

# MSI9000

*Spread Spectrum RF*

## Calibration Guide



**Measurement Systems  
International™**

A RICE LAKE WEIGHING SYSTEMS COMPANY



## INTRODUCTION

The MSI-9000 CellScale is 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 above listed remote devices are not in use with the MSI-9000 CellScale, 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 MSI-9000 User's Guide.

***The following procedure describes how to perform a standard, single point calibration for a single load cell MSI-9000 CellScale. 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 9000CS TERMINAL MENU

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 9000CS **ON** and allow to complete power up sequence.
- 5). Connect the 9000CS comport 1 to the PC serial port with the 501705-0001 serial cable.
- 6). From PC, press **ENTER**. Main Cell Scale Manu will appear.  
Select **Channels/Calibration** press **1**.

```
----- 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 county
(ESC) Exit

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

- 4) The MSI-9000 CellScale prompts for the calibration units of mass. Press **number** value corresponding to desired units.

```

***** Choose Calibration Units *****
(1)  Pounds
(2)  Kilograms
(3)  Tons
(4)  Metric Tons
(5)  Ounces
(6)  Grams
(7)  Deka-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 countby *****
(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-6260CS 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  $\pm 250$  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. After 15 seconds, press **R**, to assure Main Menu appears in full as confirmation of data stored. Disconnect serial cable from scale and cycle power.

```
----- 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:
```



## 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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