



## **CW250 Users Manual**

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Manual #: 700014 rev J

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# Introduction

This operations manual describes the Intercomp Model CW250 specifications, detailed operating procedures, and calibration.

This manual is separated into several sections, each containing information on a different aspect of the platform. The specifications outline the design parameters for the scale. The detailed operation section outlines the correct use of the scale for most applications. The calibration section explains how to set the platform's adjustments.

## Features

lb or kg programmable readout.

Ability to display total weight.

Accumulating total function.

Auto zero tracking automatically corrects zero-weight display shifts.

5½ digit, 1 inch LCD readout, with automatic back lighting.

5-15 VDC and 120 VAC 60 Hz power sources standard.

RFI/EMI protection.

Low battery detection with automatic shutoff to protect batteries.

Built-in self-diagnostics to check: Load cells, Memory, Display, AD converter, and Power supply.

Weigh pads manufactured from high strength aluminum alloys.

## OPTIONS

### **220V / 50Hz charging transformer**

#### **24" x 24" ramp (100181)**

cast aluminum

#### **15" x 15" ramp (100330)**

cast aluminum

### **Battery operated tape printer (100090)**

#### **Transport wheels (100183)**

2 per platform.

#### **Remote indicator (100184)**

Indicator with pedestal.

#### **Remote indicator (100184)**

Indicator for use on floor or wall.

## Specifications

### Controls

General	On/Off, Print/Accumulate, Local/Total, Zero
Display	5½ digit, 1 inch liquid crystal display (LCD), with automatic LED back lighting.
Indicators:	lb, kg, TOTAL, ERROR, '-' (minus) sign, and a 4 segment battery indicator.

### Electrical

Power source required	5 - 15 VDC, 120 VAC, optional 240 VAC.
Charging Voltage	10 - 15 VDC.
Batteries	4-AA size NiMH, or alkaline cells.
Charging Current	50 mA.
Charging Time	2 days for a full charge.
Battery endurance	Radio off: 300 hours with alkaline or NiMH cells. Radio on: 250 hours with alkaline or NiMH cells. NOTE: For special setups that require a scale wireless "host", that scale's battery life is 40 hours.
A/D Converter	24 bit conversions.
Auto-Zero	Satisfies all HB-44 requirements.

### Performance

Speed	1 second to typical reading (static).
Accuracy	± 0.1% of reading or ± display graduation, whichever is greater.
Calibration interval	Twelve months recommended.

### Environmental

Humidity	10 to 95% Non-Condensing.
Temperature	Operating: -30 C to +60 C. / -22 F to +140 F.
	Storage: -40 C to +70 C. / -40 F to +158 F.
EMI/RFI	Meets Mil Spec 461

### Physical

Dimensions (15"):	Overall: 15 x 22 x 4 in. / 380 x 557 x 100 mm Platform: 15 x 15 x 4 in. / 380 x 380 x 100 mm
Weight (15"):	40.5 lb / 18.4 kg
Dimensions (24"):	Platform: 24 x 24 x 4 in. / 610 x 610 x 100 mm
Weight (24"):	85 lb / 39 kg
Overload capacity:	150%

# Operations

The control panel has a liquid crystal display (LCD) screen and four control switches.



CW250 scale

## Display Description

The display is a Liquid Crystal Display unit, providing one line of 5 1/2 digits. The screen shows the weights read from the pad. The TOTAL icon indicates measurement mode as in the table below the CW250 display. Information displayed includes indicators for both “lb” and “kg”, a segment bar to show battery charge level, error conditions and set-point indicators when set-point thresholds are reached. The display contains an automatic backlight for use in low-light conditions.

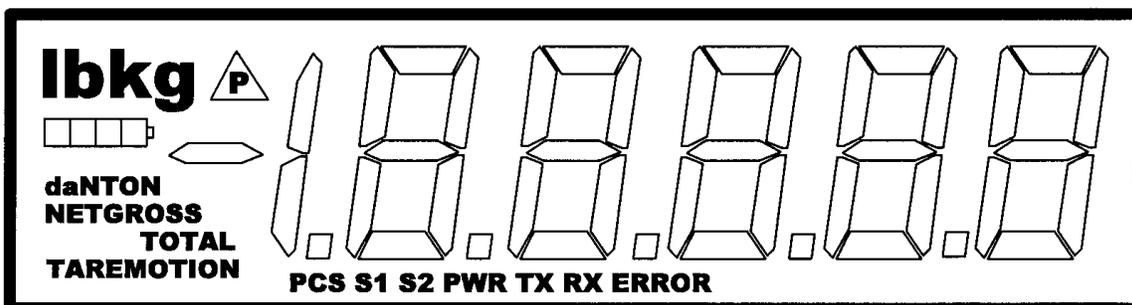


Diagram: CW250 display

Mode status	Setting
TOTAL not lit	Local
TOTAL lit	Total
TOTAL flashing	Accumulated Total

## Controls

### ON / OFF

Press this key to apply power to the weighing system electronics. When power is first applied, the weighing system rapidly performs self-tests of the pad and the internal electronics. When the tests have completed successfully, the system begins weighing. If a problem is detected, the screen displays an error message. If the CW250 is powered up, press this button to turn the scale off. The CW250 retains the setup information, and calibration in a special memory device (non-volatile memory) that is not affected by power loss or battery condition.

### PRINT / ACCUMULATE

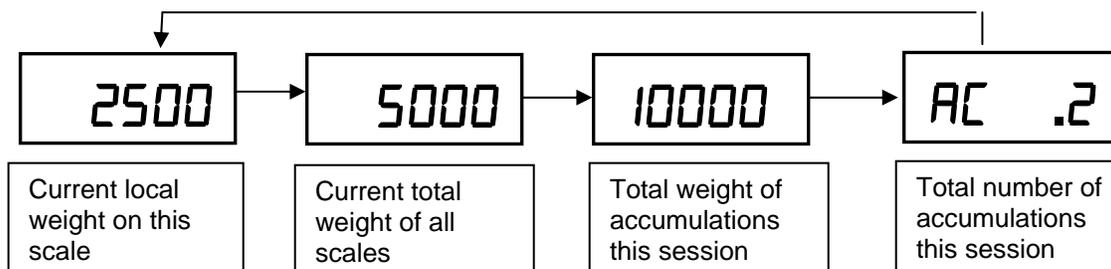
Press this button to print and/or accumulate weights, depending on the current print mode. See section titled "Serial Output Setup". When using the accumulated total function: press the PRINT /ACCUMULATE button to add the total to the accumulated total. Also, see section titled "Using Accumulated Total".

New accumulated total = total weight (all scales in system) + old accumulated total

### LOCAL/TOTAL

Press the LOCAL/TOTAL button to toggle the scale between local weight and total weight. The local weight is the weight on that scale only. The total weight is the weight on all of the scales in your system. The display will be in local mode unless the "TOTAL" icon is on. (shown on page 5).

If the serial output is set to mode 2 or 3 and a successful accumulation has occurred, press the LOCAL/TOTAL button to toggle the display through the current local weight, current total weight, accumulated total, and the number of accumulations that make up the total.



Note: If the system is not setup correctly, the "error" icon and message "E0E" will be displayed when trying to view the total weight. See section titled "Totalizing Setup".

### ZERO

Sets the weighing system to read zero pounds or kilograms. If pressed while a pad holds weight, that weight becomes the zero condition for the pad. This can be useful to cancel the weight of any weighing fixtures, such as tail cones or

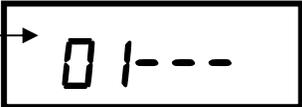
wheel chocks. When the weight is removed, a negative weight displays until the system is re-zeroed. This switch is used any time the scale shows a non-zero value with no weight on the pads. Please note that this system contains a feature called Auto Zero Tracking (AZT), which corrects for slight zero changes during normal operation. An example of a zero change could be a buildup of dirt on the pads.

Another function of the zero key is to clear the accumulated total. Press and hold the ZERO key until the display reads "0.00" and release the ZERO key. This will reset the accumulated total and the accumulation number. All other scales you have connected will also be zeroed through the interconnect cables. This allows you to zero your entire system with one key press.

## Totalizing Setup

The CW250 scales must be setup correctly in order to communicate. If the system is not setup correctly, the “error icon” and message “Err” will be displayed when trying to view the total weight.

1. To enter into totalizing setup: Simultaneously press the LOCAL/TOTAL and ZERO buttons.
2. Message “SC id” will be displayed. Press PRINT/ACCUMULATE button. A number will be displayed with 3 dashes following it. This is the scale number. Use the LOCAL/TOTAL button to increment and the ZERO button decrement the number. When the desired number is displayed, press the PRINT/ACCUMULATE.

scale # → 

3. Message “SCL5” will be displayed. Press the PRINT/ACCUMULATE button. The display will show three dashes and then a number. This number is the total number of scales in the system. Use the LOCAL/TOTAL button to increment and the ZERO button decrement the number. When the desired number is displayed, press the PRINT/ACCUMULATE button. The maximum number of scales is 32.

 total # of scales  
(only displayed on scale #1)

4. If the scale# is ‘1’, the display will ask if the scale is the “HOST”. Press the PRINT/ACCUMULATE button. Use the LOCAL/TOTAL or the ZERO button to toggle the display “YES” or “no”. A ‘Host’ controls the scale network, and this setting should be set to “yes” if the scale network consists of scales only. If your system uses an external device such as a PDA or PC to view the weights, this setting should be set to “no” since the external host controls the network. Press the PRINT/ACCUMULATE button to save the setting.

### Example:

Setup for two scales: On the first scale, enter ‘01’ for the scale number, enter ‘02’ for the total number of scales, and enter ‘yes’ for the ‘Host’ setting. On the other scale, enter ‘02’ for the scale number and ‘02’ for the total number of scales.

Note: The scale will not accumulate when the weight is negative, zero, or if the weight is in motion. These Protections are added to ensure that only valid readings are accumulated into the total. An error message "Ac.Err" will be displayed if any of those conditions are present. After a successful accumulation the scale must return to zero before you accumulate the next weight. If you attempt to accumulate the next weight before allowing the scale to return to zero, an error message "Ac.Err" will be displayed. The scale's print setup must be set to "accumulating print" in order for the totalizing function to work. See the next section titled "Serial Output Setup" to set the scale to "accumulated print".

## Serial Output Setup

There are four different serial output modes for the CW250, “on-demand”, “continuous”, “accumulating print” wheel axle format, and “accumulating print” standard format. See below for more information on these modes.

**To setup the serial output mode:** Press the PRINT/ACCUMULATE and ZERO buttons simultaneously until the display shows “b.L tE”, Press the PRINT/ACCUMULATE button to scroll through the menu (12 times) until the display shows “PrE t”. Press the PRINT/ACCUMULATE button once to display setting number. Set print mode to the number of the print mode wanted by using the LOCAL/TOTAL button to increment and the ZERO button decrement the number. .

Communication Mode	Setting
On-Demand	0
Continuous	1
Accumulating Print Axle	2
Accumulating Print Standard	3

**Notes:** For best results, only set **one** scale to ‘1, ‘2 or ‘3. This should also be the scale you are printing from. ‘0’ is the default setting.

Press the PRINT/ACCUMULATE button. Now the display will display “PbAUD”. Press the PRINT/ACCUMULATE button to change the baud rate set, press the LOCAL/TOTAL or the ZERO button to cycle through the baud rates available. The baud rates available are: 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200. When the desired baud rate is displayed, press the PRINT/ACCUMULATE button. The baud rate only needs to be set on the scale doing the printing. The settings are saved once PRINT/ACCUMULATE is pressed to advance the menu, and the scale can then be turned off to exit the Mode Menu.

### On-Demand

The weight is transmitted every time the PRINT/ACCUMULATE key is pressed. Press PRINT/ACCUMULATE to print either the local or total weight (depending on the local/total setting of the scale). This is the default print mode.

### Continuous

The CW250 automatically and continuously outputs the weight at a rate of about once per second.

## Data Format

When the serial output is set to either on-demand or continuous mode, the transmitted data is in the format shown below:

AAAAAAA BB<cr><lf>

Item	Meaning	ASCII Hex	ASCII Decimal
AAAAAAA	weight		
BB	units "lb" or "kg"		
<cr>	carriage return	0D	13
<lf>	linefeed	0A	10

The AAAAAAA field will vary in length depending on the length of the number and could contain a decimal point and/or a minus sign. The weight will either be local weight or total weight, depending on which mode you're in.

## Accumulating Print

See section titled "Using Accumulated Total" for both the Axle and the standard formats.

## Using Accumulated Total

The CW250 platforms can be used separately, in pairs, or in groups to measure a support load or the total weight in one measuring procedure.

To use the Accumulated Total feature, the scales need to be numbered correctly and the scale you intend to print from or display the accumulated total must have its print mode set to one of two 'Accumulating Print' modes. See the "Totalizing Setup" and "Serial Output Setup" sections for details.

### Accumulating Print Axle

Press the PRINT/ACCUMULATE button to add the current total weight to the accumulated total weight. At the same time, a print ticket will be generated (assuming you have a printer in the system). The print ticket format is in respect to a vehicle's individual wheels and axles or a standard weight accumulation mode.

For example wheel and axle, think of "WHL 1" as scale 1 and "AXL 1" as the total weight of scale 1 and scale 2. The following print ticket example is a 4 scale system:

PRINT / ACCUMULATE  
button has been pressed



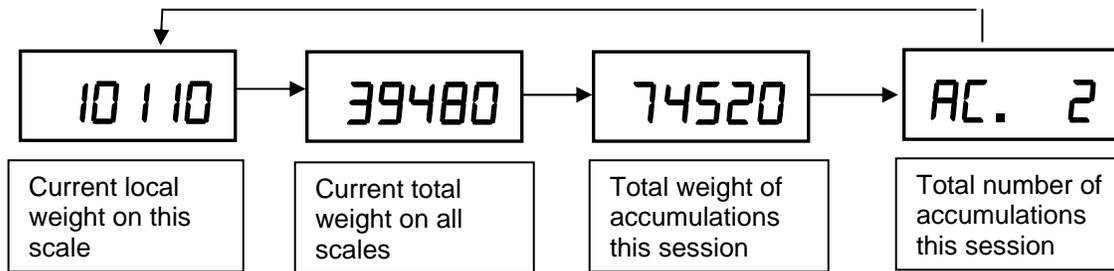
```
WHL 1: 7460   WHL 2: 7400
  AXL 1: 14860
WHL 3: 10110  WHL 4: 10070
  AXL 2: 20180
SUBTOTAL GRP 1: 35040
ACCUM TOTAL: 35040
```

PRINT / ACCUMULATE  
button has been pressed



```
WHL 1: 10110  WHL 2: 10070
  AXL 1: 20180
WHL 3: 9800   WHL 4: 9500
  AXL 2: 19300
SUBTOTAL GRP 2: 39480
ACCUM TOTAL: 74520
```

Once a successful accumulation has occurred, press the LOCAL/TOTAL button to toggle the display through the current local weight, current total weight, accumulated total, and the number of accumulations that make up the total.

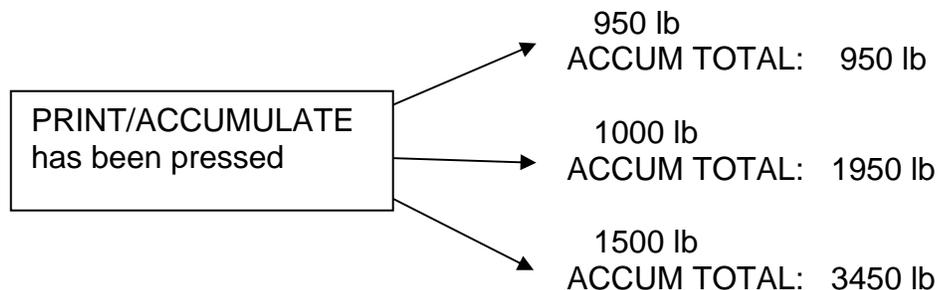


Note: The scale will not accumulate and will display the error message "AC.ERR" if the current weight is negative, zero, or if the weight is in motion. These Protections are added to ensure that only valid readings are accumulated into the total. Also, after a successful accumulation, ALL scales in the system must return to zero before you accumulate the next weight. If you attempt to accumulate the next weight before allowing the scale(s) to return to zero, the error message "AC.ERR" will be displayed.

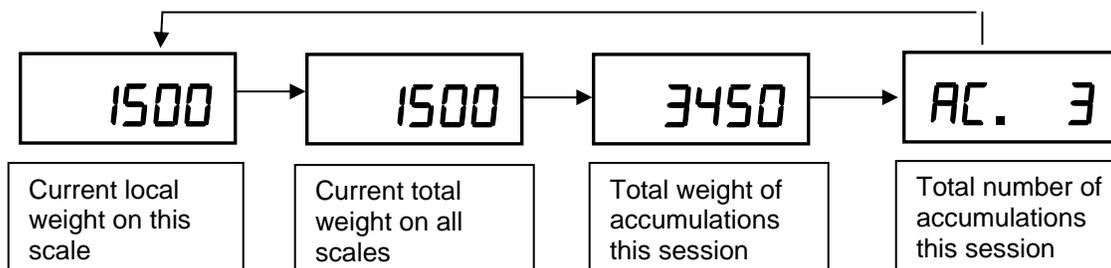
The accumulated total weight can be viewed only on the scale you are accumulating from. After the PRINT/ACCUMULATE button is first pushed; the display will show "AC. X" as the system will accumulate the next reading and send it to print. (X will show the number of accumulations this session) Once a successful accumulation has occurred, pressing the LOCAL/TOTAL button will cycle the display to show number of accumulations, current local weight, current total weight on all scales, and the accumulated total. When the local weight, current total weight, or accumulated total is displayed, the total icon will be lit up, flashing, or off. (as shown on page 5).

## Accumulating Print Standard

A standard accumulation shows total weight of multiple items weighed on 1 or more scales. The following print ticket example is a 1 scale system after 3 items are weighed: (950lb, 1000lb, and 1500lb)



Once a successful accumulation has occurred, press the LOCAL/TOTAL button to toggle the display through the current local weight, current total weight, accumulated total, and the number of accumulations that make up the total.



Note: The scale will not accumulate and will display the error message "AC.ERR" if the current weight is negative, zero, or if the weight is in motion. These Protections are added to ensure that only valid readings are accumulated into the total. Also, after a successful accumulation, ALL scales in the system must return to zero before you accumulate the next weight. If you attempt to accumulate the next weight before allowing the scale(s) to return to zero, the error message "AC.ERR" will be displayed.

The accumulated total weight can be viewed only on the scale you are accumulating from. After the PRINT/ACCUMULATE button is first pushed; the display will show "AC. X as the system will accumulate the next reading and send it to print. (X will show the number of accumulations this session) Once a successful accumulation has occurred, pressing the LOCAL/TOTAL button will cycle the display to show number of accumulations, current local weight, current total weight on all scales, and the accumulated total. When the local weight, current total weight, or accumulated total is displayed, the total icon will be lit up, flashing, or off. (as shown on page 5).

**Note:** In print-mode 3 it can accumulate either in local or total weight, but not when viewing the accumulated total.

To clear the accumulated total weight, press and hold the ZERO button until the display shows "CLT".

## Accumulating Procedure:

1. With your system setup correctly, decide which scale you will accumulate from. This can be any scale, but once you choose, you must only accumulate with that scale until the weighing is complete. This scale needs to be set to your desired accumulate mode, 2 or 3 (See "Serial Output Setup"). If you are using a printer, select the scale directly connected to the printer.
2. With the first group of items stable on the scales, press the PRINT/ACCUMULATE button. If you are using a printer, a print ticket with all weights will now be printed. The display will return to the setting that the accumulation was taken from. This first group's weight will become the accumulated total, which can be seen on the display by pressing the LOCAL/TOTAL button as described in the previous section with the TOTAL icon flashing. Another accumulation can not be made in the standard mode

if the scale is in the Accumulation Print mode. (TOTAL icon flashing). After accumulation, remove the first group of items from the scale(s).

3. With the next group of items stable on the scale(s), press the PRINT/ACCUMULATE button. This will add the total weight to the accumulated total. If you are using a printer, a print ticket with all weights will now be printed.
4. Repeat step 3 as needed. If the accumulated total becomes too large to display, the “*d 15P*” message and error icon will be displayed.
5. When finished, you may clear the accumulated total weight by pressing and holding the ZERO button until the display show “*0.00*”. The display will clear the accumulated total and the number of accumulations.

**Note:** The scale will not accumulate when the weight is negative, zero, or if the weight is in motion. A display message “*Ac.Err*” with error icon will be displayed if any of those conditions are present. After a successful accumulation the scale must return to zero before you accumulate the next weight. If you attempt to accumulate the next weight before allowing the scale to return to zero, a display message “*Ac.Err*” with error icon will be displayed.

# Mode Menu

## Mode Menu

To access the mode menu simultaneously press the PRINT/ACCUMULATE and ZERO buttons. The display will show "b.L iLE". If it doesn't, go to Calibration Enable Jumper section and verify the scale is in the RUN position.(shorting pins 2 and 3(RUN))

At times it will be necessary to enter up to a five digit number. When this is necessary the current number will be displayed with the right most digit flashing. The flashing digit may be incremented by pressing the LOCAL/TOTAL button. To move one digit to the left, press the ZERO key. When you have finished entering a number press the PRINT/ACCUMULATE button. The settings are saved once PRINT/ACCUMULATE is pressed to advance the menu, and the scale can then be turned off.

Step	Function	Note	Default
<i>b.L iLE</i>	Backlight	<i>AUTO, on, OFF</i>	<i>AUTO</i>
<i>SEtP1</i>	Set Point 1	0 to 199999	<i>199999</i>
<i>SEtP2</i>	Set Point 2	0 to 199999	<i>199999</i>
<i>uEr.</i>	Firmware Version	View only	XXXXXX
<i>A. rE</i>	Average rate	1 to 120	<i>008</i>
<i>A.tHrS</i>	Average Threshold	1 to 10000	<i>200</i>
<i>A OFF</i>	Auto off	000 = off, 1 to 240	<i>050</i>
<i>PrE t</i>	Print Mode	0 = On-demand, 1 = Continuous, 2 = Accumulating Total Axle, 3 = Accumulating Total Standard	<i>0</i>
<i>PbAUd</i>	Printer baud rate	1200, 2400, 4800, 9600, 19200, or 38400, 57600, 115200	<i>9600</i>
<i>Un iTS</i>	Measurement units	lb or kg	lb
<i>Proto</i>	Protocol	<i>StAnd, Lo Pr, C.LOOP, or nonE</i>	<i>Lo Pr</i>
<i>.bAUd</i>	Interface baud rate	9600 or 115200	<i>9600</i>
<i>rAd io</i>	Radio Enable	Yes or no	<i>no</i>
<i>rF CH</i>	Radio Channel	01 to 12	<i>1</i>
<i>rF.PAn</i>	Radio Network ID	0 to 65534	<i>8000</i>
<i>rF.ECP</i>	Radio encryption enable	Yes or no	<i>no</i>
	Radio Encryption Key	0 to 65534	<i>00000</i>
<i>rF.dEF</i>	Restore Radio Defaults	0 or 3	<i>0</i>

## Setting the Mode Menu Parameters

1. Simultaneously press the PRINT/ACCUMULATE and ZERO buttons. The display will show "b.L L E". Press the PRINT/ACCUMULATE button. The flashing display shows the current setting. Press the ZERO or the LOCAL/TOTAL buttons to toggle between Auto, on, and off. With 'Auto' selected (default), the backlight will automatically light up when low level light conditions are detected. When the desired setting is displayed, press the PRINT/ ACCUMULATE button.
2. The display will show "SETP 1". Press the PRINT/ACCUMULATE button. The flashing digit shows the current setting. When the weight displayed is equal to or greater than the set point, the corresponding icon is displayed on the LCD. During normal weighing mode, the S1 icon on the display will light when the weight is greater than or equal to set point 1. Use the LOCAL/TOTAL button the advance the number and the ZERO button to move the number flashing to the left. When the display shows the desired number, press the PRINT/ACCUMULATE button.
3. The display will show "SETP2". Press the PRINT/ACCUMULATE button. The flashing digit shows the current setting. During normal weighing mode, the S2 icon on the display will light when the weight is greater than or equal to set point 2. Use the LOCAL/TOTAL button the advance the number and the ZERO button to move the number flashing to the left. When the display shows the desired number, press the PRINT/ACCUMULATE button.
4. The display will show "uEr". Press the PRINT/ACCUMULATE button and the display will show the current version of firmware loaded in the scale. Press the PRINT/ACCUMULATE button.
5. The display will show "A. rE". Press the PRINT/ACCUMULATE button. The flashing digit shows the current setting. This number is how many readings will be averaged together before the reading is sent to the display. Higher values will result in a more stable reading, but will take longer to settle to the final value. Note that the scale updates at 4Hz, so an Average Rate of '8' equates to 2 seconds of averaging. Enter a '1' to effectively disable averaging. Use the Lb/Kg button the advance the number and the ZERO button to move the number flashing to the left. When the display shows the desired number, press the Mode button.
6. The display will show "A.LH-5". Press the Mode button. The flashing digit shows the current Average Threshold setting. This setting enables dynamic averaging, which can improve the settling time of a large Average Rate. If the scale senses a large weight change, it will temporarily suspend averaging, jump to the new weight, and resume averaging. Enter a value of 1-10000 to set the threshold (in display divisions) at which the dynamic averaging triggers. Enter '0' to disable dynamic averaging. When disabled, the averaging will never be suspended. When the display shows the desired number, press the PRINT/ACCUMULATE button.
7. The display will show "A. oFF". Press the PRINT/ACCUMULATE button. The flashing digit shows the current setting. The number displayed is the minutes that the scale can remain idle before it automatically shuts down. Setting this number to

“000” will disable the function, meaning the scale will never shut itself off. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the number flashing to the left. When the display shows the desired number, press the PRINT/ACCUMULATE button.

8. The display will show “Prt t”. Press the PRINT/ACCUMULATE button. The flashing digit shows the current setting. The number enables the scales different print modes. (0 for on-demand, 1 for continuous, 2 for accumulating total axle format, and 3 for accumulating total standard format) Use the LOCAL/TOTAL button to increment and the ZERO button to decrement the number. When the display shows the desired number, press the PRINT/ACCUMULATE button.
9. The display will show “PbAud”. Press the PRINT/ACCUMULATE button. The flashing display shows the current setting of the printer baud rate. The baud rates available are: 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200. Use the LOCAL/TOTAL button or the ZERO button to toggle through the available rates. When the display shows the desired number, press the PRINT/ACCUMULATE button.
10. The display will show “Un t5”. Press the PRINT/ACCUMULATE button. The lb or the kg icon will flash in the upper left of the display. This will set the scale to measure pounds (lb) or kilograms (kg). Use the LOCAL/TOTAL button or the ZERO button to toggle between the settings. When the desired icon is flashing, press the PRINT/ACCUMULATE button.
11. The display will show “Proto”. Press the PRINT/ACCUMULATE button. The flashing display shows the current setting. There are 4 protocol settings for the scale, Standard (“StAnd”), Low Power (“Lo Pr”), Current Loop (“C.LOOP”), or “nonE”. Standard is the legacy setting for use in wireless and wired scale networks. Low Power will significantly improve the wireless battery life for all non-‘host’ scales. (maximum number of scales in this mode is 32) Current Loop is not used in the CW250. When scales are not part of a totalizing network, battery life will be improved if “nonE” is chosen. Use the LOCAL/TOTAL button or the ZERO button to cycle through the settings. When the desired protocol is flashing, press the PRINT/ACCUMULATE button.
12. The display will show “i.bAud”. Press the PRINT/ACCUMULATE button. The display will show the current setting flashing. This is the setting of the interface baud rate. There are two settings available, 9600 and 115200. Use the LOCAL/TOTAL button or the ZERO button to toggle between the settings. When the desired baud rate is flashing, press the PRINT/ACCUMULATE button.
13. The display will show “rAd io”. Press the PRINT/ACCUMULATE button. The display will show the current setting flashing. This is the radio enable status and is either on or off. Use the LOCAL/TOTAL button or the ZERO button to toggle between the settings. When the desired status is flashing, press the PRINT/ACCUMULATE button. If you select “no” the scale will skip the rest of the settings and return to normal weighing.

14. The display will show “*rF CH*”. Press the PRINT/ACCUMULATE button. The flashing digit shows the current setting. All scales in a system must be set to the same radio channel setting in order to communicate with each other. Use the LOCAL/TOTAL button to increment and the ZERO button to move the number flashing to the left. When the display shows the desired number, press the PRINT/ACCUMULATE button.
15. The display will show “*rF.PAn*”. Press the PRINT/ACCUMULATE button. The display will show the current setting with the number on the right flashing. All scales in a system must be set to the same Personal Area Network ID setting in order to communicate with each other. Use the LOCAL/TOTAL button to increment and the ZERO button to move the number flashing to the left. When the display shows the desired number, press the PRINT/ACCUMULATE button.
16. The display will show “*rF.ECP*”. Press the PRINT/ACCUMULATE button. The display will show the current setting flashing. This is the encryption enable status and is either on or off. Use the LOCAL/TOTAL button or the ZERO button to toggle between the settings. When the desired status is flashing, press the PRINT/ACCUMULATE button. If “*YES*” was selected go to the next step. If “*no*” was selected go to step 17.
17. The display will show “*00000*” with the number on the right flashing. Use the LOCAL/TOTAL button to increment and the ZERO button to move the number flashing to the left. Enter any number from 0 to 65534. This is the encryption key. For security purposes, this setting is not accessible to view and will always show as “*00000*”. If you don’t want to change the key enter “*00000*” to leave it unchanged. All scales in a system must be set to the same encryption key setting in order to communicate with each other. When the desired encryption key is displayed, press the PRINT/ ACCUMULATE button.
18. The display will show “*rF.dEF*”. Press the PRINT/ACCUMULATE button. The display will show “*0*” with the number flashing. Use the LOCAL/TOTAL button to increment and the ZERO button to decrement the number. Setting the number to 3 will restore the default radio settings. All other numbers will have no affect on the radio set-up. When the desired number is flashing, press the PRINT/ACCUMULATE button. The scale will return to normal weighing.

If the scale does not have the radio option installed, the “*rF CH*”, “*rF PAn*”, “*rF ECP*” and the Encryption key will be view only.

## Calibration

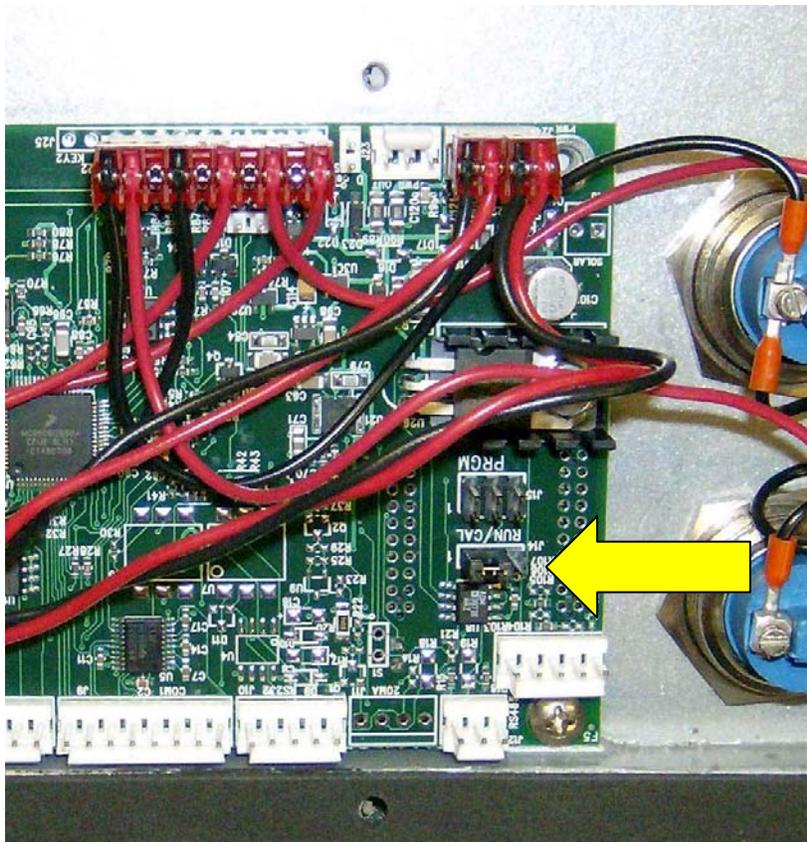
**Notice:** The CW250 scale is calibrated by the factory prior to shipment.

### Calibration Enable Jumper

To access the calibration mode the shorting strap labeled “RUN/CAL”, located on the right-middle of the circuit board (Intercomp, A/D 20 BIT rev E), it must be moved from shorting pins 2 and 3(RUN); to shorting pins 1 and 2(CAL). To access the shorting strap, remove the 10 screws on the outside edges of the display assembly. Carefully lift the display assembly up and place the assembly, display side down, on top of the weighing platform.

Following calibration, replace the strap to shorting pins 2 and 3 (RUN); replace the assembly and reattach the assembly with the screws. This will ensure that the calibration information of the scale is protected from being changed.

Note: Care must be taken to ensure the wire harness is seated properly to prevent it from being pinched between the display assembly and the scale casing.



## Calibration menu

To initiate calibration simultaneously press the PRINT/ACCUMULATE and ZERO buttons. The display will show “*StEP*”, if it does not, the calibration strap is incorrectly placed to allow calibration. Return to ‘Calibration Enable Jumper’ section to verify correct setting. Press the PRINT/ACCUMULATE button to access the parameter setting.

At times it will be necessary to enter up to a five digit number. When this is necessary the current number will be displayed with the right most digit flashing. The flashing digit may be incremented by pressing the LOCAL/TOTAL button. To move one digit to the left, press the ZERO key. When you have finished entering a number press the PRINT/ACCUMULATE button. The settings are saved once PRINT/ACCUMULATE is pressed to advance the menu, and the scale can then be turned off.

Step	Function	Note	Default
<i>StEP</i>	skip	000= no skip 001= skip to Weight Calibration	<i>000</i>
<i>U. EnA</i>	Unit enable	Yes or no	<i>YES</i>
<i>bP 1</i>	grad break point 1	Enter weight	<i>00000</i>
<i>bP 2</i>	grad break point 2	Enter weight	<i>00000</i>
<i>bP 3</i>	grad break point 3	Enter weight	<i>00000</i>
<i>AdC.r.t</i>	ADC rate	0 or 1	<i>1</i>
<i>AZt</i>	AZT (auto zero tracking)	1 d, 3 d, .5 d, oFF, or.6 d	<i>1 d</i>
<i>ZErO.r</i>	Zero range	0= off, 1= 1%, 2= 2%, 3= 5%, 4 = 1%	<i>0</i>
<i>GrAd</i>	graduation size	0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, or 100	<i>d 1</i>
	<i>SALE</i>	Displays for 1 sec and advances	
<i>CAP</i>	capacity	Enter scale capacity	<i>20000</i>
<i>LL-01</i>	No weight applied		
<i>HH-01</i>	First weight	Enter first weight	
<i>LL-01</i>	First weight	Load first weight	
<i>HH-02</i>	Second weight	Enter second weight	
<i>LL-02</i>	Second weight	Load second weight	
<i>HH-03</i>	Third weight	Enter third weight	
<i>LL-03</i>	Third weight	Load third weight	
<i>HH-04</i>	Fourth weight	Enter fourth weight	
<i>LL-04</i>	Fourth weight	Load fourth weight	
	10 points available to enter	3 minimum recommended	

## Setting the Calibration Parameters

1. At any point in the following steps, data will be retained by the scale at the step completed if the power is cycled off. To initiate calibration simultaneously press the PRINT/ACCUMULATE and the ZERO buttons. The scale shows "STEP". Press the PRINT/ACCUMULATE button. The scale shows "000" with the far right number flashing. To go through all of the calibration parameters, press PRINT/ACCUMULATE with the display showing "000". To skip the first 8 calibration parameters and proceed to step 10 enter "00 1" or "002". See Diagnostics section for additional codes available. Use the LOCAL/TOTAL button to increment and the ZERO button to decrement the number. Press the PRINT/ ACCUMULATE button when the desired number is displayed.
2. The display shows "U. EnA" if proceeding through all parameters. Press the PRINT/ACCUMULATE button. The display will read "YES". Pressing LOCAL/TOTAL or the ZERO button will toggle the display to "no". With the display showing "YES", press the PRINT/ACCUMULATE button.
3. The display now shows "bP 1". Press the PRINT/ACCUMULATE button. The display will read the current setting with the far right number flashing. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the number flashing to the left. When the desired graduation break point is displayed press the PRINT/ ACCUMULATE button.
4. The display shows "bP 2". Press the PRINT/ACCUMULATE button. Repeat the process in step 3 for graduation break point 2. When the desired graduation break point is displayed press the PRINT/ACCUMULATE button.
5. The display shows "bP 3". Press the PRINT/ACCUMULATE button. Repeat the process in step 3 for graduation break point 3. When the desired graduation break point is displayed press the PRINT/ACCUMULATE button.

### Multiple Graduation Break Points

The CW250 has the ability to have multiple graduation values set. Following is an example of setting graduation break points. Example:

Grad = Initial graduation equals by 0.1 lb
Cap = 10000 (Capacity equals 10,000 lb)
bP 1 = 1000
bP 2 = 2000
bP 3 = 5000

The scale would then display the following:

up to 1000 lb	by 0.1 lb;	up to 453.55 kg	by 0.05 kg
1000+ to 2000 lb	by 0.2 lb;	453.55+ to 907.1 kg	by 0.1 kg
2000+ to 5000 lb	by 0.5 lb;	907.1+ to 2267.8 kg	by 0.2 kg
5000+ lb	by 1.0 lb;	2267.8+ kg	by 0.5 kg

To disable the breakpoints the graduation break points should be set to 110% of the capacity. The scale uses the same graduation from zero to capacity. This turns off the breakpoint feature.

6. The display shows "A~~D~~.r~~t~~". Press the PRINT/ACCUMULATE button. The display shows the current setting flashing. This sets the internal A/D conversion time at one of two choices. An entry of '0' results in the full conversion time for the most stable results. An entry of '1' results in a reduced conversion time which extends battery life. For the CW250 it is recommended to leave this set to '1'. Note that if this setting is changed, the scale must be recalibrated. Use the LOCAL/TOTAL button to increment and the ZERO button to decrement the number. When the desired ADC rate is displayed press the PRINT/ACCUMULATE button.
7. The display shows "A~~Z~~t". Press the PRINT/ACCUMULATE button. The display shows the current setting. Press the LOCAL/TOTAL or the Zero button to cycle through the auto zero tracking options. (1 d, 3 d, .5 d, OFF, or 5 d) If the displayed weight is less than the number of grads shown for a given amount of time, the weight will be zeroed off. When the desired auto zero tracking setting is displayed press the PRINT/ACCUMULATE button.
8. The display shows "Z~~E~~-0.r". Press the PRINT/ACCUMULATE button. The display shows the current setting flashing. Use the LOCAL/TOTAL button to increment and the ZERO button to decrement the number. The zero range is the percentage the zero can move from the original zero obtained at calibration. The zero button will not work if outside the zero range; and the display will show "Z~~E~~-0.r" with the error icon lit if the zero range is set to 1, 2, or 3. If 4-6 is selected, the zero button will simply not function when an attempt is made to zero the scale outside the range. When the number for desired zero range number is displayed press the PRINT/ACCUMULATE button. (0=off, 1=1%, 2=2%, and 3=5%, 4=1%, 5=2%, 6=5%)
9. The display shows "G~~r~~-A~~d~~". Press the PRINT/ACCUMULATE button. The display shows the current setting with the number flashing. Press the LOCAL/TOTAL or the Zero button to cycle through the graduation options. When the desired graduation setting is displayed press the PRINT/ACCUMULATE button. (grad options 0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, or 100)

At this point the display will show "S~~R~~U~~E~~" for about 1 second and advance to show "C~~R~~P".

## Weight Calibration

One to ten load weights need to be applied to calibrate the scale. Using multiple point calibration allows the unit to weigh more accurately; by removing undesirable characteristics of load cells. A typical weight calibration is a three point calibration. This means three different and optimal loads are applied and entered (not including the zero point). If you do not conveniently have the three different weights available, you may also use one or two point calibration. To calibrate with one point, simply turn off the scale after completing step 13 as listed below. To calibrate with two points, turn off the scale after completing step 15 as listed below. The CW250 has the capability to apply and load up to 10 calibration points.

10. The display will show "SCALE" for about 1 second and advance to show "CAP". Press the PRINT/ ACCUMULATE button. The display will show the current capacity setting with the far right number flashing. Use the LOCAL/TOTAL button the advance the number and the ZERO button the move the number flashing to the left. Enter the capacity of the scale and press the PRINT/ACCUMULATE button when the scale capacity is displayed.
11. The display shows "LL-00". With no weight applied to the scale press the PRINT/ ACCUMULATE button.
12. The display shows "HH-01". Press the PRINT/ACCUMULATE button. The display will show "00000" with the far right number flashing. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the number flashing to the left. Enter the value of the first load and press the PRINT/ACCUMULATE button when the value of the first load is displayed.
13. The display shows "LL-01". Apply the first load to the scale. With the first load applied to the scale press PRINT/ACCUMULATE button.
14. The display shows "HH-02". Press the PRINT/ACCUMULATE button. The display will show "00000" with the far right number flashing. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the number flashing to the left. Enter the value of the second load and press the PRINT/ACCUMULATE button when the value of the second load is displayed.
15. The display shows "LL-02". Apply the second load to the scale. With the second load applied to the scale press PRINT/ACCUMULATE button.
16. The display shows "HH-03". Press the PRINT/ACCUMULATE button. The display will show "00000" with the far right number flashing. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the number flashing to the left. Enter the value of the third load and press the PRINT/ACCUMULATE button when the value of the third load is displayed.
17. The display shows "LL-03". Apply the third load to the scale. With the third load applied to the scale press PRINT/ACCUMULATE button.

18. The display shows "HH-04". Press the PRINT/ACCUMULATE button. The display will show "00000" with the far right number flashing. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the number flashing to the left. Enter the value of the forth load and press the PRINT/ACCUMULATE button when the value of the forth load is displayed.
19. The display shows "LL-04". Apply the forth load to the scale. With the forth load applied to the scale press PRINT/ACCUMULATE button.

Repeat step 12 and 13 for each additional "HH-05" – "HH-10" and "LL-05"- "LL-10" combination. If the scale is turned off at any time the calibration data acquired to that point will be retained. After the PRINT/ACCUMULATE button is pressed after "LL-10", the display will return to normal weighing.

## ***Finished***

Following calibration, replace the strap to shorting pins 2 and 3 (RUN); replace the assembly and reattach the assembly with the screws. This will ensure that the calibration information of the scale is protected from being changed.

Note: Care must be taken to ensure the wire harness is seated properly to prevent it from being pinched between the display assembly and the scale casing.

## Error Messages

Message	Meaning
EEPE	EEPROM failure. Scale will require recalibration
Ad 1	AD converter failure. Circuit board may need to be repaired or replaced
LCbXX	Self test shunt-current circuitry has detected one or multiple load cell errors. A load cell may have failed or there is a bad connection. "XX" shows which cell or connection has failed: xx = 1-8 (single digit) if there is a single load cell failure, or xx = 2-digit hex code if multiple cells failed. (Examples: "LCb 2" = load cell # 2 error, "LCb0F" = load cells #1-#4 errors)
LC XX	Run-time overload limit circuitry has detected one or multiple load cell errors. A LC may have failed or there is a bad connection. "xx" shows which cell or connection has failed: xx = 1-8 (single digit) if there is a single load cell failure, or xx = 2-digit hex code if multiple cells failed. (Examples: "LC 2" = load cell # 2 error, "LC 0F" = load cells #1-#4 errors)
Lo.bAt	Low battery. Replace the battery or connect the charger if using rechargeable batteries. (Warning: Do not charge alkaline cells)
CAP	Overcapacity. Reduce load to scale
ZEror	Zero range error. Scale tried to zero off a load outside the range specified in the zero range setting. Remove any load applied and press zero.
dISP	Display error. Number is too large to fit on the display.
COP or CLOC	Diagnostic power-up messages. These won't affect normal operation and can typically be ignored.
Ac.Err	This indicates that certain conditions for accumulation have not been met and that the attempted scale accumulation was rejected. The scale will not accumulate and will display the error message "Ac.Err" if the current weight is negative, zero, or if the weight is in motion. Also, only one accumulation is allowed while weight is still on the scale(s). The weight should be temporarily removed in between accumulations. See the "Accumulating Print Axle" section for details.

## Diagnosics

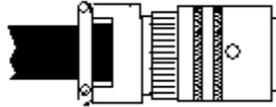
The 'step' choice that starts the calibration menu also allows special codes for technical diagnostic work. Typically only scale technicians should use these features. Here is the list of possible entries to the 'step' choice related to the CW250:

Message	Meaning
000	Simply advance to the first Calibration Menu step.
001	Advance to weight calibration.
005	This brings you to the Mode Menu, just as if the cal strap had been left in the RUN position.
121	Raw counts display diagnostic
131	Constant power to all cells diagnostic
311	Restore all radio settings to defaults (CH = 1, Network ID = 8000, and Encryption disabled). Display will then show "SAFE" if successful, or "no RF" if there is no radio installed or some other radio failure.
711	Restore all settings to defaults, but leave weight calibration untouched.
911	Restore all settings to default settings, including weight calibration. It is recommended that this only be used as a last resort, as your previous calibration and settings will be lost after running this.

Step Choice Table

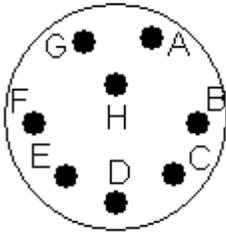
# Connector

The diagram below shows the pin-out for the PT connector on the side of the CW250:



***PT connector***

- A:** RS-485 A
- B:** TXD (RS232)
- C:** - Charging Voltage
- D:** none
- E:** +Charging Voltage
- F:** Ground
- G:** RS485 B
- H:** none



## How to reach Intercomp

Things to know:

Inform the Service Dept. that the product is a CW250 scale.

When was the scale purchased?

Where was the scale purchased?

What is the serial number?

For Intercomp Service call or fax:

FAX # (763)-476-2613

(763)-476-2531

**1-800-328-3336**

or fill out Service Support Form at :

[www.intercompcompany.com](http://www.intercompcompany.com)

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