MicroStrain®

Quick Start Guide

EmbedSense™ Wireless Sensor
Firmware Version 1.0 and higher
Software Version 1.0.1 and higher
Revised: 8 February 2008

Welcome

- Thank you for purchasing MicroStrain's EmbedSense™ Wireless Sensor.

Software Installation

- Place the EmbedSense™ CD in your CD-ROM drive and follow the on-screen instructions to install MicroStrain's EmbedSense™ software.

Hardware Installation

- Connect one end of the BNC cable to the BNC connector on the Interrogation Antenna.
- Connect the other end of the BNC cable to the BNC connector on the Reader Assembly.
- Connect one end of the serial cable to the 9-pin RS-232 port on the Reader Assembly.
- Connect the other end of the serial cable to a 9-pin RS-232 port on your host computer.
- Connect the 5-pin DIN connector of the power supply to the 5-pin connector on the Reader Assembly.
- Connect the power supply to the appropriate 100-240 VAC source.
- Observe that the green LED on the front panel of the Reader Assembly illuminates indicating the unit is operating.
- Place your Node in close proximity to the Interrogation Antenna.

Software Operations

- Launch the EmbedSense™ software.
- The software Main screen will appear and the software will automatically scan the host computer's available serial ports and find the Reader Assembly.
- The port which is communicating with the Reader Assembly will be identified by number in the Port Number box. See Figure 1.
- You may verify communications between the host computer and the Reader Assembly by clicking the Ping (Port) button.
- Look for a successful ping message in the Console frame.
- You may reinitiate a scan for the Reader Assembly by clicking the Scan (Port) button.
- Look for a successful scan message in the Console frame.

- The next step is to verify communication between the Reader Assembly and the Node.
- Ensure that only one Node is lying on top of or underneath the Reader Assembly.
- By default, an address of 16384 should be entered in the Node Address scroll box. If not, enter that specific address.
- Click the Ping (Node) button.
- Look for a successful ping message in the Console frame. See Figure 2.
- **Note:** Each Node has a unique address ranging between 1 and 65535. Look on the Node label for the unique address applied at the factory. The exception is the 16384 'broadcast' address; each Node will respond to its unique address and all Nodes will respond to the broadcast address.
- To determine the Node's unique address, enter 50 in the EEPROM Location scroll box; this is the location in the Node's EEPROM map where its unique address is maintained.
- Click the Read button.
- Look for a successful read message in the Console frame indicating what the value in EEPROM 50 is and therefore the unique Node address. See Figure 3.
- Note: When working with multiple nodes, the unique addresses should always be used to insure data integrity.
- Enter the address found in EEPROM 50 in the Node Address scroll box.
- Click the Ping (Node) button.
- Look for a successful ping message in the Console frame. See Figure 4.
- An EmbedSense™ Node has 2 sensing channels.
- Channel 1 is the internal temperature sensor and channel 2 is the differential input circuit, designed to accommodate Wheatstone bridge sensors with 1000 ohm resistors or greater.
- The Node is supplied with a full Wheatstone bridge of 1000 ohm resistors for evaluation.
- Figure 5 shows the Calibration Coefficients required to scale the raw 'bits' from the system into engineering units.
- Enter 0.00457770 for the channel 1 (temperature sensor) Gain1.
- Enter -50.0 for the channel 1 (temperature sensor) Offset 1.
- Enter 0.001 for the channel 2 (differential input) Gain 2.
- Enter 0.0 for the channel 2 (differential input) Offset 2.
- Insure that the Node is in close proximity to the Interrogation Antenna
- Click the Stream button.
- Channels 1 (green trace) and 2 (red trace) will begin sampling and displaying on the graph. See Figure 6.
- The X-axis represents number of samples collected and the Y-axis represents engineering units.
- **Note:** Remember that two different engineering units are being displayed on the same graph. The Y-axis auto-scales accordingly. In this case we are looking at degrees C and millivolts.

- After 30 seconds (as an example), remove the Node away from the Interrogation Antenna. In a moment, the sampling will stop and a message box will appear allowing you to Save/No Save the data collected.
- If you click 'Yes' to save the data, a data file will automatically be created and stored in the Data folder found in the application path of your EmbedSense™ software installation. The file will be named "Stream" and the timestamp will be concatenated to the file name (example: Stream_2-8-2008@9.38).

Congratulations!
You are off and running! Please read the EmbedSense™ User Manual to learn how to successfully put your EmbedSense™ Wireless Sensor to work.

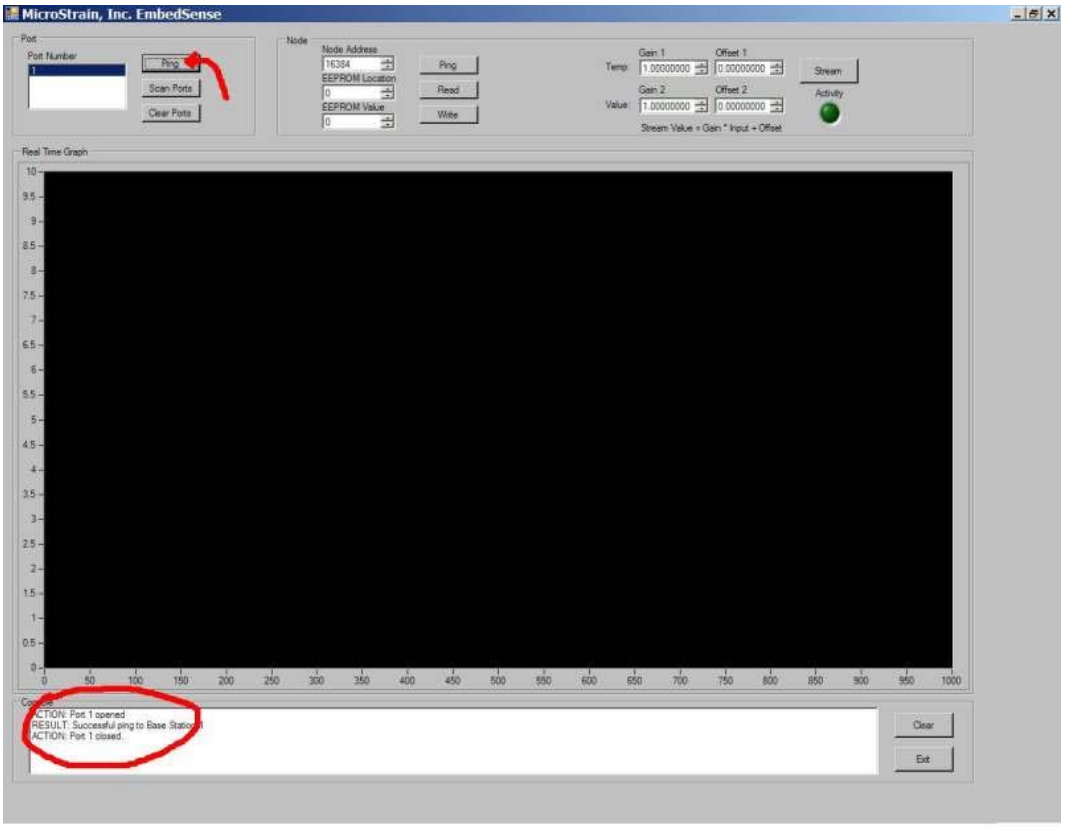

Figure 1

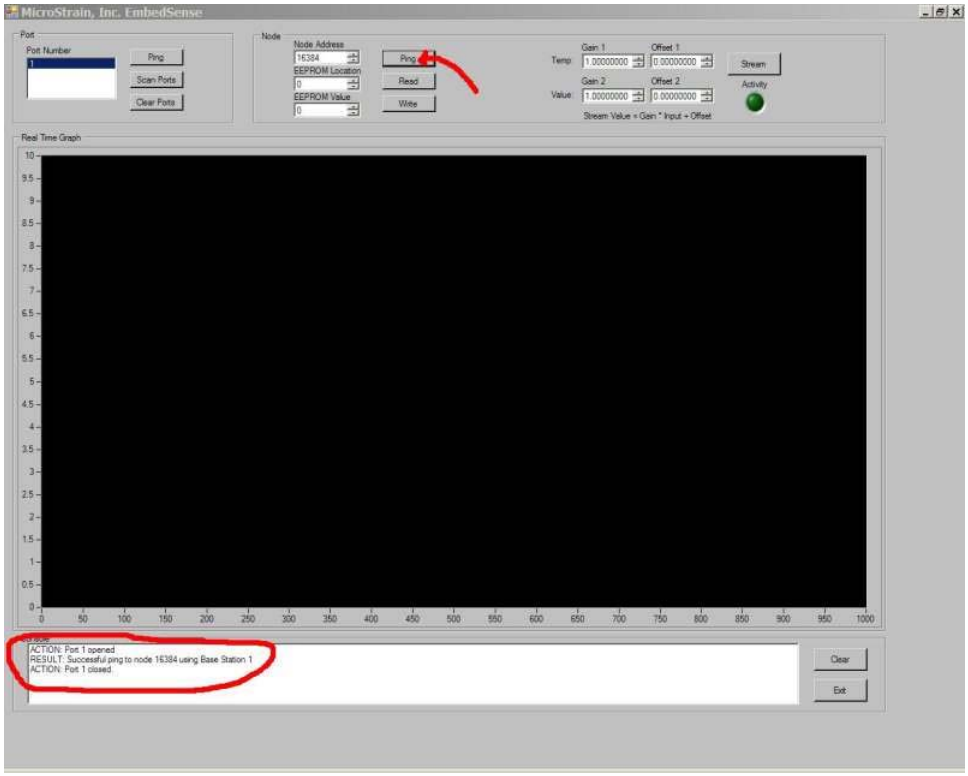

Figure 2

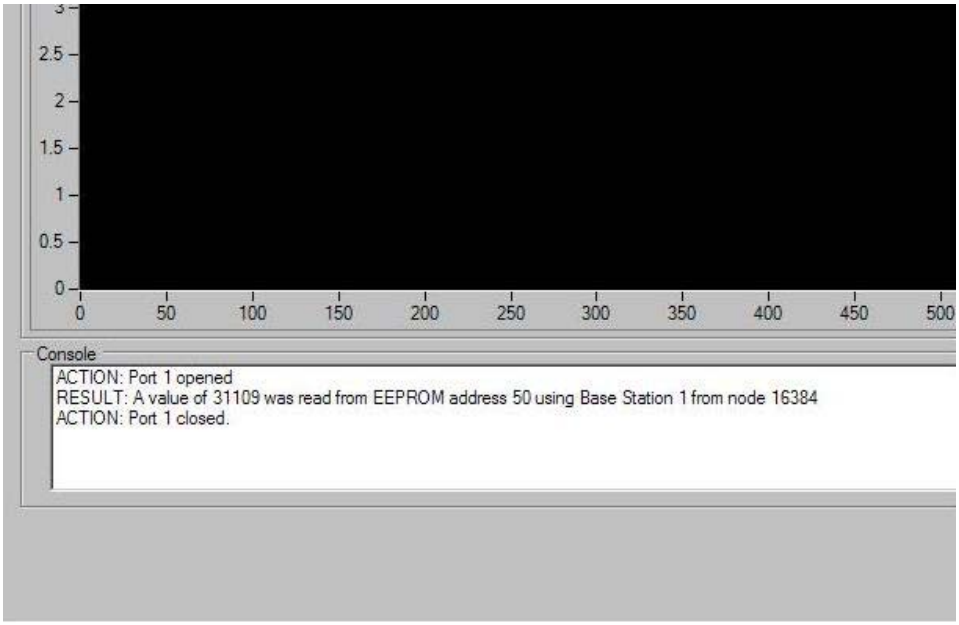

Figure 3

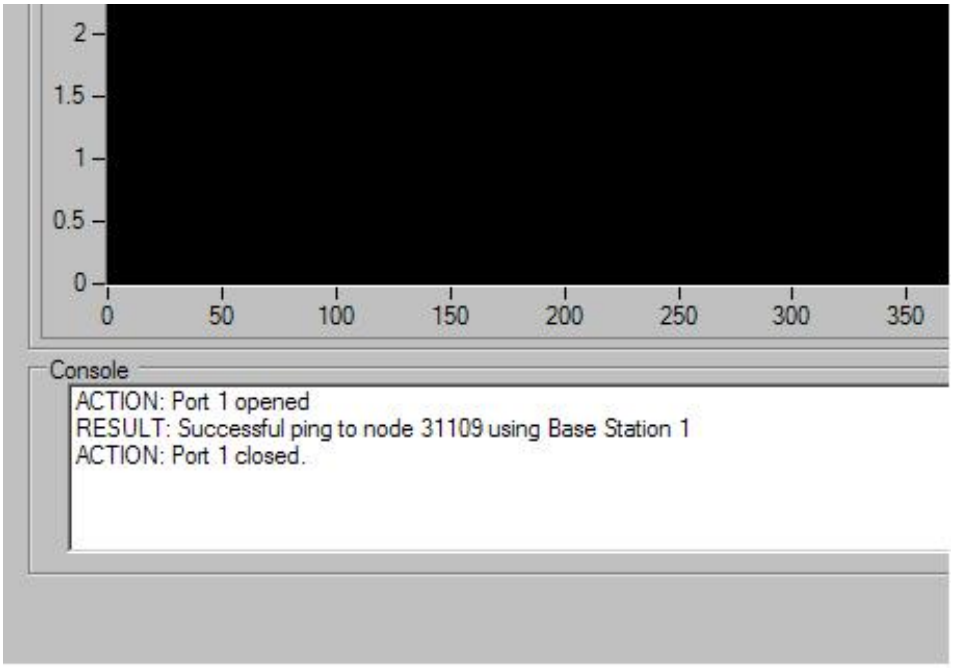

Figure 4

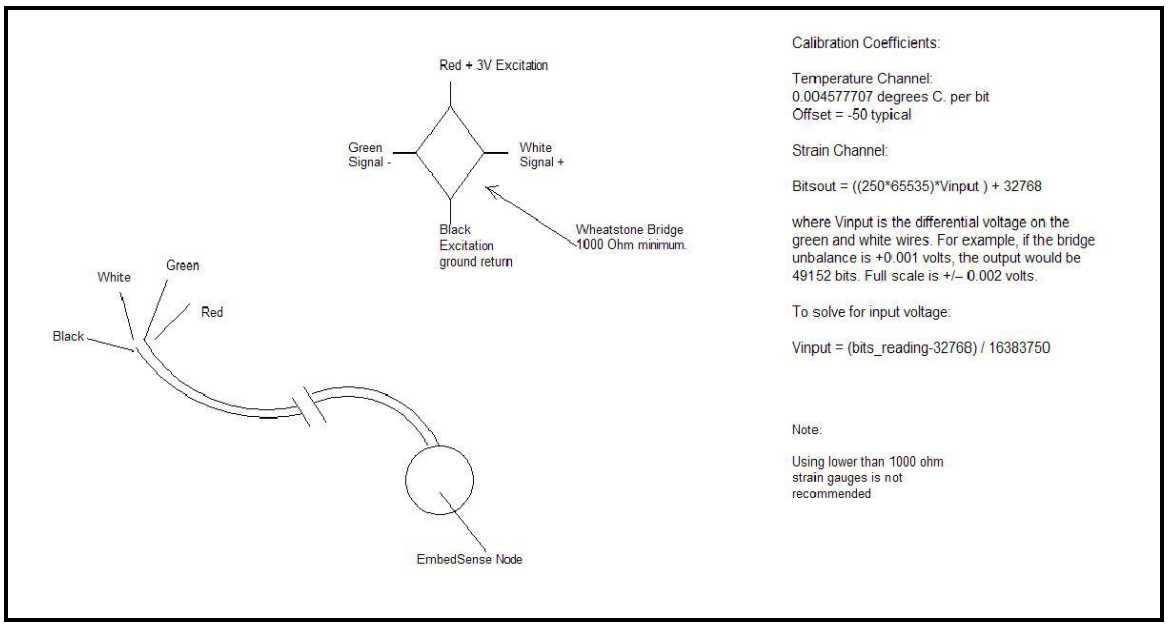

Figure 5

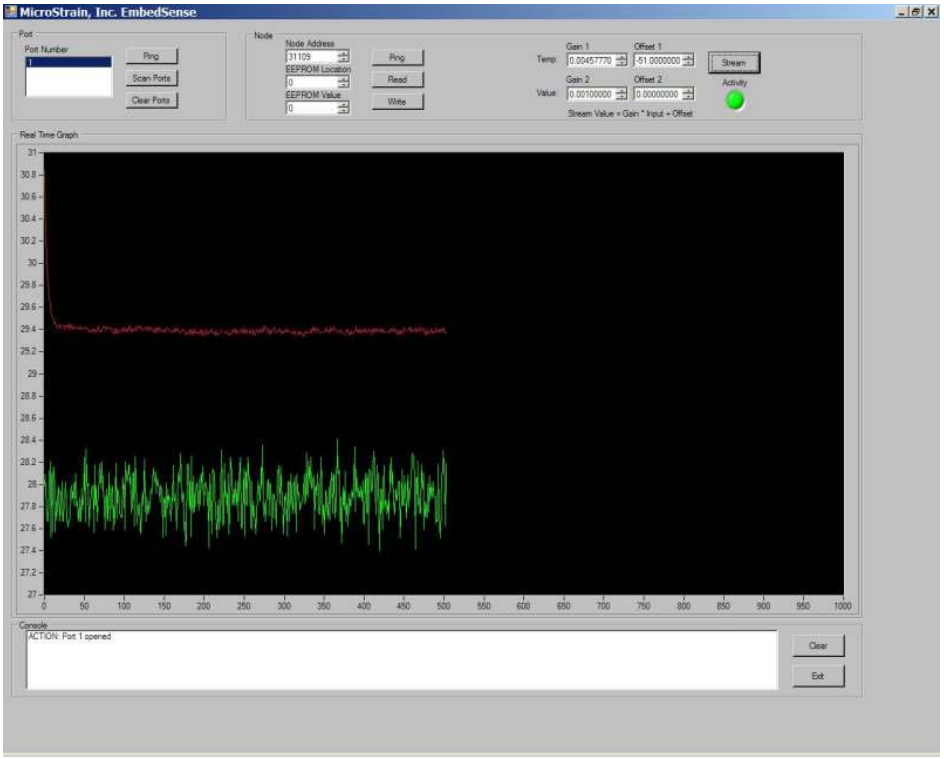
MicroStrain, Inc. EmbedSense
Port
Port Number
1
Ping
Scan Ports
Clear Ports
Node
Node Address
31109
EEPROM Location
0
EEPROM Value
0
Ping
Read
Write
Gain 1
Offset 1
Temp
0.00457770
-51.0000000
Gain 2
Offset 2
Value
0.00100000
0.00000000
Stream Value = Gain * Input + Offset
Stream
Activity
Real Time Graph
31
30.8
30.6
30.4
30.2
30
29.8
29.6
29.4
29.2
29
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2
27
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000
Console
ACTION: Port 1 opened
Clear
Exit

Figure 6