



Industrial Weighing Systems

9 Richmond St. Picton, ON Canada K0K 2T0

Ph: 613-786-0016 Cell: 613-921-0397 Fax: 613-476-5293

E-mail info@iwsystems.ca Website: www.iwsystems.ca

This document shows calibration instructions extracted from Manuals we have on file that may not necessarily match your current model.

For your reference only.

IWSystems provides repair services to instruments and load cells

On site calibrations

For additional information please contact us.

How to Enter the Calibration Mode

The Calibration Mode is accessed as follows:

To calibrate Channel 1, press



To calibrate Channel 2, press



To calibrate Channel 3, press



The display will now flash 'PrESS', asking you to press the push button accessed through the small hole at the back of the indicator.

You must press this button within 30 seconds of selecting Calibration Mode. If the button is not depressed in time, the indicator will return to the previous display and you must repeat the above procedure.

When the Calibration Mode has been enabled, a flashing 'C' will appear in the far left display digit.

Note:

In Calibration Mode, key functions change as follows:



becomes 'WEIGHTS/COUNTS' to select between display of scale weight or internal counts. A flashing 'A' in the leftmost digit indicates internal counts displayed.








becomes 'ENTER' to allow entry of any change in parameters and calibration values.

Setup Parameters

In order to calibrate the indicator, certain parameters must be set up first before weights are applied on the scale. Setup parameters in the order they appear. The reason for this is, if the deadload is set or the span is calibrated and one of the indicated parameters is changed afterwards, the span or the deadload might change as well.

To check the value of a parameter, press the number for that parameter followed by the SELECT key. For example:

To check 'Graduation Size' (Parameter 3): Press  

To check 'Push to Zero Window' (Parameter 21): Press   

When you have accessed a parameter via the above procedure, the indicator will then display the current value for that parameter. If you wish to change the value, check the Parameter List (Section 4) for valid entries and enter a new value by pressing the appropriate number(s) followed by the TARE key.



Reload Factory Values.

A set of factory values for all parameters is available to make the indicator easier to use initially. After you have selected this function, press [1] [TARE] and the factory values will be loaded. **Note that this will clear any previous calibration.**



Decimal Point Position.

Set the decimal point position to correspond with the graduation size. Please note that if 'kg' graduation size is approximately half of 'lb' graduation size and therefore may require an additional decimal position.

e.g. For a .05 kg graduation size, press [2] [TARE].
For a 1 kg graduation size, press [0] [TARE].



Graduation Size.

Set the graduation size from the Parameter List, (Section 4), making sure that the graduation size is appropriate for the displayed units (lb/kg). (To change the displayed units, select Parameter 7).

- e.g. For .05 kg grad size, press [.05] [TARE].
- For 10 kg grad size, press [10] [TARE].



Overweight.

Set to one graduation over the maximum capacity of the scale. This number must be less than 5,000 displayed graduations.

- e.g. For 2 kg grad size and a maximum capacity of 5,000 kg, press [5002] [TARE].



Motion Window.

Set to two times the graduation size. Note this value is automatically set when you set the graduation size.

- e.g. For .05 kg grad size, press [.1] [TARE].
- For 10 kg grad size, press [20] [TARE].



Power On Units.

Set to the units (lb/kg) that you wish the unit to be in whenever it is powered up.

- e.g. To power up in 'kg' mode, press [1] [TARE].
- To power up in 'lb' mode, press [0] [TARE].



U.S.A. Display Flag.

Set this parameter to '0' for Canada and to '1' for U.S.A.

- e.g. To make the indicator 'Legal for Trade' in the United States, press [1] [TARE].



Power On Reset Warning.

This parameter should be set to '1' for a 'Legal for Trade' scale.



Push to Zero Window.

Set this parameter to '2' for a 'Legal for Trade' scale. This value represents the percentage of scale capacity that can be zeroed by the Zero key.



Auto Zero On-Off.

If you wish to turn off the automatic zero tracking function, press [0] [TARE]. To restore auto zero, press [1] [TARE].



Auto Zero Window.

Set this parameter to '60' for a 'Legal for Trade' scale. This value represents a percentage of one graduation, the maximum amount of weight change per 1/4 second that will be automatically zeroed.



Motion Settle Time.

Enter the number of ¼ second intervals for which motion will remain asserted after the scale stabilizes to within the Motion Window (Parameter 5). Factory set to 16 (4 seconds).

e.g. To set to 2 seconds, press [8] [TARE].

Calibration with Weights

Note: You must set the following Parameters before initially adjusting the deadload or span.



Set Load Cell Full Scale Output.

This parameter represents the output of the load cell, in millivolts, at maximum scale capacity. This entry acts as a coarse span or span range adjustment for the indicator, matching it with the working range of the load cell. This value must be set accurately to achieve the rated performance from the indicator.

You may use one of two methods for determining the value of this parameter - the formula or the trial and error method:

Formula:

The formula for determining the output of the load cell is as follows:

$$\frac{\text{Amount of Load Cell Used}}{\text{Load Cell Capacity}} \times \text{Rated Millivolt Output of Load Cell at Capacity} \times 9$$

Example:

Using a 1,000 lb. load cell of 3 mV/V range and estimating you are using 40% of the cell capacity, you would obtain the formula:

$$\frac{400 \text{ lbs}}{1,000 \text{ lbs.}} \times 3 \times 9 = 10.8$$

Round this off to the nearest integer number, 11, and enter this value, press [11] [ENTER].

Note: Only integer numbers from 8 to 35 may be entered. for this value.

Trial and Error Method

In this method you will try various values for this parameter and see what the resultant scale readings are.

1. Press the ON/OFF key to enter Counts Mode. The flashing 'C' in the leftmost display digit will be replaced by a flashing 'A' and a number should appear. The indicator is now in the Counts mode. Make sure the scale is clear of weight and note the value of this number. This number represents the internal raw counts. If a number does not appear and the display shows 'uuuuuu', check Troubleshooting (Section 6).

Example:

Scale clear of weight - internal raw counts are 3431.

2. Apply a known weight on the scale that represents a fraction of scale capacity and note the change in the reading.

Example:

Scale capacity is 5,000 lbs.
Apply 1,000 lbs. (1/5 of capacity) -
Internal Raw Counts are 11223.

Change in reading is $11223 - 3431 = 7782$.

The indicator has 60,000 internal raw counts available and, for maximum performance, you want the internal raw counts to be between 50,000 and 60,000 at scale capacity. Therefore, at 1/5th capacity (above example), the change in the internal raw counts should be between 10,000 and 12,000 counts.

Checking the current value for Parameter 11:
[11] [SELECT] → displayed value = '14'

You must change this value until the above procedure gives you a change in internal raw counts of between 10,000 and 12,000 counts.

In this example you must decrease the value of Parameter 11.

Note:

Decrease Parameter 11 to increase the change in counts.

Increase Parameter 11 to decrease the change in counts.

Example:

Press [11] [SELECT] → displayed value = '14'
Change to '12', press [12] [TARE].

Repeat the test:	Press [ON/OFF] for Counts mode.
Scale clear of weight:	<u>internal raw counts</u> are 4587.
Place 1/5th capacity on scale:	<u>internal raw counts</u> are 13690.

Change in reading is $13690 - 4587 = 9103$.

Try to improve this by entering a lower value for Parameter 11.

Example:

Press [11] [SELECT] - displayed value = '12'.
Change to '10', press [10] [TARE].

Repeat the test:	Press [ON/OFF] for Counts mode.
Scale clear of weight:	<u>internal raw counts</u> are 6300.
Place 1/5th capacity on scale:	<u>internal raw counts</u> are 17046.

Change in reading is $17046 - 6300 = 10746$ counts, which is an acceptable reading.

Thus, in this example, the correct value for Parameter 11 [Load Cell Full Scale Output) is 10 mV.

Note in the above example the calculated raw counts at capacity would be:

$10,746 \times 5 = 53,730$ counts - which falls between the limits of 50,000 and 60,000.

Press [ON/OFF] to return to Calibration mode.

If the counts are less than 50,000, the displayed weight readings tend to be more unstable. If the counts exceed 60,000, the indicator will over range at capacity. Make sure your calculated counts will fall between these limits. With some load cells, you will be unable to reach even 50,000 counts. As close as possible is adequate with the exception of exceeding 60,000 counts.

Remember:

- 1) Display must be in 'Counts' mode (flashing 'A' in leftmost digit).
- 2) Decrease Parameter 11 to increase change in counts.
- 3) Increase Parameter 11 to decrease change in counts.
- 4) Parameter 11 can have an integer value from 8 to 35.
- 5) Remove weight from scale after you change Parameter 11 and take a new initial counts reading before re-applying weights.



Set Deadload

The indicator features an automatic compensation for the scale deadload. When you have selected this function, press [1] [TARE], the indicator will enter a routine to automatically zero the deadload. While this routine is in progress, a flashing 'd' will replace the flashing 'C' in the leftmost digit. Upon completion of the routine, the flashing 'C' will return and the weight display will be at or near zero.

Setting the Span

To set the span, follow these steps:

1. Make sure you have set Parameter 11 (load cell full scale output) to the correct value.
2. Make sure you have set the deadload.
3. Zero the indicator.

Press [ZERO].

4. Place a known weight on the scale. Displayed weight may be too high, too low, or display 'EEEEEE'.

e.g. Place 1,000 kg on scale → scale reads '990' kg.

5. Select the span set function.

Press [13] [SELECT] → display flashes '1' and returns to '990'.

6. Enter correct weight, if incorrect.

Press [1000] [TARE] → display flashes '990' and then reads '1000'

7. Remove weight and check zero.
8. Re-apply weight and repeat procedures 5 through 7, if necessary.
9. The scale indicator is now calibrated.

This completes the basic Calibration procedures.

To exit the Calibration mode - press [99] [SELECT].

Note: If you are also using Channels 2 and 3, calibrate them with the same procedures.