

Application Note M005
 Version 002
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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


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

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: The Ritron Factory has determined that the optimal TX Signal Level is 0.767 Vpp, which corresponds to the following TX_ADJUST setting:

- For the B202v103 – Set TX_ADJUST Pot to 13:00 o'clock
- For the B202v108 or v109 – Set TX_ADJUST Pot to 11:30 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:

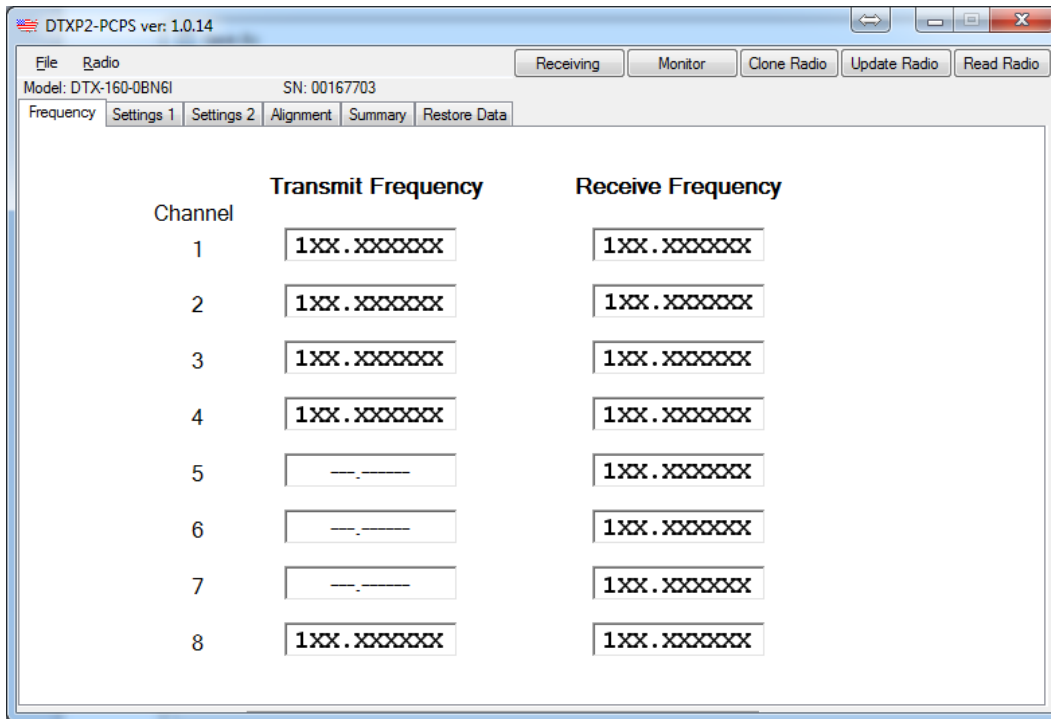


Figure 2.

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

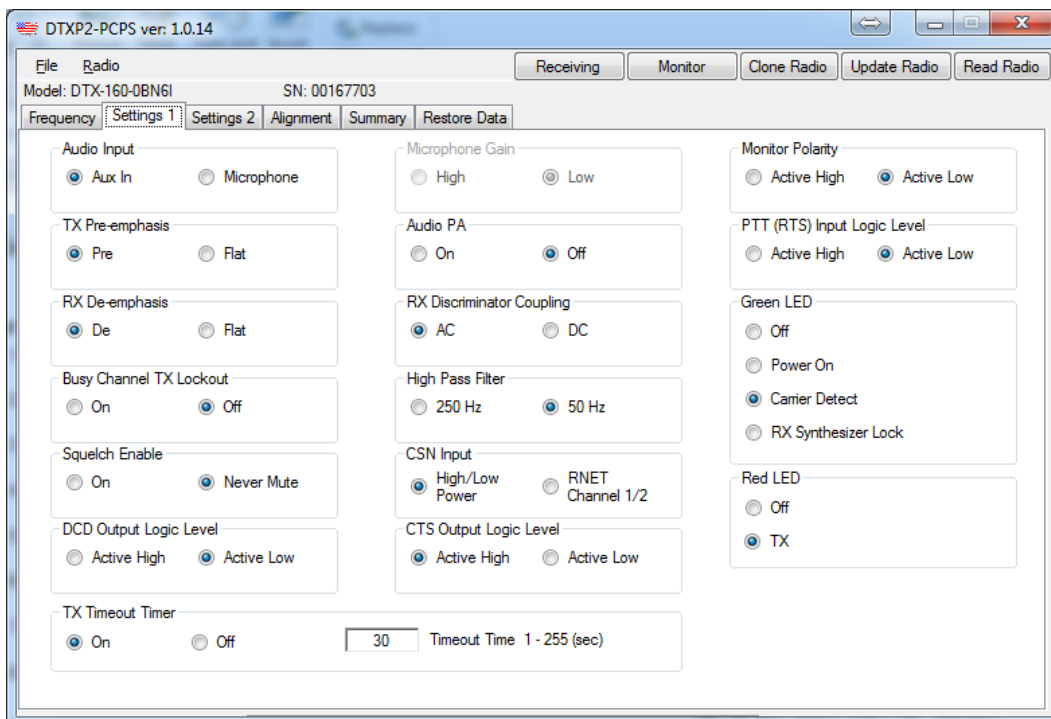


Figure 3.

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.

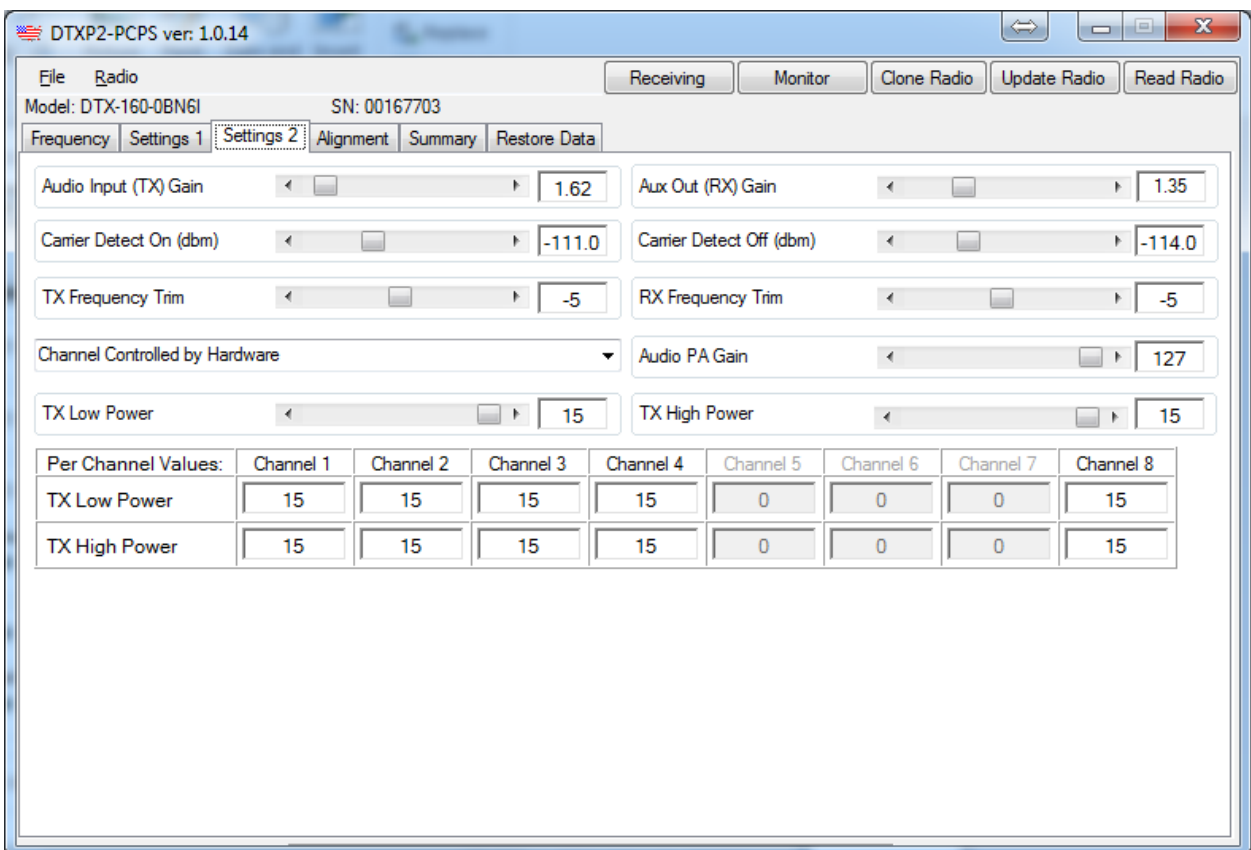


Figure 4.

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.

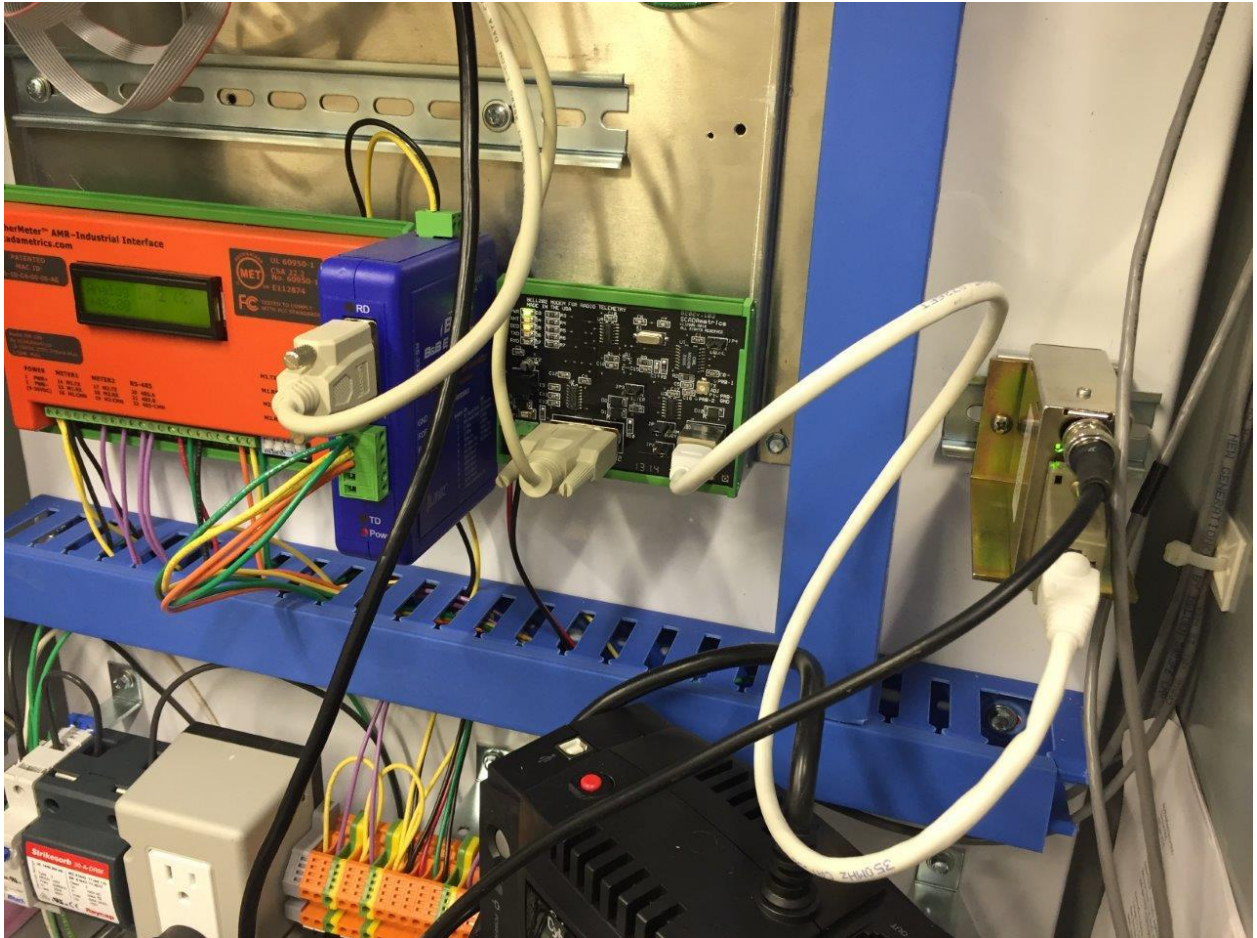


Figure 5.