CW250

User Manual

Manual #: 700014-M

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Declaration of Conformity

CE

We, Intercomp Company
3839 County Road 116
Medina, Minnesota 55340 USA

Declare under sole responsibility that the CW250 to which this declaration relates meets the essential health and safety requirements and is in conformity with the relevant EC Directives listed below using the relevant section of the following standards and other normative documents.

2001/95/EC - on general product safety
2009/125/EC - ecodesign requirements for energy-related products (2005/32/EC recast)
(EC) No 278/2009 - no-load condition electric power consumption and average active efficiency of external power supplies
Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility (recast) Text with EEA relevance AKA Electromagnetic Compatibility (EMC) Directive
EN 55011:2016 -Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement
EN 61000-6-1:2007 - Generic standards, Residential, commercial and light industry environment
EN 61000-6-2:2005 - Immunity for industrial environments
EN 61000-6-3:2007 - Emission standard for residential, commercial and light-industrial environments
EN 45501:2015 - Metrological aspects of non-automatic weighing instruments
2012/19/EU - on waste electrical and electronic equipment (WEEE) (Directive 20/96/EC Recast)
2013/56/EU amending Directive 2006/66/EC on batteries and accumulators

This product complies with all safety-relevant provision referring to protection against electrical hazards and other hazards, such as mechanical hazards, fire hazards, noise and vibration. The safety issues of this measurement equipment have been evaluated under the self-certification provisions of the relevant directives.

The related technical construction files are held for inspection in the U.K. at Intercomp Europe Limited.

The CE mark, Red M and WEEE marks must be affixed as required in the directives.

Mark Browne / Quality Manager
June 24, 2014

Introduction

This manual contains specifications, operating instructions and calibration procedures for the Intercomp Model CW250 Scale.

CW250 Scale Features

- lb or kg programmable readout
- Ability to display total weight
- Accumulating total function
- Auto zero tracking automatically corrects zero-weight display shifts
- 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 wheels 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, LCD (1.0 inch) with automatic LED back lighting
Indicators	lb, kg, TOTAL, ERROR, (- minus) sign, 4-segment battery indicator

Electrical

Voltage	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	Up to 48 hours for a full charge.
Battery Life	Radio Off: 300 hours with alkaline or NiMH cells. Radio On: 250 hours with alkaline or NiMH cells. NOTE: The battery life for setups requiring a scale wireless "host", 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	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	40.5 lb / 18.4 kg
Dimensions	Platform: 24 x 24 x 4 in. / 610 x 610 x 100 mm
Weight	85 lb / 39 kg
Overload Capacity	150%

Radio

Radio Frequency	ISM 2.4GHz, 802.15.4
License Requirements	None. Pre-approved US/FCC, CAN/IC, EUR/CE
Range	200ft. / 60m indoor, 300ft. / 90m line of sight
Batteries (AC-PDA-RF only)	4-AA size alkaline or NiMH rechargeable
Battery life (AC-PDA-RF only)	36 hours using NiMH 2500 or alkaline

B Radio Notes: Frequency: ISM 2.4GHz (2.400GHz - 2.483GHz), with 12 channels (CH 1-12) within that range with each center frequency = 2405MHz + (CH * 5) MHz Power output 63mW (18dBm), 10mW (10dBm) for international variant. Antenna is internal surface mount with -1.5dbi gain, omni-directional.

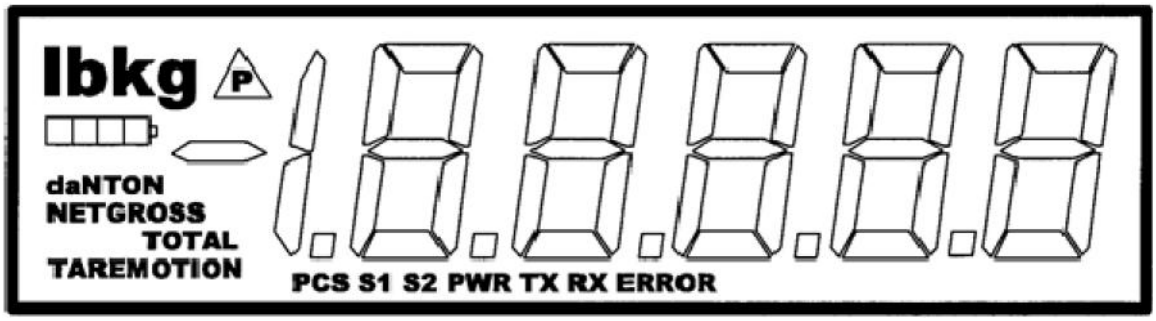
WARNING: To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended. The antenna for this transmitter must not be located in conjunction with any other antenna or transmitter.

Operations

CW250 Scale

Display Description

The display is a Liquid Crystal Display unit (shown below) providing one line of 5 1/2 digits. The screen displays the weights read from the pad. Information displayed includes indicators for "lb" and "kg" unit of measure, a segment bar to show battery charge level, error conditions, and set-point indicators that show when set-point thresholds are reached. The display contains an automatic backlight for use in low-light conditions.



The "TOTA"L icon displays the scale measurement mode as referenced in the table below.

CW250 Measurement Modes

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

Control Functions

ON / OFF

Press the On/Off 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 been successfully completed, the scale begins weighing. If a problem is detected during self-test, the screen will display an error message. To turn the scale off, press the On/Off key. 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.

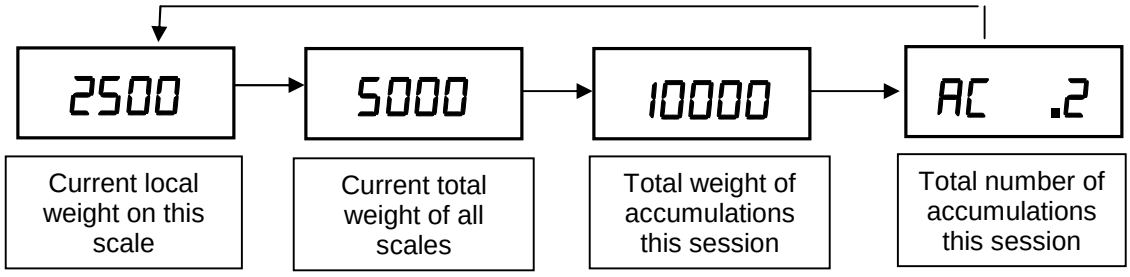
PRINT / ACCUMULATE

Press the Print/Accumulate button to print and/or accumulate weights. The function is dependent on the current print mode setting. When using the accumulated total function, press the PRINT /ACCUMULATE button to add the total to the 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 shown is the weight on all of the scales in the system. The display will be in local mode unless the "TOTAL" icon is displayed.

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, an "error" icon and the message "tOt" will be displayed when attempting to view the total weight.

ZERO

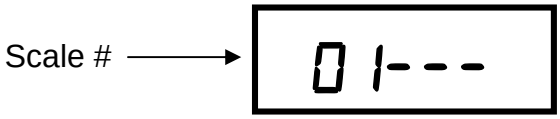
The ZERO key will reset the weight on a scale to read zero (either lb or kg unit of measure). If the ZERO key is pressed when a pad holds weight, the current weight becomes the zero condition for the pad. The ZERO feature can be useful to cancel the weight of weighing fixtures such as tail cones or wheel chocks. When the weight is removed, a negative weight is displayed until the system is re-zeroed. The ZERO function is also used when the scale shows a non-zero value with no weight on the pads. NOTE: The system includes a feature called Auto Zero Tracking (AZT). AZT corrects for slight zero changes during normal operation. An example of a zero change could be a buildup of dirt on the pads.

The ZERO key can also be used to clear the accumulated total. Press and hold the ZERO key until the display screen shows "CLr.t", then release the ZERO key. The accumulated total and the accumulation number will be reset. All scales connected in the system through interconnect cables will also be zeroed. The entire system can be zeroed with one press of the ZERO key.

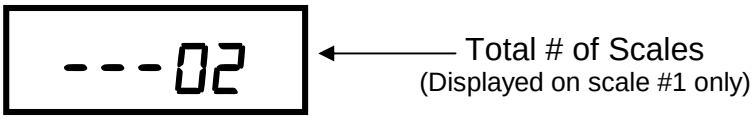
Totalizing Setup

The CW250 scale must be setup correctly in order to communicate with other scales in the system. If the system is not setup correctly, an "error icon" and message “tOt “will be displayed when attempting to view the total weight.

1. To begin Totalizing Setup, press the LOCAL/TOTAL and ZERO buttons simultaneously.
2. The message "SC id" will be displayed. Press the PRINT/ACCUMULATE button. A number will be displayed followed by 3 dashes. The number displayed 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 button.



3. The message "SCLS" will be displayed. Press the PRINT/ACCUMULATE button. The display will show three dashes followed by a number. The number represents the total number of scales in the system. Use the LOCAL/TOTAL button to increment and the ZERO button to decrement the number. When the desired number is displayed, press the PRINT/ACCUMULATE button. NOTE: The maximum number of scales in a system is 32.



4. If the scale number is "1", the display will issue a prompt confirming the scale designation is "HOSt". Press the PRINT/ACCUMULATE button. Use the LOCAL/TOTAL or the ZERO button to toggle either "yES" or "no". A scale with a HOST designation controls the entire scale network. The setting should be set to "yes" if the scale network consists of scales only. If the system uses an external device such as a PDA or PC to view the weights, the display setting should be set to "no" because the external host device controls the scale network. Press the PRINT/ACCUMULATE button to save the setting.

   SETUP EXAMPLE: Setup for two scales. First Scale: Enter "01" for the first scale number. Enter "02" for the total number of scales. Enter "yes" for the "Host" setting. Second Scale: Enter "02" to identify the second scale and "02" for the total number of scales.

ACCUMULATE NOTE: The scale will not accumulate when the weight is negative, zero, or if the weight is in motion. The protections are added to ensure only valid readings are accumulated into the total. An error message "Ac.Err" will be displayed when any of the three conditions are present. At the completion of a successful accumulation, the scale must be returned to zero before the next accumulation can be attempted. If an attempt is made to accumulate the next weight before allowing the scale to return to zero, the error message "Ac.Err" will be displayed.

Serial Output Setup

The CW250 scale can be set to one of four different serial output modes.

1. On-Demand
2. Continuous
3. "Accumulating Print" Wheel Axle
4. "Accumulating Print" Standard

Serial Output Mode Setup

To access Serial Output Mode Setup, press the PRINT/ACCUMULATE and ZERO buttons simultaneously until the message "bAL itE" is displayed. Press the PRINT/ ACCUMULATE button to scroll through the Menu until the display shows "Prt t". Press the PRINT/ACCUMULATE button one time to display the setting number. Set the print mode to the number of the Communication Mode setting (shown below) required 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

NOTE: For the best result, select only one scale to be designated for Communication Mode 1, 2 or 3. The scale being used to print should be the scale selected as the Communication Mode designation. The default setting is"0".

Press the PRINT/ACCUMULATE button. The display screen will show "PbAUd". Press the PRINT/ACCUMULATE button to change the baud rate setting. Press the LOCAL/ TOTAL or the ZERO button to cycle through the available baud rates (1200, 2400, 4800, 9600, 19200, 38400, 57600 and 115200). When the desired baud rate is entered, press the PRINT/ACCUMULATE button. The baud rate should only be set on the scale connected to the printer. Press the PRINT/ACCUMLATE button to save the baud rate setting and advance the menu. The scale can now be turned off to exit the Mode Menu.

On-Demand

When the scale is set in the On-Demand mode, the weight is transmitted each time the PRINT/ACCUMULATE button is pressed. Press PRINT/ACCUMULATE button to print either the local or total weight (depending on the local/total setting of the scale). The On-Demand setting is the default print mode.

Continuous

When the Continuous mode has been selected, the scale automatically and continuously outputs the weight approximately one time 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 as: AAAAAAA BB<cr><lf>

Item	Definition	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 may contain a decimal point and/or a minus sign. The weight will either be local weight or total weight, depending on which mode is selected.

Accumulating Print

Refer to the "Using Accumulated Total" section for specific information about the "Accumulating Print Axle" and "Accumulating Print Standard" communication modes.

Accumulated Total

The CW250 scale platform can be used separately, in pairs, or in groups to measure a support load or a total weight across the scales connected to the system in one weighing procedure. The Accumulated Total feature "accumulates" the weights as each individual load is weighed.

To use the Accumulated Total feature, each scale in the system must be numbered correctly. The scale selected to print from or to display the accumulated total must have the print mode set to either the "Accumulating Print Axle" or "Accumulating Print Standard" mode.

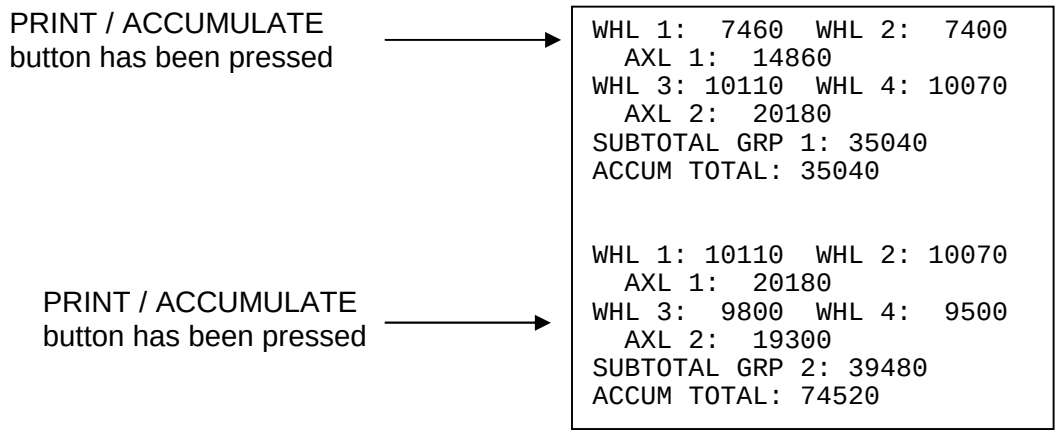
Accumulating Print Axle

If the "Accumulating Print Axle" mode has been selected for the designated scale, press the PRINT/ACCUMULATE button to add the current total weight to the accumulated total weight. If the scale designated as the "Accumulating Print Axle" mode scale is connected to a printer, a print ticket will be printed. The print ticket format is in reference to the individual wheels and axles of the vehicle being weighed or is formatted in a standard weight accumulation mode.

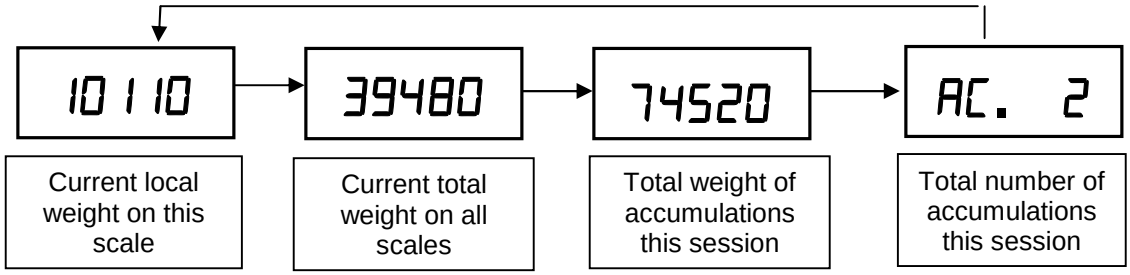
The following example shows a 4-scale system with two separate weighings having been conducted and accumulated.

Subgroup #1: "WHL 1" is scale number 1 and "WHL 2" is the second scale. "AXL 1" shows the total weight of scale number one and two. "AXL2" shows the weights from scale number three and four. Both the subtotal and accum total weights reflect the Subgroup #1 totals

Subgroup #2": WHL 1" is scale number 1 and "WHL 2" is the second scale. "AXL 1" shows the total weight of scale number one and two. "AXL2" shows the weights from scale number three and four. The subtotal grp 2 weight reflects the total weight for the subgroup #2. The accum total weight reflects the Subgroup #1 total and Subgroup #2 total.



When 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 comprise the total weight.

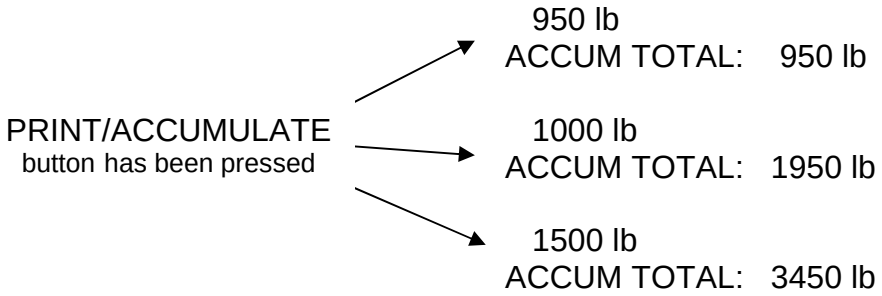


ACCUMULATE NOTE: The scale will not accumulate when the weight is negative, zero, or if the weight is in motion. The protections are added to ensure only valid readings are accumulated into the total. An error message "Ac.Err" will be displayed when any of the three conditions are present. At the completion of a successful accumulation, the scale must be returned to zero before the next weight accumulation can be initiated. If an attempt is made to accumulate the next weight before allowing the scale to return to zero, the error message "Ac.Err" will be displayed.

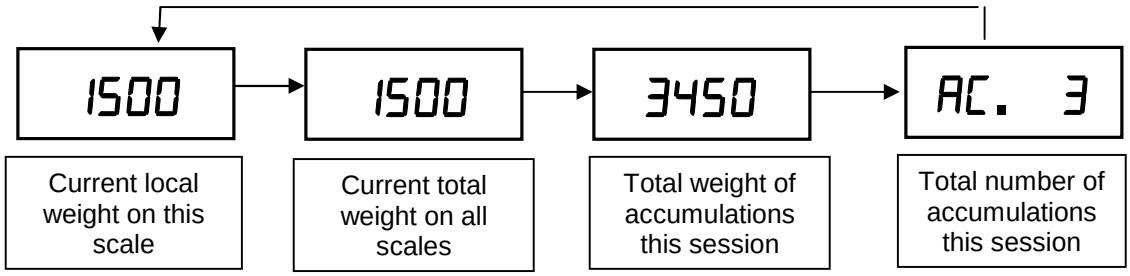
The accumulated total weight can be viewed only on the designated scale. When the PRINT/ACCUMULATE button is pushed, the display will show the message "Ac. X" as the system accumulates the next reading and sends it to print. ("X" denotes the number of accumulations for the session) When a successful accumulation has occurred, press the LOCAL/TOTAL button to cycle the display to show the 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, flashing or turned off.

Accumulating Print Standard

The "Accumulating Print Standard" mode will display the total weight of multiple items weighed on one or more scales. The following example depicts a 1-scale system with three separate loads (950 lb., 1000 lb. and 1500 lb.) being weighed and accumulated.



When 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 comprise the total weight.



ACCUMULATE NOTE: The scale will not accumulate when the weight is negative, zero, or if the weight is in motion. The protections are added to ensure only valid readings are accumulated into the total. An error message "Ac.Err" will be displayed when any of the three conditions are present. At the completion of a successful accumulation, the scale must be returned to zero before the next weight accumulation can be initiated. If an attempt is made to accumulate the next weight before allowing the scale to return to zero, the error message "Ac.Err" will be displayed.

The accumulated total weight can be viewed only on the designated scale. Press the PRINT/ACCUMULATE button and the display will show the message "Ac. X" as the system accumulates the next reading and sends it to print ("X" denotes the number of accumulations for the session). When a successful accumulation has occurred, press the LOCAL/TOTAL button to cycle the display to show the 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 turned off.

When the scale is set to the "Accumulating Print Standard" mode, the scale can in accumulate in either 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 the message "Clr.t".

Accumulating Procedure

1. When the system is setup and operating correctly, select the scale to be used to accumulate the weights. Any scale can be designated, but once selected, the scale must be used to accumulate all weights until the weighing is complete. The scale should be set to the desired accumulate mode of 2 or 3 (Refer to the "Serial Output Setup" section for additional information). If using a printer, the scale directly connected to the printer should be designated as the scale to be used for accumulation.

2. When the first group of items to be weighed is stable on the scales, press the PRINT/ACCUMULATE button. If using a printer, a print ticket with all weights will be printed. The display will return to the setting the accumulation was obtained from. The weight from the first group will become the accumulated total. The accumulated total can be displayed by pressing the LOCAL/TOTAL button when the TOTAL icon is flashing. An accumulation cannot be made in standard mode if the scale is in the Accumulation Print mode with the TOTAL icon flashing. When the accumulation is complete, remove the first group of items from the scale(s).
3. When the next group of items to be weighed is stable on the scale(s), press the PRINT/ACCUMULATE button. The total weight will be added to the accumulated total. If using a printer, a print ticket with all weights will be printed.
4. Repeat step 3 as required for additional weigh groups. If the accumulated total becomes too large to display, the message "dISP" and an error icon will be displayed.
5. When finished, the accumulated total weight can be cleared by pressing and holding the ZERO button until the display shows "CLr.t".The display will clear the accumulated total and the number of accumulations.

   ACCUMULATE NOTE: The scale will not accumulate when the weight is negative, zero, or if the weight is in motion. The protections are added to ensure only valid readings are accumulated into the total. An error message "Ac.Err" will be displayed when any of the three conditions are present. At the completion of a successful accumulation, the scale must be returned to zero before the next weight accumulation can be initiated. If an attempt is made to accumulate the next weight before allowing the scale to return to zero, the error message "Ac.Err" will be displayed.

Mode Menu

Mode Menu

To access the Mode Menu, press the PRINT/ACCUMULATE and ZERO buttons simultaneously. The display will show the message "b.L itE". If the message is not displayed, verify the Calibration Enable Jumper is in the "RUN" position (refer to the "Calibration Enable Jumper" section).

When accessing the Mode Menu, it may be necessary to enter a number (up to a five digit). This will be required when the current number is displayed with the far right 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 the number has been entered, press the PRINT/ ACCUMULATE button. The settings are saved each time the PRINT/ACCUMLATE button is pressed to advance the menu. The scale can then be turned off.

Step	Function	Note	Default
b.L itE	Backlight	AUto, on, oFF	AUto
SEtP 1	Set Point 1	0 to 199999	199999
SEtP2	Set Point 2	0 to 199999	199999
uEr.	Firmware Version	View only	XXXXX
A. rt	Average Rate	1 to 120	008
A.tHrS	Average Threshold	1 to 10000	200
A oFF	Auto Off	000 = off, 1 to 240	060
Prt t	Print Mode	0 = On-demand, 1 = Continuous 2 = Accumulating Total Axle, 3 = Accumulating Total Standard	0
PbAUd	Printer Baud Rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	9600
Un itS	Measurement Units	lb or kg	lb
Proto	Protocol	StAnd, Lo Pr, C.LOOP or nonE	Lo Pr
i.bAUd	Interface Baud Rate	9600 or 115200	9600
rAd io	Radio Enable	Yes or no	no
rF CH	Radio Channel	01 to 12	1
rF.PAn	Radio Network ID	0 to 65534	8000
rF.ECP	Radio Encryption Key	0 to 65534	08000
rF.dEF	Restore Radio Defaults	0 or 3	0

Setting Mode Menu Parameters

1. Press the PRINT/ACCUMULATE and ZERO buttons simultaneously. The display will show the message "b.L itE". 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. When "Auto" is selected (default setting), the backlight will automatically light up when low level light conditions are detected. When the desired setting is displayed, press the PRINT/ ACCUMULATE button to save.

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 screen. During normal weighing mode, the S1 icon on the display will light up when the weight is greater than or equal to Set Point 1. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the flashing number to the left. When the desired set point number is displayed, 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 up when the weight is greater than or equal to set point 2. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the flashing number the left. When the desired set point number is displayed, press the PRINT/ACCUMULATE button.

4. The display will show "uEr". Press the PRINT/ACCUMULATE button. The display will show the current version of firmware loaded on the scale. Press the PRINT/ACCUMULATE button.

5. The display will show the message "A. rt". Press the PRINT/ACCUMULATE button. The flashing digit shows the current setting. The number reflects the number of readings that 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 process the final value. The scale updates at 4Hz, so an Average Rate of "8" equates to 2 seconds of averaging. Enter a "1" to disable averaging. Use the Lb/Kg button to the advance the number and the ZERO button to move the flashing number to the left. When the desired average rate setting is displayed, press the Mode button.

6. The display will show "A.tHrS". Press the Mode button. The flashing digit reflects the current Average Threshold setting. The setting enables dynamic averaging, which can improve the settling time of a large Average Rate. If the scale detects a large weight change, it will temporarily suspend averaging, jump to the new weight, and resume averaging. Enter a value between 1 and 10000 to set the threshold (in display divisions) at which the dynamic averaging activates. Enter "0" to disable dynamic averaging. When the display shows the desired setting, 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 number of minutes the scale can remain idle before it automatically shuts down. Setting the number to "000" will disable the function and the scale will never automatically shut down. Use the LOCAL/TOTAL button the advance the number and the ZERO button to move the flashing number 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 Print Mode setting enables one of three scale 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 printer baud rate setting. The available baud rates 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 desired printer baud rate setting is shown, press the PRINT/ACCUMULATE button.

10. The display will show "Un it5". Press the PRINT/ACCUMULATE button. The current unit of measure (lb or kg) icon will flash in the upper left corner of the display. The Measurement Units function will set the scale to measure in pounds (lb) or kilograms (kg). Use the LOCAL/TOTAL button or the ZERO button to toggle between the two settings. When the desired setting is flashing, press the PRINT/ACCUMULATE button.

11. The display will show the message "Proto". Press the PRINT/ACCUMULATE button. The flashing display shows the current Protocol setting. There are four protocol settings available to choose from; Standard ("StAnd"), Low Power ("Lo Pr"), Current Loop ("C.LOOP") and "nonE". The Standard setting is the legacy setting for use in wireless and wired scale networks. The maximum number of scales that may be connected in a network is 32. The Low Power setting will significantly improve the wireless battery life for all "non-host" scales. The Current Loop setting is not used in the CW250. When scales are not part of a totalizing network, battery life will be improved if "nonE" is selected. Use the LOCAL/TOTAL button or the ZERO button to cycle through the settings. When the desired protocol setting 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 Interface Baud Rate setting in flashing mode. Two baud rate settings available; 9600 and 115200. Use the LOCAL/TOTAL button or the ZERO button to toggle between the settings. When the desired baud rate setting is flashing, press the PRINT/ ACCUMULATE button.

13. The display will show "rAd no". Press the PRINT/ACCUMULATE button. The display will show the current Radio Enable setting in flashing mode. The radio enable status setting is either on or off. Use the LOCAL/TOTAL button or the ZERO button to toggle between the settings. When the desired status setting is flashing, press the PRINT/ ACCUMULATE button. If "no" is selected, the scale will skip the remaining radio function settings and return to normal weighing.

14. The display will show "rF CH". Press the PRINT/ACCUMULATE button. The flashing digit shows the current Radio Channel setting. All scales in a system must be set to the same radio channel setting to be able to communicate with each other. Use the LOCAL/TOTAL button to increment and the ZERO button to move the flashing number to the left. When the display shows the desired radio channel setting, 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 far right digit in flashing mode. All scales in a system must be set to the same Personal Area Network ID setting to be able 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 "00000" with the far right digit in flashing mode. For security purposes, the actual Encryption Key setting is not accessible for viewing and will always be displayed "00000". Use the LOCAL/TOTAL button to increment and the ZERO button to move the flashing number to the left. To set up a new encryption key, enter any number from 1 to 65534. Enter "0" to retain the current encryption key setting. All scales in a system must be set to the same encryption key setting to be able to communicate with each other. When the desired encryption key is displayed, press the PRINT/ ACCUMULATE button.

17. The display will show "rF.dEF". Press the PRINT/ACCUMULATE button. The display will show "0" with the number flashing. There are two settings available under the "Restore Radio Defaults" feature. Select "0" to retain current settings. Select "3" to restore the default radio settings. All other numbers will have no effect on radio setup. Use the LOCAL/TOTAL button to increment and the ZERO button to decrement the number. When the desired number is flashing, press the PRINT/ ACCUMULATE button. The scale will return to normal weighing.

NOTE: If the scale does not have the radio option installed, settings "rF CH", "rF PAn" and "rF ECP" and the Radio Encryption Key can only be accessed in a "View Only" mode.

Calibration

Calibration Preparation

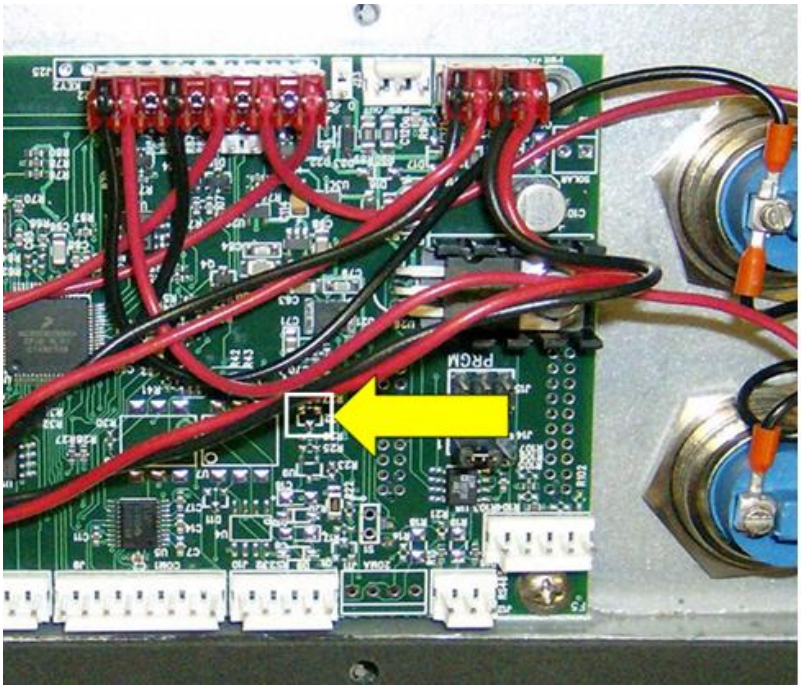
The CW250 scale is calibrated at the factory prior to shipment. The Calibration Enable Jumper will be set in the "RUN" position. Prior to attempting a calibration of the CW250 scale, the jumper will need to be moved to the "CAL" position.

Calibration Enable Jumper

The Calibration Enable Jumper is used to prevent unauthorized or inadvertent adjustment of settings controlled by the calibration process. Prior to commencing a calibration, the jumper must be moved to the "CAL" position. The jumper is a shorting strap labeled "RUN/CAL" and is located near the right-middle of circuit board, Intercomp, A/D 20 BIT rev E (shown below). The jumper must be moved from shorting pins 2 and 3 (RUN position) to shorting pins 1 and 2 (CAL position). The shorting strap is accessed by removing the 10 screws along the outside edge of the display assembly. When the screws are removed, carefully lift the display assembly up and then place the assembly, display side down, on top of the weighing platform.

Following calibration, replace the strap to shorting pins 2 and 3 (RUN). Place the assembly back into the housing and reattach the assembly with the 10 screws previously removed. The scale can now be operated without danger of the calibration settings being altered.

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



Calibration Menu

To begin calibration of the CW250, press the PRINT/ACCUMULATE and ZERO buttons simultaneously. The display will show the message "StEP". If the message is not displayed, verify the calibration strap is in the "CAL" position. Follow the instructions set forth in the "Calibration Enable Jumper" section to ensure the jumper is in the "CAL" position. Press the PRINT/ACCUMULATE button to access the parameter setting. To continue with calibration, select setting "000".

During calibration, it may be necessary to enter up to a five digit number. When this occurs, the current number will be displayed with the right digit in flashing mode. The flashing digit may be incremented by pressing the LOCAL/TOTAL button. To move one digit to the left, press the ZERO key. When the desired number has been entered, press the PRINT/ ACCUMULATE button to save the entry and advance to the next menu step. When the setting has been saved, the scale can then be turned off.

Step	Function	Note	Default
StEP	Skip	000= no skip 001= skip to Weight Calibration	000
U. EnA	Unit Enable	Yes or no	YES
bP 1	Grad Break Point 1	Enter weight	00000
bP 2	Grad Break Point 2	Enter weight	00000
bP 3	Grad Break Point 3	Enter weight	00000
AdC.rt	ADC Rate	0 or 1	1
AZt	AZT (Auto Zero tracking)	1 d, 3 d, .5 d, oFF or.6 d	1 d
ZEr0.r	Zero Range	0= off, 1= 1%, 2= 2%, 3= 5%, 4 = 1%	0
GrAd	Graduation Size	0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, or 100	d 1
	SAvE	Displays for 1 sec and advances	
CAP	Capacity	Enter scale capacity	20000
LL-01	No Weight Applied		
HH-01	First Weight	Enter first weight	
LL-01	First Weight	Load first weight	
HH-02	Second Weight	Enter second weight	
LL-02	Second Weight	Load second weight	
HH-03	Third Weight	Enter third weight	
LL-03	Third Weight	Load third weight	
HH-04	Fourth Weight	Enter fourth weight	
LL-04	Fourth Weight	Load fourth weight	
	10 points available to enter	3 minimum recommended	

Setting Calibration Parameters

During the calibration process, all calibration data saved up to and including the last completed step will be retained in the event power is turned off.

1. To begin calibration of the CW250, press the PRINT/ACCUMULATE and the ZERO buttons simultaneously. The scale will display the message "StEP". Press the PRINT/ACCUMULATE button. The scale shows "000" with the right digit flashing. To continue through all of the calibration parameters, press the PRINT/ ACCUMULATE button to save the current setting of "000". To conduct a weight calibration only (commencing with step 10), and skipping the first 8 calibration parameters, enter the setting "001". Use the LOCAL/TOTAL button to increment and the ZERO button to decrement the number. Press the PRINT/ ACCUMULATE button when the desired setting is displayed.

2. The display will show "U. EnA" if proceeding through all calibration parameters. Press the PRINT/ ACCUMULATE button. The display will show "YES". Press the LOCAL/TOTAL or the ZERO button to toggle through the available selections (YES or no). Press the PRINT/ACCUMULATE button to save the "YES" setting.

3. The display will show the message "bP 1". Press the PRINT/ACCUMULATE button. The display will show the current graduation breakpoint 1 setting with the far right digit 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 to save the setting.

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 to save the setting.

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 to save the setting.

Multiple Graduation Break Points

The CW250 has the capability to set multiple graduation breakpoint values. An example of setting three graduation break points is presented below.

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

Using the breakpoint settings from the previous example, the scale would display the following information:

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 point settings should be set to 110% of the capacity. The scale uses the same graduation from zero to capacity. Setting the breakpoint to 110% of capacity effectively disables the breakpoint feature.

6. The display shows "AdC.rt". Press the PRINT/ACCUMULATE button. The display shows the current ADC Rate setting in flashing mode. There are two ADC rate settings available for selection. To achieve a full conversion time and the most stable results, select the "0" setting. A setting of "1" will result in a reduced conversion time, but will extend battery life. It is recommended the ADC Rate be set to "1". NOTE: When the 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 has been selected, press the PRINT/ACCUMULATE button to save the entry.

7. The display shows "AZt". Press the PRINT/ACCUMULATE button. The display will show the current AZT setting. Press the LOCAL/TOTAL or the ZERO button to cycle through the available auto zero tracking options (1 d, 3 d, .5 d. oFF or 6 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 to save the entry.

8. The display will show "2Er0.r". Press the PRINT/ACCUMULATE button. The display shows the current ZERO Range setting in flashing mode. Use the LOCAL/TOTAL button to increment and the ZERO button to decrement the number. The ZERO Range setting 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. The display will show the message "2Er0.r" with an error icon lit up if the ZERO Range is set to 1, 2 or 3. If a setting between 4 and 6 is selected, the ZERO button will not function when an attempt is made to zero the scale outside the range. When the setting for desired ZERO Range number is displayed (0=off, 1=1%, 2=2%, and 3=5%, 4=1%, 5=2%, 6=5%), press the PRINT/ACCUMULATE button to save the entry.

9. The display shows "GrAd". Press the PRINT/ACCUMULATE button. The display shows the current Graduation Size setting in flashing mode. Press the LOCAL/TOTAL or the ZERO button to cycle through the graduation options (0.02, 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50 or 100). When the desired graduation setting is displayed press the PRINT/ACCUMULATE button.

The display will show "SAvE" for approximately 1 second and then advance to show the message "CAP". The scale is now ready to proceed to weight calibration.

Weight Calibration

The CW250 has the capability to apply and load up to 10 calibration points. Depending on the calibration goal, one to ten load weights will need to be applied to calibrate the scale. Multiple point calibration will improve scale accuracy by removing undesirable characteristics of load cells. A typical weight calibration is a 3-Point calibration. A 3-Point calibration will apply and enter three different and optimal loads (not including the zero point). If three different weights are not available, a one or two point calibration can be performed. To calibrate with one point (weight), turn off the scale after completing step 13. To calibrate with two points, turn off the scale after completing step 15.

10. The display will show "SAVE" for approximately 1 second and then advance to show the message "CAP". Press the PRINT/ ACCUMULATE button. The display will show the current capacity setting with the right digit flashing. Use the LOCAL/TOTAL button to 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 will show "LL-00". Verify there is no weight is applied to the scale and 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 digit flashing. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the flashing number 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. When the first load is 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 digit flashing. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the flashing number 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. When the second load is 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 digit flashing. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the flashing number 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. When the third load is 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 digit flashing. Use the LOCAL/TOTAL button to advance the number and the ZERO button to move the flashing number to the left. Enter the value of the fourth load and press the PRINT/ACCUMULATE button when the value of the fourth load is displayed.

19. The display shows "LL-04". Apply the fourth load to the scale. When the fourth load is applied to the scale, press PRINT/ACCUMULATE button.

Repeat step 12 and 13 for each additional calibration point ("HH-05" to "HH- 10" and "LL-05" to "LL- 10") combination. If the scale is turned off at any time during the calibration, all data acquired to that point will be retained. When the last calibration point ("LL- 10") is completed, press the PRINT/ACCUMULATE button and the display will return to normal weighing mode.

Calibration Completion

When calibration has been completed, set the "Calibration Enable Jumper" to the "RUN" position (shorting pins 2 and 3). Reassemble the display assembly and housing. Secure the display assembly in the housing using the 10 screws initially removed from the display. The calibrations settings are now secure from inadvertent or unauthorized changes or modification.

NOTE: Care must be taken to ensure the wire harness is seated properly to prevent damage to the harness due to pinching between the display assembly and the scale casing.

Troubleshooting

Error Messages

Message	Definition
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" represents the cell or connection that 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" represents the cell or connection that 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.
2Ero.r	Zero Range Error. Scale attempted to zero off a load outside the range specified in the zero range setting. Remove load applied to scale and press zero.
d ,SP	Display error. Number is too large to fit on the display.
COP or CLOC	Diagnostic power-up messages. The messages will not affect normal operation and can typically be ignored.
AC.Err	Certain conditions for accumulation have not been met and 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 the weight is in motion. Only one accumulation is allowed while weight is on the scale(s). The weight should be temporarily removed between accumulations. Refer to the "Accumulating Print Axle" section for additional information.
tot	Refer to the “Totalizing Setup” section for setup details. Or press LOCAL/TOTAL to change to the standard LOCAL display if totalizing is not needed

Diagnostic Codes

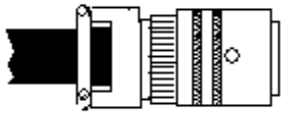
Step Choice Codes

Step Choice codes are used in some calibration procedures and can also be used to aid in troubleshooting scale performance problems. The codes are typically used by scale technicians. Common Step Choice diagnostic codes are presented in the table below.

Message	Definition
000	Advance to the first Calibration Menu step.
001	Advance directly to weight calibration.
005	Accesses 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, Encryption = 8000. Display will show "save" if successful, or "no rF" if there is a radio failure or if no radio installed.
711	Restore all settings to defaults, but leave the weight calibration settings intact.
911	Restore all settings to default settings, including weight calibration. The "911" code should only be used when all other attempts at troubleshooting have been exhausted as all calibration and other settings will be deleted.

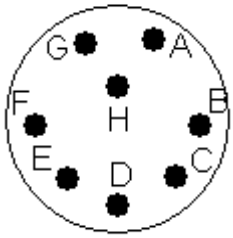
PT Connector Pinout

The diagram below shows the pin-out for the PT connector located on the right side of the CW250 display housing.



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 Contact Intercomp

Please provide the following information when requesting service for the CW250 Scale:

1. Item Description and Part Number (if available)
2. Serial Number(s) of Item (if available)
3. When was item purchased (mm/yyyy)?
4. Where was item purchased (company/location)?

For Intercomp Service call or fax: