Sensor Configuration Tool

Instruction Manual

Original Instructions
170002 Rev. D
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170002

Contents

1 Sensor Configuration Tool

The Sensor Configuration Tool offers an easy way to manage sensor parameters, retrieve data, and visually show sensor data from a number of different sensors. The Sensor Configuration Tool software runs on any Windows machine and uses an adapter cable to connect the sensor to your computer.

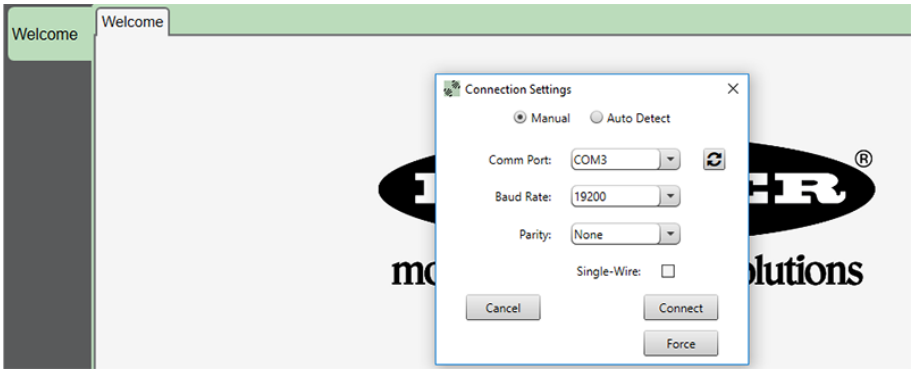
Download the most recent version of the Sensor Configuration Tool from Banner Engineering's website: *www.bannerengineering.com/wireless*. The Sensor Configuration Tool currently supports the following sensors:

Sensor Type	Model	USB Adapter Cable
Temperature and Humidity	M12FTH3Q and M12FT3Q	Model BWA-HW-006: USB-to-RS-485 adapter cable OR Model BWA-UCT-900: USB to RS-485 adapter cable
	M12FTH4Q and M12FT4Q	Model BWA-USB1WIRE-001: USB-to-RS-232 1-Wire adapter cable
Vibration and Temperature	QM42VT1	Model BWA-USB1WIRE-001: USB-to-RS-232 1-Wire adapter cable
	QM42VT2	Model BWA-HW-006: USB-to-RS-485 adapter cable OR Model BWA-UCT-900: USB to RS-485 adapter cable OR When updating the firmware, you must use one of the two USB to RS-485 adapter cables plus a splitter pigtail cable p/n 83265
GPS	GPS50M	Model BWA-HW-006: USB-to-RS-485 adapter cable AND a field-wireable M12/Euro-style connector or connecter with pigtail OR Model BWA-UCT-900: USB to RS-485 adapter cable AND a field-wireable M12/Euro-style connector or connecter with pigtail
U-GAGE K50U Ultrasonic	K50UX1RA-C	Model BWA-USB1WIRE-001: USB-to-RS-232 1-Wire adapter
	K50UX2RA-C	Model BWA-HW-006: USB-to-RS-485 adapter cable OR Model BWA-UCT-900: USB to RS-485 adapter cable
	K50UX1RA-A	Model BWA-USB1WIRE-001: USB-to-RS-232 1-Wire adapter
	K50UX2RA-A	Model BWA-HW-006: USB-to-RS-485 adapter cable OR Model BWA-UCT-900: USB to RS-485 adapter cable

1.1 Banner Engineering Corp. Software Copyright Notice

1.2 Launch the Sensor Configuration Tool Software

Follow these instructions to start up the Sensor Configuration Tool software.



1. Launch the Sensor Configuration Tool.
2. Choose your device's connection settings in the **Connection Settings** window and click **Connect**. Sensor connects to the software and the configuration screen specific to your sensor type appears. If not, go to step 3.
3. If the sensor is not connecting and you are sure you have the correct connection settings selected, click **Force** to force a connection to your sensor.
4. If the sensor is not automatically detected or you click **Force** or **Cancel**, select your sensor type in the **Device Type Select** window and click **OK**.

1.3 Menu Bar

The COMM port connection status, application status, and the program version number are displayed at the bottom of the Sensor Configuration Tool window.

File

Exit—Closes the COMM port and exits the Sensor Configuration Tool.

Help—Downloads the instruction manual in PDF form.

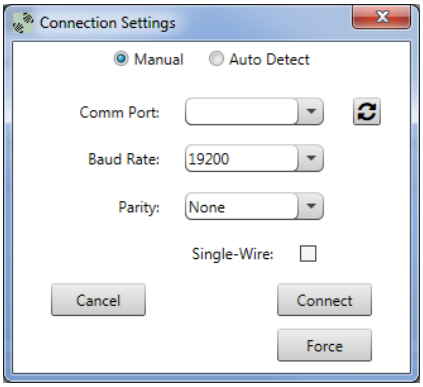
Device

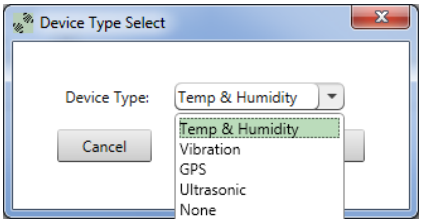
Advanced Options—Displays a new tab for configuring specific options for a sensor. For example, a vibration sensor has the ability to select various data values that can be put into the Modbus registers.

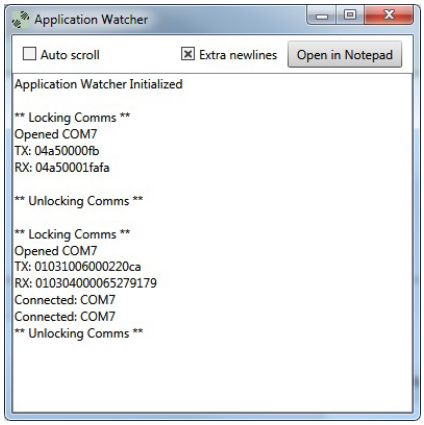
Application Watcher—Displays all serial data traffic between the PC and the sensor. This is primarily useful for debugging a setup or connection issue.

Connection Settings—Use to change the communication settings between the radio device and sensor. The standard default settings for the interface are manual detect, 19200 baud, no parity, and Modbus address 1 for a Modbus device. Set the COMM port to communicate with the sensor. The connection type can be set to auto detect or manual detect. Select the sensor interface type to be Modbus RTU type or a 1-wire. Refer to the specific sensor model number to identify the sensor interface type. Typically the COMM port is selected and the sensor is selected when the Sensor Configuration Tool first launches.

Device Type—Use to change the sensor type after the software is launched.







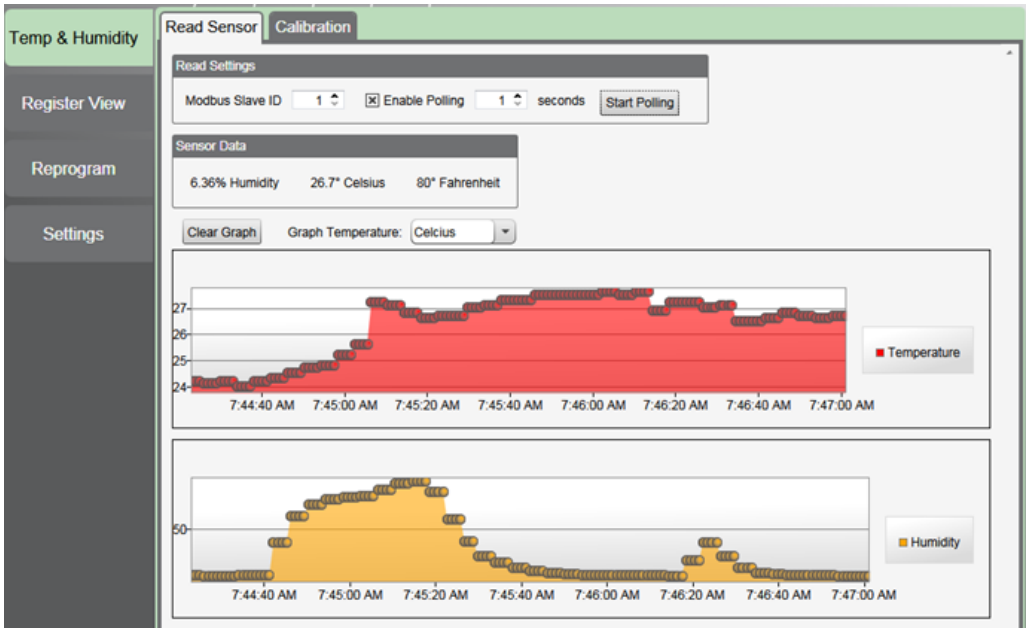
2 Temperature-Humidity Sensors

The only temperature/humidity sensors the software is designed for are Sure Cross® Temperature and Humidity Sensors model M12FTH3Q and M12FTH4Q.

1. Before launching the application, plug the Banner Engineering USB-to-RS-485 adapter cable for M12FTH3Q sensors or USB-to-RS-232 1-Wire adapter cable for M12FTH4Q sensors into an available USB port on your computer and into ac power, if applicable. See *Sensor Configuration Tool* on page 3 for the list of cables to use with each sensor.
2. Plug the sensor into the adapter and wait for the green LED inside the sensor to flash.
3. Launch the Sensor Configuration Tool.
4. The **Comm Port** list auto-populates from the serial communication ports available for use on your computer. Select the applicable **Comm Port**, **Baud Rate**, and **Parity** to match the settings of the USB serial port in the PC's device manager. When initially installed, the default baud rate is 19200 and parity is set to none.
5. Select the **Single-Wire Device** checkbox for M12FTH4Q sensors only.
6. Click **Connect** and the configuration tool attempts to communicate with the sensor. If the connection succeeds, the **Sensor Configuration Tool** main window opens. If the connection fails, select the applicable **Comm Port** settings and click **Connect** again or click **Cancel** to skip the connection process and launch the main screen.
7. If you clicked **Force** or **Cancel**, use the **Device Type Select** drop-down list to manually select your sensor type. For example, Temp & Humidity.

2.1 Read Sensor Screen

Use the **Read Sensor** screen to retrieve data from your temperature-humidity sensor. This tab also allows for polling the device, viewing that sensor data, and viewing the sensor data graphically over time



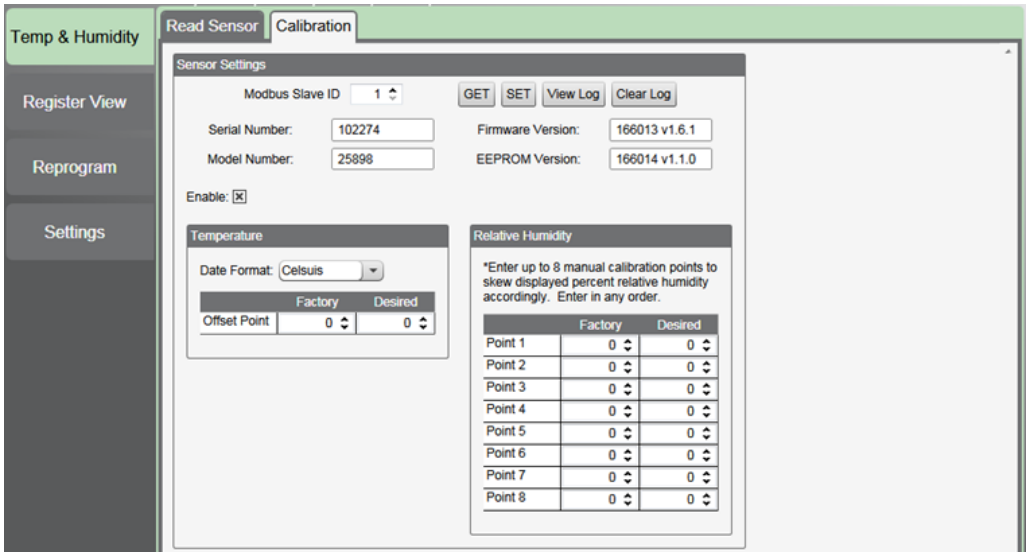
To retrieve the sensor data continuously through polling:

1. Select the Modbus Slave ID assigned to the sensor. The default Modbus Slave ID is 1.
2. Select **Enable Polling** and select how often to poll the sensor.
3. Click **Start Polling**.

The relative humidity, degrees Celsius, and degrees Fahrenheit display in the **Sensor Data** area. Temperature and relative humidity are also displayed graphically.

2.2 Calibration Screen

Use the **Calibration** screen to manually calibrate your temperature-humidity sensors. Up to 8 manual calibration points can be entered to offset the current humidity readings. The **Calibration** screen only appears when the **Advanced Options** are selected.



To manually calibrate the relative humidity of your sensor, follow these steps:

1. From the menu bar, go to **Device** > **Advanced Options**.
2. Go to the **Calibration** screen that appears.
3. Select the Modbus Slave ID applicable for sensor. (The default Modbus slave ID is 1.)
4. Select an **Enable** On or Off radio button to enable and disable manual calibration skewing of displayed percent relative humidity and temperature values. Manual calibration can be disabled without clearing factory and desired points.
5. Within the **Relative Humidity** box, enter up to eight factory readings and desired readings to adjust the sensor percent relative humidity reading. For each point, the **Factory** reading is the percent relative humidity read from the sensor; the **Desired** reading is the desired value. Unused points retain a zero value but all factory points must have a corresponding desired point.
6. If a percent relative humidity is not needed for manual calibration, leave all factory and desired values at zero.

To manually calibrate the temperature reading of your sensor, follow these steps:

1. Select the Modbus Slave ID applicable for sensor. (The default Modbus slave ID is 1.)
2. Within the **Temperature** box, enter the **Factory** reading and **Desired** temperature to adjust the sensor temperature readings.
3. Select Celsius or Fahrenheit from the drop-down. Changing units automatically converts the displayed values.

GET

Click **Get** to read the manual calibration enabled flag, all factory and desired manual calibration points, the sensor's serial number, model number, firmware version, and EEPROM version.

SET

Click **Set** to write the enable flag and all factory and desired reading points to the sensor.

If information writes successfully, all data points and enable flag are automatically logged to the log file, along with device's serial number, model number, Modbus slave ID, firmware version, EEPROM version, and date and time of the write.

View Log

Click **View Log** to view a spreadsheet generated from the logged data in a **Log Report Viewer** window.

In the **Log Report Viewer** window, click on the **Export** menu tab and select MS Excel to export the log report data to Microsoft Excel 2003 or newer. To save the log report directly from the **Log Report Viewer** window, select the **Save** menu, then select **As CSV**.

The **Save As** dialog window will prompt you to save as a comma separated value [CSV] file. The CSV file can later be imported into Microsoft Excel or any spreadsheet viewer.

Clear Log

Click **Clear Log** to clear the log file data.

The original log file is renamed with the current data and time appended to name for future reference.

The next time the **Set** button is pressed and manual calibration data is written to a sensor, a new log file is automatically generated.

2.3 Modbus Registers

These Modbus holding registers (4xxxx) can be accessed from the **Register View** screen.

The temperature values are stored as the active temperature multiplied by 2.

Register	Standard Physical Inputs	Default Value
1	Relative Humidity (%)	
2	Temperature in °C × 2	
3	Temperature in °F × 2	

Relative humidity values are stored as the percentage multiplied by 100. Temperature values are stored as the actual temperature multiplied by 20.

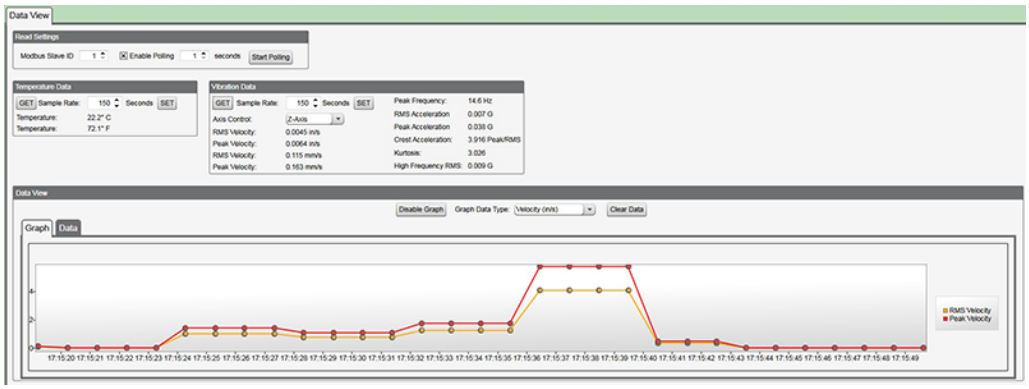
Register	Manual Calibration Points	Accepted Values	Default Value
2001	Input 1 Manual Calibration Enable	0 = OFF; 1 = ON	0
2002	Factory Temperature Point in °C × 20		0
2003	Desired Temperature Point in °C × 20		0
2004	Factory Relative Humidity Point 0 in %RH × 100		0
2005	Desired Relative Humidity Point 0 in %RH × 100		0
2006	Factory Relative Humidity Point 1 in %RH × 100		0
2007	Desired Relative Humidity Point 1 in %RH × 100		0
...			
2018	Factory Relative Humidity Point 7 in %RH × 100		0
2019	Desired Relative Humidity Point 7 in %RH × 100		0

3 Vibration-Temperature Sensors

1. Before launching the application, plug the Banner Engineering USB-to-RS-232 1-Wire adapter cable for VT1 models or the USB-to-RS-485 adapter cable for VT2 models into an available USB port on your computer and into ac power, if applicable.
2. Plug the sensor into the adapter and wait for the green LED inside the sensor to flash.
3. Launch the Sensor Configuration Tool.
4. The **Comm Port** list auto-populates from the serial communication ports available for use on your computer. Select the applicable **Comm Port**, **Baud Rate**, and **Parity** to match the settings of the USB serial port in the PC's device manager. When initially installed, the default baud rate is 19200 and parity is set to none.
5. Click **Connect** and the configuration tool attempts to communicate with the sensor. If the connection succeeds, the **Sensor Configuration Tool** main window opens. If the connection fails, select the applicable **Comm Port** settings and click **Connect** again or click **Cancel** to skip the connection process and launch the main screen.
6. If you clicked **Force** or **Cancel**, use the **Device Type Select** drop-down list to manually select your sensor type. For example: Vibration.

3.1 Z Axis Data Screen

Use the **Z Axis Data** screen to view vibration and temperature data collected by the sensor.



To retrieve the sensor data continuously through polling:

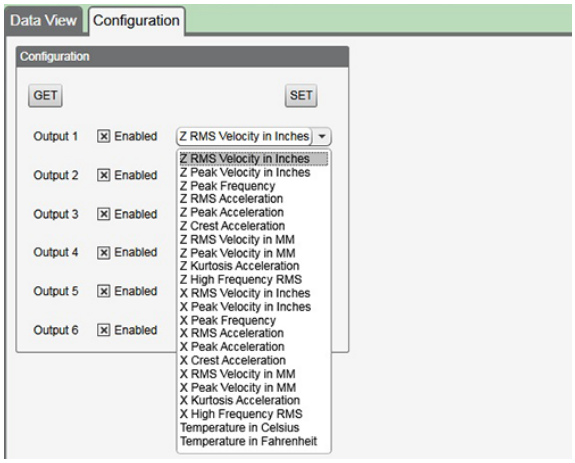
1. Select the Modbus Slave ID assigned to the sensor. The default Modbus Slave ID is 1.
2. Select **Enable Polling** and select how often to poll the sensor.
3. Click **Start Polling**.

To retrieve the vibration or temperature data from the sensor, click **GET**. The current values populate the screen.

Historical data is graphed at the bottom of the screen. Use the **Graph Data Type** drop-down list to select which data to graphically display: Velocity (in/s), Velocity (mm/s), Acceleration (G), High Frequency RMS (G), Temperature (°F), or Temperature (°C).

3.2 Configuration

To view the **Configuration** screen, select **Device** > **Advanced Options** from the program's menu bar. Use this screen to select which sensor data is associated with the sensor inputs or to reassign the sensor's outputs to the Node's inputs.



When the **Configuration** screen opens, click **GET** to read the current configuration from the Vibration/Temperature sensor into the software. The outputs listed on the screen are the sensor's outputs. Up to six sensor outputs may be mapped to the Node's inputs. The sensor's output 1 is automatically mapped to the Node's input 1.

To change which sensor values are mapped to the Node's inputs, select a new value from the drop-down list for each sensor output. When you have selected the outputs for your sensor to transmit to the Node, click **SET** to save the configuration.

The parameters you can map from the sensor to the Node are:

Crest Acceleration
Measures how extreme the peaks are in a given waveform; derived from acceleration Pk/RMS.

Kurtosis Acceleration
Statistical indicator used to characterize the pulse character of the signal. Typical value = 3

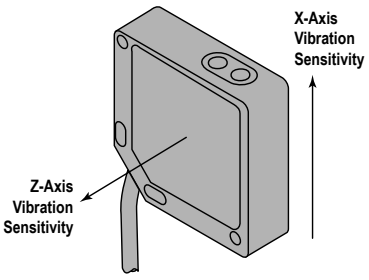
Peak Acceleration (Gs)
Maximum absolute deviation from mean of time-domain acceleration.

Peak Frequency (Hz)
Center frequency of the FFT (Fast Fourier Transform) bin with the greatest velocity magnitude.

Peak Velocity (mm/s or in/s)
RMS Velocity × 2

RMS (Root Mean Squared) Acceleration (Gs)
Time-domain measurement AC only (Total RMS- mean).

RMS (Root Mean Squared) Velocity (mm/s or in/s)
Measure of effective energy produced by the machine within the frequency range measured.



Temperature
Temperature in degrees Celsius and degrees Fahrenheit

Modbus registers for the VT1 vibration-temperature sensor:

Sensor Register	Output Type	I/O Range		Holding Register Representation	
		Min	Max	Min (Dec)	Max (Dec)
1	Z-Axis RMS Velocity (in/sec) [1, 5]	0	6.5535	0	65535

Sensor Register	Output Type	I/O Range		Holding Register Representation	
		Min	Max	Min (Dec)	Max (Dec)
2	Z-Axis RMS Velocity (mm/sec) [2, 5]	0	65.535	0	65535
3	Temperature (°F) [3]	–1638.4	1638.3	32768	32767
4	Temperature (°C) [3]	–1638.4	1638.3	32768	32767
5	X-Axis RMS Velocity (in/sec) [1, 5]	0	6.5535	0	65535
6	X-Axis RMS Velocity (mm/sec) [2, 5]	0	65.535	0	65535

Modbus registers for the VT2 vibration-temperature sensor:

Modbus Register Alias Address	Modbus Register Address	Description	I/O Range		Holding Register Representation	
			Min	Max	Min (dec)	Max (dec)
45201	42401	Z-Axis RMS Velocity (in/sec) [1, 5]	0	6.5535	0	65535
45202	42403	Z-Axis RMS Velocity (mm/sec) [2, 5]	0	65.535	0	65535
45203	40049	Temperature (°F) [3]	–327.68	327.67	32768	32767
45204	40043	Temperature (°C) [3]	–327.68	327.67	32768	32767
45205	42451	X-Axis RMS Velocity (in/sec) [1, 5]	0	6.5535	0	65535
45206	42453	X-Axis RMS Velocity (mm/sec) [2, 5]	0	65.535	0	65535
45207	42407	Z-Axis Peak Acceleration (G) [2, 6]	0	65.535	0	65535
45208	42457	X-Axis Peak Acceleration (G) [2, 6]	0	65.535	0	65535
45209	42405	Z-Axis Peak Velocity Component Frequency (Hz) [4, 5]	0	6553.5	0	65535
45210	42455	X-Axis Peak Velocity Component Frequency (Hz) [4, 5]	0	6553.5	0	65535
45211	42406	Z-Axis RMS Acceleration (G) [2, 5]	0	65.535	0	65535
45212	42456	X-Axis RMS Acceleration (G) [2, 5]	0	65.535	0	65535
45213	42409	Z-Axis Kurtosis [2, 6]	0	65.535	0	65535
45214	42459	X-Axis Kurtosis [2, 6]	0	65.535	0	65535
45215	42408	Z-Axis Crest Factor [2, 6]	0	65.535	0	65535
45216	42458	X-Axis Crest Factor [2, 6]	0	65.535	0	65535
45217	42402	Z-Axis Peak Velocity (in/sec) [1, 5]	0	6.5535	0	65535
45218	42404	Z-Axis Peak Velocity (mm/sec) [2, 5]	0	65.535	0	65535
45219	42452	X-Axis Peak Velocity (in/sec) [1, 5]	0	6.5535	0	65535
45220	42454	X-Axis Peak Velocity (mm/sec) [2, 5]	0	65.535	0	65535
45221	42410	Z-Axis High-Frequency RMS Acceleration (G) [2, 6]	0	65.535	0	65535
45222	42460	X-Axis High-Frequency RMS Acceleration (G) [2, 6]	0	65.535	0	65535
	46101	Baud	0=9.6k, 1=19.2k (default), 2=38.4k			
	46102	Parity	0=none (default), 1=odd, 2=even			
	46103	Modbus Slave Address	1 (default) through 247			
	42601	Rotational Speed (RPM) (default = 1725 RPM) -- Used in vibration spectral band measurements	0	65535	0	65535

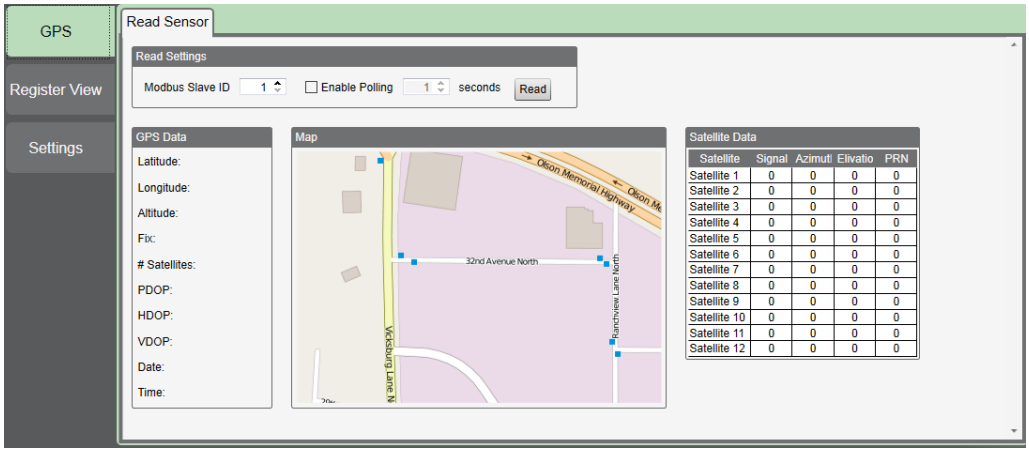
Modbus Register Alias Address	Modbus Register Address	Description	I/O Range		Holding Register Representation	
			Min	Max	Min (dec)	Max (dec)
	42602	Rotational Speed (Hz) (default = 29 Hz) -- Used in vibration spectral band measurements	0	65535	0	65535

4 GPS Sensors

1. Before launching the application, field-wire the unterminated ends of the GPS cable into a M12/Euro-style connector.
2. Plug the GPS sensor's connector into the Banner Engineering USB-to-RS-485 adapter cable, then plug the adapter cable into an available USB port on your computer and into ac power, if applicable.
3. Launch the Sensor Configuration Tool.
4. The **Comm Port** list auto-populates from the serial communication ports available for use on your computer. Select the applicable **Comm Port**, **Baud Rate**, and **Parity** to match the settings of the USB serial port in the PC's device manager. When initially installed, the default baud rate is 19200 and parity is set to none.
5. Click **Connect** and the configuration tool attempts to communicate with the sensor. If the connection succeeds, the **Sensor Configuration Tool** main window opens. If the connection fails, select the applicable **Comm Port** settings and click **Connect** again or click **Cancel** to skip the connection process and launch the main screen.
6. If you clicked **Force** or **Cancel**, use the **Device Type Select** drop-down list to manually select your sensor type. For eacmple: GPS.

4.1 Read Sensor Screen

Use the **Read Sensor** screen to retrieve data from your GPS sensor. This screen also allows for polling the device, viewing that sensor data, and viewing the sensor data graphically over time



To retrieve the sensor data continuously through polling:

1. Select the Modbus Slave ID assigned to the sensor. The default Modbus Slave ID is 1.
2. Select **Enable Polling** and select how often to poll the sensor.
3. Click **Start Polling**.

The GPS data displayed includes latitude, longitude, altitude, Fix, # Satellites, PDOP, HDOP, VDOP, Date, and Time. A map of the location is displayed, as is satellite data.

GPS Modbus Registers				Definition	Description
Signed		Floating Point			
Upper	Lower	Upper	Lower		
1	2	101	102	Latitude	0 to ±90° From the equator north(+) or south(–) position of a point on the Earth's surface. Integer value is fixed at 7 decimal points
3	4	103	104	Longitude	0 to ±180° From the Prime Meridian east(+) or west(–) position of a point on the Earth's surface. Integer value is fixed at 7 decimal points
5	6	105	106	Altitude	Calculated altitude above sea level in meters(±). Integer value is fixed at 5 decimal points.
7	8	107	108	UTC Time	HHMMSS (Hour, Minute, Second) of UTC time

GPS Modbus Registers				Definition	Description
Signed		Floating Point			
Upper	Lower	Upper	Lower		
9	10	109	110	Date	DDMMYY (Day, Month, Year)

5 Ultrasonic Sensors

1. Before launching the application, connect the Ultrasonic sensor to the USB-to-RS-485 adapter cable for the X2 models or USB-to-RS-232 1-Wire adapter cable for the X1 models.
2. Plug the adapter cable into an available USB port on your computer and into ac power, if applicable.
3. Launch the Sensor Configuration Tool.
4. The **Comm Port** list auto-populates from the serial communication ports available for use on your computer. Select the applicable **Comm Port**, **Baud Rate**, and **Parity** to match the settings of the USB serial port in the PC's device manager. When initially installed, the default baud rate is 19200 and parity is set to none.
5. Click **Connect** and the configuration tool attempts to communicate with the sensor. If the connection succeeds, the **Sensor Configuration Tool** main window opens. If the connection fails, select the applicable **Comm Port** settings and click **Connect** again or click **Cancel** to skip the connection process and launch the main screen.
6. If you clicked **Force** or **Cancel**, use the **Device Type Select** drop-down list to manually select your sensor type. For example: Ultrasonic.

5.1 Read Sensor Screen

Use the **Read Sensor** screen to retrieve data from your Ultrasonic sensor. This tab also allows for polling the device, viewing that sensor data, and viewing the sensor data graphically over time

To retrieve the sensor data continuously through polling:

1. Select the Modbus Slave ID assigned to the sensor. The default Modbus Slave ID is 1.
2. Select **Enable Polling** and select how often to poll the sensor.
3. Click **Start Polling**.

The Ultrasonic sensor data displayed includes distance (mm and in) and temperature (°C and °F). The distance is graphically displayed.

Modbus registers for the 1-wire serial (X1) models, where temperature = (Modbus register value) ÷ 20. The distance (in) = (Modbus register value) ÷ 100:

Sensor Register	Output Type	I/O Range		Holding Register Representation	
		Min	Max	Min (Dec)	Max (Dec)
1	Distance (mm)	0	65535	0	65535
2	Temp °C	–1638.4	1638.3	–32768	32767
3	Temp °F	–1638.4	1638.3	–32768	32767
4	Distance (in)	0	655.35	0	65535

Modbus registers for the RS-485 (X2) models where distance (in) and the temperature (°C and °F) = (Modbus register value) ÷ 100:

Modbus Register Alias Address	Modbus Register Address	Output Type	I/O Range		Holding Register Representation	
			Min	Max	Min (Dec)	Max (Dec)
5201	1	Distance (mm)	0	65535	0	65535
5202	6	Distance (in)	0	655.35	0	65535

Modbus Register Alias Address	Modbus Register Address	Output Type	I/O Range		Holding Register Representation	
			Min	Max	Min (Dec)	Max (Dec)
5203	5	Temperature °F	–327.68	327.67	–32768	32767
5204	4	Temperature °C	–327.68	327.67	–32768	32767

6 Utilities

6.1 Modbus Registers Shared by all Sensor Types

The following Modbus registers are common among all the sensor types.

Register	Manufacturing Information	Default Value
4101-4102	Serial Number	
4103-4104	Model Number	
4105-4106	Production Date	

Register	Software Information	Default Value
4301-4302	RF Firmware Part Number	
4303	RF Firmware Version Upper	
4304	RF Firmware Version Lower	
4305	RF Firmware Version Engineering	
4306-4307	RF EEPROM Part Number	
4308	RF EEPROM Version Number Upper	
4309	RF EEPROM Version Number Lower	
4310	RF EEPROM Version Number Engineering	

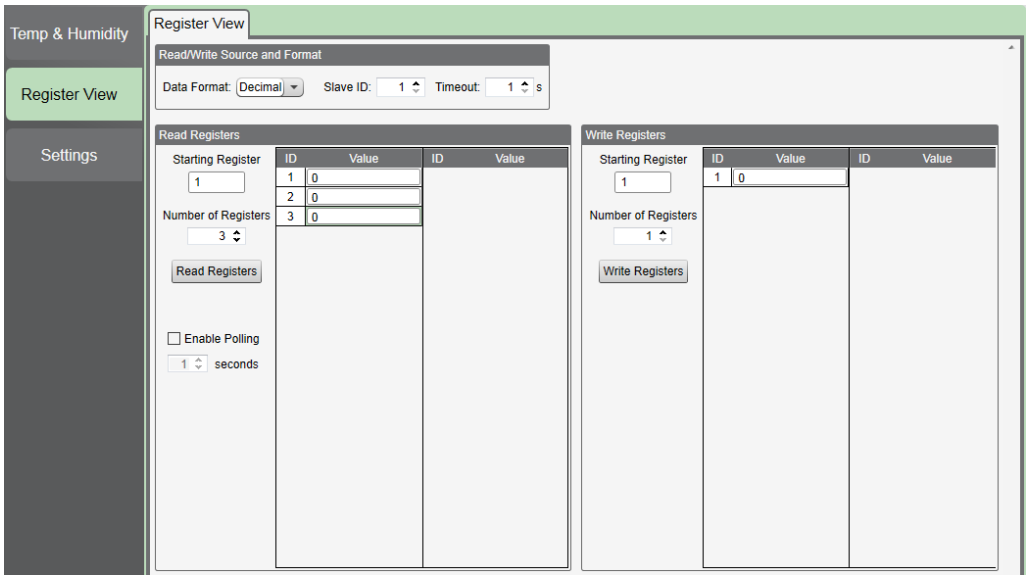
Register	Serial Communication Parameters	Accepted Values	Default Value
6101	Serial Baud Rate	0 = 9600; 1 = 19200; 2 = 38400	1
6102	Parity	0 = None; 1 = Odd; 2 = Even	0
6103	Modbus Address	1 to 247	1

6.2 Register View Screen

Use the **Register View** screen to read and write Modbus holding registers within the sensor. Registers are read/written in consecutive order starting with Modbus holding register address 1 to address 25535, up to 40 registers at a time.

One time read or write actions are completed by clicking **Read Registers** or **Write Registers**.

To enable constant polling from the device, select **Enable Polling**. The **Read Registers** button changes to **Begin Polling**. Click **Begin Polling** to start polling at the specified rate.



To read or write to specific registers, follow these steps:

1. Select the Modbus Slave ID of your sensor.
2. Select the data type you are reading or writing: decimal or hexadecimal.
3. To read registers, select the starting register and the number of registers to read. Click **Read Registers**.
4. To write registers, select the starting register and the number of registers to write to. For each register, enter a value. Click **Write Registers**. (See Write Registers for details).

Data Format

Select read/write register data type to display (decimal or hexadecimal).

Enable Polling

Enter a polling frequency in seconds. Click **Begin Polling** to begin polling the sensor.

Read Registers

Within the Register Information section of Read Registers, enter a starting Modbus holding register and the Number of Registers to read. Changing number of registers automatically populates the read information displayed.

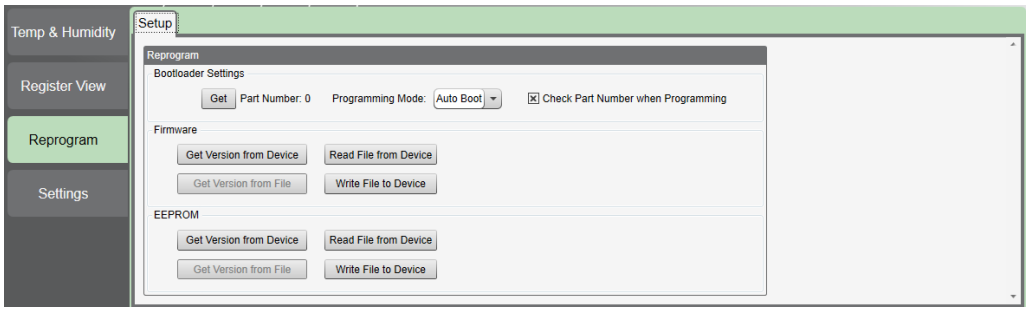
Write Registers

Select the **Starting Register** and **Number of Registers** to write to.

Changing the number of registers automatically populates the write information to be input. Enter the data to write to the applicable Modbus holding register. Decimal input values range from 0 to 65535 (FFFF in hex). Click the **Write Registers** button to write the data to the sensor.

6.3 Reprogram Device Screen

Use the **Reprogram** screen to read or write firmware and EEPROM files to the sensor. To access the **Reprogram** screen, go to the **Device** > **Advanced Options** menu.



Write File to Device. To write firmware or EEPROM files to the sensor, follow these steps:

1. Click **Write File to Device**.
2. Browse to the file location and select the file. Click **Open**.
3. Accept the warning prompt by clicking the **OK** button.

Read File from Device. To read firmware or EEPROM files from sensor:

1. Click **Read File from Device**.
2. Use the **Save As** dialogue box to navigate to the directory to save the new file to.
3. Enter the name of new file in the file name input field, then click **Save**. The new file path will show in text field.

Get Version from Device. To read the EEPROM part number with major, minor, and engineering version numbers from the sensor:

1. Click **Get Version from Device**.
2. The current version of the firmware or EEPROM is reported back.

Get Version from File. To read the EEPROM part number with major, minor, and engineering version numbers from a file:

1. Click **Get Version from File**.
2. Navigate to the directory of the file you wish to get version information from, select the file and click **Open**.
3. The version in the firmware or EEPROM file is reported back.

6.3.1 Bootloader Settings

During the normal sensor programming process, the **Auto Boot** option should always be selected within the **Programming Mode** drop-down list. This allows the reading and writing of firmware and EEPROM files to and from the device and the reading of firmware and EEPROM version numbers from the files and sensors without having to unplug and re-plug the sensor into the adapter. The **Check Part Number when Programming** option should also be selected; this verifies the firmware or EEPROM file being written is the correct part number.

If the sensor is unresponsive, the firmware and EEPROM files can be force-loaded into the device. To force-load the firmware or EEPROM, follow these steps:

1. Unplug the sensor from the adapter connection.
2. Select the **Manual Boot** programming mode and unselect the **Check Version when Programming** option.
3. Use the **Browse** button to locate the file to load into the device and press the corresponding **Write to Device** button.
4. Accept the warning prompt then immediately plug the sensor into the adaptor connector.

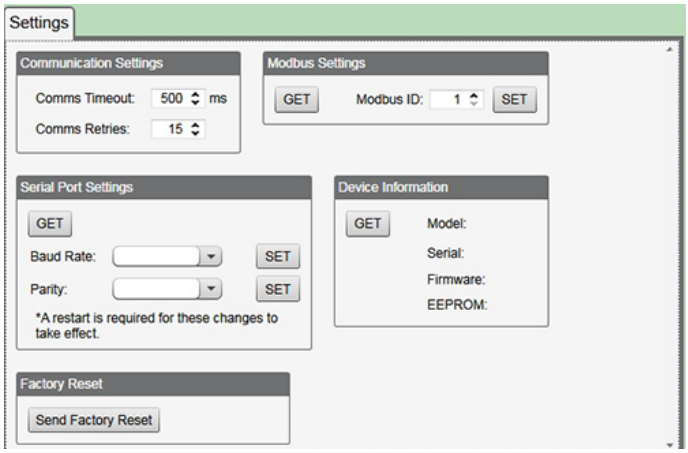
Force-loading the firmware and EEPROM files to unresponsive sensors can take multiple attempts.

6.3.2 Updating the Firmware of the QM42VT2 Sensor

1. Connect the QM42VT2 Vibration sensor to the USB port of a PC using the USB to RS485 converter hardware (BWA-HW-006 or BWA-HW-900) and splitter cable #83265 (CSRB-M1250M125.47M125.73).
2. Tape the brown wire on the splitter cable (power) to prevent the power wire from shorting with any other wire.
3. Connect the blue wire (ground, pin 3) to the green wire (pin 5) to enable the firmware programming of the device.

6.4 Settings Screen

Use the **Settings** screen to configure computer communication settings, serial power settings, and Modbus system parameters.



Communication Settings

Communication Retries—determines how many attempts are taken to send a command to the sensor before the communications port generates an error. The default communication retry setting is 15.

Communication Timeout—determines how long the configuration tool attempts to communicate with the sensor before timing out the connection. The default communication timeout is 500 milliseconds.

Device Information

Click **GET** to retrieve the Model and Serial numbers as well as Firmware and EEPROM numbers and versions.

Factory Reset

Click **Send Factory Reset** to reset the sensor to factory default settings.

A **Factory Reset Check** pop-up window appears. Click **Yes** to reset the sensor to factory default settings. Click **No** to cancel.

Modbus Settings

Click **GET** to retrieve the Slave ID from a device if the Slave ID is unknown.

Click **SET** to change the sensor's Modbus Slave ID to the value selected. Valid Modbus Slave IDs range from 1 to 247.

Serial Port Settings

Click **GET** to retrieve the sensor's baud rate and parity settings. The retrieved settings are displayed in the Baud Rate and Parity drop-downs lists. Use this button if the connection to the sensor is failing and the baud rate or parity has been changed on a computer or device. The baud rate and parity on the computer and the sensor should be the same.

To change the sensor baud rate, select 9600, 19200, or 38400 from drop-down list and click the corresponding **SET** button. Set the computer serial port to the same rate to ensure communication.

To change the sensor parity option, select NONE, ODD, or EVEN from drop-down list and click the corresponding **SET** button. Set the computer serial port to the same parity to ensure communication.