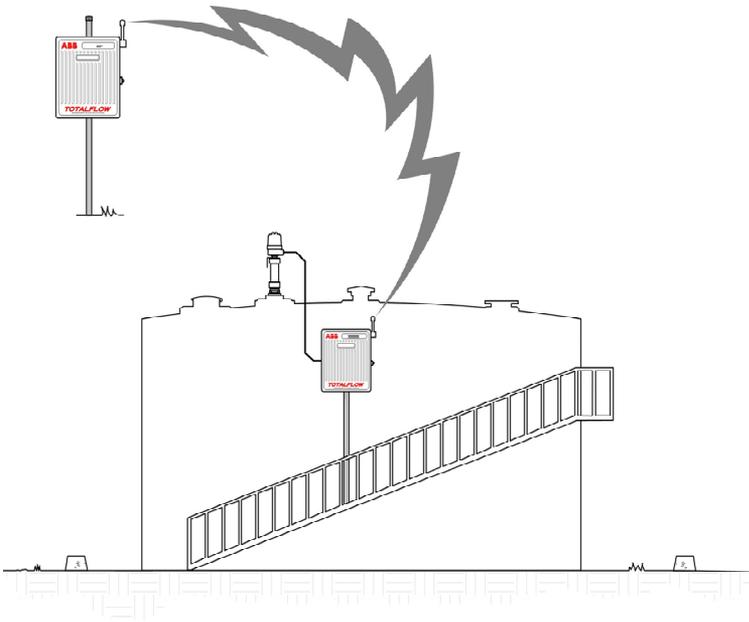




## WellTell Wireless IS Start-Up Guide



# ***TOTALFLOW***

MEASUREMENT & CONTROL SYSTEMS

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## Introduction

This is a quick start guide designed for typical installations only. It is recommended that inexperienced technicians consult the Totalflow® WellTell Wireless User’s Manual for more detailed information while performing the installation and start-up.

The Totalflow WellTell wireless product is designed to replace expensive cable with robust and inexpensive radio links. Cable trenching presents drawbacks related to expense, inconvenience, maintainability and safety. Spread spectrum radio technologies have made it possible to install low-cost, easily maintainable RF links between many of the system components. Trenching can be minimized, and in some instances, done away with entirely.

The WellTell-IS is a simple protocol transport incorporating an RS-485 compatible, intrinsically safe (IS) barrier. The WellTell-IS has a wide range of uses to include providing an RF link to the LevelMaster products.

Scan through the guide to see what information is available before beginning the installation. If there are questions that are not answered in the guide or other documentation, call a local Totalflow representative or call the number listed on the back page of this guide. Alternate methods of installation are acceptable and may save time; however, it is recommended that inexperienced technicians perform these procedures in this order.

Unpack and inspect the WellTell-X and WellTell-IS and any other optional equipment. Inspect all parts for damage, missing or incorrect components.

## Before Beginning

The WellTell-IS system is comprised of two parts: the host (WellTell-X) and the intrinsically safe (IS) barrier client (WellTell-IS). The host, WellTell-X, is generally installed in the site controller (XFC or XRC). The IS barrier client, WellTell-IS, is installed near the LevelMaster application.

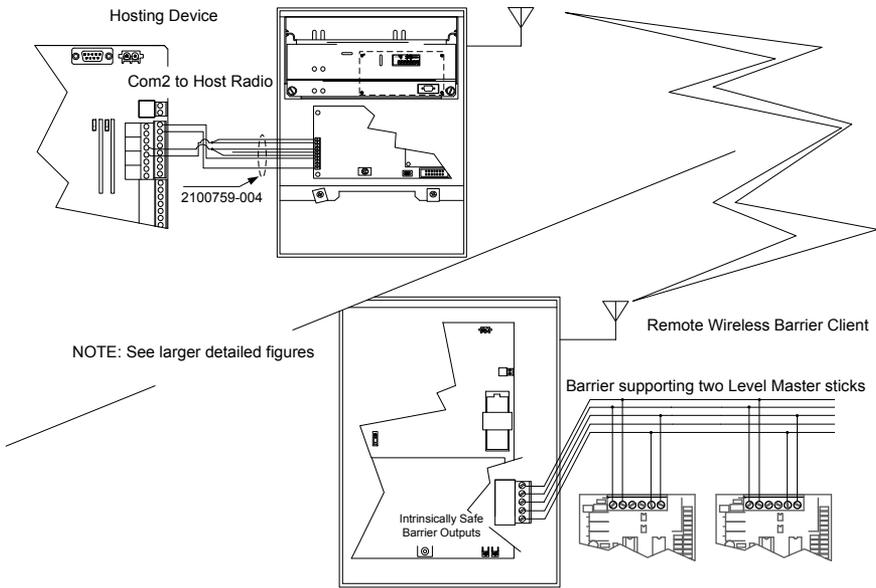


Figure 1 – Basic Setup

## Basic Installation

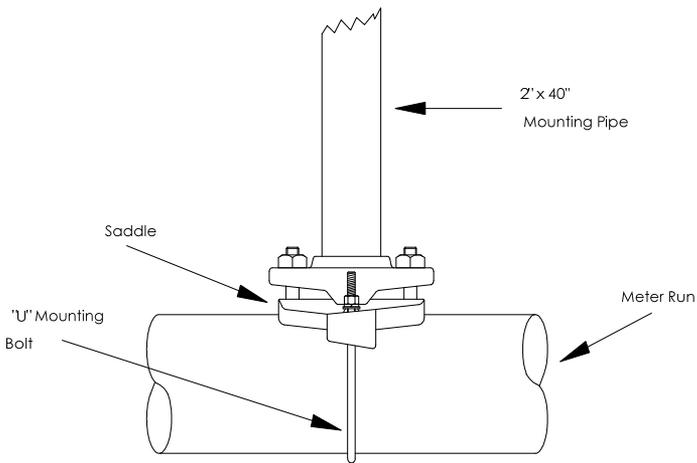
The following information covers the initial installation of the WellTell-X host at the site controller (XFC/XRC), the installation of the WellTell-IS client near the LevelMaster application and the final application configuration and test at the site controller.

The instructions are broken down into segments that cover the mechanical and electrical installation along with the configuration of the system. It is assumed that this installation is taking place within either a 6400 or 6700 enclosure

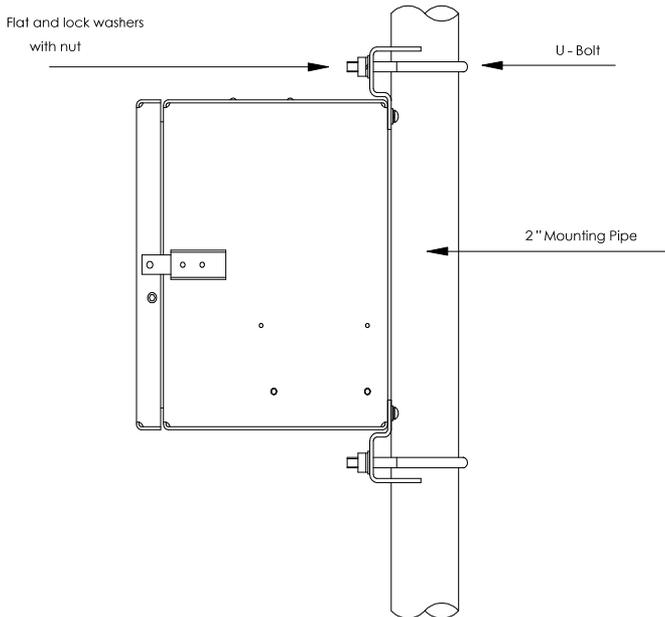
### **Step 1** WellTell-IS Mechanical Installation

The mechanical installation for both the WellTell-IS client and WellTell-X host is the same. Use the following instructions to accomplish the task.

- 1A** Position the pipe saddle on the meter run. Select a location that allows easy user access and is close to the equipment. Temporarily attach the saddle on the meter run pipe using U-bolts and associated hardware.
- 1B** Screw the 2" by 40" mounting pipe into the saddle (see Figure 2). Place the level against the pipe and vertically align. Adjust the pipe, mounted in the saddle, until vertical alignment is achieved. After vertical alignment, securely tighten the 2" by 40" pipe in the saddle. Tighten the saddle mounting bolts. Ascertain that the pipe is securely installed in the saddle.
- 1C** Position the enclosure on the 2" mounting pipe, and secure in place with two U-bolts, flat washers, lock washers and two 9/16" bolts (see Figure 3).



**Figure 2 – Pipe and Saddle Mount**

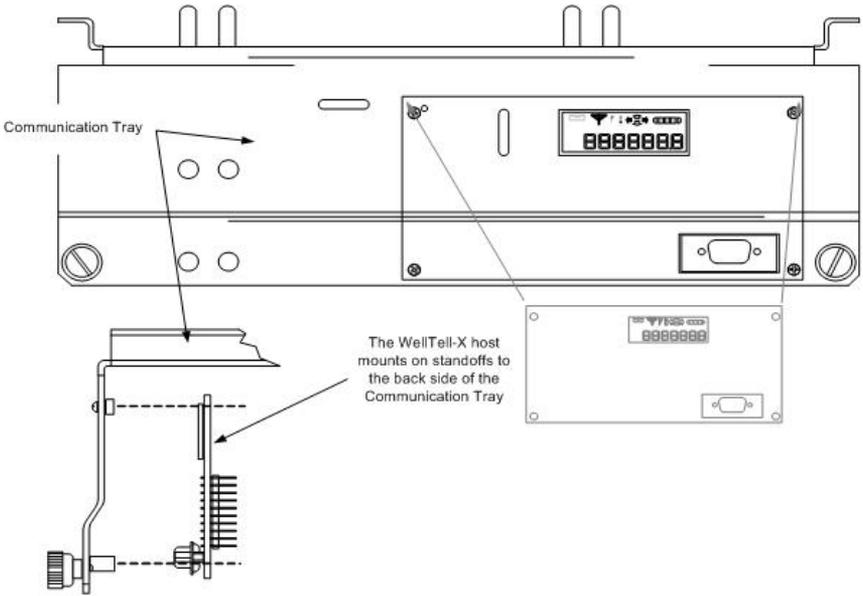


**Figure 3 – Pipe Mounted 6400/6700 Enclosure**

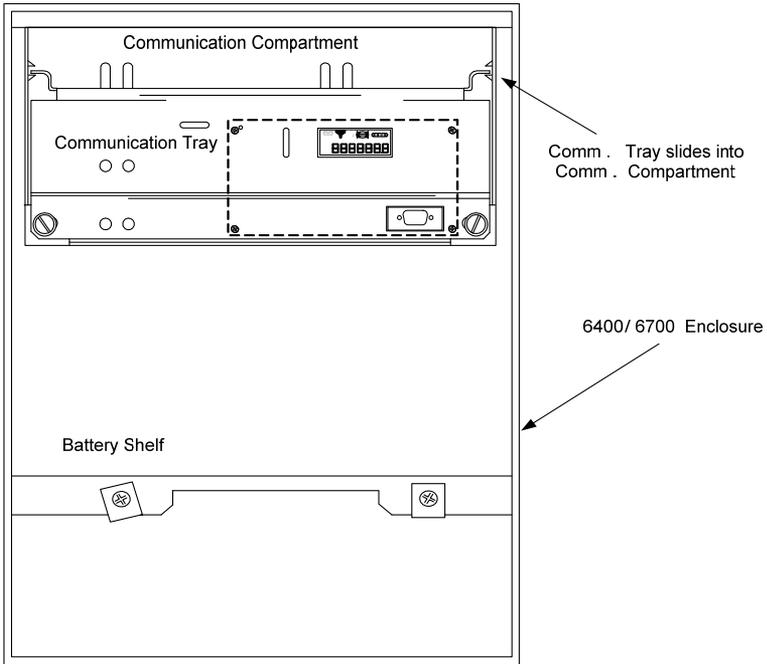
**Step 2** WellTell-X Installation

The WellTell-X host unit is mounted in a communication tray (generally at the factory) and is designed to be installed in a Totalflow 6400 or 6700 enclosure (see Figure 4).

At the top of the enclosure is the area where communication devices are installed. This area is referred to as the communication compartment (see Figure 5). All communication equipment is secured to the communication tray and slid into this compartment. The WellTell-X is mounted to standoffs on the communication tray and then slid into the communication compartment.



**Figure 4 – Communication Tray**



**Figure 5 – Communication Tray Installed in the 6700 Enclosure**

### Step 3 WellTell-X Host Communication Wiring

**NOTE:** If the unit came preconfigured from the factory, ignore the following wiring instructions.

Wiring of the WellTell-X host to a parent device (XFC/XRC) is fairly simple. In the example (see Figure 6), an XFC-195 board is used as the parent meter. If the application involves something other than the XFC-195, please check the meter pinouts before proceeding.

Additionally, the following example uses COM 2 of the XFC. COM 1 is often defaulted for communication with a remote device (radio, modem, etc.). Wiring is simplified by the use of pre-wired cable that is designed specifically for the WellTell-X device.

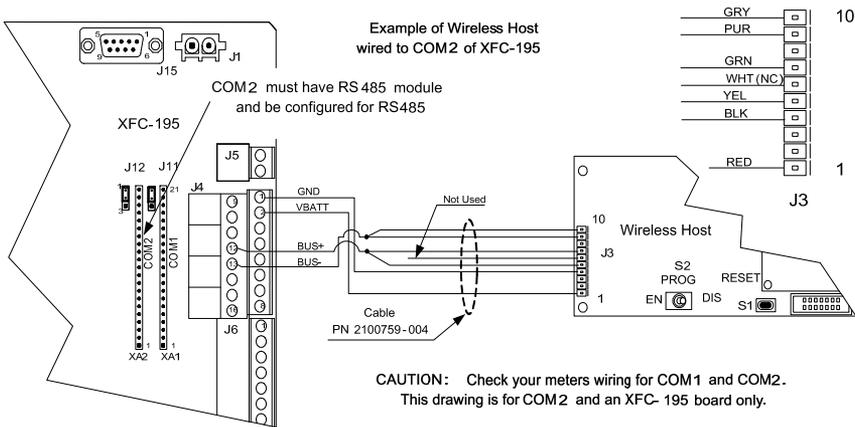


Figure 6 – Wireless Host Wired to COM 2 of XFC-195

### Step 4 Configuring COM 2 for the LevelMaster Application

After completing the electrical wiring for the WellTell-X to COM 2 on the flow computer, the user needs to configure the COM 2 communication port.

**NOTE:** In Figure 6, COM 2 (XA2) must have an RS-485 module inserted.

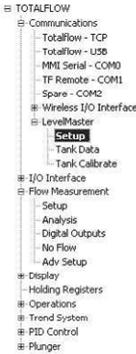
Figure 7 walks the user through the steps (A and B) to configure COM 2 for the LevelMaster application.

A - Move to the Communications tab. Set the Spare - COM 2 to None and the LevelMaster port to COM2:



Communications Ports Network			
	Port Name	Port	
1.3.3	TotalFlow - TCP	9999	Dir = Comm-1
2.3.3	TotalFlow - USB	USB1:	Dir = Comm-2
3.3.3	MMI Serial - COM0	COM0:	Dir = Comm-3
4.3.3	TF Remote - COM1	HOHE	Dir = Comm-4
6.3.3	Spare COM2	None	Dir = Comm-5
12.3.3	Wireless I/O Interface	COM1:	Dir = WLIO-1
51.3.3	LevelMaster	COM2:	Dir = Level-1

B - Move to the LevelMaster Communications tab and setup as shown



Setup Communications Request Blocks Statistics Packet Log		
Description		
51.3.3	Serial Port	COM2:
51.0.22	Port Type	Serial
51.0.6	Protocol	Tank Gauge
51.0.1	Interface	Rs485
51.0.2	Baud Rate	9600
51.0.3	Data BITS	7
51.0.4	Parity	Even
51.0.5	Stop Bits	1
51.1.1	Xmit Key Delay (milliseconds)	10
51.1.2	Unkey Delay (milliseconds)	10
51.1.3	Timeout (milliseconds)	5000
51.0.15	Switched V-Batt Operate	Enable
51.1.0	Power Up Delay (milliseconds)	0
51.0.13	Retries	0

Figure 7 – Typical Communication Setup for the LevelMaster

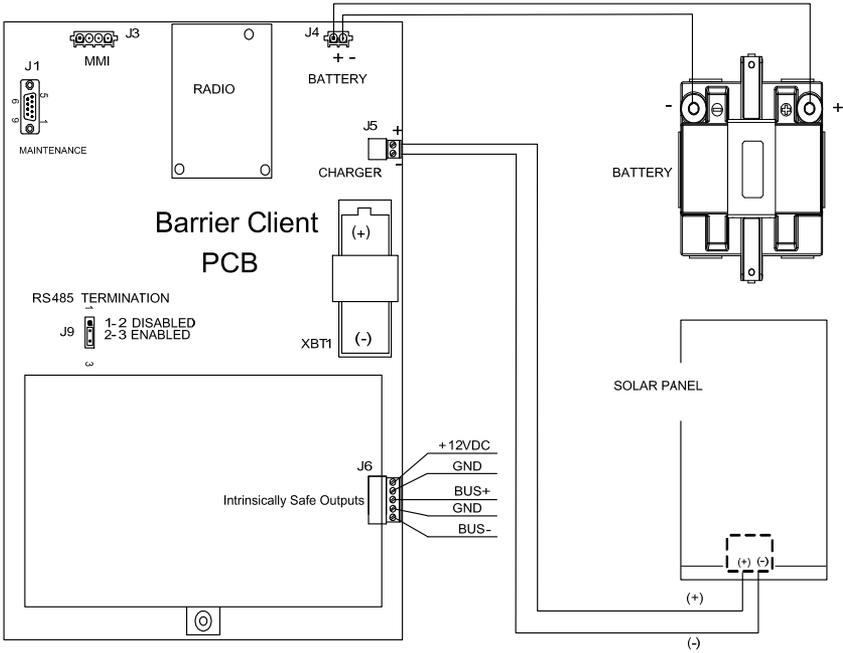
## WellTell-IS Wiring

Electrical wiring at the WellTell-IS (client) is accomplished with two basic steps: powering the unit and wiring the RS-485 to the LevelMaster sticks.

### **Step 5** WellTell-IS Client Electrical Wiring

The WellTell-IS client can be mounted near or at the top of the storage tank. It should be mounted in a Division 2 or non-hazardous location; however, a short piece of cable can be run to the LevelMaster itself.

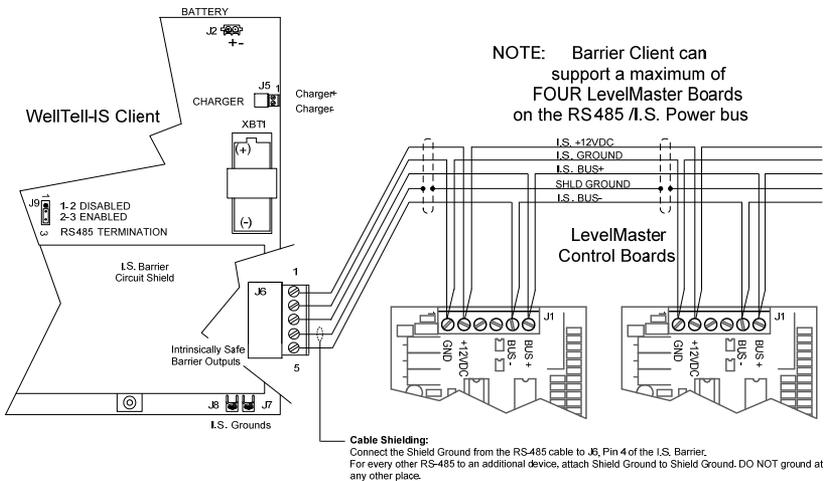
The WellTell-IS client also has an onboard battery charger to maintain the charge on a 12 VDC lead-acid battery. Figure 8 illustrates the most common way to provide power to the WellTell-IS.



**Figure 8 – Powering of the WellTell-IS**

**Step 6** Wiring the LevelMaster Sticks to the IS Barrier

The second part of the electrical installation for the WellTell-IS is the wiring of the LevelMaster sticks to the IS barrier on the WellTell-IS. Figure 9 illustrates how this is accomplished.



**Figure 9 – Wiring LevelMaster Sticks to the IS Barrier**

# System Configuration

## **Step 7** Configuring the WellTell-X

In a similar fashion to configuring the meters for the COM 2 port, the user must also configure the WellTell-X radio.

To configure the WellTell-X (or the WellTell-IS) radio, the user must have the WellTell Wireless Utility (WWU) program and a typical 9-pin to 9-pin (male DB9 to female DB9) cable. The cable connects between a laptop and the maintenance connector of the WellTell-X.

- 7A** Configure the WellTell-X security. WWU supports two levels of Access: Restricted Use and Admin (lower left side on the System Config tab). Restricted Use gives the user access to the basic setup parameters that are most often used (i.e., Network ID, FR Channel, etc.). Lesser used parameters (i.e., Encryption Key, Range Refresh, etc.) are grayed out, if Restricted Use is selected. Normal setup does not require Restricted Use. These lesser parameters can be accessed through Admin. Admin is achieved by entering the password. The factory password is 0000.

As opposed to providing an in-depth, screen-by-screen explanation of the WWU, the opening screen is presented to the user along with references to the various available tabs that contain relevant parameters on each of the corresponding screens (see Figure 10).

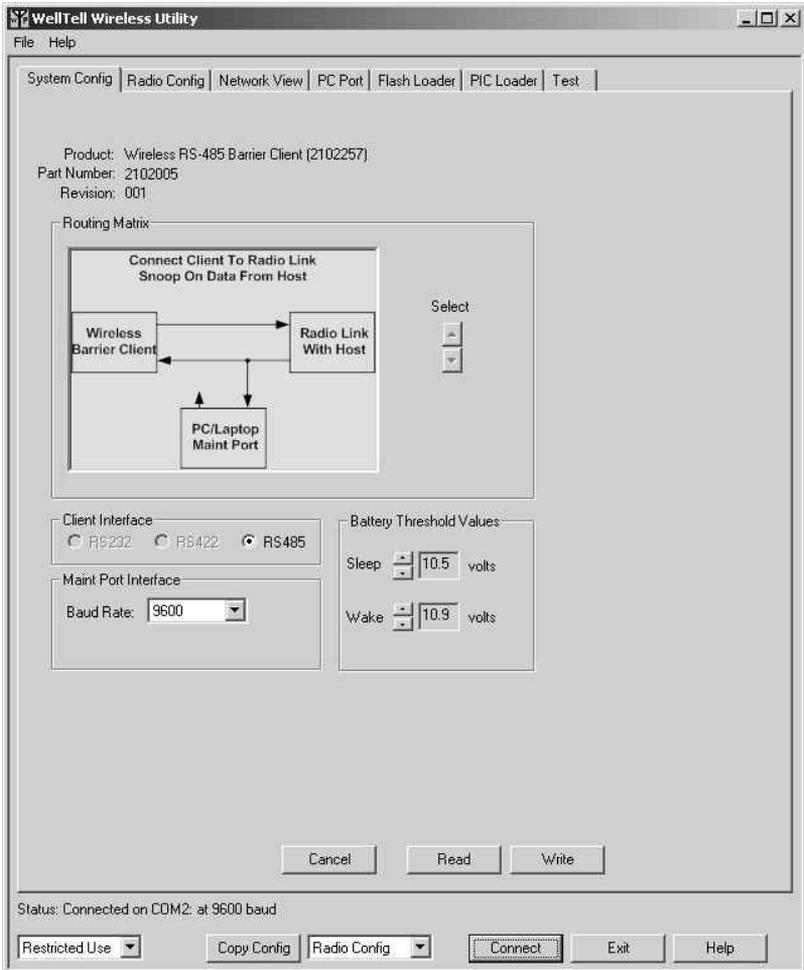
- 7B** System Config tab - Set the parameters as shown in Figure 10.

- 7C** Radio Config tab – Set the parameters as shown in the following table:

<b>Parameter Field</b>	<b>Value</b>
Mode	Server
Network ID	1 (Must match Client)
RF Channel	Anything between 16 and 47 (must match Client)
Baud Rate	9600
Delivery Mode	Broadcast
RF Mode	Acknowledge
Duplex Mode	Half Duplex



Network View tab – Leave the values at their default settings.



**Figure 10 – WWU Main Screen**



PC Port tab – Set the parameters as follows:

Parameter Field	Value
Port	COM 1 (Communication port of laptop PC)
Baud Rate	9600
Data Bits	7 or 8 bits based on user setup
Parity	Even/Odd/None based on user setup
Stop Bits	1

**7F** The remaining tabs (Flash Loader, PIC Loader and Test) can be left at their default settings.

### **Step 8**      **Configuring the WellTell-IS**

Just as the host radio, WellTell-X, was configured, it is necessary to configure the WellTell-IS client radio.

As with the WellTell-X, it is necessary to have the WWU program and a typical 9-pin to 9-pin (male DB9 to female DB9) cable. The cable connects between the laptop and the maintenance connector on the WellTell-IS.

The opening screen for the WellTell-IS client radio is similar to the opening screen for the WellTell-X host, with the exception of a display that states that this is a Wireless Client Server as opposed to a Wireless Host Server.

Rather than providing an in-depth, screen-by-screen explanation of the WWU, please refer to Figure 10 to view the available tabs. As with the previous section, the following details each individual tab available to the user and the corresponding parameter fields and values that must be entered therein.

**8A** System Config tab – Set the parameters as shown in Figure 10.

**8B** Radio Config tab – Set the parameters as follows:

<b>Parameter Field</b>	<b>Value</b>
Mode	Client
Network ID	1 (Must match Host
RF Channel	Anything between 16 and 47 (must match Host)
Baud Rate	9600
Delivery Mode	Broadcast
RF Mode	Acknowledge
Duplex Mode	Half Duplex

**8C** Network View tab – These parameters should be left at their default settings.

**8D** PC Port tab – Set the parameters as follows:

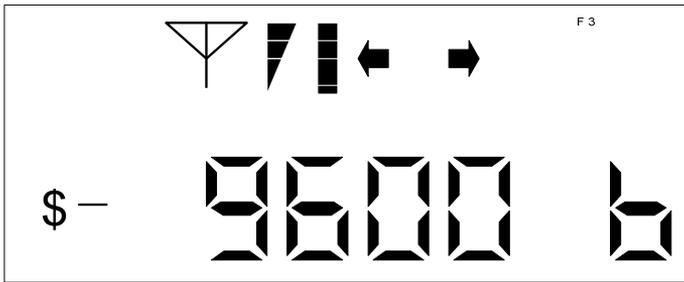
<b>Parameter Field</b>	<b>Value</b>
Port	COM 1 (Communication port of laptop PC)
Baud Rate	9600
Data Bits	7 or 8 bits based on user setup
Parity	Odd/Even/None depending on user setup.
Stop Bits	1

**8E** The remaining tabs (Flash Loader, PIC Loader and Test) can be left at their default settings.

**Step 9** Final Configuration at the Site Controller (XFC/XRC)

With the WellTell-X host and the WellTell-IS client both installed and configured, the last step is to configure the site controller (XFC/XRC at the host end) for the LevelMaster application. There is no difference in the configuration of the LevelMaster application due to the presence of the WellTell products. LevelMaster is instantiated and configured as it would be without the WellTell products.

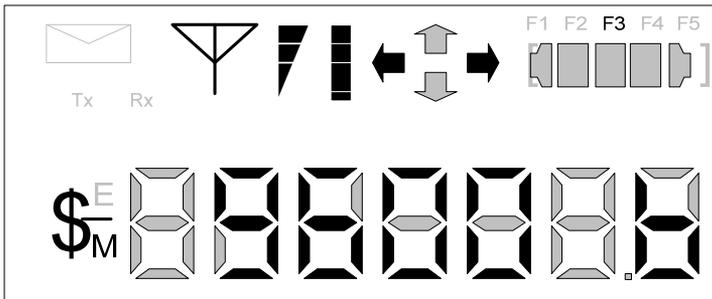
With the system up and running, the WellTell-X host display looks similar to Figure 11.



**Figure 11 – WellTell-X (Host) Display**

The antenna symbol is on. The "\$" symbol is always active on the WellTell-X or host server. The "-" is the system heart beat and blinks continuously. The blink slows down whenever the radio is dead or not connected. The "F3" in the upper right of the display denotes that this is a host server (WellTell-X). The main area of the display scrolls through several parameters: baud rate, temperature, channel, etc. For more information on the display, refer to the appropriate appendix.

**LCD Display and Annunciators**



**Figure 12 – LCD Display**

<b>Description of Standard Displays (Annunciators)</b>	
<b>Envelope</b>	Indicates “Snoop” mode (i.e., processor is “snooping” the data stream).
<b>Tx/Rx</b>	Indicates activity on the processor’s UART port.
<b>Antenna</b>	The Host Server (WellTell-X) annunciator is always on. The Client (WellTell-IS or WellTell-IO) is only on when the Client is ‘synced’ to a Host.
<b>Signal Strength</b>	A three section “progress bar” indicating incoming signal strength between the Host and the Client.
<b>Battery Strength</b>	A four section “progress bar” indicating incoming signal strength between the Host and the Client.
<b>Arrows</b>	<p>The arrows represent up, down, left and right for a total of four. These arrows describe the Routing Matrix of the WellTell Product. This Routing Matrix connects the microprocessor (also referred to as the Maintenance Port) to either the radio or to the RS-485 device port. In Pass Through mode, the Device Port is connected directly to the radio while the microprocessor can be enabled to “snoop” data from either the Device Port or the radio. More on this topic can be found in the WWU Help Files.</p> <p>When the UP arrow is on, the Microprocessor can snoop the Device Port. If the UP arrow is not on, the microprocessor can snoop the radio. Snoop is only operational in Pass Through mode (i.e., the Left and Right arrows are lit).</p> <p>The DOWN arrow being on informs the user that the microprocessor is being connected in the Routing Matrix.</p> <p>When the RIGHT arrow is on, this depicts that the radio is being connected in the Routing Matrix.</p> <p>The LEFT arrow being on depicts that the Device Port (RS485) is being connected in the Routing Matrix.</p> <p>An example of the Routing Matrix might be having the Device Port (RS485) connected directly to the radio (Pass Through mode). In this configuration the LEFT and RIGHT arrows would both be on.</p>
<b>F1 – F5 Annunciators</b>	<p>F1 I.S. Barrier Client indicator (WellTell-IS)</p> <p>F2 I/O Client indicator (WellTell-IO)</p> <p>F3 Host Server indicator (WellTell-X)</p> <p>F4 Reserved for future use</p> <p>F5 Test mode indicator</p>
<b>[ ] Right and Left Brackets</b>	Indicate activity on the Maintenance (processor) port.
<b>\$</b>	Always active on the Host and inactive on the Clients.
<b>M</b>	Activates whenever a cable is connected to the Maintenance port.

-		The 'dash' or 'underscore' is the system heartbeat. It blinks off and on continuously. The blinking slows whenever the Radio is dead or not connected.
<b>Description of Standard Displays (Alpha/Numeric Portion)</b>		
<b>SLEEP</b>		When power drops below 10.5VDC the Host Server will detect the low voltage and enter a "SLEEP" mode.
<b>Host Server and the I/O and Barrier Client</b>		
<b>b</b>	Ex: 9600 b	Baud rate displayed in Numeric section.
<b>n</b>	Ex: n 1	Network ID displayed in Numeric section.
<b>ch</b>	Ex: ch 2	Channel displayed in Numeric section.
<b>b</b>	Ex: b 12.3	Battery voltage displayed in Numeric section.
<b>t</b>	Ex: t 72.1	Temperature displayed in Numeric section.
<b>I/O and Barrier Clients (Not Applicable to the Host Server)</b>		
<b>c</b>	Ex: c 0	Charger voltage.
<b>L</b>	Ex: L .5	Lithium cell voltage.
<b>Barrier Clients Only (Not Applicable to the Host Server or the I/O Client)</b>		
<b>o</b>	Ex: o .0	Overload voltage.
<b>i</b>	Ex: i .0	Intrinsically safe voltage.
<b>S</b>	Ex: S 4.5	Supply voltage supervisory.



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