825 Application

MSCALE (Multi Scale)

June 14, 2011

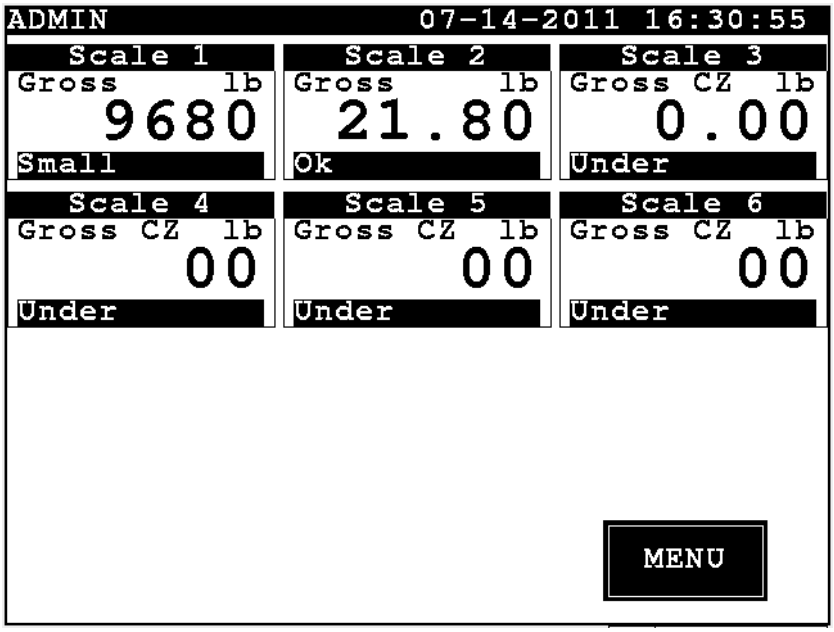
Use this application document in conjunction with the 825 Operation Manual and existing addendums for a complete understanding of system operation.

HARDWARE REQUIREMENTS

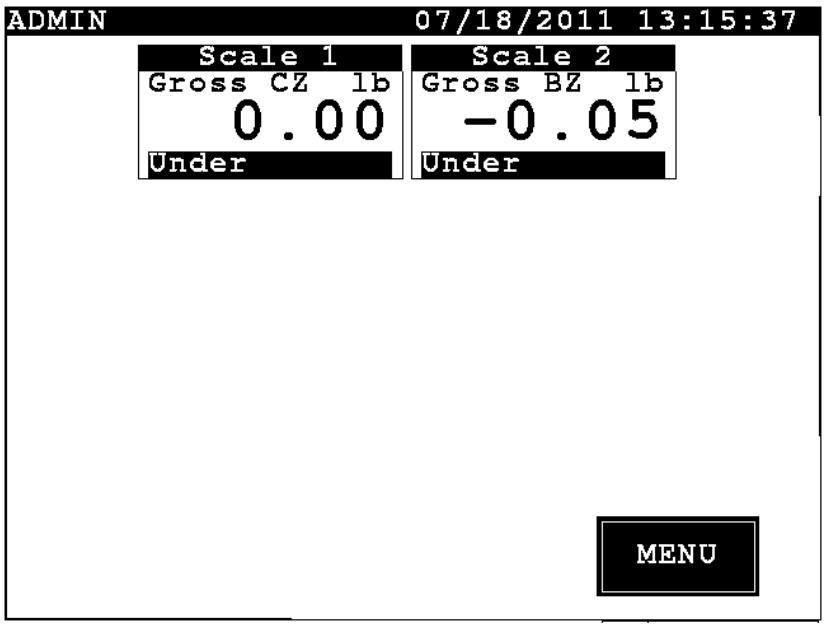
Cardinal 825 weight indicator with up to 10 SIB cards.

INDICATOR OPERATION

The weight indicator must be loaded with the multi scale Ethernet/IP application software "mscaleeip".

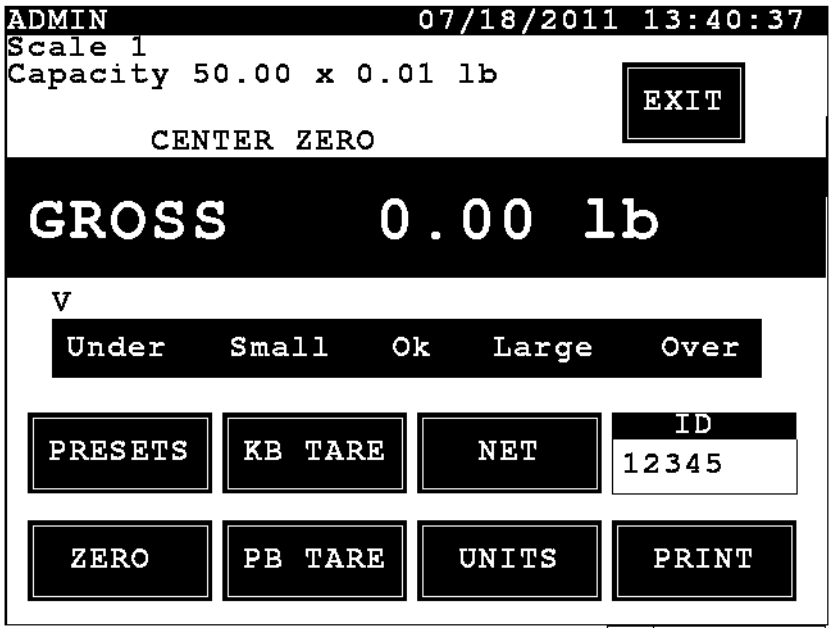


The display will appear differently for different numbers of scales.

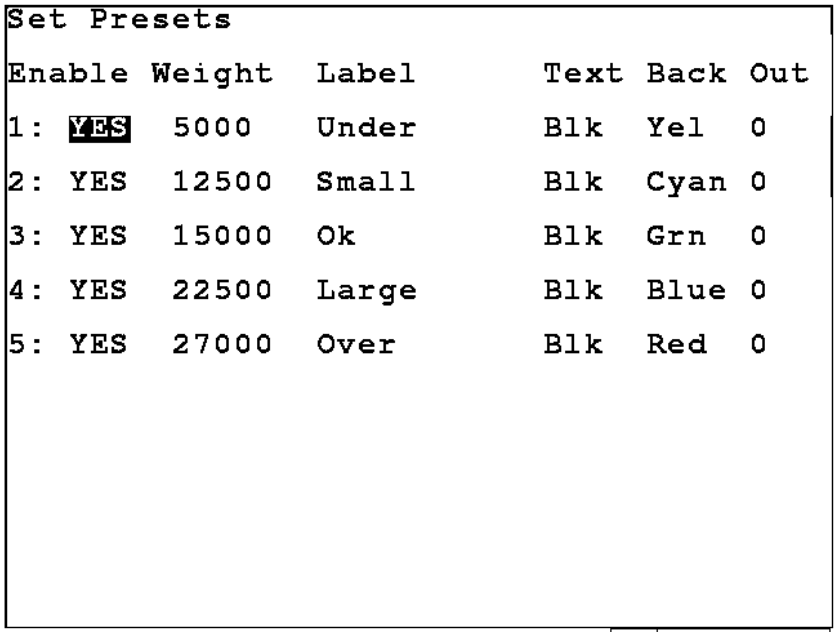


The application is the same the standard MSCALE multiple scale application with the addition of the EIP protocol.

Press any scale button for a detailed view of the selected scale.



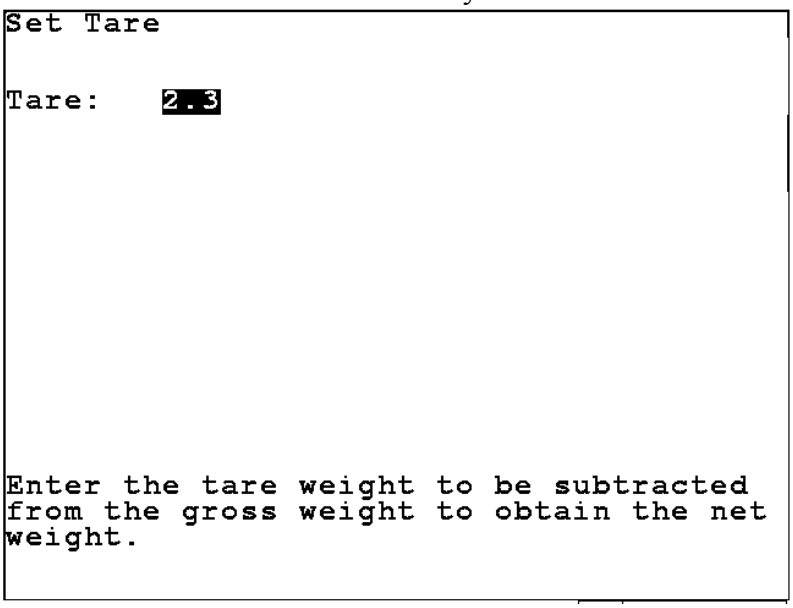
PRESETS



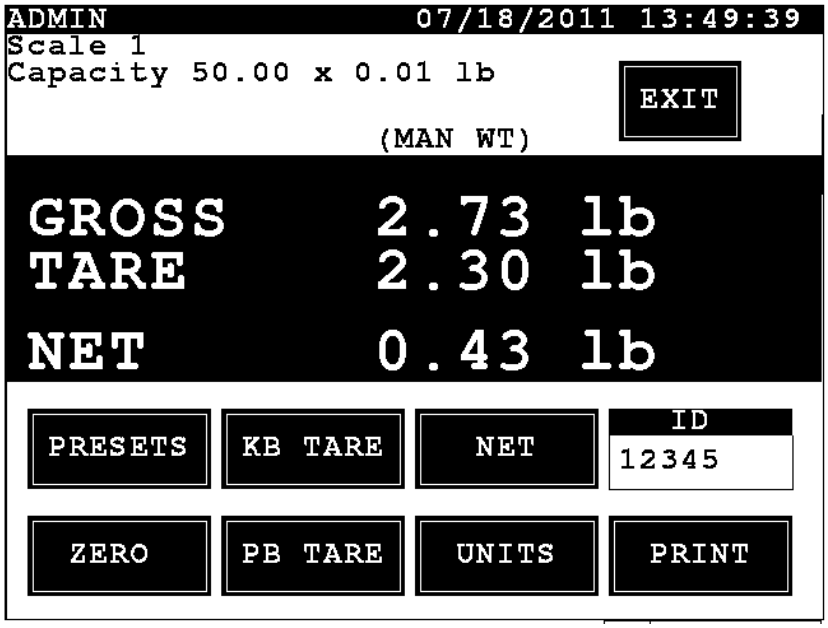
Up to 5 presets may be enabled. Specify the “Weight” cut-off for each preset. A “Label” may be specified. This label will also show in the main screen for each scale. “Text” and “Back” colors may be specified by selecting the appropriate input and press the “SPACE” key to cycle through the available options. An “Out” output relay may be specified to drive and output when the specified condition is true. After making changes to the screen press ENTER to save the changes.

ZERO
Press the “ZERO” button to zero the scale.

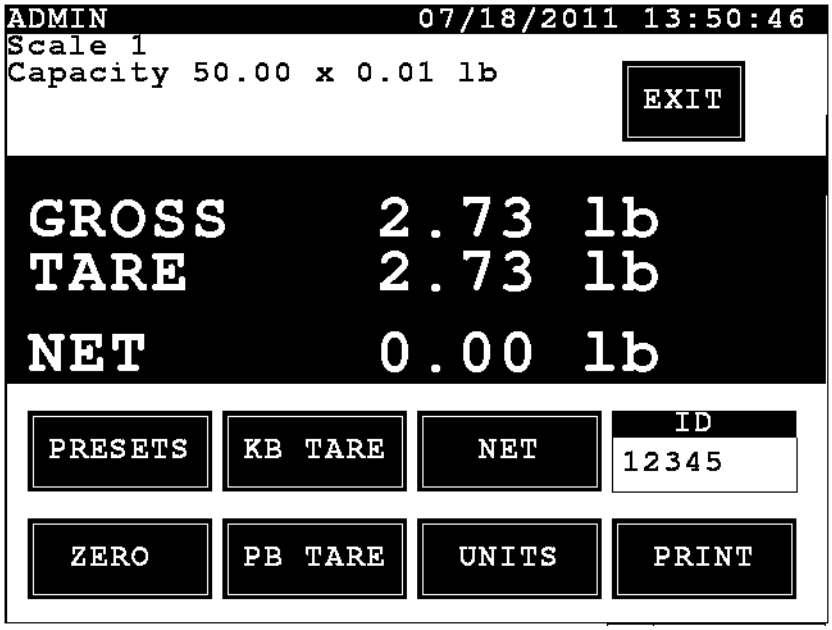
KB TARE
Press the “KB TARE” button for keyboard tare.



Type the tare weight and press ENTER. This display will automatically show “GROSS” “TARE” and “NET” weights.



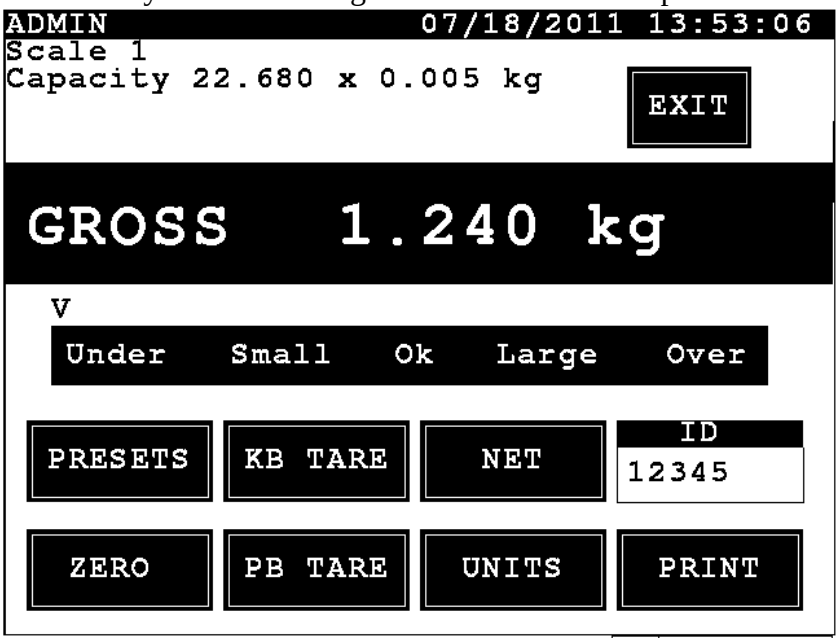
PB TARE
The “PB TARE” button performs a push button tare operation setting the tare weight to equal the current gross weight.



GROSS/NET
The “GROSS” or “NET” button is used to switch the display mode between gross and gross, tare, net weight.

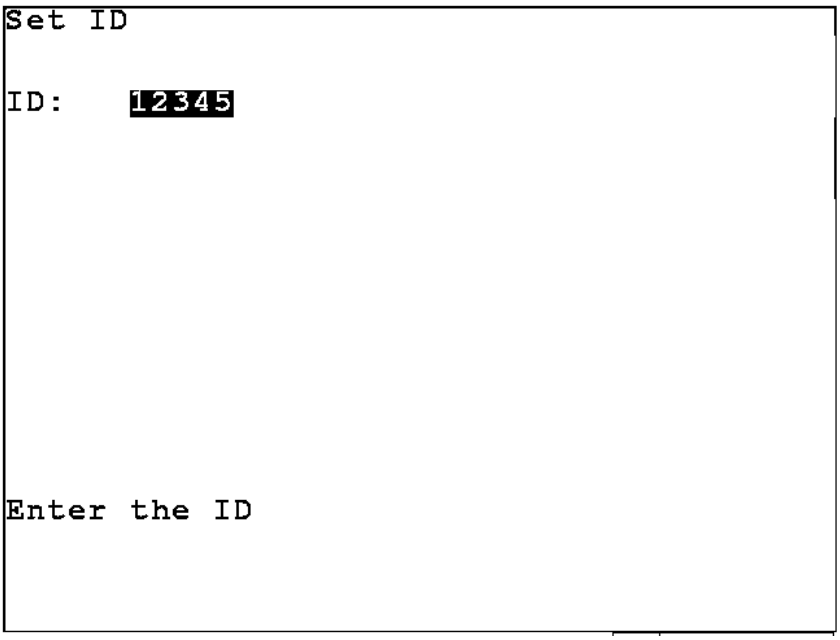
UNITS

The “UNITS” button toggles between primary and secondary units such as “lb” and “kg” if secondary units are configured in calibration/setup.



ID

The “ID” button allows an ID value to be entered.



This value will may print on the ticket output if the ticket output is configured to print the ID.

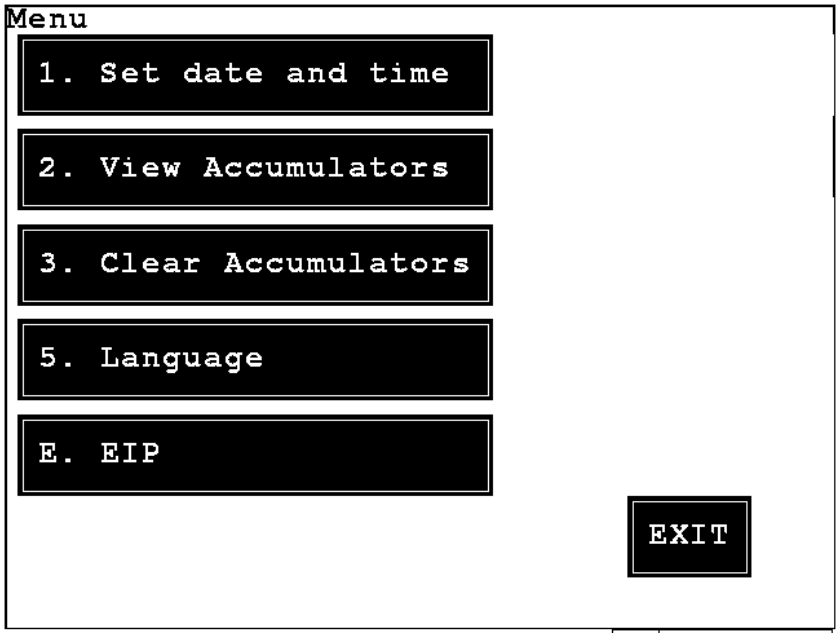
PRINT

The “PRINT” button will send the current time/date, ID and weights to the printer. The output is based on the “Configuration” printer tabs.

EXIT
The “EXIT” button will return to the main screen showing all of the scale weights.

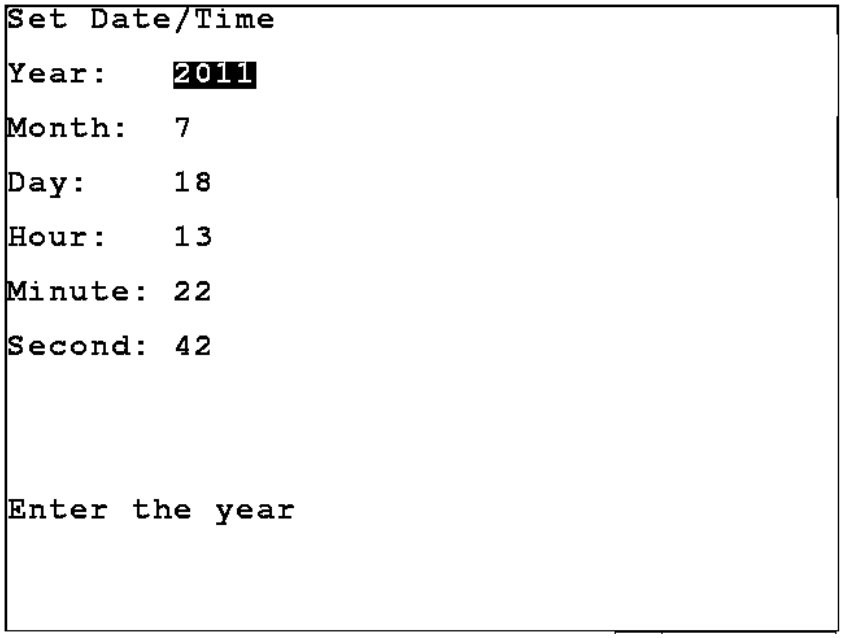
MENU

The setup menu contains an additional setup item for “EIP”.



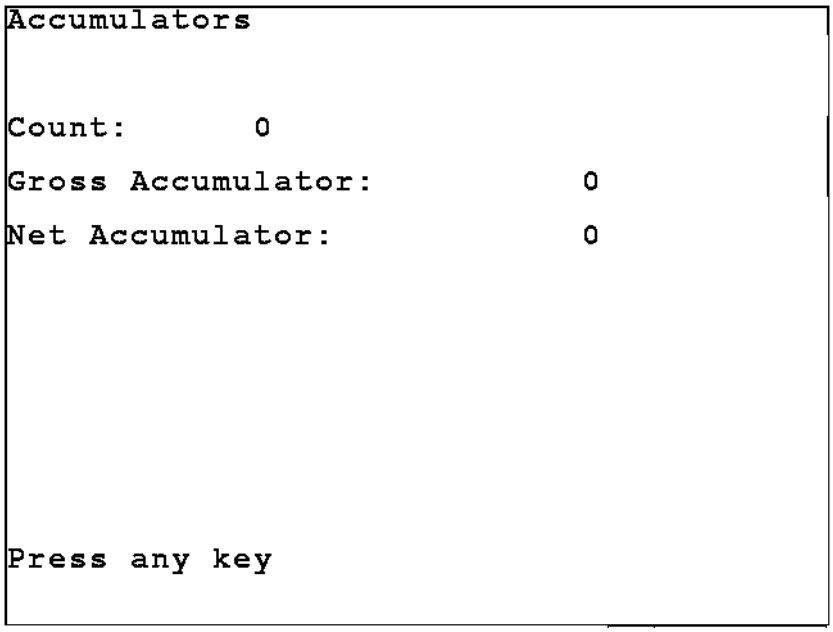
Select the “EIP” option to configure EIP communications.

1. Set Date/Time



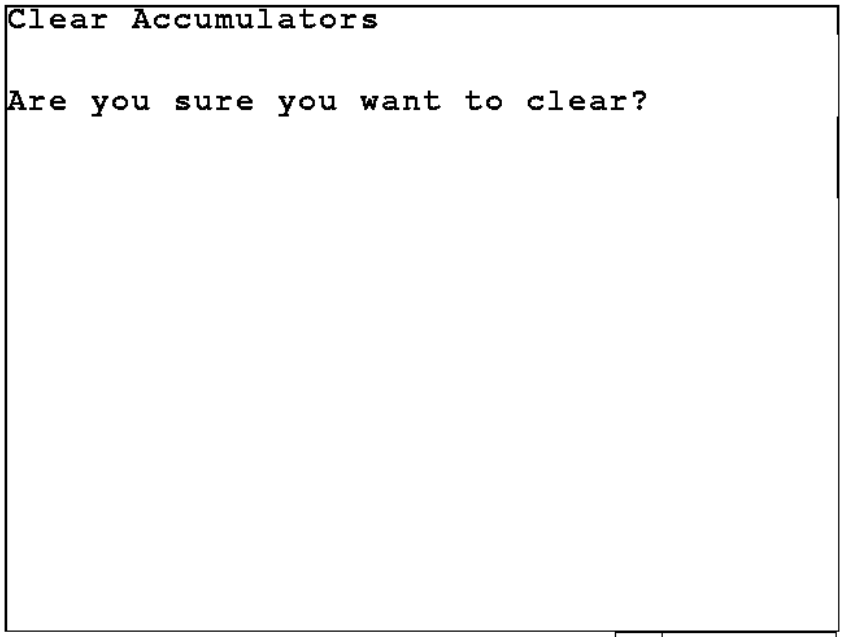
Use the “Up” and “Down” navigation keys to select any items to change and type the desired values. The “Hour” is entered in 24 hour format regardless of whether the display is set for 12 or 24 hour format. When the desired date and time is entered press the ENTER key to save changes.

2. View Accumulators

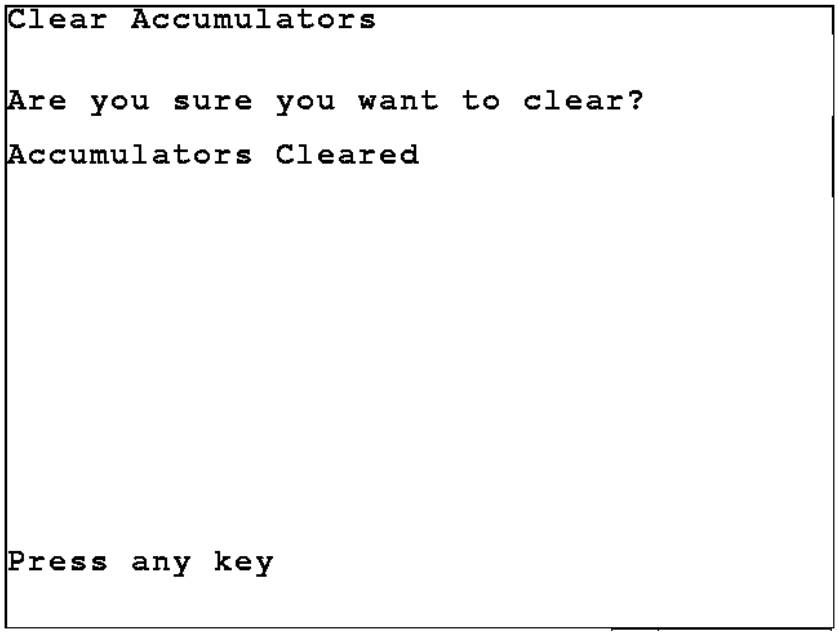


Based on the print operation the “Count” of how many loads is shown, the “Gross Accumulation” shows accumulated gross weight. “Net Accumulator” shows accumulated net weight. Press any key to return to the menu.

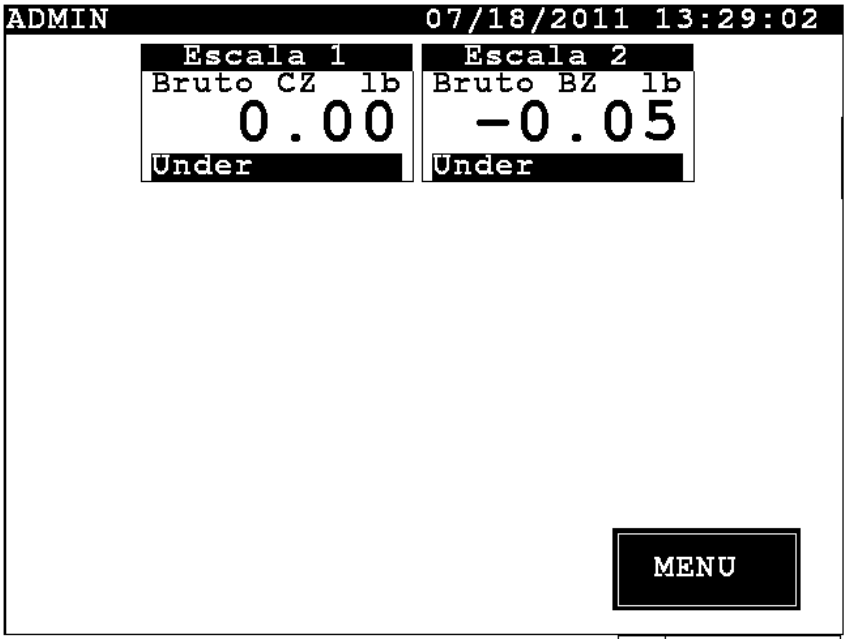
3. Clear Accumulators



Press “Y” to confirm that accumulators are to be cleared.

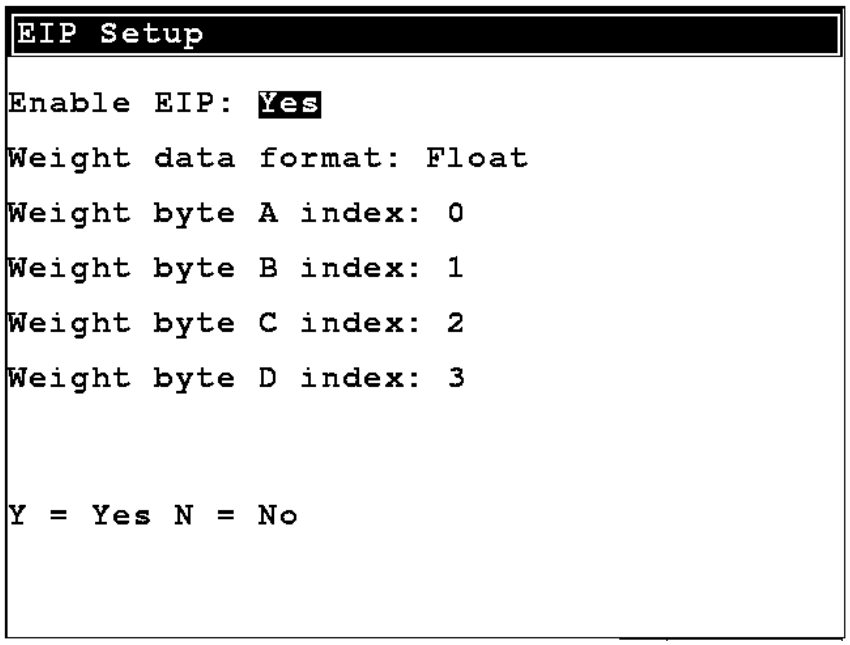


4. Language



Toggle the language between English and Spanish. The display will automatically return to the main screen in order to refresh all of the test. Press “MENU” to and “Language” again to return to “English”.

E. EIP



This “Enable EIP:” prompt will allow EIP communications to be enabled or disabled.

The “Weight data format:” prompts allows the weight value to be sent from the 825 as an integer or float. Press “SPACE” to toggle the selection. If integer is selected the output

will have an assumed decimal place. For example, a weight of 10.5 with a calibration having two decimal places will be output as 1050.

The “Weight data byte A index:” through “Weight data byte D index:” prompts allow the weight value output bytes to be output in any order. The default order is bytes A, B, C, D bytes to be output in position 0, 1, 2, or 3 to match the 2XX-EIP formst.

The desired settings are specified press ENTER to save the settings. The settings will not take effect until the application is exited and restarted. Press SHIFT then ESC repeatedly to back out of the application to return to the application menu. Then restart the application.

The output address format is:

<table>
<tr><th>Address</th><th>Description</th></tr>
<tr><td>Byte 0</td><td>Scale 1 weight 0</td></tr>
<tr><td>Byte 1</td><td>Scale 1 weight 1</td></tr>
<tr><td>Byte 2</td><td>Scale 1 weight 2</td></tr>
<tr><td>Byte 3</td><td>Scale 1 weight 3</td></tr>
<tr><td>Byte 5</td><td>Scale 1 status byte may contain combinations of the following:
<table>
<tr><td>Bit 0</td><td>Motion</td></tr>
<tr><td>Bit 1</td><td>Below Zero</td></tr>
<tr><td>Bit 2</td><td>Center of Zero</td></tr>
<tr><td>Bit 3</td><td>Over Capacity</td></tr>
<tr><td>Bit 4</td><td>Units 0 = std, 1 = converted</td></tr>
<tr><td>Bit 5</td><td>Mode 0 = gross, 1 = net</td></tr>
<tr><td>Bit 6</td><td>Not defined</td></tr>
<tr><td>Bit 7</td><td>Weight Error</td></tr>
</table></td></tr>
<tr><td>Byte 6</td><td>Not used</td></tr>
<tr><td>Byte 7</td><td>Not used</td></tr>
<tr><td>Byte 8-15</td><td>Scale 2 weight and status</td></tr>
<tr><td>Byte 16-23</td><td>Scale 3 weight and status</td></tr>
<tr><td>Byte 24-31</td><td>Scale 4 weight and status</td></tr>
<tr><td>Byte 32-39</td><td>Scale 5 weight and status</td></tr>
<tr><td>Byte 40-47</td><td>Scale 6 weight and status</td></tr>
<tr><td>Byte 48-55</td><td>Scale 7 weight and status</td></tr>
<tr><td>Byte 56-63</td><td>Scale 8 weight and status</td></tr>
<tr><td>Byte 64-71</td><td>Scale 9 weight and status</td></tr>
<tr><td>Byte 72-79</td><td>Scale 10 weight and status</td></tr>
</table>

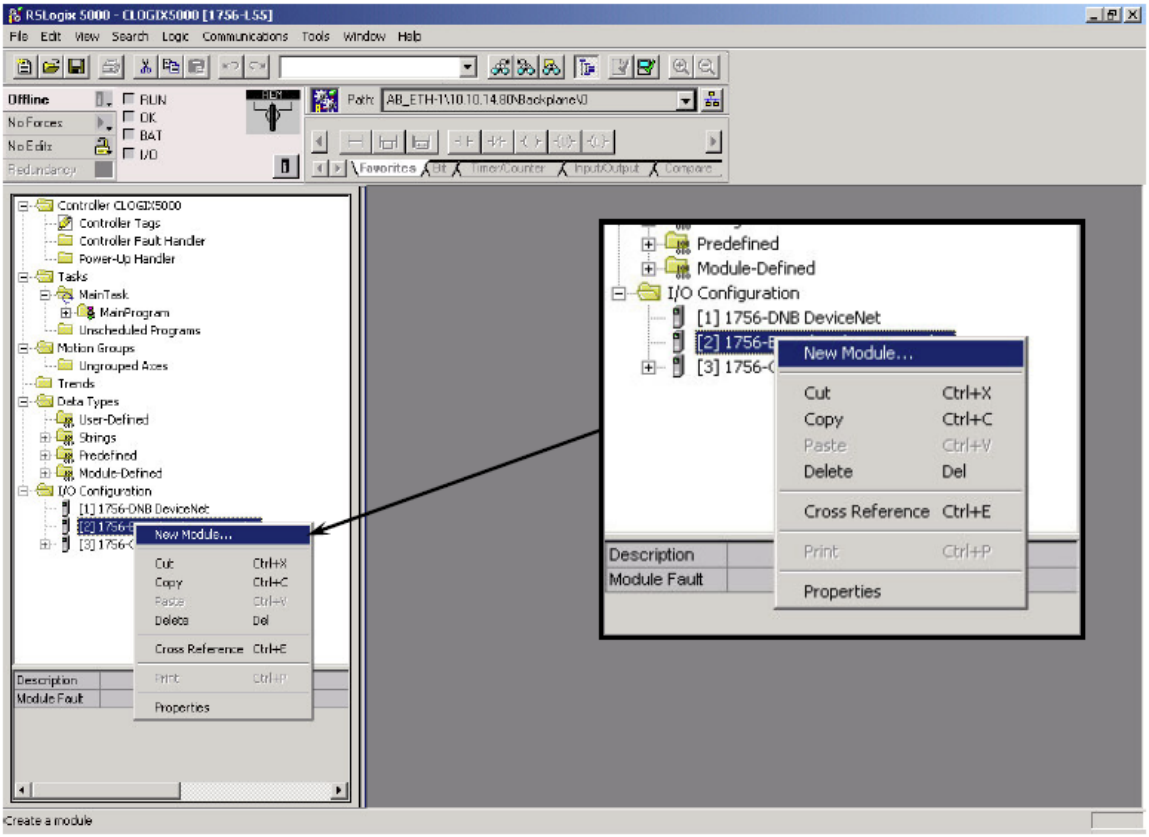
The input address format is:

Address	Description
Byte 0	Scale 1 command byte:

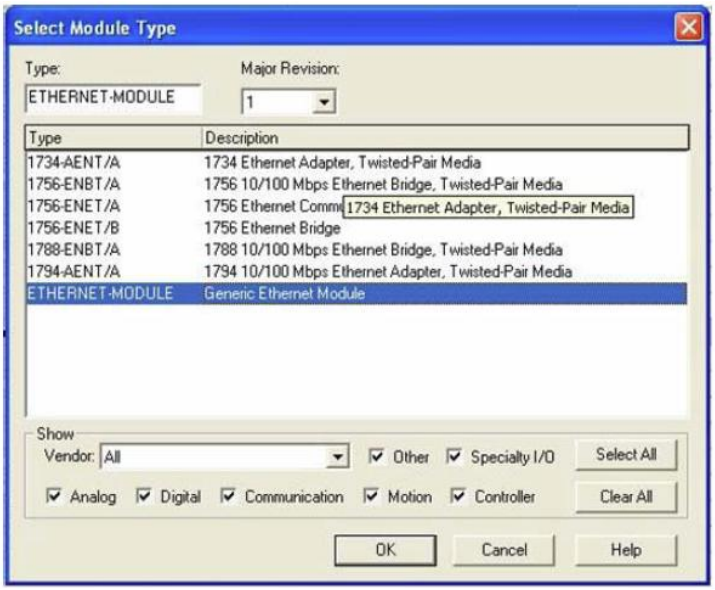
	Bit 0	Gross/Net
	Bit 1	Not defined
	Bit 2	Zero Scale
	Bit 3	PB Tare
	Bit 4	KB Tare (value in bytes 4,5,6,7)
	Bit 5	Not defined
	Bit 6	Not defined
	Bit 7	Not defined
Byte 8	Scale 2 command byte	
Byte 16	Scale 3 command byte	
Byte 24	Scale 4 command byte	
Byte 32	Scale 5 command byte	
Byte 40	Scale 6 command byte	
Byte 48	Scale 7 command byte	
Byte 56	Scale 8 command byte	
Byte 64	Scale 9 command byte	
Byte 72	Scale 10 command byte	

CONFIGURE THE PLC USING RSLogix5000

Either create a new project or use an existing, set the program in “Offline” mode. Add the module to the configuration in the PLC. Start by right click the EtherNet/IP module/bridge in the I/O configuration, and select “New Module”.

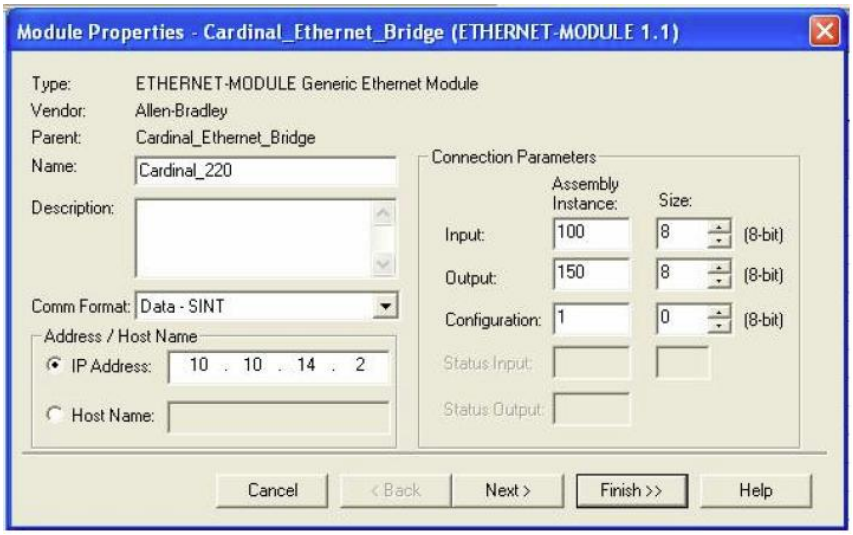


Now a dialogue window will appear. In this dialogue window, select “Generic Ethernet module” and press OK.

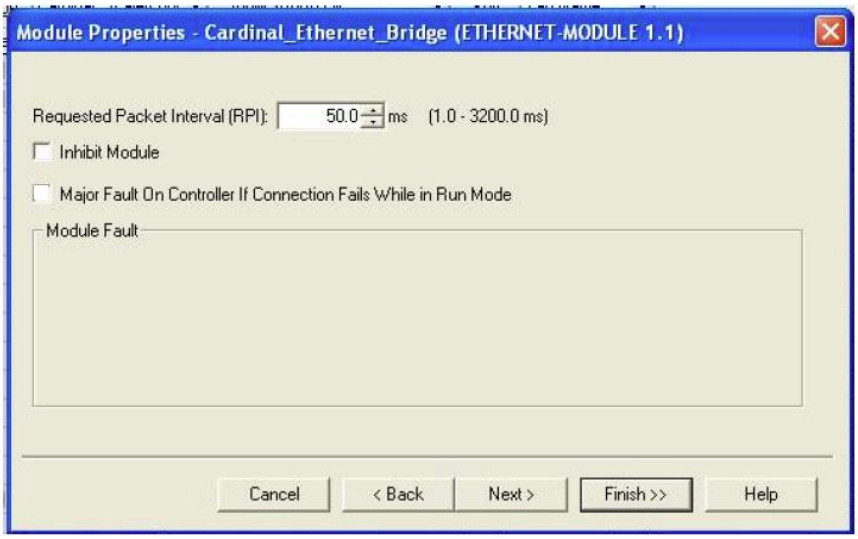


In the next dialogue window, RSLogix 5000 will ask for information regarding the

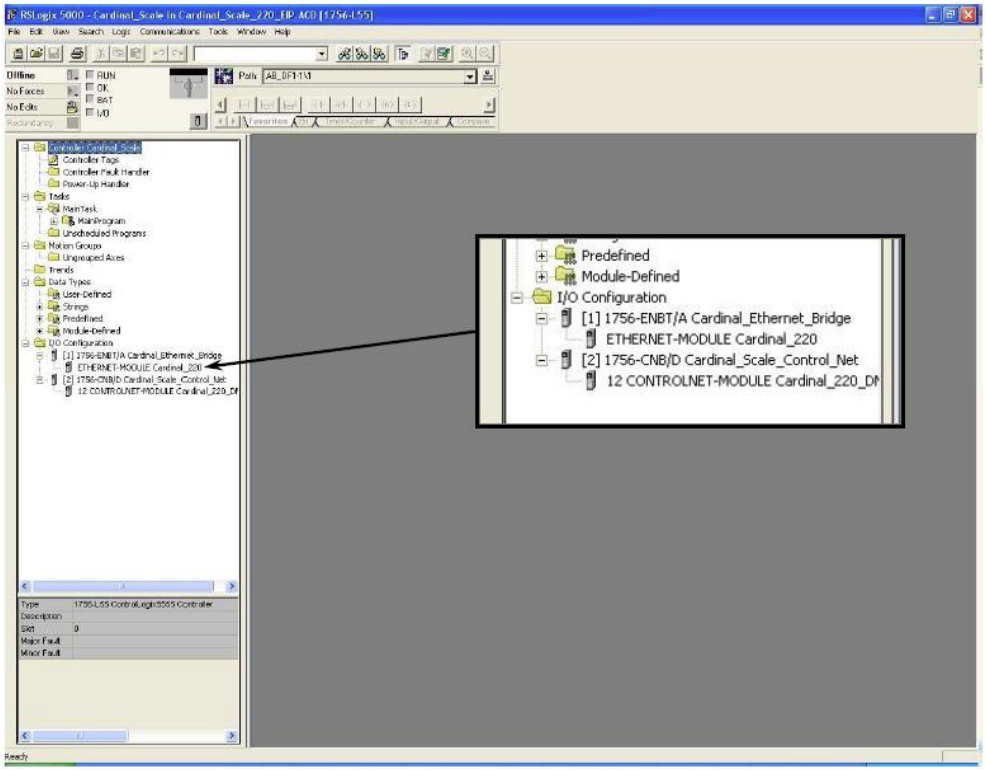
communication to the module. First enter a name for the module. This name will create a tag in RSLogix5000, which can be used to access the memory location in the PLCs memory where the data for the module will be stored. With the name entered, press Next.



In the next dialogue box enter a value for the time between each scan of the module, called Request Packet Interval (RPI). Make sure that “Inhibit Module” isn’t checked. After this, press Finish.

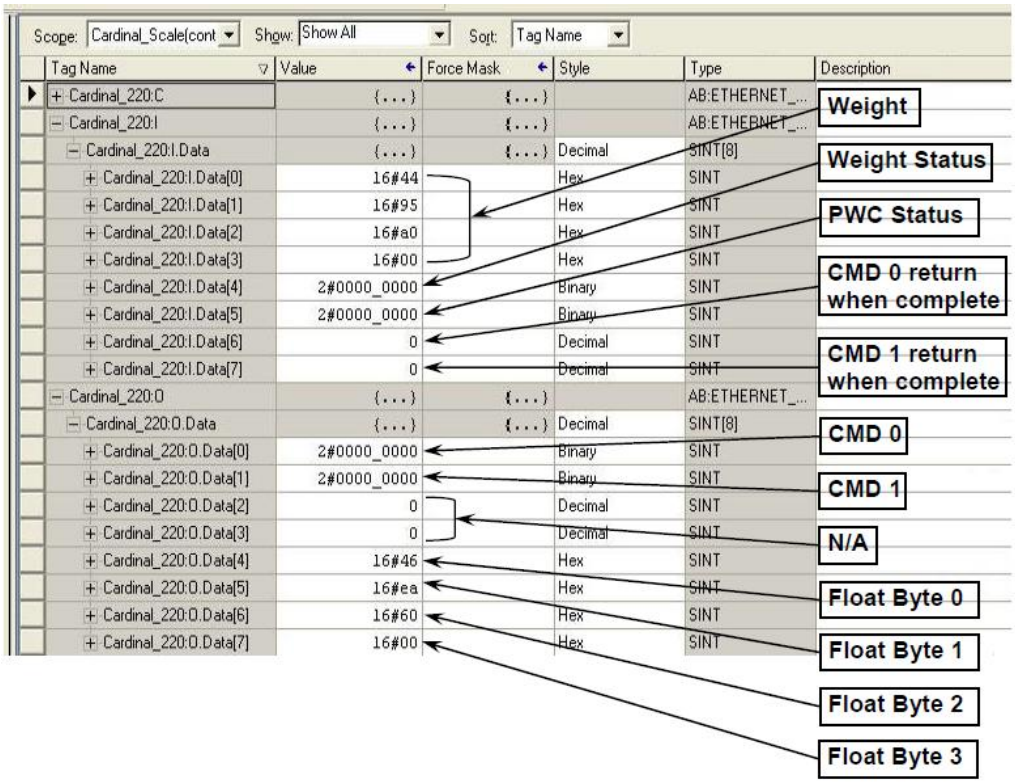


Now the module has been added to the I/O configuration in RSLogix5000. The main screen will look as follows.



Now go online and download the configuration to the PLC.
1. Select Go Online in the communication menu.
2. A new window will open.
3. Select download.
4. A new window will popup with the question if you actually want to download the configuration.
5. Select “Download”. The configuration will now be downloaded to the PLC.

Now it’s possible to access the data exchanged by ControlLogix5000 and the module. To do this, open the “Controller Tags” window and go to monitor tags. Three tags named “Cardinal_2XX:C”, “Cardinal_2XX:I” and ” Cardinal_2XX:O” should be visible, representing the three instances configuration, input and output. The configuration instance will be created even if we selected zero as its size. The Cardinal_2XX:I tag is data coming from the module and Cardinal_2XX:O tag holds data going to the module.

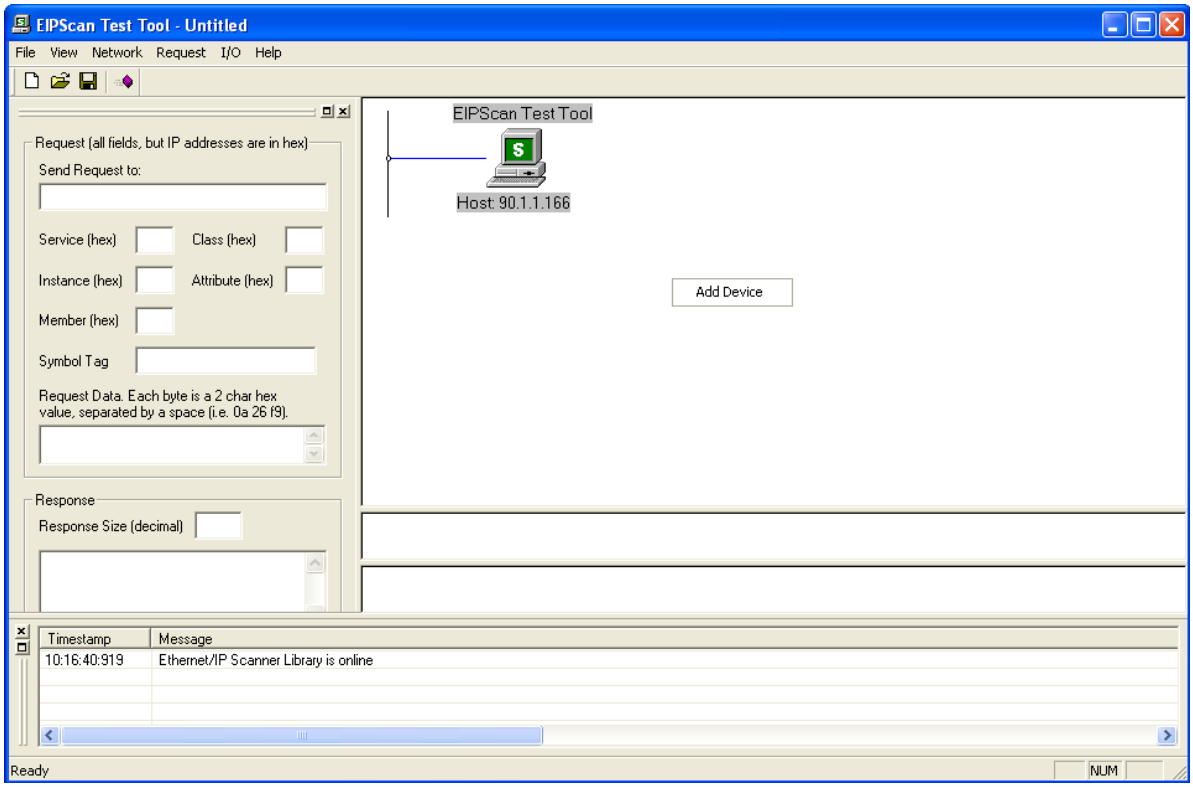


Input:
The weight data begins at Data[0] and uses the next four bytes to produce a floating point program tag.
Float = (Data[0], Data[1], Data[2], Data[3])

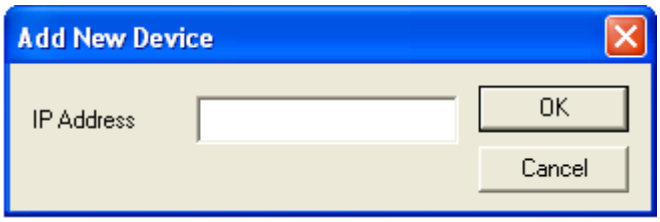
WEIGHT_220	2000.0		Float	REAL		

Test using Pyramid Solutions EIP Scan:

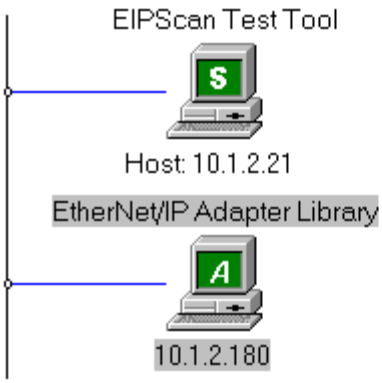
1. Record the IP address and open the EIPScan Test Tool.



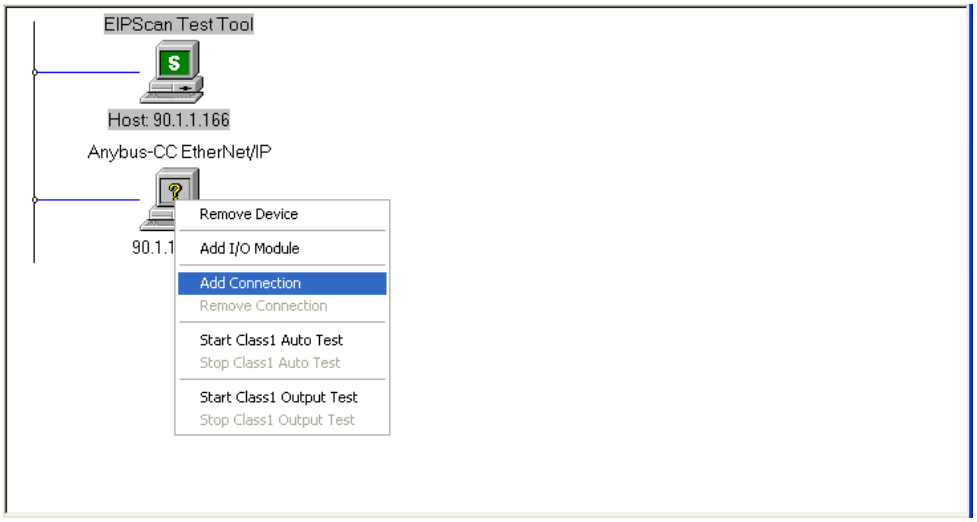
2. Right click in the network area and select “Add Device”
3. Now a dialogue window will appear. Enter the IP address of the 825.



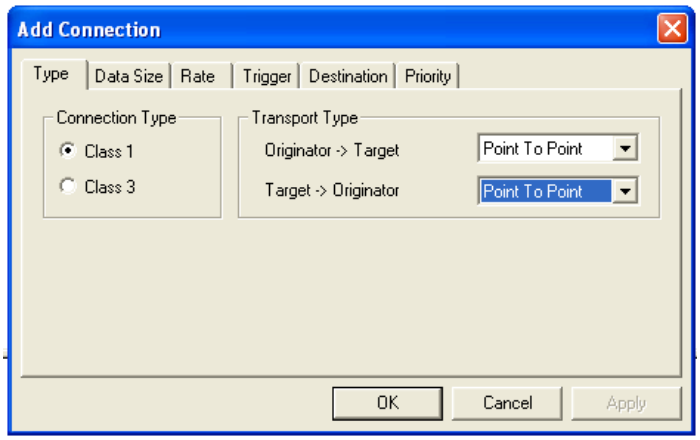
4. The 825 Ethernet/IP module will appear in the network area.



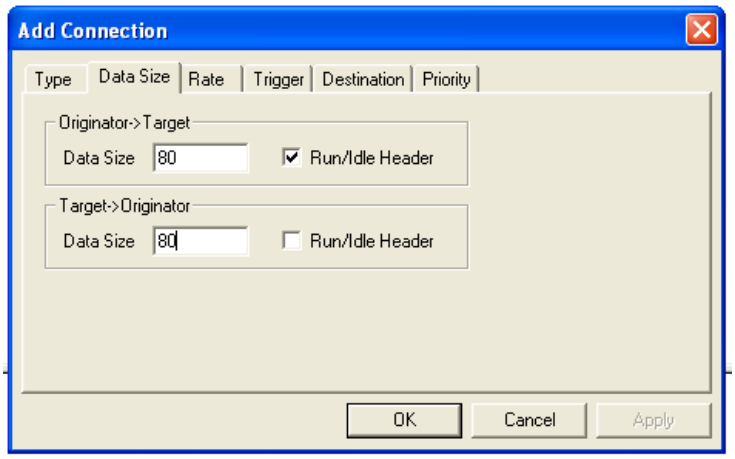
5. Right click on the module and select Add Connection.



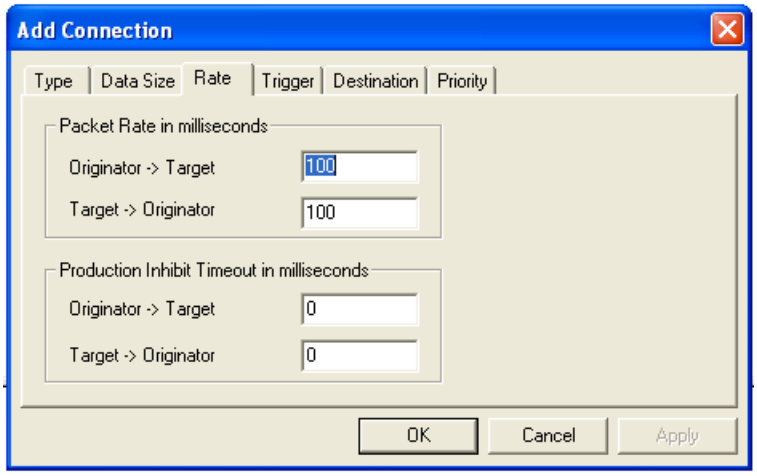
6. A new dialogue window will appear, configure the Type tab as shown:



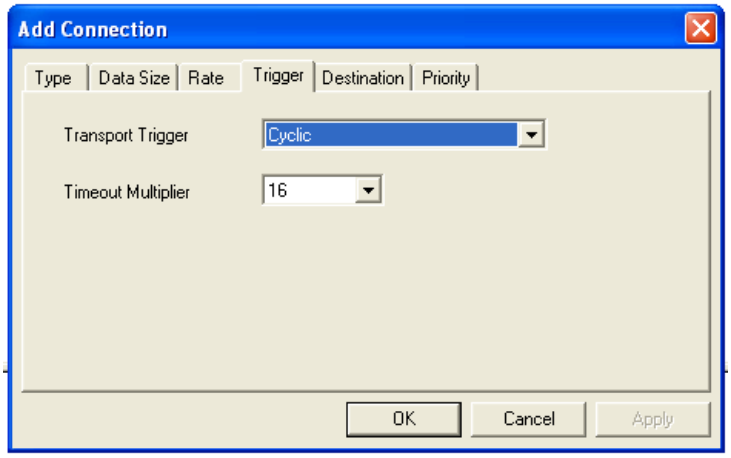
7. Click on the Data Size tab and configure as shown:



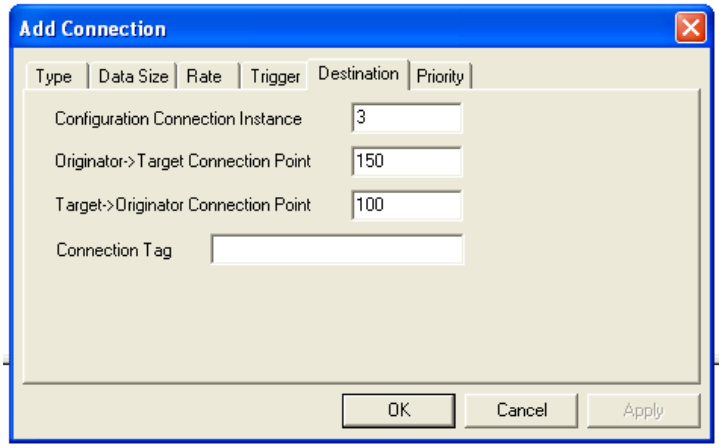
8. Click on the Rate tab and configure as shown:



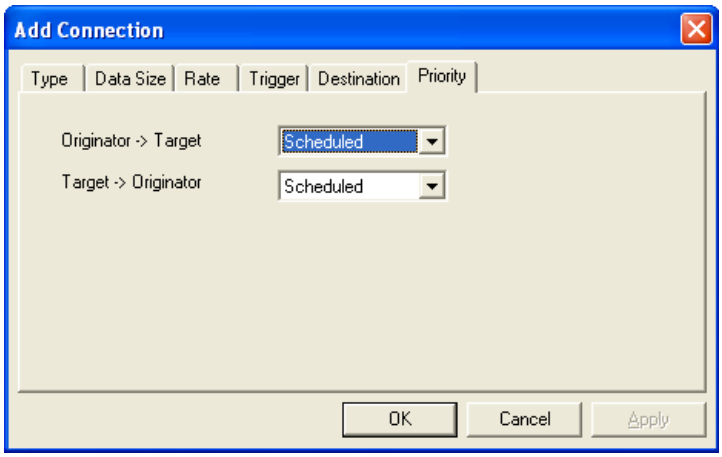
9. Click on the Trigger tab and configure as shown:



10. Click on the Destination tab and configure as shown:

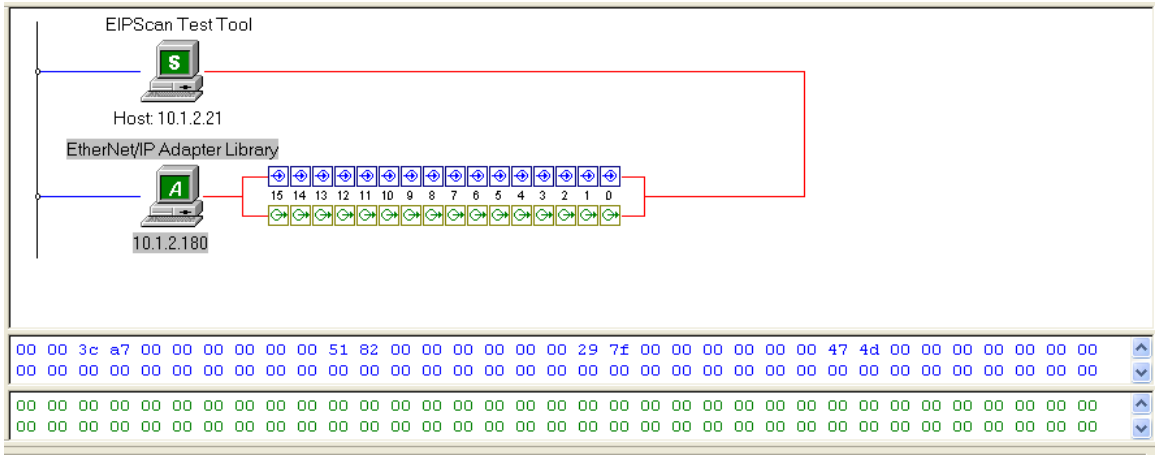


11. Click on the Priority tab and configure as shown:

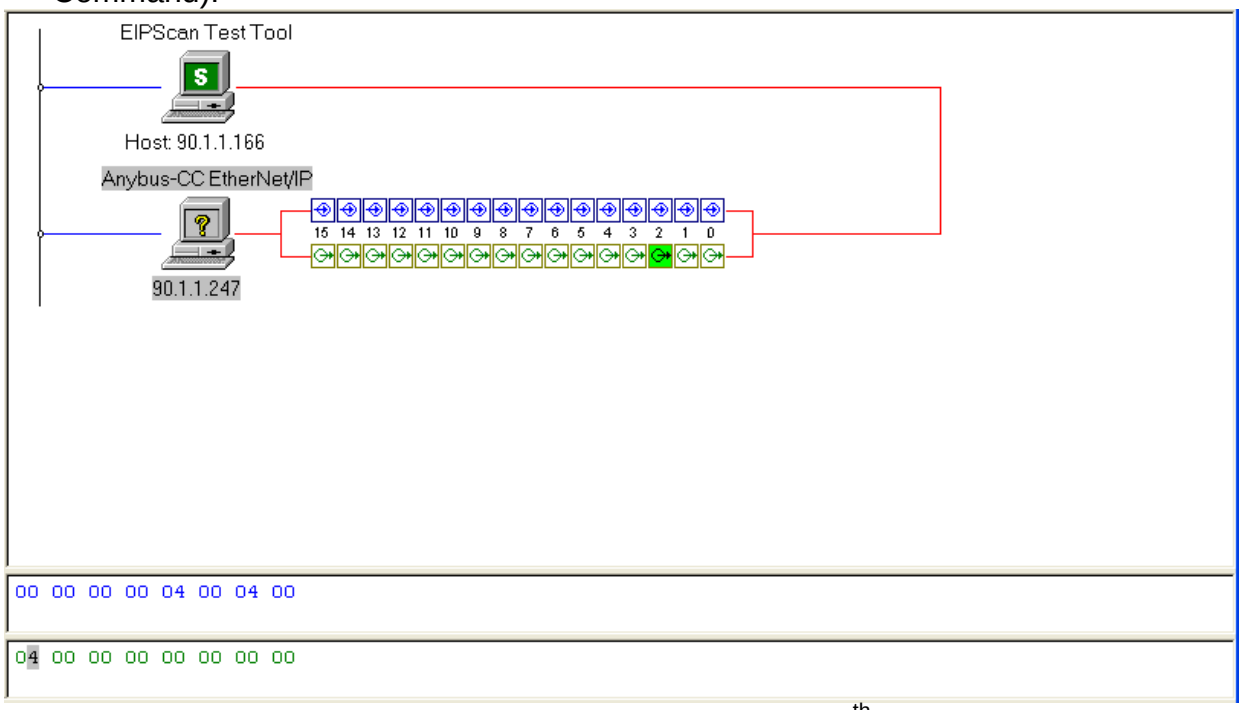


12. Click OK

13. After the configuration is completed the data will show up in the display window. The data in blue will be the incoming weight and status bits and the data in green is the output commands. The weight is displayed in the first four bytes (10000 lb in the default float output format will read 46 1C 40 00)



1. Set the weight simulator dial to display 10000 lb on the indicator.
2. When changing the weight simulator dial, observe the 5th input byte it should change to 01h when there is motion.
3. Highlight the first byte of the output data and type a 4 (Zero Scale Command).



4. The weight display of the indicator should zero and the 5th byte of the input data should read 04h to indicate the indicator is at center of zero.
5. Type over the 04h in the output data to return it to 00h.
6. Set the weight simulator dial to .2mV/V and send the zero scale command again.
7. Type over the 04h in the output data to return it to 00h.