML	zero or negative	No	Keyed prompt (1)	No Action	Keyed prompt (1)	Zero
		Yes	Keyed prompt (2)	Clear tare	Keyed prompt (2)	Zero and clear Tare (3)
	positive	No	Keyed prompt (1)	Tare	Tare	Zero
		Yes	Keyed prompt (2)	Tare	Tare	Zero and clear Tare (3)
NONE	zero or negative	No	Keyed prompt (1)	Tare	Keyed prompt (1)	Zero
		Yes	Keyed prompt (2)	Clear tare	Keyed prompt (2)	Zero
	positive	No	Keyed prompt (1)	Tare	Tare	Zero
		Yes	Keyed prompt (2)	Clear tare	Clear tare	Zero

NOTES:
1. *Entering a Zero tare will cancel the entry. Any other value will be accepted as a Keyed Tare.*
2. *Entering a Zero tare will clear the current Tare. Any other value will be accepted as a Keyed Tare.*
3. *The indicator will Zero and Clear the Tare only if the gross weight is within Zero Range. No action is taken if the weight is outside of Zero Range.*

Table 9-4. Tare and Zero Key Functions for REGULA Parameter Settings

Table 9-5 lists the sub-parameters available when configuring a scale using INDUST mode. The table includes the default values of the INDUST sub-parameters and the effective (not configurable) values used by NTEP, CANADA, OIML and NONE regulatory modes

| REGULA/INDUST Parameter | | REGULA Mode | | | | |
Parameter	Description	INDUST	NTEP	CANADA	OIML	NONE
SNPSHT	Display or Scale weight source	DISPLAY	DISPLAY	DISPLAY	DISPLAY	SCALE
ZTARE	Remove tare on ZERO	NO	NO	NO	YES	YES
KTARE	Always allow keyed tare	YES	YES	NO	YES	YES
MTARE	Multiple Tare Action	REPLAC	REPLAC	NOTHIN	REPLAC	REMOVE
NTARE	Allow negative tare	NO	NO	NO	NO	YES
CTARE	Allow CLEAR tare to clear tare	YES	YES	YES	NO	YES
RTARE	Round push button tare to nearest Display Division.	YES	YES	YES	NO	YES
PRTMOT	Allow print while in motion	NO	NO	NO	NO	YES
PRTPT	Add PT to keyed tare print	NO	NO	YES	YES	NO
OVRBAS	Zero base for overload calculation	CALIB	CALIB	CALIB	SCALE	CALIB

Table 9-5. REGULA/INDUST Mode Parameters, Comparison with Effective Values of Regulatory Modes

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9.6 Data Formats

9.6.1 Stream Serial Data Format

If stream data transmission is configured for a port (STRLFT or STRIND), by default the 882IS sends data using the Rice Lake Weighing Systems serial data format shown in Figure 9-1.

| <STX> | <POL> | <wwwwwww> | <UNIT> | <G/N> | <S> | <TERM> |

ASCII 02 decimal

Polarity:
<space> = Positive
<–> = Negative

Weight: 7 digits, right-justified, dummy zeroes, decimal point with no leading zeroes except for leading zero immediately preceding the decimal point. Leading zeroes transmitted as spaces.

L = pounds
K = kilograms
T = tons (T, TN, LT)
O = ounces
G = grams
<space> = GN, TROYOZ, TROYLB, or NONE

G = Gross
N = Net

Status:
<space> = valid
I = Invalid
M = Motion
O = Over/under range

<CR> <LF>
or <CR>

Figure 9-1. Stream Serial Data Format

Stream Format parameter default – <2><P><W7.><U><M><S><CR><LF>

> **Note** **Format can be changed, see** Section 9.7**.**
>
> **The character values can be changed for the stream format tokens, see** Table 6-7 on page 57**.**

9.6.2 Print Output Serial Data Format

The 882IS uses a data string format for a basic ticket printout. The print format is configured in the setup menu for the demand (print) port, and depends on the indicator configuration and mode. See Section 7.0 on page 62 for print formatting.

Use the EDP commands, Revolution or the front panel to fully customize the print to work with a wide variety of printers and other remote equipment.

9.7 Custom Stream Formatting – Input/Output

The format of the streamed data can be configured for any of the ports individually using the front panel, EDP commands or Revolution using the tokens in Table 9-6. Configuration is available for stream input/output tokens through EDP commands only; no front panel access is provided.

Format Identifier	Defined By	Description
<P[G | N | T]>	STR.POS STR.NEG	Polarity. Outputs the positive or negative polarity label for the current or specified (Gross/Net/Tare) weight on the source scale. Possible values are SPACE, NONE, + (for STR.POS), or – (for STR.NEG)
<U[P | S | T]>	STR.PRI STR.SEC STR.TER	Units. Outputs the primary, secondary, or tertiary* units label for the current or specified (Primary/Secondary/Tertiary*) weight on the source scale.
<M[G | N | T]>	STR.GROSS STR.NET STR.TARE	Mode. Outputs the gross, net, or tare label for the current or specified weight (Gross/Net/Tare) on the source scale.
<S>	STR.MOTION STR.RANGE STR.OK STR.INVALID STR.ZERO	Outputs the status for the source scale. Default values and meanings for each status: STR.MOTIONM In motion STR.RANGEO Out of range STR.OK <space> OK STR.INVALIDI Invalid STR.ZERO Z COZ

Table 9-6. Custom Stream Format Identifiers

Format Identifier	Defined By	Description
<B [–]n,…>	See descriptions below	Bit fields. Comma-separated sequence of bit field specifiers. Must be exactly 8 bits. Minus sign ([–]) inverts the bit.
B0	-	Always 0
B1	-	Always 1
B2	Configuration	=1 if even parity
B3	Dynamic	=1 if MODE=NET
B4	Dynamic	=1 if COZ (center of zero)
B5	Dynamic	=1 if motion
B6	Dynamic	=1 if displayed gross or net weight is negative
B7	Dynamic	=1 if out of range
B8	Dynamic	=1 if secondary/tertiary*
B9	Dynamic	=1 if tare in system
B10	Dynamic	=1 if tare is keyed
B11	Dynamic	=00 if MODE=GROSS =01 if MODE=NET =10 if UNITS=TERTIARY* =11 (not used)
B12	Dynamic	=00 if UNITS=PRIMARY =01 if UNITS=PRIMARY =10 if UNITS=PRIMARY =11 (note used)
B13	Configuration	=00 (not used) =01 if current DSPDIV=1 =10 if current DSPDIV=2 =11 if current DSPDIV=5
B14	Configuration	=00 (not used) =01 if primary DSPDIV=1 =10 if primary DSPDIV=2 =11 if primary DSPDIV=5
B15	Configuration	=00 (not used) =01 if secondary DSPDIV=1 =10 if secondary DSPDIV=2 =11 if secondary DSPDIV=5
B16	Configuration	=00 (not used) =01 if tertiary* DSPDIV=1 =10 if tertiary* DSPDIV=2 =11 if tertiary* DSPDIV=5
B17	Configuration	=000 (not used) =001 if current DECPNT=888880 =010 if current DECPNT=888888 =011 if current DECPNT=88888.8 =100 if current DECPNT=8888.88 =101 if current DECPNT=888.888 =110 if current DECPNT=88.8888 =111 if current DECPNT=8.88888
B18	Configuration	=000 (not used) =001 if primary DECPNT=888880 =010 if primary DECPNT=888888 =011 if primary DECPNT=88888.8 =100 if primary DECPNT=8888.88 =101 if primary DECPNT=888.888 =110 if primary DECPNT=88.8888 =111 if primary DECPNT=8.88888

Table 9-6. Custom Stream Format Identifiers (Continued)

Format Identifier	Defined By	Description
B19	Configuration	=000 (not used) =001 if secondary DECPNT=888880 =010 if secondary DECPNT=888888 =011 if secondary DECPNT=88888.8 =100 if secondary DECPNT=8888.88 =101 if secondary DECPNT=888.888 =110 if secondary DECPNT=88.8888 =111 if secondary DECPNT=8.88888
B20	Configuration	=000 (not used) =001 if tertiary* DECPNT=888880 =010 if tertiary* DECPNT=888888 =011 if tertiary* DECPNT=88888.8 =100 if tertiary* DECPNT=8888.88 =101 if tertiary* DECPNT=888.888 =110 if tertiary* DECPNT=88.8888 =111 if tertiary* DECPNT=8.88888
<wspec [–] [0] digit[[.]digit]>	Scale weight	Weight for the source scale. wspec is defined as follows: wspec Indicates whether the weight is the current displayed weight (W, w), gross (G, g), net (N, n), or tare (T, t) weight. Upper-case letters specify right-justified weights; lower-case are left-justified. Optional /P, /S, or /T suffixes can be added before the ending delimiter (>) to specify weight display in primary (/P), secondary (/S), or tertiary* (/T) units. [–] Enter a minus sign (–) to include sign for negative values. [0] Enter a zero (0) to display leading zeroes. digit[[.][.]digit] The first digit indicates the field width in characters – range is 1-7. Decimal point only indicates floating decimal; decimal point with following digit (range is 1-5) indicates fixed decimal with n digits to the right of the decimal. Two consecutive decimals send the decimal point even if it falls at the end of the transmitted weight field.
<CR>	-	Carriage return, hex 0x0D, ASCII decimal 13
<LF>	-	Line feed, hex 0x0A, ASCII decimal 10
<SPnn>	-	Space, nn = number of spaces. If nn is not specified, 1 is assumed. Value must be in the range 1-99.
<NLnn>	TERMIN setting of the port	New line, nn = number of termination (<CR/LF> or <CR>) characters. If nn is not specified, 1 is assumed. Value must be in the range 1-99. Note: when streaming data, a configured End-of-Line Delay is performed after each New Line.
<nnn>	-	ASCII character (nnn = decimal value of ASCII character). Used for inserting control characters (<002> for an STX, for example) in the output.
* Tertiary (Range/Interval 3)		

Table 9-6. Custom Stream Format Identifiers (Continued)

9.8   Stream Formatting Examples

9.8.1   Toledo 8142 Indicator

Sample string for Toledo 8142 indicator (with no checksum):

<STX><*Status Word A*><*Status Word B*><*Status Word C*><*wwwwww*><*tttttt*><EOL>

882IS stream format configuration:<02><B2, B0, B1, B13, B17><B2, B0, B1, B8, B5, B7, B6, B3><B2, B0, B1, B0, B0, B0, B0, B0><W6><T6><CR>

Identifier	Description
<STX>	The STX character is entered into the string using the <02> hex value.
<*Status Word A*>	Toledo status words are made up of various bit fields. NOTE: Identifiers must be entered beginning with the high-order bit (bit 7–bit 0) of the Toledo status word. Status Word A contains the following fields. Equivalent 882IS format identifiers are shown in parentheses Bit 7: parity (B2) Bit 6: always 0 (B0) Bit 5: always 1 (B1) Bits 3–4: display divisions (B13) Bits 0–2: decimal format (B17)
<*Status Word B*>	Status Word B contains the following fields. Equivalent 882IS format identifiers are shown in parentheses Bit 7: parity (B2) Bit 6: always 0 (B0) Bit 5: always 1 (B1) Bit 4: lb/kg units (B8) Bit 3: stable/motion (B5) Bit 2: in/out-of-range (B7) Bit 1: pos/neg (B6) Bit 0: gross/net (B3)
<*Status Word C*>	Status Word C contains the following fields. Equivalent 882IS format identifiers are shown in parentheses Bit 7: parity (B2) Bit 6: always 0 (B0) Bit 5: always 1 (B1) Bits 0–4: always 0 (B0)
<*wwwwww*>	The <W6> and <T6> indicate six digits of indicated weight and tare weight. Valid characters are W, w, G, g, T, t, N, or n (lower case indicates left justified). W indicates current weight, G gross weight, N net weight, and T tare weight. /P and /S can be used to specify primary or secondary. Minus indicates sign inclusion, and (0) indicates leading zeros. First digit indicates field width in characters. Decimal indicates floating decimal point. Decimal with subsequent digit indicates fixed decimal with *n* digits to the right of the decimal. Two consecutive decimals (for example, <W06..>) send the decimal point even if it falls at the end of the transmitted weight field.
<*tttttt*>	Tare weight. See description above
<EOL>	<CR> is entered at the end of the string as the end of line character in this example

Table 9-7. Toledo Sample String Identifiers

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W E I G H I N G   S Y S T E M S

9.8.2 Cardinal 738 Indicator

Sample string for the Cardinal 738 indicator:

      <CR><POL><*wwwwww*><S><SP><*units*><SP><G/N><SP><SP><EOL>

882IS stream format configuration:

      <CR><P><W07..><S><SP><U><SP><M><SP2><03>

Identifier	Description
<CR>	Carriage Return
<POL>	Cardinal uses + for positive and – for negative, so the stream polarity tokens need to reflect this. The EDP commands for the 882IS are STR.POS=+ and STR.NEG= –.
<*wwwwwww*>	The <W07.> identifier that the 882IS recognizes indicates seven digits of weight with a decimal and leading zeros, with the decimal being sent at the end of the weight. Valid characters are W, w, G, g, T, t, N, or n (lower case indicates left justified). W indicates current weight, G gross weight, N net weight, T tare weight. /P and /S can be used to specify primary or secondary. Minus indicates sign inclusion, while (0) indicates leading zeros. First digit indicates field width in characters. Decimal indicates floating decimal point. Decimal with subsequent digit indicates fixed decimal with *n* digits to the right of the decimal. Two consecutive decimals (for example, <W06.>) send the decimal point even if it falls at the end of the transmitted weight field.
<S>	There are four possible tokens for status bits that can be used: motion, out-of-range, valid, and invalid. In the Cardinal, m indicates motion, o indicates out-of-range, and a space is used for valid or invalid weights. The commands to set these tokens in the 882IS are STR.MOTION=m, STR.RANGE=o, STR.OK= , STR.INVALID= . ***NOTE: Although it appears that there are no commands for OK and INVALID, there is a space entered with the keyboard before pressing the Enter key.***
<SP>	Space
<*units*>	The Cardinal uses two-character, lower-case units identifiers. The commands to set these tokens in the 882IS include: STR.PRI=lb (options: kg, g, tn, t , gr, oz, or sp), STR.SEC=kg (options: lb, g, tn, t , gr, oz, or sp).
<SP>	Space
<G/N>	The mode used for Cardinal is *g* for gross and *n* for net. These tokens are set using the STR.GROSS=g and STR.NET=n tokens.
<SP>	Space
<SP>	Space
<EOL>	The end of line character is an ETX in this case so the hex value of <03> is entered in the string.

Table 9-8. Cardinal Sample String Identifiers

9.8.3   Weightronix WI 120 Indicator

Sample string for the Weightronix WI120 indicator:

<SP><G/N><POL><*wwwwww*><SP><*units*><EOL>

882IS stream format configuration:

<SP><M><P><W06.><SP><U><CR><LF>

Identifier	Description
<SP>	Space
<G/N>	The mode used for Weightronix is *G* for gross and *N* for net. These tokens are set using the STR.GROSS=G and STR.NET=N tokens.
<POL>	Since the Weightronix uses + for positive and – for negative, the polarity tokens need to reflect this. The EDP commands for the 882IS are STR.POS=+ and STR.NEG= –.
<*wwwwww*>	The <W06.> that the 882IS recognizes indicates six digits of weight with a decimal and leading zeroes. Valid characters are W, w, G, g, T, t, N, or n (lower case indicates left justified). W indicates current weight, G gross weight, N net weight, and T tare weight. /P and /S can be used to specify primary or secondary. Minus indicates sign inclusion, while (0) indicates leading zeros. First digit indicates field width in characters. Decimal indicates floating decimal point. Decimal with subsequent digit indicates fixed decimal with *n* digits to the right of the decimal. Two consecutive decimals (for example, <W06..>) send the decimal point even if it falls at the end of the transmitted weight field.
<SP>	Space
<*units*>	The Weightronix uses two-character, lower-case units identifiers. The commands to set these tokens in the 882IS include: STR.PRI=lb (options: kg, g, tn, t , gr, oz, or sp), STR.SEC=kg (options: lb, g, tn, t , gr, oz, or sp).
<EOL>	<CR> or <CR> and <LF>

Table 9-9. Weightronix Sample String Identifiers

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9.9 ASCII Character Chart

Use the decimal values for ASCII characters listed in Tables 9-10 and 9-11 when specifying print format strings in the 882IS Print Format menu or serial stream formats. The actual character printed depends on the character mapping used by the output device.

The 882IS can send or receive any ASCII character value (decimal 0–255). Due to limitations of the indicator display, some characters cannot be shown.

Control	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex
Ctrl-@	NUL	00	00	space	32	20	@	64	40	`	96	60
Ctrl-A	SOH	01	01	!	33	21	A	65	41	a	97	61
Ctrl-B	STX	02	02	"	34	22	B	66	42	b	98	62
Ctrl-C	ETX	03	03	#	35	23	C	67	43	c	99	63
Ctrl-D	EOT	04	04	$	36	24	D	68	44	d	100	64
Ctrl-E	ENQ	05	05	%	37	25	E	69	45	e	101	65
Ctrl-F	ACK	06	06	&	38	26	F	70	46	f	102	66
Ctrl-G	BEL	07	07	'	39	27	G	71	47	g	103	67
Ctrl-H	BS	08	08	(	40	28	H	72	48	h	104	68
Ctrl-I	HT	09	09	)	41	29	I	73	49	i	105	69
Ctrl-J	LF	10	0A	*	42	2A	J	74	4A	j	106	6A
Ctrl-K	VT	11	0B	+	43	2B	K	75	4B	k	107	6B
Ctrl-L	FF	12	0C	,	44	2C	L	76	4C	l	108	6C
Ctrl-M	CR	13	0D	-	45	2D	M	77	4D	m	109	6D
Ctrl-N	SO	14	0E	.	46	2E	N	78	4E	n	110	6E
Ctrl-O	SI	15	0F	/	47	2F	O	79	4F	o	111	6F
Ctrl-P	DLE	16	10	0	48	30	P	80	50	p	112	70
Ctrl-Q	DC1	17	11	1	49	31	Q	81	51	q	113	71
Ctrl-R	DC2	18	12	2	50	32	R	82	52	r	114	72
Ctrl-S	DC3	19	13	3	51	33	S	83	53	s	115	73
Ctrl-T	DC4	20	14	4	52	34	T	84	54	t	116	74
Ctrl-U	NAK	21	15	5	53	35	U	85	55	u	117	75
Ctrl-V	SYN	22	16	6	54	36	V	86	56	v	118	76
Ctrl-W	ETB	23	17	7	55	37	W	87	57	w	119	77
Ctrl-X	CAN	24	18	8	56	38	X	88	58	x	120	78
Ctrl-Y	EM	25	19	9	57	39	Y	89	59	y	121	79
Ctrl-Z	SUB	26	1A	:	58	3A	Z	90	5A	z	122	7A
Ctrl-[	ESC	27	1B	;	59	3B	[	91	5B	{	123	7B
Ctrl-\	FS	28	1C	<	60	3C	\	92	5C			124	7C
Ctrl-]	GS	29	1D	=	61	3D	]	93	5D	}	125	7D
Ctrl-^	RS	30	1E	>	62	3E	^	94	5E	~	126	7E
Ctrl-_	US	31	1F	?	63	3F	_	95	5F	DEL	127	7F

Table 9-10. ASCII Character Chart (Part 1)

ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex	ASCII	Dec	Hex
Ç	128	80	á	160	A0		192	C0	a	224	E0
ü	129	81	í	161	A1		193	C1	b	225	E1
é	130	82	ó	162	A2		194	C2	G	226	E2
â	131	83	ú	163	A3		195	C3	p	227	E3
ä	132	84	ñ	164	A4		196	C4	S	228	E4
à	133	85	Ñ	165	A5		197	C5	s	229	E5
å	134	86	ª	166	A6		198	C6	m	230	E6
ç	135	87	º	167	A7		199	C7	t	231	E7
ê	136	88	¿	168	A8		200	C8	F	232	E8
ë	137	89		169	A9		201	C9	Q	233	E9
è	138	8A	¬	170	AA		202	CA	W	234	EA
ï	139	8B	1/2	171	AB		203	CB	d	235	EB
î	140	8C	1/4	172	AC		204	CC	¥	236	EC
ì	141	8D	¡	173	AD		205	CD	f	237	ED
Ä	142	8E	«	174	AE		206	CE	Î	238	EE
Å	143	8F	»	175	AF		207	CF	Ç	239	EF
É	144	90		176	B0		208	D0	º	240	F0
æ	145	91		177	B1		209	D1	±	241	F1
Æ	146	92		178	B2		210	D2	³	242	F2
ô	147	93		179	B3		211	D3	£	243	F3
ö	148	94		180	B4		212	D4	ó	244	F4
ò	149	95		181	B5		213	D5	õ	245	F5
û	150	96		182	B6		214	D6	¸	246	F6
ù	151	97		183	B7		215	D7	»	247	F7
ÿ	152	98		184	B8		216	D8	º	248	F8
Ö	153	99		185	B9		217	D9	·	249	F9
Ü	154	9A		186	BA		218	DA		250	FA
¢	155	9B		187	BB		219	DB		251	FB
£	156	9C		188	BC		220	DC		252	FC
¥	157	9D		189	BD		221	DD	²	253	FD
Pts	158	9E		190	BE		222	DE		254	FE
ƒ	159	9F		191	BF		223	DF		255	FF

Table 9-11. ASCII Character Chart (Part 2)

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9.10 Digital Filtering

Digital filtering can be used to create a stable scale reading in challenging environments. The 882IS has two filtering methods that can be set; Sample rate and Digital filter.

9.10.1 Sample Rate:

The Sample rate should be set first. Better stability is achieved with a lower sample rate setting, so 7.5 Hz is more stable than 120 Hz.

9.10.2 Digital Filter:

The digital filter is an adaptive filter that has two parameters to set the filter settling and response times: sensitivity and threshold.

Digital Filtering Sensitivity

Digital filtering sensitivity controls the stability and settling time of the scale. The sensitivity parameter can be set to heavy, medium, or light. A heavy setting will result in an output that is more stable and will settle more slowly than that of light. However, small changes in weight data (a few grads) on the scale base will not be seen as quickly.

If the difference in typical subsequent weight values on the scale will be only a few grads, use a light setting. If using a truck scale where the changes in subsequent weight values will be 100s of grads, a heavy setting will be more appropriate.

Digital Filtering Threshold

With the digital filter threshold set at zero, determine the amount of instability that is present. Convert this instability to display divisions. The number of display divisions of instability will be used to set the threshold of the digital filter. The digital filter can be set to *Off* by entering 0 in the *Filter Threshold* parameter.

Digital filtering threshold should be set for the amount of observed noise in the system. This parameter can be set in the range of 0 to 99999 display divisions. When a new sampled weight value is acquired, the adaptive filter compares the new value to the previous (filtered) output value. If the difference between the new value and the previous output value is greater than the *Filter Threshold* parameter (displayed division) the adaptive filter output is reset. The newly acquired sample value replaces the filtered output. If the difference between the new value and the previous output value is less than the *Filter Threshold* parameter, the two values are averaged together using a weighted average. The weighed average is based on the amount of the difference, time the system has been stable, and selected *Filter Sensitivity* value.

9.11 Analog Output Calibration

See Section 3.0 on page 23, Table 3-15 for Analog Output parameters.

The following calibration procedure requires a multimeter to measure voltage or current output from the analog output module. If the option is not already installed, install it in according to the instructions included with the option.

> **Note** *The analog output must be calibrated after the indicator itself has been configured (*Section 4.0*) and calibrated* (Section 4.0)*.*

1. Enter configuration mode and go to the Analog Output menu.
- Set OUTPUT as desired for 0-10V, 0-20mA, or 4-20mA output

> **Note** *the minimum calibration occurs at 0.5V and 1mA for a 0-10V and 0-20mA output respectively.*

- Set the minimum value to lowest weight value to be tracked by the analog output
- Set the maximum value to highest weight value to be tracked by the analog output
2. Connect multimeter to connector J1 on the analog output board:
- For voltage output, connect voltmeter leads to pins 3 and 4 (-V, +V)
- For current output, connect ammeter leads to pins 1 and 2 (-mA, +mA)
3. Adjust zero calibration:
- Scroll to the Calibrate Zero parameter
- Press ▽, 000000 displays
- Check voltage or current reading on multimeter
- Set the parameter to match the reading from the multimeter
- Press ◁ or ▷ to select the digit
- Press △ or ▽ to increment or decrement the value
- Press [TARE ↵] to move to the decimal point entry
- Press ◁ or ▷ to adjust the decimal point placement
- Press [TARE ↵] to accept the displayed value
- *CAL* is displayed while the calibration is being performed.
4. Adjust span calibration:
- Scroll to the Calibrate Span parameter
- Press ▽, 000000 displays
- Set the parameter to match the reading from the multimeter
- Press ◁ or ▷ to select the digit
- Press △ or ▽ to increment or decrement the value
- Press [TARE ↵] to move to the decimal point entry
- Press ◁ or ▷ to adjust the decimal point placement
- Press [TARE ↵] to accept the displayed value
- *CAL* will be displayed while the calibration is being performed
5. Verify calibration:
- Return to the Calibrate Zero/Calibrate Span parameter and verify that the calibration has not drifted.
- Repeat calibration if needed
6. Return to weigh mode. Analog output function can be verified using test weights.

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10.0   Compliance

$\mathsf{C}\,\mathsf{E}$

EU DECLARATION OF CONFORMITY

EU-KONFORMITÄTSERKLÄRUNG
DÉCLARATION UE DE CONFORMITÉ

Rice Lake Weighing Systems
230 West Coleman Street
Rice Lake, Wisconsin 54868
United States of America

RICE LAKE
W E I G H I N G   S Y S T E M S

Type/Typ/Type: 882IS/882IS Plus indicator, mb-EPS-100-240-X2 power supply and IS6V2 battery module, IO module

English   We declare under our sole responsibility that the products to which this declaration refers to, is in conformity with the following standard(s) or other regulations document(s).

Deutsch   Wir erklären unter unserer alleinigen Verantwortung, dass die Produkte auf die sich diese Erklärung bezieht, den folgenden Normen und Regulierungsbestimmungen entsprechen.

Francais   Nous déclarons sous notre responsabilité que les produits auxquels se rapporte la présente déclartion, sont conformes à la/aux norme/s suivante ou au/aux document/s normatif/s suivant/s.

EU Directive	Certificates	Standards Used / Notified Body Involvement
2014/30/EU EMC	-	EN 61326-1:2013, EN 55011:2009+A1:2010
2014/35/EU LVD	-	Applicable to: / Aufwendbar auf: / Applicable a: IO module EN 60950-1:2006+A11:2009/A1:2010/A12:2011/A2:2013
2011/65/EU RoHS	-	EN 50581:2012

2014/34/EU ATEX	FM18ATEX0047X	Applicable to: / Aufwendbar auf: / Applicable a:
		  Indicator,power supply and battery module
		EN 60079-0:2012+A11:2013, EN 60079-11:2012, EN 60079-18:2015, EN 60529:1991
		+A1:2000/A2:2013
		Notified Body involved with module B and D: / Benannte Stelle, die an Modul B und D
		beteiligt ist: / Organisme notifié impliqué dans les modules B et D:
		  FM Approvals Europe Ltd. - 2809

Signature: *Richard Shipman*

Type Name: Richard Shipman

Title: Quality Manager

Place: Rice Lake, WI   USA

Date: May 3, 2019

11.0 Specifications

Power

Nominal Voltage	Intrinsically safe power supply (7.5 VDC output) or optional 6 VDC battery
Minimum Voltage	5.8 VDC
Maximum Voltage	7.9 VDC
Current Consumption	100 mA average
	175 mA maximum (4 x 350W load cells)
Max Power Consumption	0.25 watts
Temperature	T4
Fusing	3 x 125 mA, fully-encapsulated

Analog Specifications

Full Scale Input Signal	0.6 mV/V - 4.0 mV/V
Load Cell Excitation	3.0VDC (350W); 4.6VDC (700W)
Load Cell Current	34 mA (4 x 350W or 8 x 700W load cells)
Analog Signal Input Range	-0.65 mV/V to 4.0 mV/V
Analog Signal Sensitivity	0.2 µV/graduation minimum, 1.5 µV/grad. recommended
Input Impedance	200 MW typical
Internal Resolution	8,000,000 count
Display Resolution	10 000 dd maximum (NTEP certified)
Measurement Rate	Up to 60 measurements/sec.
System Linearity	Within 0.01% of full scale
Zero Stability	150 nV/°C, maximum
Span Stability	3.5 ppm/°C, maximum
Calibration Method	Software, constants stored in EEPROM
RFI Protection	Signal, excitation, and sense lines protected by capacitor bypass
ESD/Transient Protection	600 watt PPD, Transient voltage suppressors
	IEC 6100-4-2
	± 8 kv contact
	± 15 kv air discharge

Optical Port

Physical Medium	2.2mm plastic fiber @ 640 nm
Max Transmission Length	246 ft. (75 m)

Operator Interface

Display	7-digit LCD display. 7-segment, 121 x 24 dot matrix with white LED background
LCD annunciators	Gross, net, center of zero, standstill, lb/primary units, kg/secondary units, count, tare
Front Panel	11 button flat membrane panel (including F1, F2, F3, F4, On/Off, Menu, Tare, Zero, Gross/Net, Units, Print)
	882IS Plus - Numeric keypad

Environmental

Operating Temperature	14 to +104°F (-10 to +40°C)
Storage Temperature	-13 to +158°F (-25 to +70°C)
Humidity	0–95% relative humidity

Enclosure

Enclosure Dimensions	9.6 in x 6.5 in x 4.3 in
	24 cm x 17 cm x 11 cm
Weight	2.8 Kg (6.1 lb)
Rating/Material	Stainless Steel IP-66

Certifications and Approvals

FM APPROVED
FM18US0195X
FM18ATEX0047X
IECx FMG 18.0018X
FM18CA0092X

NTEP
CoC Number 19-015
Accuracy ClassIII/III L
n_{max} : 10 000

**
UL LISTED
File Number: E151461-A23-UL

Measurement Canada Approved   (Pending)

The 882IS complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:
• This device may not cause harmful interference.
• This device must accept any interference received, including interference that may cause undesired operation.

*** UL is only applicable to 882IS IO and battery charger*

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