

## Rain Gage RS-232 Connection

November 2011 Hydreon Corporation

### Overview

Hydreon includes an RS-232-like connection for its own use. Hydreon uses the connection for development and for unit testing. We are making this available on an “as is” basis. Hydreon is not claiming that the connection is standards complaint, and we offer no support beyond this document.

The system is talk-only: the RS-232 connection continuously sends data. It does not respond to data.

### Baud Rate

The RS-232 is nominally 1200 baud. It is not crystal controlled, and we do not specify an upper or lower limit to how far from nominal it may drift.

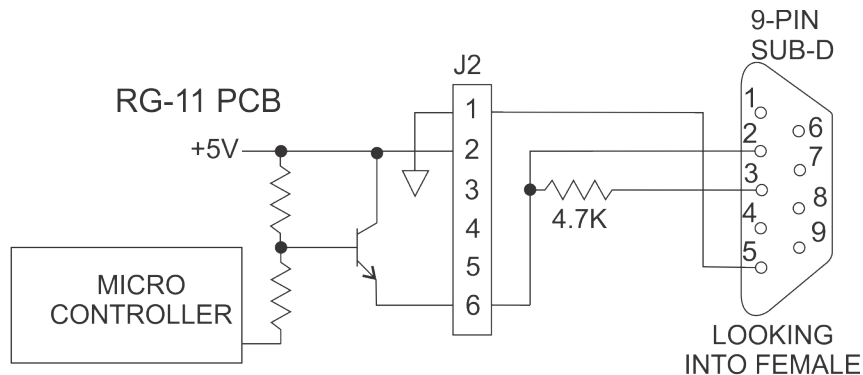
### Hardware Connection

The RG-11 connection is through a 6 position 0.1” pitch pin field. This connector is not polarized or locking.

**DIP SW 5 Must Be Off** The RG-11 shares a microcontroller pin between DIP Switch 5 and the RS-232. If DIP Switch 5 is on (e.g. “It’s Raining” Mode), the RS-232 is defeated.

The RS-232 output is an open collector PNP output to the internal +5V supply of the RG-11. Thus, the RG-11 can only pull the RS-232 line high, and then only to +5V. The connection must have some external resistive pull-down to some negative voltage.

To connect to, for example, a personal computer, you can use the Receive Data line as the source of negative voltage. Here is an example RG-11 to PC adapter:



RG-11 RS-232 ADAPTER

## **Communications Protocol**

### **Bytes**

Individual bytes are sent with this protocol: 8 data bits, 1 stop bit, no parity.

### **Frames**

Frames start with the transmission of an ASCII 's' character.

Each data byte is then sent as ASCII-Hex over , meaning that the upper nibble of the byte is converted to a single ASCII character, 0-9 or a-f. The lower nibble is then similarly transmitted. For example, if the data byte is a decimal value 108, this would be hex 6C. This is transmitted as an ASCII “6” followed by ASCII “c”. (Yes, lower case is used.)

There is no end-of-frame character.

's'

Data Byte 0 upper nibble

Data Byte 0 lower nibble

Data Byte 1 upper nibble

...

Data Byte 9 lower nibble

### **Decoding the Frame Data**

The data within the frame is decoded using the guidelines set up in the \*.SER file that corresponds to the software of the Device Under Test. Open this file with your favorite text editor. (Or, for that matter, your least favorite, it makes no difference.) The comments in that file explain the decoding.