IRU Series Ultrasonic Sensors
User Manual

IRU-2423, IRU-3433, & IRU-5413

www.ControlByWeb.com

Table of Contents

Introduction

Thank you for purchasing an IRU ultrasonic sensor from ControlByWeb. We appreciate your business! Please take a few minutes to familiarize yourself with your IRU and this manual.

The IRU series is ControlByWeb's line of general purpose ultrasonic sensors. With a choice of operating ranges from just a few inches to as far as 50 feet, the IRU product line is designed to fit a wide range of industrial automation applications. Sensor adjustments, such as sensitivity and filtering options, are made by interfacing the sensor to a PC using an RST module and ControlByWeb's free, Windows-based programming software. IRU sensors incorporate internal temperature compensation for increased accuracy under varying environmental conditions. The sensors are housed in PC/PET to seal out moisture and resist a wide range of chemicals.

Reading your label

Every ControlByWeb IRU comes with a label that includes the instrument's model number, part number, serial number, and a wiring pinout table. Please ensure that the part number and pinout table on your label match your order. The following electrical ratings and approvals are also listed on the label. Please refer to the Hazardous Location Drawing at the back of this manual for further details.

Electrical ratings

Input: 12 to 28 Volts DC, 80mA max; Outputs: 4-20mA
Class I Division 2; Groups C, D T6
Class I, Zone 2, Group IIB
AEx nA IIB T6: Ta: -30°C to 60°C; IP65
Ex nA IIB T6: Ta: -30°C to 60°C; IP65

$C_{237484}US$

IRU models: IRU-2423, IRU-3433, IRU-5413.
Models listed are rated for Pollution Degree 2, Installation Category II.

Input: 12 to 28 Volts DC, 80 mA max; Outputs: 4-20mA
Listed for General Purpose
Ta: -30°C to 60°C;

IRU models: IRU-2423, IRU-3433, IRU-5413.
Models listed are rated for Pollution Degree 2, Installation Category II.

> ℹ IMPORTANT: Your IRU must be listed above and installed as shown on the Hazardous Location Drawing to meet listed approvals. Faulty installation will invalidate all safety approvals and ratings.

Warranty and Warranty Restrictions

This product is covered by ControlByWeb's warranty to be free from defects in material and workmanship under normal use and service of the product for 24 months. Contact Technical Support to receive a Return Material Authorization before shipping your product back.

Chapter 1: Specifications and Options

- **Dimensions**

3/4" ø NPT
Threads

7.21"
183.13mm

5.08"
129.03mm

2" ø NPT
Threads

3.05"
77.47mm

1.47"
37.34mm

1.98"
50.29mm

IRU-2423

3/4" ø NPT
Threads

7.76"
197.10mm

3" ø NPT
Threads

2.27"
57.66mm

5.63"
143.00mm

2.80"
71.12mm

3.00"
76.20mm

IRU-3433

3/4" ø NPT
Threads

6.10"
154.94mm

3.97"
100.84mm

2.73"
63.34mm

1" ø NPT
Threads

0.68"
17.27mm
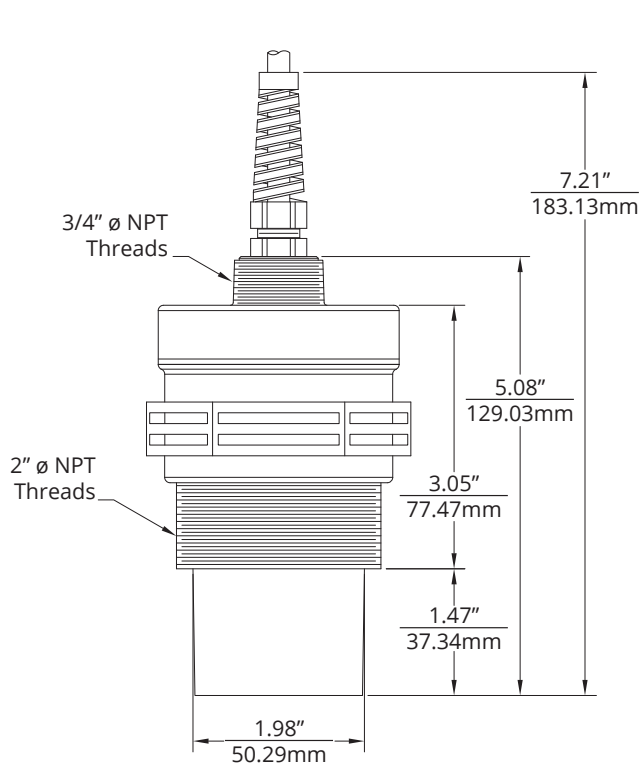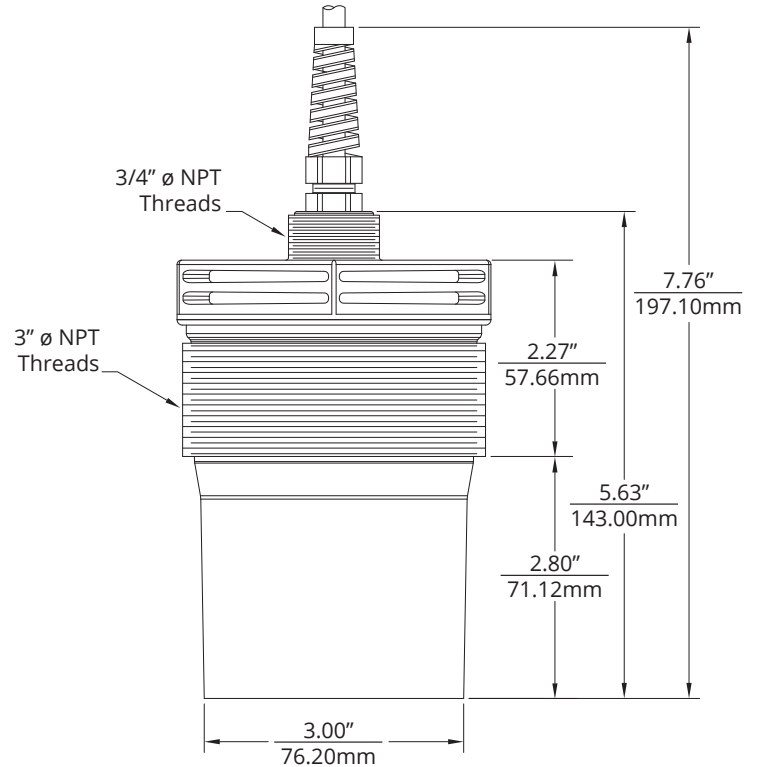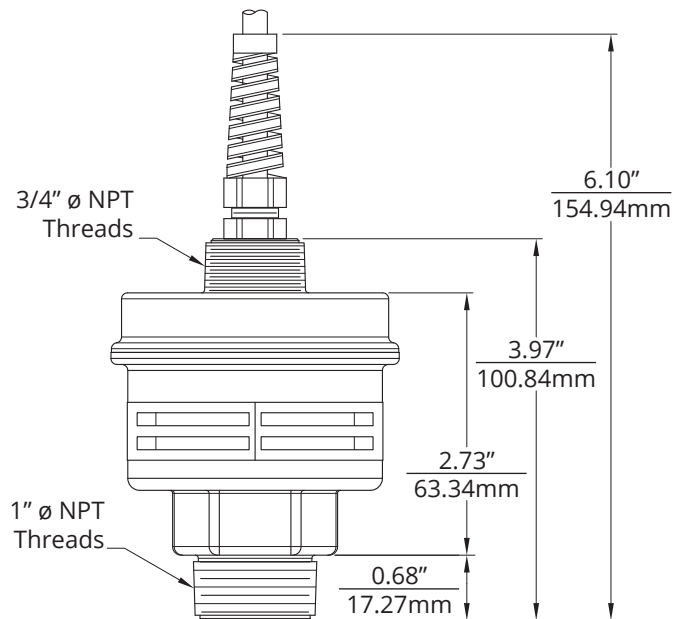
IRU-5413

- ## Specifications

IRU-2423

Performance

Operating Range	1 - 25 ft. (0.3 - 7.6 m) on liquids and hard, flat surfaces
	1 - 10 ft. (0.3 - 3 m) on bulk solids
Analog Output	Loop powered 4-20 mA
Beam Pattern	9° off axis
Transducer Frequency	69 kHz
Response Time	Programmable, 55 ms min @ 25 ft. (or 18 Hz max)

Accuracy

Accuracy	±0.25% of detected range
Resolution	0.1 inch (2.54 mm)

Environmental

Operating Temperature	-40 to 60°C (-40 to 140°F)
Internal Temperature Compensation	Yes
Enclosure Protection	IP65
CSA Certifications	See page iii

Electrical

Opperational Supply Voltage (at sensor)	12-28 VDC
Programming Supply Voltage	15-28 VDC
Current Draw	75 mA max @ 24 VDC and 4 Hz

Materials of Construction

Transducer Housing	PVDF (Kynar®)
Upper Housing	PC/PET
Transducer Type	Ceramic, PVDF faced

Mounting

Front	2" Ø NPT
Rear (top of lid)	3/4" Ø NPT

IRU-3433

Performance

Operating Range	1.25 - 50 ft. (0.4 - 15.2 m)
Analog Output	Loop powered 4-20 mA
Beam Pattern	9° off axis
Transducer Frequency	43 kHz
Response Time	Programmable, 100 ms min @ 50 ft. (or 10 Hz max)

Accuracy

Accuracy	±0.25% of detected range
Resolution	0.1 inch (2.54 mm)

Environmental

Operating Temperature	-40 to 60°C (-40 to 140°F)
Internal Temperature Compensation	Yes
Enclosure Protection	IP65
CSA Certifications	See page iii

Electrical

Opperational Supply Voltage (at sensor)	12-28 VDC
Programming Supply Voltage	15-28 VDC
Current Draw	75 mA max @ 24 VDC and 4 Hz

Materials of Construction

Transducer Housing	PC/PET
Upper Housing	PC/PET
Transducer Type	Ceramic, PVDF faced

Mounting

Front	3" Ø NPT
Rear (top of lid)	3/4" Ø NPT

IRU-5413

Performance
Operating Range	0.33 - 6.58 ft. (0.1 - 2.7 m)
Analog Output	Loop powered 4-20 mA
Beam Pattern	9° off axis
Transducer Frequency	143 kHz
Response Time	Programmable, 22 ms min @ 6.58 ft. (or 45 Hz max)

Accuracy
Accuracy	±0.25% of detected range
Resolution	0.1 inch (2.54 mm)

Environmental
Operating Temperature	-40 to 60°C (-40 to 140°F)
Internal Temperature Compensation	Yes
Enclosure Protection	IP65
CSA Certifications	See page iii

Electrical
Opperational Supply Voltage (at sensor)	12-28 VDC
Programming Supply Voltage	15-28 VDC
Current Draw	75 mA max @ 24 VDC and 4 Hz

Materials of Construction
Transducer Housing	PC/PET
Upper Housing	PC/PET
Transducer Type	Ceramic, PVDF faced

Mounting
Front	1" Ø NPT
Rear (top of lid)	3/4" Ø NPT

- **Electrical Connection and Pinout Tables**

| 3/C Cable	IRU-XXX3-C
Red	+24 VDC
Black	DC Ground
White	4-20 mA Out

4-pin MC	IRU-XXX3-M
1 Brown	+24 VDC
2 White	Not used
3 Blue	DC Ground
4 Black	4-20 mA Out
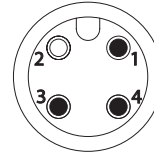
- **Wiring Diagram**

RST-3002 Programming Module Wiring

All IRU sensors are fully programmable using an RST-3002 programming module, which acts as an interface between the sensor and a personal computer. The RST-3002 is both 32- and 64-bit Windows compatible.
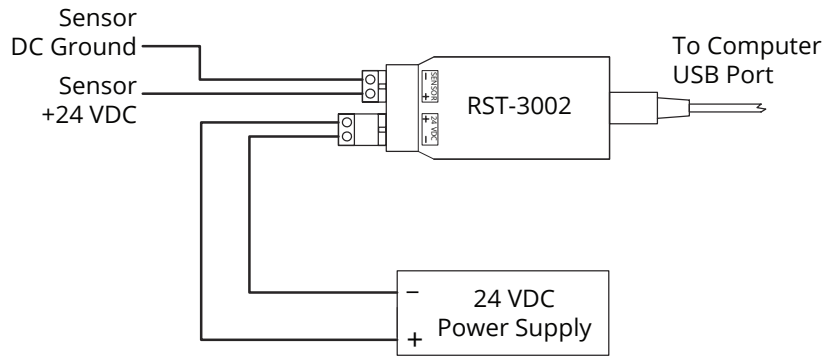
Figure 1.1

The RST-3002 is connected in series between the sensor and its power source using the two 2-pin Phoenix connectors on the module (See Figure 1.1). 15-28 VDC from the power source is connected to one 2-pin connector, while the VDC + and DC Ground of the sensor is connected to the module through the second 2-pin connector. When power is applied, the red LED between the Phoenix connectors on the RST should illuminate and the sensor should start audibly "ticking". The operating parameters of the sensor can then be adjusted using the Windows-based utility software.

> 🖉 NOTE: The utility software can be obtained by contacting the factory.

Chapter 2: Installation and Removal Procedures and Notes

- **Tools Needed**

  All IRU models can be mounted via NPT threads on the sensors.

  If you are using a stand pipe to mount your IRU, you will probably need tools to install the stand pipe.

- **Installation Notes**

  - Mount your IRU sensor so that it has a clear, perpendicular sound path to the surface being monitored. Your sensor should be mounted away from tank or vessel walls and inlets. (See Figure 2.1)
  - The sound path should be free from obstructions and as open as possible for the 9° off axis beam pattern.
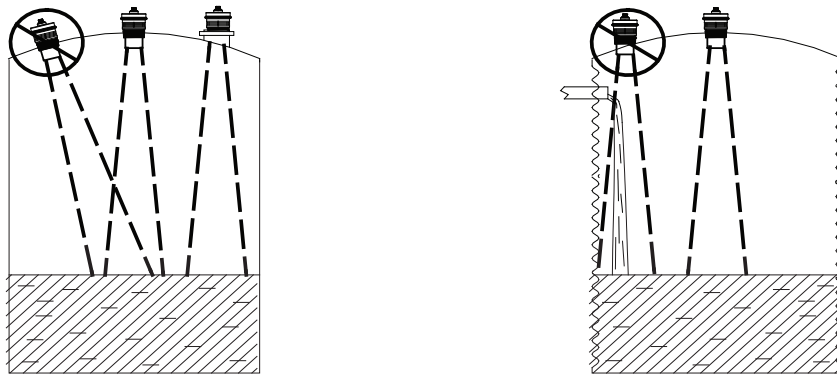

Figure 2.1

📝 NOTE: Do not mount the sensor where the beam will intersect objects such as fill streams, pipes, ladder rungs, wall seams, or corrugated tank walls.

• Mounting Instructions

Mounting your IRU is easy if you follow a few simple steps:

- Never over-tighten the sensor.
- Always screw in your sensor by hand to avoid cross-threading. Thread failure can be a problem if you damage threads by over-tightening them or by crossing threads.

> ℹ IMPORTANT: Do not over tighten! The sensor should be threaded in only hand tight.

• Electrical Installation

- Check the pinout table on your IRU against your order.
- Check that your electrical & control system wiring matches the pinout table on your IRU.
- For sensors with connectors, make the connection. For instruments with pigtails, run the cable to a junction box in a suitable location to connect to your system.

> ✎ NOTE: Please see wiring diagrams in Chapter 1 for RST Module Programming Wiring.

- **Software Installation**

  - Download the RST-3002 software zipfile as provided by the factory.
  - Open the zip file.
  - Choose "Install" from the options at the top of the zip file window.
  - The installation process will prompt you as needed to complete the installation.
  - The software will create I2000SWR.exe which will run from a folder in your start menu titled "APG/I2000SWR".

  > ⓘ IMPORTANT: RST-3002 is compatible with computers running 32- and 64-bit Windows systems.

- **Removal Instructions**

  - Ensure that power to the sensor is off.
  - Disconnect cable to sensor.
  - Remove the sensor and store it in a dry place, at a temperature between -40° F and 180° F.
  - If the sensor was installed in a hazardous location, ensure that the cable will not energize while the sensor is disconnected.

  > 🚑 DANGER: Do not disconnect equipment installed in hazardous locations unless power has been switched off or area is known to be non-hazardous.

CONTROL by WEB
www.ControlByWeb.com

Chapter 3: Set Up and Operation

• User Interface

IRU sensors use I2000SWR, a Windows-based utility software for user interface.

I2000SWR software user interface is one screen with three primary areas (See Figure 3.1). The primary portion of the screen is two columns of Sensor Parameters. The Sensor Readings and Communication Status area is below the Sensor Parameters, in two uneven columns. Finally, the Control Buttons area is located across the bottom of the screen.

Only the fields in the Sensor Parameters are editable by the user. All of the fields in the Sensor Readings and Communication Status area are display only.
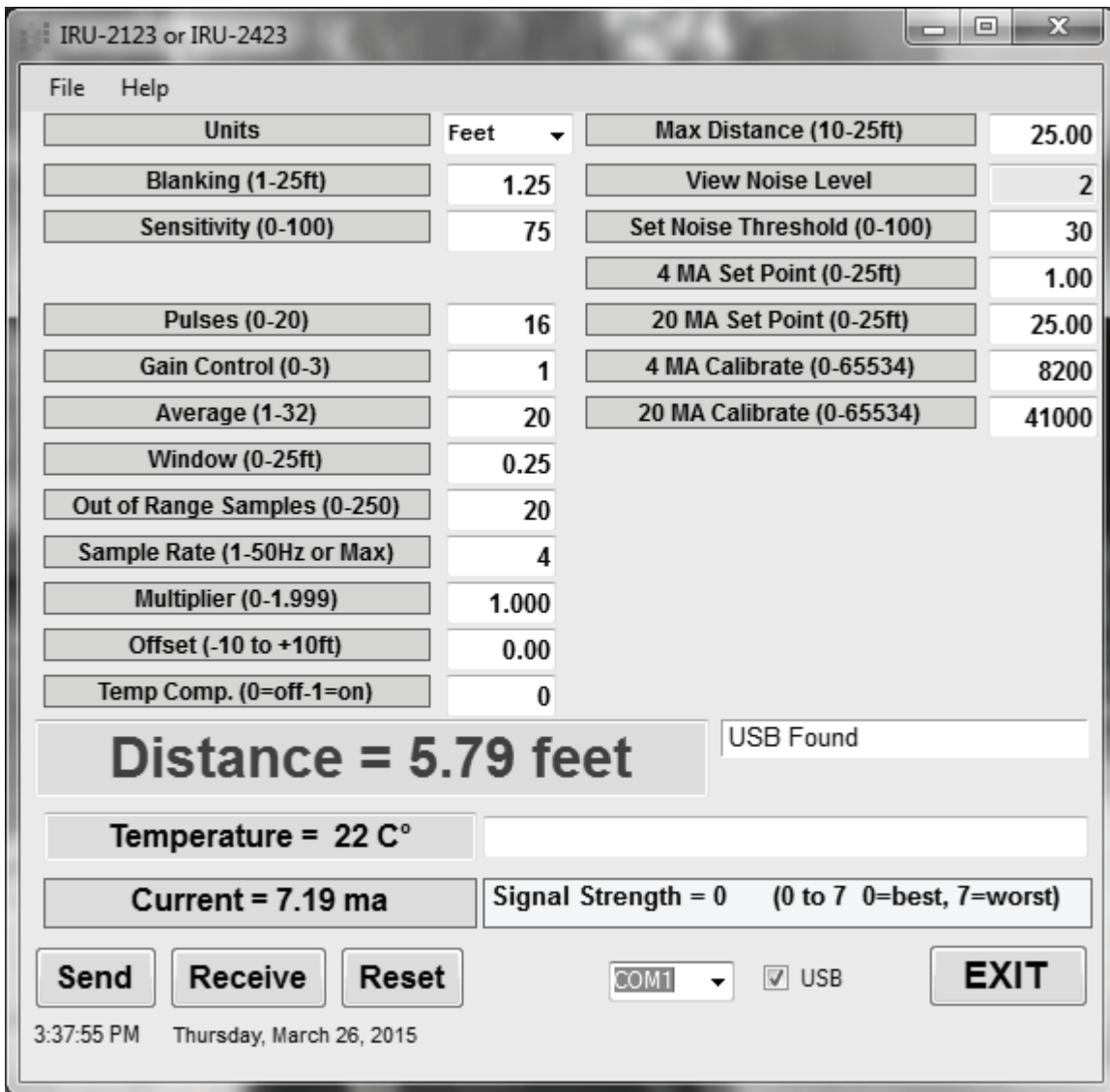

Figure 3.1

The top and middle Communication Status boxes in the right column show the status of communication between the I2000SWR software and the RST-3002, and between the I2000SWR software and the sensor (See Figure 3.2).
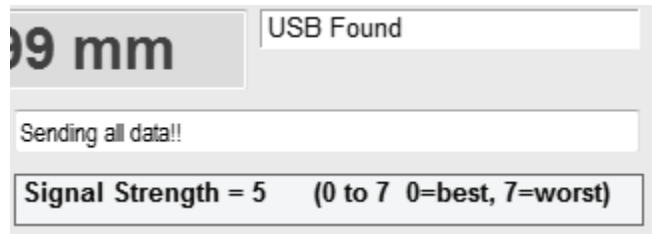

Figure 3.2

When the I2000SWR software is started it will attempt to establish communications with your IRU sensor via the RST-3002 module. The Send button will grey-out and the *Sensor Communication Status* will display "Receiving all data!!" During this initial communication, the software will determine the model number of your sensor (IRU-XXXX), configure the available parameters accordingly, and load the current parameter values from the sensor.

If the sensor model in the upper left-hand corner of the window does not change from the default (IRU-2003), then a communication error has occured. Check all wiring to ensure proper connections have been made (See Figure 1.1). Then close (*Exit*) the software and open it again.

Changes to parameters are written to the sensor by clicking on the *Send* button. During the writing process, the *Sensor Communication Status* will display "Sending all data!!" The message will then change to "Communication Error!!!" and the parameter fields will briefly change to green. The fields will then blank to white and the *Sensor Communication Status* will display "Receiving all data!!" At this point the parameter fields will turn greyish-blue and be populated with the new values read from the sensor.

The "Communication Error!!!" message in this process is a result of the brief time needed for the sensor to switch from receiving the new paramters to sending all the parameters back to the software. As long as your changes are reflected in the final read of the sensor data, there has not been an actual communication error.

- **IRU Sensor Parameters**

PARAMETER	RANGE
Units	Feet
	Inches
	mm

Units is used to select the units of measurement for parameter display. The units will also determine the resolution of the display and the outputs. The resolution is: feet 0.01, inches 0.1, and millimeters 1.
When a new unit of measure is selected, the software will automatically communicate with the sensor and update appropriate paramters.

PARAMETER	RANGE
Blanking	Determined by sensor model

Blanking sets the blanking distance, which is the zone from the Zero Point of the sensor to the point from which the first echo will be accepted. While blanking distance can be used to ignore unwanted targets--such as welds, seams, pipe fittings, or gaskets--between the sensor and the closest acceptable target level, such objects generally create additional reflections and echoes, which are hard to filter out. More often, blanking distance is used for a sensor installed in a stand pipe.

Because of the physical properties of an ultrasonic sensor, objects cannot be detected closer than approximately 1 foot from the face of most transducers (4 inches for IRU-5413). However, this distance varies according to how much energy is being transmitted (*Pulses*) and the installation.

> ⓘ IMPORTANT: *Blanking* is always measured from the Zero Point of the sensor. See Figures 3.3 - 3.5.

PARAMETER	RANGE
Sensitivity	0 - 100%

Sensitivity sets the level of gain that is applied to the echo. When operating in AutoSense, Hard-Target, or Soft-Target (see *Gain Control*), *Sensitivity* sets an upper limit for the amplification that can be applied to the echo. If operating in Manual, this parameter sets the gain.

When using manual gain control, set *Sensitivity* to the minimum value that will allow the target to be reliably tracked through the full range of expected environmental conditions.

PARAMETER	RANGE
Pulses	0-20

Pulses sets the maximum number of pulses the sensor can transmit when operating in AutoSense, Hard-Target, or Soft-Target (see *Gain Control*), or sets the number of pulses when operating in Manual. The more pulses that are sent in a burst, the stronger the returning echo.

When operating in Manual, increase the strength of the transmission by increasing *Pulses* for detecting soft targets in damping environments. In acoustically active environments or small enclosed areas, decrease *Pulses* to reduce multiple echoes.

PARAMETER	RANGE
Gain Control	0 = Manual
	1 = AutoSense
	2 = Hard-Target
	3 = Soft-Target

Gain Control selects the control mode for the sensor's gain settings (*Sensitivity* and *Pulses*). In AutoSense, the sensor automatically adjusts the sensitivity and pulses for the best quality return signal. Manual, Hard Target, and Soft Target are user controlled scenarios. In Manual, the user is in full control of *Sensitivity* and *Pulses*. For Hard and Soft Target, the user sets maximum *Sensitivity* and *Pulses*, but the overall gain is either ramped up slowly (Hard Target) or quickly (Soft Target) by the sensor.

PARAMETER	RANGE
Average	1-32

Average sets the number of qualified received signals to average for the displayed reading. Qualified received signals are placed in a first-in, first-out buffer, the contents of which are averaged for the displayed output. The larger the number of qualified received signals being averaged, the smoother the output reading will be, and the slower the reading will be to react to quickly changing targets.

PARAMETER	RANGE
Window	Determined by sensor model

Window determines the physical range of qualified received signals, based on the current reading. Signals beyond the +/- *Window* range of the current reading will not qualify unless the average moves. Signals outside the extents of the *Window* are written to the *Out of Range Samples* buffer.

PARAMETER	RANGE
Out of Range Samples	0-250

Out of Range Samples sets the number of consecutive samples outside the *Window* necessary to automatically adjust the current reading and move the *Window*.
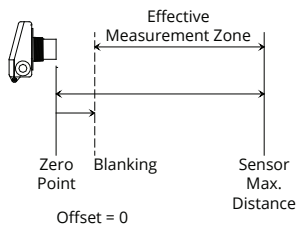
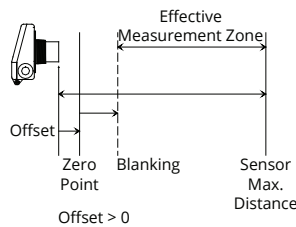| PARAMETER	RANGE
Sample Rate	1 Hz to sensor Maximum

Sample Rate is the number of samples taken by the sensor every second. While higher sample rates allow for quicker sensor response times to changing levels, lower sample rates reduce the likelihood of echo-based false positives. Also, lower sample rates result in longer sensor life.

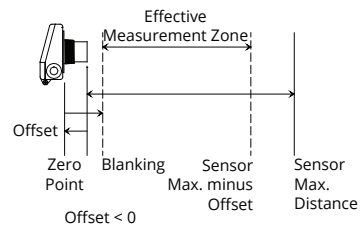| PARAMETER	RANGE
Multiplier	0 - 1.999

Multiplier is used to calibrate the sensor for variations in the speed of sound due to variations in atmospheres. The default of 1.000 is used for most applications. See the Calibration section of Chapter 4.

Figure 3.3 **Figure 3.4** **Figure 3.5**

PARAMETER	RANGE
Offset	-10 ft - + 10ft

Offset is used to change the Zero Point of the sensor. This is not the zero output (4 mA) point of the sensor. The Zero Point of the sensor is the point from which the calculated distance is measured. When the Offset is set to 0, the Zero Point of the sensor is at the face of the transducer (See Figure 3.3). A positive setting will move the Zero Point forward, in front of the sensor face (See Figure 3.4). Setting the Offset to a negative number will move the Zero Point backward, behind the sensor face (See Figure 3.5).

In all cases, Blanking is measured from the end of Offset, and the effective measurement zone of the sensor begins at the forward end of Blanking. If Offset is more negative than Blanking is positive, the net difference will be a loss in sensor maximum range (See Figure 3.5).

PARAMETER	RANGE
Temp Comp.	0 = Off
	1 = On

Temperature Compensation activates or deactivates the IRU's internal temperature compensation circuit. The speed of sound changes with changes in temperature, therefore changes in temperature can affect distance measurements. These effects can be minimized by activating temperature compensation.

> ✎ NOTE: If the internal temperature compensation is enabled and the sensor is exposed to direct sun light, the radiant heat can warm the sensor housing above the ambient temperature, which can affect the internal temperature sensor and cause overcompensation.

PARAMETER	RANGE
Max Distance	Determined by sensor model

Maximum Distance sets the maximum acceptable signal range for the sensor, measured from the Zero Point. Signals beyond the *Maximum Distance* are ignored. Under Loss of Echo conditions, the software distance reading will display the *Maximum Distance*.

PARAMETER	RANGE
View Noise Level	0 - 100
Read Only	

View Noise Level displays the number of echoes being picked up by the sensor. The presence of more than 30 echoes often indicates a noise source (acoustical or electrical) that could hamper sensor operation. Reducing the *Sensitivity* and *Pulses* may help cut down the influence of noise.

PARAMETER	RANGE
Set Noise Threshold	0 - 100

Set Noise Threshold sets an activation level for the sensor's noise filter. When the noise level exceeds the threshold, the filter activates a steady reading on the sensor until the noise level returns below the threshold. If periodic, short-term noise sources are known to be operating near the sensor, this threshold can be set to prevent false readings during noise-source activities.

CONTROL by WEB
www.ControlByWeb.com

PARAMETER	RANGE
4 MA Set Point	0 - Sensor Max Distance

4 mA Set Point sets the distance at which the output is 4 mA. This distance is measured from the Zero Point. See Figures 3.6 and 3.7.

PARAMETER	RANGE
20 MA Set Point	0 - Sensor Max Distance

20 mA Set Point sets the distance at which the output is 20 mA. This distance is measured from the Zero Point. See Figures 3.6 and 3.7.

For Distance configuration (i.e., greater mA output for target surface further from sensor), set the *4 mA Set Point* to be **less** than the *20 mA Set Point*. See Figure 3.6.
For Fill configuration (i.e., greater mA output for target surface closer to sensor), set the *4 mA Set Point* to be **greater** than the *20 mA Set Point*. See Figure 3.6.
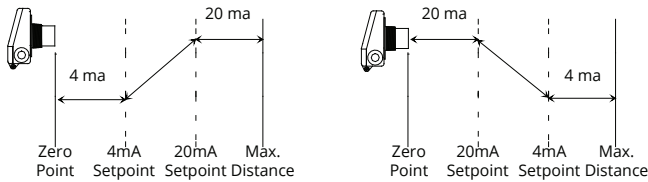
Figure 3.6

Figure 3.7

PARAMETER	RANGE
4 MA Calibrate	0 - 65534
	Default: 8200

4 mA Calibrate fine tunes the minimum current sourced on the analog output. (See Figure 3.7)

PARAMETER	RANGE
20 MA Calibrate	0 - 65534
	Default: 41000

20 mA Calibrate fine tunes the maximum current sourced on the analog output. (See Figure 3.7)

- ## Sensor Readings and Communication Status

Below the Sensor Parameters and Output Configuration is the Sensor Readings and Communication Status area. On the left side are three sensor reading displays: Distance, Temperature, and Current Output. On the right side are three communication status displays: *USB status*, *Sensor Communication Status*, and *Signal Strength Status*. (See Figure 3.8)
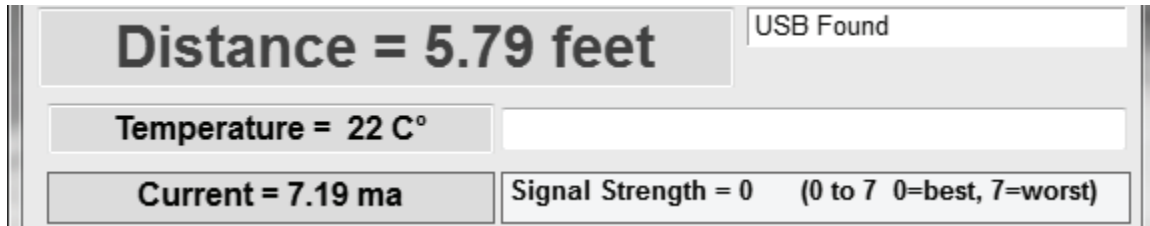
Figure 3.8

Reading Type
Distance

Distance displays the current output of the sensor in the units selected in the *Units* parameter above.

Reading Type
Temperature

Temperature displays the current temperature of the thermal device in the IRU sensor body.

Reading Type	Range
Current Output	Current

Current Output displays the current output of the sensor.

Communication Type	Range
USB Status	USB Not Found
	USB Found

USB Status displays the status of the USB connection between the I2000SWR software and the RST-3002 as detected when the software initiated.

Communication Type	Range
Sensor Com Status	[blank]
	Receiving all data!!
	Sending all data!!
	Commmunication Error!!!

Sensor Communication Status displays the current status of communication between the I2000SWR and the IRU sensor. Typically this box is blank. The three messages--"Receiving all data!!", "Sending all data!!", and "Communication Error!!!"--only display while their respective events are happening. See page 10.

Communication Type	Range
Signal Strength Status	0 - 7
	Default

Signal Strength Status displays the strength of the signal being received by the sensor. 0 represents the highest quality signal, and 7 represents the lowest quality. For some sensor models, the *Signal Strength Status* may show "Default" if the sensor is not fully communicating with the I2000SWR software. Other models only display "Default," and never show the 0-7 range.

- ## Control Buttons

Below the Sensor Readings and Communication Status area are four Control Buttons. On the left side are three sensor communication buttons: Send, Receive, and Reset. In the middle are a dropdown box and check box for selecting the communication channels. On the right side is the Exit button. (See Figure 3.9)
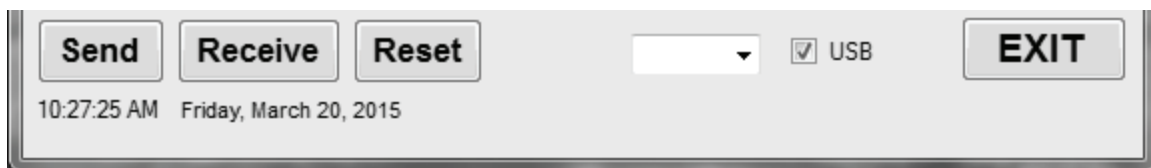

Figure 3.9

Control Button

Send

Send sends all the user-entered values for sensor parameters to the sensor. After sending the parameters to the sensor, the software will automatically poll the sensor to receive back all parameters. The *Sensor Communication Status* display will show the progression of the writing and reading of sensor parameters.

Control Button

Receive

Receive polls the IRU sensor to read all the sensor parameters into the software. The Sensor Communication Status display will show the progression of the reading of sensor parameters.

Control Button

Reset

Reset returns all sensor parameters to their factory settings. After reseting the parameters on the sensor, the software will automatically poll the sensor to receive back all parameters The *Sensor Communication Status* display will show the progression of the resetting and reading of the sensor parameters.

Dropdown Box	**Range**
Com Channel	No Selection
	1

Com Channel selects the computer's communication port used for RS-232 serial communication between the I2000SWR software and the IRU sensor. If you are using an RST-3002 via USB you do not need to use this dropdown box.

Check Box

USB

The *USB* checkbox directs the I2000SWR software to use communicate with the IRU sensor via USB and an RST module. If the box is unchecked, the software will use RS-232 via the selected com port in the *Com Channel* dropdown box.

Control Button

Exit

Exit closes the I2000SWR software. Sensor parameters that have been successfully written to the sensor will be stored in non-volatile memory on the IRU.

- ## Saving and Loading Parameter Files

In the File Menu are options for saving and loading parameters in text (.txt) files. Save Parameters will write the current values for all parameters in the I2000SWR software to a .txt file. Load Parameters will load all the parameters in a .txt file into the I2000SWR software. The parameters will not be written to the IRU until the *Send* button is clicked. Similarly, to ensure that the current parameters in the IRU are written to a file, *Receive* must be clicked before choosing File>Save Parameters.

Saving and loading parameters is especially helpful for setting up several identical sensors in identical settings. Once the parameters for the first sensor are configured appropriately, the parameters can be saved in a .txt file and subsequently loaded into the remaining sensors.

Chapter 4: Maintenance

- **General Care**

  Your IRU ultrasonic sensor is very low maintenance and will need little care as long as it was installed correctly. However, in general, you should:
  - Avoid applications for which the sensor was not designed, such as extreme temperatures, contact with incompatible corrosive chemicals, or other damaging environments.
  - Inspect the threads whenever you remove the sensor from duty or change its location.

- **Trouble Shooting**

  Should you have problems with your IRU, here are some troubleshooting steps.
  - Check the *Signal Strength Status* (See Figure 3.8 on page 16 and explanation on page 17). If the signal strength is low, alternately increase *Pulses* and *Sensitivity* (pages 11 and 12) until the signal strength improves.
  - Ensure *Temperature Compensation* (page 14) is turned on.
  - Set *Gain Control* (page 12) to AutoSense.
  - Ensure that *Blanking* (page 11)is accurately set to account for any unwanted targets between the sensor and the closest acceptable target.
  - Ensure that the *Noise Threshold* is greater than the *Noise Level* (page 14).
  - Ensure that the settings for *Average* and *Window* (pages 12) allow for anticipated target surface movement without adversely effecting the output reading.

- **Calibration**

  This procedure uses targets at known distances to calibrate the sensor's accuracy. A wall or other large, flat object is recommended for the long range target.
  - Point the sensor at a target at a known distance near the maximum range of the sensor (See Figure 4.1).
  - Adjust the *Multiplier* until the distance reading on the sensor matches the actual measured distance to the target.
  - Point the sensor at a target near the minimum measurement range plus any *Blanking* distance (See Figure 4.2).
  - Adjust the *Offset* value until the distance reading on the sensor matches the actual measured distance to the target.
  - Repeat previous two steps until no further adjustment is required.

measure

measure

Figure 4.1   **Figure 4.2**

> ✏️ NOTE: The *Reset* button in the I2000SWR software will reset the IRU to factory default settings (See Figure 3.9).
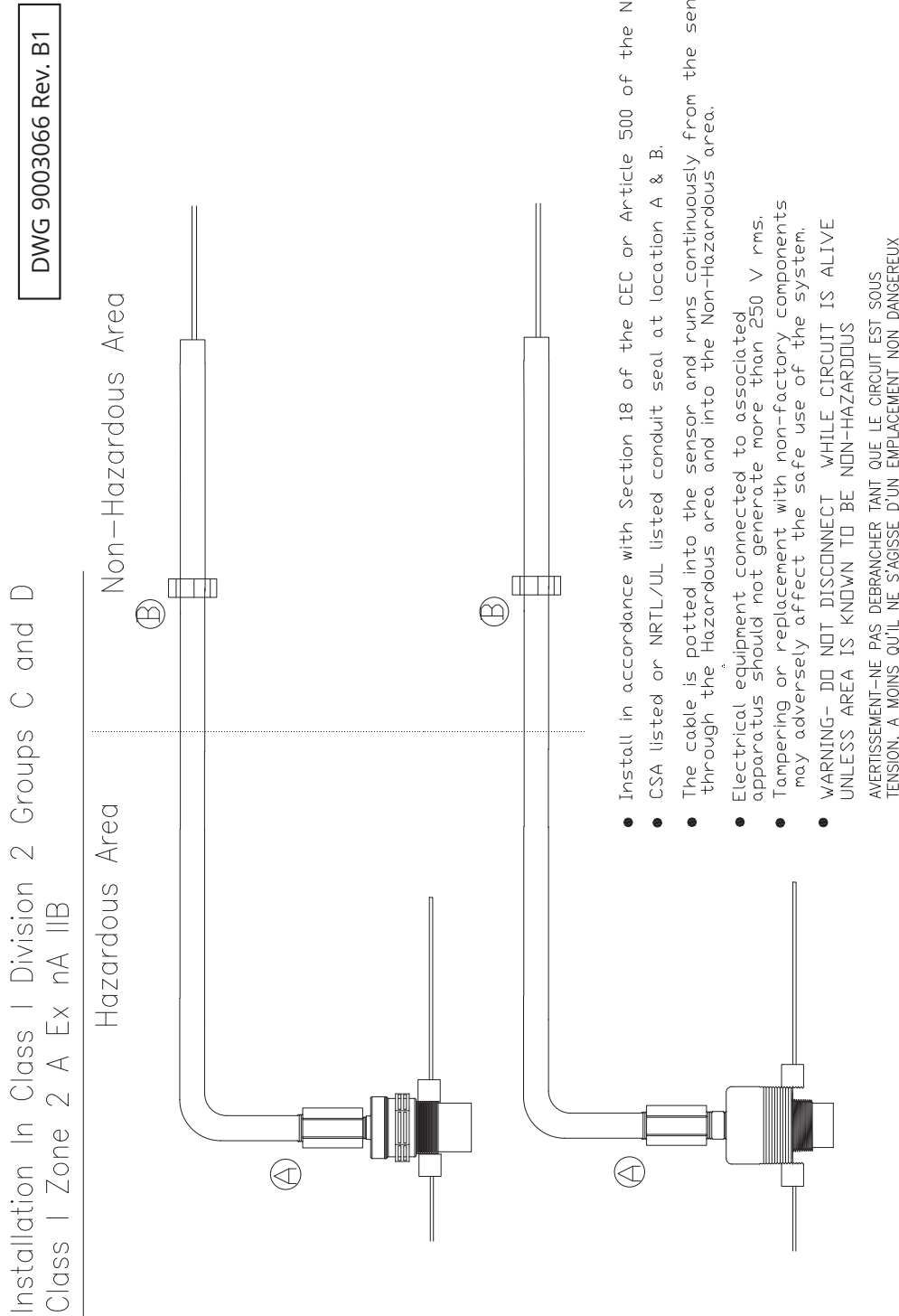
• Repair and Returns

Should your IRU ultrasonic sensor require service, please contact the factory via phone or email. We will issue you a Return Material Authorization (RMA) number with instructions.

- Phone: 435-750-5999
- Email: sales@controlbyweb.com

Please have your IRU sensor's part number and serial number available. See Warranty and Warranty Restrictions for more information.

Chapter 5: Hazardous Location Drawing

- **Hazardous Location Drawing**

DWG 9003066 Rev. B1

Installation In Class I Division 2 Groups C and D
Class I Zone 2 A Ex nA IIB

Hazardous Area

Non-Hazardous Area

- Install in accordance with Section 18 of the CEC or Article 500 of the NEC.
- CSA listed or NRTL/UL listed conduit seal at location A & B.
- The cable is potted into the sensor and runs continuously from the sensor through the Hazardous area and into the Non-Hazardous area.
- Electrical equipment connected to associated apparatus should not generate more than 250 V rms.
- Tampering or replacement with non-factory components may adversely affect the safe use of the system.
- WARNING– DO NOT DISCONNECT WHILE CIRCUIT IS ALIVE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS
  AVERTISSEMENT–NE PAS DEBRANCHER TANT QUE LE CIRCUIT EST SOUS TENSION, A MOINS QU'IL NE S'AGISSE D'UN EMPLACEMENT NON DANGEREUX

- WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – Clean only with a damp cloth
  AVERTISSEMENT – surface non conductrice du boîtier peuvent être facturés par MEDIA non conductrice , CLEAN avec un chiffon humide

CONTROL by WEB
www.ControlByWeb.com

Control By Web

Tel: 1/435/750-5999 • www.controlbyweb.com • sales@controlbyweb.com