WIRELESS MODEM (WM01)

INSTALLATION AND OPERATION GUIDE

The Wireless Modem is a unit that provides a radio communication link between remote equipment and a host computer. This unit consists of two boards, an ACCES 9X radio and a serial interface board. The interface board can be either RS232, RS485, or RS422 compatible. The 9X RADIO is a frequency hopping module that uses a standard asynchronous serial data stream.

FEATURES:
- RS-232 RS485, or RS422 Interface
- Interfaces to external systems using standard DB-9 cable
- Seamlessly & transparently integrates ACCES Wireless Modem into existing interfaces

RS-232 Cable		RS-422 Cable		RS-485 Cable	
HOST RS-232 Signals	TB-9	HOST RS-422 Signals	TB-9	HOST RS-485 Signals	TB-9
DCD	1	Rec-(RX-)	3	Trans+(TX+)	2
TXD	2	Trans+(TX+)	2	Trans-(TX-)	3
RXD	3	Trans-(TX-)	7	GND	5
DTR	4	GND	5		
GND	5	Rec+(RX+)	6		
DSR	6				
RTS	7				
CTS	8				
RI+	9				

TABLE 1

WIRE CONNECTIONS
RS-232:
If wired "one to one" the DB-9 cable connection follows the standard for **RS-232**, 9 pin connections. The connection should be wired as shown in Table 1. A female DB-9 cable should mate directly to any standard RS-232 host mating connector.

RS-422 full duplex:
The HOST serial connection signal pinouts may vary from one manufacturer to another. The Host Serial signals should be wired as above in Table 1. **RS-422** protocol is provided on the board via jumper selection (install a jumper in the RS422 position on the 485/422 jumper selection).

RS-485 (two wire) half duplex:
The HOST serial connection signal pinouts may vary from one manufacturer to another. The Host Serial signals should be wired as above in Table 1. The HOST serial transmit and receive signals are connected together via jumpers on the board (install jumpers on the RS-485+, RS-485-, and in the RS485 position on the 485/422 jumper selection).

Termination & Bias
In order to avoid noise and reflections in long lines, a cable with a characteristic impedance of 120Ω should be selected and the line should be terminated on both ends with 120Ω resistors. Termination is provided on the board via jumper selection **(TERM).** For short lines (when the propagation of the signal is less than 4% of the time to transmit a bit), the termination might not be needed.

POWER CONSIDERATIONS

The power required is supplied externally and has two options to select from (regulated +5VDC or unregulated +12VDC). Three terminals labeled +5V, GND, and +12V are provided. The +5V is not regulated and is fed directly to the VCC circuit. The +12VDC input has a range of +7V to +18V with an on-board 5V regulator in series with the line. A optional DC to DC converter is available for lower power consumption when battery savings or heat disapation considerations are important.
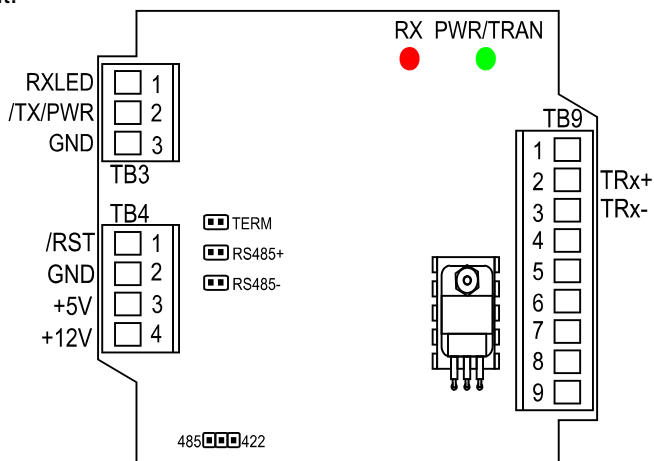

Figure 1: Option Selection Map

Note:
The Wireless Modem requires that you supply only +5VDC *or* +12VDC, but **never** both.

INSTALLATION GUIDE

1. Connect the Wireless Modem cable to the host computer serial port. Configure the interface board jumpers for the communication protocol that you are using (RS-232 requires no jumper settings). Apply power to the unit via one of the input power options.

2. Check that your serial port settings are one of the following data configurations.
    Baud Rate: 9600 Baud
    Serial Data Format: 8 Character, No Parity, 1 Stop Bit
                                               7 Character, Even Parity, 1 Stop Bit
                                               7 Character, Odd Parity, 1 Stop Bit
                                               7 Character, No Parity, 2 Stop Bits

Optional steps: To check operation of the wireless serial modem follow steps 3-5.

3. Locate and run ACCES' WINRISC.EXE application program (easy-to-use serial communication terminal program) on the CD-ROM provided at :\disks\Tools.win\WIN32\.

4. WINRISC settings should be as follows:
    Port: Set to the serial port that the Wireless Modem is connected to (COM1, COM2, etc.).
    Baud: 9600
    Parity: Even
    Data Bits: 7
    Stop Bits:1

    Click the "Connect" button to connect the application to the Wireless Modem then click the cursor into the large "data" area of the WINRISC screen.

5.   If talking to a REMOTE ACCES Pod send the ? command to receive a response from your pod by typing ? and entering a carriage return.

If talking to another Wireless Modem, set that modem up following these steps on another system or second serial port on the same system, and type anything at the keyboard to see the data appear on the other system.

Block Diagram
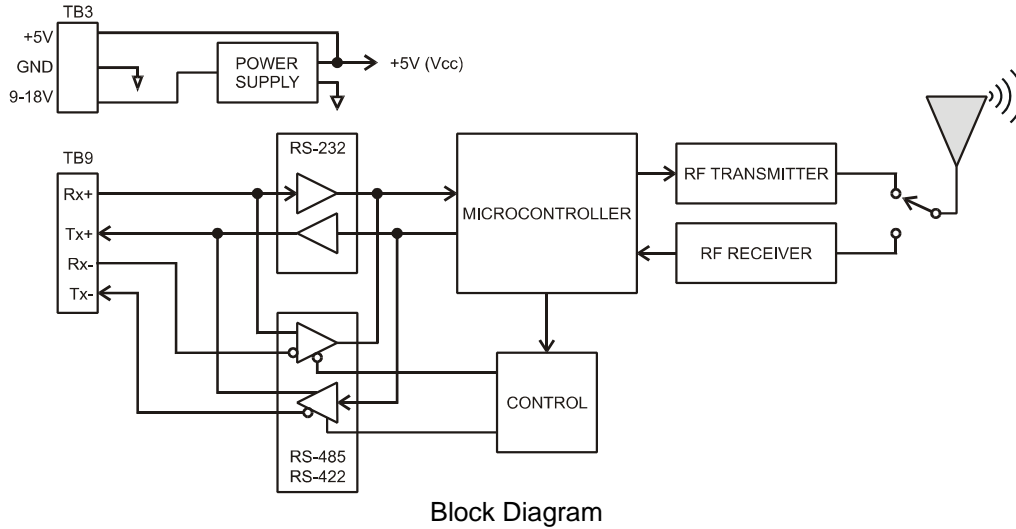
FUNCTIONAL DESCRIPTION
Wireless Modem receives serial data from the host computer. The microcontroller converts the data to spread spectrum FCC-approved wireless data which is transmitted at 900 MHZ. When this spread spectrum data is detected by a receiving wireless modem, the micro controller checks the data for integrity and then sends it to a receiving device via the serial port.

The terminal block, TB-3 is provided for external power input. The +5V input bypasses the regulator and is directly connected to the +5V bus. The alternate is a +12V source which is regulated to +5V.

Note:
The Wireless Modem requires that you supply only +5VDC _or_ +12VDC, but **never** both.

SPECIFICATIONS
External Power: +5 VDC +/-5%

Alternate External Power: +7 VDC to +18V

Baud Rate: 9600 Baud

Serial Data Format: 8 Character, No Parity, 1 Stop Bit
                                                   7 Character, Even Parity, 1 Stop Bit
                                                   7 Character, Odd Parity, 1 Stop Bit
                                                   7 Character, No Parity, 2 Stop Bits

Radio Data Buffers   132 Byte Data Input
                                                   132 Byte Data Output

Operating Temperature Range: -45 to +85 C

Storage Temperature Range: -50 to +120 C

Humidity: 5% to 95% Non-condensing