8.4.4 Check Modbus Configuration

Click on **Monitor Configuration** button and verify the following:

- Power Supply Voltage = 5.8 volts
- Slave ID = 0
- Baud Rate = 9600
- Configuration = N,8,1
- RS485 is checked
- Modcon Registers is checked

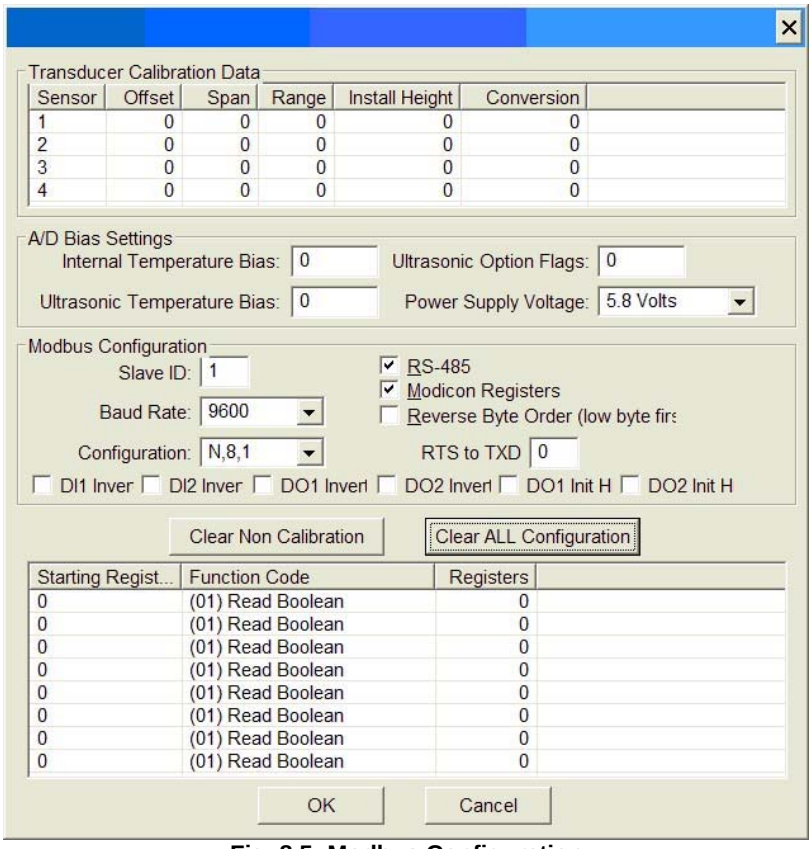


Fig. 8.5: Modbus Configuration

8.4.5 Click on **OK** then **OK** again, to return to the BinComm Main Menu screen.

8.4.6 Deassert **RTS** by clicking on the rts button until letters appear in lowercase.

Note 1: If you want to see 'Debug' messages on BinComm window, when RTS is ON, and the Cmd> prompt is present, type "dE" to enable debug.

Note 2: If you enable Debug and you want to put the Monitor to sleep, click on the RTS button and the Cmd> [SLP] prompt will appear.

Note 3: Once configuration is completed, put the Monitor to sleep by deasserting rts.

8.5 RF Configuration

Verify and/or setup the RF Configuration in the DataHub to ensure it can communicate with all Monitors installed on site. Verify or change the RF Configuration in the DataHub by performing the following steps:

8.5.1 Open BinComm software if not already running on your system.

8.5.2 Connect the DB9 pin connector end of the cable to the DataHub and the other end to an available COM port on your computer.

8.5.3 Verify BinComm is set to communicate with the DataHub via the correct COM port (i.e. COM 1). If the cable attached to a COM port other than COM 1, see Section 8.3 for configuring COM Port.

WARNING

Do not make this connection unless the area is known to be non-hazardous.

8.5.4 From the BinComm main menu screen, click on **Comm Port** > **Configure RF Board** to view the default RF Configuration settings. Fig. 8.6

8.5.5 Verify the **TX/RX Configuration** is set to **19200, single, broadband**. Fig. 8.6

8.5.6 Verify the **Transmit Power** is set to **1** or **2**, depending on distance and terrain between the Monitor(s) and DataHub. Fig. 8.6

8.5.7 See Section 8.6 for details on setting the frequency in Monitor and DataHub.

8.5.8 Click on [Update] > [Initialize] > [Status] > [Reset] buttons to save the changes.

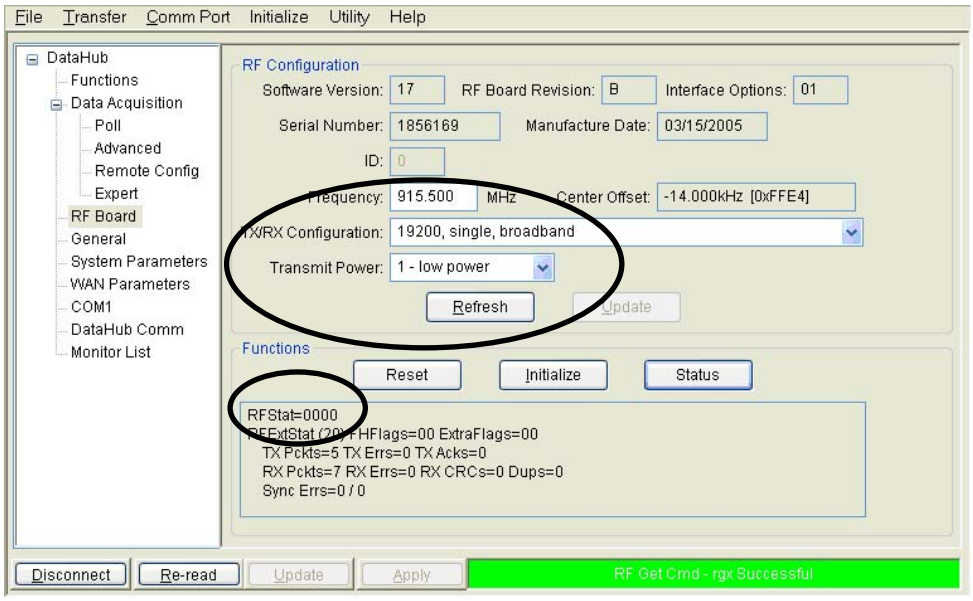


Fig. 8.6: Default RF Configuration via RF Board Screen

8.5.9 Verify **RF Stat=0000** on RF Default screen in DataHub Lite menu tree, Fig. 8.6 or in the Floating terminal screen. Fig. 8.7

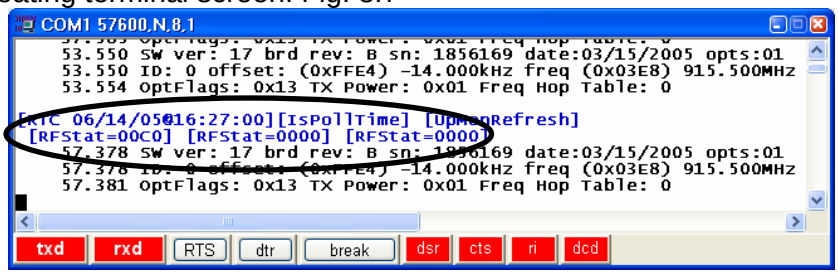


Fig. 8.7: RF Stat=0000

8.6 Setting or Changing RF Frequency

The default frequency setting for the Monitor is 912.000 MHz (Fig. 8.8). If multiple sites are in close proximity, set each site to different frequency settings.

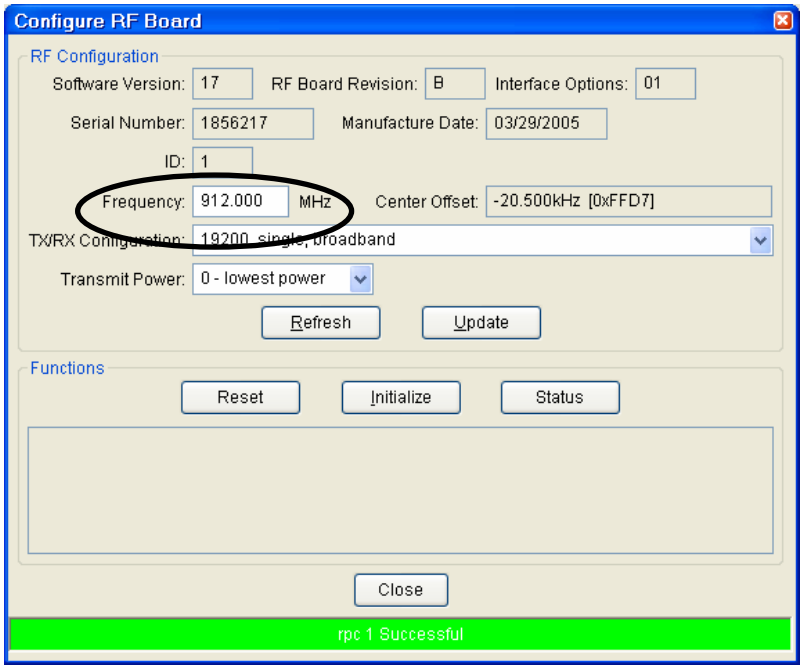


Fig. 8.8: Default Frequency

DataHub and all Monitors on each site must be set to the same frequency to ensure proper operation of the system. The DataHub and Monitor cannot communicate with each other if they are set to different frequencies.

To change the frequency setting in the Monitor and DataHub perform the following steps:

8.6.1 Setting/Changing RF Frequency in Monitor

8.6.1.1 Open BinComm software if not already running on your system.

8.6.1.2 Connect Monitor configuration cable to PCB on Monitor and to available COM port on computer.

WARNING

Do not make this connection unless the area is known to be non-hazardous.

8.6.1.3 Verify BinComm is set to communicate with the Monitor via the correct COM port (i.e. COM 1). If COM port other than COM 1 see Section 8.3 for configuring COM Port.

8.6.1.4 From the BinComm main menu screen, click on **Comm Port** > **Configure RF Board** to set the RF Frequency in the Monitor. A screen similar to Fig. 8.9 should appear.

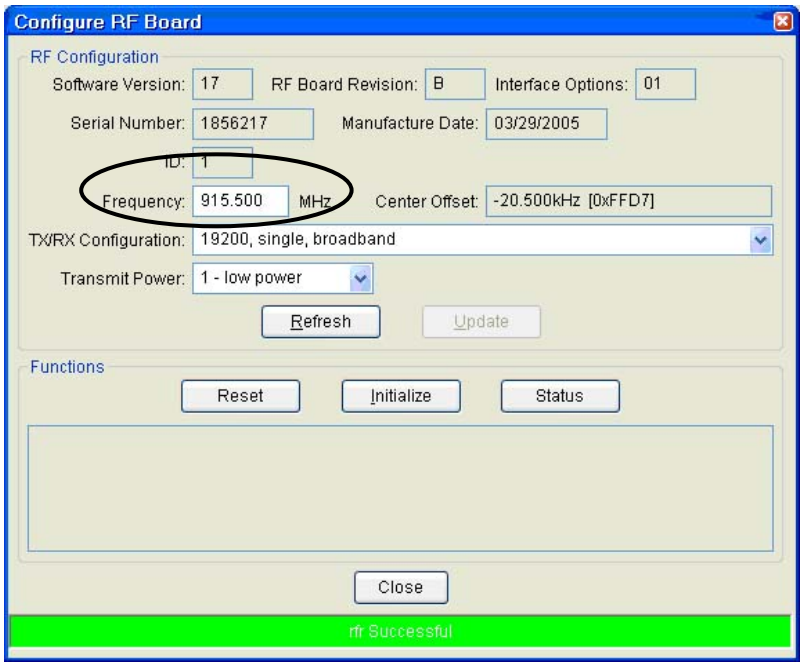


Fig. 8.9: Change Frequency

8.6.1.5 Highlight the text in Frequency box and change the number to the desired frequency (i.e. 915.500). Fig. 8.10

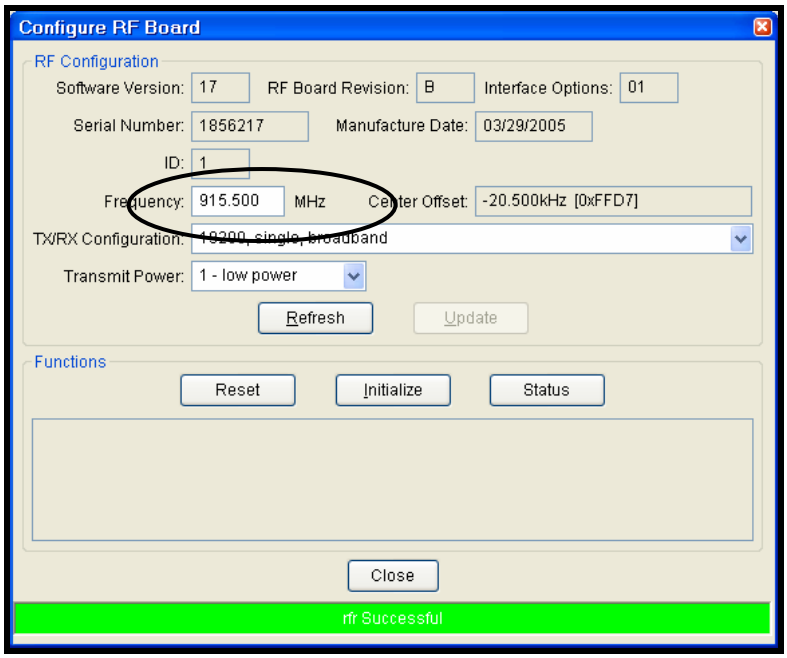


Fig. 8.10: Change Frequency

8.6.1.6 Click on [Update] > [Initialize] > [Status] > [Reset] buttons to save the new frequency setting

8.6.1.7 Repeat the above step for each Monitor installed on site.

8.6.2 Setting/Changing RF Frequency in DataHub

8.6.2.1 Open BinComm software if not already running on your system.

8.6.2.2 Connect the DB9 pin connector end of the cable to the DataHub and the other end to an available COM port on your computer.

8.6.2.3 Verify BinComm is set to communicate with the DataHub via the correct COM port (i.e. COM 1). If the cable attached to a COM port other than COM 1, see Section 8.3 for configuring COM Port.

⚠ WARNING ⚠

Do not make this connection unless the area is known to be non-hazardous.

8.6.2.4 From the BinComm main menu screen, click on **Comm Port** > **Configure RF Board** to set the RF Frequency in the Monitor. A screen similar to Fig. 8.11 should appear.

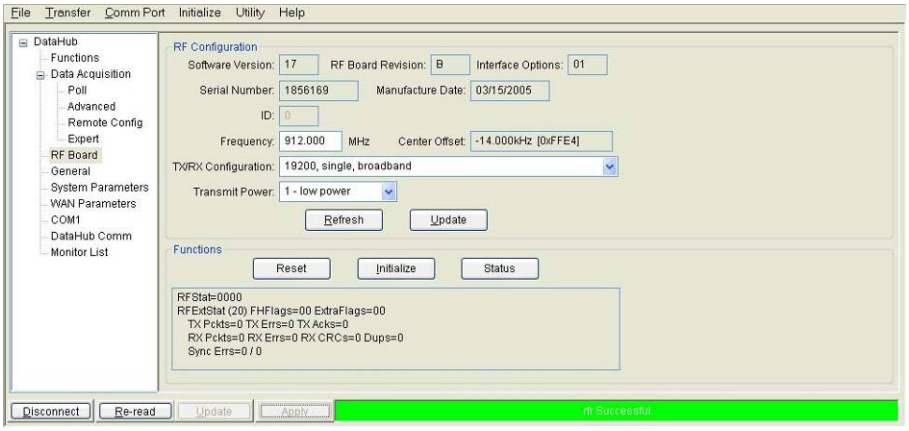


Fig. 8.11: Configure RF Board

8.6.2.5 Highlight the text in the **Frequency** box and change the text to the frequency assigned to the Monitors and DataHubs for the site and hit the Enter key. Fig. 8.12

8.6.2.6 Click on [Update] > [Initialize] > [Status] > [Reset] buttons to save the changes.

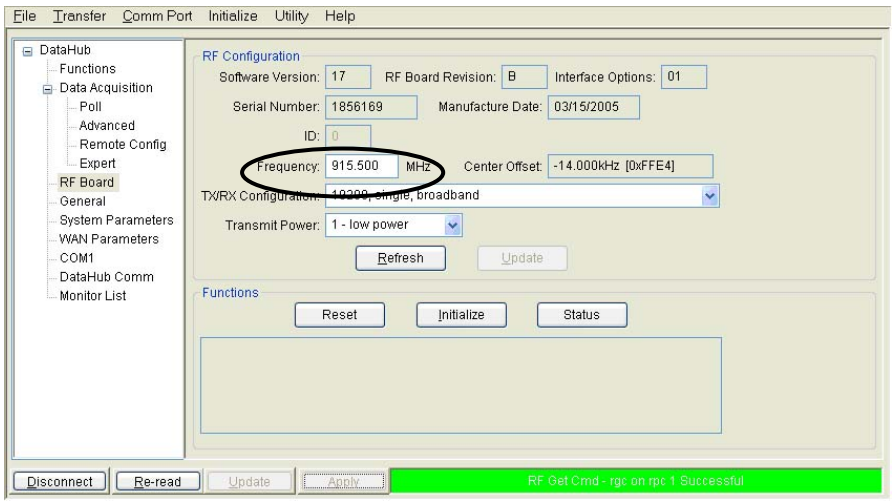


Fig. 8.12: Set RF Frequency

8.6.3 Click on [Disconnect] > **File** > **Exit** and to close **BinComm** screen.

8.7 RF Communications

The RSSI reading in the DataHub Lite will give you the RF signal strength between the DataHub Lite and each Monitor. To determine the RSSI for each Monitor, perform the following steps:

8.7.1 Open BinComm software if not already open in background.

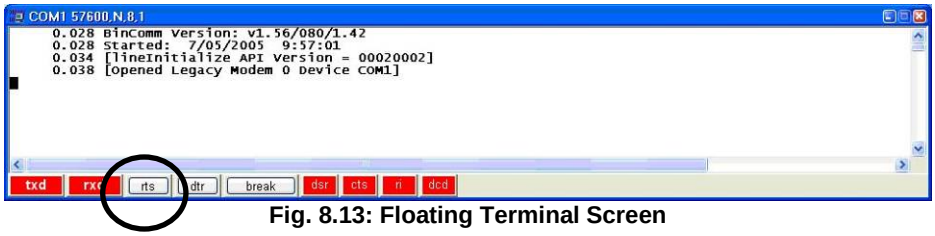


Fig. 8.13: Floating Terminal Screen

8.7.2 On the floating terminal screen, click on assert [rts] button to awaken DataHub from sleep mode. Fig. 8.13

8.7.3 On the BinComm main menu screen click on **Comm Port** > **Connect to DataHub** > **Connect**.

8.7.4 Click on **Poll** > **Poll Monitor**. Fig. 8.14

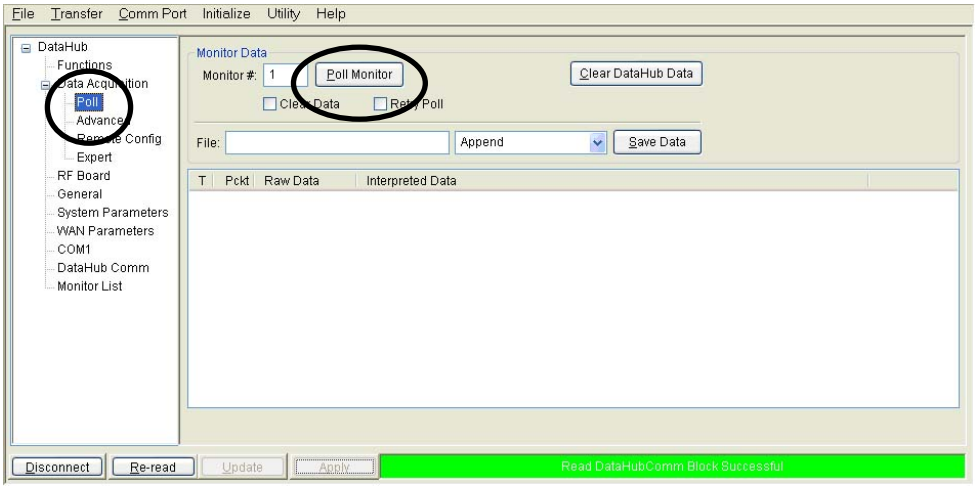


Fig. 8.14: Poll Monitor

8.7.5 On the Floating Terminal screen, locate the RSSI value for the Monitor polled. Fig. 8.15

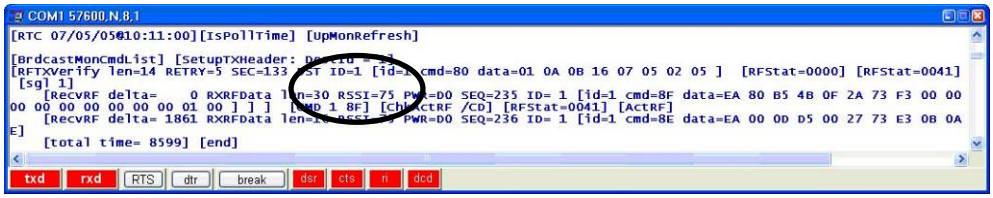


Fig. 8.15: RSSI Value

8.7.6 An optimal RSSI value is 75 dBm, but a range of 75 to 95 dBm should provide effective communications between the devices. If you receive an RSSI value above 95, verify there is a clear line-of-sight between the DataHub Lite and Monitor. If the line of site is clear, increase the RF Transmit Power between the Monitor and DataHub Lite.

8.8 RF Transmit Power

8.8.1 To increase the RF Transmit Power, click on **RF Board**. Review the current **Transmit Power** setting. There are four Transmit Power settings, O - lowest, 1 - low power, 2 – medium power and 3 – high power. Fig. 8.16

8.8.2 Increase the setting to the next highest level then click on Update > Initialize > Status > Reset buttons.

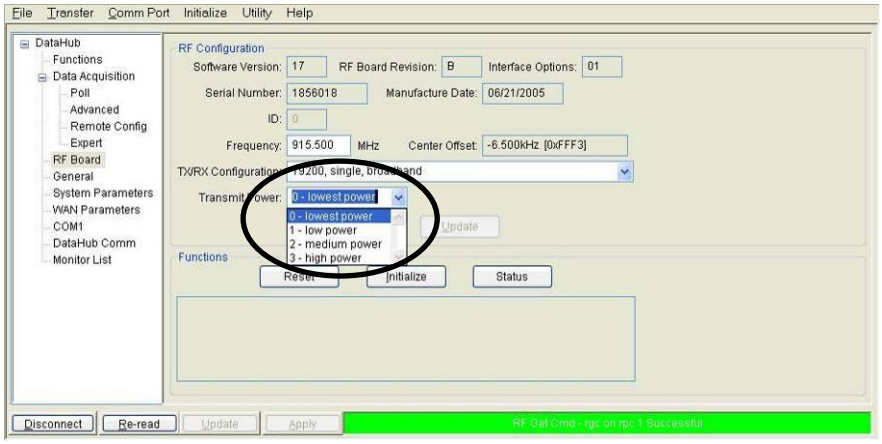


Fig. 8.16: Transmit Power Setting

8.8.3 Poll the Monitor again. If you receive an RSSI value between 75 to 90 dBm, repeat steps 8.7.6 through 8.7.8 above for each Monitor installed on site.

8.8.4 Upon completion, click on Disconnect button then close BinComm.

9.0 Calibration of Pressure Monitor

Since the Sentry* Pressure Monitor uses analog pressure transducers to allow the Monitor to sense the pressure on a line, these devices will need an initial calibration and require periodic calibration to keep the devices accurate. Calibration requires associating each transducer with the appropriate port on the Monitor and the setting the zero pressure point. We recommend calibration of pressure transducers on a bench top or calibration con be performed when installed on the pipe. Use appropriate precautions. Vent the transducer to atmospheric pressure.

9.1 Introduction

9.1.1 Loosen the Monitor enclosure cover and open the Monitor

9.1.2 Connect 4-pin connector on the Configuration cable to P2 on the Monitor PCB.

9.1.3 Connect the DB9 serial connector on the Configuration cable (P/N SX1000-CCM) to the serial port on your PC.

9.2 Calibration via BinComm

9.2.1 Open BinComm software if not already running on your system.

9.2.2 From the BinComm main menu screen, click on **File** > **COM Configure**.

9.2.3 Verify the Monitor is communicating with the appropriate COM Port, the **Baud Rate** set to **57600** and **Config N,8,1**. Fig. 9.1 (See Section 8.3, **Configure COM Port** for additional details)

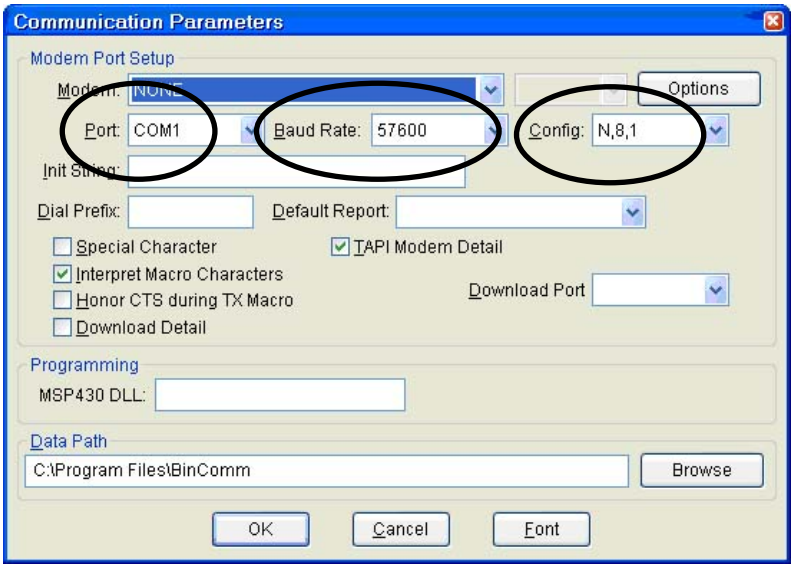


Fig. 9.1: Verify Communication Configuration

9.2.4 On the floating terminal screen, assert **rts** (Alt-R or click on “rts”). This awakens the Monitor from sleep mode. (Fig. 9.2)

9.2.5 Type a **c** at the **Cmd>** prompt (**Cmd>c**) to enter the **Calibration** Mode. Fig. 9.2

Fig. 9.2: Enter Calibration Mode

9.2.6 At the calibration command (**CalCmd>**) prompt, type the number of the port you wish to calibrate (i.e. p1, p2, p3 or p4). For this example, we will use **p1**. Data for the active port will display. Fig. 9.3

CalCmd>p1
Active Port 1 Current Offset=0 Span=0 Range=0 Conversion=0 Height=0
CalCmd Port 1>

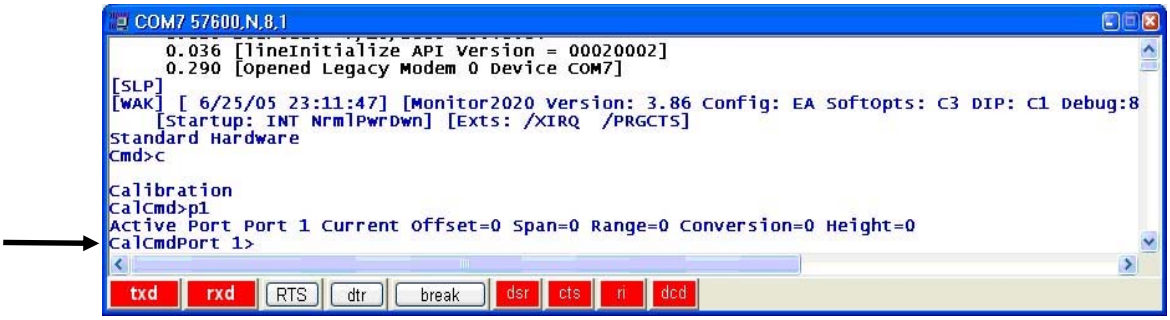


Fig. 9.3: Active Port Current Reading

Note: The values shown above are typical the first time, actual values may differ.

9.2.7 If this is not a First Time calibration, check the current transducer reading. To check current transducer reading, at the **CalCmd Port 1>,** type the letter **d** to display data. The value after **Pressure** is the current pressure on the transducer. Fig 9.4

Fig. 9.4: Current Pressure Reading

9.2.8 Set Offset Automatically

Set the offset automatically.

NOTE: Ensure the transducer has no pressure on it and that each transducer has a different offset typically in the range of 327 to 491. An offset return of less than 20 indicates the transducer is either not plugged in or the wrong port selected.

To set the offset automatically, type **o** and hit <Enter>.

Fig. 9.5: Set Offset

9.2.9 Save Offset Value

Type **w** and hit <Enter> to write and store offset in the Monitor. Fig 9.6

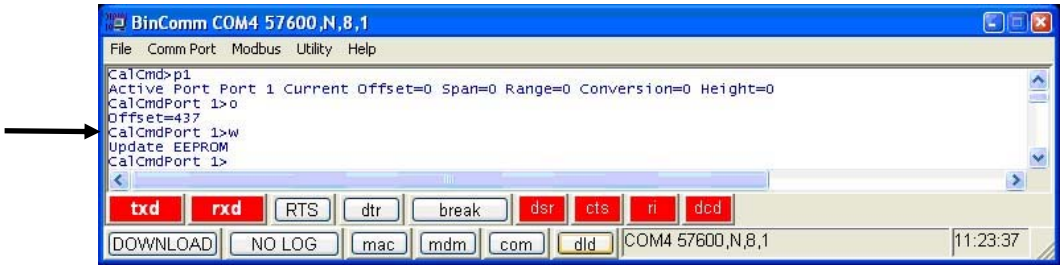


Fig. 9.6: Save Offset

9.2.10 Set Range of Pressure

To set the range of the pressure, type **r** plus the transducer range and hit <Enter> key (in the example below the transducer pressure range is 1000) **(r 1000)** <Enter>

Fig. 9.7: Set Range

9.2.11 **Save Range Value**

Type **w** and hit <Enter> to write and store range in the Monitor. Fig

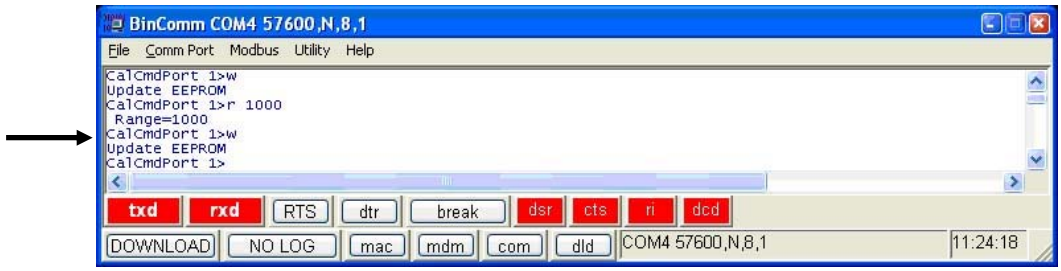
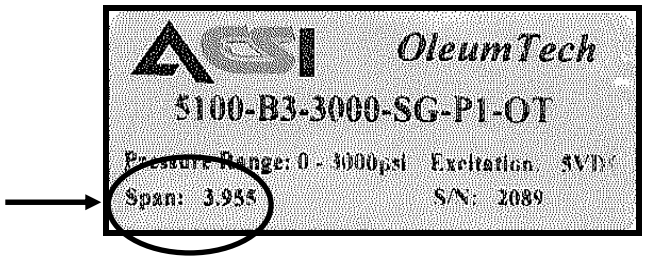


Fig. 9.8: Save Range

9.2.12 **Set the Span**

To ensure accuracy of the pressure reading the pressure transducer span needs to be set and stored in the Monitor. A simple calculation is required to determine the span.

9.2.12.1 To set the Span Value, you need the span number located on the lower left corner of the label. Fig 9.9



- Calculating of the span value:
- Transducer span = 3.955 volt (value on transducer label)
- Span value = 4096 x (transducer span in volts / 5volts)
- Span value = 4096 x (3.955 / 5.00)
- Span value = approximately 3240

9.2.12.2 Type s 3240 <Enter> a

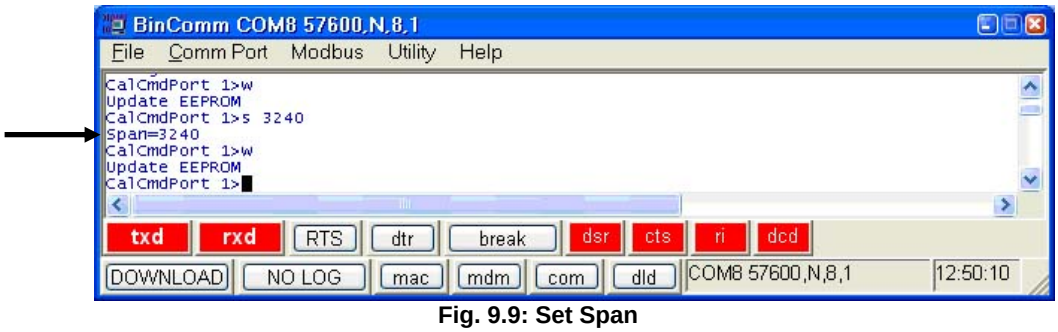


Fig. 9.9: Set Span

9.2.13 **Write data to storage**:

Type w <Enter>

9.2.14 Recheck all of the values to ensure they are correct:

Type **p1** <Enter>

Fig. 9.9: Save Span

9.2.15 Repeat calibration procedure starting with step 9.2.5 for each additional pressure transducer port.

9.2.16 Exit Calibration Mode:

Type **x** <Enter>

9.3 Calibration of Pressure Transducer via BinComm & DataHub

9.3.1 Open BinComm software if not already running on your system.

9.3.2 From the BinComm main menu screen, click on **File** > **COM Configure**.

9.3.3 From the **Cmd>** prompt type **CAL**.

9.3.4 At the calibration command prompt, type **PD1** to calibrate analog output port number 1.

9.3.5 Type **O** and hit <Enter> key then type **800** to enter offset value.

9.3.6 Type **S** and hit <Enter> key then type **3200** to enter span value.

9.3.7 Type **W** and hit <Enter> key to save the calibration of analog output port 1.

9.3.8 Repeat steps 9.3.4 through 9.3.7 for each port containing a pressure transducer.

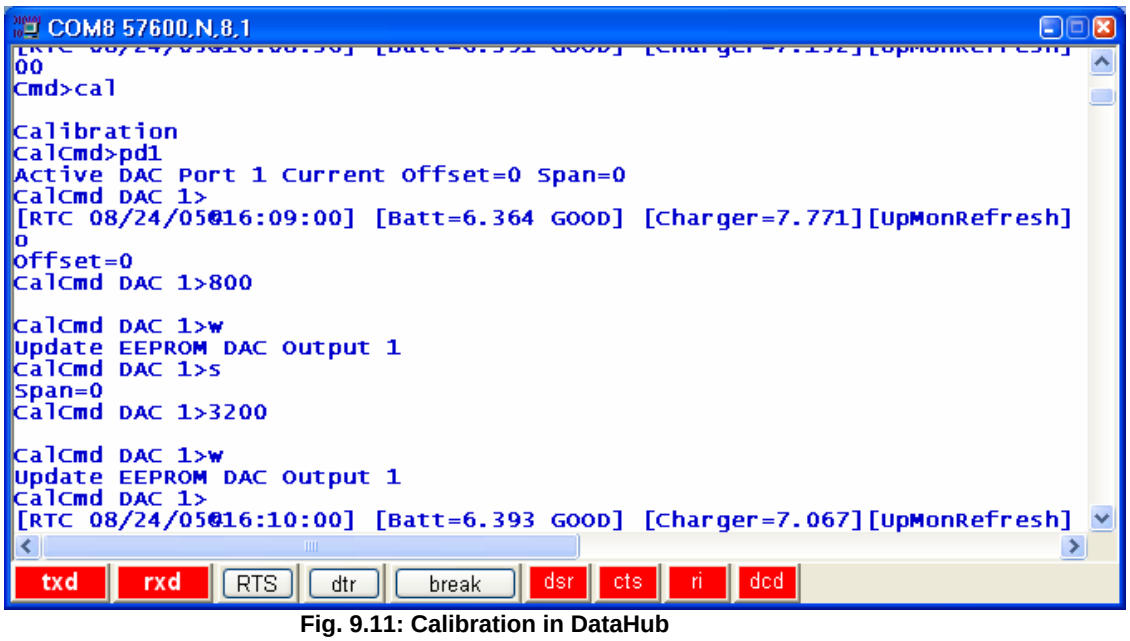


Fig. 9.11: Calibration in DataHub

10.0 Calibration of Temperature Sensor

The Sentry* Temperature Monitor uses analog temperature sensors to allow the Monitor to sense the temperature accurately; these devices will need an initial calibration and require periodic calibration to keep the devices accurate. Calibration requires associating each temperature sensor with the appropriate port on the Monitor and setting the zero pressure point. We recommend calibration of temperature sensors on a bench top or calibration can be performed when installed on site. Use appropriate precautions.

10.1 Introduction

10.1.1 Loosen the Monitor enclosure cover and open the Monitor

10.1.2 Connect 4-pin connector on the Configuration cable to P2 on the Monitor PCB.

10.1.3 Connect the DB9 serial connector on the Configuration cable (P/N SX1000-CCM) to the serial port on your PC.

WARNING

Explosions may result in death or serious injury. Do not remove the monitor cover in an explosive atmosphere. Perform onsite software configuration and connect hardware away from hazardous location.

10.2 Calibration of Temperature Sensor via BinComm

10.2.1 Open BinComm software if not already running on your system.

10.2.2 From the BinComm main menu screen, click on **File** > **COM Configure**.

10.2.3 Verify the Monitor is communicating with the appropriate COM Port, the **Baud Rate** set to **57600** and **Config N,8,1**. Fig. 10.1 (See Section 8.3, **Configure COM Port** for additional details)

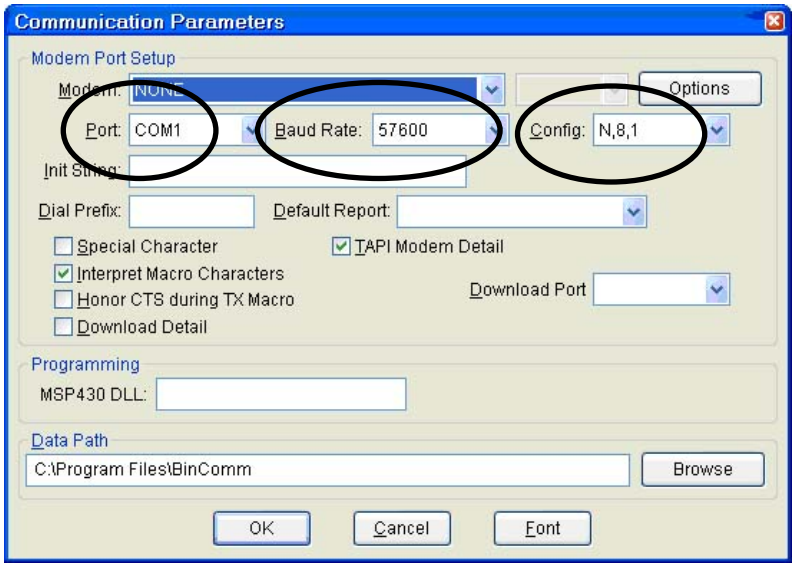


Fig. 10.1: Verify Communication Configuration

10.2.4 On the floating terminal screen, assert **rts** (Alt-R or click on “rts”). This awakens the Monitor from sleep mode. (Fig. 10.2). The

10.2.5 Type a **c** at the **Cmd>** prompt (**Cmd>c**) to enter the **Calibration** Mode. Fig. 10.2

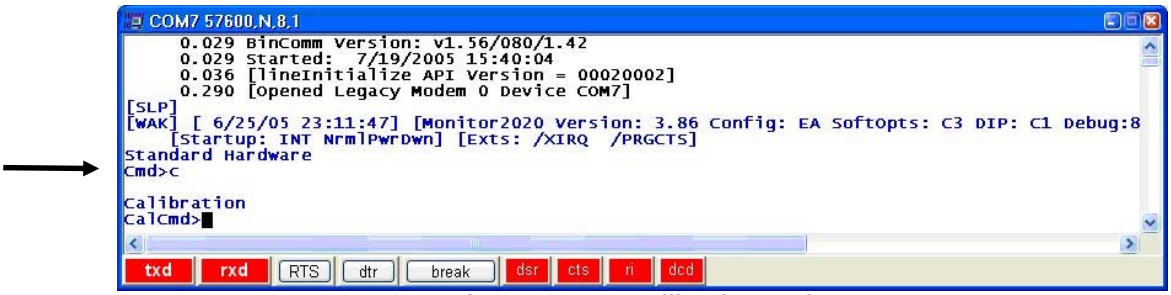


Fig. 10.2: Enter Calibration Mode

10.2.6 At the calibration command (**CalCmd>**) prompt, type the number of the port you wish to calibrate (i.e. p1, p2, p3 or p4). For this example, we will use **p1**. Data for the active port will display. Fig. 10.3

- **Cmd>**
- Enter calibration configuration mode:
- **Cmd>c**
  CalCmd>
- Select the port number to calibrate determined by the port the transducer is plugged into. If this is a single temperature sensor hard mounted to the Monitor, it will be 1.
- **CalCmd>p1**
  Active Port 1 Current Offset=0 Span=0 Range=0 Conversion=0 Height=0
  CalCmd Port 1>

10.2.7 **Set Offset**

10.2.7.1 Set the offset to 1 to indicate that this port has a temperature probe attached:

10.2.7.2 **CalCmd Port 1>o 1**
Offset=1

10.2.8 **Save Offset Value**

Type **w** and hit <Enter> to write and store offset in the Monitor.

CalCmd Port 1>w
Update EEPROM

10.2.9 Recheck all of the values to ensure they are correct:

Type **p1** <Enter>

- **CalCmd Port 1>p1**
  Active Port 1 Current Offset=1 Span=0 Range=0 Conversion=0 Height=0

10.2.10 Repeat calibration procedure starting with step 10.2.5 for each additional temperature sensor port.

10.2.11 Exit Calibration Mode:

Type **x** <Enter>

- **CalCmd Port 1>x**
  Cmd>

11.0 Reset System

Always reset the Sentry System upon completion of an initial installation or after software updates in the Sentry Monitor or Sentry DataHub to store new settings. If an unusual event occurs in the area and you receive partial data or data that appears to be inaccurate, reset the system. To reset the system, perform the following steps:

11.1 Reset Sentry DataHub

11.1.1 Open **BinComm** software if not already running on your system.

11.1.2 Connect the DB9 pin connector end of the cable to the **DataHub** and the other end to an available COM port on your computer.

WARNING

Do not make this connection unless the area is known to be non-hazardous.

11.1.3 Verify **BinComm** is set to communicate with the **DataHub** via the correct COM port (i.e. COM 1). If the cable attached to a COM port other than COM 1, see Section 8.3 for configuring COM Port.

11.1.4 Click on [rts] to assert [RTS] and establish communications with DataHub.

11.1.5 Click on **Comm Port** then **Connect to DataHub** on the **BinComm** main menu screen.

11.1.6 Click on the [Connect] button.

11.1.7 Select the **Functions** in the tree control. Figure 11.1

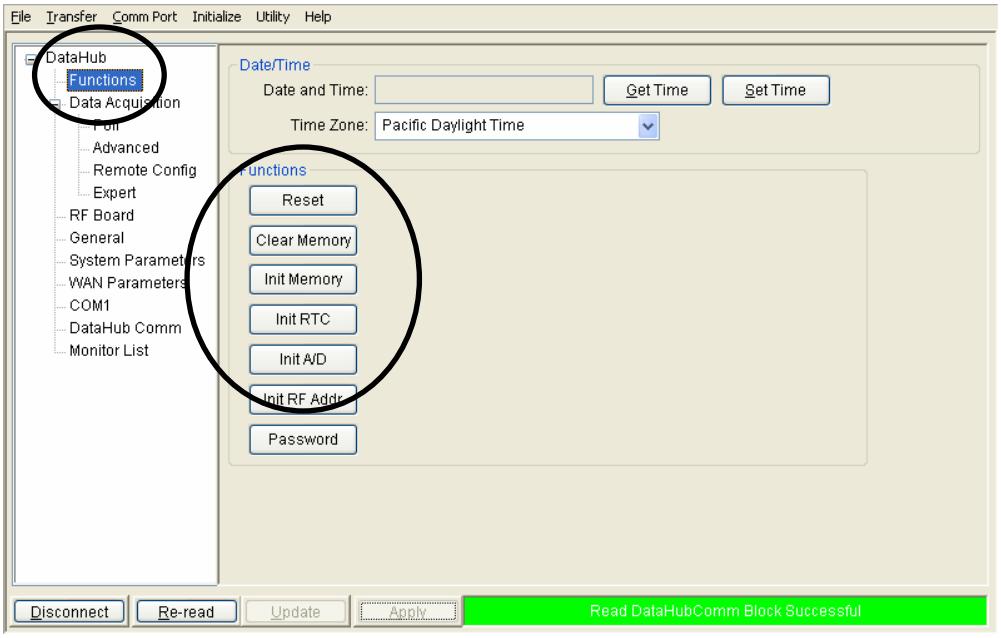


Figure 11.1: BinComm System Reset Screen

11.1.8 Click on the [Clear Memory] button.

11.1.9 Click on the [Init Memory] button.

11.1.10 Click on the [Init RTC] button.

11.1.11 Click on the [Init A/D] button.

11.1.12 Click on the [Init RF Addr] button.

11.1.13 Click on the [Reset] button.

11.1.14 Click on the [Disconnect] button.

11.2 Reset Sentry Monitor

WARNING

Explosions may result in death or serious injury. Do not remove the instrument cover to the monitor in an explosive atmosphere. Remove the monitor from the hazardous location and then open the cover and replace the battery.

11.2.1 Unscrew and remove Monitor enclosure cover.

11.2.2 Locate the reset button on the PCB Assembly. Figure 11.2

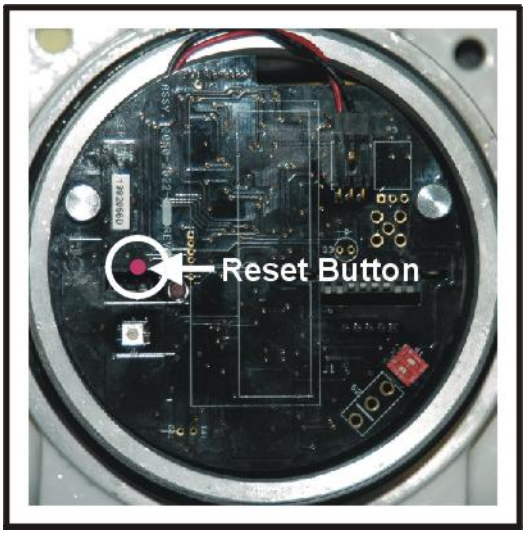


Figure 11.2: Monitor Reset Button

11.2.3 Press and hold the reset button for 10 seconds.

11.2.4 Reinstall the cover to enclosure housing and screw down until snug.

12.0 Battery Power

12.1 Low Battery Power Indicator - Sentry Monitor

The low battery power indicator for the Sentry Monitor is located in the Monitor Data Packet byte #2. Each Monitor will frequently send a “Data Packet”

Review the Data Packet information and if you receive a Battery Voltage reading of 3.0 or less the battery should be replaced as soon as possible.

See Fig. 11.1 for an example of a partial data packet.

```
Bytes = ID + CMD_MONITOR_SENSOR_DATA_EX
+ 22 = 24

      0  1  2  3  4
00 8F 00 00 00 00 00
-- -- -- -- -- -- ---
|  |  |  |  |  |  |
|  |  |  |  |  |  ---- VRef
|  |  |  |  |  ---- Last DataHub RSSI
|  |  |  |  ---- Battery Voltage
|  |  |  ---- Sensor Number / Flags
|  |  ---- Monitor Type
|  ---- Response Code
---- ID
```

FIG. 12.1: Example Monitor Data Packet

12.2 View Battery Power via DataHub

To access and view voltage for the battery in the Monitor via the DataHub, open the BinComm software if not already open and running in the background on your system.

12.2.1 On the BinComm main menu screen click on **Comm Port** > **Connect to DataHub** > **Connect**.

12.2.2 Click on **Poll** > **Poll Monitor**. Fig. 12.1

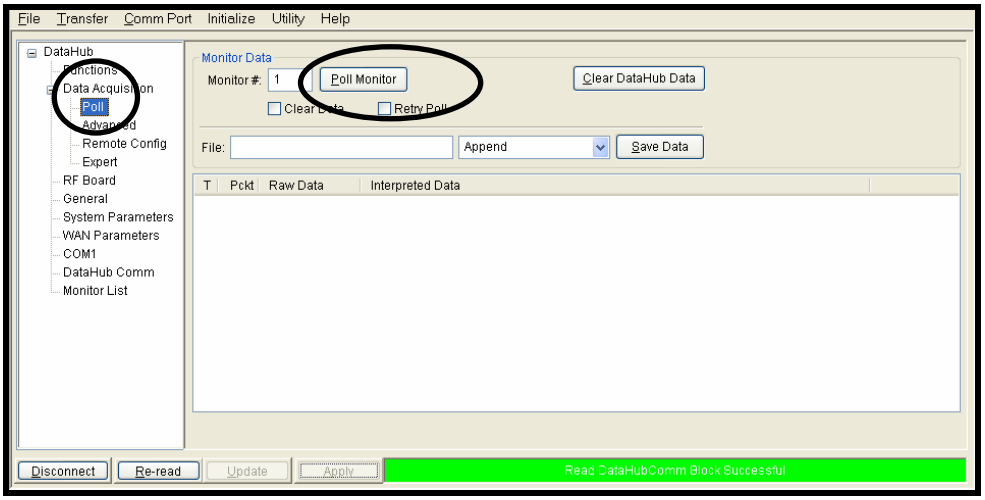


Fig. 12.2: Poll Monitor

12.2.3 Read the “Battery Voltage” located on the lower left section of the main menu screen. Figure 12.3

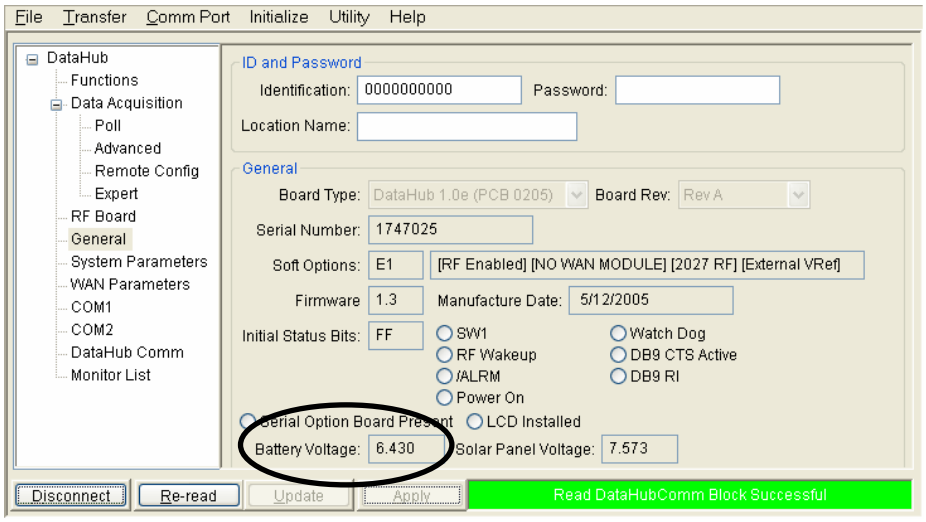


FIG. 12.3: Monitor Battery Voltage

12.3 Removing and Replacing Battery in Monitor

WARNING

Explosions may result in death or serious injury. Do not remove the instrument cover to the monitor in an explosive atmosphere. Remove the monitor from the hazardous location and then open the cover and replace the battery.

WARNING

The replacement battery **MUST** be a SAFT** lithium thionyl chloride ($Li\text{-}SOCl_2$) battery pack (3.6 volts, Size D, OleumTech PN: SX1000-BP2) specifically designed for use in the Sentry** Monitor. Use of a battery other than this battery pack may negatively affect device performance, void the warranty and may result in an explosion.

12.3.1 Remove enclosure.

12.3.2 Turn Power switch to the OFF position as indicated on the PCB. Ensure that both switch levers are in the OFF position.

12.3.3 Carefully remove battery cable connector.

12.3.4 Remove thumbscrews from assembly.

12.3.5 Carefully remove the PCB assembly from enclosure housing. Ensure that the assembly is in a horizontal orientation while being removed.

12.3.6 Remove battery pack from enclosure housing by gently lifting from base of battery cable.

12.3.7 Place new battery pack in enclosure housing.

12.3.8 Ensure that the connection of battery pack assembly leads outside the enclosure housing.

12.3.9 Reinstall connector onto the gold fingers of the assembly.

12.3.10 Ensure that the screw hole aligns with bracket screw holes and reset button with clearance hole on assembly before installing.

12.3.11 Ensure that reset button has proper clearance with the through hole on board assembly.

12.3.12 Install the thumbscrews on assembly.

12.3.13 Reconnect the battery cable connector to assembly.

12.3.14 Turn POWER switch back to the ON position as indicated on the PCB.

12.3.15 Reinstall the cover to enclosure housing. Screw down until snug.

13.0 Maintenance

General Maintenance

The Sentry Monitor is easy to maintain and does not require periodic system checks. A yearly visual inspection for the following is all that is generally needed:

- Is the Monitor still securely fastened to the mounting location?
- Are there any visible signs of corrosion, cracks or residue build-up on the unit?
- Has anything about the intended use of the original application changed?

If the Monitor is securely fastened, with no signs of corrosion, cracks or residue build-up, or if nothing has changed about the location of its intended use, the Monitor should continue to operate within designed specification.

If the Monitor is not securely fastened, or if there are signs of corrosion, cracks, residue build-up, or if there has been a change about the location of its intended use resulting in undesirable performance, contact the manufacturer for service instructions.

14.0 Model Numbers

Depending on the number of analog in ports on the Monitor, the SM1X00-XXX series of Monitors can be configured to 10 (ten) versions or model numbers (See Table 1). As noted in the table the first X, which is the fourth character in the model number, indicates the type of Analog In Monitor. The fourth character in the model number (SM1**1**00-XXX) indicates the pre-configured monitor type (i.e. 0 = Pressure Monitor, 2 = Temperature Monitor and 3, 4 or 5 = combination Pressure & Temperature Monitor). The eighth and ninth character in the model number (SM1X00-**AN**1) indicates the class category (i.e. AN = analog in). The tenth (last) character in the model number (SM1X00-XX**1**) indicates the number of analog in connections in the adaptor attached to the Monitor enclosure (i.e. 1, 2, or 4).

Model Number	Description
SM1000-AN1	Pressure Monitor (Pressure Monitor w/1 Input)
SM1000-AN2	Pressure Monitor (Pressure Monitor w/2 Inputs)
SM1000-AN4	Pressure Monitor (Pressure Monitor w/4 Inputs)
SM1100-AN1	Temperature Monitor (Temperature Monitor w/1 Input)
SM1100-AN2	Temperature Monitor (Temperature Monitor w/2 Inputs)
SM1100-AN4	Temperature Monitor (Temperature Monitor w/4 Inputs)
SM1200-AN2	Pressure & Temperature Monitor (w/1 Pressure & 1 Temperature Input)
SM1300-AN4	Pressure & Temperature Monitor (w/2 Pressure & 2 Temperature Inputs)
SM1400-AN4	Pressure & Temperature Monitor (w/3 Pressure & 1 Temperature Input)
SM1500-AN4	Pressure & Temperature Monitor (w1 Pressure & 3 Temperature Inputs)

15.0 Specifications

Sentry* Pressure Monitor

- **Memory**
  - 60 KB FLASH,
  - 2 KB RAM
  - 1 MB external serial FLASH
- **I/O Interface**
  - 1 - RS232 COM Port (internal)
- **Pressure Transducers**
  - Range: 0 to 5,000 PSI
  - Accuracy: 0.5% of FS Span (combined linearity, hysteresis and repeatability)
  - Pressure Cycles: 10 million (minimum)
  - Pressure Overload: 2X rated pressure
  - Burst Pressure: 5X FS or 20,000 PSI (whichever is less)
  - Long-Term Stability - ± 0.025% of FS span (typical)
  - Pressure Port Material: 17-4 PH Stainless Steel
- **Communications**
  - Type: ISM, FSK modulation, Direct Sequence Spread Spectrum (DSSS) Burst
  - Frequency: 902 – 928 MHz (868 MHz and 2.4 GHz optional)
  - Deviation: 600 KHz
  - Data Rate: 9.6 to 57.6 Kbps
  - Receiving Sensitivity: -104 dBm for 38.4 Kbps
  - Range: Approximately 1,000 to 4,000 feet based on terrain and antenna
- **Power**
  - Battery:
    - 1 - 3.6 V lithium battery pack
    - Power Consumption: 45 mA max., read peak, average sleep mode 250 µA
- **Environmental Limits**
  - Temperature: -30° to 85°C
  - Humidity: 0 to 95%, non condensing
- **Compliance**
  - Designed to meet Class 1, Division 1 requirements
  - Designed to meet FCC Part 15 requirements

Sentry*Temperature Monitor

- **Memory**
  60 KB FLASH,
  2 KB RAM
  1 MB external serial FLASH
- **I/O Interface**
  1 - RS232 COM Port (internal)
- **Temperature Sensor**
  Temperature Range:
  Accuracy:
  Alpha RT Curve:
  Resistance at 25° C:
  Temperature Cycles:
  Probe Material:
- **Communications**
  Type: ISM, FSK modulation, Direct Sequence Spread Spectrum (DSSS) Burst
  Frequency: 902 – 928 MHz (868 MHz and 2.4 GHz optional)
  Deviation: 600 KHz
  Data Rate: 9.6 to 57.6 Kbps
  Receiving Sensitivity: -104 dBm for 38.4 Kbps
  Range: Approximately 1,000 to 4,000 feet based on terrain and antenna
- **Power**
  Battery:
  1 - 3.6 V lithium battery pack
  Power Consumption: 45 mA max., read peak, average sleep mode 250 µA
- **Environmental Limits**
  Temperature: -30° to 85°C
  Humidity: 0 to 95%, non condensing
- **Compliance**
  Designed to meet Class 1, Division 1 requirements
  Designed to meet FCC Part 15 requirements

Sentry* DataHub Lite

- **Memory**
  - 1 - RS232 or RS485 COM Port (software configurable)
    - RS232: Data rate from 300 up to 115.2 Kbps
    - RS485: half or full duplex (selectable)
  - 1 - RS232 Configuration Port
- **I/O Interface**
  - 2 - Discrete Inputs
  - 2 - Discrete Outputs
- **Dimensions**
  - 5.15” x 3.27” x 1.14” (L x W x H)
- **Weight**
  - 0.5 lbs
- **Communications**
  - **Type:** ISM, FSK modulation, Direct Sequence Spread Spectrum (DSSS) Burst
  - **Frequency**: 902 – 928 MHz (868 MHz and 2.4 GHz optional)
  - **DSB Bandwidth**: 600 KHz
  - **Data Rate**: 9.6 to 57.6 Kbps
  - **Receiving Sensitivity**: -104 dBm for 38.4 Kbps
  - **Range**: Approximately 1,000 to 4,000 feet based on terrain and antenna
- **Power**
  - **External**: 9 to 24 VDC power supply
  - **Power Consumption**: 10 mA sleep mode; average 25 mA
- **Environmental Limits**
  - Temperature - -30° to 85°C
  - Humidity – 0 to 95%, non condensing
- **Compliance**
  - Designed to meet Class 1, Division 2 requirements
  - Designed to meet FCC Part 15 requirements

OleumTech Corporation

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