TOTALFLOW®

TechBull 68

Modifications Required for MDS-2310 to MDS-9810 Piggy Back (tail end) Installations

Totalflow Technical Bulletin

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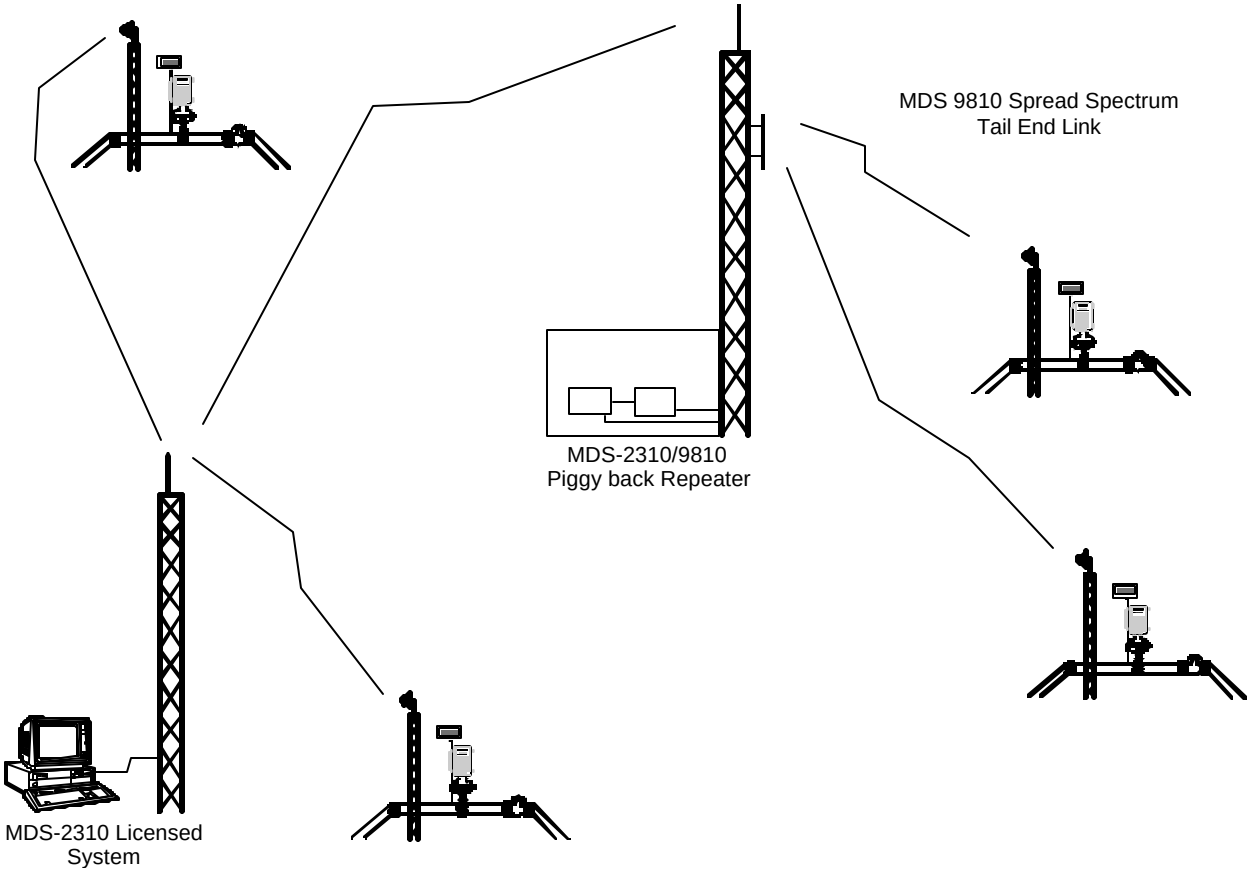
1. Purpose:

To describe the proper wiring and configuration for a MDS-2310 to MDS-9810 Piggyback installation.

As Multiple Address System (MAS) licenses are becoming harder to obtain there is a growing need to Extend radio coverage. One popular method for extending licensed coverage is using spread spectrum technology.

A typical system installation using this concept with MDS radios:

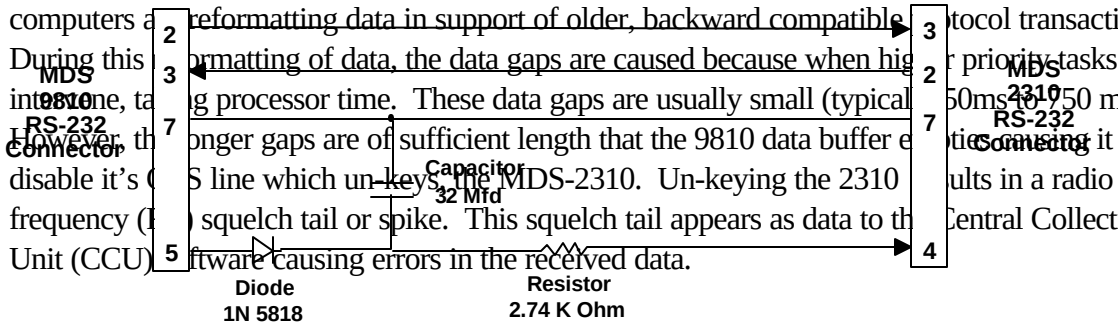


2. Piggyback Wiring:

Special Interface Problem:

MDS 2310/9810 Piggyback Cable for 6600/6400 and 6700 FCU when 9810 configured for 1200 baud

The MDS 2310/9810 piggyback configuration utilizes the presence of data at the 2310 to enable Clear-to-Send (CTS) on the 9810. The 9810's CTS line is connected to the Request-to-Send (RTS) input of the 2310, thereby using the radio's control line (9810 CTS to 2310-RTS) keys and un-keys the 2310 based on the presence of data. The Totalflow Flow Computer Unit (FCU) doesn't always send seamless data. This is especially true when "New Database Capable" flow computers are reformatting data in support of older, backward compatible protocol transactions. During this reformatting of data, the data gaps are caused because when higher priority tasks interrupt one, taking processor time. These data gaps are usually small (typically 50ms to 750 ms). However, the longer gaps are of sufficient length that the 9810 data buffer empties causing it to disable it's CTS line which un-keys the MDS-2310. Un-keying the 2310 results in a radio frequency (RF) squelch tail or spike. This squelch tail appears as data to the Central Collection Unit (CCU) software causing errors in the received data.

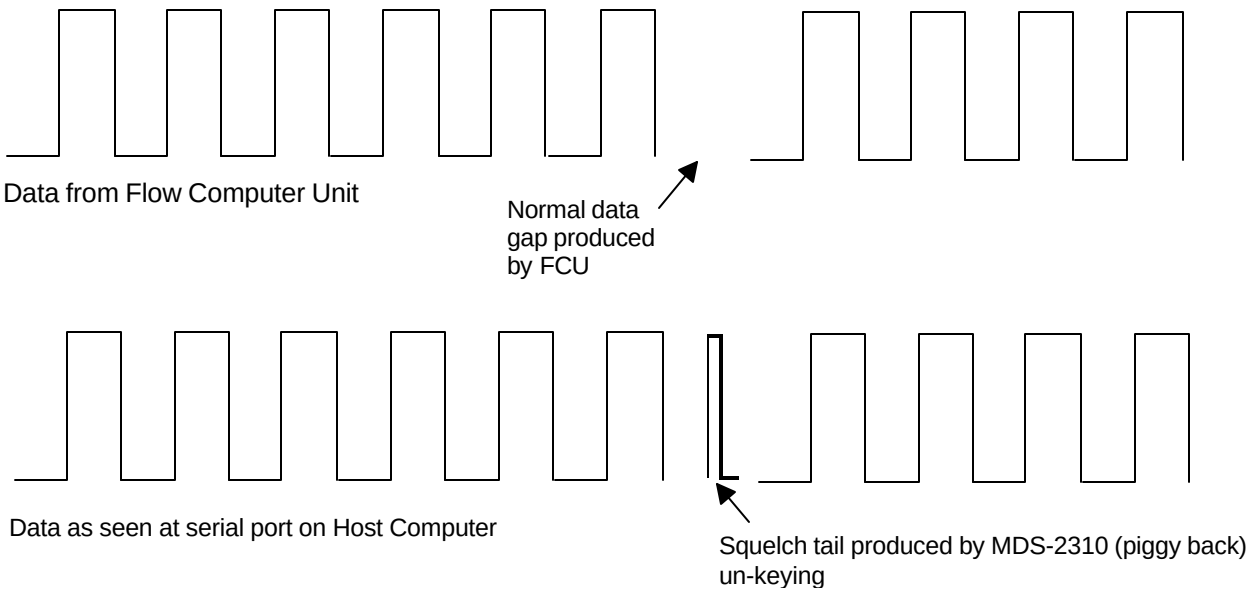


Piggyback programming: Program 9810 to "CTS Key", CTS=15 ms (default), Buffer=Off and baud rate=4800 on MDS-9810 connected to MDS-2310. On the MDS-2310 set the soft carrier dekey= 4 ms.

9810 Remotes: CTS=10 and baud rate=1200. Also program Flow Computers on tail end 9810 links to 1200 baud.

MDS9310.drw

Example:



3. Solution:

Several attempts were made to provide work around solutions including intelligent hardware that attempted to monitor the incoming data and remove the squelch tail. This method wasn't reliable because occasionally the hardware would remove valid data causing an error in the received data.

To date, the most reliable solution requires a special cable between the MDS-2310 and MDS-9810 at the piggyback location (See wiring above). This cable includes a capacitor that prevents the RTS signal from dropping on the 2310 when data gaps occur. Other changes required include:

- MDS-9810 Piggy back radio, program "CTS Key", CTS delay=15ms, Buffer=off and Baud Rate=4800
- MDS-2310 Piggy back radio, program Soft Carrier Dekey = 4 ms and baud rate = 4800
- MDS-9810 Tail End links, CTS delay=10ms and Baud Rate=1200
- Program Tail End Flow Computer Baud rates to 1200 baud

By setting the 9810's buffer to off and the baud rate to 1200 baud reduces the data gaps to a very small predictable length. This enables the capacitor's size to remain the same regardless of what type of data is transmitted.

4. Conclusion

To operate Flow Computer Units in a Piggyback (hybrid MAS / Spread Spectrum) system it is recommended that the above mentioned special cable be inserted between the MDS-2310 and MDS-9810 radios and the proper settings are programmed into the radios. Without this device in the system, data collection reliability cannot be determined.