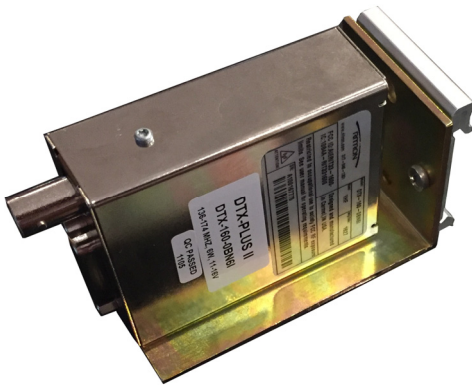


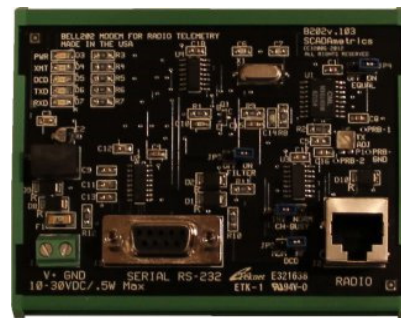
Application Note M005  
 Version 001  
 12 Dec 2016

## Connecting The SCADAmetrics Bell 202 Modem To the Ritron DTX Plus Series Telemetry Radios

Based on extensive laboratory and field testing, SCADAmetrics has verified that the Model B202 modem and the DTX Plus Series Telemetry Radios by Ritron Wireless Solutions Inc. are compatible. This document describes the wiring procedures and Ritron Radio Setup Software settings required when connecting the B202 to the DTX Plus. For added convenience, SCADAmetrics has developed a DTX Plus mounting kit for 35mm industrial din rail.



**Ritron DTX Plus Telemetry Radio**



**SCADAmetrics B202 Modem**

### Radio/Modem Interface Cable

When integrating the DTX Plus Series Radio and the B202, the main step is to create the custom interface cable. This cable connects the DB15F port of the DTX Plus radio to the RJ45F interface port of the B202 modem:

- |          |   |          |                         |
|----------|---|----------|-------------------------|
| Radio.07 | ↔ | Modem.01 | (Flat Audio Into Radio) |
| Radio.14 | ↔ | Modem.03 | (Push To Talk)          |
| Radio.08 | ↔ | Modem.02 | (Flat Audio From Radio) |
| Radio.13 | ↔ | Modem.04 | (Channel Busy)          |
| Radio.15 | ↔ | Modem.05 | (Ground)                |
| Radio.06 | ↔ | Modem.08 | (+12VDC)                |

SCADAmetrics leverages the flexibility of off-the-shelf RJ45-DSub modular connectors to create this cable:

RJ45F-to-DB15M Connector: L-COM, Part No. RA158M  
 Extension Cable: Category 5 Patch Cable, Straight-Thru, Shielded, 24 GA Conductors

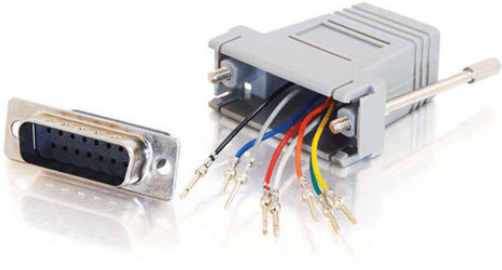
	<b><u>DB15M CONNECTIONS (SNAP-IN):</u></b>		
	<u>Pin</u>	<u>Function</u>	<u>Color</u>
	1	CS0	---
	2	CS1	---
	3	CS2	---
	4	Mic In	---
	5	CSN	---
	6	Vcc (12V)	<b>WHITE</b>
	7	TxA (Flat Audio Into Radio)	<b>BLUE</b>
	8	RxA (Flat Audio From Radio)	<b>ORANGE</b>
	9	PGM IN/OUT	---
	10	CTS	---
	11	RX MON	---
	12	AUDIO OUT	---
	13	CD	<b>RED</b>
	14	PTT	<b>BLACK</b>
	15	GND	<b>GREEN</b>
Trim away the unused wires: <b>YELLOW</b> and <b>BROWN</b> .			

Figure 1.

**Modem Shunt Switches and Transmit Level Settings**

The B202 Modem features four (4) settable shunt switches, which should be set to the following:

JP1	Radio Channel Busy	INVERTED
JP2	DCD Source	RADIO
JP3	DCD Byte Filter	ON
JP4	Receive Equalizer	ON

TX ADJUST: Turn Potentiometer to Approximately 1 O’Clock

**Ritron DTX Plus Radio Programming**

It is assumed that the **DTXP2-PCPS** software and programming cable has been installed and configured.

The programming cable and software is available for purchase to qualified radio dealers and systems integrators. Ritron Part No. **DTXP2-PCPK-1-USB**

The DTX Plus Radio requires programming before it can be used with the B202 Modem. Ritron’s DTX Plus radio programming software, **DTXP2-PCPS**, should be launched:

The **FREQUENCY** settings should be programmed first. For Bell 202 communications, a single frequency will be re-used for transmit and receive at all radio/modem sites. It is recommended that all eight (8) channels of the DTX Plus be programmed for this frequency:

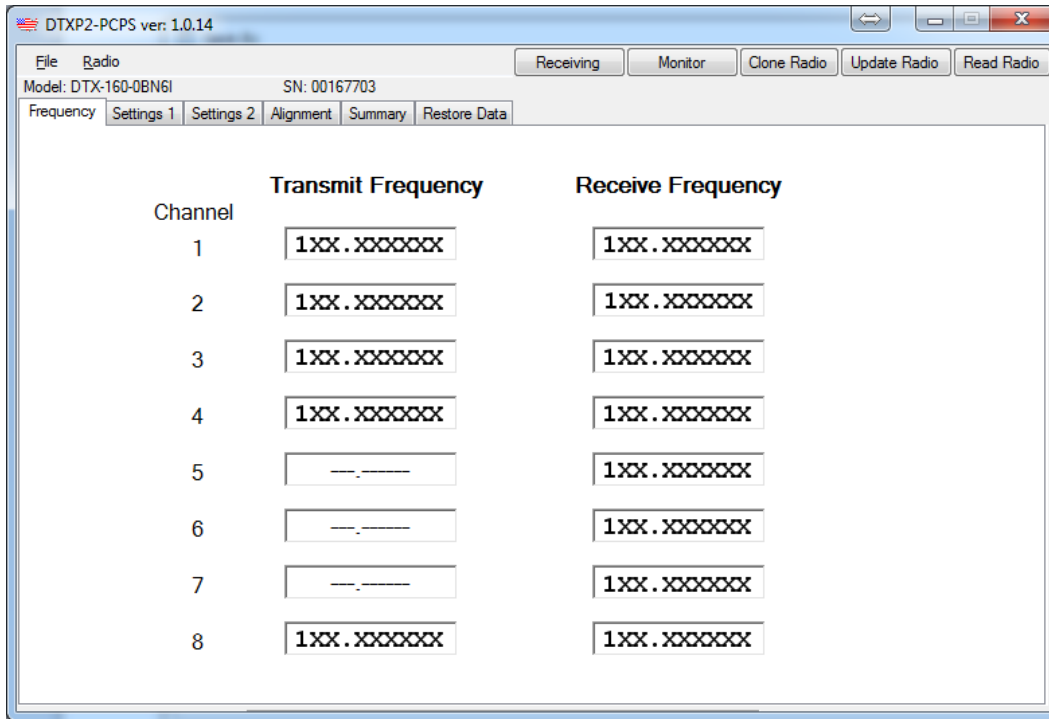


Figure 2.

The **SETTINGS 1** settings should be set exactly as illustrated in Figure 3 below:

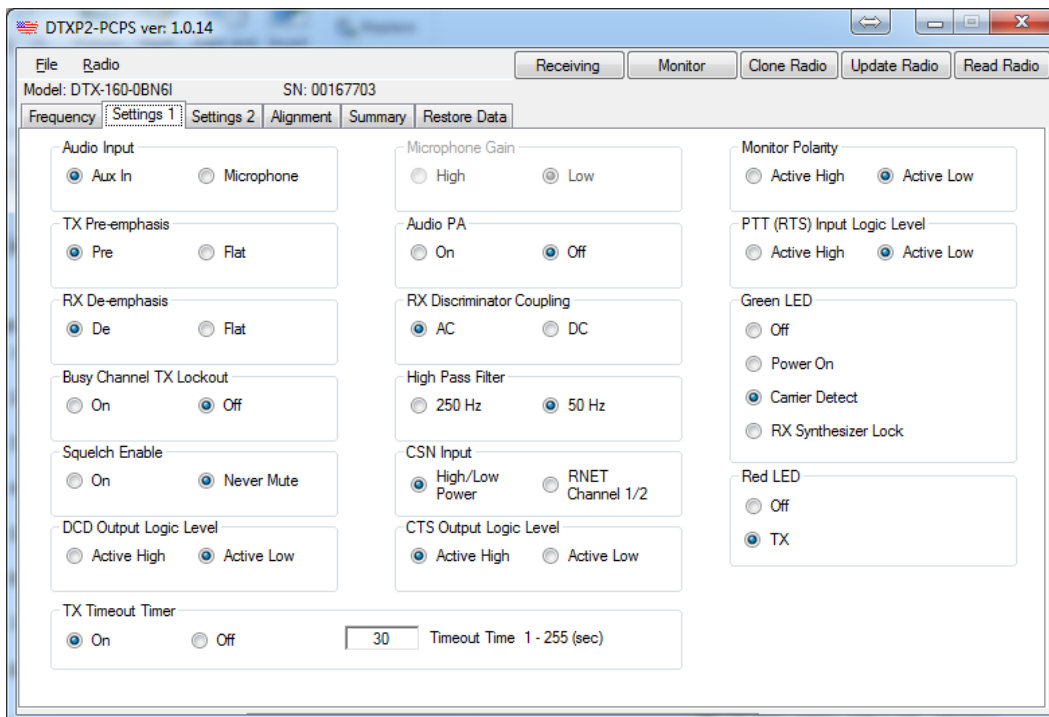


Figure 3.

The **SETTINGS 2** settings menu is shown below.

The following settings **SHOULD NOT** be changed from the factory defaults:

- Audio Input (TX) Gain
- Carrier Detect On (dbm)
- TX Frequency Trim
- Aux Out (RX) Gain
- Carrier Detect Off (dbm)
- RX Frequency Trim
- Audio PA Gain

The TX Low Power and TX High Power should both be set to the same level, as determined by the application's requirements and licensing restrictions. The lowest setting corresponds to 1W, and the highest setting corresponds to 6W.

After these settings are completed, press the "UPDATE RADIO" button to store these settings into the DTX Plus Radio.

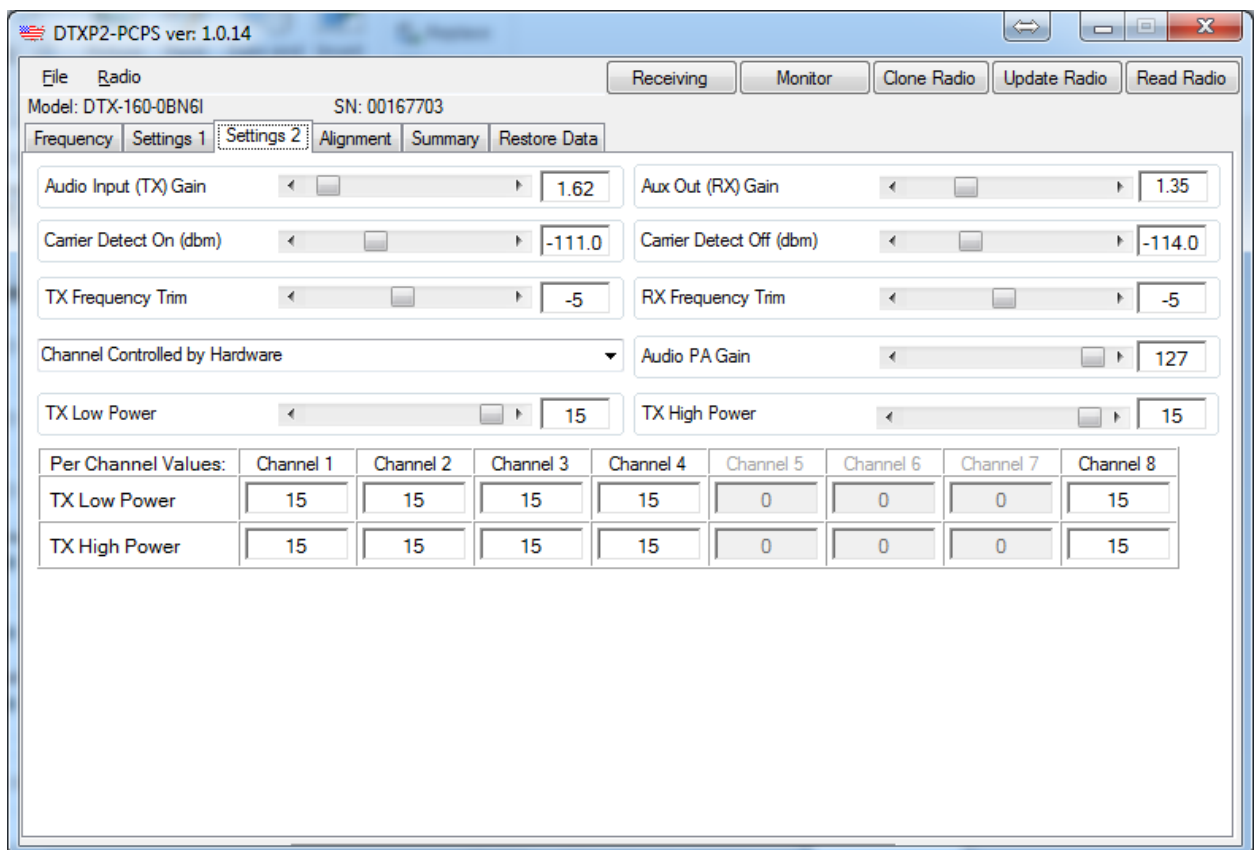


Figure 4.

At this stage, radio programming is complete. The radio and modem are ready for staging in your application.

The following photo in Figure 5 illustrates a DTX Plus Radio and B202 Modem installed within a Water Utility Pumping Station Control Panel. A CAT5 Cable (Shielded, 24 GA) connects the Modem to the Radio's RJ45F-DB15M Adapter. An RS-232 serial cable connects the Modem to the station's RTU.

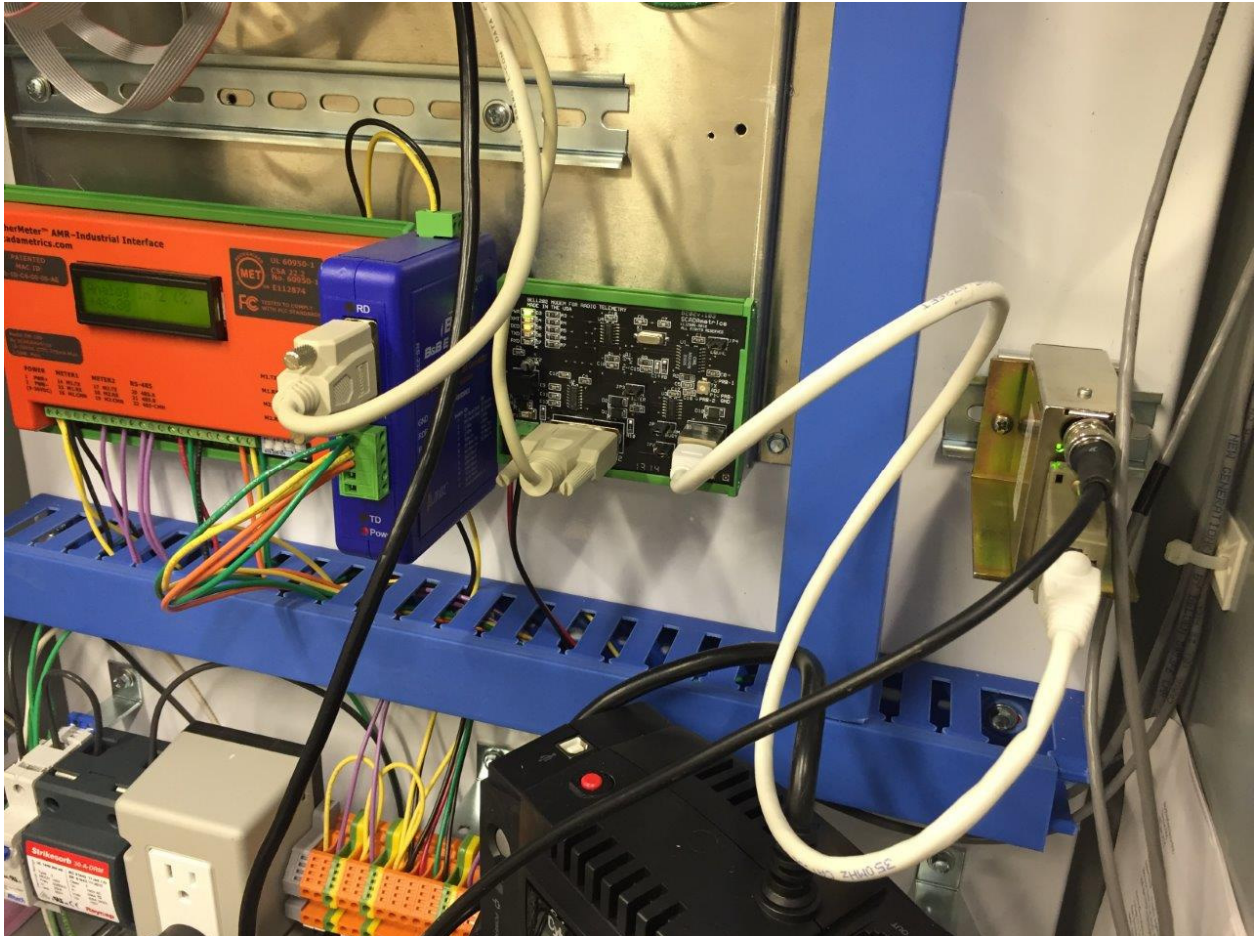


Figure 5.