



Subject: RL Scales – Zeroing and Calibration

Bulletin A Update: To correct typo in the scale communications parameters.

Bulletin B Update: Added Scale Installation & Service steps below and recommended calibration weights

1. Scan & Bag Considerations

- 1.1. The software on Scan and Bag Scale units expects to see a positive weight on the scale at all times.
- 1.2. Currently all Bag Scale units are being shipped with either firmware v2.9 or v3.2, shortly this will be superseded with v3.5.
- 1.3. The Load Cells and Weight Transmitters are calibrated at the factory, when installing the system a **HARD ZERO** must be done with bag racks removed, thus when the bag racks are replaced the weight will be a positive value.
- 1.4. The factory calibration is valid for most US locations that are 1500 ft or less above sea level and with in 5 degrees of 45 degrees north latitude. In the case of an installation above 1500 ft or greater than 50 degrees north or less then 40 degrees north latitude the scale must be re-calibrated. If you are working on a model 1930 weight transmitter, this can conveniently be done by entering the new latitude and altitude in the Calibration menu and exiting.

2. SBU Considerations

- 2.1. The SBU Conveyor Scale software expects the Conveyor Scale to be at ZERO when no items are placed on the belt.
- 2.2. All SBU weight transmitters should have v3.5 firmware installed.
- 2.3. While the Load Cells and Weight Transmitter are calibrated at the factory, they do not take into account the weight of the Conveyor which is added at assembly time in Plattsburg. Therefore, when the system is installed in a store location, a calibration (Auto-Cal) must be performed in order to ‘zero’ out the weight of the conveyor.
- 2.4. The factory calibration is valid for most US locations that are 1500 ft or less above sea level and with in 5 degrees of 45 degrees north latitude. In the case of an installation above 1500 ft or greater than 5 degrees north or less then 40 degrees north latitude the scale must be re-calibrated. This can conveniently be done by entering the new latitude and altitude in the Calibration menu and exiting.

3. Scale Installation & Service

Following the installation or replacement of a Scaleton Scale, the following steps must be performed.

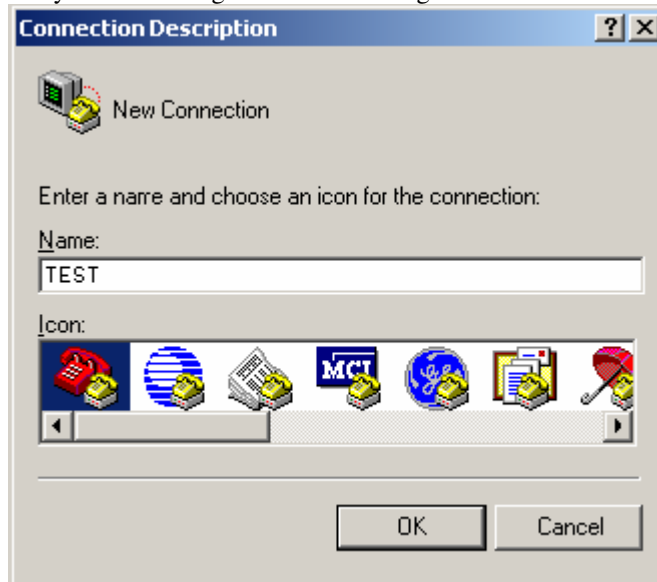
For details of each, refer to sections below.

- Set/Verify Latitude and Altitude
- Set/Verify the scale is properly set for its application (‘S’ command in HyperTerminal)
 - **Static** = Bag Scale
 - **Conveyor** = Belt Scale
- Calibrate Scale (**Auto-Cal**), no weights required
 - If **Auto-Cal** fails, Calibrate using known test weights
- Verify scale weighing correctly (current process)

<u>INQUIRIES TO:</u>		DATE
Fujitsu Transaction Solutions Inc.		
Exchange:	Sustaining Engineering	_____
Mail:	Fujitsu USA04, Sustaining Engineering	_____
FAX:	858-731-4781 (7888-4781)	_____
Internet:	SustainingEngineering@ftxs.fujitsu.com	_____
FTP:	ftp://ftp.ftxs.fujitsu.com/	_____
Original signature copies maintained by Sustaining Engineering.		

4. How to perform a HARD ZERO

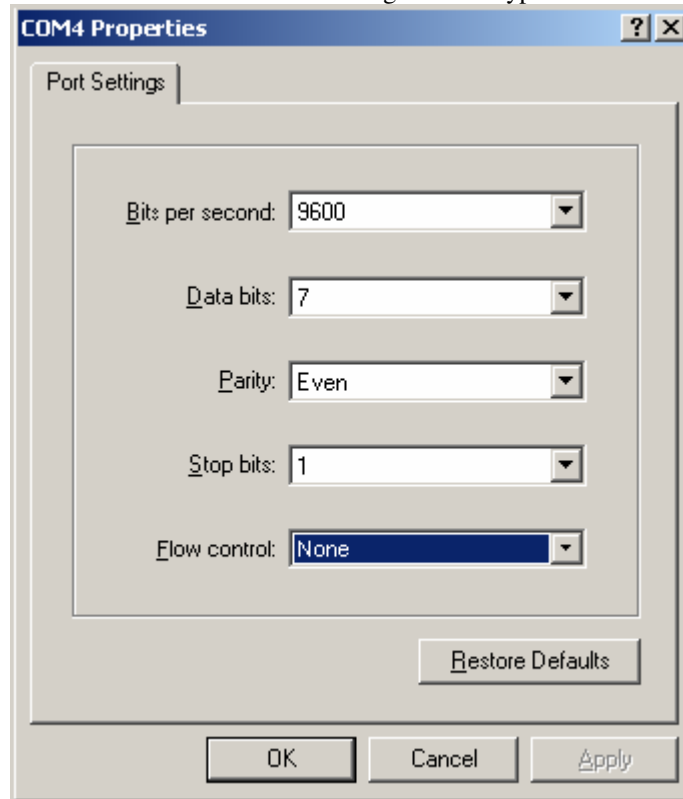
- 4.1. Stop and exit Device Tester & exit the launch-pad.
- 4.2. Press the Windows **START** button, select **ACCESSORIES, COMMUNICATION, HYPERTERMINAL**
- 4.3. Select a name for the session you are creating. **Test** would be a good choice.



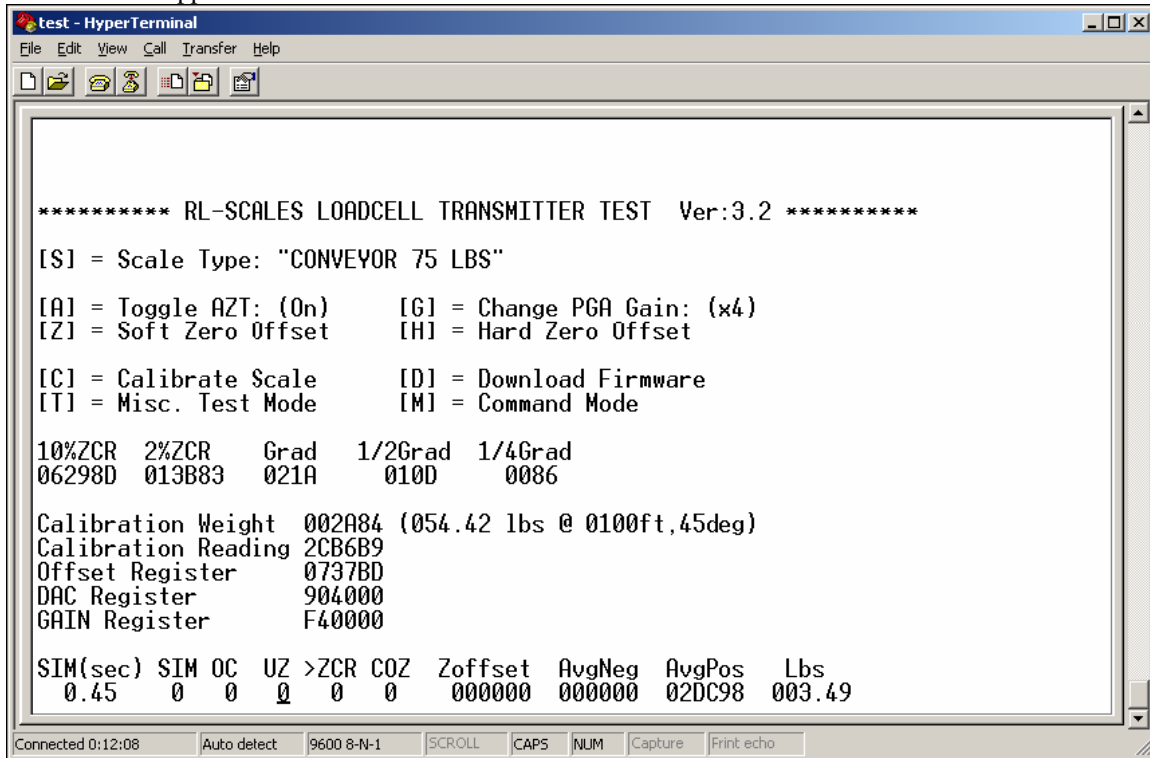
- 4.4. Select Com port 4 (they are out of order) and click **OK**.



- 4.5. In the **Com port 4 settings** box, select **9600** for the Bits Per Second, **7** Data Bits, **Even** parity, **1** Stop bits, and **None** for Flow Control. Then click **OK**. You should then be viewing a blank HyperTerminal display.



- 4.6. Turn on the **CAPS LOCK** button. Type “/TEST” without the quotes. You should now see the **RL SCALES LOADCELL TRANSMITTER TEST Ver 3.5** displayed. If the version is under **3.5** (pictured example is old 3.2) contact Tech Support.



```
test - HyperTerminal
File Edit View Call Transfer Help
***** RL-SCALES LOADCELL TRANSMITTER TEST Ver:3.2 *****
[S] = Scale Type: "CONVEYOR 75 LBS"
[A] = Toggle AZT: (On)      [G] = Change PGA Gain: (x4)
[Z] = Soft Zero Offset     [H] = Hard Zero Offset
[C] = Calibrate Scale      [D] = Download Firmware
[T] = Misc. Test Mode      [M] = Command Mode

10%ZCR  2%ZCR   Grad   1/2Grad  1/4Grad
06298D  013B83   021A   010D    0086

Calibration Weight  002A84 (054.42 lbs @ 0100ft,45deg)
Calibration Reading 2CB6B9
Offset Register     0737BD
DAC Register        904000
GAIN Register       F40000

SIM(sec) SIM OC  UZ >ZCR COZ  Zoffset  AvgNeg  AvgPos  Lbs
0.45     0  0  0  0  0  000000  000000  02DC98  003.49

Connected 0:12:08  Auto detect  9600 8-N-1  SCROLL  CAPS  NUM  Capture  Print echo
```

- 4.7. Clear the conveyor of any items.
- 4.8. Press the ‘**H**’ (Hard Zero Offset) (This ‘Zero’ will be retained by the transmitter even if the unit is powered off and on or reset.)
- 4.9. **VERY IMPORTANT** you must exit the test program by pressing the letter ‘**M**’

5. Calibrating the Conveyor Scale or Bag Scale without Weights (AutoCal)

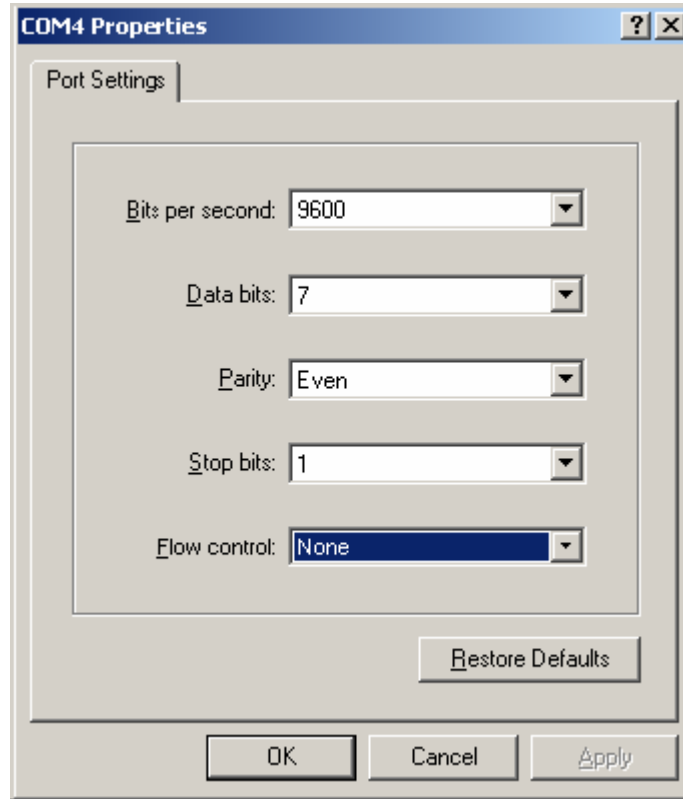
- 5.1. Calibration of a bag scale must be performed with bag racks removed. Calibration of a Conveyor Scale must be performed with no weight on the conveyor.
- 5.2. Stop and exit Device Tester & exit the launch-pad.
- 5.3. Press the Windows START button, select **ACCESSORIES, COMMUNICATION, HYPERTERMINAL**
- 5.4. Select a name for the session you are creating. **Test** would be a good choice.



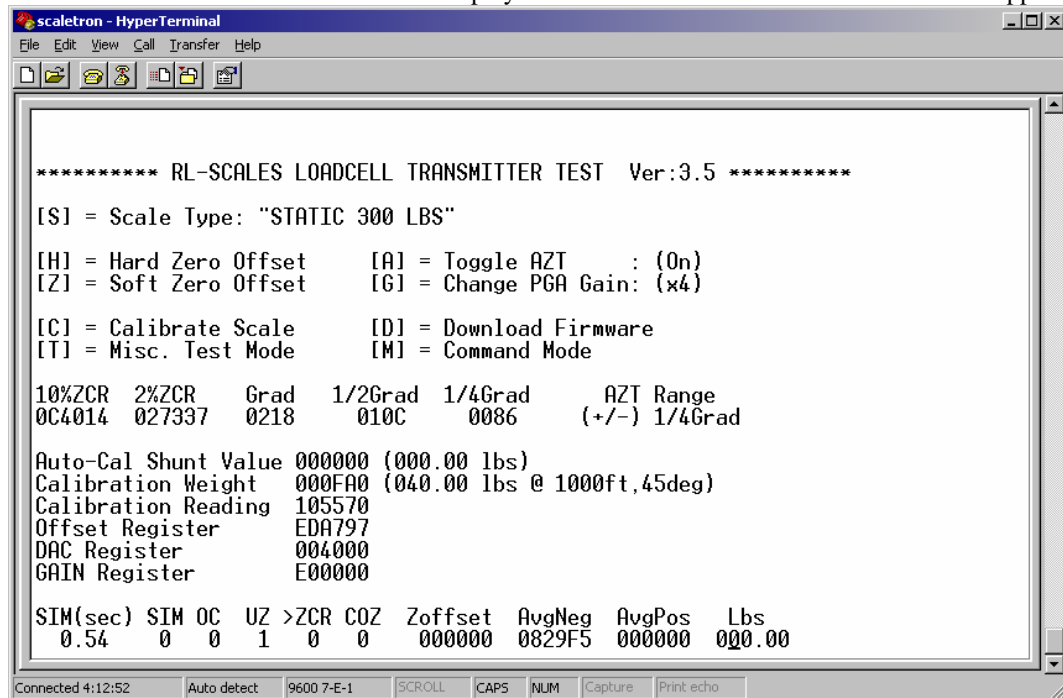
- 5.5. Select Com port 4 (they are out of order) and click **OK**.



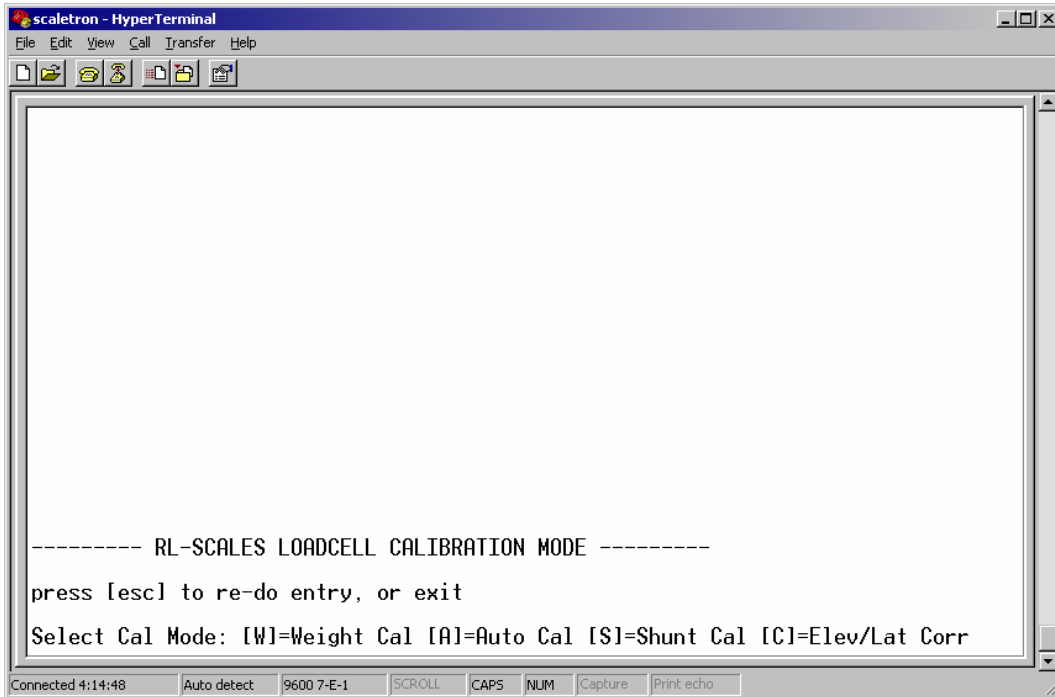
- 5.6. In the **Com port 4 settings** box, select **9600** for the Bits Per Second, **7** Data Bits, **Even** parity, **1** Stop bits, and **None** for Flow Control. Then click **OK**. You should then be viewing a blank HyperTerminal display.



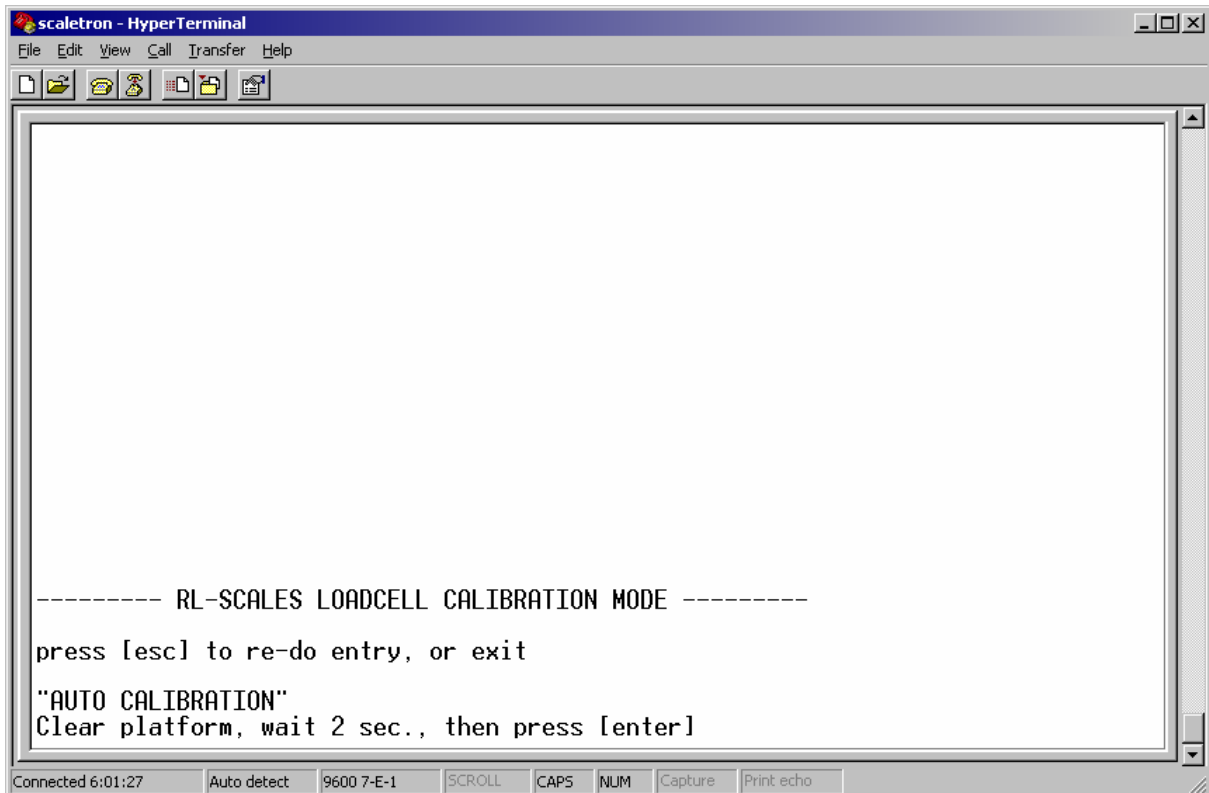
5.7. Turn on the **CAPS LOCK** button. Type **"/TEST"** without the quotes. You should now see the **RL SCALES LOADCELL TRANSMITTER TEST Ver 3.5** displayed. If the version is under **3.5** contact Tech Support.



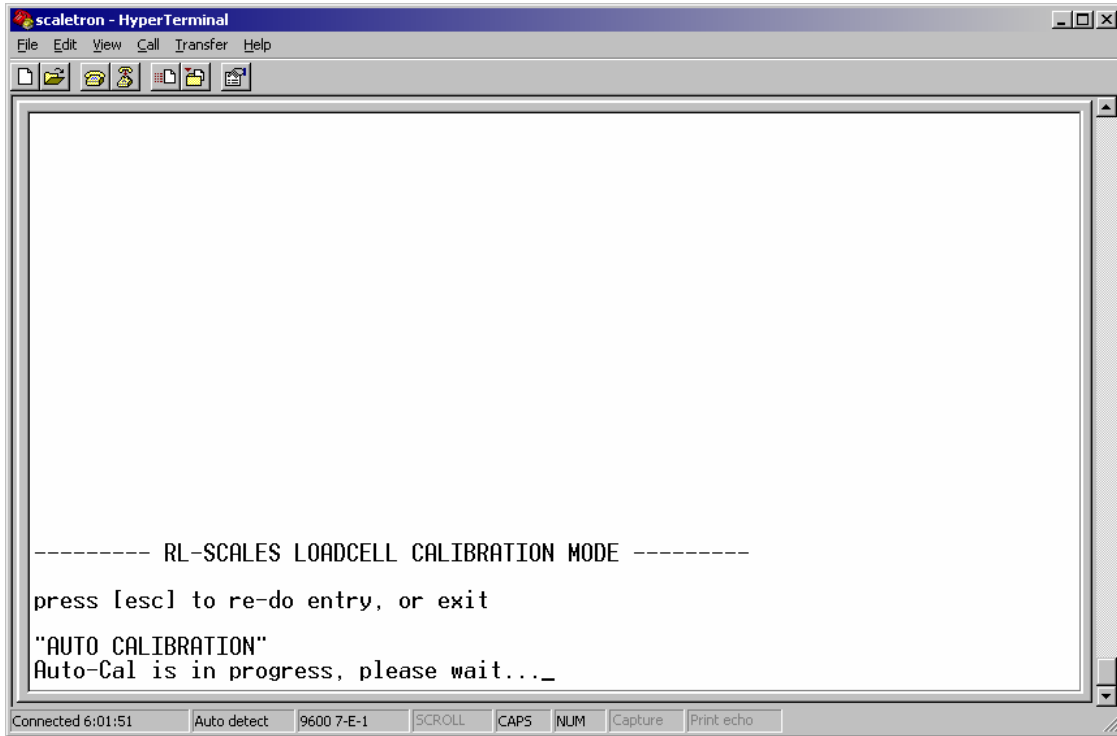
5.8. Press **'C'** to calibrate scale.



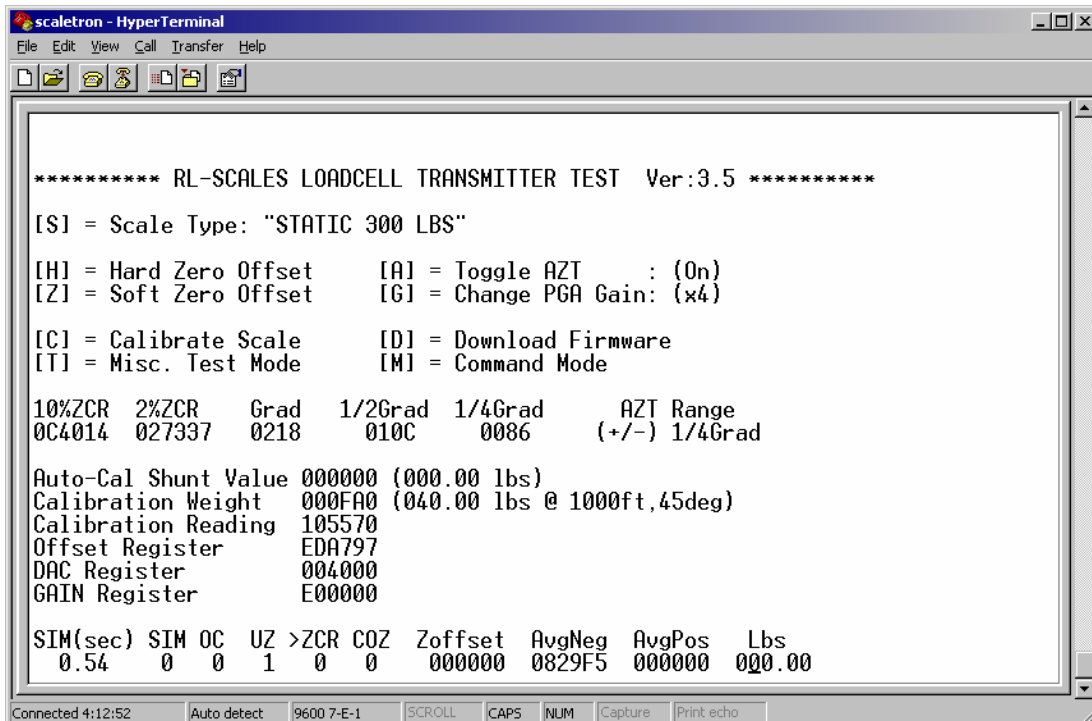
5.9. Enter 'A' for Auto Calibration.



5.10. Clear the platform of any weight, wait 2 seconds, and press enter.



5.11. The “Calibration Complete” message will display for 2 seconds and then you will be returned to the main menu as shown below.



5.12. **VERY IMPORTANT** you must exit the test program by pressing the letter ‘M’

6. Calibrating the Conveyor Scale or Bag Scale with Weights

When Calibrating a scale using weights, the weight must be >25% capacity up to 90% scale capacity. The test weights **MUST** be Calibrated test weights to ensure accuracy.

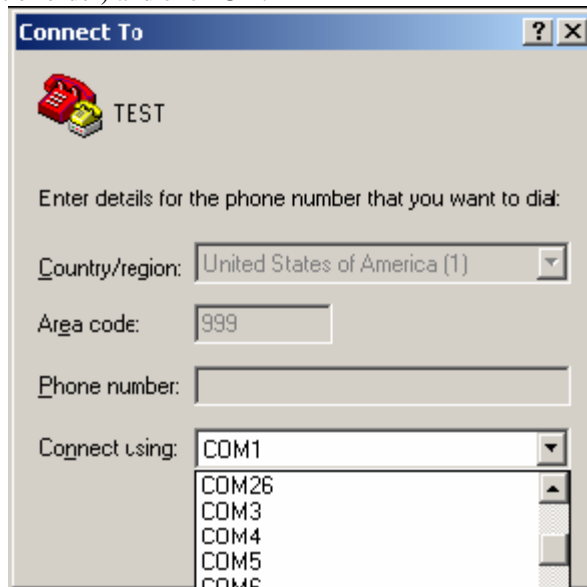
Scale Type	Capacity	Recommended Test Weight
SBU	75 lb	40 lbs
Bag Scale	150 lb	80 lbs
Carousel	300 lb	100 to 200 lb

- 6.1. Calibration of a bag scale must be performed with bag racks removed. Calibration of a Conveyor Scale must be performed with no weight on the conveyor.
- 6.2. Stop and exit Device Tester & exit the launch-pad.
- 6.3. Press the Windows **START** button, select **ACCESSORIES, COMMUNICATION, HYPERTERMINAL**
- 6.4. Select a name for the session you are creating. **Test** would be a good choice.



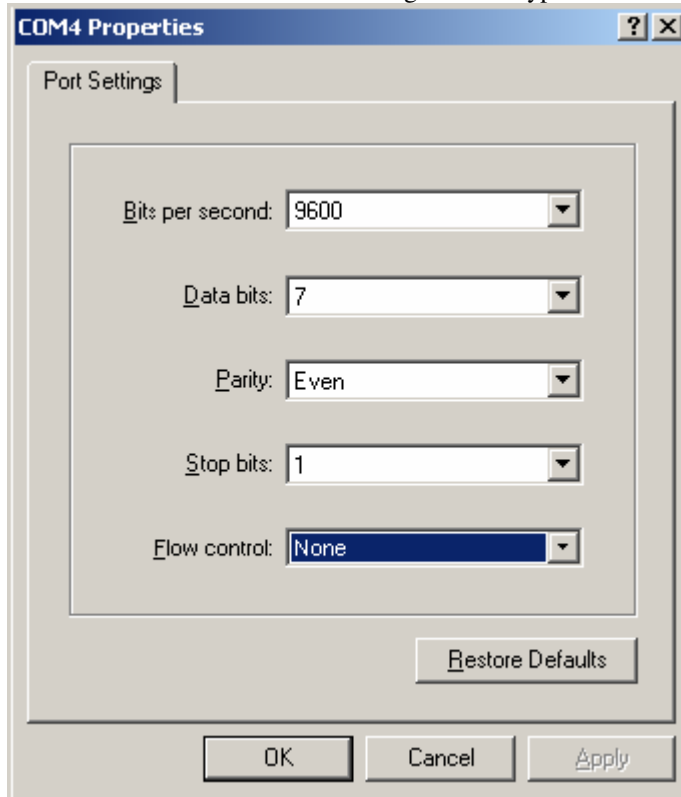
5.1.

- 6.5. Select Com port 4 (they are out of order) and click **OK**.

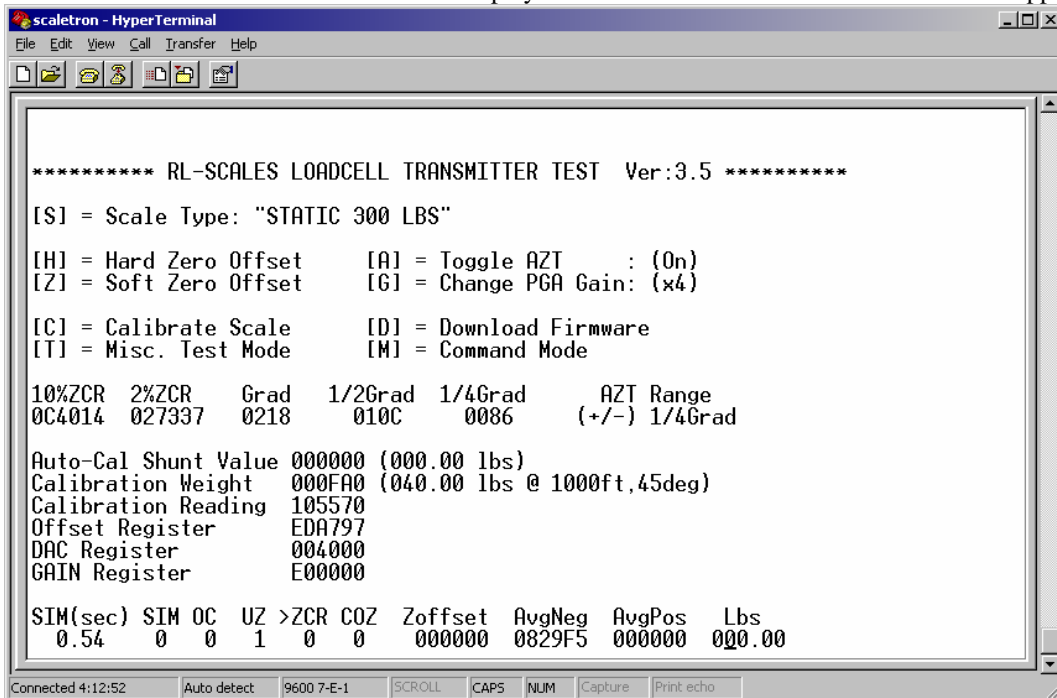


5.2.

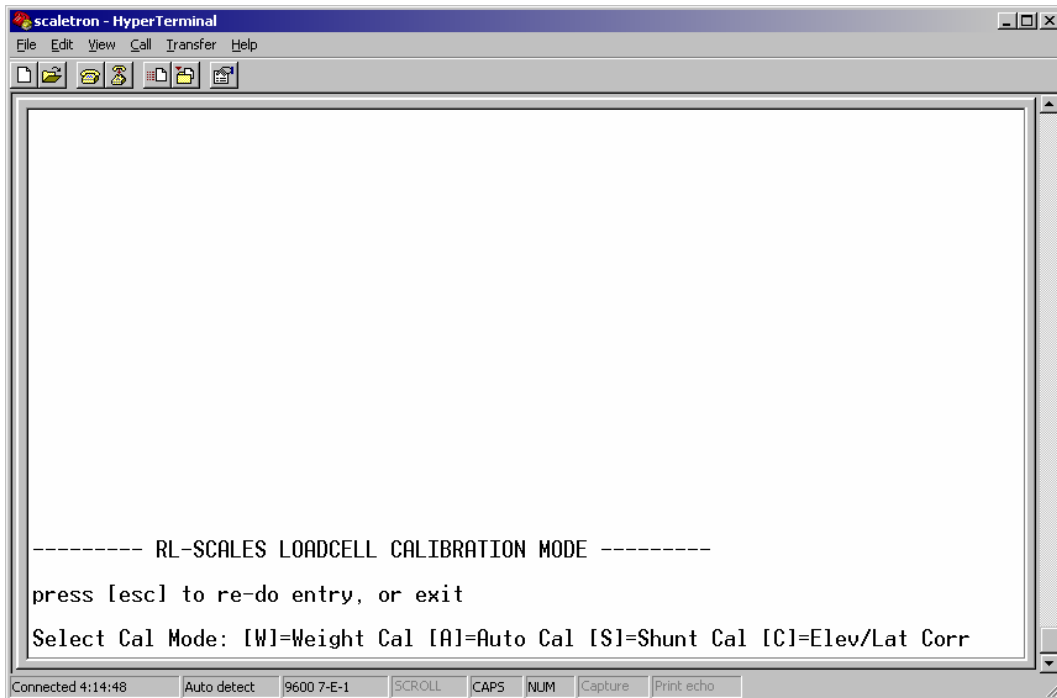
- 6.6. In the **Com port 4 settings** box, select **9600** for the Bits Per Second, **7** Data Bits, **Even** parity, **1** Stop bits, and **None** for Flow Control. Then click **OK**. You should then be viewing a blank HyperTerminal display.



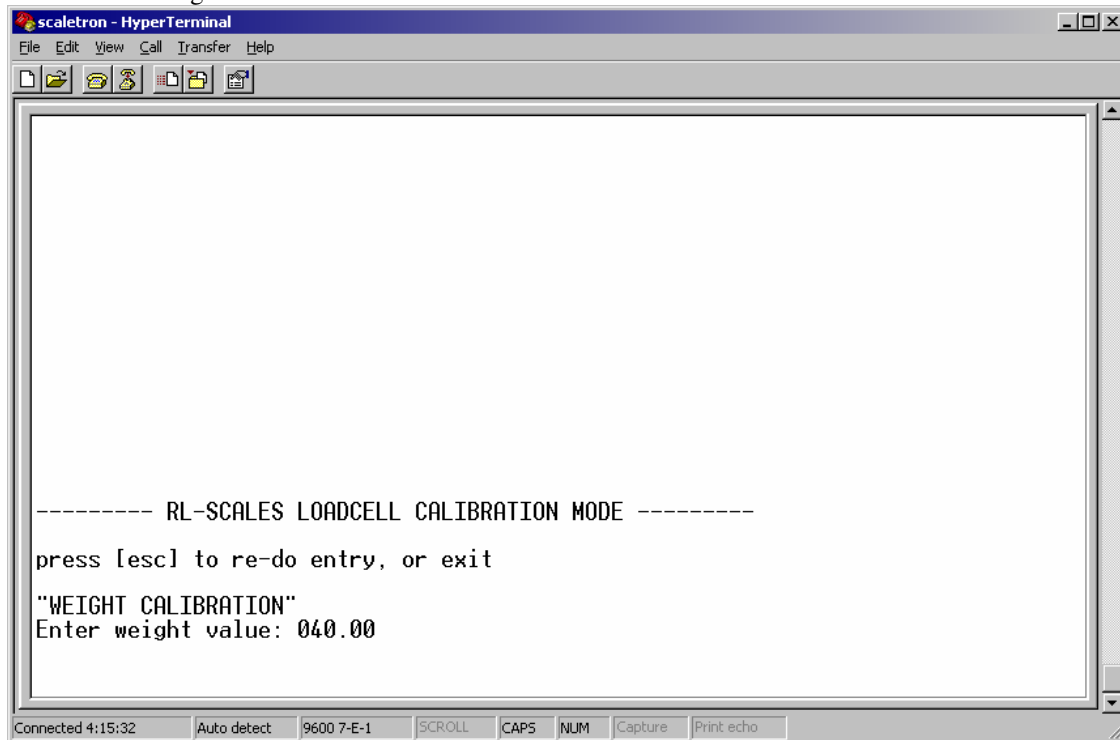
- 6.7. Turn on the **CAPS LOCK** button. Type **"/TEST"** without the quotes. You should now see **the RL SCALES LOADCELL TRANSMITTER TEST Ver 3.5** displayed. If the version is under 3.5 contact Tech Support.



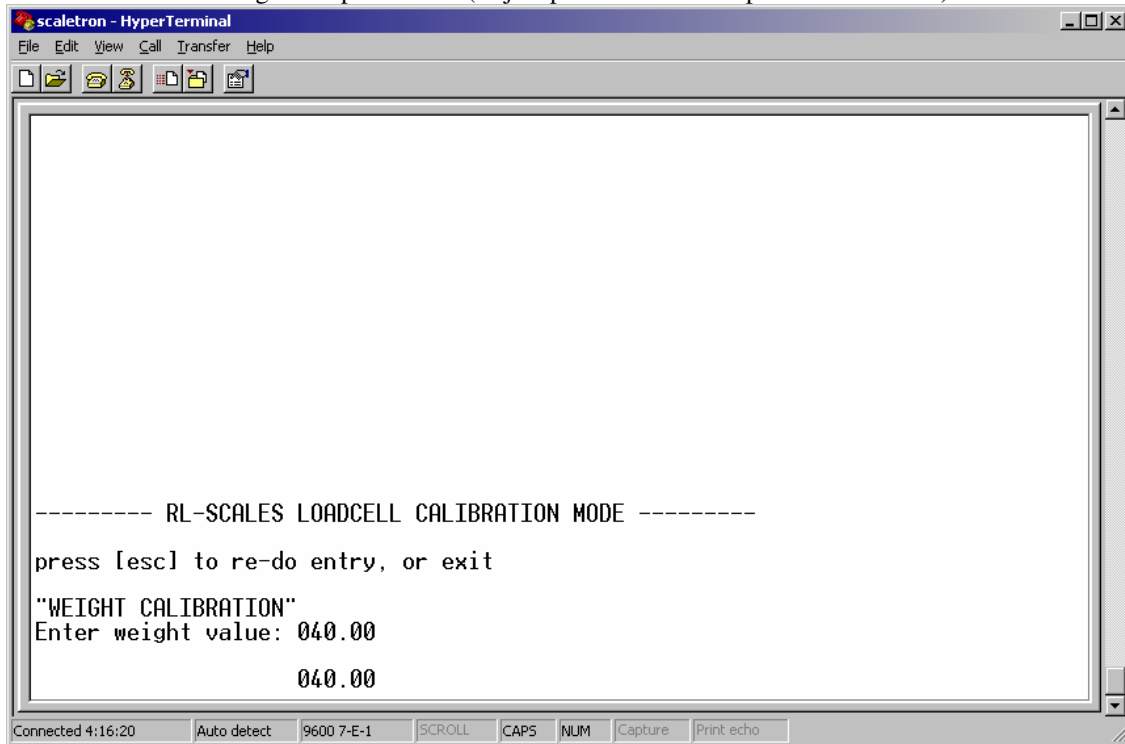
6.8. Press 'C' to calibrate scale.



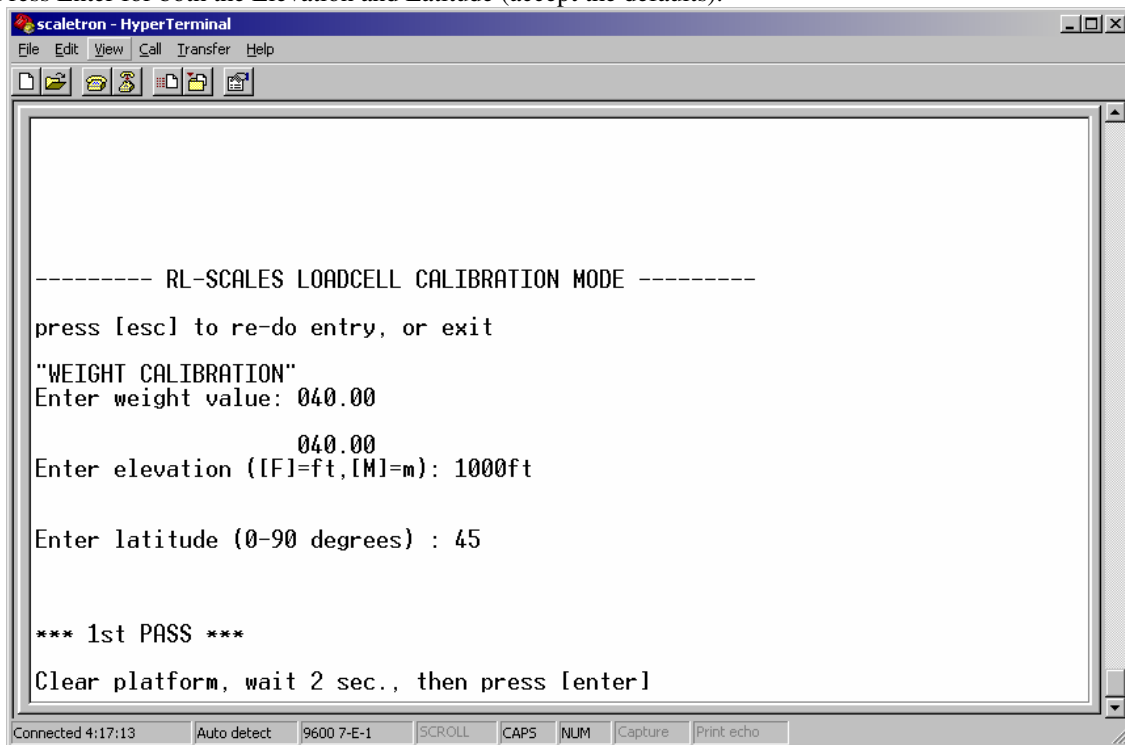
6.9. Enter 'W' for Weight Calibration.



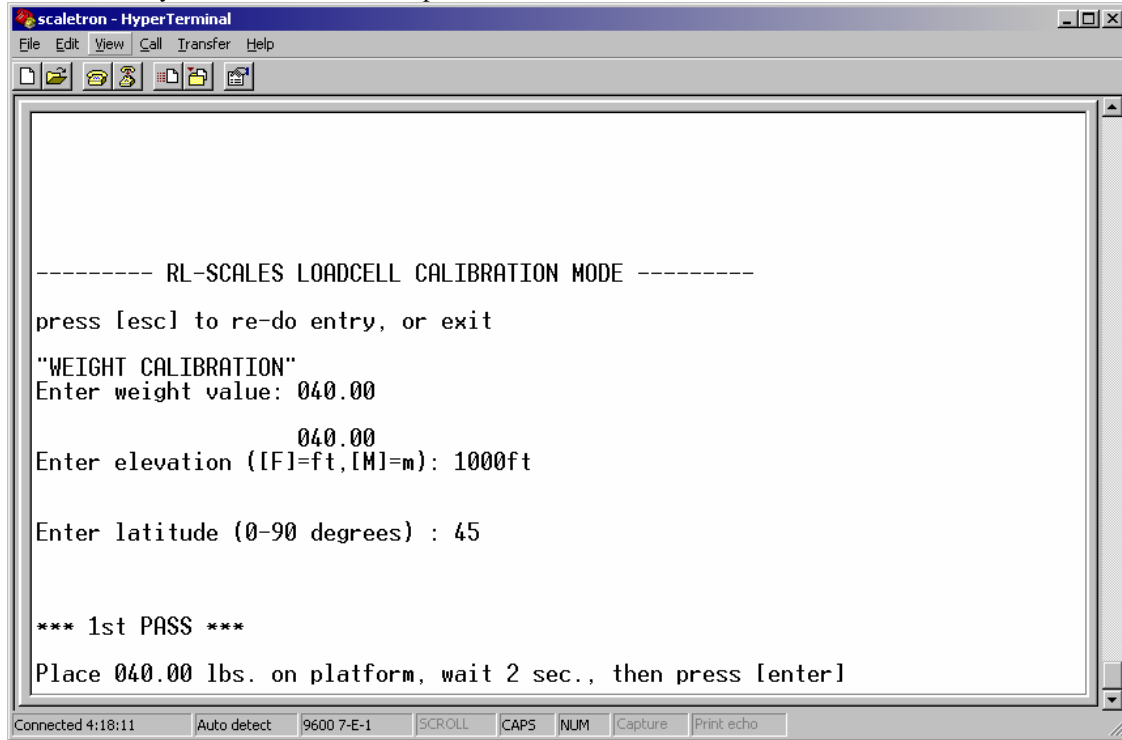
6.10. Enter the calibration weight and press Enter (or just press enter to accept the 40lb default).



6.11. Press Enter for both the Elevation and Latitude (accept the defaults).



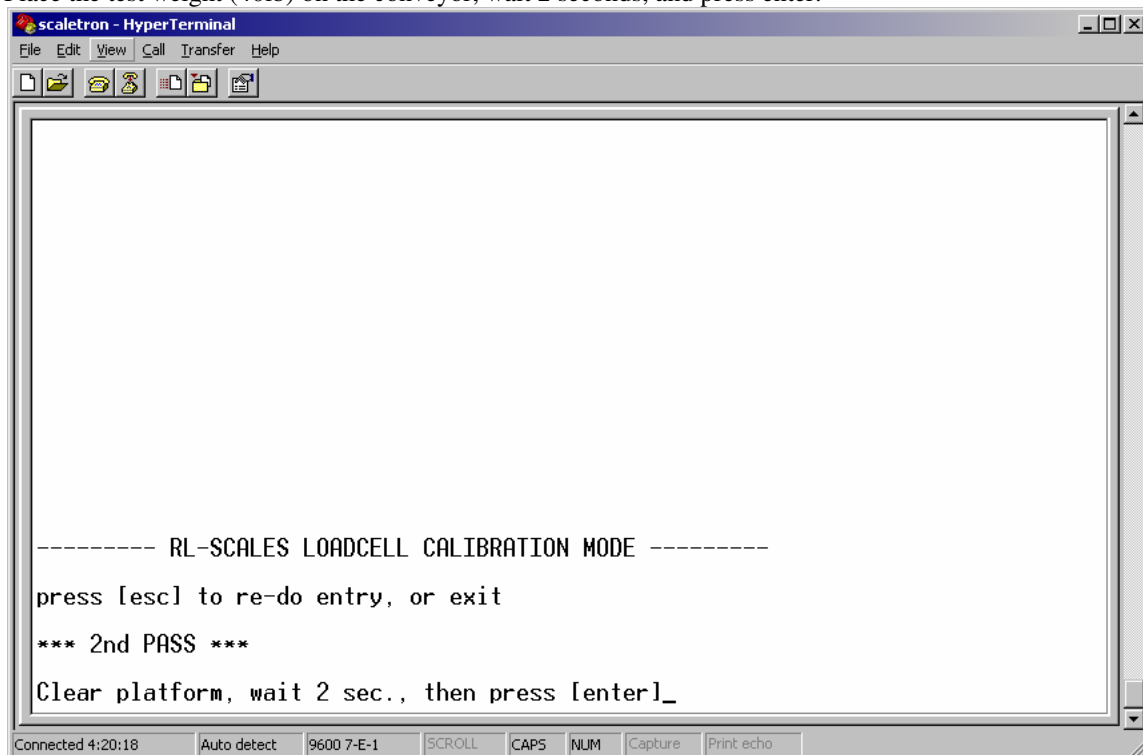
6.12. Clear the conveyor Wait 2 seconds, and press Enter.



```
----- RL-SCALES LOADCELL CALIBRATION MODE -----
press [esc] to re-do entry, or exit
"WEIGHT CALIBRATION"
Enter weight value: 040.00
040.00
Enter elevation ([F]=ft,[M]=m): 1000ft
Enter latitude (0-90 degrees) : 45

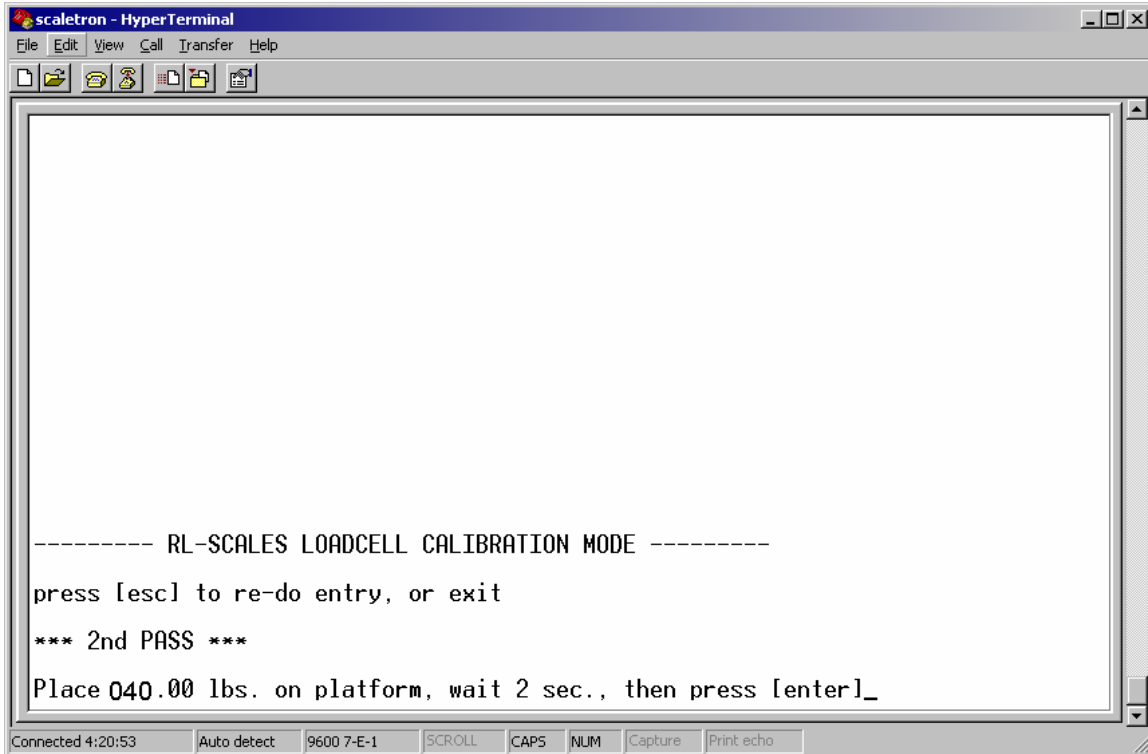
*** 1st PASS ***
Place 040.00 lbs. on platform, wait 2 sec., then press [enter]
```

6.13. Place the test weight (40lb) on the conveyor, wait 2 seconds, and press enter.

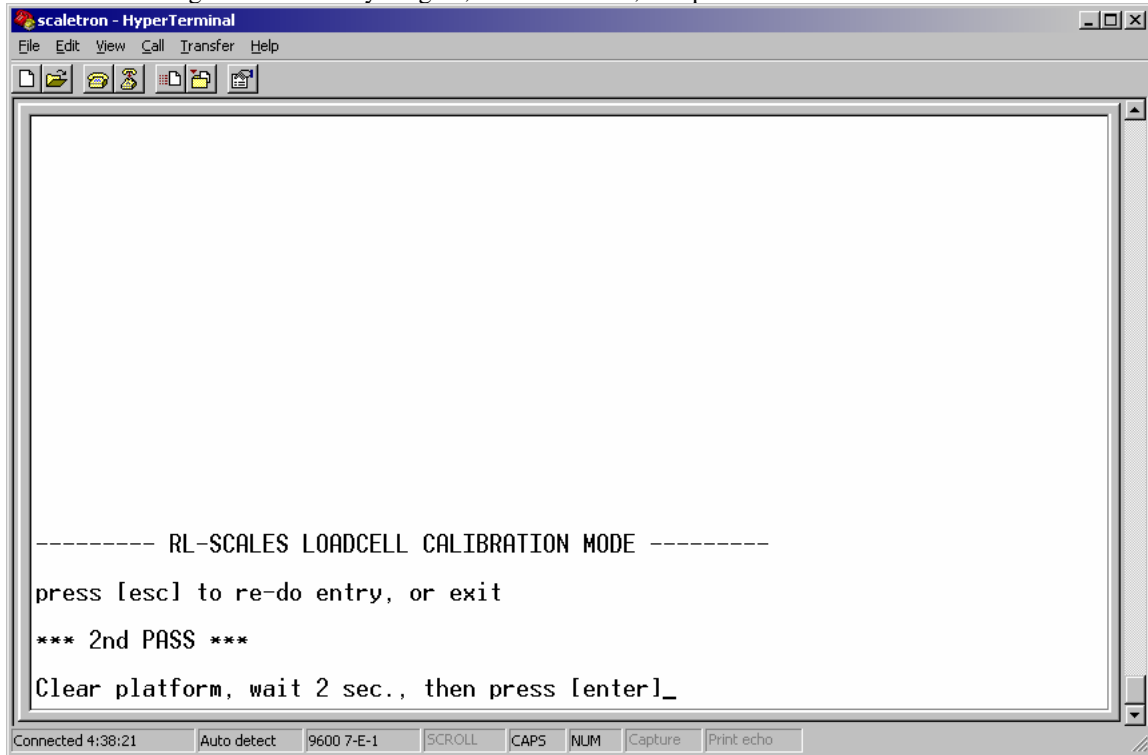


```
----- RL-SCALES LOADCELL CALIBRATION MODE -----
press [esc] to re-do entry, or exit
*** 2nd PASS ***
Clear platform, wait 2 sec., then press [enter]_
```

6.14. Remove the weight from the conveyor, wait 2 seconds, and press Enter.



6.15. Place the test weight on the conveyor again, wait 2 seconds, and press enter.



6.16. Remove the weight from the conveyor, wait 2 seconds, and press Enter.

6.17. The “**Calibration Complete**” message will display for 2 seconds and then you will be returned to the main menu as shown below.

```

***** RL-SCALES LOADCELL TRANSMITTER TEST Ver:3.5 *****
[S] = Scale Type: "STATIC 300 LBS"
[H] = Hard Zero Offset      [A] = Toggle AZT      : (0n)
[Z] = Soft Zero Offset     [G] = Change PGA Gain: (x4)
[C] = Calibrate Scale      [D] = Download Firmware
[I] = Misc. Test Mode      [M] = Command Mode

10%ZCR  2%ZCR   Grad   1/2Grad  1/4Grad   AZT Range
0C4014  027337   0218   010C    0086     (+/-) 1/4Grad

Auto-Cal Shunt Value 000000 (000.00 lbs)
Calibration Weight   000FA0 (040.00 lbs @ 1000ft,45deg)
Calibration Reading  105570
Offset Register      EDA797
DAC Register         004000
GAIN Register        E00000

SIM(sec) SIM OC  UZ >ZCR COZ  Zoffset  AvgNeg  AvgPos  Lbs
0.54     0  0  1  0  0    000000  0829F5  000000  000.00
    
```

6.18. **VERY IMPORTANT** you must exit the test program by pressing the letter ‘M’

7. Finding Latitude and Elevation

THE RULE

Latitudes are accurate enough if entered to the nearest 5 degrees.
Altitudes are accurate if entered to the nearest 1000 ft.

INSTRUCTIONS

Latitude - Option 1:

From a map, locate the installation and determine which latitude lines it lies between. Then halve the difference and enter this number. For example, Atlanta GA is between the 30 and 35 degree lines, so enter 32.5

Latitude - Option 2:

Major US and Canadian cities – latitude <http://www.infoplease.com/ipa/A0001796.html>

Major world cities – latitude <http://www.infoplease.com/ipa/A0001769.html>

Elevation:

Elevation for USA Option 1 - Access the following link

<http://geonames.usgs.gov/pls/gnispublic/f?p=116:1:5136549759483131231>

- In field "State or Territory" select the state of the installation
- In field "Feature Class" select "Populated Place"
- You will get a list of towns with their elevations for that state

Elevation for USA Option 2 - Access the following link

http://geonames.usgs.gov/pls/gnis/web_query.gnis_web_query_form

- Click on "State and Topical Gazetteer"
- Scroll down to "Columnar Format Files"
- Locate the file for the state of your choice and click on it
- A page will appear with information about various locations in the chosen state
- Find the exact location needed
- The first set of numbers refers to the "FEATURE ID" of the location you chose (see below). Example, the Feature ID for Miami is 295004

286747	FL	Mexico Beach	ppl
309772	FL	Meyer Heliport	air
286748	FL	Meyers Cove	bay
300870	FL	Miakka	ppl
286749	FL	Miakka Church	chu
297637	FL	Miamarina North Pier Light	loc
297636	FL	Miamarina South Pier Light	loc
295004	FL	Miami	ppl
293763	FL	Miami Aerospace Academy	sch
303378	FL	Miami Aerospace Academy	sch
310005	FL	Miami Agricultural School	sch
293777	FL	Miami Arena	loc
286750	FL	Miami Beach	ppl

- Now click on the following link

<http://geonames.usgs.gov/pls/gnispublic/f?p=116:1:5136549759483131231>

- In field "Feature ID" enter the appropriate Feature ID number for the store location
- A results page will be displayed, retrieve the elevation value in feet from this page

Elevation for Canada Option 1:

- access the following link <http://www.postalcodedownload.com/>
- Select the Province
- Select the 3 first characters of the store's postal code
- A page with full postal codes appears, select the store's postal code
- A page with details including the elevation appears

Elevation for Canada Option 2:

- access the following link <http://atlas.gc.ca/site/english/maps/reference/national/reliefinteractive>
- Click on "Zoom to Region"
- Select the Province from the drop down list
- Select the City from the drop down list
- Refer to the colored Land Relief chart on the right hand side to determine the elevation in METERS

Elevation and Latitude for the WORLD:

- access the following link <http://www.fallingrain.com/world/>
- Select the Country
- Select the Province
- Select the first letter of the city you are looking for
- Locate the city on the list that appears, note down the Elevation in FEET and the Latitude