

MSI9300

*PortaWeigh Plus Crane Scales
PortaWeigh Plus Hi-Torque Crane Scales*

Calibration Guide



**Measurement Systems
International™**

A RICE LAKE WEIGHING SYSTEMS COMPANY



INTRODUCTION

The MSI-9300 Series crane scales are best calibrated using a remote indicator such as the MSI-3750CS, MSI-9850, or the MSI-9750A Handheld. Calibration procedures using these devices are covered in their respective User Guides. If the crane scale is not RF equipped or above listed remote devices are not in use with the MSI-9300 Series crane scales, the only way to calibrate it is through the Comm. Port using the Terminal Access Mode. MSI recommends having test weights of at least 50% capacity to properly calibrate the Crane Scale. The calibration procedures will operate with as little as 12.5% of capacity, though rated accuracy cannot be guaranteed. For details of Multi-Point, Certified, or other specialized calibrations, refer to full version of the MSI-9300 Series User Guide.

The following procedure describes how to perform a standard, single point calibration for a single load cell MSI-9300 Series Crane Scale. Some menu items may appear slightly different than shown, depending upon actual software application version. However, those relative to Scale Calibration are accurate.

REQUIRED EQUIPMENT:

- 1) PC or terminal with terminal program and RS-232 serial port.
- 2) Serial Communications cable, PN: 501705-0001.
- 3) Known calibration test weight between 12.5% and 100% of the scale's capacity.

ACCESSING EMBEDDED CELL SCALE

The MSI-9300 Series Crane Scales are controlled by an embedded MSI-9000 CellScale. All scale functions & operating parameters are stored within the MSI-9000 CellScale.

- 1) Set the terminal program to emulate an ASCII terminal.
- 2) Set the terminal programs port protocol to 9600 Baud, no parity, 8 data bits and 1 stop bit.
- 3) Disable flow control in the terminal program.
- 4) Turn Scale **ON** and allow to power up. Once complete press & hold **NET/GROSS** key then press and release the **TEST** key. The scale should indicate **H-PORT**. Release all keys.
- 5) Connect the MSI-9300 Series Crane Scale's comport to the PC serial port with the 501705-0001 serial cable.
- 6) From PC, press ENTER. Main CellScale Manu will appear.

```
----- MSI 9000 - CellScale -----  
-(c) 2005 Measurement Systems International -  
-----  
13:48:06                                01/01/08  
  
(1)    Channels/Calibration  
(2)    Communications  
(3)    Display  
(4)    Feature Locks/Passwords  
(5)    Product IDs  
(6)    Set Points  
(7)    System  
(8)    About...  
  
Enter choice:
```



CALIBRATION PROCEDURE

- 1) Select **Channel Calibration** press 1.

```

***** Channel Setup *****

(1)  Channel Calibration
(2)  Data backup
(3)  Filter (software)
(4)  Channel Scanlist functions
(5)  Motion Compensation (Accelerometer option required)
(6)  Motion Detection
(7)  Tare
(8)  Total
(9)  Units Lock
(a)  Zero
(b)  Standard Mode: Industry
(c)  4 to 20mA
(d)  Temperature Sensor Installed: No
(ESC) Exit
  
```

- 2) Start the Calibration procedure by pressing 1.

```

***** Choose Channel Parameters *****

(1)  Continue. These settings are correct
(2)  Choose the channel to calibrate:      1-1
(3)  Calibration timeout:                  None
(ESC) Exit
  
```

- 3) Press 1 to perform a completely new calibration.

```

***** Channel Calibration *****

(1)  Perform a completely new calibration
(2)  Re-do the current calibration
(3)  Manually adjust current cal points
(4)  Reset all cal parameters to defaults
(5)  Change display resolution country
(ESC) Exit

Calibrate channel #:      1-1
The channel name is:     .....
Calibration Capacity:    0.
Calibration Country:     1.
Calibration Units:
Display Resolution Country:  1.
Display Units:
  
```

- 4) The MSI-9000 CellScale prompts for the calibration units of mass. The MSI-9300 Series crane scales only have enunciators for pounds and kilograms. Press **number** value corresponding to desired units.

```

***** Choose Calibration Units *****

(1)  Pounds
(2)  Kilograms
(3)  Tons
(4)  Metric Tons
(5)  Ounces
(6)  Grams
(7)  Dekka-Newtons

Type a key...
  
```



- 5) The MSI-9000 CellScale next prompts for the capacity. With the numeric keys, enter the capacity of the scale. Type **capacity** value and press **ENTER**.

Type in the new capacity: **10000** kg

The capacity represents the highest operating value of the crane scale. Do not enter a higher number than the scale is rated for. The actual overload point is a few scale divisions above the entered capacity.

- 6) The MSI-9000 CellScale next prompts for the count by (d). Press **letter** value corresponding to desired value

```
***** Select a country *****
(a) 1. Kilograms
(b) 2. Kilograms
(c) 5. Kilograms
(d) 10. Kilograms
(e) 20. Kilograms
(f) 50. Kilograms
(g) 100. Kilograms
```

This list is for a type 'A' scale with up to 10000 counts resolution. This is the standard default. MSI recommends all MSI-9300 Series crane scales calibrated at 5000 divisions or less. Too many divisions will compromise stability and settling time. Use the largest division size suitable for your application.

- 7) Unload the scale, make sure it is stable, and press **Y**. The scale performs its zeroing step, removing all offset. This process takes several seconds.

```
***** Channel Calibration *****

Calibrating Ch # 1-1, named: .....
Precision in Kilograms : 10000 x 2.

Test weight # 0 in Kilograms : 0.

Unload the scale.
Press (Y) when scale is unloaded and steady
Press (B) to backup
Press (ESC) to exit calibration

Raw A/D counts: 8403115
```

The number presented at the bottom of the screen is direct A/D counts. This is for troubleshooting only. This number will never be steady as it represents 24 bits. If the deviation is less than ± 250 counts the load is stable enough for a 5000 count scale. The calibration step needs the scale platform to remain steady and unloaded during this step.



- 8) Next, the MSI-9000 CellScale prompts for the value of the first calibration test weight. This step defaults to capacity. If this is the actual calibration test load push **Y**, otherwise push **N** to input the actual cal weight. If **Y** is selected, skip to step 10.

```

***** Channel Calibration *****

Calibrating Ch # 1-1, named: .....
Precision in Kilograms :      10000. x 2.

Test weight # 0 in Kilograms :      0.

Test weight # 1 in Kilograms :      10000.
Press  (Y)      if this is correct
Press  (N)      to change
Press  (B)      to backup
Press  (ESC)    to exit calibration
    
```

- 9) If the calibration test weight is any value less than capacity. Type **N** to bring up the **to change** screen. Type in the correct calibration **TEST WEIGHT VALUE** and press **ENTER** to store the value.

```

Type in the new test weight value: 7540 Kilograms
    
```

- 10) Load the scale with the indicated test weight. When the scale is stable press **Y**.

```

***** Channel Calibration *****

Calibrating Ch # 1-1, named: .....
Precision in Kilograms :      10000. x 2.

Test weight # 0 in Kilograms :      0.
Test weight # 1 in Kilograms :      10000.

Load the scale with test weight # 1
Press  (Y)      when scale is loaded and steady
Press  (B)      to backup
Press  (ESC)    to exit calibration
Raw A/D counts: 1649850
    
```

NOTE: When load is applied to scale, there will be a significant increase in the **Raw A/D Counts**. Actual amount will vary depending upon rated mV/V output of load cell and percentage of capacity applied to scale.



- 11) The MSI-9000 CellScale calibrates with the first test weight, and then presents the following menu. The upper half of the screen indicates the two cal steps taken, zero and a 10000 kg test weight. Press **ESC** to end calibration, and store all the calibration constants.

```

***** Channel Calibration *****

Calibrating Ch # 1-1, named: .....
Precision in Kilograms :      10000. x 2.

Test weight # 0 in Kilograms :      0.
Test weight # 1 in Kilograms :      10000.

Test Weight # 2 in Kilograms:      10000
Press (Y)   when scale is loaded and steady
Press (N)   to change
Press (B)   to backup
Press (ESC) to complete and store calibration

```

- 12) Calibration is now complete. **NOTE:** It may take up to 30 sec. to complete store & save process. When complete, Main Menu should appear. If after 30 sec. it does not appear in full, press **ENTER**.

```

----- MSI 9000 - CellScale -----
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-----
13:48:06                               01/01/08

(1) Channels/Calibration
(2) Communications
(3) Display
(4) Feature Locks/Passwords
(5) Product IDs
(6) Set Points
(7) System
(8) About...

Enter choice:

```

- 13) It may be required to set the “**UNITS**” of the 9300 to indicate KG. Refer to full version MSI-9300 User’s Guide for details.

If 5-20, or later, MSI-9000 CellScale application software is used. Perform MSI-9300-5-20 Setup Exit procedure before exiting system.

If software version is less than 5-20, then disconnect comm. cable and cycle power on scale.



Notes on terminal programs

There are several terminal programs available for every platform. Below are some notes on terminal programs that are used regularly at MSI for communicating with CellScale products.

TeraTermPro

Get from downloads.com or MSI can e-mail "tterm23.zip"
After installing, start the program Start -> Programs -> TeraTermPro
Select "serial" and COM1 or whichever port being used (DO NOT SELECT TCP/IP) Hit OK
Set-up Serial port
Port: COM1
Baud Rate: 9600
Data: 8 bits
Parity: none
Stop: 1 bit
Flow Control: none
Hit OK May need to hit space bar to refresh display.

HyperTerminal

Comes with Windows Start -> Programs -> Accessories -> Communications -> HyperTerminal -> Hyperterm.exe
Name connection CCom1 (any name is fine)
Under connect using:
Direct to Com1 DO NOT TYPE PHONE NUMBER IN!
Hit OK
Port Settings
Baud Rate: 9600
Data: 8 bits
Parity: none
Stop: 1 bit
Flow Control: Hardware
Hit OK

May need to press space bar to refresh the display When done, save session as you named it earlier and an icon will be created so you will not have to go through set-up in the future.

ProComm Plus

After installed: Programs Procomm Plus
Data Terminal Set-up – set-up bar is at the bottom of the screen. To change, click on the appropriate parameter and set to the following:
Port: Direct connect-Com1
Baud: 9600
Parity-Data bits-Stop bits: N-8-1
Hit 'r' key to refresh



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