

Counterpart[®]

Counting Scale Indicator
Version 2.5

User Manual



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1.0 Introduction

This manual is intended for use by qualified installers and service technicians responsible for installing and servicing the Counterpart® counting scale indicator.

Counterpart offers practical solutions for a full range of precision counting applications. A bright LCD display enables operators to view quantities, alphanumeric text messaging, part numbers to verify descriptions and correct part called from memory. One hundred and fifty item memory and two RS-232 ports and Ethernet enable Counterpart to provide real-time data collection and position it for the future growth of businesses. Multiple scales can be connected to Counterpart, as well as an RS-232 bar code scanner and external printer. When portability is required, choose the battery operation option of Counterpart with up to 24 hours of continuous use for mobile workstations, outdoor applications, and rental fleets. It's built to withstand transport from one area of the plant to another or from one business to the next. Simply connect a printer via RS-232 for labeling, ticketing or receipt tasks.



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 Standard Features

Counterpart offers a variety of standard features:

- AC operated (battery operation is optional)
- Lb, kg, g, oz weight display conversion
- Single- or dual-channel models with serial scale
- Two RS-232 ports for peripheral connections (with one port also supporting 20 mA transmit)
- Onboard Ethernet capability
- Scanner input (using RS-232 port)
- Revolution software utility for setup
- 150 item memory

1.2 Capacities and Resolutions

Table 1-1 lists the scale capacities and resolutions for all part numbered models of Counterpart.

Counting scales show two types of resolution:

- Weight (or external) resolution
- Counting (or internal) resolution

Weight resolution is displayed in divisions of the full scale capacity, which is divided into weight increments. For example, a 5 lb scale divided into 10,000 display divisions would display weight with 0.0005 lb divisions (10,000 divisions x 0.0005 lb = 5.0 lb).

Counting resolution is based on the internal resolution of the scale. The default weight and counting resolutions for Counterpart capacities are shown below.

| Platform Capacity | Weighing Resolution | Counting Resolution | Platform Dimensions |
|-------------------|-----------------------|---------------------|---------------------|
| 5.0 lb (2 kg) | 0.0005 lb (0.0002 kg) | 0.000005 | 9 inch x 12 inch |
| 10 lb (5 kg) | 0.001 lb (0.0005 kg) | 0.00001 | 11 inch x 16 inch |
| 25 lb (10 kg) | 0.002 lb (0.001 kg) | 0.00002 | |
| 50 lb (20 kg) | 0.005 lb (0.002 kg) | 0.00005 | |
| 100 lb (50 kg) | 0.01 lb (0.005 kg) | 0.0001 | |

Table 1-1. Counterpart Capacities

1.3 Modes of Operation

1.3.1 Description of Modes of Operation

- Count Mode – all basic weighing and counting operations are performed
- Setup Mode – item data can be programmed into the memory of the scale

1.4 Keypad Functions










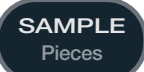


| Key | Function |
|---|---|
|  POWER | Turns Counterpart unit on/off.  Note <i>If the PC1 jumper is set to SW, the POWER button must be used to turn the unit on and off. If the PC jumper is set to ON, the unit automatically powers on when it's plugged in and the only way to turn it off is to unplug power.</i> |
|  MENU SETUP | Enters Menu mode, allowing configuration if the Audit jumper is in the ON position. Also used as an escape key in Menu mode. |
|  ZERO →0← | Sets the current gross weight to zero, provided the amount of weight to be removed or added is within the specified zero range and the scale is not in motion. The zero band is defaulted to 1.9% of full scale, but can be configured for up to 100% of full scale.  Note <i>1.9% is required for legal-for-trade applications.</i> |
|  UNIT WEIGHT | Used to enter a known unit weight of a part. Up to 10 characters may be entered including zero. |
|  PRINT | Sends on-demand serial information out the serial port, provided the conditions for standstill are met. |
|  TARE | Performs one of several predetermined Tare functions dependent on the mode of operation selected in the TAREFN parameter. To view a stored tare, see Section 1.5 on page 3 . Also acts as the ENTER key. |
|  GROSS NET B/N | Allows the display to change between gross mode and net mode. |
|  SAMPLE <i>Pieces</i> | Used for computing the unit weight by sampling. Press the SAMPLE key after placing a sample on the platform or after using the numeric keypad to enter the sample size. The default sample size is 10. |
|  UNITS TOGGLE | Switches the weight display to an alternate unit. The alternate unit is defined in the Setup Menu and could be kg, g, lb, oz. |
|  CLR | Clear key. Used to backspace on entries. |
| Alpha-Numeric keypad | Used to enter values directly. Press keys for lower and upper case alpha characters. See Figure 1-1 on page 3 . |

Table 1-2. Keypad Functions



Figure 1-1. Numeric Keypad

Additional Keypad Symbols

Additional symbols can be accessed by pressing the following keys.

| Key | Symbol |
|------------|--------|
| 1 | < |
| | > |
| | - |
| | + |
| | * |
| | \$ |
| | / |
| | % |
| | " |
| 0 | * |
| . (period) | space |

Table 1-3. Additional Keypad Symbols

1.5 Tare Recall

When a stored tare is displayed, Net annunciators turn on. To display a stored tare,

1. Set up a softkey (see Softkey Setup in [Section 1.7 on page 4](#)).
2. Press the **DISPLAY TARE** softkey. The tare value displays. If there is no tare in the system, pressing the **TARE** key will have no effect. The Gross/Net annunciators are not lit and a value is displayed in weight display area.

1.6 Annunciator Symbols




| Annunciator | Description |
|---|--|
|  | Zero (Center of Zero) While in gross weight display mode, this LED indicates that the current displayed weight reading is within +/-0.25 display divisions of the acquired zero, or is within the center of zero band. When in the net weight display mode, it indicates that the current net weight reading is within +/-0.25 display divisions of the center of net zero. A display division is the resolution of the displayed weight value, or the smallest incremental increase or decrease that can be displayed or printed. |
| G/B | Gross weight mode (or Brutto in OIML mode) |
| N | Net weight display mode |
|  | Indicates the level of the battery. |
|  | Scale is at standstill or within the specified motion band. Some operations, including tare functions and printing, can only be done when the standstill symbol is shown. |

Table 1-4. Annunciator Symbols

1.7 Softkey Setup

Softkeys offer additional ways to access features associated with Counterpart. To access the softkey setup parameter, go to **Menu/Setup/Config/Feature/Softkeys**.

Select information for each softkey and press **TARE (Enter)** key after each entry and then press the **SaveExit** softkey. To exit back out of the unit, press the **MENU SETUP** key twice without saving changes.



Softkeys set for either Display Tare or Display Accum automatically time out and revert to the normal active display after 10 seconds.

1.8 How to Use AlphaNumeric Keypad

Counterpart has the ability to use alpha characters along with numeric characters. Use the following steps to change to alpha characters:

1. Select a key labeled with the value desired.
2. Push until the desired value appears, e.g. 2 abcABC.
3. Move to the next letter and push until that value appears.
4. If the next letter is the same key, push the right arrow (PRINT) to move over to the next selection.
5. When complete, push **TARE (Enter)** to save.

1.9 Indicator Operations

Basic Counterpart operations are summarized below.

Toggle Gross/Net


Press the **GROSS/NET** key to switch the display mode from gross to net or from net to gross. If a tare value has been entered or acquired, the net value is the gross weight minus the tare. If no tare has been entered or acquired, the display remains in gross mode.

Gross mode and net mode is indicated by the annunciator on the display.

Toggle Units

Press the **UNITS TOGGLE** key to switch between primary, secondary, and tertiary units.

Zero Scale

1. While in gross mode, remove all weight from the scale and wait for the standstill annunciator (.
2. Press the **ZERO** key. The zero annunciator is displayed to indicate the scale is zeroed.

Acquire Tare

1. Place a container on the scale and wait for the standstill annunciator (▲▲).
2. Press the **TARE** key to acquire the tare weight of the container.
3. The **Net** annunciator will be enabled.

Remove Stored Tare Value

1. Remove all weight from the scale and wait for the **standstill** annunciator (▲▲).
2. Press the **TARE** key. The display shifts to gross weight and the Gross annunciator is displayed.

Keyed Tare

1. Key in the value of the container.
2. Press the **TARE** key.
3. The **Net** annunciator is displayed.

Print

Press the **PRINT** key to print either the Gross, Net, Total or Count format.

The default format is a 2.25 x 4.5 inch label.

1. Wait for standstill annunciator (▲▲).
2. Press the **PRINT** key to send data to the serial port.

If the standstill annunciator is not present, the **PRINT** key command is executed if the scale comes out of motion within three seconds.

Set Date and Time


1. If the softkey is enabled, push the softkey. The current value is displayed.
2. To change, use the Up/Down arrows to highlight the value to change.
3. Press the **TARE** key to save and exit.

Set Serial Scale (Scale 3)

1. Select Port 1 — Indust Scale.
2. Match the baud rates. Upon doing this it automatically becomes Scale 3.

Setting up a Softkey

To set up a softkey, use the following steps:

1. Press the **MENU SETUP**  key.
2. Navigate through the menu setup to Setup using the **▷** key.
3. Press **▽** to navigate to **CONFIG**.
4. Press **▽** to navigate to **SCALES**.
5. Press **▷** to navigate to **FEATURE**.
6. Press **▽** to navigate to **COUNT**.
7. Use **▷** to scroll to **SOFTKEYS**.
8. Scroll down. Then use **◀▷** to scroll through menu selections SK1 through SK12.
9. Press **▽** to assign a softkey to that position.
10. Select a parameter to be displayed.
11. Press **△** once the function is selected.
12. Press **Save/Exit** softkey.

2.0 Installation

Counterpart is available in different configurations from just the indicator display to the display and counting scale combined together as a unit. This section contains instructions on unpacking and assembly, leveling, making power connections, load cell wiring, wiring standard serial port, optional network communications, wiring optional digital outputs, optional backup battery operation, and power-up sequence. Assembly drawings and replacement parts lists are also included.

IMPORTANT

Do not pick up the counting scale by the “spider” assembly, which supports the platter. Lifting by the spider may damage the load cell. Lift the scale from under the base to move it.

2.1 Unpacking

Counterpart comes with the following components and comes pre-assembled from the factory.

Counterpart Indicator Display

- AC adapter
- This manual
- Indicator head

Scale Base

- Scale base
- Weighing platform
- Bracket assembly



Notes

If purchasing a different scale base, a separate plastic bag with wiring components comes with the scale base but is not needed and can be set aside.

Store the packing material and box in a safe, easily accessible place. To transport the scale across any substantial distance, using the original packing material is the first step in protecting the investment.

Immediately after unpacking the scale, visually inspect Counterpart to ensure all components are included and undamaged. If any parts were damaged in shipment, notify Rice Lake Weighing Systems and the shipper immediately.

2.2 Scale Base Assembly (if purchasing the scale base separate from indicator)

IMPORTANT

Do not turn the scale upside down. Always work with the scale on its side. Damage to the load cell can occur if the scale is turned upside down.

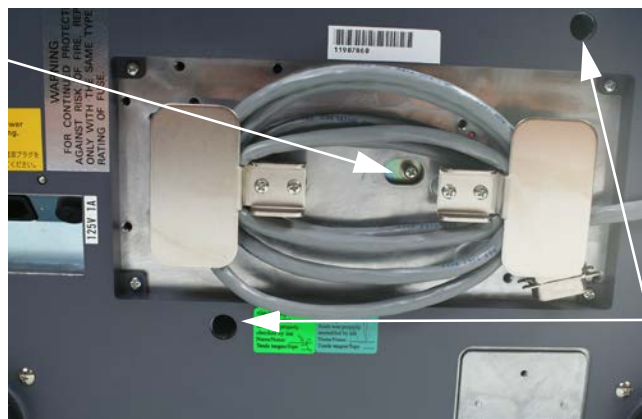
Set up the scale on a stable, level surface.

2.2.1 Locking and Unlocking - S-XL Scale Base

The Counterpart S-XL scale base is delivered in a locked position to prevent damage to the load cells during shipment. The scale base uses either one setscrew for the single-platform scale or two setscrews for the dual-platform scale. The setscrews are located on the bottom of the base and must be removed before the scale is put into service. Use the following steps to unlock the scale base.

1. Turn the scale on its side.

Single platform load cell setscrews



Dual platform load cell setscrews

Figure 2-2. Location of Load Cell Setscrews for Single and Dual-Platform Scales (DIGI S-XL Scale Base shown)

2. Remove the load cell setscrew using a hex wrench for the dual platform setscrews or a Phillips head screwdriver for the single platform scale.
3. Tape the setscrews to the bottom of the scale or store in a safe place for possible future use.

2.2.2 Locking and Unlocking - S-YC Scale Base

The Counterpart S-YCL scale base is delivered in a locked position to prevent damage to the load cells during shipment. The scale base uses two setscrews. The setscrews are located on the bottom of the base and must be removed before the scale is put into service. Use the following procedure to unlock the scale base for the S-YC Model.

1. Turn the scale on its side.

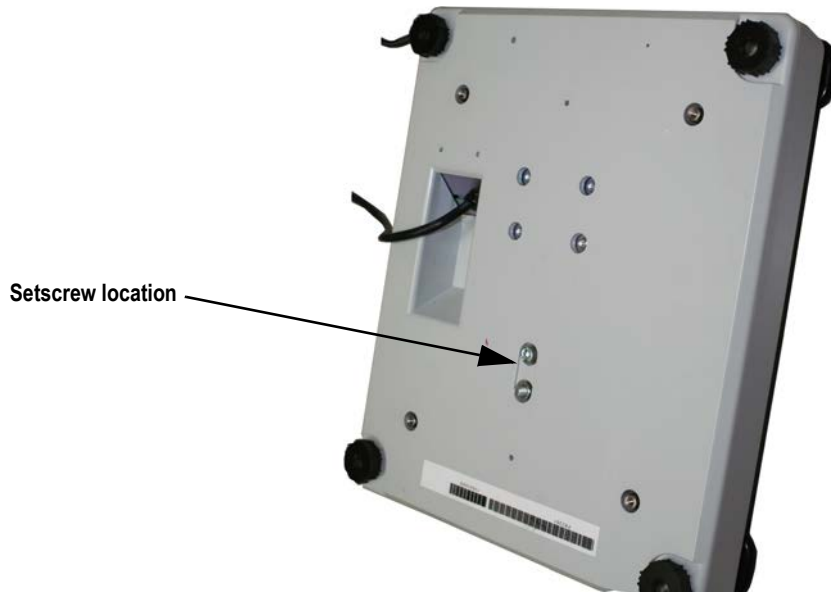


Figure 2-3. Location of Load Cell Setscrew for the DIGI S-YC Scale Base

2. Remove the load cell setscrews using a hex wrench which is included.
3. Tape the setscrews to the bottom of the scale or store in a safe place for possible future use.

2.2.3 Leveling

Select a location for the Counterpart that is level and free of vibrations and air currents. Adjust the four corner feet on the scale base and refer to the bubble level on the inside frame. The base should not rock and the feet should have solid contact with the surface.



Note Ensure the nut on each foot's bolt is secured flush against the scale base.

To ensure greater scale stability, turn in all four adjustable legs before leveling. Turn out adjustable legs to level as needed.



Figure 2-4. Adjust the Scale Base Feet

2.3 Enclosure Disassembly

The Counterpart indicator enclosure must be opened to connect cables for load cells, communications and digital inputs/ outputs.



Before opening the unit, ensure the unit is turned off and the power cord is disconnected from the power outlet. The power outlet must be located near the indicator to allow the operator to easily disconnect power to the unit.

Ensure power to the indicator is disconnected, then place the indicator on an anti-static mat. Remove the four screws holding the top plate to the enclosure body and set them aside. Gently lift the top plate away from the enclosure and disconnect any cables and set aside.

2.4 Cable Assembly Instructions

The indicator comes with five removable openings for running cabling through. The user can open as many as needed and can easily remove them by using needle-nose pliers as shown in Figure 2-5.

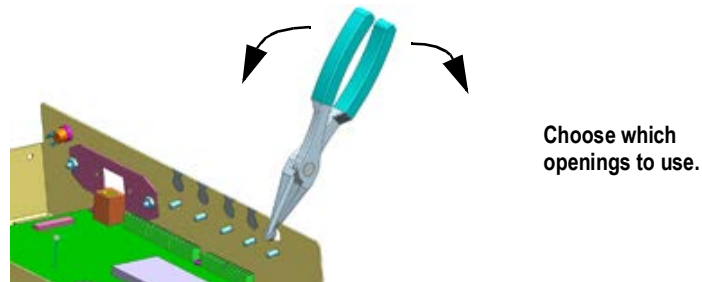


Figure 2-5. Removable Openings

Use the following steps to open and install cable assemblies.

1. Open the cover assembly by removing the four screws (only one shown in Figure 2-6).
2. Run the appropriate cable(s) through the desired opening(s).
3. Thread the plastic split bushing (found in the parts kits contents) onto the cable with the smallest diameter facing towards the enclosure and the split opening facing downwards.
4. Replace the cover assembly and tighten using the four screws.
5. Push the plastic bushing all the way into the enclosure to make a tight seal in the hole.

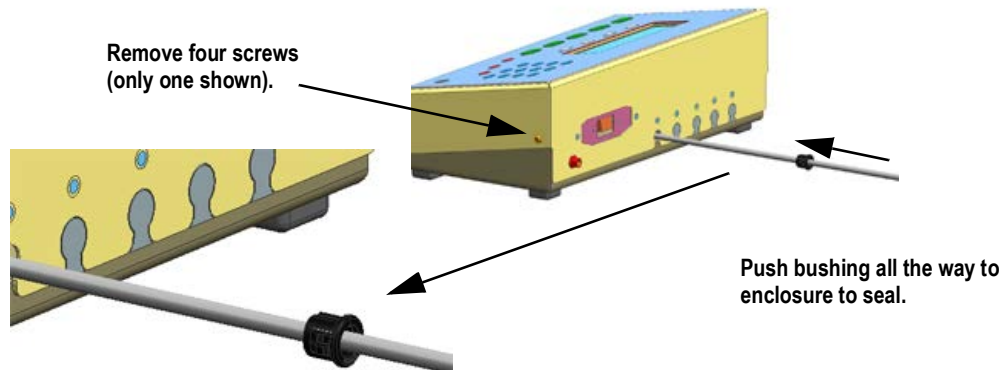


Figure 2-6. Use Plastic Bushings



Bushings are not a “cord grip.” Bushings allow for free movement of cable while protecting them from the enclosure sides.

2.5 Making Power Connections

The power source used for the Counterpart must be properly grounded to an acceptable earth ground and the outlet must be a grounded outlet. If the scale is remotely mounted, the platform must be separately grounded from the chassis ground screw located on the bottom of the platform. Connect this screw with 18 gauge wire to the same earth ground system as the AC power source. Failure to ground the base may cause static buildup that could cause damage to the electronics and/or give incorrect weight readings.

The AC adapter plugs in and turns to lock to the unit. [Figure 2-7](#) shows the AC power location.



Figure 2-7. AC Power Location

2.6 Load Cell Wiring

On all complete units, the load cell has been wired to the CPU load cell terminal at the factory. Wire the cable to the CPU board's J1 and J2 connector as shown in [Table 2-5](#).



Note If using a 4-wire connection, set J1 and J2 to ON. If using a 6-wire connection, set J1 and J2 to OFF.

| J1 & J2 | Function |
|---------|--------------|
| 1 | + Signal |
| 2 | - Signal |
| 3 | + Sense |
| 4 | - Sense |
| 5 | + Excitation |
| 6 | - Excitation |

Table 2-5. J1 and J2 Pin Assignments

2.6.1 Dual Channel Units (S-XD Base)

For units that have dual channels, connect cable from the 14 pin connector to J1 and J2. If not using a dual base, remove the J2 connector as shown in [Figure 2-9](#). Trim back the wires and tape.

Shown connectors shipped from the factory.

Remove connector off of J2 and tie off two wires.

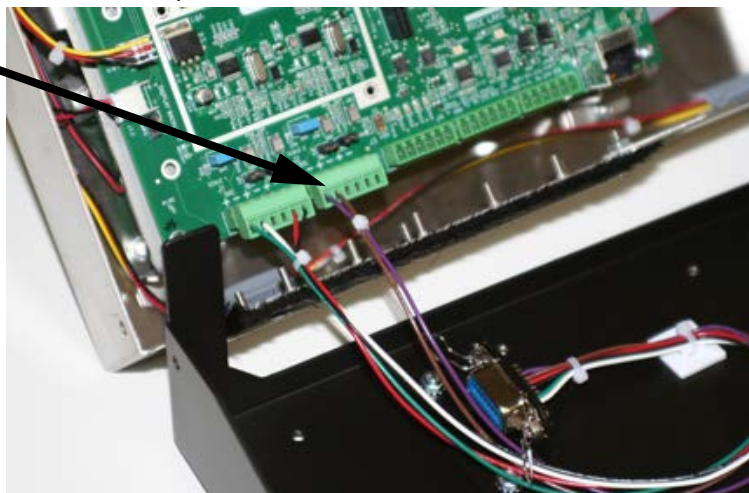


Figure 2-8. J2 Connector Location

2.6.2 Dual Channel – Remote Scale Setup

Use the following steps for units that have dual channels and want to set up a scale remotely.

1. Remove the connector from the parts bag (included).
2. Wire per the load cell wiring code.
3. Plug into the J2 connector on the CPU board (example shown in [Figure 2-8](#)).
4. Set up the soft key - Scale Select (see [Section 3.7 on page 25](#)).

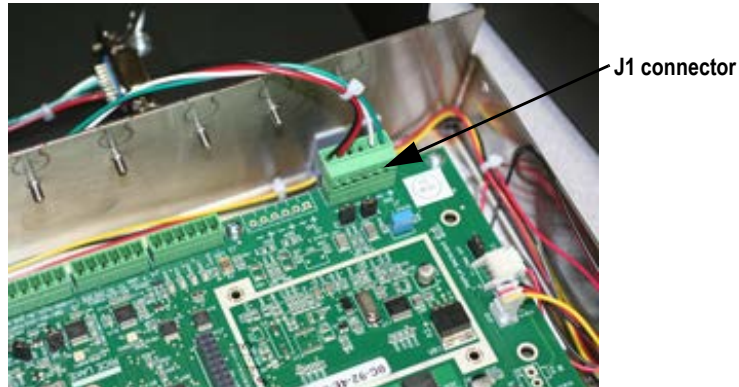


Figure 2-9. Remove J2 Connector if Using Single Base Scale or Only Single Base on a Dual Base

2.7 Wire Specifics

Wires connecting to J1, J2, J3, or J4 should adhere to the following specifications:

| Wire Range | Wire Strip Length |
|----------------------------------|-----------------------|
| 28~12 AWG stranded or solid wire | 5~6 mm (3/16" ~ 1/4") |

Table 2-6. Wire Specifications for Connectors

2.8 Cable Grounding

Except for the power cord, all cables should be grounded against the scale enclosure. Do the following to ground shielded cables.

- Use the lockwashers, clamps, and keps nuts provided in the parts kit to install grounding clamps on the enclosure studs. Install grounding clamps that will be used; do not tighten nuts
- Route cables and grounding clamps to determine cable lengths required to reach cable connectors. Mark cables to remove insulation and shield as described below
- For cables with foil shielding, strip insulation and foil from the cable half an inch (15 mm) past the grounding clamp (see [Figure 2-10](#)). Fold the foil shield back on the cable where the cable passes through the clamp. Ensure silver (conductive) side of foil is turned outward for contact with the grounding clamp
- For cables with braided shielding, strip cable insulation and braided shield from a point just past the grounding clamp. Strip another half inch (15 mm) of insulation **only** to expose the braid where the cable passes through the clamp (see [Figure 2-10](#))
- Finish installation using cable mounts and ties to secure cables inside of indicator enclosure

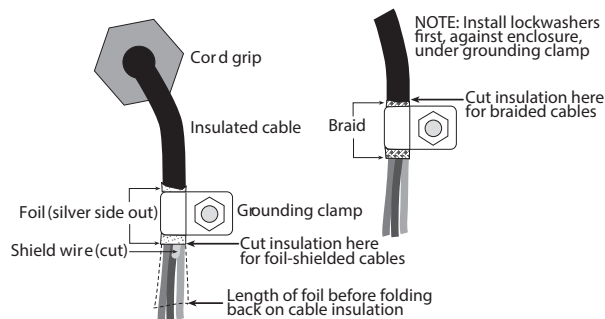


Figure 2-10. Grounding Clamp Attachment for Foil-Shielded and Braided Cabling

2.8.1 Serial Communications

Wire the serial communications cables to J4, which is Port 1 (20 mA). J5 is Port 2 (RS-232). Connect communications cables to J5 and J4 as shown in [Table 2-7](#).

Use cable ties to secure serial cables to the inside of the enclosure.

Port 1 supports full duplex RS-232 communications only; Port 2 provides either active 20 mA output or duplex RS-232 transmission. Both ports are configured using the SERIAL menu. See [Section 3.7.3 on page 40](#).

| Connector | Pin | Signal | Port |
|-----------|-----|------------------|------|
| J4 | 1 | +20 mA | 2 |
| | 2 | Ground or -20 mA | |
| | 3 | Tx | |
| | 4 | Rx | |
| | 5 | CTS | |
| | 6 | RTS | |
| J5 | 1 | Ground | 1 |
| | 2 | Ground | |
| | 3 | Tx | |
| | 4 | Rx | |
| | 5 | DTR | |
| | 6 | RTS | |

Table 2-7. Serial Communication Wiring



Note An additional port (Port 3) is available if needed through the installation of an option card at J14.

2.8.2 Digital I/O

The Digital I/O can be configured as either digital inputs or digital outputs as determined by the Digital I/O menu (see [Section 3.7.3 on page 40](#)). The inputs are active (on) with low voltage (0 VDC) and can be driven by TTL or 5V logic without additional hardware. Use the Digital I/O menu (see [Section 3.7.3 on page 40](#)) to configure the digital inputs. LEDs on the CPU board light when digital inputs are active ([Figure 2-11](#)).

Digital outputs are typically used to control relays that drive other equipment. Outputs are designed to sink not source, switching current. Each output is a CMOS circuit, capable of sinking 24 mA when active. Digital outputs are wired to switch relays when the digital output is active (low, 0 VDC) with reference to 5 VDC supply. LEDs on the CPU board light up when the digital outputs are active ([Figure 2-11](#)).

| Connector | Pin | Signal |
|-----------|-----|-----------|
| J3 | 1 | +5V |
| | 2 | Ground |
| | 3 | DIG I/O 1 |
| | 4 | DIG I/O 2 |
| | 5 | DIG I/O 3 |
| | 6 | DIG I/O 4 |

Table 2-8. J3 Pin Assignments (Digital I/O)

2.8.3 Network Connection to Counterpart

Counterpart has an onboard Ethernet connection. Its wireless connectivity is made possible with the optional Lantronix®¹ WiPort wireless networking device (PN 108671). Refer to the WLAN installation instructions (PN 108680) included with the option card for installation and configuration instructions.

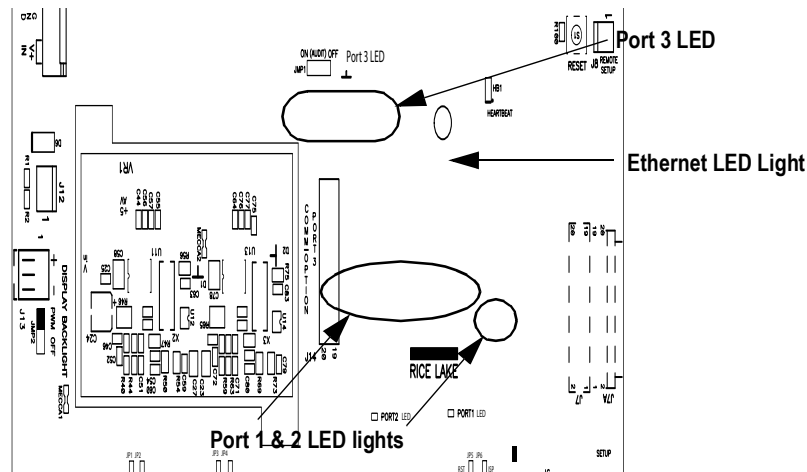


Figure 2-11. LED Light Locations

1. Lantronix® is a registered trademark of Lantronix Inc.



Note The Ethernet LED light is on when connected at 100 mb/s and is off when connected at 10 mb/s.

2.9 Enclosure Reassembly

Once the cabling is complete, position the top plate over the enclosure and reinstall the four screws.

2.10 CPU Board Removal

To remove the Counterpart CPU board, use the following procedure:

1. Disconnect power to the scale.
2. Disconnect power supply cable from connector J12 on the Counterpart CPU board.
3. Disconnect the wires at the following connectors: J1, J2, J3, J4 and J5 and J13 if equipped.
4. Remove the six screws connecting the CPU board and then lift the board out of the enclosure.

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

2.11 CPU Board Battery Replacement



CAUTION Risk of explosion exists if battery is replaced with incorrect type. Dispose of batteries according to federal, state and local regulations.

The lithium battery on the CPU board maintains the real-time clock and protects data stored in the system RAM when the indicator is not connected to AC power. Data protected by this battery includes time and date, IDs, buffered WeighVault transaction data and setpoint value data. If any data is lost, the indicator configuration can be restored from the PC. Watch for the low battery warning on the LCD display and periodically check the battery voltage on the CPU board. Batteries should be replaced when the indicator low battery warning comes on, or when battery voltage falls to 2.2 VDC. Life expectancy of the battery is 7 years. Use Revolution to store a copy of the configuration before attempting to replace the battery.

For best results, replace the battery while in weigh mode and with AC power applied. Use care not to bend the battery retaining spring. The battery location on the CPU board is shown in [Figure 2-14 on page 14](#) as B1.

2.12 Field Installation of Battery

An optional DC battery pack (PN124692) for Counterpart is available and can be purchased from Rice Lake Weighing Systems to ship with the scale or retrofit in the field. The rechargeable 12V battery pack allows for more than 24 hours of continuous use without an AC power supply.

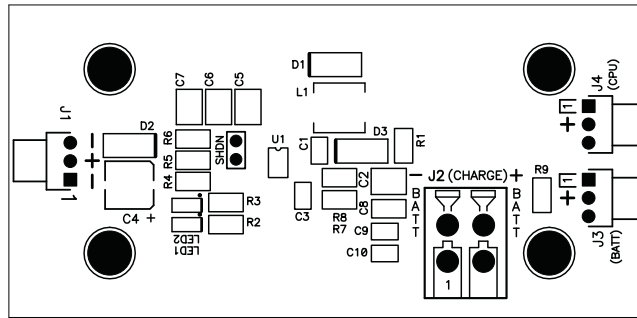


Figure 2-12. Battery Pack CPU Board

The battery pack can be installed next to the CPU board of Counterpart. Use the following procedure to install or replace the battery pack.

1. Disconnect power from the scale prior to opening.
2. If the indicator is connected to scale base, disassemble and set scale base aside.
3. Place the indicator on an anti-static mat.
4. Remove the four screws holding the top plate to the enclosure body and set them aside.
5. Gently lift the top plate away from the enclosure and disconnect any cables and set it aside.
6. Using the supplied nuts, secure battery pack to enclosure using a 5/16" nut driver.

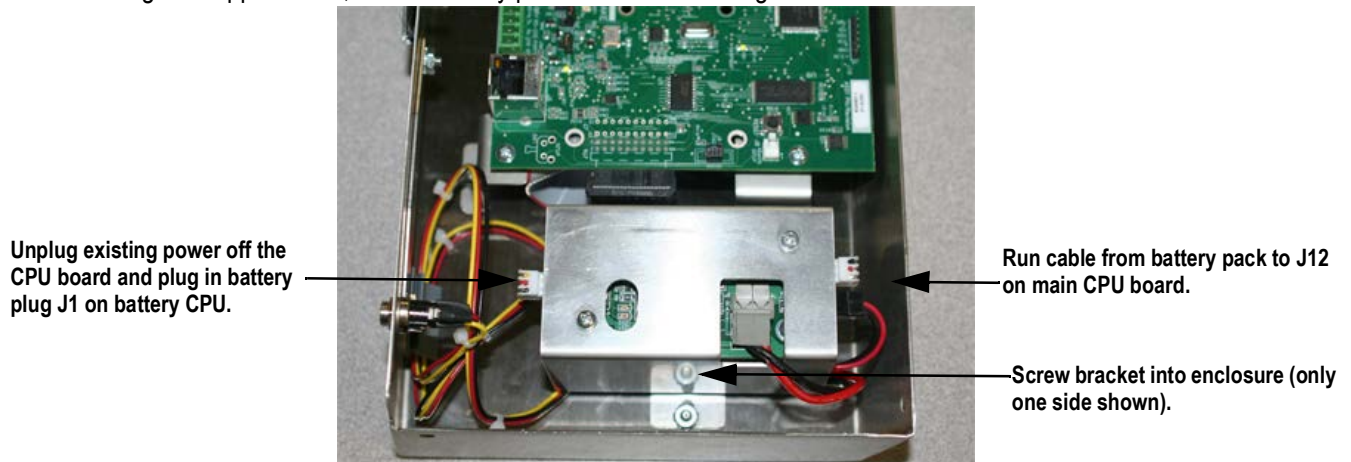


Figure 2-13. Secure Battery Pack into Enclosure

7. Run cable over to power plug J12 on the Counterpart CPU board.



Figure 2-14. Connect Power Plug onto J12 on CPU Board

8. Unplug existing power off the CPU board and plug in battery plug J1 on battery CPU.
9. AC plugs into the back of the unit.

Red and green LEDs located on the battery CPU board tell the user whether the battery is fully charged or not.

2.13 Installing Option Cards

Disconnect power cord before installing option cards.



Note

Ethernet port is not suitable for connection to circuits used outside the building and is subject to lightning or power faults.

Each option card is shipped with installation instructions specific to that card. For specific instructions on the WLAN card, refer to [Section 8.0 on page 87](#).

The general procedure for all option cards is:

1. Disconnect power cord from the scale.
2. Install the plastic standoffs in the standoff holes.
3. Carefully align the option card connector with the J14 connector on the CPU board.
4. Press down firmly to seat the option card in the CPU board connector.

5. Make connections to the option card as required. Use cable ties to secure loose cables inside the enclosure. When installation is complete, reassemble the enclosure as described in [Section 2.9 on page 12](#).

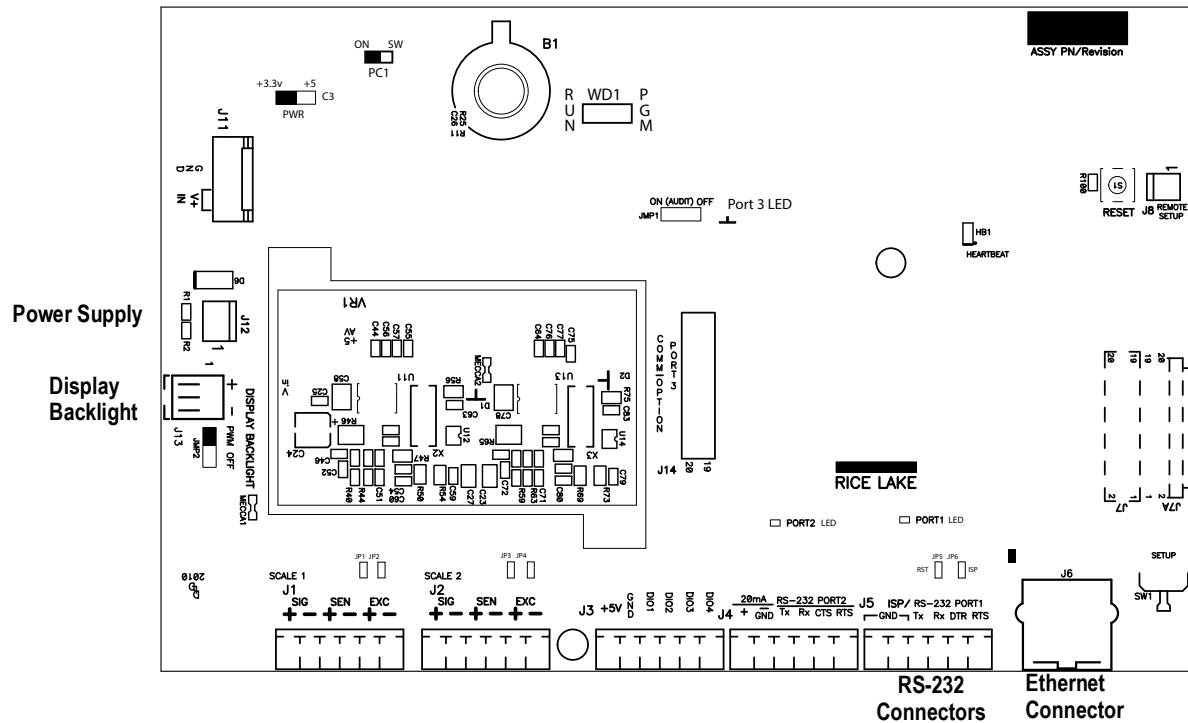


Figure 2-15. CPU Board

| Jumper | Description |
|--------------------|---|
| JP1/JP2 JP3/JP4 | Jump excitation to sense. If using a 4-wire load cell cable (JP3 and JP4 for scale number 2), leave JP1 and JP2 on. If using a 6-wire load cell cable, take JP1 and JP2 off. Default is ON. |
| JP5/JP6 | Used when upgrading firmware. The jumpers should be on when upgrading firmware and off when the update is complete. |
| PC 1 | Power control. If the jumper is set to SW, the POWER key can be used to turn the unit on/off. If set to ON, the unit will power on when plugged in and can only be powered off by unplugging. |
| JMP2 | Set display backlight setting jumper to the OFF position which turns off the backlight. |
| AUDIT JMP1 | If set to Audit ON, calibration and configuration can be accessed through the front keypad. If set to Audit OFF, calibration and configuration can only be accessed by removing the screws from the unit and placing the jumper in the ON position. |
| PWR | +3.3V/5V Factory use only — leave in 3.3V position. |

Table 2-9. Jumper Descriptions



If the RESET button on the CPU board is pressed, the scale will perform a reboot.

Jumper WD1 is located next to B1 battery on the CPU board. Put the jumper to PGM for programming mode only and move the jumper to RUN position for normal operation.

For backlit display to function properly, jumper JMP2 should be set to PWM and jumper PWR should be set to 3.3V.

2.13.1 USB Option Card Installation

Use the following steps to install the USB option card:

1. Disconnect power cord from the scale.
2. Install the plastic standoffs in the standoff holes.
3. Carefully align the option card connector with the J14 connector on the CPU board (as shown in [Figure 2-14 on page 14](#)).

- Press down firmly to seat the option card in the CPU board connector.

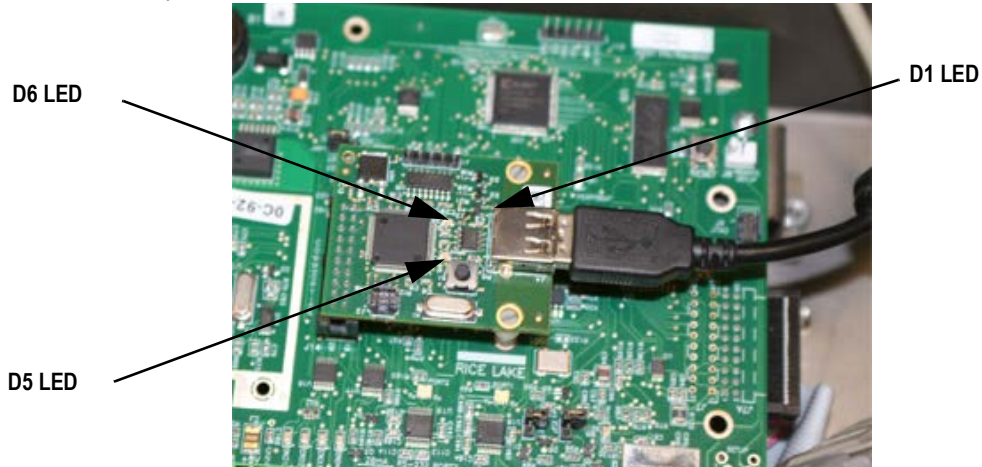


Figure 2-16. Installing the USB Option Card

- Several signal LEDs are located on the USB option board as shown in [Figure 2-16](#).
 - D5 — When flashing, it indicates that a keyboard is connected and has been detected.
 - D6 — Is lit continuously when the option board is waiting for a keyboard to be connected. It is off when a keyboard is connected.
 - D1 — Indicates that there is communication with the main CPU board. It should flicker for each keypress on the attached keyboard.



Note *USB option is for USB keyboard only.*

2.14 Bracket Assembly Connecting Indicator to Scale Base

The Counterpart scale comes with an easy bracket assembly that conveniently hooks the indicator head to the scale base. There are two bracket assemblies that can be used to attach the indicator to the scale base depending on which scale base is being used.

- DIGI S-XL base bracket assembly kit part number 121459
- DIGI S-YC base bracket assembly kit part number 154700

The associated assembly is found in the scale base box and is shown below.



Figure 2-17. Bracket Assembly Kit for the Counterpart Scale Base

Use the following steps to attach the indicator to the scale base.



Do not turn the scale upside down. Always work with the scale on its side. Damage to the load cell can occur if the scale is turned upside down.

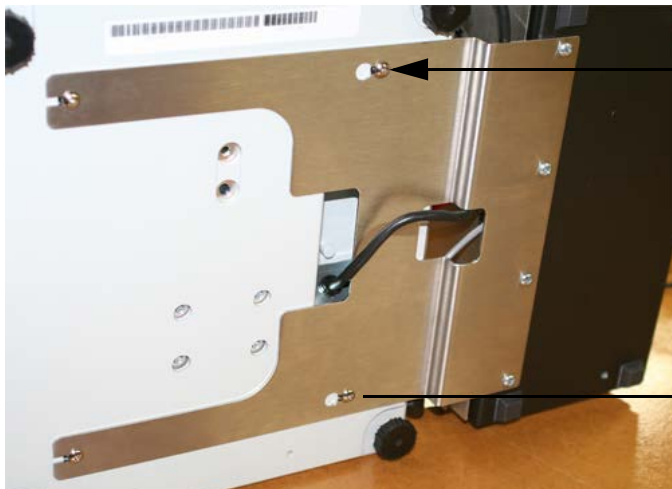
- Stand the scale base on its side to attach the bracket to the scale using the screws provided in the bracket kit.
- Ensure the cable underneath the scale base is threaded through the opening between the scale and the bracket,

otherwise it will not fit. (shown in [Figures 2-18](#) and [2-19](#)).



Note Ensure the cable from the underside of the scale is run between bracket and scale prior to attaching bracket.

Figure 2-18. Attach Bracket Assembly to Scale Base While Scale Is Tipped on its Side (DIGI S-XL Base Shown).



The DIGI S-YC scale base comes with notched holes in the bracket assembly. While plugging in the AC adapter, slide the bracket assembly forward to allow more room to work. Once the AC adapter is connected, slide the bracket assembly back and finish tightening the screws.

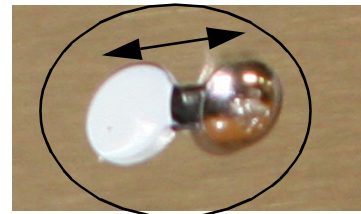


Figure 2-19. Attach Bracket Assembly to DIGI S-YC Scale Base

3. Set scale base down on a flat surface positioning the bracket assembly at the edge of a table.
4. Attach the indicator to the bracket using the second set of screws provided and screw white threaded standoffs into indicator base as in [Figure 2-20](#) if using the S-YC scale base and then screw feet into the bottom of the standoffs.

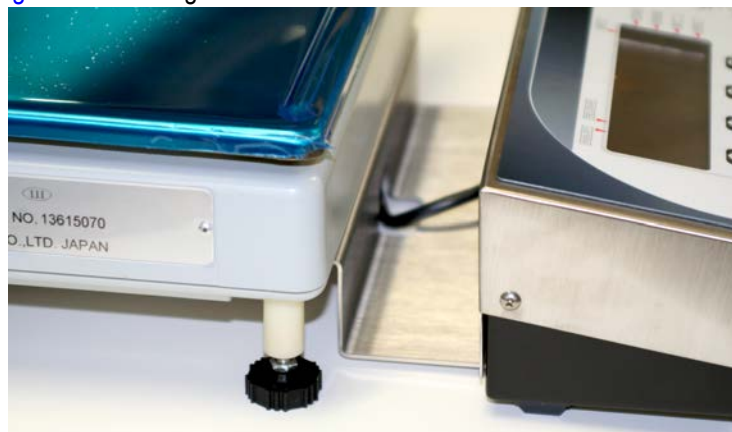


Figure 2-20. Indicator Attached to the Scale Base (DIGI S-YC Scale Base Shown)

2.15 Indicator Replacement Parts and Assembly Drawings

| Ref Number | Part Number | Description (Quantity) | Quantity |
|------------|-------------|-----------------------------------|----------|
| 1 | 118434 | Overlay, membrane switch panel | 1 |
| 2 | 118435 | Counterpart cover enclosure | 1 |
| 3 | 120756 | Seal strip, nylon brush w/ holes | 1 |
| 4 | 124625 | Adapter, AC Wire | 1 |
| 5 | 119275 | LCD display module | 1 |
| 6 | 14848 | Screw, Phillips Head 6-32NC x 3/8 | 4 |
| 7 | 120484 | CPU mounting bracket | 1 |
| 8 | 14621 | Kep nut, 6-32NC hex | 6 |
| 9 | 120741 | CPU board single AD | 1 |
| | 117507 | CPU board dual AD | 1 |
| 10 | 14822 | Machine screw, 4-4 ONC x 1/4 | 6 |
| 11 | 118437 | Enclosure base | 1 |
| 12 | 19433 | Rubber foot | 4 |
| 13 | 60130 | Ribbon cable | 1 |
| 14 | 75146 | Coverplate | 1 |
| 15 | 120266 | Machine screw, 6-32NC x 3/8 | 4 |
| 16 | 69291 | Lithium battery, 3V | 1 |
| 17 | 59274 | #6 flat washer | 1 |
| 18 | 56972 | Flat cable clamp | 2 |
| | 128063 | Power supply assembly | 1 |

Table 2-10. Counterpart Indicator Replacement Parts



Figure 2-21. Counterpart Front View

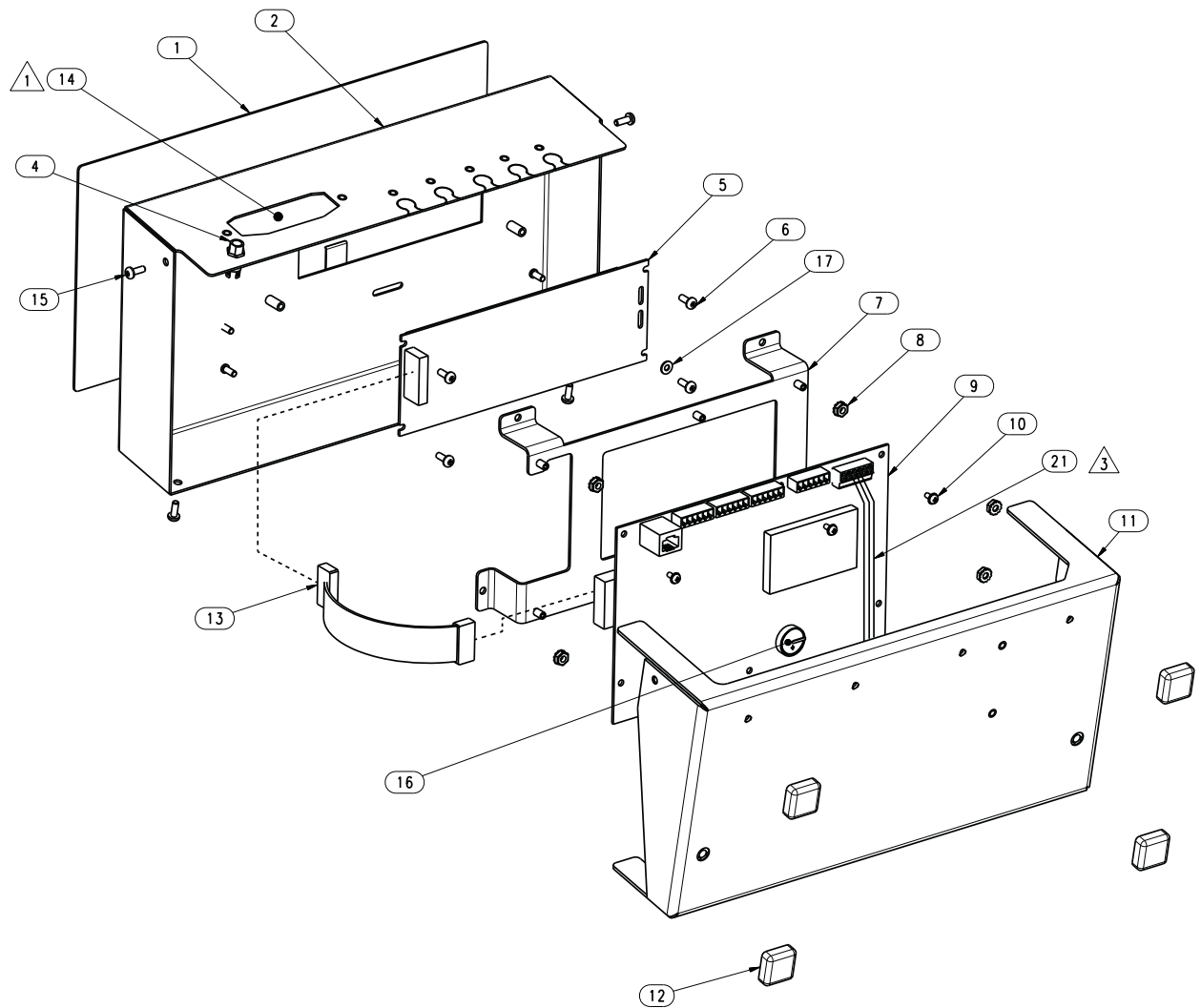


Figure 2-22. Counterpart Assembly and Components

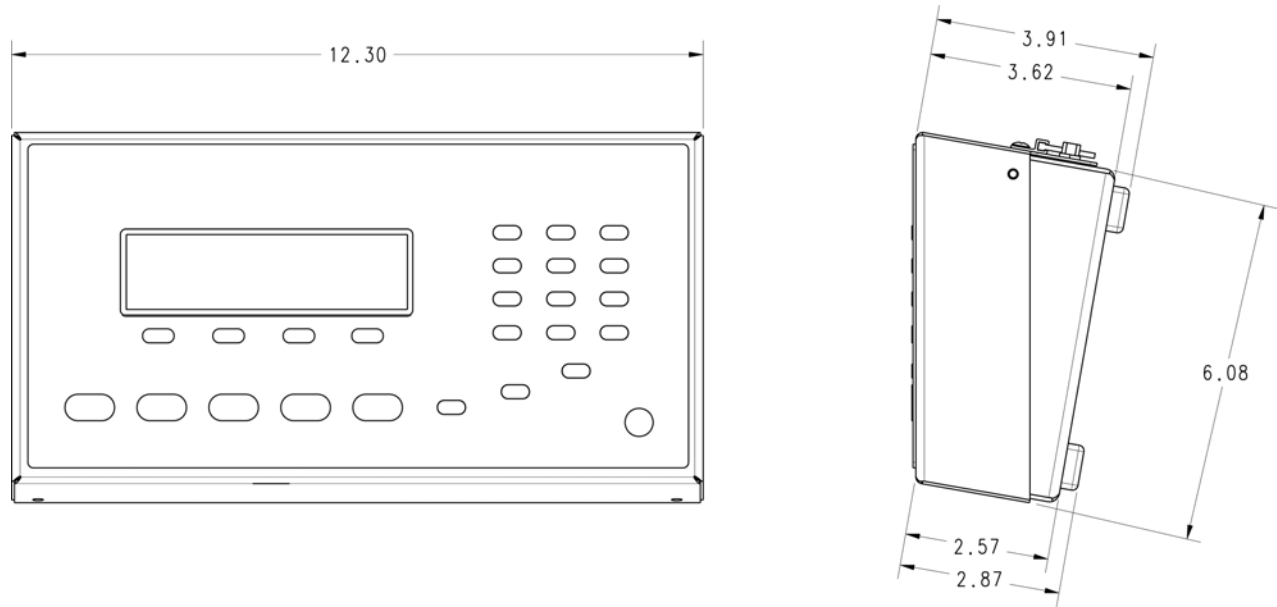


Figure 2-23. Counterpart Dimensions

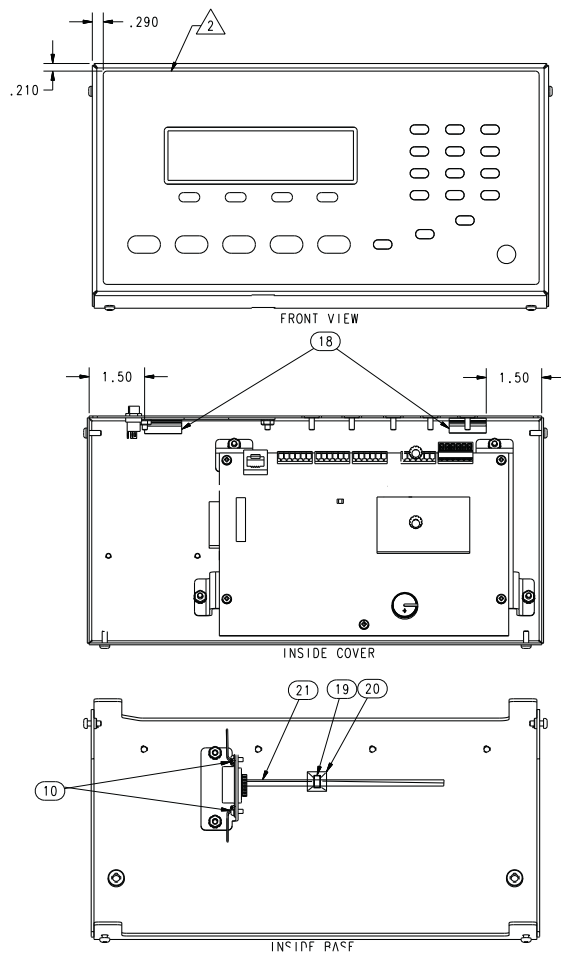


Figure 2-24. Counterpart Rear and Side Dimensions

3.0 Configuration

The Counterpart scale can be configured using a series of menus accessed through the scale front panel when the scale is in setup mode. [Figure 3-1](#) and [Table 3-1 on page 21](#) summarizes the functions of each of the top level menus.



Note To navigate through the menus, use the front panel keys and shown in [Figure 3-2 on page 21](#).

3.1 Front Panel Configuration

To set up and configure the Counterpart counting scale, select the **MENU** key on the front panel. The default for the indicator is set at the factory with the audit trail jumper (JMP1) in the ON position, allowing configuration access by pressing the **MENU** key. Press the **MENU** key to display the *Audit* menu selection. Use the **SAMPLE** (◀) and **PRINT** (▶) navigation keys to move to other menu selections. Use the **NET/GROSS** (▽) and **ZERO** (△) navigation keys to enter and exit menu selections.

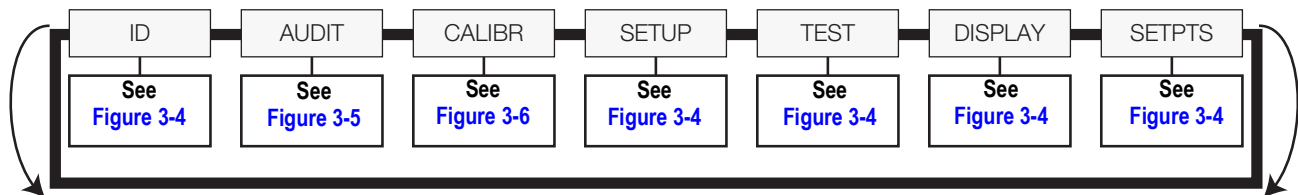


Figure 3-1. Menu Mode Navigation Structure

| Menu | | Function |
|---------|-------------|--|
| ID | ID | Allows for setup or edit IDs |
| AUDIT | Audit Trail | Displays the legally relevant (LR) firmware version, configuration count, and calibration count |
| CALIBR | Calibrate | Calibrates the scale |
| SETUP | Setup | Accesses setup options for the scale, features, serial output, print format, digital inputs and outputs, and displays the version number |
| TEST | Test | Performs a basic test on the A/D, digital inputs and outputs, communication ports, RAM, and keypad |
| DISPLAY | Display | Accesses the setup option for contrast, image, brightness |
| SETPTS | Setpoints | Used for setting up weighmode setpoint accessible parameters using numeric values |

Table 3-1. Menu Summary

3.2 Menu Navigation

Once menus have been entered, use the front panel buttons to navigate. Note the looped menu structure shown in [Figure 3-1](#). This provides a shortcut for accessing the right-most menu items by navigating to the left, and vice versa for the opposite side of the menu. This shortcut also holds true for sub-menu navigation.



Figure 3-2. Front Panel Key Functions in Menu Mode

Various keys are used as directional keys to navigate through the menus. The **SAMPLE** (◀) and **PRINT** (▶) keys scroll left and right (horizontally) on the same menu level; **ZERO** (△) and **GROSS/NET** (▽) move up and down (vertically) to different menu levels. Each of these keys has a directional symbol indicating its menu navigation function. The **TARE** (ENTER) key has the same function as **GROSS/NET** (▽) when navigating the menu — either will move down to access subcategories of a main menu item. The **SAMPLE** (◀) and **PRINT** (▶) keys navigate to another digit. The numeric keys can also be used to insert a digit to the right of the blinking digit. Press **TARE** (ENTER) to accept the data and return to the next menu item.



Note To exit Configuration and return to weighing, press the **MENU** key or press the **SAVEEXIT** softkey.

3.3 Revolution® Configuration

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

Revolution supports both uploading and downloading of indicator configuration data. This capability allows configuration data to be retrieved from one indicator, edited, and then downloaded to another indicator with an identical hardware configuration.

To use Revolution, use the following steps:

1. Install Revolution on an IBM-compatible personal computer.
2. With both indicator and PC powered off, connect the PC serial port to the RS-232 pins on the indicator serial port or to the optional USB communications card.
3. Power up the PC and the indicator. Use the setup switch to place the indicator in setup mode.
4. Start the Revolution program.

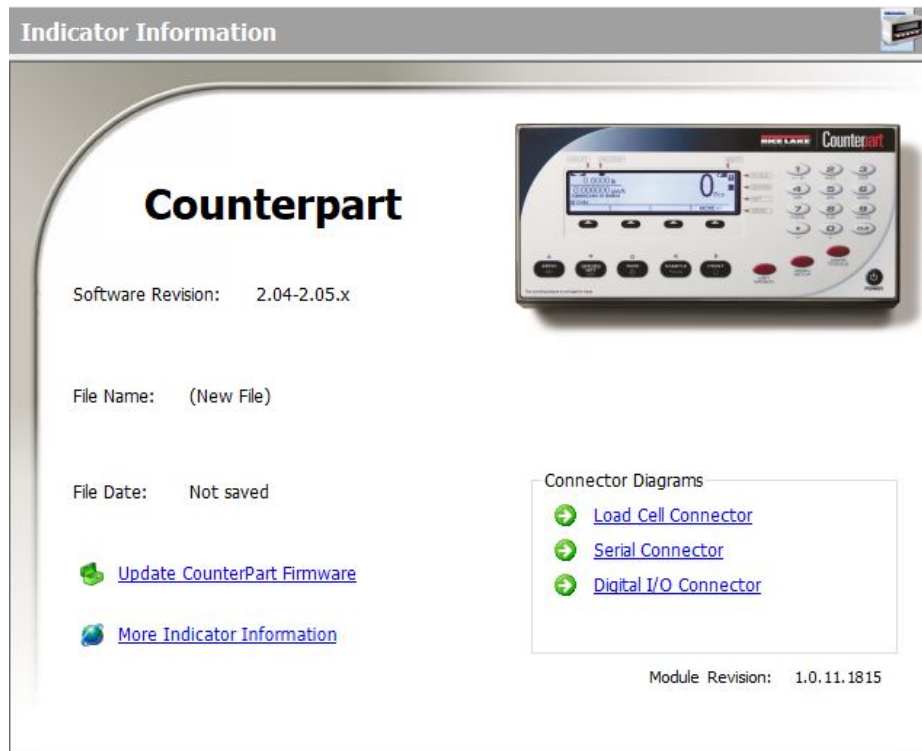


Figure 3-3. Revolution Display

Revolution provides on line help for each of its configuration displays. Parameter descriptions provided in this manual for front panel configuration can also be used when configuring the indicator using Revolution — the interface is different, but the parameters sets are the same.

3.4 ID Menu

The ID menu displays parameters for registers from 1 to 150. Sub-parameters are shown below.

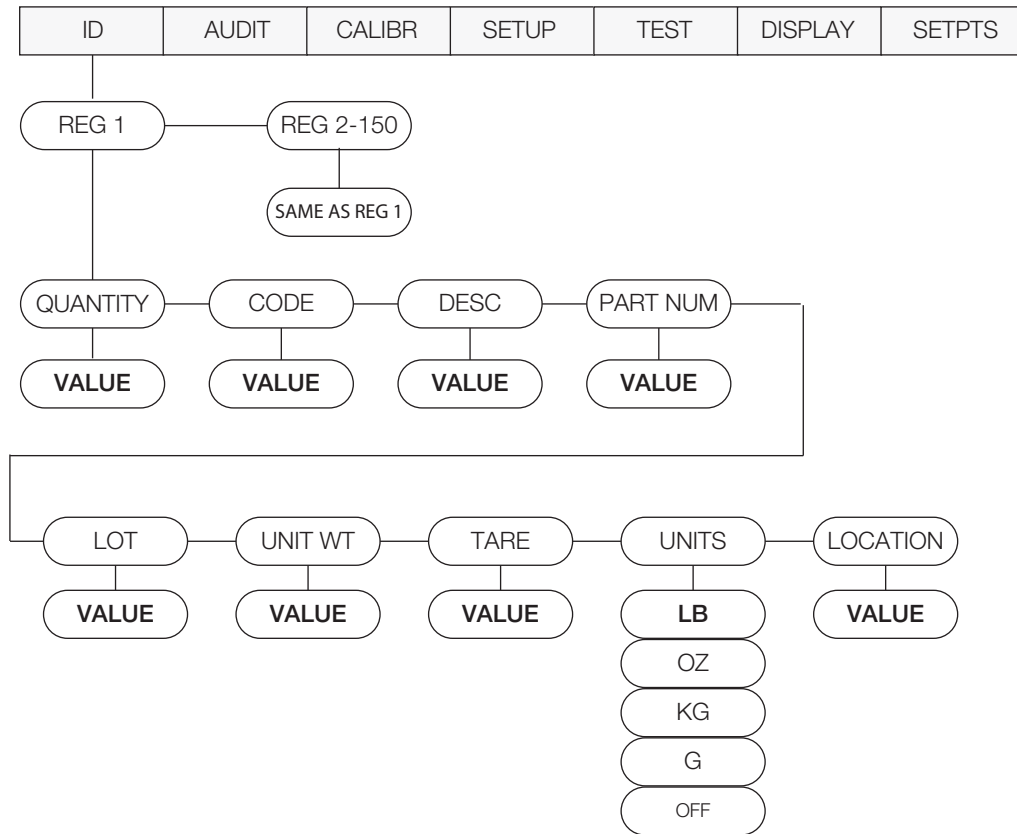


Figure 3-4. ID Menu Layout

| ID Menu | | |
|----------------|---|--|
| Parameter | Choices | Description |
| REG 1, 2 - 150 | QUANTITY CODE DESC PART NUM LOT UNIT WT TARE UNITS LOCATION | Inventory quantity, range — 2000000000 to 200000000 ID code for part, maximum 32 alphanumeric characters Part description, maximum 32 alphanumeric characters Part number, maximum 32 alphanumeric characters Part lot number, maximum 32 alphanumeric characters Unit weight, range 0.0 to 9999999.0 Tare weight, range 0.0 to 9999999.0 Weight units for both the unit weight value and the tare weight value, choices of OFF, KG, G, LB, OZ Part stock location, maximum 11 alphanumeric characters |

Table 3-2. ID Menu Parameters

3.5 Audit Menu

The audit menu accesses audit trail support. It provides tracking information for configuration and calibration events. To prevent potential misuse, all configuration and calibration changes are counted as change events. Audit information can be printed by pressing **PRINT** while displaying the audit trail items beneath the AUDIT menu.

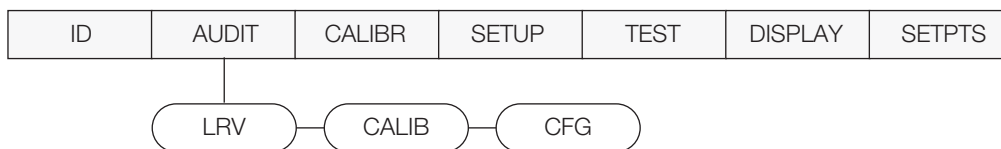


Figure 3-5. Audit Menu Layout

| Parameter | Description |
|-----------|-------------------------------------|
| LRV | Legally relevant firmware version |
| CALIB | Displays total calibration events |
| CFG | Displays total configuration events |

Table 3-3. Audit Menu Parameters

3.6 Calibration Menu

See [Section 4.0 on page 54](#) for calibration procedures. The Calibration menu can be protected by assigning a password in the Feature menu.



The Counterpart requires the WZERO and WSPAN points to be calibrated. The linearity points are optional, but must NOT duplicate zero or span. During calibration, the TARE key acts as a data entry confirmation key. It also acts as an EXECUTE key and accepts the value if calibration is successful.

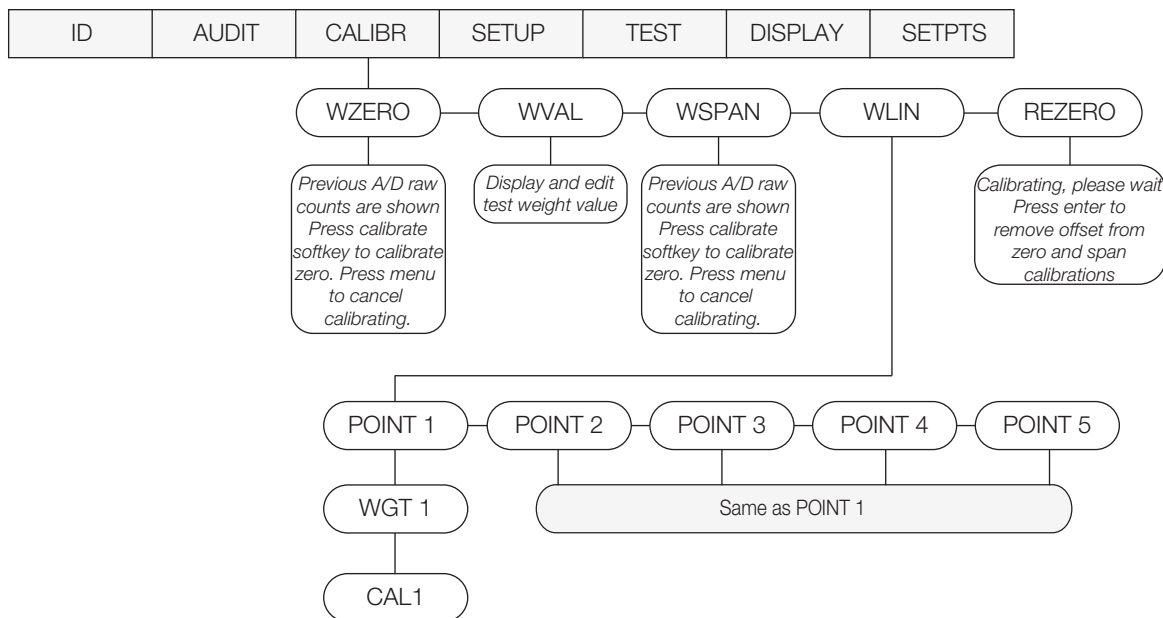


Figure 3-6. Calibration Menu Layout

| CALIBR Menu | | |
|------------------|---------|--|
| Parameter | Choices | Description |
| Level 2 submenus | | |
| WZERO | | Press the calibrate softkey to display the AD raw counts. Press calibrate softkey again to calibrate zero, or press MENU to cancel. "CALIBRATING" appears prior to automatically moving to WWAL. |

Table 3-4. Calibration Menu Parameters

| CALIBR Menu | | |
|-------------|-------------------|---|
| Parameter | Choices | Description |
| WVAL | | Press the calibrate softkey to display and edit the test weight value. Press the calibrate softkey again to move to WSPAN. |
| WSPAN | | Press the calibrate softkey to display the AD raw counts. Press the calibrate softkey to calibrate the span or press MENU to cancel. "CALIBRATING" appears prior to automatically moving to WLIN. |
| WLIN | POINT 1 — POINT 5 | WGT 1 allows for display and edit the test weight value. Press the calibrate softkey to edit the value. CAL 1 allows for calibration and display of the raw AD value. Press TARE to perform calibration. Press the calibrate softkey to move to the next calibration point. Note: The linearity points are optional, but must not duplicate zero or span. They must be between zero and span. |
| REZERO | | Press the calibrate softkey to remove an offset value from the zero and span calibrations if hooks or chains are being used during calibration. Note: Use this parameter only after WZERO and WSPAN have been set. See Section 4.1 on page 54 for more information. |

Table 3-4. Calibration Menu Parameters (Continued)

3.7 Setup Menu

The setup menu allows:

- Configuration of scale, features, serial port, Ethernet, print format, and digital inputs and outputs settings
- Viewing of the software and regulatory versions and reverting to default settings

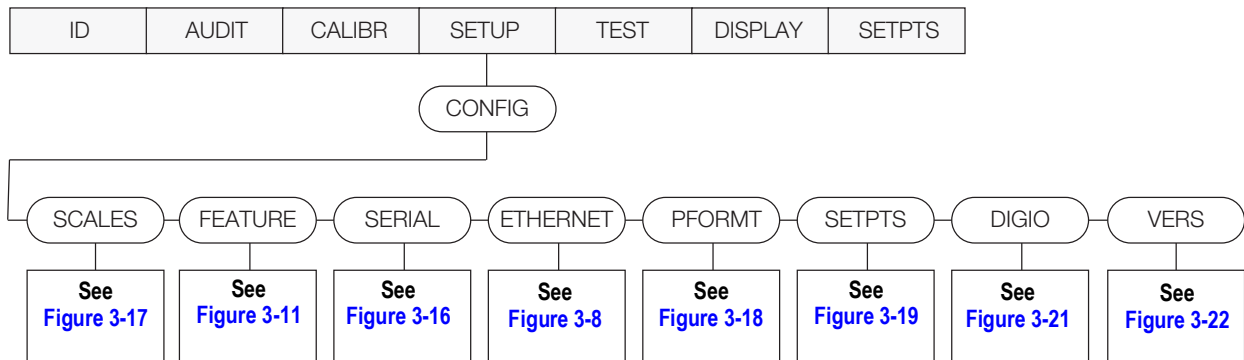


Figure 3-7. Setup Menu Layout

| Menu | Choices | Menu Function |
|----------|--|---|
| SCALES | Configuration | Configure and calibrate scales |
| FEATURE | Feature | Set passwords, keyboard locks, regulatory mode, and initial consecutive number value, count function, and define softkeys |
| SERIAL | PORT 1 PORT 2 PORT 3 (Option Card) | Configures the communications ports |
| ETHERNET | Ethernet | Configures the Ethernet port |
| PFORMT | Print Format | Set print format used for header, gross, net, count, pallet, setpoint and total ticket formats. See Section 6.0 on page 71 for more information |
| SETPTS | Setpoints | Configure setpoints |
| DIG IO | Digital IO | Assign digital input/output functions |
| VERS | Version | Display installed software version and regulatory version numbers. The Reset Config softkey on the Version menu can be used to restore all configuration parameters to their default values |

Table 3-5. Setup Menu Parameters

3.7.1 Scale Menu

Calibration can be performed in two places within the menu: the CALIBR menu shown in [Figure 3-6 on page 24](#) is an in-depth scale setup and calibration. A “quick access” calibration is shown in [Figure 4-1 on page 54](#).

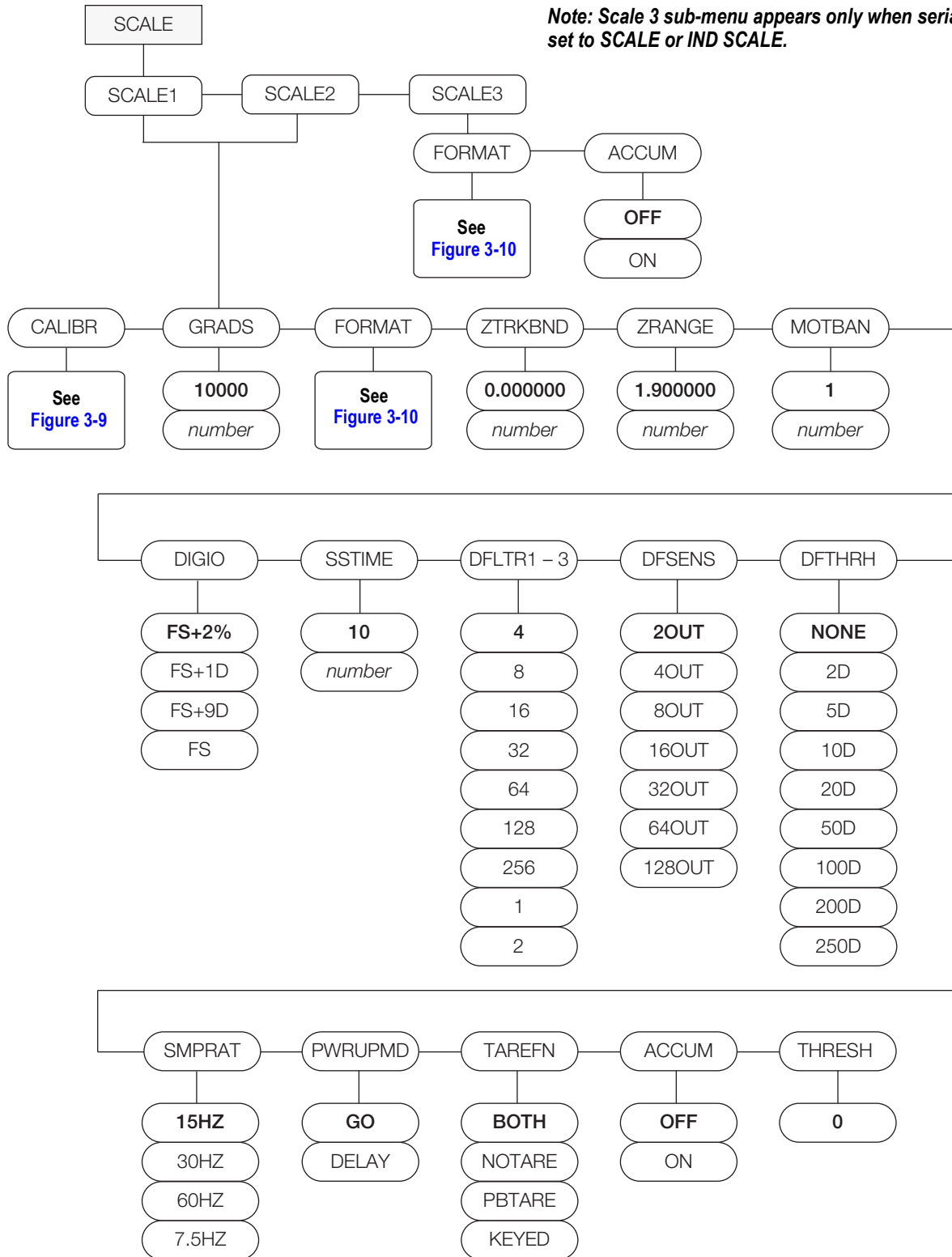


Figure 3-8. Setup – Scale Menu

| Parameter | Settings | Description |
|------------------------|--|---|
| Scales 1 and 2 | | Allows configuration and calibration of each scale |
| Scale 3 | | Allows configuration and calibration of scale 3 |
| Scales sub-menu | | |
| GRADS | 10000 1-100000 | Specifies the number of full scale graduations 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 GRADS, use the formula: $GRADS = Capacity / Display Divisions$ Display divisions are specified under the FORMAT sub-menu |
| FORMAT | PRIMARY SEC TER | Select a primary, secondary, and tertiary unit of measure. Sub-choices include lb, kg, oz, and g. See Format menu, Figure 3-10 |
| ACCUM | OFF ON | Scale 3 only |
| ZTRKBND | 0.000000 number | Automatically zeros the scale when within the range specified, as long as the input is within the ZRANGE and scale is at standstill. Specify the zero tracking band in \pm display divisions. Maximum legal value varies depending on local regulations. Note: For scales using linear calibration, do not set the zero tracking band to a value greater than that specified for the first linearization point. |
| ZRANGE | 1.900000 number | Selects the range within which the scale can be zeroed. The 1.900000 default value is $\pm 1.9\%$ around the calibrated zero point, for a total range of 3.8%. Indicator must be at standstill to zero the scale. Use the default value for legal-for-trade applications. |
| MOTBAND | 1 number | Sets the level, in display divisions, at which scale motion is detected. If motion is not detected for 1 second or more, 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 does not light; operations normally requiring standstill (zero, tare, print) are performed regardless of scale motion. If 0 is selected, ZTRKBND must also be set to 0. |
| OVRLOAD | FS+2% FS+1D FS+9D FS | 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. |
| SSTIME | 10 number | 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. Values greater than 10 are not recommended. |
| DFLTR 1-3 | 4 8 16 32 64 128 256 1 2 | Selects the digital filtering rate used to reduce the effects of mechanical vibration from the immediate area of the scale. The overall filtering effect can be expressed by adding the values assigned to the three filter stages: $DFLTR1 + DFLTR2 + DFLTR3$ See Section 9.6 on page 92 for information on digital filtering. Choices indicate the number of AD conversions per update that are averaged to obtain the displayed reading. A higher number gives a more accurate display by minimizing the effect of a few noisy readings, but slows down the settling rate of the indicator. |
| DFSENS | 4OUT 2OUT 8OUT 16OUT 32OUT 64OUT 128OUT | Digital filter cutout sensitivity. Specifies the number of consecutive readings that must fall outside the filter threshold (DFTHR parameter) before digital filtering is suspended. |

Table 3-6. Scales Menu Parameters

| Parameter | Settings | Description |
|-----------|---|---|
| DFTHRH | NONE 2D 5D 10D 20D 50D 100D 200D 250D | Digital filter cutout threshold. Specifies the filter threshold, in display divisions. When a specified number of consecutive scale readings (DFSENS parameter) fall outside of this threshold, digital filtering is suspended. If NONE is selected, the filter is always enabled. |
| SMPRAT | 15 HZ 30 Hz 60 Hz 7.5 Hz | Sample rate. Selects measurement rate, in samples per second, of the analog-to-digital converter. Lower sample rate values provide greater signal noise immunity. |
| PWRUPM | GO DELAY | Power up mode. In GO mode, the indicator goes into operation immediately after a brief power up display test. In DELAY mode, the indicator performs a power up display test and 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 is repeated. |
| TAREFN | BOTH NOTARE PBTARE KEYED | Enables or disables push-button and keyed tares. Possible values are: 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 |
| ACCUM | OFF ON | Accumulator. Specifies whether the scale accumulator is enabled. If enabled, accumulation occurs whenever a print operation is performed. Scale must return to zero to re-arm a new print. |
| THRESH | 0 | Enter a value to be used as divisions. Select Zero threshold to display a threshold or reset point where automatic printing functions reset themselves to be retriggered. When a value is entered, anything that would normally require the scale to reach zero before it happens/rearms (except for LFT parameters) now only needs to go below this value and then above it again. |
| CALIBR | WZERO WVAL WSPAN WLIN REZERO | See Calibration Menu, Figure 3-9 . |

Table 3-6. Scales Menu Parameters (Continued)

Scale Calibration Menu

Calibration can be performed in two places within the menu: the CALIBR menu shown in [Figure 3-6 on page 24](#) is an in-depth scale setup and calibration.

A “quick access” calibration is shown in [Figure 4-1 on page 54](#).

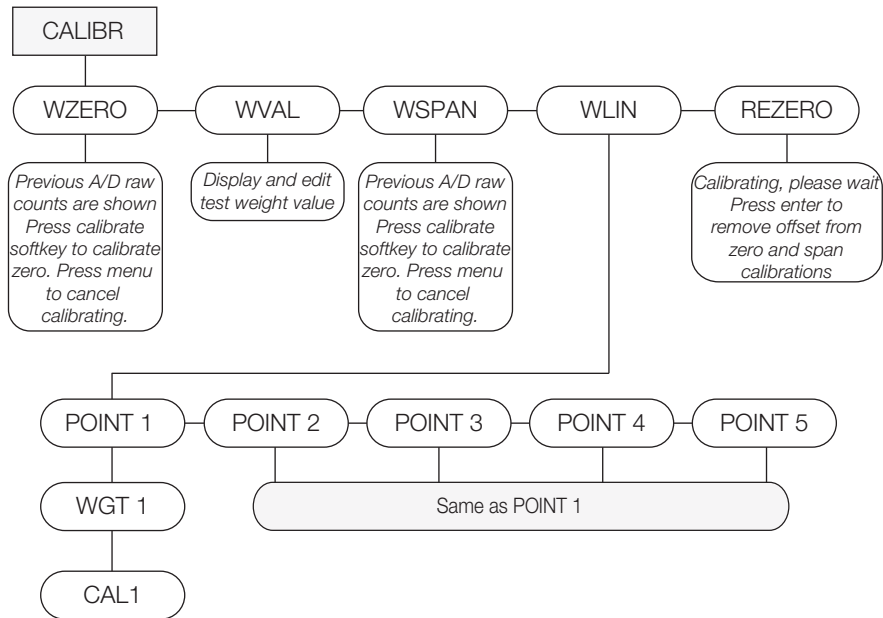


Figure 3-9. Scale Calibration Menu Layout

| Parameter | Settings | Description |
|-----------|-----------|---|
| WZERO | | View or change the zero calibration AD count value |
| WVAL | | View and edit the test weight value |
| WSPAN | | View or change the span calibration AD count value |
| WLIN | POINT 1-5 | Press ENTER to display and edit test weight and calibration values for up to five linearization points. Perform linear calibration only after WZERO and WSPAN have been set. Parameters include CAL1 — View or change linear point calibration value WGT1 — Sets test value |
| REZERO | | Removes offset from zero and span calibrations. Can be used during a span calibration process using hooks and chains. |

Table 3-7. Scale Calibration Menu Parameters

Scale Format Menu

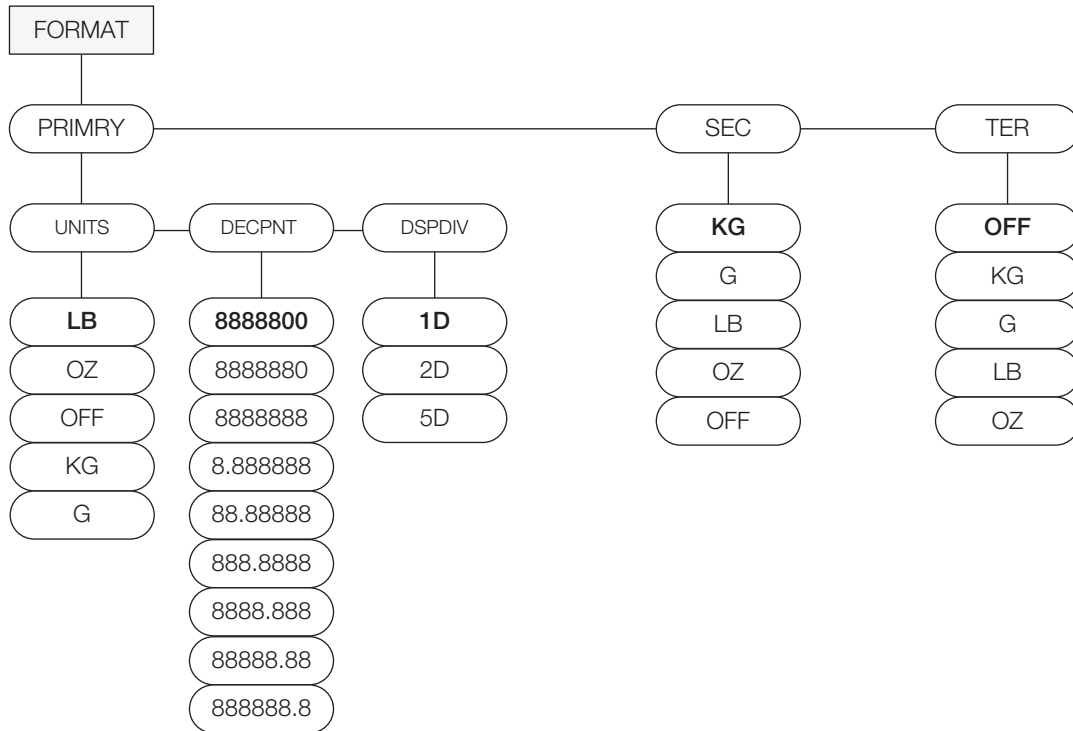


Figure 3-10. Scale Format Menu Layout

| Parameter | Settings | Description |
|---------------------------------------|----------------------------|---|
| PRIMARY | UNITS DECPNT DSPDIV | Set the primary units, decimal point format, and display divisions |
| SEC | KG G LB OZ OFF | Set the secondary units Decimal point format and display divisions are selected automatically. Values are kg = kilogram (default); g = gram; lb = pound; oz = ounce; and off. Note: If using the <cu> token and secondary or tertiary values are changed, the stream tokens must be changed to match in order to stream secondary or tertiary. |
| TER | OFF KG G LB OZ | Set the tertiary units. Decimal point format and display divisions are selected automatically. Values are off (default); kg = kilogram; g = gram; lb = pound; oz = ounce. Note: If using the <cu> token and secondary or tertiary values are changed, the stream tokens must be changed to match in order to stream secondary or tertiary. |
| Primary, Secondary, Tertiary sub-menu | | |
| UNITS | LB OZ KG G OFF | Specifies primary units for displayed and printed weight. Values are lb = pound; oz = ounce; kg = kilogram; g = gram. |

Table 3-8. Scale Format Menu Parameters

| Parameter | Settings | Description |
|-----------|---|--|
| DECPNT | 8888800 8888880 8888888 8.888888 88.88888 888.8888 8888.888 88888.88 888888.8 | Place the decimal point position. Use the ID (<) and TARGET (>) keys to place the decimal point where desired. |
| DSPDIV | 1D 2D 5D | Display divisions. Selects the minimum division size for the primary unit's displayed weight. |

Table 3-8. Scale Format Menu Parameters (Continued)

3.7.2 Feature Menu

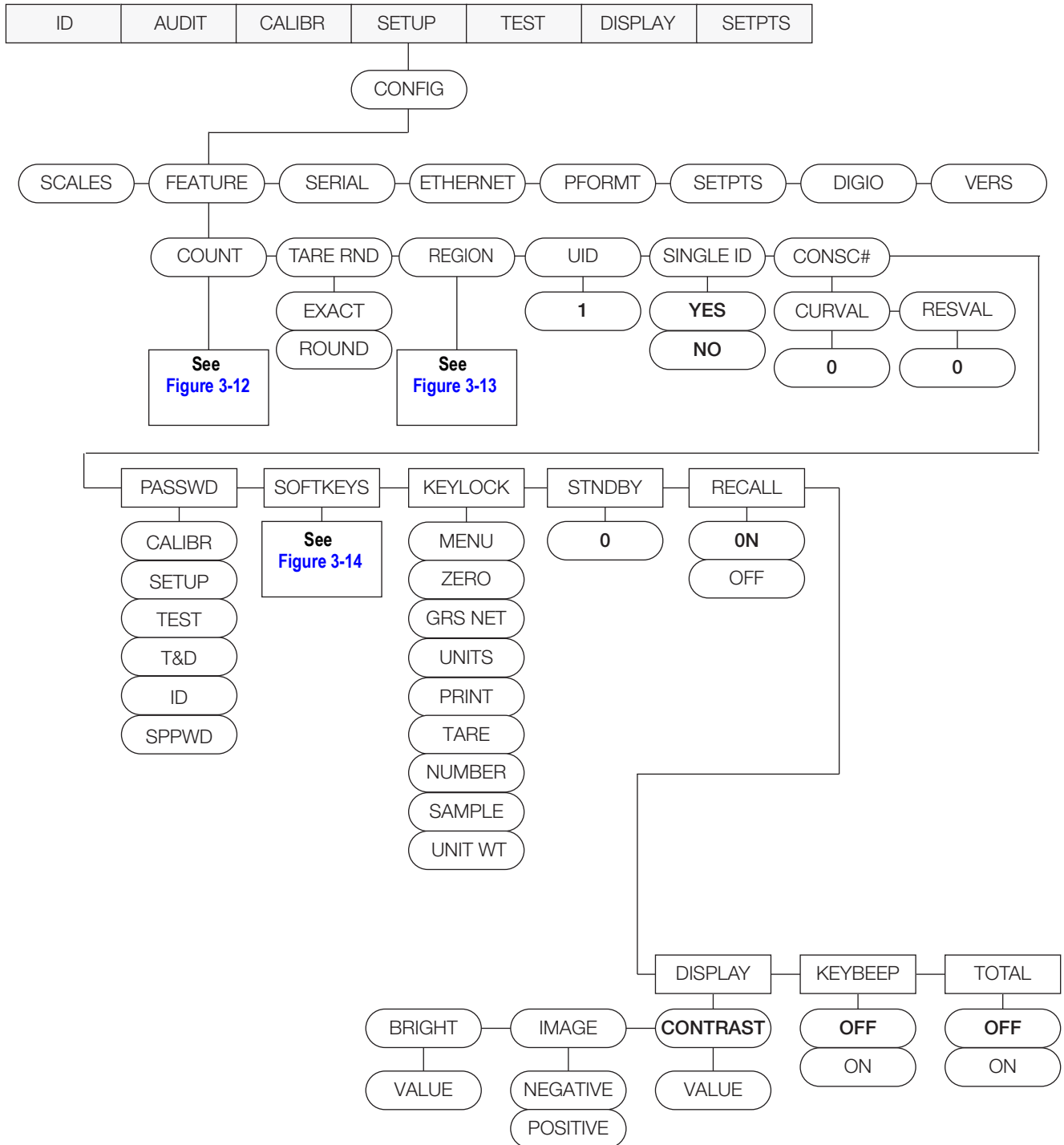


Figure 3-11. FEATUR Sub-menu

| Parameter | Settings | Description |
|-----------|---|---|
| COUNT | NEGCOUNT SAMPLEQTY INFSMPL LOTUPDT SCLCHG NEWITEM XFRSampl DISPACC UNITWTUPDATE UTWTBASE DSP Mode RemovESP | Selects the counting mode (enables/disables negative checkweighing; turns data parameters on/off. See Figure 3-12 . |
| TARE RND | Exact Round | When transferring tare to the second scale, tare value remains the exact weight or rounds to scale resolution. |
| REGION | REGULA REGWRD DECfmt TIME DATE | Selects regional settings. See Figure 3-13 . |
| UID | 1 | 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. |
| SINGLE ID | Yes No | Allows entry of ID to not be stored. Next ID clears field and establishes new data. |
| CONSC# | CURVAL RESVAL | Allows sequential numbering for print operations. <ul style="list-style-type: none"> • CURVAL is the current/starting value • RESVAL is the ending/reset value 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 RESVAL specified on the parameter. |
| PASSWD | CALIBR SETUP TEST T&D ID | Creates a password to access the CALIBR, SETUP, TEST, T&D, and ID menus. Specify a non-zero value to restrict access to all configuration menus. Passwords can be overridden by loading new firmware or entering 999999. Note: Overriding passwords will clear configuration and calibration settings. To preserve settings (such as ID information), use Revolution software to upload data to a PC, and then download it back to the indicator after the password override is performed. |
| SOFTKEYS | SK1-12 | See Figure 3-14 . |
| KEYLCK | MENU ZERO GRSNET UNITS PRINT TARE NUMBER SAMPLE UNIT WT | Disables the MENU, ZERO, GROSS/NET, UNITS, PRINT, TARE numeric, SAMPLE and UNIT WEIGHT keys. Select LOCK to disable the key, and UNLOCK to enable the key. |
| STNDBY | 0 | Standby mode delay. Specifies the number of minutes the indicator must be inactive before entering standby mode. Valid values are 0 (off) through 255 minutes. When in standby mode, power is still supplied to the CPU and draws half of the current as when the display is powered. The display is no longer updated and the backlight is off. Press any key to exit standby mode and reactivate the display. The indicator enters standby mode if no key presses, serial communications, or scale motion occur for the length of time specified in this parameter. Set to 0 to disable standby mode. Note: If regulatory agency is set for NONE or INDUST, the standby will occur after the specified number of minutes regardless of how much weight is on any of the scales. If regulatory agency is set for NTEP, OIML, or Canada a standby will only occur when the weight on the currently viewed scale is at center of zero. |

Table 3-9. Feature Menu Parameters

| Parameter | Settings | Description |
|-----------|-----------------------------|---|
| RECALL | ON OFF | ON allows the Tare, Zero, and Units values to be maintained across a power cycle. Over/Under/Target/ID values are also maintained. OFF clears the values on a power cycle. Zero is reset to calibrated zero and Units are reset to Primary. Over/Under/Target/ID values are reset as well. |
| DISPLAY | CONTRAST BRIGHT IMAGE | Adjusts Counterpart display viewing. Key in a value: BRIGHT — key in a value IMAGE — enter negative or positive |
| KEYBEEP | OFF ON | Select ON to alert the user every time a key is pressed. |
| TOTAL | OFF ON | Totalization mode check |

Table 3-9. Feature Menu Parameters (Continued)

Feature Count Menu

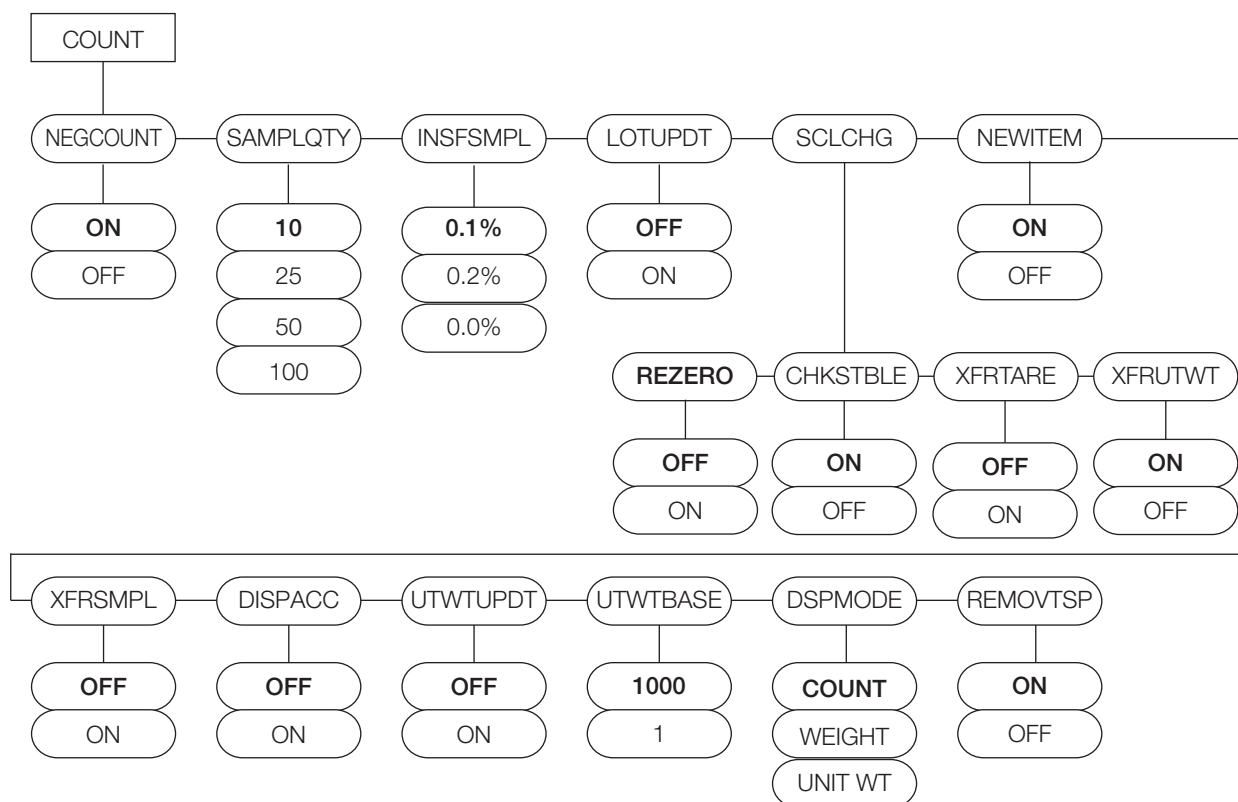


Figure 3-12. Count Menu Layout

| Parameter | Choices | Description |
|-----------|-----------------------|---|
| NEGCOUNT | ON OFF | Sets whether negative weighing mode is off or on. |
| SAMPLQTY | 10 25 50 100 | Is the default value for sample quantity. |

Table 3-10. Count Menu Parameters

| | | |
|-----------------------|---|---|
| INSFSMPLE | 0.1 0.2 0.0 | A minimum sample size is required based on the platform capacity and product weight. |
| LOTUPDT | OFF ON | OFF — Changing or deleting the lot value in operation mode does not update the stored copy of the currently loaded ID record. ON — Changing or deleting the lot value in operation mode saves the changes into the stored copy of the currently loaded ID record. |
| SCLCHG | REZERO CHKSTABLE XFRTARE XFRUTWT | Scale change. These are actions taken when changing from one scale to another. See SCLCHG sub-menu below. |
| NEWITEM | OFF ON | New item. This prompts user to add an ID to memory when an unknown ID is requested from weigh mode. |
| XFRSMPL | OFF ON | After sample. After a sample, a switch is done from the current scale to the next scale that is larger than or equal to the current scale. If a sample is done on the largest of the scales, a switch will not be done. |
| DISPACC | OFF ON | Display accuracy |
| UTWTUPDT | OFF ON | Enables or disables the updating of the loaded ID with a new unit weight value. OFF — Parts can be sampled (generating a new unit weight) or a unit weight can be keyed or scanned but the new unit weight is not saved into the stored copy of the currently loaded ID record. ON — If on, the unit weight will update the stored value whether at zero or actual value. |
| UTWTBASE | 1000 1 | Unit weight base. 1 = APW (Average Piece Weight), 1000 = Piece weight per thousand. |
| DISPMODE | COUNT WEIGHT UNITWEIGHT | Display mode. This chooses the value to be displayed as large in viewing window. |
| REMOVTSP | ON OFF | Removes trailing spaces from ID Codes. <ul style="list-style-type: none"> • ON — If set to on: <ul style="list-style-type: none"> - an ID code configured through the ID menu will have any entered trailing spaces removed before being stored. - an ID code configured through the ID.CODE EDP command will have any entered trailing spaces removed prior to being stored. - trailing spaces will be removed from an ID Code that is entered via the Code softkey. This includes using the front panel or USB keyboard. - trailing spaces will be removed from an ID Code that is scanned from a barcode. • OFF — If set to off: <ul style="list-style-type: none"> - an ID code configured through the ID menu will be stored with trailing spaces as entered - an ID code configured through the ID.CODE.EDP command will be stored with trailing spaces as entered. - an ID code entered via the Code softkey for recall will retain any trailing spaces. This includes using the front panel or USB keyboard. - an ID Code scanned from a barcode for recall will retain any trailing spaces |
| SCLCHG submenu | | |
| REZERO | OFF ON | Performs a zero function on change. |
| CHKSTBLE | ON OFF | When changing scales, a stability check can be either enabled or disabled. If enabled, and the stability check is successful, no indication is shown and the unit switches to the next scale. If enabled and the stability check fails, then NON-STABLE is shown on the display and the switch to the next scale is not made. |
| XFRTARE | OFF ON | When changing scales, the tare weight is transferred from the current scale to the new scale. Units must be set to the same unit of measurement. |
| XFRUTWT | ON OFF | When changing scales, the unit weight is transferred from the current scale to the new scale. |

Table 3-10. Count Menu Parameters (Continued)

Feature Region Menu

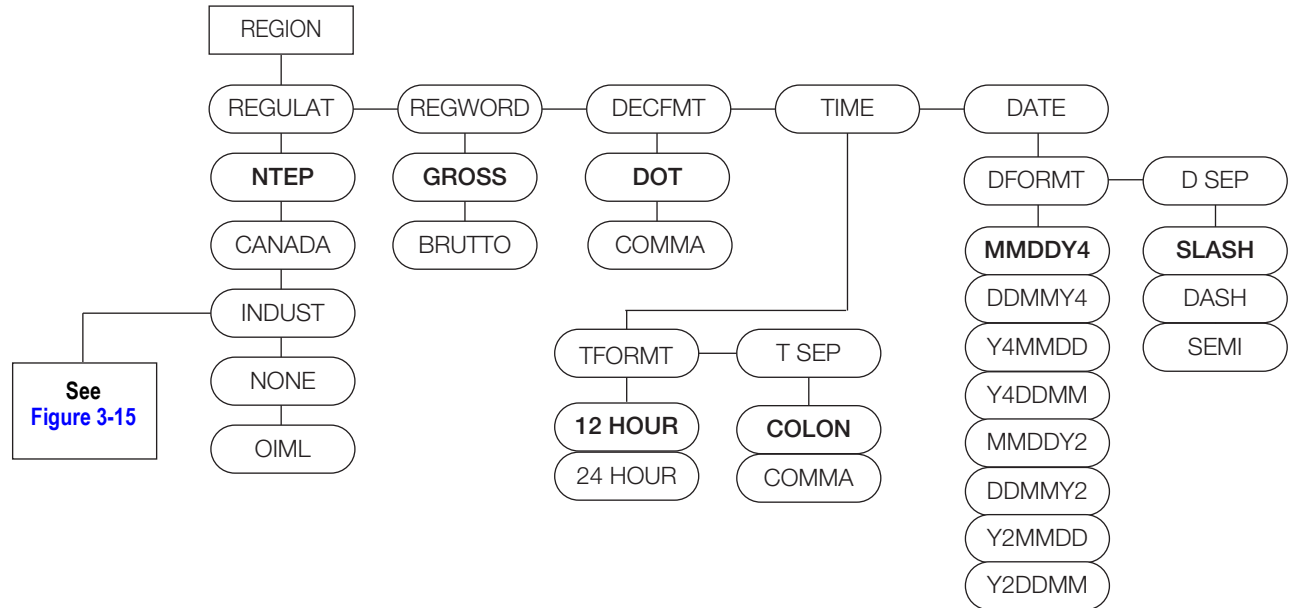


Figure 3-13. Region Menu Layout

| Parameter | Settings | Description |
|----------------------|---|---|
| REGULA | NTEP CANADA INDUST NONE OI ML | Regulatory mode. Specifies the regulatory agency having jurisdiction over the scale site. Note: The value specified for REGULA affects the function of the front panel TARE and ZERO keys. <ul style="list-style-type: none"> OI ML, 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. OI ML, 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 OI ML 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 ZRANGE. In OI ML mode, the scale must be in gross mode before it can be zeroed; pressing the ZERO key in net mode clears the tare. INDUST provides a set of subparameters to allow customization of tare, clear, and print functions in non-legal-for-trade scale installations. When in legal-for-trade mode, refer to Section 9.10 on page 95 for more information on using this feature. |
| REGWOR | GROSS BRUTTO | Sets the term printed when weighing in gross mode. Selecting BRUTTO replaces <i>Gross</i> with <i>Brutto</i> |
| DECFMT | DOT COMMA | Specifies whether decimal numbers are displayed using a period (DOT) or a comma |
| TIME | TFORMT T SEP | Sets the current time, and the time format and separator character. See Time sub-menu below. |
| DATE | DFORMT D SEP | Sets the current date, and date format and date separator character |
| Time sub-menu | | |
| TFORMT | 12 HOUR 24 HOUR | Sets the time format |
| T SEP | COLON COMMA | Sets the time separator as a colon or a comma |

Table 3-11. Region Menu Parameters

| Date sub-menu | | |
|---------------|--|---|
| DFORMT | MMDDY4 DDMMY4 Y4MMDD Y4DDMM MMDDY2 DDMMY2 Y2MMDD Y2DDMM | Sets the date format. Y4 will use a four-digit year value, such as 2011, while Y2 will use a two-digit value, such as 11. |
| D SEP | SLASH DASH SEMI | Sets the date separator as a slash, dash, or semicolon |

Table 3-11. Region Menu Parameters (Continued)

SOFTKEYS Menu

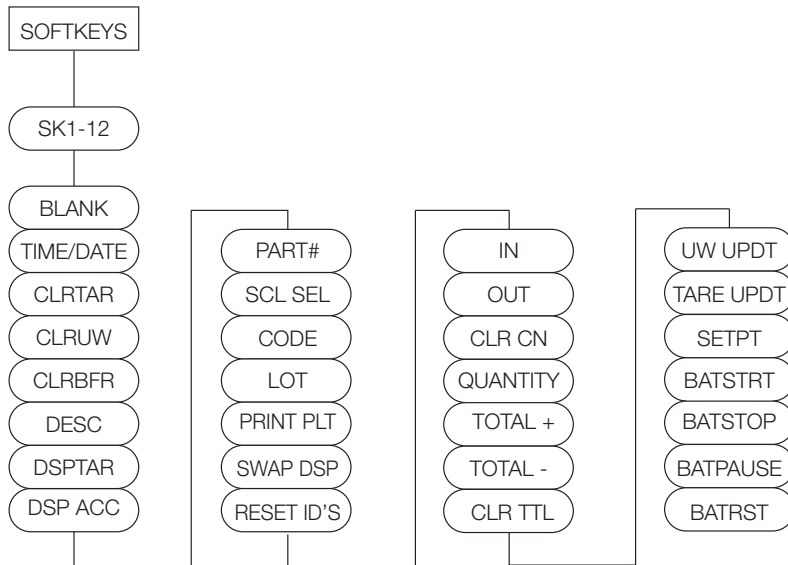


Figure 3-14. Softkey Menu Layout

| Parameters | Descriptions |
|------------|--|
| BLANK | No softkey function selected |
| TIMEDATE | Allows user to set time and date |
| CLRTAR | Clear tare |
| CLRUW | Clear unit weight value |
| CLRBFR | Clear buffer. |
| DESC | Description update. |
| DSPTAR | Display tare value (times out after 10 seconds) |
| DSPACC | Display accumulated weight value (may be printed or cleared while displayed) – times out after 10 seconds |
| PART # | Part number entry. |
| SCLSEL | Allows user to select scale 1, scale 2 for displayed weight, count in multi-scale unit |
| CODE | Press CODE, enter ID number, press ENTER to recall stored item code. If item code does not exist, will prompt “Item not found, Save as New ID?” Pressing YES will store in first available register. Alpha ON/OFF softkey appears to turn off Alpha to process numbers quicker when not using Alpha. |
| LOT | Allows user to add lot number to stored item code on the fly (if enabled to do so) |
| PRINTPLT | Allows user to print a pallet label |

Table 3-12. Softkey Menu Parameters

| Parameters | Descriptions |
|------------|---|
| SWAPDSP | Allows user to swap large display between weight, count, unit weight |
| RESET ID'S | Reset or clear ID's/codes. |
| IN | Used to add, subtract count from inventory value (local or WeighVault) |
| OUT | |
| CLRCN | Sets consecutive number back to RESVAL (beginning reset value) |
| QUANTITY | Update quantity for IN/OUT inventory database. |
| TOTAL+ | Used with totalization mode or parts reduction count mode to add or subtract items from total accumulated count. CLRRTL will clear the totalized value. |
| TOTAL- | |
| CLRRTL | |
| UWUPDT | Update stored unit weight or tare weight for currently loaded item code |
| TAREUPDT | |
| SETPT | Change setpoint value |
| BATSTRT | Batch start |
| BATSTOP | Batch stop |
| BATPAUSE | Pause batch |
| BATRST | Reset batch |

Table 3-12. Softkey Menu Parameters (Continued)

Regulate Industry Menu

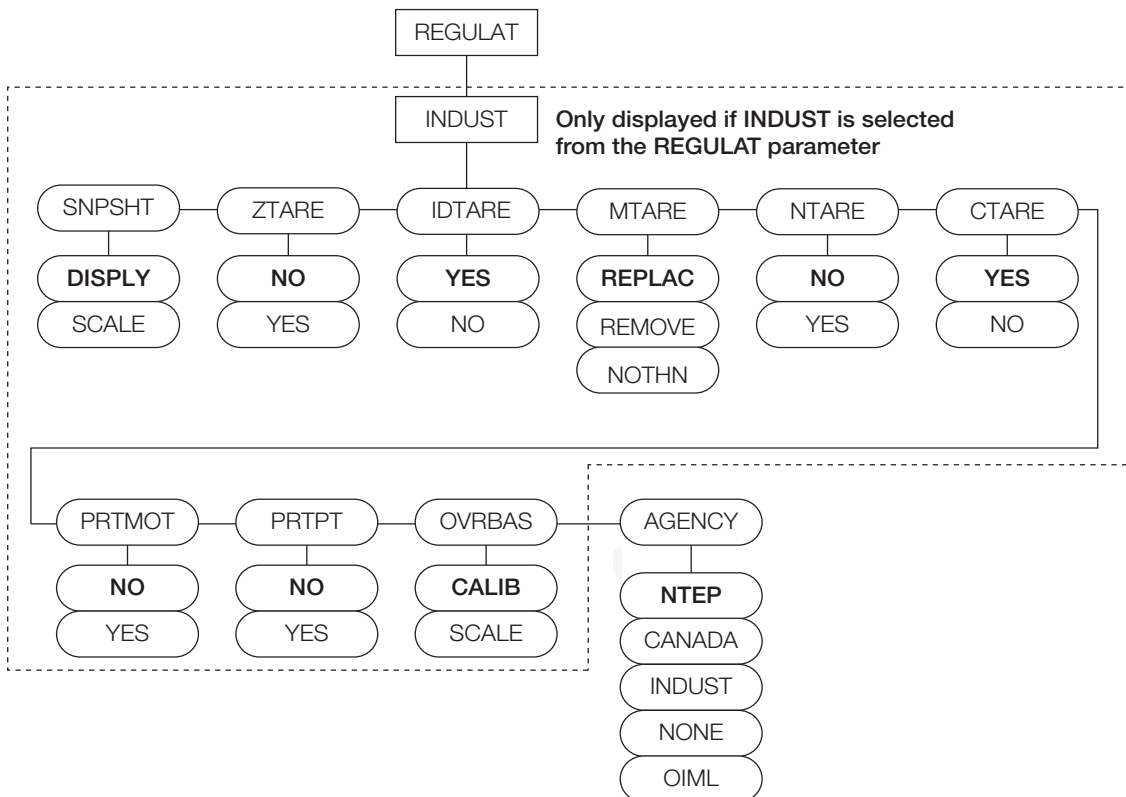


Figure 3-15. Regulate Industry Menu Layout

| Parameter | Settings | Description |
|-----------|--|--|
| SNPSHT | DISPLY SCALE | Display or scale weight source |
| ZTARE | NO YES | Remove tare on ZERO |
| IDTARE | YES NO | Always allow keyed tare |
| MTARE | REPLAC REMOVE NOTHIN | Multiple tare action |
| NTARE | NO YES | Allow negative or zero tare |
| CTARE | YES NO | Allow CLEAR key to clear tare/accumulator |
| PRTMOT | NO YES | Allow print while in motion |
| PRTPT | NO YES | Add PT to keyed tare print |
| OVRBAS | CALIB SCALE | Zero base for overload calculation CALIB = Calibrate Zero SCALE = Scale Zero |
| AGENCY | NTEP CANADA INDUST NONE OIML | <p>Selects the agency having jurisdiction over the scale site.</p> <ul style="list-style-type: none"> • 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. A tare can 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 OIML mode, printing is not allowed if the scale is more than -20dd. 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 ZRANGE. In OIML mode, the scale must be in gross mode before it can be zeroed; pressing ZERO in net mode clears the tare. • INDUST provides a set of subparameters to allow customization of tare, clear, and print functions in non-legal-for-trade applications. <p>The value specified for this parameter affects the function of the front panel TARE and ZERO keys. See Section 9.9 on page 94 for more information.</p> <p>When in legal-for-trade mode, refer to Section 9.10 on page 95 for more information.</p> |

Table 3-13. Regulate Industry Menu Parameters

3.7.3 Serial Menu

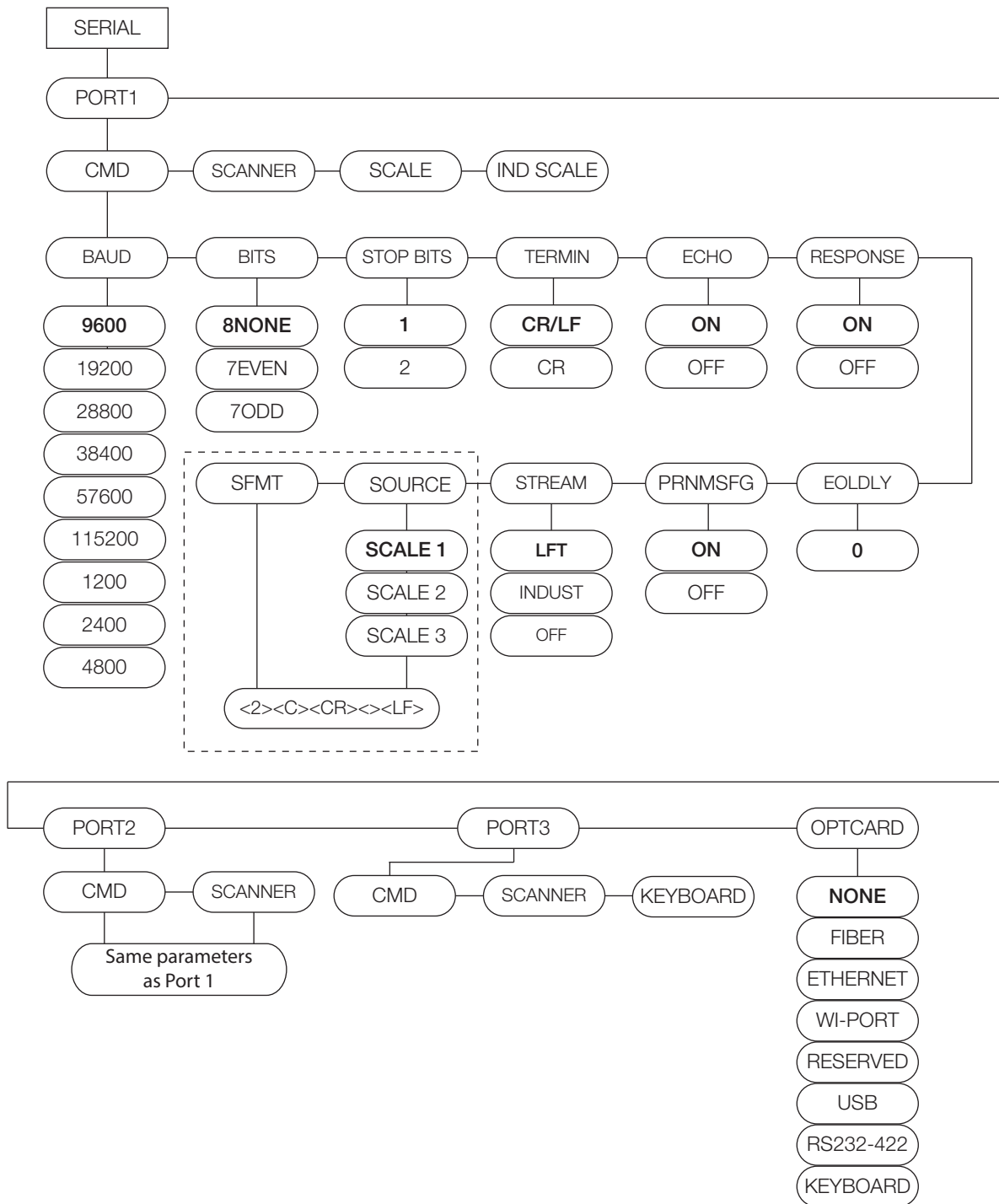


Figure 3-16. Serial Menu Layout

| Parameter | Settings | Description |
|----------------------------|---|--|
| PORT 1 PORT 2 PORT 3 | CMD SCANNER SCALE IND SCALE KEYBOARD | Specifies Port 1 through 3's mechanism for triggering a transmission of data, print message, baud rate, bits, stop bits, termination character, end-of-line delay, and echo. See Ports sub-menus for parameter descriptions. |
| OPTCARD | NONE FIBER ETHERNET WI-POR RESERVED USB RS232-432 KEYBOARD | Option card parameters. Indicates which connection can be selected when using a wireless option card and WeighVault. Notw: When setting up the USB option and opening Revolution, a prompt may display to load a driver if Windows PC has not previously used a USB driver. |
| Ports sub-menus | | |
| CMD | BAUD BITS STOP BITS TERMIN ECHO RESPONSE EOLDLY STREAM **SOURCE **SFMT | Sets up the transmission information for the command. Note: For SOURCE and SFMT to appear on menu, first configure the STREAM parameter for either LFT (legal-for-trade) or INDUST (Industrial). |
| SCANNER | BAUD BITS STOP BITS TERMIN HEADERS | Sets up the transmission information for the scanner. |
| SCALE | BAUD BITS STOP BITS TERMIN EOLDLY SFMT | Sets up the transmission information for scale 3. |
| IND SCALE | BAUD BITS STOP BITS TERMIN EOLDY SFMT | Sets up the transmission information for the industrial scale parameter. |
| KEYBOARD | BAUD BITS STOP BITS | Sets up the communication information for the USB keyboard option. |

Table 3-14. Serial Menu Parameters

3.7.4 Ethernet Menu

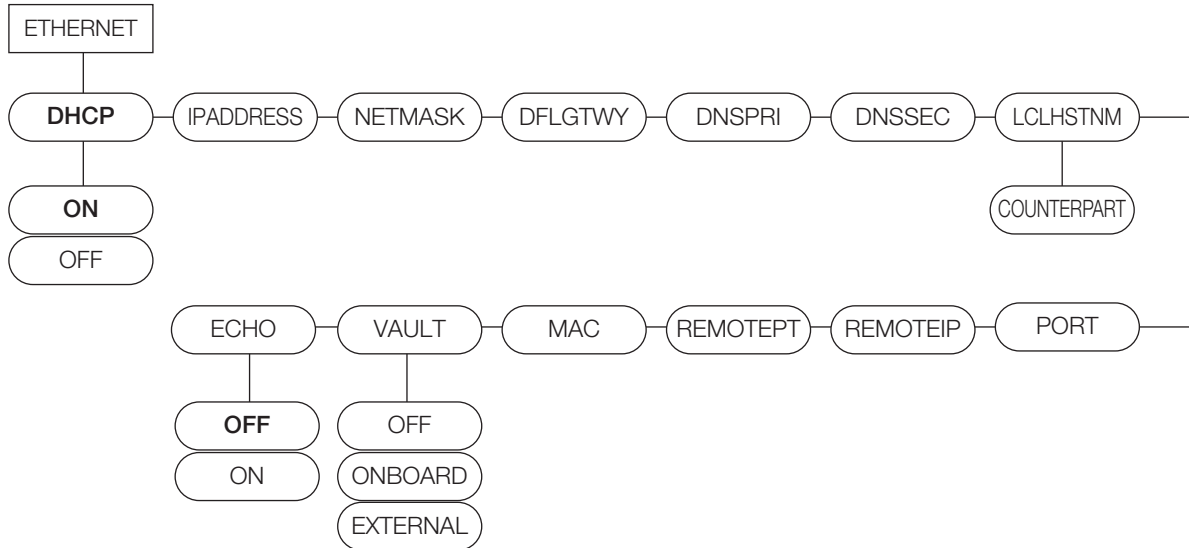


Figure 3-17. Ethernet Menu Layout

| Parameter | Settings | Description |
|-----------|-----------------------------|---|
| DHCP | ON OFF | Dynamic Host Configuration Protocol ON — obtains IP address, primary and secondary DNS IP addresses, netmask, and default gateway IP address from a DHCP server. OFF — uses static settings for the above parameters. |
| IPADDRESS | | IP address. This can be leased (provided by DHCP server) or statically set. |
| NETMASK | | Subnet address |
| DFFLTGTWY | | IP address for default gateway |
| DNSPRI | | Primary domain server IP address |
| DNSSEC | | Secondary domain server IP address |
| LCLHSTNM | Counterpart | Counterpart local host name |
| PORT | | Port number used |
| REMOTEIP | | Remote IP address using WeighVault |
| REMOTEPT | | Remote port number using WeighVault |
| MAC | | Views the MAC address and is non-changeable |
| VAULT | OFF ON BOARD EXTERNAL | Selects on or off Using onboard RJ45 Ethernet connection Using wireless port connection Note: Softkey shown to clear weigh vault batter. |
| ECHO | ON OFF | Allows Echo to be on or off |

Table 3-15. Ethernet Menu Parameters

3.7.5 Print Format Menu

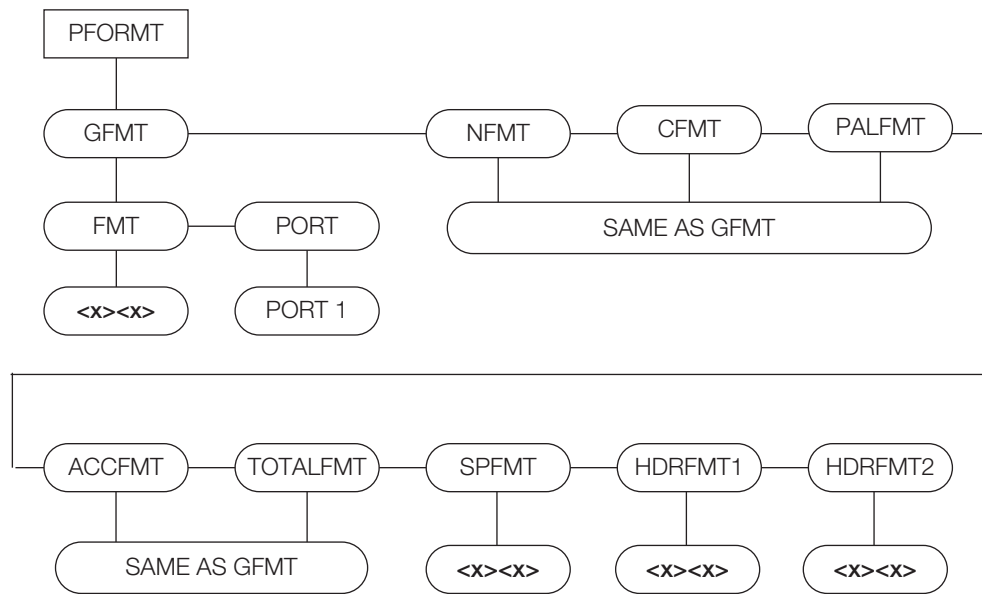


Figure 3-18. Print Format Menu

| Parameter | Settings | Description |
|-----------|----------|--|
| PFORMT | GFMT | Sets the print format for gross weight mode, net weight mode, count, pallet, accumulate, total, setpoint, header 1 and header 2. Gross format |
| | NFMT | Net format |
| | CFMT | Count format |
| | PALFMT | Pallet format |
| | ACCFMT | Accumulator format |
| | TOTALFMT | Total format |
| | HDRFMT1 | Header 1 format |
| | HDRFMT2 | Header 2 format |

Table 3-16. Print Format Menu Parameters

3.7.6 Scale Setpoints Menu

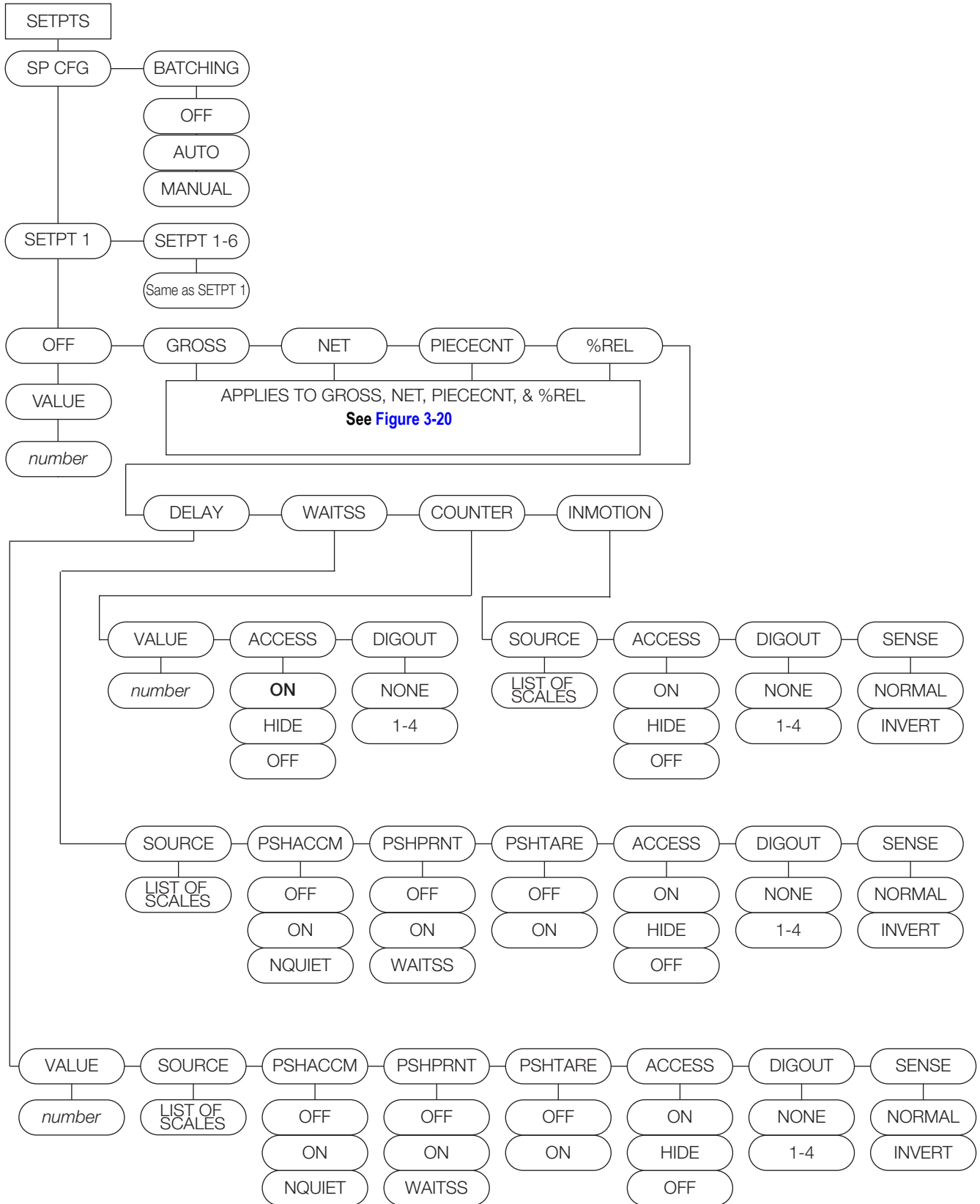


Figure 3-19. Setpoints Menu

Gross, Net, Piececnt, %REL Sub-menu

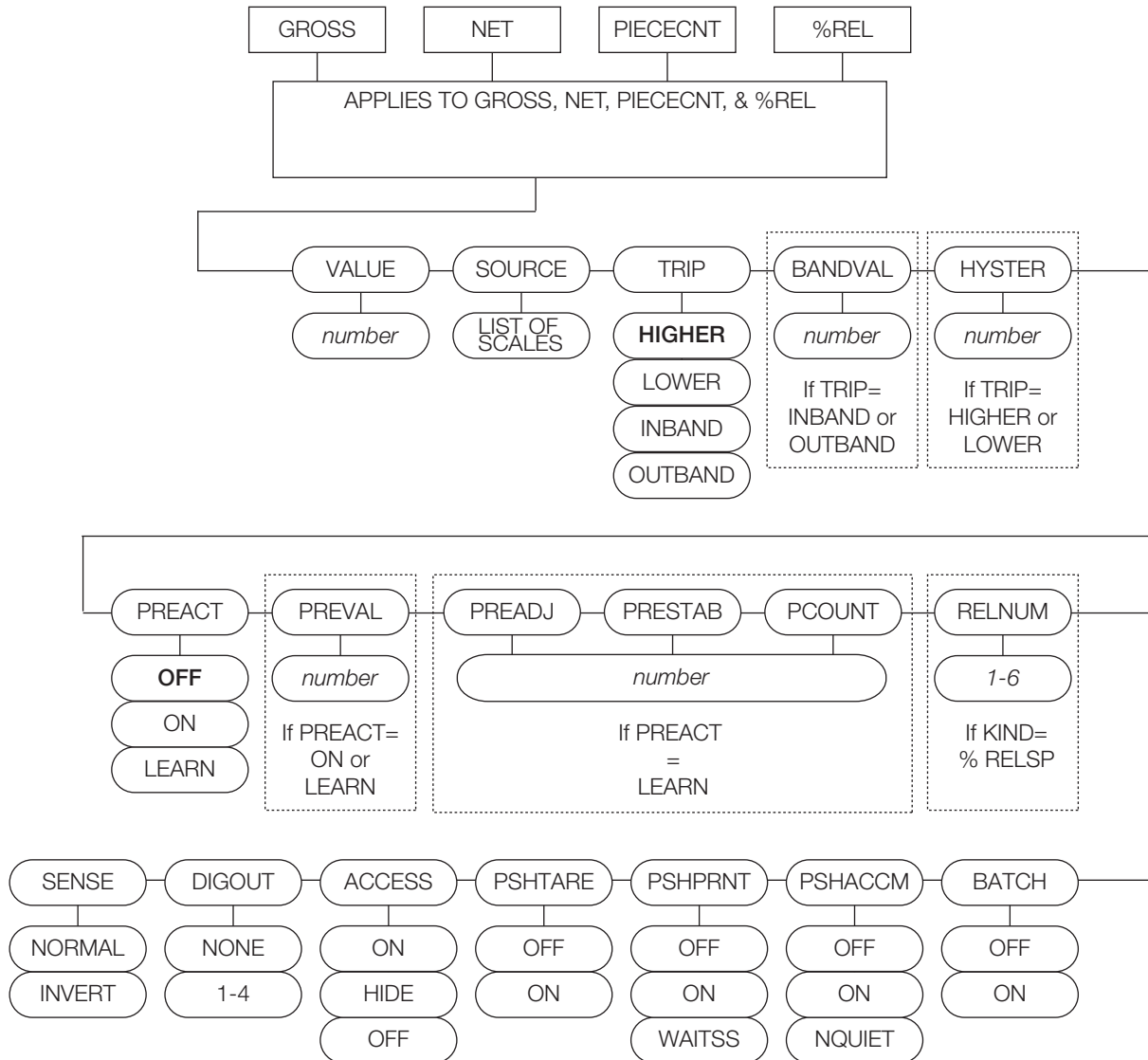


Figure 3-20. Gross, Net, Piececnt, %REL Sub-menu

| Parameters | Settings | Description |
|---------------|---|---|
| SP CFG | SETPT 1 SETPT 2-6 | Specifies the settings for GROSS, NET, PIECECNT, % REL, delay, waitss, counter and inmotion used by setpoints 1 through 6. |
| BATCHING | OFF AUTO MANUAL | Batching enable. Set to AUTO or MANUAL to allow a batch sequence to run. MANUAL requires a Batch Start softkey before the batch sequence can run. AUTO allows batch sequences to repeat continuously. |
| SP CFG subenu | | |
| SETPT1-6 | OFF GROSS NET PIECECNT %REL DELAY WAITSS COUNTER INMOTION | Specifies the setpoint kind. GROSS, NET, PIECECNT, and %REL setpoint kinds can be used as either batch or continuous setpoints. DELAY, WAITSS, and COUNTER setpoint kinds can only be used in batch sequences. The INMOTION setpoint kind can only be used as a continuous setpoint. |

Table 3-17. Scale Setpoint Menu Parameters

| Parameters | Settings | Description |
|---|---|--|
| Setpoint 1-6 submenu | | |
| OFF | Value = number | |
| GROSS NET PIECECNT %REL | Value Source Trip Bandval Hyster Preact Preval Preadj Prestab Pcount Relnum Batch Pshaccm Pshprint Pshtare Access Digout Sense | Display and edit the gross value |
| DELAY | Value Source Pshaccm Pshprint Pshtare Access Digout Sense | Display and edit |
| WAITSS | Source Pshaccm Pshprint Pshtare Access Digout Sense | Display and edit |
| COUNTER | Value Access Digout | Display and edit |
| INMOTION | Source Access Digout Sense | Display and edit |
| Off, Gross, Net, Peicecnt, %Rel, Delay, Waitss, Counter and Inmotion submenus | | |
| VALUE | number | |
| SOURCE | List of available scales | Specify the scale number used as the source for the setpoint. |
| TRIP | Higher Lower Inband Outband | Specifies whether the setpoint is satisfied when the weight is higher or lower than the setpoint value, within a band established around the value, or outside of that band. In a batch sequence with TRIP = HIGHER, the associated digital output is active until the setpoint value is reached or exceeded; with TRIP = LOWER, the output is active until the weight goes below the setpoint value. |
| BANDVAL | number | |
| HYSTER | number | Specifies a band around the setpoint value that must be exceeded before the setpoint, once off, can trip on again. |

Table 3-17. Scale Setpoint Menu Parameters (Continued)

| Parameters | Settings | Description |
|------------|----------------------------|--|
| PREACT | Off On Learn | Allows the digital output associated with a setpoint to shut off before the setpoint is satisfied to allow for material in suspension. The ON value adjusts the setpoint trip value up or down (depending on the TRIP parameter setting) from the setpoint value using a fixed value specified on the PREVAL parameter. The LEARN value can be used to automatically adjust the preact value after each batch. LEARN compares the actual value at standstill to the target setpoint value, and then adjusts the preact PREVAL by the PREADJ value times the difference after each batch. |
| PREVAL | | |
| PREADJ | 0.500000 0-9999999 | Preact adjustment factor. For setpoints with PREACT set to LEARN, specifies a decimal representation of the percentage of error correction applied (0.05 = 50%, 1.0 = 100%) each time a PREACT adjustment is made. |
| PRESTAB | 0 0-65535 | Preact stabilization time-out. For setpoints with PREACT set to LEARN, specifies the time, in 0.1-second intervals, to wait for standstill before adjusting the PREACT value. Setting this parameter to a value greater than zero disables the learn process if standstill is not achieved in the specified interval. |
| PCOUNT | 1 0-65535 | Preact learn interval. For setpoints with PREACT set to LEARN, specifies the number of batches after which the preact value is recalculated. The default value, 1, recalculates the preact value after every batch cycle. |
| RELNUM | 1 2 3 4 5 6 | For the percent relative setpoint, specifies the number of the relative setpoint. The target weight for the %REL setpoint is determined as the percentage (specified on the VALUE parameter of the %REL setpoint) of the target value of the relative setpoint. |
| BATCH | Off On | Specifies whether the setpoint is used as a batch (ON) or continuous (OFF) setpoint. |
| PSHACCM | Off On ONquiet | Specify ON to update the accumulator and perform a print operation when the setpoint is satisfied. Specify ONQUIET to update the accumulator without printing. |
| PSHPRNT | Off On Waitss | Specify ON to perform a print operation when the setpoint is satisfied; specify WAITSS to wait for standstill after setpoint is satisfied before printing. |
| PSHTARE | Off On | Specify ON to perform an acquire tare operation when the setpoint is satisfied. Note that PSHTARE acquires the tare regardless of the value specified for the REGULAT parameter on the FEATUR menu. |
| ACCESS | On Hide Off | Specifies the access allowed to setpoint parameters shown by pressing the Setpoint softkey in normal mode. ON: Values can be displayed and changed. HIDE: Values cannot be displayed or changed. OFF: Values can be displayed but not changed. |
| DIGOUT | None 1-4 | Lists all digital output bits available. This parameter is used to specify the digital output bit associated with this setpoint. Use the DIGI/O menu to assign bit function to OUTPUT. For continuous setpoints, the digital output becomes active (low) when the condition is met; for batch setpoints, the digital output is active <i>until</i> the setpoint condition is met. |
| SENSE | Normal Invert | Specifies whether the value of the digital output associated with this setpoint is inverted when the setpoint is satisfied. |

Table 3-17. Scale Setpoint Menu Parameters (Continued)

3.7.7 DIG I/O Menu

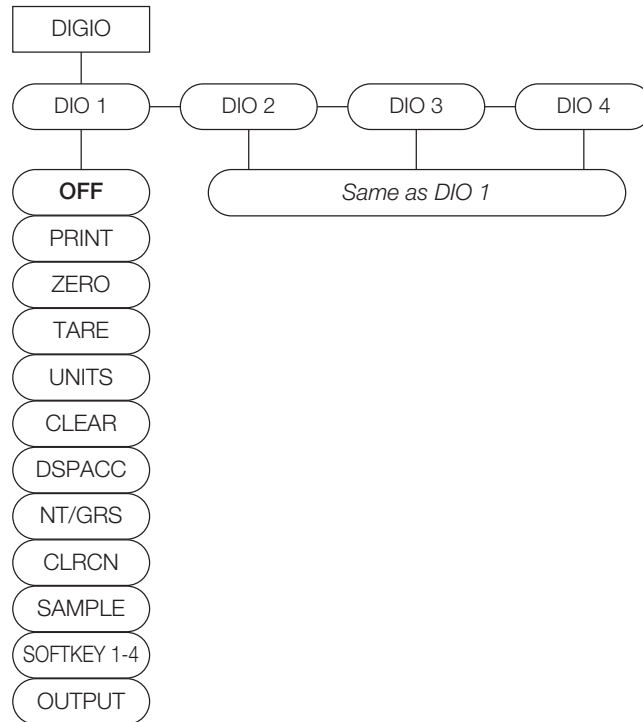


Figure 3-21. Digital I/O Menu Layout

| Parameter | Settings | Description |
|------------------|---|--|
| DIG IO | DIO 1 DIO 2 DIO 3 DIO 4 | Assign digital input/output functions. |
| DIO 1-4 sub-menu | | |
| DIO 1-4 | OFF PRINT ZERO TARE UNITS CLEAR DSPACC NT/GRS CLRCN SAMPLE SFTKEY1 SFTKEY2 SFTKEY3 SFTKEY4 OUTPUT | Digital I/O functions |

Table 3-18.

3.7.8 Version Menu

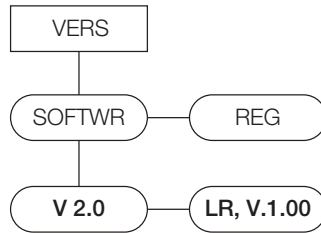


Figure 3-22. Version Menu Layout

| Parameter | Settings | Description |
|-----------|----------|--------------------------------|
| VERS | SOFTWR | Software version. 2.xx |
| | REG | Regulatory version. LR, V 1.XX |

Table 3-19. Version Menu Parameters

3.8 Test Menu

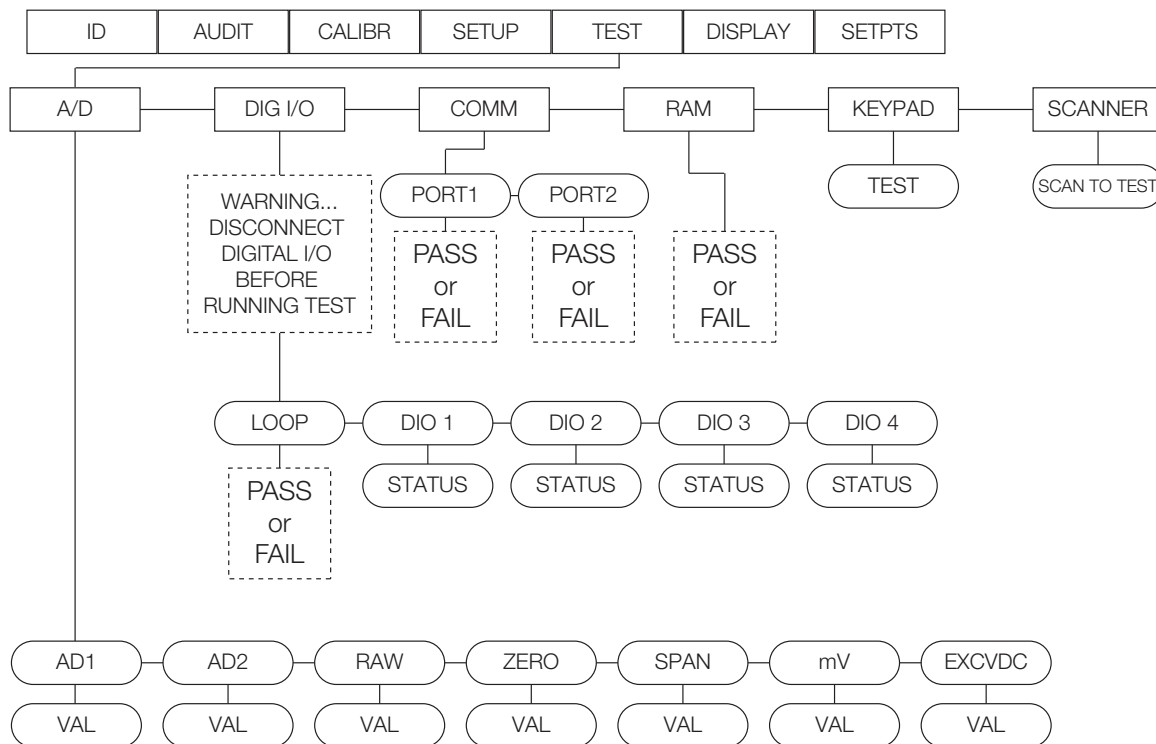


Figure 3-23. Test Menu


| Parameter | Settings | Description |
|-----------|--|--|
| A/D | AD1 AD2 EXCVAC | Gives details of current or live A/D counts as well as stored zero and span A/D values. Shows voltage levels for signal and excitation voltages. |
| DIG I/O | LOOP DIO 1 DIO 2 DIO 3 DIO 4 | Tests digital I/O ports. If they are functioning, PASS is displayed. If they are not functioning, FAIL is displayed. Note: Both inputs and outputs are active low. They go to a ground state when active.  WARNING The I/O ports become activated when the test is performed. Make sure any equipment is disconnected prior to performing this test to avoid inadvertently activating it. |

Table 3-20. Test Menu Parameters

| Parameter | Settings | Description |
|----------------------------------|----------------|---|
| COMM | PORT1 PORT2 | Performs a loop-back test on the serial ports. If they are functioning, PASS is displayed. If they are not functioning, FAIL is displayed. |
| RAM | TEST | Tests the unit's memory. If it is functioning, PASS is displayed. If it is not functioning, FAIL is displayed. |
| KEYPAD | TEST | Tests the unit's individual keypad buttons by displaying the name of the key pressed. If nothing is displayed, the key is not functioning. Press the Menu key to exit the test. |
| SCANNER | TEST | Displays scanned value with control characters. |
| A/D sub-menus | | |
| RAW | VAL | Displays the live current raw AD count. |
| ZERO | VAL | Displays the captured AD Zero calibration value. |
| SPAN | VAL | Displays the captured AD Span calibration value. |
| mV | VAL | Displays the live current millivolt signal voltage. |
| EXCVDC | VAL | Displays the current excitation voltage. |
| LOOP | TEST | Performs a loop test on dig I/O cards. |
| DIO 1 DIO 2 DIO 3 DIO 4 | STATUS | Displays the status of each individual digital I/O port. If set as input, the display shows input stats IN HI or IN LO. If set as output, pressing Enter toggles the output between HI and LO. OUT HI or OUT LO. |
| PORT1 PORT2 | TEST | Performs a loopback test on serial port 1 or 2. Connect jumper TX and RX together on port 1 or port 2 before testing. |

Table 3-20. Test Menu Parameters (Continued)

3.9 Display Menu

There are three display settings on the Counterpart.

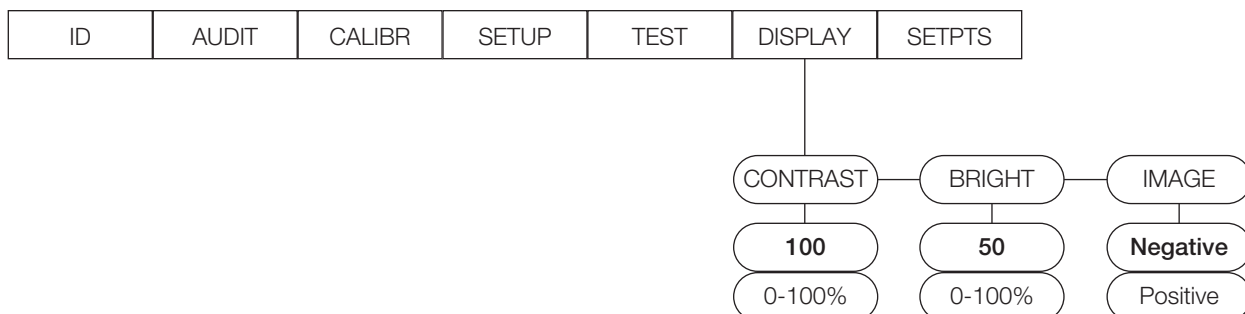


Figure 3-24. DISPLAY Menu

Setting the display parameters from this top level menu is temporary. After a power cycle, the values will revert to their previous values. Changes made to these parameters through the CONFIG menu are kept through a power cycle.

3.10 Setpoints – Weigh Mode Parameter Menu

Set up of setpoints is allowed while in the weigh mode.

While setting up setpoints, the Access parameter needs to be set to either On or Off.

- Setting it to **On** allows a setpoint to be viewed and edited if setpoint type is Gross, Net, Piececnt, %Rel, Delay, or Counter
- Setting it to **off** allows a setpoint to be viewed but not edited if the setpoint type is Gross, Net, Piececnt, %Rel, Delay, or Counter
- Hide will not show the setpoint

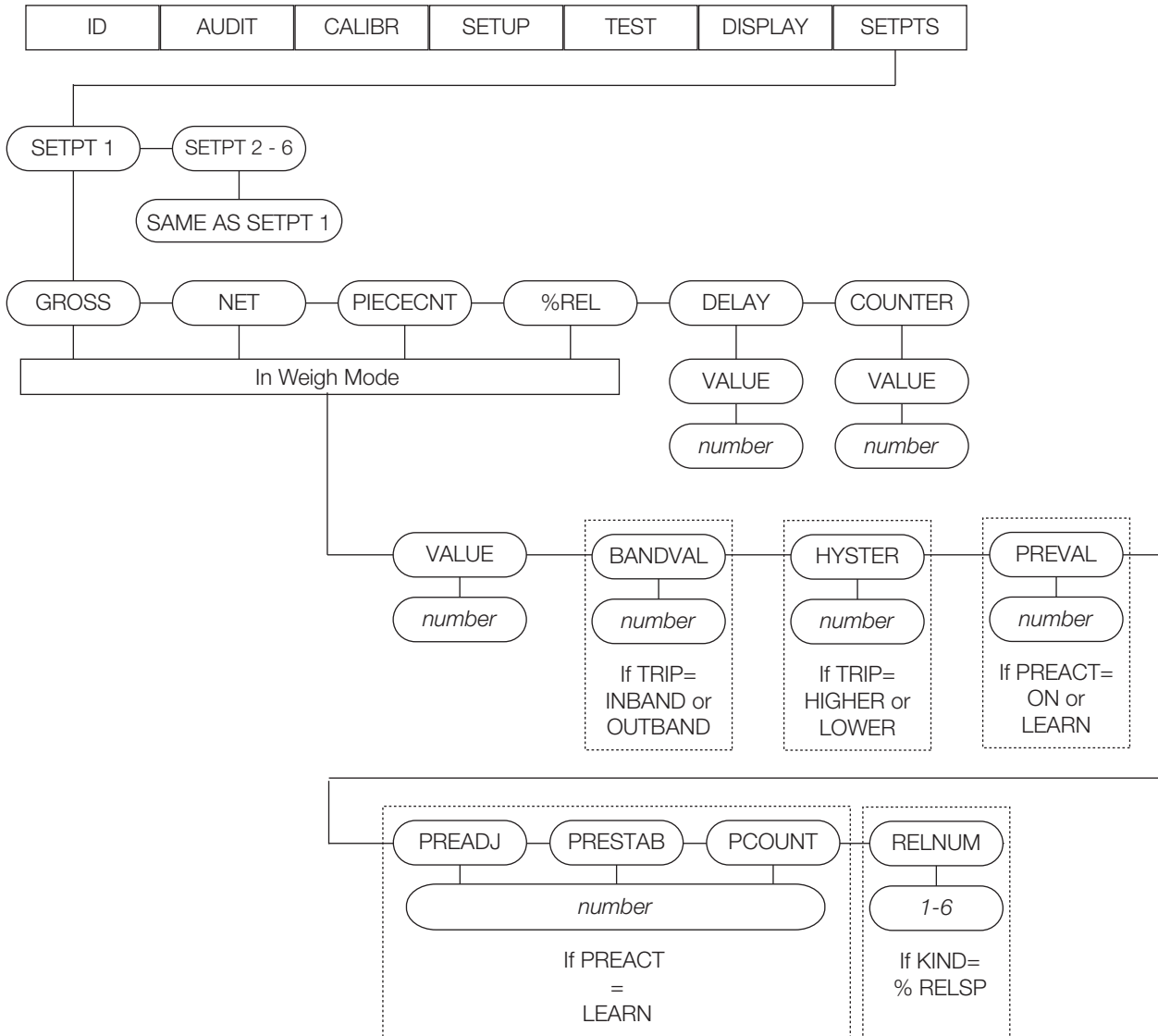


Figure 3-25. Weigh Mode Menu

| Parameters | Settings | Description |
|---|---|---|
| SETPT1-6 | OFF GROSS NET PIECECNT %REL DELAY WAITSS COUNTER INMOTION | Specifies the setpoint kind. GROSS, NET, PIECECNT, and %REL setpoint kinds can be used as either batch or continuous setpoints. DELAY, WAITSS, and COUNTER setpoint kinds can only be used in batch sequences. The INMOTION setpoint kind can only be used as a continuous setpoint. |
| Setpoint 1-6 sub-menu | | |
| GROSS NET PIECECNT %REL | Value Source Trip Bandval Hyster Preact Preval Preadj Prestab Pcount Relnum Batch Pshaccm Pshprint Pshtare Access Digout Sense | Display and edit the gross value |
| DELAY | Value Source Pshaccm Pshprint Pshtare Access Digout Sense | |
| COUNTER | Value Access Digout | |
| Gross, Net, Peicecnt, %Rel, Delay and Counter sub-menus | | |
| VALUE | number | |
| BANDVAL | number | |
| HYSTER | number | Specifies a band around the setpoint value that must be exceeded before the setpoint, once off, can trip on again. |
| PREVAL | number | |
| PREADJ | 0.500000 0-9999999 | Preact adjustment factor. For setpoints with PRACT set to LEARN, specifies a decimal representation of the percentage of error correction applied (0.05 = 50%, 1.0 = 100%) each time a PRACT adjustment is made. |
| PRESTAB | 0 0-65535 | Preact stabilization time-out. For setpoints with PRACT set to LEARN, specifies the time, in 0.1-second intervals, to wait for standstill before adjusting the PRACT value. Setting this parameter to a value greater than zero disables the learn process if standstill is not achieved in the specified interval. |
| PCOUNT | 1 0-65535 | Preact learn interval. For setpoints with PRACT set to LEARN, specifies the number of batches after which the preact value is recalculated. The default value, 1, recalculates the preact value after every batch cycle. |

Table 3-21. Setpoint Menu Parameters in Weigh Mode

| Parameters | Settings | Description |
|------------|----------------------------|---|
| RELNUM | 1 2 3 4 5 6 | For the percent relative setpoint, specifies the number of the relative setpoint. The target weight for the %REL setpoint is determined as the percentage (specified on the VALUE parameter of the %REL setpoint) of the target value of the relative setpoint. |

Table 3-21. Setpoint Menu Parameters in Weigh Mode (Continued)

4.0 Calibration

The Counterpart can be calibrated using the front panel, EDP commands, or Revolution®.



Calibration can be performed in two places within the menu: the CALIBR menu shown in Figure 4-1 and the SCALE sub-menu shown in Figure 3-8 on page 26. The CALIBR menu shown in Figure 4-1 is a “quick access” calibration; for more in-depth scale setup and calibration, use the menus found under SETUP/CONFIG/SCALE (see Figure 3-8 on page 26).

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.



The Counterpart requires the WZERO and WSPAN points to be calibrated. The linearity points are optional, but must not duplicate zero or span. During calibration, the TARE (Enter) key acts as a data entry confirmation key. The soft calibrate key accepts that value.

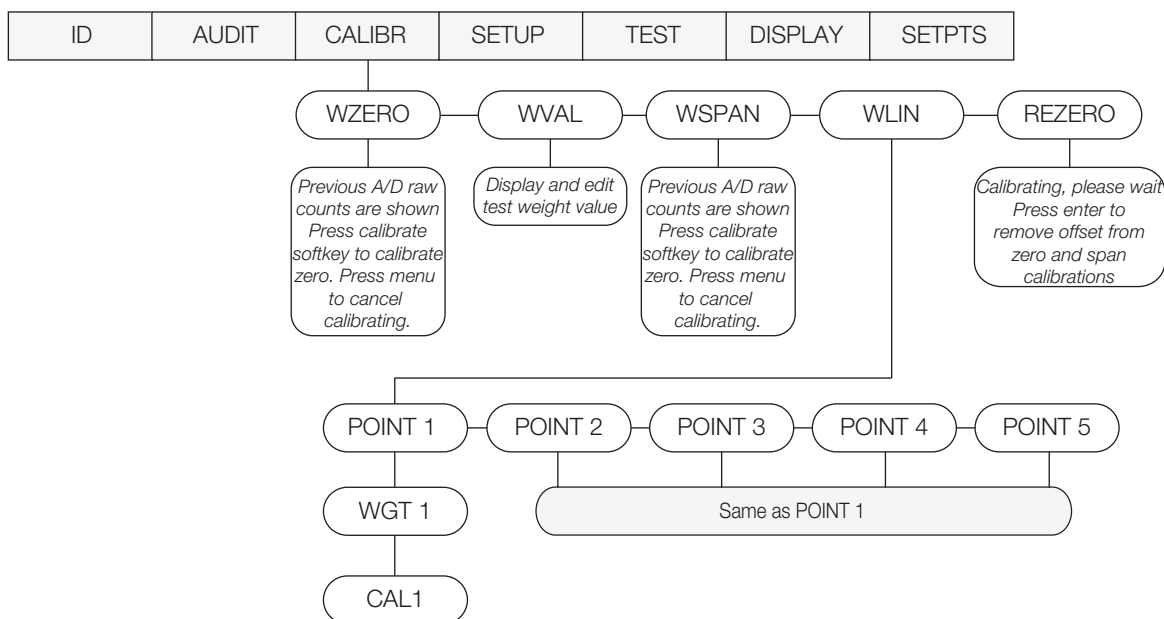


Figure 4-1. Calibration (CALIBR) Menu

4.1 Front Panel Calibration

1. Press the **MENU SETUP** button, and then press \triangleright until the display reads **CALIBR**.
2. Press **TARE (Enter)** or ∇ to go to the scale to be calibrated. Press **TARE (Enter)** or ∇ to go to **WZERO**. Press **TARE (Enter)** again to display a value and **press the Calibrate softkey to Calibrate WZERO**.



To end the zero calibration, press Menu to exit. No changes will be made to the current calibration.

3. The indicator displays **CALIBRATING** while calibration is in progress. When complete, press **TARE (Enter)** or \triangle to advanced to the next prompt (**WVAL**).



To view the new AD count, repeat Step 3, but instead of pressing TARE (Enter) while viewing the value, press MENU SETUP to exit.

4. With **WVAL** displayed, press **TARE (Enter)** or ∇ to display or edit the stored calibration weight value. Press **TARE (Enter)** to store the **WVAL** value and advance to **WSPAN**.

- With **WSPAN** displayed, press **TARE (Enter)** or ∇ to view the A/D count. Place test weights on the scale equal to WVAL. Press the **Calibrate** softkey to calibrate WSPAN.



Note To end the calibration span, press **Menu** to exit. No changes will be made to the current calibration.

- After the **Calibrate** softkey is pressed, the indicator displays **CALIBRATING** when complete. Press **TARE (Enter)** or \triangle and the **Save Exit** softkey or proceed to **WLIN**.



To view the new AD count, navigate back to the **WSPAN**, and repeat Step 6; however, instead of pressing the **Calibrate** softkey while viewing the value, press **Save/Exit** to exit.

4.2 Five-point Linearization

Five-point linearization (using the WLIN parameter) provides increased scale accuracy by calibrating the indicator at up to five additional points between the zero and span calibrations.

Linearization is optional: To not perform linearization, skip the WLIN parameter; if linearization values have previously been entered, these values are reset to zero during calibration. WZERO and WSPAN must be calibrated before adding linearization points; WLIN values must be less than the WSPAN value and must not duplicate WZERO or WSPAN.

To perform linearization, follow the procedure below:

With **WLIN** displayed, press **Down** to go to the first linearization point (**POINT 1**) and then press **Down** again to show the weight value prompt (**WGT 1**). Then press **Down** to show the weight value. Place test weights on the scale, and use the numeric keypad to enter the actual test weight value. Press **enter** to save the value and move to the calibration (**CAL 1**) prompt. Press **down** to show the current calibration value, and then press the **Calibrate** softkey to calibrate the linearization point. When complete, the AD count for the linear calibration is displayed. Press **enter** again to save the calibration value and go to the next prompt (**POINT 2**).

Repeat for up to five linearization points. To exit the linearization parameters, press the **Up** key to return to WLIN.

4.3 Rezero

The optional rezero function is used to remove a calibration offset when hooks or chains are used to hang the test weights.

The rezero function cannot be used with five-point linear calibration.



If no other apparatus was used to hang the test weights during calibration, remove the test weights and press **Up** to return to the CALIBR sub-menu.

If hooks or chains were used during calibration, remove these and the test weights from the scale. With all weight removed, go to the REZERO parameter, and press **Down** to show the current zero value. Press the **Calibrate** softkey to adjust the zero and span calibration values. Press **enter** or **Up** to return to the CALIBR sub-menu.

Press **Up** to return to the SCALES menu, or press the **Save and Exit** softkey to exit setup mode.

4.4 EDP Command Calibration

To calibrate the indicator using EDP commands, the indicator EDP port must be connected to a terminal or personal computer. See [Section 2.8.1 on page 11](#) for EDP port pin assignments.

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

- Place the indicator in config mode (display must read **SCALE** — see [Figure 3-8 on page 26](#)) and remove all weight from the scale platform. For test weights that require hooks or chains, place the hooks or chains on the scale for zero calibration.
- Send the SC.WZERO#*n* command to calibrate zero. The indicator displays **CALIBRATING** while calibration is in progress.
- Place test weights on the scale and use the SC.WVAL#*n* command to enter the test weight value in the following format:

SC.WVAL=nnnnnn<CR>

4. Send the SC.WSPAN#*n* command to calibrate span. The indicator displays **CALIBRATING** 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=nnnnn<CR>

SC.WLIN.C1<CR>

The SC.WLIN.V1#*n* command sets the test weight value (nnnnn) for linearization point 1. The SC.WLIN.C1#*n* command calibrates the point. Repeat using the SC.WLIN.V*x* and SC.WLIN.C*x* 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, and send the SC.REZERO#*n* command. The indicator displays **CALIBRATING** while the zero and span calibrations are adjusted.
7. Send the SC.KUPARROW#*n* or the SC.KEXIT#*n* EDP command to return to normal mode.

4.5 Revolution® Calibration

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

1. Place the indicator in config mode (display reads **SCALE**, — see Figure 3-8 on page 26) and remove all weight from the scale platform.
2. From Revolution, select **File » New**. The *Select Indicator* dialog box appears.
3. Select Counterpart and click **OK**.
4. From the *Communications* menu, select **Connect**.
5. From the left pane, expand the *Scale* selection and click the **Scale** button.

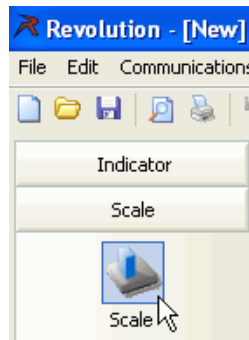


Figure 4-2. Scale Button

6. From the *Tools* menu, select **Calibration Wizard**.
7. Click **NEXT** to begin the Calibration Wizard.
8. Select between a standard calibration or a standard with multi-point linearization and click **NEXT**.
9. In the text box, enter the test weight value to be used for span calibration.
10. Select the check box if using chains or hooks during the calibration, and click **NEXT**.
11. Remove all weight from the scale and click **Click to Calibrate Zero** to begin zero calibration. For test weights that require hooks or chains, place them on the scale for zero calibration.
12. When zero calibration is complete, the Calibration Wizard prompts user to place test weights on the scale. Place the test weights on the scale and click **Click to Calibrate Span**.
13. 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 click **GO**. Repeat for additional linearization points and click **NEXT**.
14. The new and old calibration settings are displayed. To accept the new values, click **Finish**. To exit and restore the old values, click **Cancel**.

4.6 More About Calibration

The following provides additional information about compensating for environmental factors (Section 4.6.1) and also provides diagnostic information for determining expected zero and span coefficients.

4.6.1 Adjusting Final Calibration

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 tweaking WVAL to 998.5 lb. This adjustment provides a linear correction of 1.5 lb per 1000 lb.

To adjust the final calibration, return to the **WVAL** prompt and press **TARE (Enter)** to show the test weight value. Press Δ or ∇ to adjust calibration up or down. Press the **Calibrate** softkey to save the value, and press Δ to return to the CALIBR menu.

5.0 Scale Operations

The following contains detailed operator instructions for Counterpart, including instructions on how to enter tare weights, toggle between net and gross weight, enter unit weights, perform inventory accumulation and reduction and toggle between scales. All operator instructions are conducted with the scale in the operation mode that is the weighing or normal mode.

Counting scale accuracy is determined by:

- Sample size (number of pieces)
- Total sample size as a percentage of full scale capacity
- Piece-to-piece weight variation

As a general rule when determining sample size of fairly uniform pieces, the larger the sample size, the greater the total sample weight, and therefore, the better the counting accuracy. Selecting the smallest capacity scale that can obtain the highest counting resolution should be considered, but should not sacrifice the capacity required for the heaviest container of parts. For this kind of application, a dual-platform scale may be the best selection. There is a direct relationship between piece-to-piece weight variation (non-uniformity) and counting accuracy.

Therefore, elimination of the piece-to-piece weight variations can be accomplished by:

1. Isolating the sample used to calculate the unit weight and using the same sample to re-check the scale.
2. Recalculating the unit weight from lot-to-lot of parts. Parts manufactured on one machine may vary slightly from another machine relative to weight.
3. Tightening the manufacturing tolerances on the parts reduces piece weight variations and increases count accuracy.

The Stand-by Display

At the stand-by display the **WEIGHT**, **UNIT WEIGHT**, and **QUANTITY** displays show zeros and the annunciator for the platform is illuminated (Scale 1 or 2).

5.1 Weight Unit Switching

The weight units displayed can be changed between primary, secondary and tertiary units during weighing operations by pressing the **UNITS TOGGLE** key.

5.2 Entering Tare Weights

Tare weights can be entered in the scale by one of two methods: one-touch tare or digital tare. Digital tare is used when the tare weight is already known while one-touch tare is used when the tare weight is unknown. When an Item Code already programmed into the Counterpart memory is called up and it has a tare weight stored for that Item Code, the tare weight stored with the Item Code will override one entered digitally or by using the **TARE** key.

5.2.1 One-Touch Tare, Tare Unknown

1. If the tare weight value is not known, place the item to be tared on the scale and press **TARE**. The weight display should now show **0** and the **Net** annunciator should illuminate.
2. Remove the item from the scale. The weight display should show a negative weight value (weight of the tared container, box, or item).
3. To clear the tare weight, press **TARE** with no weight on the scale. The **scale should be at gross zero**. The **Net** annunciator will no longer be illuminated.

5.2.2 Digital Tare, Tare Weight Known

1. If the tare weight value is known, use the numeric keypad to key in the value and then press **TARE**. The **Net** annunciator will illuminate.
2. To reset the tare to zero, press **TARE** again with no weight on the scale while the scale is at gross zero and the **Zero** annunciator is lit.

5.3 Toggling Between Gross and Net

To toggle between net and gross weight, a tare value must be entered into the scale. See [Section 5.2](#) to enter a tare value. After a tare value is entered into the scale, items placed on the scale will cause the **Net** annunciator to illuminate and allow toggling between net weight and gross weight. For example:

1. Place 0.5 lb weight on the scale and then press **TARE**. The weight display should show 0.000 lb.
2. Place another 0.5 lb weight on the scale. The scale weight display should show 0.500 and the **Net** annunciator should be illuminated.
3. Press the **GROSS/NET** key. The weight display should show 1.000 GROSS WEIGHT, and the **Net** annunciator will no longer be illuminated.
4. Press the **GROSS/NET** key. The weight display should show 0.500 and the **Net** weight annunciator should be illuminated again.

5.4 Entering Unit Weights

Entering unit weights can be done either by sampling, as presented in [Section 5.4.1](#), or by key entry as described in [Section 5.4.2](#).



Notes

EXTENT OF INSUFFICIENT SAMPLES controls unit weight sampling. The default setting for the **INSFSMPLE** is 0.1 percent.

AMPLE QUANTITY determines the number of pieces the scale assumes are on the platter when pressing the **SAMPLE** key to calculate the unit weight. The default setting is 10 pieces.

XFRUNITWT sets whether the unit weight determined by sampling is automatically transferred from Scale 1 to Scale 2. The default setting is **AUTOMATIC**.

UNIT WEIGHT BASE controls whether the unit weight is displayed per 1000 pieces or per 1 piece. The default setting for this is 1000 pieces.

Unit Weight per 1000 Pieces vs. Unit Weight per 1 Piece

The scale's internal microprocessor calculates unit weights to several decimal places. However, the scale display generally can only show unit weight to a maximum of 8 characters (or 7 places and a decimal point). If this unit weight is recorded from the scale display and entered by key entry, this can introduce errors in the unit weight and consequently in the counts. This error increases as the unit weight of the parts being counted decreases.

Example: A sample of 10 zener diodes is placed on the scale. The unit weight is computed to be 0.000653642 lbs. However, the scale has a 7 character display for unit weight (or 6 places after the decimal point — 0.000000) so the scale can only display 0.000653 as the unit weight. If this unit weight were recorded and keyboard entered in future counting operations, the resulting error would be:

$$\left(\frac{0.000653642 - 0.000653 \times 100}{0.000653642} \right) = 0.098\%$$

On the other hand, with entry of the unit weight as “weight per 1000 pieces” the decimal place is, in effect, moved three places to the right, allowing 3 more decimal places of accuracy. In this example, the entry would be made as 0.653642 per 1000 pieces, eliminating the error.

As a practical note, entering unit weights per 1000 pieces also lessens the chances of entering the wrong number of zeros when keying in weights with many leading zeros. Incorrect entry of unit weights is a common cause of inaccurate counting.

In this case, unit weight per 1 piece is generally used:

When working with other existing systems or procedures that are already set up to record unit weight per piece such as (inventory systems or labeling requirements).

5.4.1 Unit Weight Operation by Sampling

Unit weight operation by sampling is accomplished by placing a 10 piece sample on the scale and then pressing the **SAMPLE** key. The scale calculates a unit weight based on the weight of the sample. The following details the procedure with **UNIT WEIGHT** set at either on or off.

Default settings are placed at 10 pieces. To key in a larger sample, key in the quantity and press **SAMPLE**.

Unit Weight Update Set to “Off” (Default)

Parts can be sampled (generating a new unit weight) or a unit weight can be scanned, but the new unit weight is not saved into the stored copy of the loaded ID record.

Unit Weight Update Set to “On”

Parts can be sampled (generating a new unit weight) or a unit weight can be keyed or scanned and the new unit weight is saved into the stored copy of the currently loaded ID record. If WeighVault is also enabled, a WeighVault ID update will also occur.

5.4.2 Unit Weight Operation by Key Entry

Unit weight operation by key entry is accomplished by using the numeric keypad to enter the known value of the unit weight and then pressing the **UNIT WEIGHT** key. For example:

1. With the display in the weighing mode, enter the known unit weight of 200.00 using the keyboard.
2. Press the **UNIT WEIGHT** key to enter the unit weight.
3. Place a 2 lb weight on the scale. The weight display reads 2.000, the unit weight display reads 200.00, and the quantity display reads 10.

Also, weight as APW (average piece weight) or unit weight per thousand can be entered.



Note To clear the unit value, enter 0 and push the Unit Weight key.

Piece Weight Enhancement

After performing a sample process, the unit determines the maximum number of pieces that could be accurately used for a recompute. If the number of pieces on the scale is less than the recompute value, the **RECOMP** annunciator will be shown.

1. Place items to be counted on the scale platter; make sure the **RECOMP** annunciator is still on.
2. Press the **SAMPLE** key while the **RECOMP** annunciator is shown. This will start a sample process using the current piece count (instead of the **SAMPLEQTY** value) as the sample quantity.

Negative Counting (Full Box Counting)

Just as counting can be done by adding parts to the scale, counting can be done by removing parts from the scale. This is called “negative counting” because a negative weight is displayed while counting. However, do not use the (-) key to do negative counting. The (-) key is only used to delete an unwanted entry in accumulation mode. This procedure does not affect the inventory quantity for this item stored in the scale.



Note To utilize the negative counting feature, set **NEGCOUNT** to “On” under the Count Menu and the regulatory mode must be set to Industrial.

There are two ways to do this depending on whether the user wants to see the total amount remaining in the container or the total amount removed from the container.

Counting Out of a Full Container — See Total Amount Remaining in the Container

To carry out this operation, the tare weight must be known ahead of time.

1. Place the full container on the scale. Press the **TARE** key.
2. Remove a 10 piece sample from the container and press the **SAMPLE** key. After the unit weight has been calculated, return the sample to the container.
3. To see how many are still in the bin, the tare weight of the bin or container must be known. After removing any unwanted parts out of the bin, enter the tare weight of the bin and press the **TARE** key. The scale will display how many parts were left in the bin. To print a label to put on the bin showing the total quantity in the bin, press the **PRINT** key.

Negative Counting — Total Removed Displayed at the End

With this procedure, count can be done accurately out of a full container for kitting or shipping without having to know the tare weight of the container.

1. Place a full container on the scale and press **TARE**.
2. Remove a 10 piece sample from the container and press **SAMPLE**. After the unit weight has been calculated, return the sample to the container.
3. Remove the number of pieces needed for kitting or shipping. The amount removed will be displayed. If a label is needed for each kit or container, press the **PRINT** key after removing each batch of pieces.

5.5 IDs

IDs are used to save and recall previously set codes, descriptions, unit weight, and tare preferences. The *Counterpart* has the capacity to store up to 150 individual IDs. There are three ways IDs can be entered and set:

1. Normal
2. Through Count Mode
3. Through Revolution

To enter alpha ID characters, double press the numeric keypad to obtain alpha characters.

To store more than 150 IDs, WeighVault is required (see [Section 5.6 on page 64](#)).

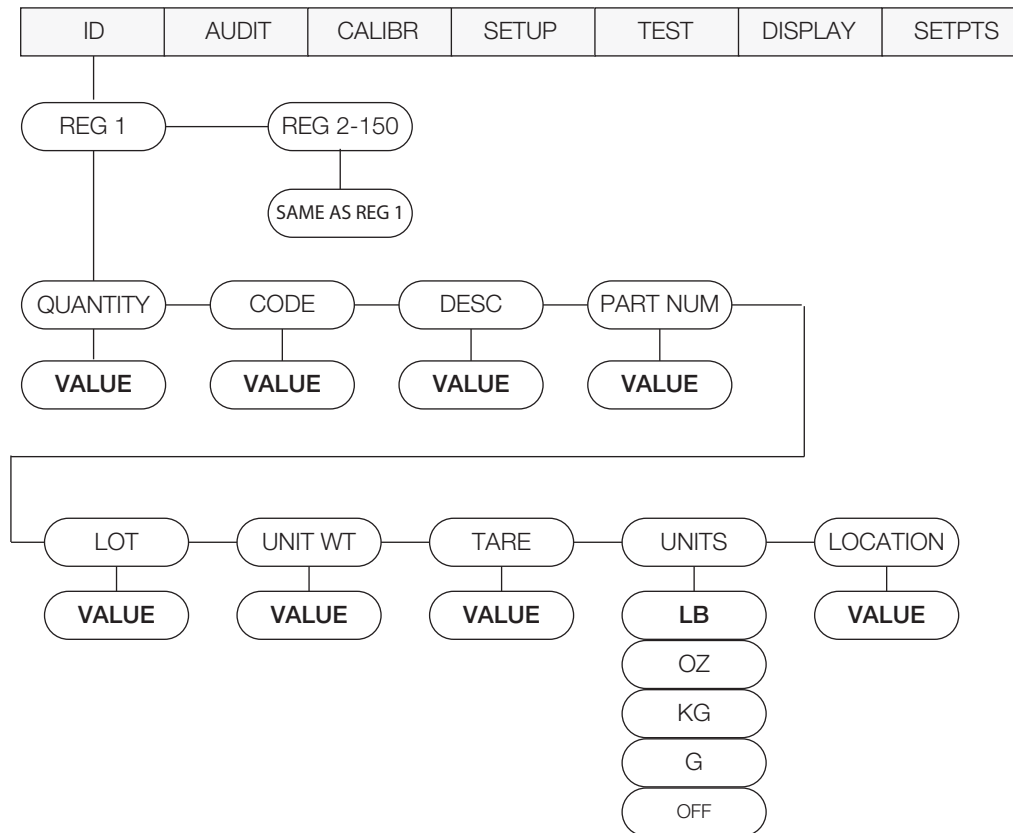



Figure 5-1. ID Menu

5.5.1 Setting an ID Using the Normal Mode

1. Press the **MENU SETUP** key  to access this menu.
2. Press \triangleleft to ID and then press ∇ to get to REG1.
3. Navigate to the REG number wanted, to set (1-150) by using the \triangleright and \triangleleft keys.

Note: All menus have wrap-around functionality. If at ID1 and want to access ID150, one can quickly do so by moving backwards through the menu.

4. When the REG number desired is reached, to set, press ∇ to select that register number.
5. Press ∇ and enter the CODE value — either the numeric or alphanumeric is acceptable. Thirty two characters can be entered and only 25 characters maximum for default bar code formats. This code will be used to recall the ID.
6. When the desired value is entered, press **TARE (Enter)**.
7. Enter the information for description, part number, lot number, unit weight, tare with all entries being optional.
8. Press **TARE (Enter)** again to accept the value(s).
9. Press \triangle to advance back up to REG. Press \triangle again, and the **DONE** softkey is displayed.
10. When complete, push the **DONE** softkey.

Enter Lot Number — Optional

1. **LOT** will be displayed. Press ∇ key to enter the alphanumeric value using the Counterpart keypad.
2. Press the **TARE (Enter)** key to accept.

Enter Unit Weight — Optional

1. **UNIT WT** will be displayed. Press ∇ and enter the unit weight value using the Counterpart keypad.
2. Press the **TARE (Enter)** key to accept.

Enter Tare — Optional

1. **TARE** will be displayed. Press ∇ and enter the tare value using the Counterpart keypad.
2. Press the **TARE (Enter)** key to accept.

Enter Units — Optional

1. **UNITS** will be displayed. To adjust the units, use the \triangleleft and \triangleright keys to adjust the selection or press ∇ to view the current setting.
2. Use the \triangle key or the **TARE (Enter)** key to store the setting.

Enter Location — Optional

1. **LOCATION** is displayed. Use the ∇ key and enter a value. Push the **TARE (Enter)** key to store.

5.5.2 Using a Stored ID

1. Press the **CODE (softkey needs to be set up)** key.
2. Counterpart responds with a code $\#=>$ with a prompt. Enter the **ID** code.
3. Press **TARE (Enter)**.



Note Press code and then enter a zero to unload an ID code.

5.5.3 Using ID/Codes that are not Stored

1. Enable **Single ID** under feature menu.
2. Setup softkeys for code and other information to be printed, including part #, description, and/or quantity.
3. Press **Softkey**.
4. Key in value or information and press **Tare (Enter)**.
5. The unit weight softkey may be set up to clear unit weight.
6. Next ID/code overrides data.

5.5.4 Clearing ID Codes

1. Press the **Menu Setup** key.
2. Toggle through menu items to **ID**.
3. Select **Reg 1-150** to clear.
4. Push the **Clear ID** softkey.
5. The display prompts **Clear ID Values**. Press the **Yes** softkey.
6. Display shows **ID Cleared**.
7. Push the **Menu** softkey to return to the Use mode.

5.5.5 Adding an ID From Count Mode

1. Press the **CODE** softkey.
2. Add in the ID number. The Alpha **ON/OFF** Softkey appears to allow number only entry.
3. If the ID number is not already in the database, Counterpart prompts, **Not Found, Save as New ID?**
4. Select Yes or No. By selecting Yes, Counterpart will store that ID code into the first open register. By selecting No, it will go back to the Counting mode display.
5. Optional – **Sample Quantity** desired and press the **UW Update** softkey
6. Optional – Tare the container and push the **Tare Update** softkey.

5.5.6 Adding an ID Through Revolution

To add an ID using Revolution, Revolution must be installed on the computer. Visit www.ricelake.com to download this free configuration software.

1. Unplug power to Counterpart.
2. Wire cable between computer and Counterpart.
3. Plug in power to Counterpart and press Counterpart's **POWER** key.
4. Open Revolution and go to Base Configuration, >> IDs.
5. To upload IDs from Counterpart, select **Connect** from the Toolbar or under **Communications — Connect**.
6. Select **Communications** and then Upload Configuration or Upload Section.
7. Select REG # and add information into the displays as shown in [Figure 5-2](#).

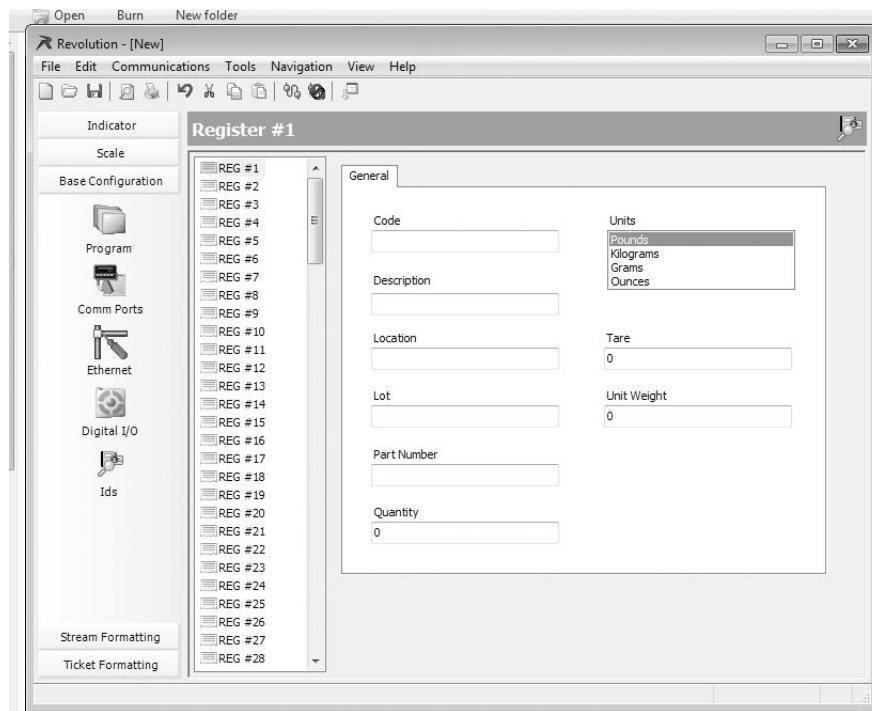


Figure 5-2. Adding IDs Through Revolution

8. To download the ID to Counterpart, connect Revolution, and select **Communications** and either Download Configuration or Download Section.
9. All register IDs are now entered and available through Revolution.



Note By uploading IDs using Revolution and saving them to a file the IDs can be backed up for future use.

5.6 WeighVault

WeighVault is a PC program that allows Counterpart users to add, edit, and access IDs over a network connection. WeighVault surpasses the Counterpart's 150 ID limitation and eliminates front-panel entry of ID parameters. **In** and **Out** softkeys can be used to update the ID quantity with inventory changes. Setting up softkeys is explained in [Section 1.7 on page 4](#). If WeighVault is enabled the inventory changes are also sent to the WeighVault PC.

It also collects data as transactions occur, and provides detailed transaction and productivity reports that can be exported to Excel, Word, or PDF. For WeighVault to function, the following criteria must be met:

- Use onboard Ethernet or wireless option (PN72117 Ethernet TCP/IP Interface Installation and Configuration Manual)
- IP address assigned to the Counterpart (Refer to PN72117 Ethernet TCP/IP Interface Installation and Configuration Manual)

- WeighVault enabled in the Counterpart menu (ETHERNET menu; see [Section 3.7.3 on page 40](#)). Table 5-1 lists parameters that must be entered in order for WeighVault to work.

| Parameter | Default |
|------------|--|
| DHCP | Consult with network administrator |
| IP ADDRESS | Consult with network administrator |
| NET MASK | Consult with network administrator |
| PORT | Port 10001 |
| REMOTE IP | IP address of computer running WeighVault — must be static |
| REMOTE PT | 5466 |
| VAULT | Onboard or external if using a wireless option |

Table 5-1. WeighVault Default Settings



Note These default settings apply only if the VAULT parameter is set to ONBOARD. See [Figure 3-22 on page 49](#).

5.6.1 Demo Setup of Counterpart and WeighVault

Install WeighVault. There are two setup programs that need to be installed.

On the PC

This setup was completed in Windows 7, however the basic information about setup is applicable to other computer operating systems.

Use the following steps to set up WeighVault on the computer side.

1. Plug in crossover cable. The computer should be able to identify this cable.
2. Go to Properties, Internet Protocol, Version 4 - TCP/IPv4.
3. Choose Assign IP address.
4. Use the following IP address for this demo: 192.168.0.02 (Check with the site specific network administrator when setting a system.)
5. Click on subnet mask field. This will fill in the display automatically.
6. Click OK and close each window.

On the Counterpart

Use the following steps to set up WeighVault on the Counterpart side.

1. Enter menu settings and go to Ethernet.
2. DHCP should be set to Off.
3. Set the IP address 192.168.0.02 (this should be in the same range as the computer side, but the last digit is different. (Check with the site specific network administrator when setting a system.)
4. Set the subnet mask — 255.255.255.0.
5. Set the default gateway, DNS Pri, DNS Sec — no changes.
6. Set the local port — 10001.
7. Set the remote IP address — 192.168.0.02 (this is set same as computer above).
8. Set the remote port — 5466.
9. Set the Vault — set onboard.
10. Set up softkey — Code.
11. IN/OUT softkey — for in/out inventory setup

5.6.2 Using WeighVault

Once the above criteria have been met, IDs can be entered into WeighVault and saved on the PC's hard drive. The *Edit Product* dialog box in [Figure 5-3](#) shows ID parameters that can be saved in WeighVault.

For testing purposes, enter a few part numbers and click **Save Changes to Database**.

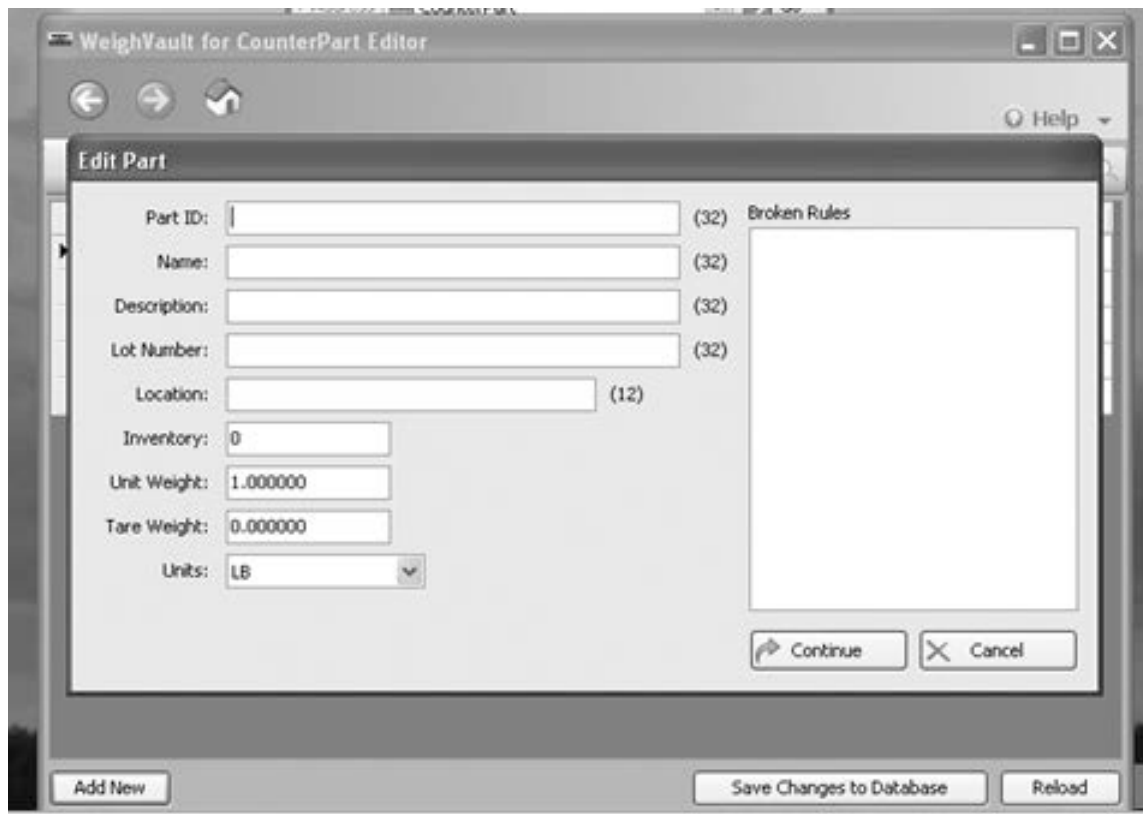


Figure 5-3. WeighVault Edit Product Dialog Box

To access a saved ID from WeighVault over the network connection,

1. Using the Counterpart front panel, press the **CODE** key.
2. Enter an **ID CODE** value.
3. Press the **TARE (Enter)** key. The ID CODE is loaded and ready to use.



Note *If the demo feature is complete and not being used permanently with WeighVault, go to network settings and turn off the Assign IP Address feature.*

5.7 Totalization Counts

Counterpart has a totalization function that allows for totaling the quantity of several weighings together. This is especially helpful if putting together parts kits. The ID code is functional with totalization, count or weight.

For full operation of the totalization feature, configure the unit with the following softkeys:

TOTAL+

TOTAL-

Clear Total

To find the total accumulated quantity of similar containers filled with parts, use the totalization procedure detailed below. Six containers are used in this example; all containers are of the same empty weight.

1. Conduct a sampling process to determine the unit weight of the pieces, or key in a known unit weight or recall an ID.
2. Enter a known tare weight or place an empty container on the scale to perform tare function. If an ID was recalled in step 1, its tare value is already loaded.

3. Place container 1 (full of parts) on the scale. The number of pieces in the container is shown in the **PCS** area of the display.
4. Press the **Total +** softkey to store the number of pieces in container 1. The memory (**M**) icon is shown. The net weight of the items in the containers is stored and the totalization count is incremented. The piece count value is displayed. The total count is shown in place of the unit weight display, and it is labeled as Total Weight **ttl**.
5. Remove container 1 and place container 2 (full of parts) on the scale.
6. Press the **Total +** softkey. The accumulated total is now equal to container 1 plus container 2. The displayed total is also updated.
7. Continue with the remainder of the containers in the same totalization method. The total number of parts stored in all six containers (and the weight of the parts in those containers) is now stored and shown on the display.

Note:

- An ID may be loaded while part totalization is being performed, the ID Quantity value is not affected by the totalizations operations.
- If a totalization has been started and the **Code** softkey is pressed — the unit will prompt **Exit Totalization Mode?** with **Yes** and **No** softkeys. Pressing **Yes** clears the total, exits from totalization mode and brings up the normal prompt for entering an ID code. If **No** is pressed, the unit does not prompt for an ID Code and totalization can continue.
- The user cannot switch to another scale during totalization. If the **Unit Toggle** key is pressed during totalization, the message **not allowed — totalizing** will be displayed and the switch will not occur.
- The user cannot switch units during totalization. If the **Unit Toggle** key is pressed during totalization, the message **not allowed - totalizing** will be displayed and the switch will not occur.
- During totalization an icon is displayed between the battery icon and the main display area label. The icon is an uppercase M for memory.
- For each totalization done (**Total+** or **Total-**) a count will be incremented. This value can be printed. When the total value is cleared and totalization mode is exited, the count will be cleared as well.
- While in totalization mode, pressing the **Print** key will print the total format — **TOTALFMT**.
- When attempting a totalization, a motion check can be performed based upon the setting of the **TOTAL** parameter in the **Feature/Count** menu. If **Total** is **ON** and if there is motion, then one more attempt will be made after two seconds. The default setting is **OFF**.
- To clear the total value, press the **Clear Total** softkey, and it will clear the total value.

5.8 Parts Reduction Counts

Parts reduction can also be done by using the minus key while the scale is in the weighing mode and the memory annunciator is on.

1. Conduct a sampling process to determine the unit weight of the pieces, or key in a known weight or recall an ID.
2. Enter known tare weight, or place an empty container on the scale to perform tare function. If ID was recalled in step one, its tare value is already loaded.
3. Place the container (full of parts) on the scale. The number of pieces in the container is shown in the **PCS** area of the display.
4. Press the **Total +** softkey to store the number of pieces in the container. The memory (**M**) icon is shown. The net weight of the items in the container is stored and the totalization count is incremented. The total piece count value is shown in place of the piece weight value and will be labeled **ttl**. The total net weight is shown in place of the normal ID Code: line - it is labeled as Total Weight.
5. Remove the number of parts required from the container and press the **Total -** softkey. The total piece count value is now equal to the number of pieces removed. The number of pieces remaining in the container is shown in the **PCS** area of the display. The total weight is now equal to the weight of the removed pieces.
6. Repeat step 5 as needed.



Note Once part reduction has been started, Pressing **Total +** will result in an error message.

5.9 Accumulate Feature For Weight

The accumulate feature allows a weight value to be accumulated. The following steps to use this feature.

1. Enable the Accumulate in the Scale Menu. Press the **On** key, and the display will say **Accumulator Enabled**.
2. Set up the **Display Accum — (DSP ACC)** and **Swap Display (SWAPDSP)** softkey. See [Section 1.7 on page 4](#) of the manual for help on setting up softkeys.
3. The weight must be active on the display.
4. Each time there is a print, the weight value is added to the accum register and keeps track of how many accums were completed. Product must be removed from the platform and the display returned to zero each time this is done.

5.9.1 Printing the Accumulated Total

Press the **Print** key to print the accumulated total when the Accum Value is displayed.

5.9.2 Clearing the Accumulated Total

1. Push the **CLR** key when the display **Accum** has been pressed.
2. **PRESS CLEAR TO VERIFY** is displayed. Press **CLR** again to clear the accum value.

5.9.3 IN/OUT Softkeys

Use the following steps to set up IN and OUT softkeys.

1. Push **IN** to add the displayed count value to quantity on hand of a stored ID code.
2. Push **OUT** to removed the displayed count value to quantity on hand of a stored ID code.

5.10 Batch Operations

Softkeys can be configured to allow the operator control of batch operations from the Counterpart front panel (see [Figure 5-4](#)). Softkeys can be configured using serial commands, or the FEATURE menu.



Figure 5-4. Counterpart Batch Operation Screenshot

| Parameter | Description |
|-------------|---|
| Setpoint | Display or change assigned setpoints |
| Batch Start | Starts the batch process |
| Batch Reset | Steps and resets an active batch to the beginning of the process. |
| Batch Stop | Stops an active batch and turns off all associated digital outputs. |

Table 5-2. Batching Softkeys

Batching Switch

The batching switch option, PN 19369, comes as a complete unit in an FRP enclosure, with legend plate, locking stop switch (mushroom button), and a run/start/abort 3-way switch.

Both switches are wired into the Counterpart's digital I/O terminal strip as shown in [Figure 5-6 on page 69](#). Each switch uses a separate digital input.

Once cables and switch have been connected to Counterpart, use the menu button to place Counterpart in setup mode. Use the DIG I/O menu to configure the digital input and output functions.

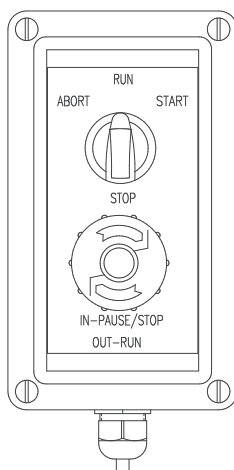


Figure 5-5. Batching Switch

When configuration is complete, exit setup mode. Initialize the batch by turning the 3-way switch to Abort, then unlock the STOP button (the STOP button must be in the OUT position to allow the batch process to run). The batching switch is now ready to use.



WARNING If no digital input is assigned to BATRUN, batching proceeds as if BATRUN were always on; the batch will start the 3-way switch is turned to RUN, but the STOP mushroom button will not function

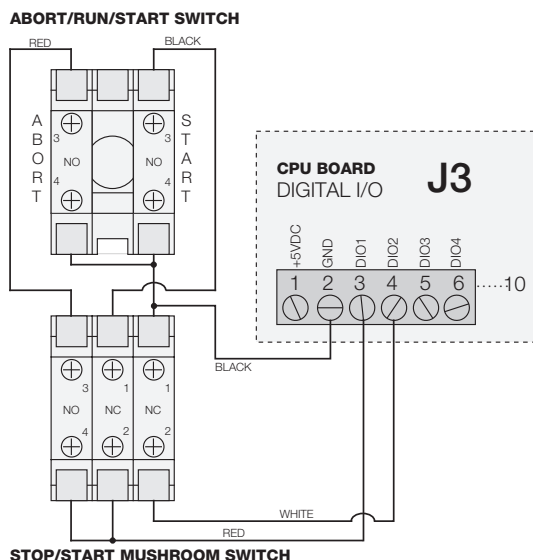


Figure 5-6. Batching Switch Wiring Diagram Example

To begin a batch process, turn the 3-way switch to START momentarily. If the STOP button is pushed during the batch process, the process halts and the button locks in the IN position.

The START switch is ignored while the STOP button is locked in the IN position. The STOP button must be turned counterclockwise to unlock it, then released into the OUT position to enable the 3-way switch.

To restart an interrupted batch from the step where it left off, do the following:

1. Unlock the STOP button (out position).
2. Turn the 3-way switch to START.

To restart an interrupted batch from the first batch step, do the following:

1. Turn 3-way switch to ABORT.

2. Unlock STOP button (out position).
3. Turn the 3-way switch to START.



Note Use this procedure (or the **BATRESET** serial command) to initialize the new batch routine following any change to the setpoint configuration.

5.11 Connecting a Barcode Scanner

The Counterpart will accept a barcode scanner connected to the unit. In order to use a scanner, the specifications of the Counterpart scale must be set to recognize the scanner to the appropriate port and, in some cases, do the setup on the scanner required by the scanner manufacturer.

The scanner allows non-contact, instantaneous, and accurate input of unit weight, tare weight, and ID code.

QD2100 Barcode Scanner

If using the Quicksan QD2100 barcode scanner sold by Rice Lake Weighing Systems, the scanner can be set up by connecting the scanner (PN121495) to the RS-232 port on the Counterpart CPU board. Plug connector with three wires into serial port 2 (J4) and plug with one wire into DIGIO (J3). Connections between the barcode scanner and Counterpart should be wired as shown in [Table 5-3](#).

| Pin out | Wire Color |
|---------|------------|
| RX | Green |
| TX | Red |
| Ground | Black |
| DIGIO | |
| 5+ | |

Table 5-3. Barcode Wiring Connections

The default baud rate is set for 9600 for both Counterpart and the scanner.

To set up barcode scanner parameters:

1. Navigate through the menu Setup >> Config >> Serial.
2. Set up the selected Port, J5 (Port 1) or J4 (Port 2) for the scanner.
3. Follow through and set up the various parameters such as 9600 baud, 8 bits, 1 stop bit, none parity.
4. Headers are set to **ON** under scanner sub-menu when needing to have headers for IDs, tare and unit weights.
5. If the header is set to **OFF**, the Counterpart assumes that all scanned items are ID codes and part numbers.



Note ID codes are not functional when scanning ID codes.

| Header Number | Description | Action |
|---------------|-------------|---|
| 1 | Unit Weight | The scanned unit weight value updates the working ID and is also applied. |
| 3 | ID Code | The scanned ID code is loaded. |
| 4 | Tare | The scanned tare value updates the working ID and is also applied to the scale. |
| L | Lot Number | The scanned lot number updates the working ID and a Yes/No prompt is shown asking if the stored ID should also be updated. |
| M | Part Number | The scanned part number updates the working ID and a Yes/No prompt is shown asking if the stored ID should also be updated. |

Note: Part Number 121495 is supplied with 2 connectors. Plug connector with 3 wires into J4 and set plug. Plug connector with 1 wire into J3.

Table 5-4. Header Codes for Bar Codes

5.12 USB Keyboard

The USB keyboard requires USB option and setup of parameter.

Keyboard entry of ID/Code information

Function keys 1-5 operate as function keys of counterpart. Function key 11 operates as sample key.

6.0 Serial Commands

The Counterpart can be controlled by a PC or remote keyboard connected to an indicator serial port. Control is provided by a set of serial commands that can simulate front panel key press functions, display and change setup parameters, and perform reporting functions. This provides the ability to print configuration data or to save to the hard drive.

6.1 The Serial Command Set

The serial command set can be divided into five groups: key press commands, reporting commands, the RESETCONFIGURATION special function command, parameter setting commands, and transmit weight data commands. When a serial command is processed, the Counterpart 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 Counterpart 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 serial commands simulate pressing the keys on the front panel of the indicator. These commands can be used in both setup and normal (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 lb tare weight:

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 | In weighing mode, press the ZERO key. |
| KUNITS | In weighing mode, press the UNITS key. |
| KPRINT | In weighing mode, press the PRINT key. |
| KTARE | Press the TARE key. |
| KID | In weighing mode, press the ID key. In menu mode, move left in the menu. In data entry mode, move to previous digit. |
| KGROSSNET | In weighing mode, press the GROSS/NET key (pseudo key). |
| KGROSS | Go to gross mode (pseudo key). |
| KNET | Go to net mode (pseudo key). |
| KDISPACCUM | Display ACCUM (pseudo key). |
| KDISPTARE | Display tare (pseudo key). |
| KCLR | Press the CLEAR key. |
| KCLRCN | Reset consecutive number (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 weighing mode, press the UNDER key. In menu mode, move down in the menu. In data entry mode, decrement the current digit. |
| KDOWN | In weighing mode, press the UNDER key. In menu mode, move down in the menu. In data entry mode, decrement the current digit. |
| KSAVE | In menu mode, saves the current configuration. |
| KEXIT | In menu mode, saves the current configuration then exits to normal mode. |
| K0–K9 | Press number 0 (zero) through 9. |
| KDOT | Press the decimal point (.) |
| KENTER | Press the ENTER key. |
| KLOCK | Lock specified front panel key. For example, to lock the ZERO key, enter KLOCK = KZERO. |
| KUNLOCK | Unlock specified front panel key. For example, to unlock the PRINT key, enter KUNLOCK = KPRINT. |
| KDATE | Display date (pseudo key). |

Table 6-1. Serial Key Press Commands

| Command | Function |
|-----------|--|
| KTIME | Display time (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). |
| KSOFT x | Press softkey number x |

Table 6-1. Serial Key Press Commands (Continued)

6.1.2 ID Commands

Up to 150 codes can be entered under ID commands.

| Command | Function |
|---------------------|---|
| ID.CODE# n | ID code |
| ID.DESC# n | Item description |
| ID.LOCATION# n | Item stock location |
| ID.LOT# n | Lot number |
| ID.PARTNUMBER# n | Part number |
| ID.QUANTITY# n | Inventory quantity |
| ID.TARE# n | Tare weight value |
| ID.UNITS# n | Units for tare and unit weight values |
| ID.UNITWEIGHT# n | Unit weight value |
| ID.CLRALL | Clear all IDs from memory Note: The ID.CLRALL command only works in setup mode |
| ID.CLEAR.INDEX# n | Clear ID at index n from memory |
| ID.CLEAR.CODE# n | Clear ID with code of n from memory |

Table 6-2. ID Commands

6.1.3 Reporting Commands

Reporting commands send specific information to the serial port. The commands listed in Table 6-3 can be used in all modes.

| Command | Function |
|--------------|---|
| DUMPALL | List all parameter values, ID information and setpoint data |
| DUMPCONFIG | List all parameter values excluding ID information and setpoint data |
| DUMPAUDIT | List audit trail information |
| DUMPBUFFER | Lists Weighvault buffer information |
| DUMPIDS | List all ID information |
| DUMPID.INDEX | List a specific ID by index. See Section 6.1.7 on page 77 for more information. |
| DUMPIDCODE | List a specific ID by code. See Section 6.1.7 on page 77 for more information. |
| VERSION | Write <i>Counterpart</i> software version |
| P | Write current displayed weight with units identifier. See Section 9.2.1 on page 89. |
| XE | Returns a 10-digit code representing any error conditions currently shown on the front panel. |
| ADCS | Return number of A/Ds installed |

Table 6-3. Reporting Commands



Note Transmit all configuration settings with the DUMPALL command.

6.1.4 Clear and Reset Commands

The following commands can be used to clear and reset the Counterpart:

RS: Reset system. Resets the indicator without resetting the configuration.

RESETCONFIGURATION: Restores all configuration parameters to their default values (menu mode only). The RESETCONFIGURATION function can also be initiated by pressing navigating to the DEFAULT parameter under the VERS menu and selecting YES. Then press ENTER to reset the indicator.



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

CLEARBUFFER: Clears the Weighvault data buffer.

6.1.5 Parameter Setting Commands

Parameter setting commands display or change the current value for a particular configuration parameter.

Current configuration parameter settings can be displayed in all modes using the following syntax: **command<ENTER>**

Most parameter values can be changed in menu mode only.

Use the following command syntax when changing parameter values: **command=value<ENTER>**, where **value** is either a number or a parameter value. Use no spaces before or after the equal (=) sign. If an incorrect command is typed, the display reads ??.

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

```
SC.MOTBAND=5<ENTER>
```

For parameters with selectable values, enter the command and equal sign followed by a question mark: **command=?<ENTER>** to see a list of those values. The indicator must be in menu mode to use this function.



Note Some parameters are valid only if other parameters or parameter values are specified. Restrictions for front-panel configuration also apply to serial command configuration.

| Command | Description | Values |
|---|---|---|
| SC.GRADS# <i>n</i> | Graduations | 1–100000 |
| SC.ZTRKBD# <i>n</i> | Zero track band | 0, 0–100 |
| SC.ZRANGE# <i>n</i> | Zero range | 1.900000, 0–100 |
| SC.MOTBAND# <i>n</i> | Motion band | 1, 0–100 |
| SC.SSTIME# <i>n</i> | Standstill time | 1–65535 |
| SC.OVRLOAD# <i>n</i> | Overload | FS+2%, FS+1D, FS+9D, FS |
| SC.DIGFLTR1# <i>n</i> SC.DIGFLTR2# <i>n</i> SC.DIGFLTR3# <i>n</i> | Digital filtering | 1, 2, 4, 8, 16, 32, 64, 128, 256 |
| SC.DFSENS# <i>n</i> | Digital filter cutout sensitivity | 2OUT, 4OUT, 8OUT, 16OUT, 32OUT, 64OUT, 128OUT |
| SC.DFTHR# <i>n</i> | Digital filter cutout threshold | NONE, 2D, 5D, 10D, 20D, 50D, 100D, 200D, 250D |
| SC.THRESH# <i>n</i> | Zero threshold | 0–9999999 |
| SC.SMPRAT# <i>n</i> | Sample rate | 30HZ, 60HZ, 120HZ, 240HZ, 480HZ, 960HZ |
| SC.PWRUPMD# <i>n</i> | Power up mode | GO, DELAY |
| SC.TAREFN# <i>n</i> | Tare function | BOTH, NOTARE, PBTARE, KEYED |
| SC.PRI.DPCPNT# <i>n</i> | Primary units decimal position | 8.888888, 88.88888, 888.8888, 8888.888, 88888.88, 888888.8, 8888888, 88888880, 88888800 |
| SC.PRI.DSPDIV# <i>n</i> | Primary units display divisions | 1D, 2D, 5D |
| SC.PRI.UNITS# <i>n</i> | Primary units | lb, kg, g, oz, OFF |
| SC.ACCUM# <i>n</i> | Accumulator enable | ON, OFF |
| SC.WZERO# <i>n</i> | Zero calibration | |
| SC.WVAL# <i>n</i> | Test weight value | test_weight_value |
| SC.WSPAN# <i>n</i> | Span calibration | |
| SC.WLIN.F1– SC.WLIN.F5# <i>n</i> | Actual raw count value for linearization points 1–5 | 0–16777215 |
| SC.WLIN.V1 SC.WLIN.V5# <i>n</i> | Test weight value for linearization points 1–5 | 0.000001–9999999 |
| SC.WLIN.C1– SC.WLIN.C5# <i>n</i> | Calibrate linearization points 1–5 | |
| SC.LC.CD# <i>n</i> | Deadload coefficient | |

Table 6-4. Scales Serial Commands

| Command | Description | Values |
|-------------|--|--------------------|
| SC.LC.CW#n | Span coefficient | |
| SC.LC.CZ#n | Temporary zero | |
| SC.REZERO#n | Rezero | |
| SC.SEC#n | Secondary units | lb, kg, g, oz, OFF |
| SC.TER#n | Tertiary units | lb, kg, g, oz, OFF |
| SC.N#n | Report scale number being verified in Weigh Mode | |

Table 6-4. Scales Serial Commands (Continued)

| Command | Description | Values |
|----------------|---|--|
| EDP.BAUD#p | Port baud rate | 1200, 2400, 4800, 9600, 19200, 28800, 38400, 57600, 115200 |
| EDP.BITS#p | Port data bits/parity | 8NONE, 7EVEN, 7ODD |
| EDP.STOPBITS#p | Port stop bits | 1, 2 |
| EDP.PRMSG#p | Print message | ON, OFF |
| EDP.ECHO#p | Port echo | ON, OFF |
| EDP.EOLDLY#p | Port end-of-line delay | 0-255 (0.1-second intervals) |
| EDP.HEADERS#p | Port header | ON, OFF |
| EDP.INPUT#p | Port input | PORT 1 - CMD, SCANNER, SCALE, IND SC PORT 2 - CMD, SCANNER PORT 3 - CMD, SCANNER, KEYBOARD |
| EDP.PORT | Port reporting command. It responds to the port the user is connected to. | |
| EDP.RESPONSE#p | Port response | ON, OFF |
| EDP.SOURCE#p | Port source | 1, 2, 3 |
| EDP.STREAM#p | Port stream | OFF, LFT, INDUST |
| EDP.TERMIN#p | Port termination | CR/LF, CR |
| STR.POS#p | Custom stream identifiers | None, Space, + |
| STR.NEG#p | | None, Space, - |
| STR.PRI#p | | 8 alphanumeric characters |
| STR.SEC#p | | |
| STR.TER#p | | |
| STR.GROSS#p | | |
| STR.NET#p | | |
| STR.TARE#p | | |
| STR.MOTION#p | | |
| STR.RANGE#p | | |
| STR.OK#p | | |
| STR.INVALID#p | | |
| STR.ZERO#p | | |
| OPTCARD | | Option cards |

Table 6-5. Serial Port Serial Commands

| Command | Description | Values |
|---------|-----------------------------------|--|
| CFGPWD | Configuration password | 0, 1-9999999 |
| CONSNUM | Consecutive numbering | 0-9999999 |
| CONSTUP | Consecutive number start-up value | 0-9999999 |
| DATEFMT | Date format | MMDDYYYY, DDMMYYYY, YYYYMMDD, YYYYDDMM |
| DATESEP | Date separator | SLASH, DASH, SEMI |

Table 6-6. Feature Serial Commands

| Command | Description | Values |
|--------------|------------------------------------|--|
| DECfmt | Decimal format | DOT, COMMA |
| DSPBRIGHT | Sets display intensity | 0 (dimkest), through 100 (brightest as a percentage) |
| KYBDLK | Keyboard lock (disable keypad) | OFF, ON |
| REG.AGENCY | Regulatory compliance | NONE, OIML, NTEP, CANADA, INDUST |
| REGULAT=NTEP | Regulatory compliance | NONE, OIML, NTEP, CANADA, INDUST |
| REG.CTARE | Allow clear keyed tare | NO, YES |
| REG.WORD | Weighing mode | Gross, Brutto |
| REG.KTARE | Always allow keyed tare | NO, YES |
| REG.MTARE | Multiple tare action | REPLACE, REMOVE, NOTHING |
| REG.NTARE | Allow negative tare | NO, YES |
| REG.ZTARE | Remove tare on ZERO | NO, YES |
| REG.BASE | Zero base for overload calculation | CALIB, SCALE |
| REG.PRTMOT | Allow print while in motion | NO, YES |
| REG.PRINTPT | Add PT to keyed tare print | NO, YES |
| REG.SNPSHOT | Display or Scale weight source | DISPLAY, SCALE |
| TIMEfmt | Time format | 12HOUR, 24HOUR |
| TIMESEP | Time separator | COLON, COMMA |
| SK#1 - SK#12 | Softkey Assignment | BLANK, TIMEDATE, CLRTAR, DSPTAR, DSPACC, SCLSEL, CODE, LOT, PRINTLOT, SWAPDSP, IN, OUT, CLRCN, TOTAL+, TOTAL-, CLRttl, UWUPDT, TAREUPDT, SETPT, BATSTRT, BATSTOP, BATPAUSE, BATRST |

Table 6-6. Feature Serial Commands (Continued)

| Command | Description | Values |
|------------|---------------------------------|---|
| GFMT.FMT | Gross print format string | See Section 7.0 on page 78 for information about demand print format strings. |
| NFMT.FMT | Net print format string | |
| ACC.FMT | Accumulator print format string | |
| CFMT.FMT | Count print format string | |
| TOTAL.FMT | Total print format string | |
| SPFMT.FMT | Setpoint print format string | |
| HDRFMT1 | Header 1 print format string | |
| PALFMT.FMT | Pallet print format string | |
| HDRFMT2 | Header 2 print format string | |

Table 6-7. PFORMT Serial Commands

| Command | Description | Values |
|--|----------------------|--|
| DIO#b | Digital I/O function | OFF, ZERO, NT/GRS, TARE, UNITS, PRINT, CLEAR, CLRCN, GROSS, DSPACC, SAMPLE, SFTKEY 1, SFTKEY 2, SFTKEY 3, SFTKEY 4, OUTPUT |
| Digital inputs and outputs are specified by bit number | | |

Table 6-8. DIG I/O Serial Commands

| Command | Description | Values |
|-------------|---|----------------------------|
| GFMT.PORT | Set the transmit port for each of these formats | PORT 1 PORT 2 PORT 3 |
| NFMT.PORT | | |
| ACC.PORT | | |
| CFMT.PORT | | |
| TOTAL.PORT | | |
| PALFMT.PORT | | |
| SPFMT.PORT | | |

Table 6-9. Print Format Port Serial Commands

| Command | Description | Values |
|-----------------|---------------------------------|--------|
| KEYLCK.NUMBER | Keys can be locked or unlocked. | LOCK |
| KEYLCK.PRINT | Default for all: Unlock | UNLOCK |
| KEYLCK.TARE | | |
| KEYLCK.ZERO | | |
| KEYLCK.SAMPLE | | |
| KEYLCK.GROSSNET | | |
| KEYLCK.UNITWT | | |

Table 6-10. Keylock Serial Commands

| Command | Description | Values |
|----------------------|--------------------|------------------------|
| ETH.DEFAULTGATEWAY | Sets IP address | 0.0.0.0 |
| ETH.DHCP | DHCP | ON, OFF |
| ETH.DNSPRIMARY | DNS Primary | 0.0.0.0 |
| ETH.DNSSECONDARY | DNS Secondary | 0.0.0.0 |
| ETH.IPADDRESS | IP Address | 192.168.0.1 |
| ETH.LOCALHOSTNAME | Local Host Name | COUNTERPART |
| ETH.MACADDRESS | Mac Address | 00-00-00-00-00-00 |
| ETH.NETMASK | Netmask | 0.0.0.0 |
| ETH.PORT | Port | 10001 |
| ETH.REMOTESERVERIP | Remote server IP | 0.0.0.0 |
| ETH.REMOTESERVERPORT | Remote server port | 5466 |
| ETH.WEIGHVAULT | WeighVault | OFF, ONBOARD, EXTERNAL |
| ETH.ECHO | Echo EDP commands | ON, OFF |

Table 6-11. Ethernet Serial Commands

6.1.6 Normal Mode Commands

The normal mode print commands transmit data to the serial port on demand in either setup or normal mode.

| Command | Description | Values |
|-----------|-----------------------------|---|
| CONSNUM#n | Set consecutive number | nnnnnnn |
| UID | Set unit ID | UID=nnnnnnn |
| SX#n | Start serial port streaming | OK or ?? |
| EX#n | Stop serial port streaming | An EX command sent while in menu mode does not take effect until the indicator is returned to normal mode. The EDP.Stream must be set to LFT or INDUST for this command to work. |

Table 6-12. Normal Mode Serial Commands

| Command | Description | Values |
|------------------|--|---|
| XG# <i>n</i> | Transmit gross weight in displayed units | nnnnnn UU where nnnnnn is the weight value, UU is the units. NOTE: You can also send XGP, XGS, XGT, XTP, etc. to specify primary, secondary or tertiary (P.S.T.). |
| XN# <i>n</i> | Transmit net weight in displayed units | |
| XT# <i>n</i> | Transmit tare weight in displayed units | |
| XA# <i>n</i> | Transmit accumulator value | |
| RS | Reset system | Soft reset. Used to reset the indicator without resetting the configuration to the factory defaults. |
| SD | Set date | SD=MMDDYY, DDMMYY, YYMMDD, or YYDDMM. Enter six-digit date using the year-month-day order specified for the DATEFMT parameter, using only the last two digits of the year. |
| ST | Set time | ST=hhmm (enter using 24-hour format) |
| KSOFT1-4 | Command to perform function assigned to softkey. | n/a |
| PIECES# <i>n</i> | Transmits data from the scale | n/a |

Table 6-12. Normal Mode Serial Commands (Continued)

6.1.7 Unique Commands

| Command | Description |
|------------------------|---|
| DUMPID.INDEX= <i>n</i> | To dump an ID by register |
| DUMPID.CODE= <i>n</i> | To dump an ID by code |
| KDISPMODE | Set or request the current display mode. KDISP = COUNT. Will switch to that mode. This only temporarily switches display. Default is set by dispmode parameter. Other choices include: COUNT WEIGHT UNIT WEIGHT |

Table 6-13. Unique Commands

7.0 Print Formatting

The Counterpart provides nine print formats, **GFMT**, **NFMT**, **TOTALFMT**, **PALFMT**, **CFMT**, **ACCFMT**, **SPFMT**, **HDRFMT1**, and **HDRFMT2**. These determine the format of the printed output when the **PRINT** key is pressed or when a **KPRINT** EDP command is received. The **HDRFMTs** must be called from another format. The **SPFMT** (setpoint print format) is printed from a setpoint routine.

Each print format can be customized to include up to 500 characters of information, two header formats are limited to 100 characters each), such as company names and addresses, on printed tickets. The indicator front panel (**PFORMAT** menu), EDP commands, or the *Revolution*[®] configuration utility can be used to customize the print formats.



Note *Print formats are limited to 500 characters. The two header formats are limited to 100 characters each.*

7.1 Print Formatting Commands

[Table 7-1 on page 79](#) lists commands to be used to format the gross, net and count print formats. Commands included in the format strings must be enclosed between < and > delimiters. Any characters outside of the delimiters are printed as text on the ticket.

| Command | Description | Supported Ticket Formats |
|--------------|---|---|
| <G> | Gross weight, current scale | GFMT, NFMT, TOTALFMT, PALFMT, CFMT, ACCFMT HDRFMT1, HDRFMT2 |
| <G#n> | Gross weight, scale <i>n</i> | |
| <N> | Net weight current scale | |
| <N#n> | Net weight, scale <i>n</i> | |
| <T> | Tare weight in displayed units. Add four before bracket to print header | |
| <T#n> | Tare weight, scale <i>n</i> | |
| <A> | Accumulated weight, current scale | |
| <A#n> | Accumulated weight, scale <i>n</i> | |
| <AC> | Number of accumulations, current scale (5-digit counter) | |
| <AC#n> | Number of accumulations, scale <i>n</i> | |
| <AD> | Date of last accumulation, current scale | |
| <AD#n> | Date of last accumulation, scale <i>n</i> | |
| <AT> | Time of last accumulation, current scale | |
| <AT#n> | Time of last accumulation, scale <i>n</i> | |
| <UID> | Unit ID number | |
| <CN> | Consecutive number | |
| <C> | Piece count, current scale | |
| <C#n> | Piece count, scale <i>n</i> | |
| <NLnn> | New line (nn = number of termination (<CR/LF> or <CR>) characters)* | |
| <SPnn> | Space (nn = number of spaces)* | |
| <SU> or <WA> | Supress unis. Toggle weight data format (formatted/unformatted)** | |
| <TI> | Time | |
| <nnn> | ASCII character (nnn=decimal value of ASCII character). Used for inserting control characters (STX, for example) in the print stream. | |
| <DA> | Date | |
| <TD> | Time & Date | |
| <H1> | Header 1 | |
| <H2> | Header 2 | |
| <IDC> | Loaded ID Code - 32 characters maximum | |
| <IDD> | Loaded ID Description - 32 characters maximum | |
| <IDL> | Loaded ID Location - 12 characters maximum | |
| <IDP> | Loaded ID Part Number - 32 characters maximum | |
| <IDL> | Loaded ID Lot - 32 characters maximum | |
| <IDU> | Loaded ID Units - 1 character maximum | |
| <IDT> | Loaded ID Tare - 9 characters maximum (range 0.0 to 9999999.0) | |
| <IDW> | Loaded ID Unit Weight - 9 characters maximum (range 0.0 to 9999999.0) | |
| <IDQ> | Loaded ID Quantity - 11 characters maximum (range -2000000000 to 2000000000) | |
| <TTLV> | Totalization Value - 11 character maximum (range -2000000000 to 2000000000). When not in totalization mode, the value will be 0. | |
| <TTLC> | Totalization Count - 4 characters maximum. When not in totalization mode, the value will be 0. | |
| <TTLW> | Print totalized weight. When not in totalization mode, the value will be 0. | |
| <WA> | Suppresses all (units, decimal, leading, spaces) | |
| <WLU> | Without leading spaces and units, decimal point is still applied. | |
| <WU> | Suppresses units but leaves leading spaces and decimal point. | |
| <WL> | Suppress units. Toggle weight data format (formatted/unformatted)** | GFMT, NFMT, TOTALFMT, PALFMT, CFMT, ACCFMT HDRFMT1, HDRFMT2 |
| <SU> or <WA> | Supress units and lead spaces | |
| <U> | Outputs K (kg) or L (lb) or O (oz). | |

Table 7-1. Print Format Commands

| Command | Description | Supported Ticket Formats |
|--|--------------------------------|--------------------------|
| <SCV> | Setpoint captured weight value | SPFMT |
| <SN> | Setpoint weight number | |
| <STV> | Setpoint target weightvalue | |
| <SPV> | Setpoint preact weight value | |
| <SPM> | Setpoint weight mode | |
| <SCVC> | Setpoint captured count value | |
| <STVC> | Setpoint target count value | |
| <SPVC> | Setpoing preact count value | |
| 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, oz, g, or kg. | | |
| 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>. | | |
| UNIT ID and consecutive number (CN) fields are 1–6 characters in length, as required. | | |
| * If nn is not specified, 1 is assumed. Value must be in the range 1–99. | | |
| ** After receiving an WA command, the indicator sends unformatted data until the next WA command is received. Unformatted data omits decimal points, leading and trailing characters. | | |

Table 7-1. Print Format Commands (Continued)

| Format | Default Format String | Used When |
|--------|---|--------------------------------------|
| NFMT | N<NL>A30,75,0,4,1,1,N,"Gross: <G>"<NL>B30,115,0,3,2,4,101,B,"<G>"<NL>A30,300,0,4,1,1,N, "Tare: <T>"<NL>B30,340,0,3,2,4,101,B,"<T>"<NL>A30,525,0,4,1,1,N, "Net: <N>"<NL>B30,565,0,3,2,4,101,B,"<N>"<NL>A30,806,0,3,1,1,N,"<TD>"<NL>P1<NL> | Normal mode, tare in system |
| PALFMT | N<NL>A416,25,1,4,1,1,N,"ID CODE: <IDC>"<NL>B378,25,1,3,2,4,51,N,"3<IDC>"<NL>A296,28,1,4,1,1,N,"Total QTY: <C>"<NL>B264,22,1,3,2,4,51,N,"<C>"<NL> A179,25,1,4,1,1,N,"Part Name: <IDD>"<NL>A126,25,1,4,1,1,N,"Part Number: <IDP>"<NL>A73,25,1,4,1,1,N,"Lot Number: <IDLT>"<NL>P1<NL> | When Print Pallet softkey is pressed |
| CFMT | N<NL>B371,20,1,3,2,4,51,N,"3<IDC>"<NL>A410,20,1,4,1,1,N,"ID. CODE: <IDC>"<NL>A302,22,1,4,1,1,N,"QTY: <C>"<NL>B264,20,1,3,2,4,51,N,"<C>"<NL>A280,400,1,4,1,1,N,"GROSS <G>"<NL> A225,400,1,4,1,1,N,"TARE <T>"<NL>B189,355,1,3,2,4,51,N,"4<T>"<NL>A120,400,1,4,1,1,N,"NET <N>"<NL>A195,24,1,4,1,1,N,"WT/K OR U W"<NL>B124,20,1,3,2,4,51,N,"1<IDW>"<NL> A47,16,1,4,1,1,N,"<TD>"<NL>A160,24,1,4,1,1,N,"<IDW>"<NL>P1<NL> | Count mode |
| GFMT | N<NL>A376,47,1,4,4,3,N"G<G>"<NL>B233,73,1,3,2,4,101,B"G"<NL>A73,77,1,4,1,1,N"<TD>"<NL>P1<NL> | Normal mode, no tare in system |
| TOTAL | N<NL>A410,32,1,5,2,1,N,"<TOTAL QUANTITY>"<NL>A57,532,1,3,1,1,N,"<TD>"<NL>A309,39,1,5,2,1,N,"<TTLV>"<NL> B195,32,1,3,2,4,101,N,"<TV>"<NL> A61,32,1,5,1,1,N,"BOX COUNT: <TTLC>"<NL>P1<NL> | Totalization mode |
| SPFMT | N<NL>A274,53,1,2,3,3,N,"<IDD>"<NL>B421,55,1,3,1,2,96,B,"<IDC>"<NL>A96,49,1,1,4,4,N,"QTY<SCVC>"<NL>P1<NL> | Setpoint mode |
| ACCFMT | N<NL>A410,32,1,5,2,1,N,"TOTAL QUANTITY"<NL>A57,532,1,3,1,1,N,"<TD>"<NL>A309,39,1,5,2,1,N,"<A>"<NL>B195, 32,1,3,2,4,101,N,"<AC>"<NL> A61,32,1,5,1,1,N,"ACCUMULATIONS: <AC>"<NL>P1<NL> | Accumulator enabled and displayed |

Table 7-2. Default Print Formats



Note The 500-character limit of each print format string includes the output field length of the print formatting commands, not the command length. For example, if the indicator is configured to show a decimal point, the <G> command generates an output field of 13 characters: the 10-character weight value (including decimal point), one space, and a two-digit units identifier. The two header formats are limited to 100 characters each.

The default Counterpart print formats are shown in [Table 7-2](#) and [Table 7-3](#):

| Format | Default Format String | Sample Output |
|--------|--|--|
| H1 | Company Name <NL> Street Address <NL> City, ST ZIP <NL2> | Company Name, Street Address, City, ST ZIP |
| H2 | Company Name <NL> Street Address <NL> City, ST ZIP <NL2> | Company Name, Street Address, City, ST ZIP |

Table 7-3. H1, H2 Formats

7.2 Customizing Print Formats

The following sections describe procedures for customizing the *GFMT*, *NFMT* and *CFMT* formats using the EDP port, the front panel (*PFORMT* menu), and the *Revolution*[®] configuration utility.

7.2.1 Using the EDP Port

With a personal computer, terminal, the EDP command can be used to set to customize the print format strings.

To view the current setting of a format string, type the name of the string (*GFMT.FMT* or *NFMT.FMT*) and press **TARE (Enter)**. For example, to check the current configuration of the *GFMT.FMT* format, type *GFMT.FMT* and press **ENTER**. The indicator responds by sending the current configuration for the gross format:

```
GFMT.FMT=<G> GROSS<NL>
```

To change the format, use the *GFMT.FMT* or *NFMT* 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, the following EDP command can be sent:



Note Indicator must be placed in the configuration mode with *CONFIG* shown on the display.

```
GFMT.FMT=FINE TRANSFER CO<NL>32400 WEST HIGHWAY ROAD<NL>SMALLTOWN<NL2><G> GROSS<NL>
```

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

```
FINE TRANSFER CO
32400 WEST HIGHWAY ROAD
SMALLTOWN
```

```
1345 lb GROSS
```

7.2.2 Using the Front Panel

If access to equipment for communication through the EDP port is unavailable or such equipment cannot be used on site, the *PFORMT* menu (see [Figure 7-1](#)) can be used to customize the print formats.

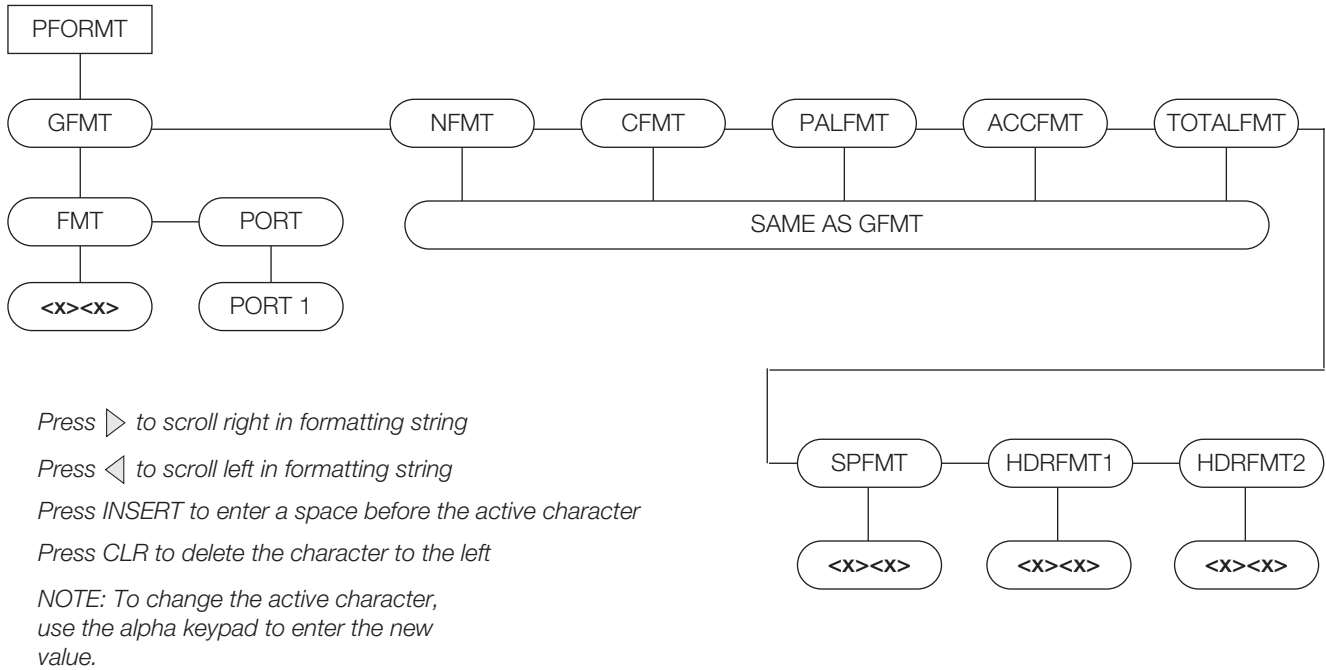


Figure 7-1. PFORMT Menu, Showing Alphanumeric Character Entry Procedure

7.2.3 Using Revolution

The *Revolution* configuration utility provides a print formatting grid with a tool bar. The grid allows for the construction of the print format without the formatting commands (<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 on desired area of printed ticket.

Figure 7-2 shows an example of the *Revolution* print formatting grid.

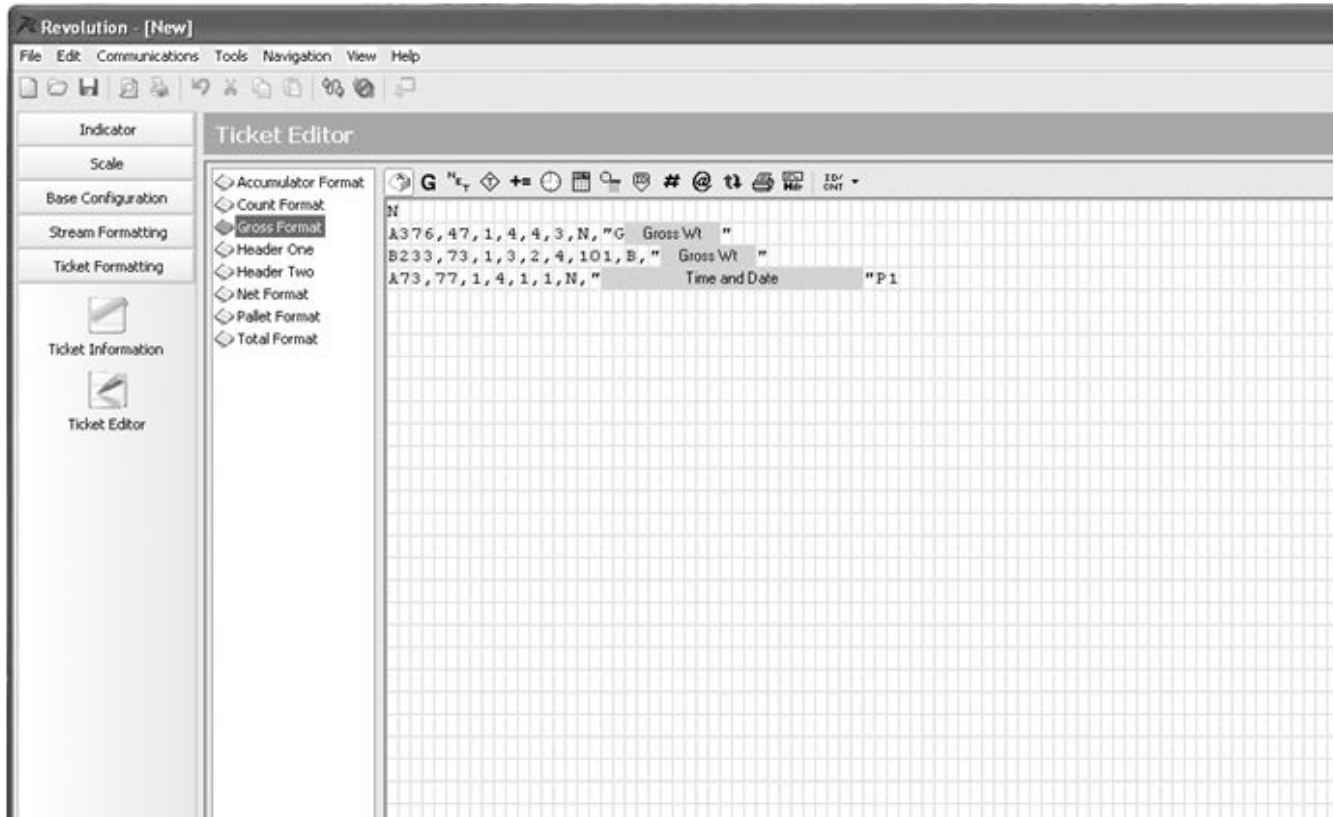


Figure 7-2. Revolution Print Format Grid

7.2.4 Print Label Examples

Listed below are print formatting examples (using the default formats) that appear with the various formats.

Count Format

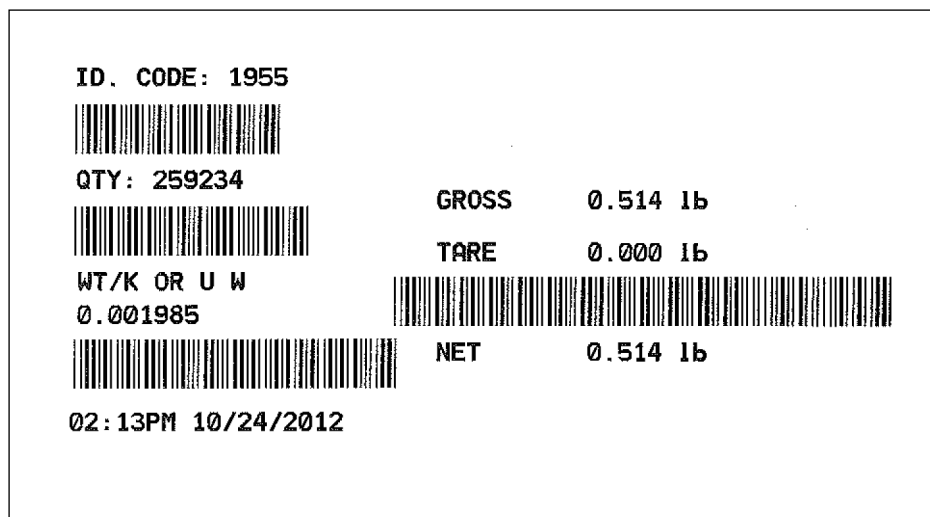


Figure 7-3. Count Format Label Example

Pallet Label Format

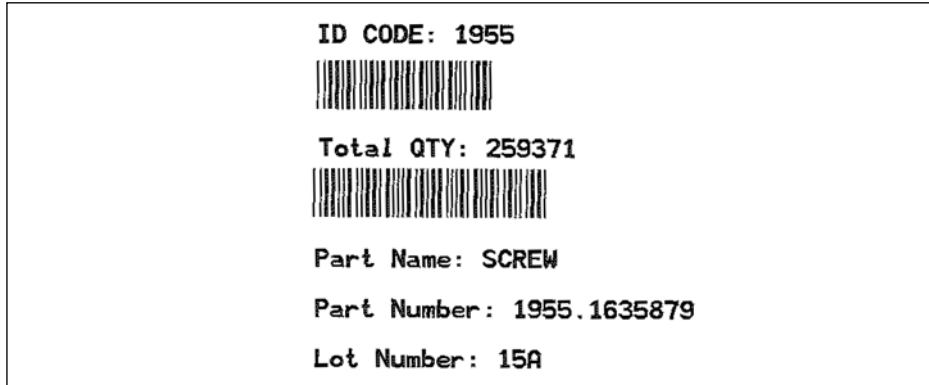


Figure 7-4. Pallet Format Label Example

Gross Label Format



Figure 7-5. Gross Label Format

Setpoint Format

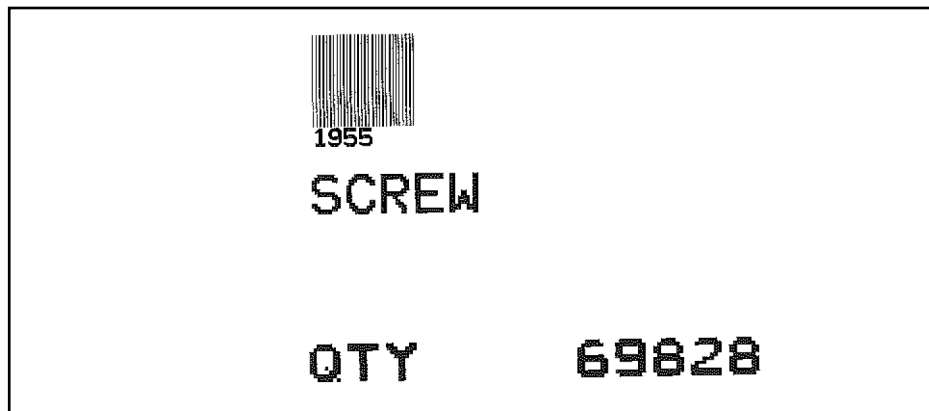


Figure 7-6. Setpoint Label Format

Total Label Format

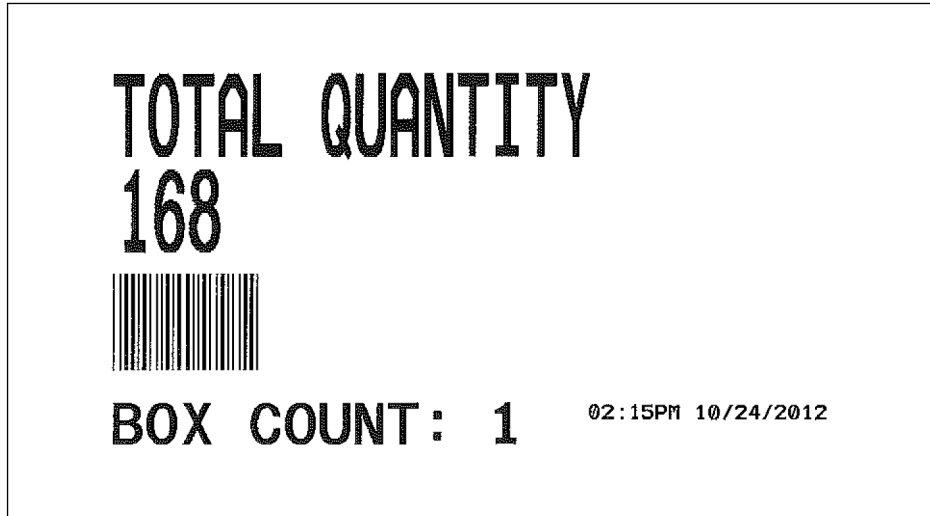


Figure 7-7. Total Format Label Example

Gross/Tare/Net Label Format

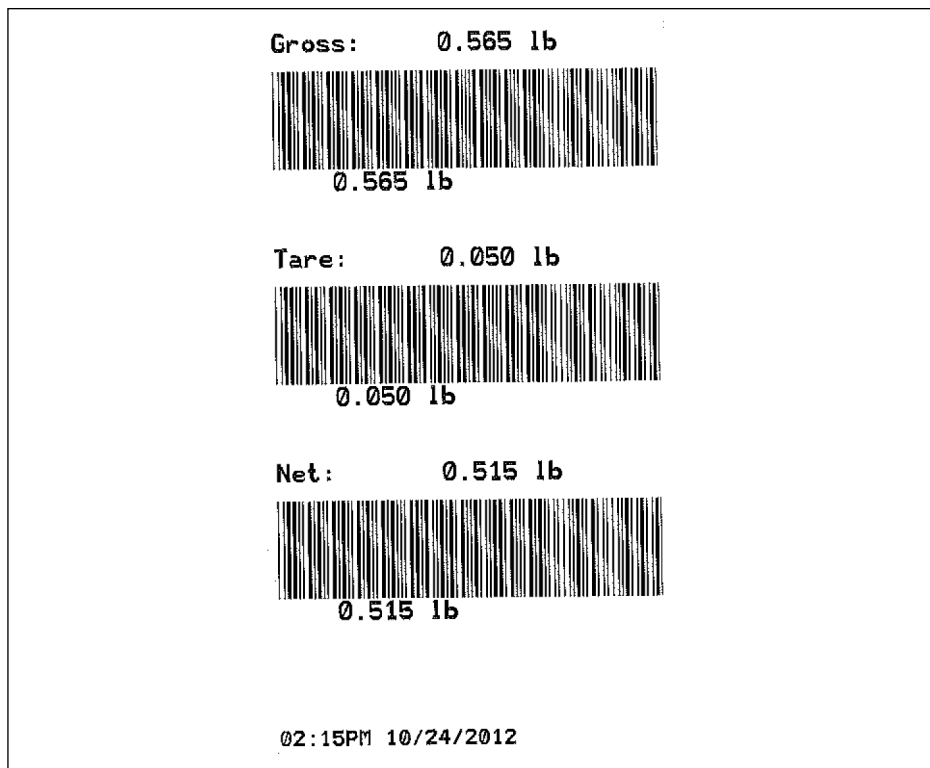


Figure 7-8. Gross/Tare/Net Label Format

Accum Label Format

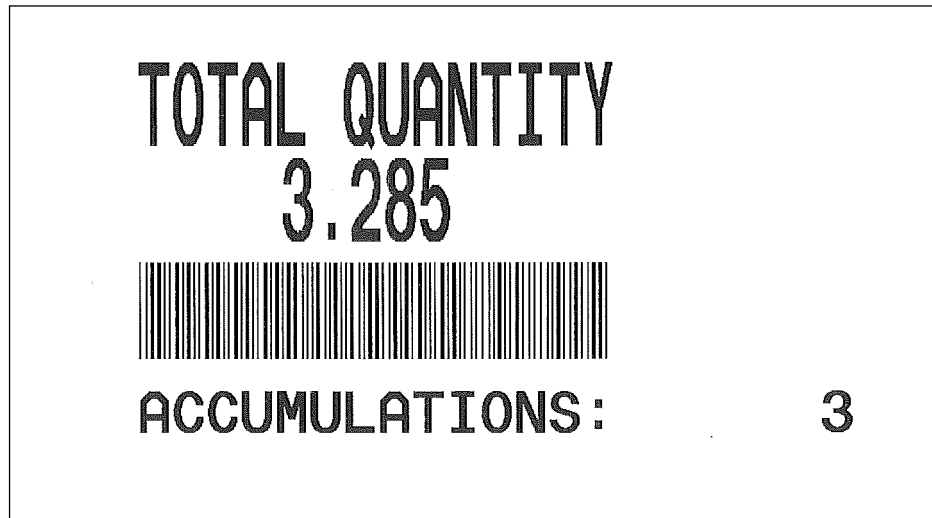


Figure 7-9. Accum Label Format

8.0 WLAN Installation Instructions



Before installing this option, contact your IT administrator to obtain network communication protocol codes and have a RS-232 communications cable or regular comm port cable available to run between the PC and the indicator while installing and setting up the wireless network.

The optional Lantronix® WiPort™ (WLAN — Wireless Local Area Network) wireless networking device can be installed inside the Counterpart for real-time data transmission to warehouse management systems. The Windows®-based configuration software, DeviceInstaller™ is required for installation and setup and is available on the CD that comes with the kit. The WLAN option can be factory installed or can be purchased separately and installed on site.

The wireless LAN option comes in a kit containing the following items:

- Pluggable wireless board (PN 125787)
- Antenna (PN 98357)
- Standoffs (PN 95356)
- CD containing Lantronix information (PN 72763)

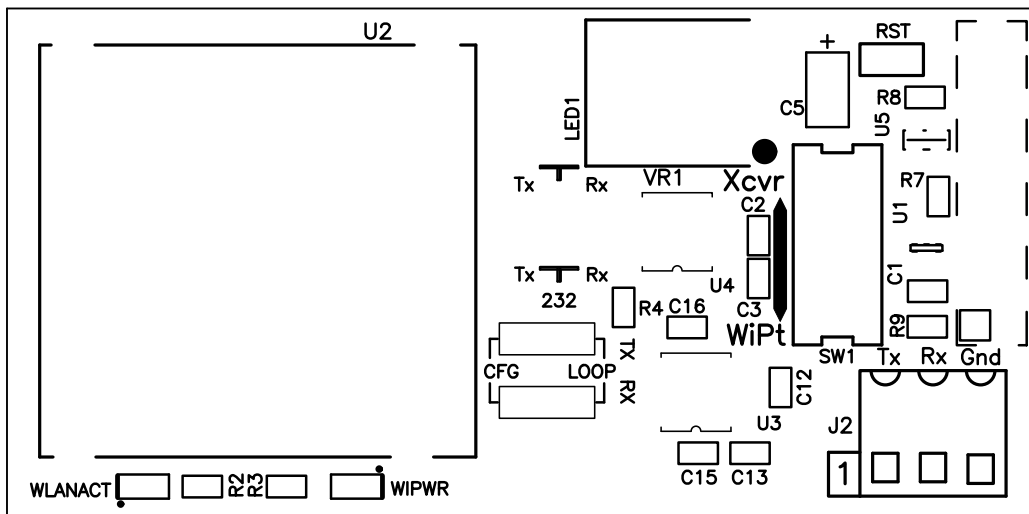


Figure 8-1. WLAN Board

8.1 Enclosure Disassembly

The indicator enclosure must be opened to install the WLAN option card and antenna and to connect cables for the installed option card.



Before opening the unit, be sure the power cord is disconnected from the power outlet.

1. Disconnect power to the indicator.
2. Place the indicator face-down on an antistatic work mat.
3. Remove the screws that hold the backplate to the enclosure body and then lift the backplate away from the enclosure and set it aside.

8.2 WLAN Card Installation

1. Refer to *CW-90/90X*, *720i*, *820i*, *iQUBE2*, *LaserLT WLAN Installation Instructions* PN 108680 included with the WLAN option card for installation and configuration instructions.
2. This card assumes serial port 2 — the port 2 terminal on the Counterpart CPU board should not be connected to any other device.

9.0 Appendix

9.1 Error Messages

If an error code appears on the display, use the information in [Table 9-1](#) as a troubleshooting guide. If unable to clear the error, call RLWS Service for assistance.




| Error Display | Description | Solution |
|---|---|--|
|  | Over range | <ul style="list-style-type: none"> • Check load cell wiring, including sense jumpers. • Check configuration, including number of grads, channel selection, display divisions. • Check calibration, including W ZERO and WSPAN values. • Under range can be caused by OIML setting and weight less than -20 display divisions. • Check for scale binding or damage. • Check for proper excitation voltage. • Call Rice Lake Weighing Systems Service for assistance. |
|  | Under range | |
|  | A/D out of range | |
| CHKERR - BATTERY BACK LOST | Battery Error | Press ENTER after replacing the battery to restore defaults to battery backed storage. |
| ERROR | Internal program error | Check configuration. Run XE command (see Section 9.2 on page 88) to determine error type. Call Rice Lake Weighing Systems Service if unable to clear error by cycling power or if error reoccurs. |
| HWFERR | Hardware error | Reboot the unit. Call Rice Lake Weighing Systems Service if unable to clear error by cycling power or if error reoccurs. |
| INVALID UNITS | ID uses unassigned units | Modify the ID to use a configured unit. |
| NOTARE | Tare is prevented | Change regulatory mode settings or the TAREFN parameter. |
| OVERFL | Overflow error | Weight value too large to be displayed. |
| OL | Overload error | Scale has been overloaded. Remove load from scale. |
| RANGE | GRADS > 100,000 WVAL > 100,000 | Only shows up in Config mode. |
| EEPERR | EEPROM error | Call Rice Lake Weighing Systems (RLWS) for service |
| VERSION UPDATED | Core has been updated or memory has been corrupted. | Press the ENTER key. If the message persists, call RLWS for service. |

Table 9-1. Counterpart Error Messages

9.2 Using the XE and XEH EDP Commands

The XE and XEH EDP commands can be used to remotely query the Counterpart for the error conditions shown on the front panel. The XE command returns a 5-digit number in the format:

xxxxx

where xxxxx contains a decimal representation of any existing error conditions as described in [Table](#) .

The XEH command returns a value in the format:

0xxxxxxxx

where xxxxxxxx contains a hexadecimal representation of any existing conditions as described in [Table](#) .

If more than one error condition exists, the number returned is the sum of the values representing the error conditions. For example, if the XE command returns the number 1040, this value represents the sum of an A/D reference error (1024) and an A/D calibration checksum error (16).

| XE Error Code (decimal) | Description | XEH Error Code (hexadecimal) |
|-------------------------|----------------------|------------------------------|
| 1 | VIRGERR | 0x00000001 |
| 2 | PARMCHKERR | 0x00000002 |
| 4 | LOADCHKERR | 0x00000004 |
| 8 | PRINTCHKERR | 0x00000008 |
| 16 | ENVRAMERR | 0x00000010 |
| 32 | ENVCRCERR | 0x00000020 |
| 64 | BATTERYERR | 0x00000040 |
| 32768 | GRAVERR | 0x00008000 |
| 65536 | ADPHYSICALERR | 0x00010000 |
| 131072 | TAREERR | 0x00020000 |
| 262144 | EACCOVER | 0x00040000 |
| 524288 | STRINGERR | 0x00080000 |
| 1048576 | RESERVED_PF | 0x00100000 |
| 2097152 | RTCERR | 0x00200000 |
| 4194304 | MISSINGHWERR | 0x00400000 |
| 8388608 | CFGCONFLICTERR | 0x00800000 |
| 16777216 | UNRECOVERABLEERR | 0x01000000 |
| 0x10000 - 0x80000000 | | Reserved |

Table 9-2. Error Codes Returned on XE Command

9.2.1 Using the P EDP Command

The P EDP command returns the current displayed weight value to the EDP port.

9.3 Continuous Output (Stream) Format

Figure 9-1 shows the default continuous output format sent to a Counterpart port when that port's STREAM parameter (SERIAL menu) is set to LFT.

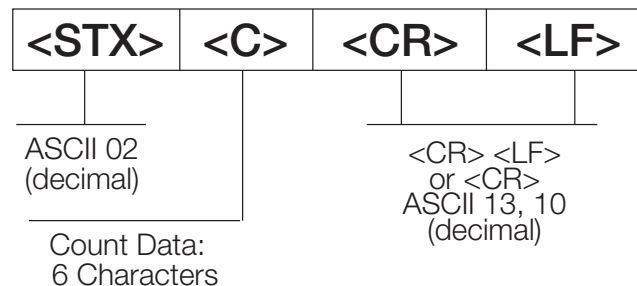


Figure 9-1. Continuous Output Data Format

9.4 Demand Output Serial Data Format

When demand mode is configured for the serial port (STREAM parameter set to OFF), the Counterpart uses a data string formatted for a basic ticket printout. The particular ticket format printed depends on the indicator configuration.

The ticket can be customized to work with a wide variety of printers, scoreboard displays, and other remote equipment. See [Section 7.0 on page 78](#) for more information on custom print formats.

9.5 Custom Stream Formatting

Each port can be independently configured to stream a default frame format or can be customized to stream a user-defined format. Custom formatting is very similar to the standard print formatting described in [Section 7.0 on page 78](#). [Table 9-3](#) lists the format identifiers used to configure a custom stream format.

| Format Identifier | Defined By | Description |
|-------------------|--|--|
| <P[G N T]> | STR.POS# <i>n</i> STR.NEG# <i>n</i> | Polarity. Specifies positive or negative polarity 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) |
| <CU> | STR.PRI# <i>n</i> STR.SEC# <i>n</i> STR.TER# <i>n</i> | Units. Specifies primary, secondary, or tertiary units for the current or specified weight on the source scale. |
| <U[P S T]> | Dynamic | =L if Units = LB =K if Units = KG =G if Units = G =O if Units = OZ |
| <M[G N T]> | STR.GROSS# <i>n</i> STR.NET# <i>n</i> STR.TARE# <i>n</i> | Mode. Specifies gross, net, or tare weight for the current or specified weight on the source scale. |
| <S> | STR.MOTION# <i>n</i> STR.RANGE# <i>n</i> STR.OK# <i>n</i> STR.INVALID# <i>n</i> | Status for the source scale. Default values and meanings for each status: STR.MOTIONMIn motion STR.RANGEOut of range STR.OK<space>OK STR.INVALIDInvalid |
| <C> | - | Piece count for the currently viewed scale |
| <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 |
| B5 | Dynamic | =1 if standstill |
| B6 | Dynamic | =1 if gross 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 MODE = TARE =11 (not used) |
| B12 | Dynamic | =00 if UNITS = PRIMARY =01 if UNITS = SECONDARY =10 if UNITS = TERTIARY =11 (not 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 |

Table 9-3. Custom Stream Formatting

| Format Identifier | Defined By | Description |
|-------------------------------|---------------|---|
| 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 if current DECPNT = 8888800 =001 if current DECPNT = 8888880 =010 if current DECPNT = 8888888 =011 if current DECPNT = 888888.8 =100 if current DECPNT = 88888.88 =101 if current DECPNT = 8888.888 =110 if current DECPNT = 888.8888 =111 if current DECPNT = 88.88888 |
| B18 | Configuration | =000 if primary DECPNT = 8888800 =001 if primary DECPNT = 8888880 =010 if primary DECPNT = 8888888 =011 if primary DECPNT = 888888.8 =100 if primary DECPNT = 88888.88 =101 if primary DECPNT = 8888.888 =110 if primary DECPNT = 888.8888 =111 if primary DECPNT = 88.88888 |
| B19 | Configuration | =000 if secondary DECPNT = 8888800 =001 if secondary DECPNT = 8888880 =010 if secondary DECPNT = 8888888 =011 if secondary DECPNT = 888888.8 =100 if secondary DECPNT = 88888.88 =101 if secondary DECPNT = 8888.888 =110 if secondary DECPNT = 888.8888 =111 if secondary DECPNT = 88.88888 |
| B20 | Configuration | =000 if tertiary DECPNT = 8888800 =001 if tertiary DECPNT = 8888880 =010 if tertiary DECPNT = 8888888 =011 if tertiary DECPNT = 888888.8 =100 if tertiary DECPNT = 88888.88 =101 if tertiary DECPNT = 8888.888 =110 if tertiary DECPNT = 888.8888 =111 if tertiary DECPNT = 88.88888 |
| <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. Decimal point only indicates floating decimal; decimal point with following digit 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 |
| <LF> | | Line feed |

Table 9-3. Custom Stream Formatting (Continued)

9.6 Digital Filtering

The Counterpart uses averaged digital filtering to reduce the effect of vibration on weight readings. Adjustable threshold and sensitivity functions allow quick settling by suspending filter averaging, allowing the weight reading to jump to the new value. Figure 9-2 shows the digital filter parameters on the CONFIG menu.

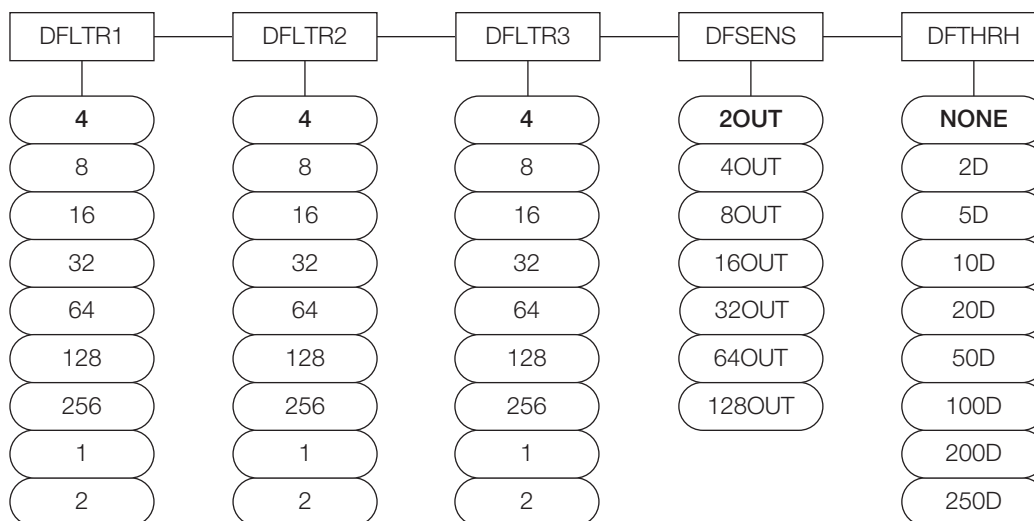


Figure 9-2. Digital Filtering Parameters on the Configuration (CONFIG) Menu

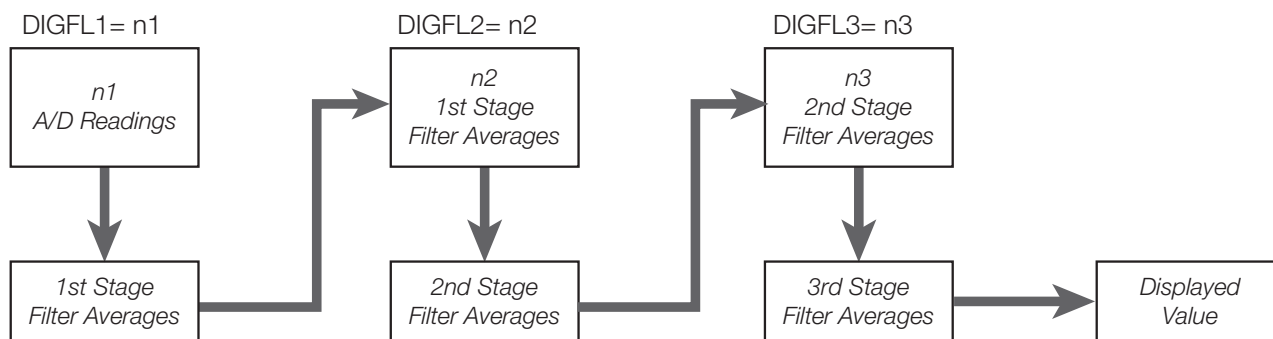


Figure 9-3. Flow Diagram for Counterpart Digital Filters

9.6.1 DIGFLx Parameters

The first three digital filtering parameters, DFLTR1, DFLTR2, and DFLTR3, are configurable filter stages that control the effect of a single A/D reading on the displayed weight. The value assigned to each parameter sets the number of readings received from the preceding filter stage before averaging (see Figure 9-3).

The overall filtering effect can be expressed by adding the values assigned to the three filter stages:

$$DFLTR1 + DFLTR2 + DFLTR3$$

For example, if the filters are configured as DFLTR1=4, DFLTR2=8, DFLTR3=8, the overall filtering effect is 20 (4 + 8 + 8). With this configuration, each A/D reading has a 1-in-20 effect on the displayed weight value. Setting the filters to 1 effectively disables digital filtering.

9.6.2 DFSENS and DFTHR Parameters

The three digital filters can be used by themselves to eliminate vibration effects, but heavy filtering also increases settling time. The DFSENS (digital filter sensitivity) and DFTHR (digital filter threshold) parameters can be used to temporarily override filter averaging and improve settling time:

- DFSENS specifies the number of consecutive scale readings that must fall outside the filter threshold (DFTHR) before digital filtering is suspended.
- DFTHR sets a threshold value, in display divisions. When a specified number of consecutive scale readings (DFSENS) fall outside of this threshold, digital filtering is suspended. Set DFTHR to NONE to turn off the filter override.

9.6.3 Setting the Digital Filter Parameters

Fine-tuning the digital filter parameters greatly improves indicator performance in heavy-vibration environments. Use the following procedure to determine vibration effects on the scale and optimize the digital filtering configuration.

1. In menu mode, set all three digital filters (DFLTR1, DFLTRL2, DFLTR3) to 1. Set DFTHRH to NONE. Return indicator to normal mode.
2. Remove all weight from the scale, then watch the indicator display to determine the magnitude of vibration effects on the scale. Record the weight below which all but a few readings fall. This value is used to calculate the DFTHRH parameter value in Step 4.

For example, if a heavy-capacity scale produces vibration-related readings of up to 50 lb, with occasional spikes to 75 lb, record 50 lb as the threshold weight value.

3. Place the indicator in menu mode and set the digital filters (DFLTR x) to eliminate the vibration effects on the scale. (Leave DFTHRH set to NONE.) Reconfigure as necessary to find the lowest effective values for the DFLTR x parameters.
4. With optimum values assigned to the DFLTR x parameters, calculate the DFTHRH parameter value by converting the weight value recorded in Step 2 to display divisions:

$$\text{threshold_weight_value} / \text{DSPDIV}$$

In the example in Step 2, with a threshold weight value of 50 lb and a display division value of 5lb: $50 / 5\text{lb} = 10\text{DD}$. DFTHRH should be set to 10DD for this example.

5. Finally, set the DFSENS parameter high enough to ignore transient peaks. Longer transients (typically caused by lower vibration frequencies) will cause more consecutive out-of-band readings, so DFSENS should be set higher to counter low frequency transients.

Reconfigure as necessary to find the lowest effective value for the DFSENS parameter.

9.6.4 Audit Trail Support

Audit trail support provides tracking information for configuration and calibration events. To prevent potential misuse, all configuration and calibration changes are counted as change events.

Use the Audit menu or Revolution to display audit trail information. This includes the legally relevant (LR) version number (software version for the code that provides audit trail information), a calibration count and a configuration count.

Audit trail information can be printed from Revolution or by sending the DUMPAUDIT serial command.

9.7 USB Keyboard Interface

The USB interface option board provides a type-A connection for a USB keyboard interface. To use the keyboard interface, set the serial input function for Port 3 (found under the SERIAL menu — see [Figure 3-22 on page 49](#)) to KEYBOARD.

[Table 9-4](#) summarizes the Counterpart specific functions provided by the keyboard interface, most other alphanumeric and navigational keys provide functions equivalent to those typical for PC operation. Menu parameters and serial commands that affect the indicator keypad operation (including KBDLCK, ZERONLY, and KLOCK serial commands also affect the remote keyboard.

| Key | Function |
|---------------|-----------------|
| F1 | Softkey 1 |
| F2 | Softkey 2 |
| F3 | Softkey 3 |
| F4 | Softkey 4 |
| F5 | Unit Weight key |
| F6 (Alt + z) | ZERO key |
| F7 (Alt + g) | GROSS/NET key |
| F8 (Alt + t) | TARE key |
| F9 (Alt + u) | UNITS key |
| F10 (Alt + p) | PRINT key |
| F11 | Not used |
| F12 | MENU key |
| Print Screen | PRINT key |

Table 9-4. USB Keyboard Functions

**Note**

- * *The keyboard interface is hot-pluggable.*
- * *Caps lock is functional (off at indicator power up).*
- * *Num lock is on and cannot be turned off.*
- * *Scroll lock is not supported.*
- * *Other USB devices are not supported.*

9.8 Serial Scale Interface

Serial port 1 can be configured for serial scale input. The serial scale function allows other scale indicators to send gross, or net weight data to Counterpart. Once the serial port has been configured to accept scale data, the data format can be customized to match the data stream sent by that indicator. See [Figure 3-22 on page 49](#) for setup information.

To set up and configure a serial scale:

1. Under the SERIAL menu, select Port 1 and scroll over to IND SC (industrial serial scale) or SCALE (Legal-for-Trade), depending on what is required. This enables Scale 3. For operation with the counting functions, set type to IND SC.
2. Match the baud rates (9600), data bits and parity, and stop bits. This becomes SCALE 3.
3. Set the format under the SFMT parameter to match the format sent by the serial scale.

An example of the default serial scale format is:

```
<STX><P><W7><U><M><S><CR>
```

**Note** Counterpart serial scale input can accept and display 1 million display divisions.

Where:

| | |
|-------|--|
| <STX> | STX character |
| <P> | Polarity |
| <W7> | Seven characters of net data with decimal pt |
| <U> | Units |
| <M> | Mode |
| <S> | Status |
| <CR> | Carriage return |

Note that industrial serial scales (IND SC) do not require the <M>, <U> and <S> identifiers. However, the units and number of decimal places must be specified. Units can be selected from the FORMAT menu; decimal places should be indicated with a w-spec identifier. For example, a seven-digit weight reading requiring two decimal places should be specified as <W7.2> rather than <W7>.

To change or match formats, use the same path to change formats.

9.9 Regulatory Mode Functions

The function of the front panel TARE and ZERO keys depends on the value specified for the REGULAT parameter on the FEATURE menu. [Table 9-5](#) describes the function of these keys for the NTEP, CANADA, OIML, and NONE regulatory modes. TARE and ZERO key functions are configurable when the REGULAT mode is set to INDUST (see [Table 9-6 on page 95](#)).

| REGULAT Parameter Value | Weight on Scale | Tare in System | Front Panel Key Function | |
|----------------------------|------------------|----------------|--------------------------|------|
| | | | TARE | ZERO |
| NTEP | zero or negative | no | no action | ZERO |
| | | yes | CLEAR TARE | |
| | positive | no | TARE | |
| | | yes | TARE | |

Table 9-5. TARE and ZERO Key Functions for REGULAT Parameter Settings

| REGULAT Parameter Value | Weight on Scale | Tare in System | Front Panel Key Function | |
|----------------------------|---|----------------|--------------------------|---|
| | | | TARE | ZERO |
| CANADA | zero or negative | no | no action | ZERO |
| | | yes | CLEAR TARE | |
| | positive | no | TARE | |
| | | yes | no action | |
| OIML | zero or negative (not to exceed -20dd) | no | no action | ZERO |
| | | yes | CLEAR TARE | ZERO and CLEAR TARE |
| | positive | no | TARE | ZERO |
| | | yes | TARE | ZERO and CLEAR TARE if weight is within ZRANGE. No action if weight is outside of ZRANGE |
| NONE | zero or negative | no | TARE | ZERO |
| | | yes | CLEAR TARE | |
| | positive | no | TARE | |
| | | yes | CLEAR TARE | |

Table 9-5. TARE and ZERO Key Functions for REGULAT Parameter Settings (Continued)

Table 9-6 lists the subparameters available when configuring a scale using INDUST mode. The table includes the default values of the INDUST subparameters and the effective (not configurable) values used by the NTEP, CANADA, OIML, and NONE regulatory modes.

| REGULAT / INDUST Parameter | | REGULAT Mode | | | | |
|----------------------------|---|--------------|------------|------------|------------|------------|
| Parameter Name | Text Prompt | INDUST | NTEP | CANADA | OIML | NONE |
| SNPSHOT | Display or Scale weight source | DISPLAY | DISPLAY | DISPLAY | DISPLAY | SCALE |
| ZTARE | Remove tare on ZERO | NO | NO | NO | YES | NO |
| KTARE | Always allow keyed tare | YES | YES | NO | YES | YES |
| MTARE | Multiple tare action | REPLACE | REPLACE | NOTHING | REPLACE | REMOVE |
| NTARE | Allow negative tare | NO | NO | NO | NO | YES |
| CTARE | Allow CLEAR key to clear tare/accumulator | YES | YES | NO | 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 |
| OVRBASE | Zero base for overload calculation | CALIB ZERO | CALIB ZERO | CALIB ZERO | SCALE ZERO | CALIB ZERO |

Table 9-6. REGULAT / INDUST Mode Parameters, Comparison with Effective Values of Other Modes

9.10 Regulatory Mode and Legal-for-Trade (LFT)



Note When REGULAT is set for NONE or INDUST there are no restrictions on displaying both weight and piece count data.

If the unit is going to be used in Legal for Trade applications, weight and piece count data cannot be displayed at the same time. Use the following examples to use Counterpart in Legal for Trade applications.

9.10.1 Legal for Trade and Normal Weight Mode

When in a Legal for Trade mode (REGULAT = NTEP, OIML, or CANADA) and the unit is in normal weigh mode:

- If the weight is displayed in the main area (either as a result of the DSPMODE parameter being set for WEIGHT or

the Swap Display softkey was pressed) then the piece count and unit weight are not displayed.



- If the piece count is displayed in the main area (either as a result of the DSPMODE parameter being set for COUNT or the Swap Display softkey was pressed) then the weight is not displayed. The unit weight will be displayed in the left display area.



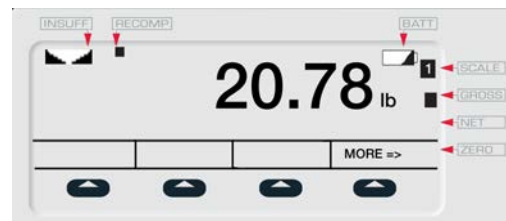
- If the unit weight is displayed in the main area (either as a result of the DSPMODE parameter being set for UNITWEIGHT or the Swap Display softkey was pressed) then the weight is not displayed. The piece count will be displayed in the left display area.



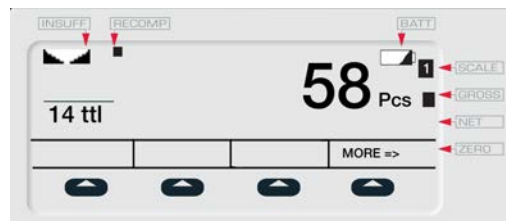
9.10.2 Legal for Trade and Totalization Mode

When in Legal for Trade mode (REGULAT = NTEP, OIML, or CANADA) and the unit is in Totalization mode:

- If the weight is displayed in the main area (either as a result of the DSPMODE parameter being set for WEIGHT or the Swap Display softkey was pressed) then the piece count and piece count total are not displayed.



- If the piece count is displayed in the main area (either as a result of the DSPMODE parameter being set for COUNT or the Swap Display softkey was pressed) then the weight is not displayed. The piece count total will be displayed in the left display area.



- If the piece count total is displayed in the main area (either as a result of the DSPMODE parameter being set for UNITWEIGHT or the Swap Display softkey was pressed) then the weight is not displayed. The piece count will be

displayed in the left display area.



9.11 Updating Firmware

To update firmware of the Counterpart, Revolution must be installed and a .hex file on your computer. Visit www.ricelake.com to download this free configuration software and the latest .hex file.



Note *If the hex file is the same version as is currently in the indicator, the firmware update will not reset the configuration.*

This is helpful if the firmware becomes corrupt and you want to reload the same firmware. However, it is always recommended that configuration be backed up in Revolution to avoid any data loss.

1. Unplug power to the Counterpart and remove top from the base of the unit.
2. Wire the serial cable to the Counterpart's Port 1. Refer to Table 9-7 for cable connection settings.

| DB9 Cable | | | | Connector (J5) | | |
|-----------|--------|--------|---------------------|----------------|-------------|--------|
| Pin/Color | Signal | In/Out | Description | Pin | Description | In/Out |
| 1/Brown | DCD | In | Data carrier detect | NC | NA | NA |
| 2/Red | RxD | In | Receive data | 3 | Tx | Out |
| 3/Orange | TxD | Out | Transmit data | 4 | Rx | In |
| 4/Yellow | DTR | Out | Data terminal ready | 5 | DTR | In |
| 5/Green | GND | ----- | Ground | 1 or 2 | Gnd | |
| 6/Blue | DSR | In | Data set ready | NC | NA | NA |
| 7/Purple | RTS | Out | Request to send | 6 | RTS | In |
| 8/Gray | CTS | In | Clear to send | NC | NA | NA |
| 9/Black | RI | In | Ring indicator | NC | NA | NA |

Table 9-7. Cable Connection Settings

3. Install jumpers on JP5 and JP6. See [Table 2-9 on page 15](#).
4. Plug in power to the Counterpart and press the indicator's **Power** button.
5. With Revolution open, begin a new configuration file for the Counterpart.
6. Click **Update Counterpart Firmware**.

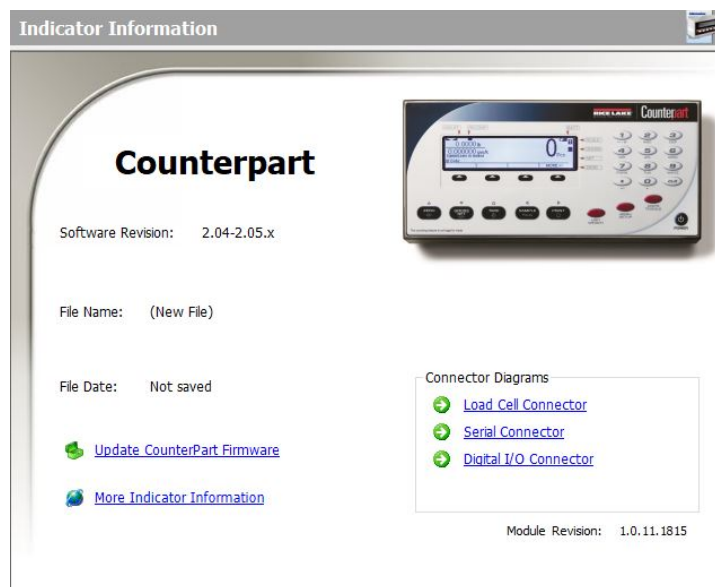


Figure 9-4. Revolution Display

7. The *Rice Lake Updater* display appears. Specify the COM port the Counterpart is connected to, and click the ellipses (...) to browse to and select the desired .hex file.

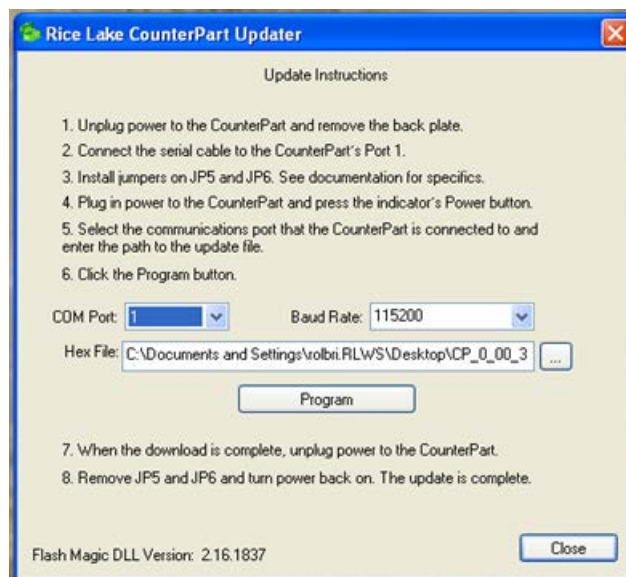


Figure 9-5. Rice Lake Updater Display

8. Click the **Program** button. The update will take several moments.
9. When complete, remove the jumpers shown in [Figure 2-14 on page 14](#) and press the **Power** button to power up the indicator.

9.12 Specifications

| Part # | Description | Weighing Resolution | Platter Dimensions |
|---|-------------------|-------------------------------------|--------------------|
| Single Channel | | | |
| 118788 | CP Indicator | Console only | |
| 120736 | CP-5 | 5 lb x 0.0005 lb (2 kg x 0.0002 kg) | 9 in x 12 in |
| 120737 | CP-10 | 10 lb x 0.001 lb (5 kg x 0.0005 kg) | 11 in x 16 in |
| 120738 | CP-25 | 25 lb x 0.002 lb (10 kg x 0.001 kg) | 11 in x 16 in |
| 120739 | CP-50 | 50 lb x 0.005 lb (20 kg x 0.002 kg) | 11 in x 16 in |
| 120740 | CP-100 | 100 lb x 0.01 lb (50 kg x 0.005 kg) | 11 in x 16 in |
| Dual Channel (single platform XL base systems) | | | |
| 120770 | CP dual indicator | Console only | |
| 119796 | CP-5 | 5 lb x 0.0005 lb (2 kg x 0.0002 kg) | 9 in x 12 in |
| 118797 | CP-10 | 10 lb x 0.001 lb (5 kg x 0.0005 kg) | 11 in x 16 in |
| 118798 | CP-25 | 25 lb x 0.002 lb (10 kg x 0.001 kg) | 11 in x 16 in |
| 118799 | CP-50 | 50 lb x 0.005 lb (20 kg x 0.002 kg) | 11 in x 16 in |
| 118800 | CP-100 | 100 lb x 0.01 lb (50 kg x 0.005 kg) | 11 in x 16 in |
| Dual Channel with Benchmark | | | |
| 125113 | CP-50BM | 50 lb x 0.01 lb (20 kg x 0.002 kg) | 12 in x 18 in |
| 125116 | CP-100BM | 100 lb x 0.02 lb (50 kg x 0.005 kg) | 12 in x 18 in |

Table 9-8. Specifications

9.13 Specifications

POWER:

Power source:

Input: 100-240VAC, 47-63 Hz, 5 watts, US power cord

Output: 9VDC or 12VDC 1.25 max

EXCITATION VOLTAGE:

5VDC

ANALOG SIGNAL INPUT RANGE:

0-4.5 mV/V

ANALOG SPECIFICATIONS:

.3 mV/V grad minimum

ANALOG SPECIFICATIONS:

Input sensitivity: 1.5 mV/V grad recommended

Zero adjustment range: 0-100% or per region settings

A/D conversion rate: 7.5, 15, 30 samples per second

Load cells per scale: 8 x 350 Ω ; 16 x 700 Ω

Scale channels: 1 or 2

Linearity +/- 0.017 full scale

CIRCUIT PROTECTION:

RFI, EMI, ESD protection

DIGITAL I/O:

4 I/O

DISPLAY:

Viewing Area: 240 x 64 pixels, transmissive VGA

Liquid Crystal Display (LCD) with adjustable contrast

KEYBOARD:

24 buttons, full keypad - alpha numeric

RESOLUTION:

Weight display resolution: up to 100,000 graduations

Counting resolution: 1/1,000,000

SERIAL COMMUNICATIONS AND SETPOINT:

Two RS-232 ports supports up to 115,200 bps

One optional port 3 connector for USB or Ethernet Fiber Optics

Ethernet port

Setpoint output (pending) - serial scale on Port 1 only.

STATUS ANUNCIATORS:

PCS, motion, low battery, insuff, recomp, scale number, gross, net, zero

BATTERY:

Type: Lithium Ion

Charge Time: 6-8 hours

Charge Cycles 400-1200

Estimated Run Time: up to 24 hours

OPERATING TEMPERATURE:

10° F to 104° F (-12° C to 40° C)

OPERATING HUMIDITY:

85%

PHYSICAL DIMENSIONS:

Indicator Only: 12.25 in x 6.25 in x 4.0 in

WARRANTY:

2-year limited



NTEP
12-110

Measurement
Canada
Approved

AM-5918C





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230 W. Coleman St. • Rice Lake, WI 54868 • USA

U.S. 800-472-6703 • Canada/Mexico 800-321-6703 • International 715-234-9171 • Europe +31 (0)26 472 1319

www.ricelake.com