



Application Note #5465

Connecting FGR09 Radios to ControlWave XFC Flow Control RTU's

May 31, 2006

FreeWave Technologies' spread spectrum radio modems can be used with Bristol Babcock ControlWave XFC RTUs to provide reliable remote measuring and data management for the oil & gas industry. Network polling can be done over a wide geographical area. Also, there are no recurring costs associated with FreeWave radio modems and no FCC license is required.

Connections

For successful connection between the ControlWave XFC and the FreeWave radio modem, the following connections must be made:

For board-level radios:

<i>Radio pinout connector</i>	<i>Connects to:</i>	<i>XFC Network Port (COM2, J2)</i>
Pin 4 (Ground) - Color: Black	↔	Pin 14 (GND)
Pin 5 (TXD) - Color: Yellow	↔	Pin 9 (RXD)
Pin 7 (RXD) - Color: Green	↔	Pin 8 (TXD)

In addition, Pin 10 (RTS) and Pin 11 (CTS) should be jumpered on the XFC Network port. Pin 13 (DCD) on the XFC Network port should be **HIGH** - the easiest way to accomplish this is to connect Pin 13 to the + connector on the XFC Power port (J6). This should be feasible for input voltages no greater than 15 VDC (12 VDC has been tested to work fine).

Radio Settings

This connection will work in both Point-to-Point and Point-to-Multipoint networks. For Point-to-Multipoint connections to work properly, "Radio Parameters" à "Lowpower Mode" must be set to "0". (see Fig. 1-1) Bristol Babcock recommends a Baud Rate of 19200 be set in the FreeWave radio modems and the ControlWave XFC for the most robust connection.
(Fig. 1-2)

Figure 1-1

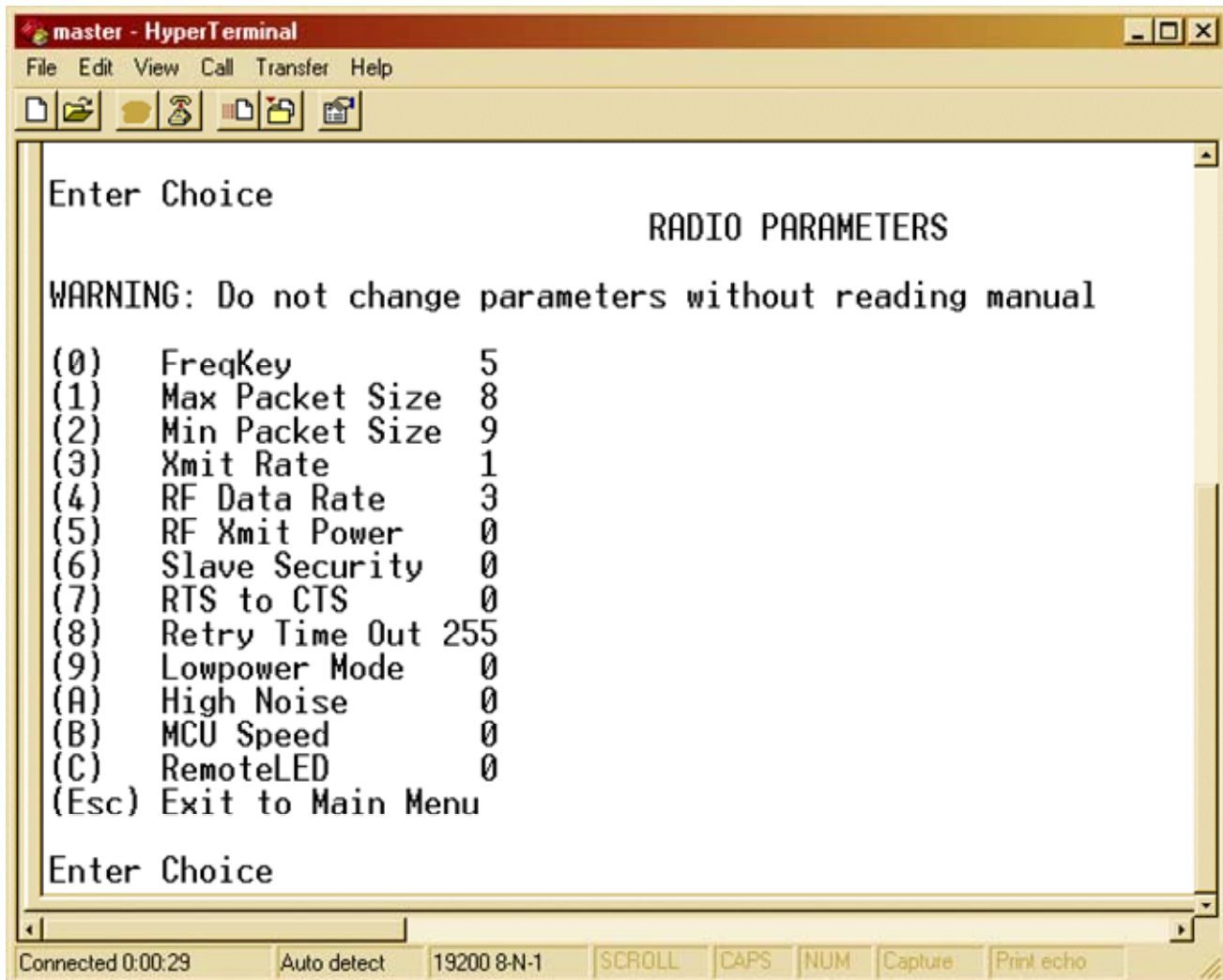


Figure 1-2

```
(Esc) Exit Setup
Enter Choice

                                SET BAUD RATE
                                Modem Baud is 019200

(0) 230,400
(1) 115,200
(2) 76,800
(3) 57,600
(4) 38,400
(5) 19,200
(6) 9,600
(7) 4,800
(8) 2,400
(9) 1,200
(A) Data, Parity 0
(B) MODBus RTU 0
(C) RS232/485 0
(D) Setup Port 3
(E) TurnOffDelay 0 TurnOnDelay 0
(F) FlowControl 0
(Esc) Exit to Main Menu
Enter Choice
```



4. Enable the Repeater Frequency function in one of the repeaters.

MULTIPOINT PARAMETERS

(0) Number Repeaters	1
(1) Master Packet Repeat	2
(2) Max Slave Retry	9
(3) Retry Odds	1
(4) DTR Connect	0
(5) Repeater Frequency	1
(6) NetWork ID	0255
(7) Reserved	
(8) MultiMasterSync	0
(9) 1 PPS Enable/Delay	255
(A) Slave/Repeater	0
(B) Diagnostics	0
(C) SubNet ID	Disabled
(D) Radio ID	Not Set
(Esc) Exit to Main Menu	

Enter Choice

With Repeater Frequency enabled, the repeater will link to the Master radio on the master's frequency key and transmit on a different frequency key, which is set in step 5. Using a different frequency key eliminates the possibility of parallel repeater interference. A slave radio that links to this repeater will automatically follow the repeater's frequency key even if the slave is set to a different frequency key.

5. Set the frequency key of this repeater to a different value than the Master radio.

RADIO PARAMETERS

WARNING: Do not change parameters without reading manual

(0) FreqKey	2
(1) Max Packet Size	8
(2) Min Packet Size	9
(3) Xmit Rate	1
(4) RF Data Rate	3
(5) RF Xmit Power	9
(6) Slave Security	1
(7) RTS to CTS	0
(8) Retry Time Out	255
(9) Lowpower Mode	0
(Esc) Exit to Main Menu	

Enter Choice