OEM Radon Module – Easy interfacing

Rev 1.0, February 8th 2018

Purpose:

This document describes an easy way of interfacing to the 72025601 Radon Module for evaluating purposes.

Equipment:

- Personal Computer with Serial Terminal program (e.g. Hyperterminal, Putty, Hercules, etc.)
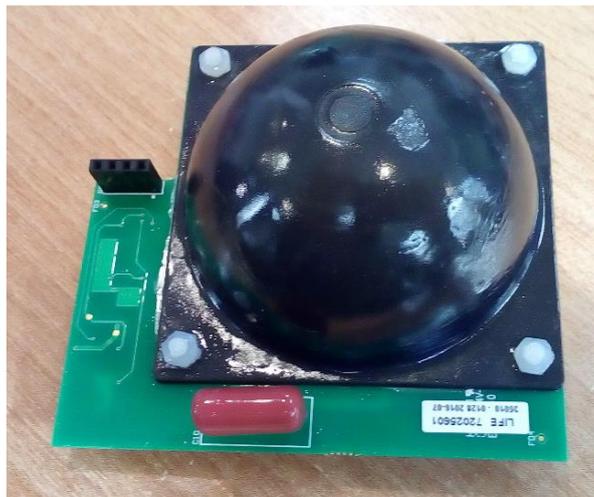
- AC/DC Power Supply unit Vout = 5V 2A

- Cable USB to Serial 3,3V 250mA (e.g. DigiKey 768-1071-ND)


- Custom cabling

The Radon module needs a power supply ranging from 3.5V to 5.5V on VLOAD pin and a 3.3V to supply logic and serial interface. The next figure shows the pin assignment of the interface connector. The unused pin is the logic enable pin. The device is enabled by default so it's not necessary to drive it.
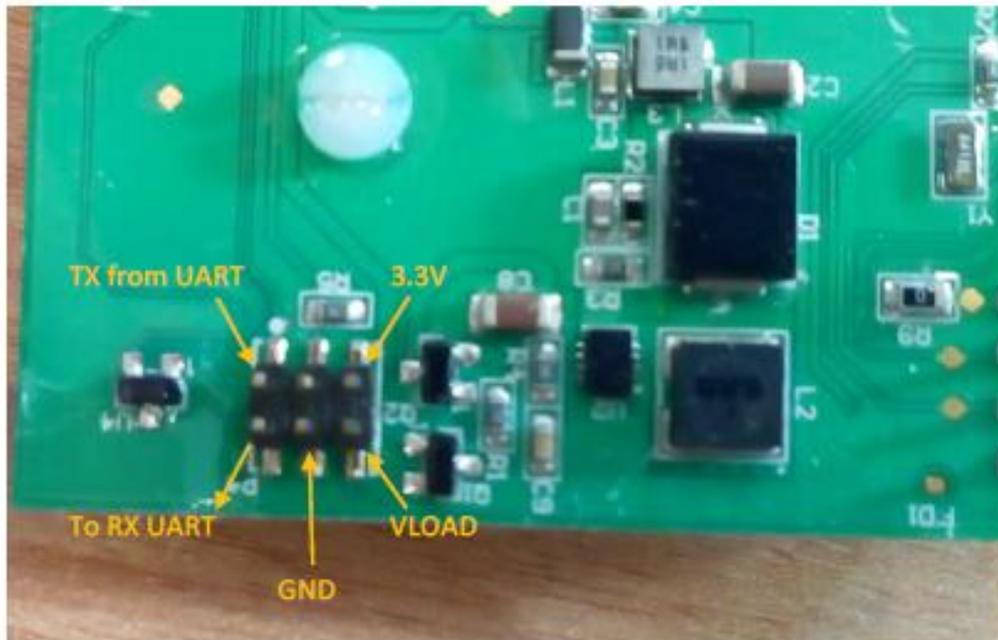
The custom cabling connect the USB/TTL cable, power supply unit and Radon Module:

- From USB cable connect GND (black), 3V3 (red), TX (orange), RX (yellow)
- From power supply unit connect 5V (blue) and GND (brown)
- Don't forget to connect GND signals from USB cable and power supply unit
- To maintain integrity of Radon module's male connector we suggest to use a female connector 2x3 pin, 2mm pitch.

The next figure shows the complete custom cabling:
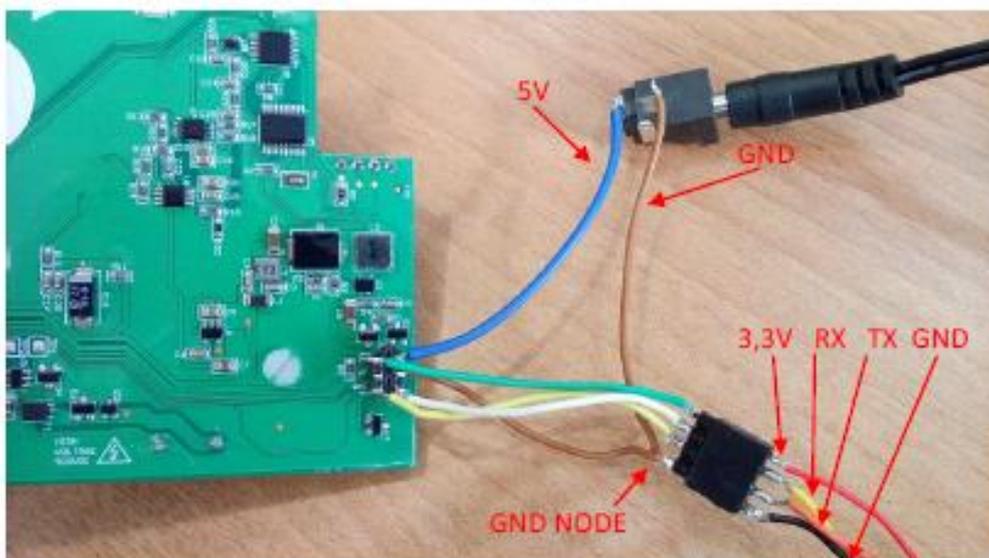
Testing procedure:

- Connect the USB/TTL serial cable to your PC
- It will create a virtual COM port, note the number
- Run the Serial Terminal software
- Select the USB cable COM port number (see above), set parameters to 9600bps, 8 bits, NO parity, 1 Stop bit, no SW/HW protocol
- If possible enable an option to show the local typed characters (Sent from PC to the module)
- If possible enable an option to show the received data in hexadecimal format
- Enable (Open) the COM port
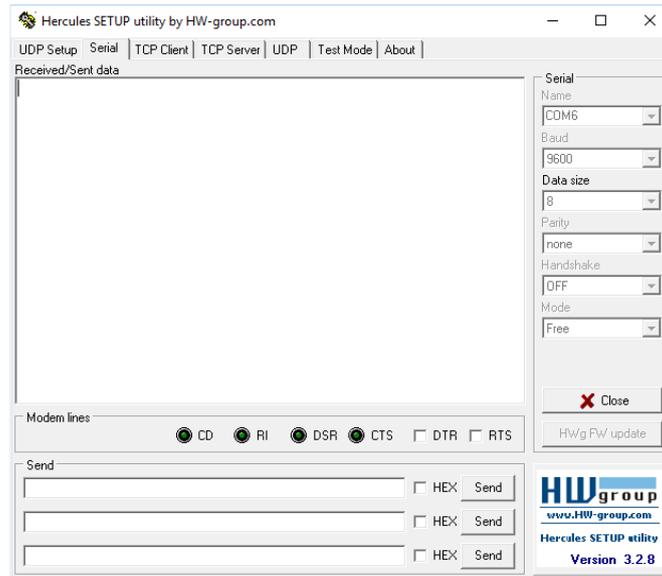
- Plug the power supply unit to the main supply (i.e. 230Vac)
- Connect the custom cable to the power supply unit and USB cable
- Connect the custom cable to the Radon Module
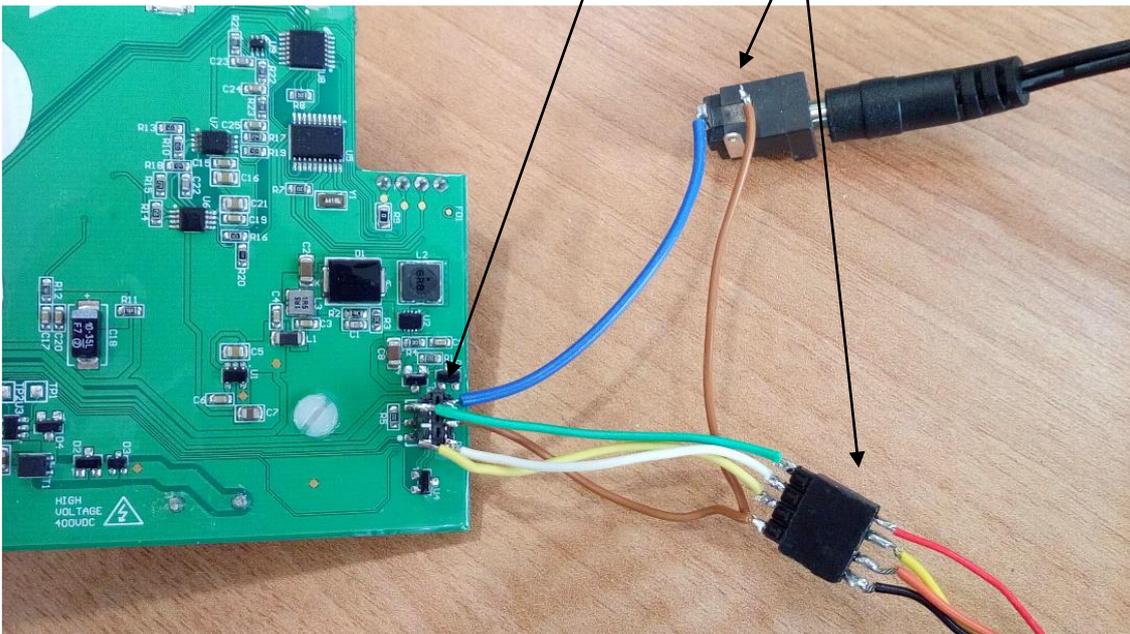
- The Radon module will start to measure Gas Radon concentration
- **WARNING: don't touch Radon module when power supply is applied. You can risk an electric shock due to the 400VDC generated by the module itself to supply the black dome.**
- The Radon module send automatically a packet with the Radon concentration every hour
- If the module receive an 'R' or 'r' character it will answer with the last Radon concentration measurement

The next figures shows a read command sent to the radon module (red colored 'r' character) and the answer packet (displayed in full hexadecimal format and Hex/ascii format)
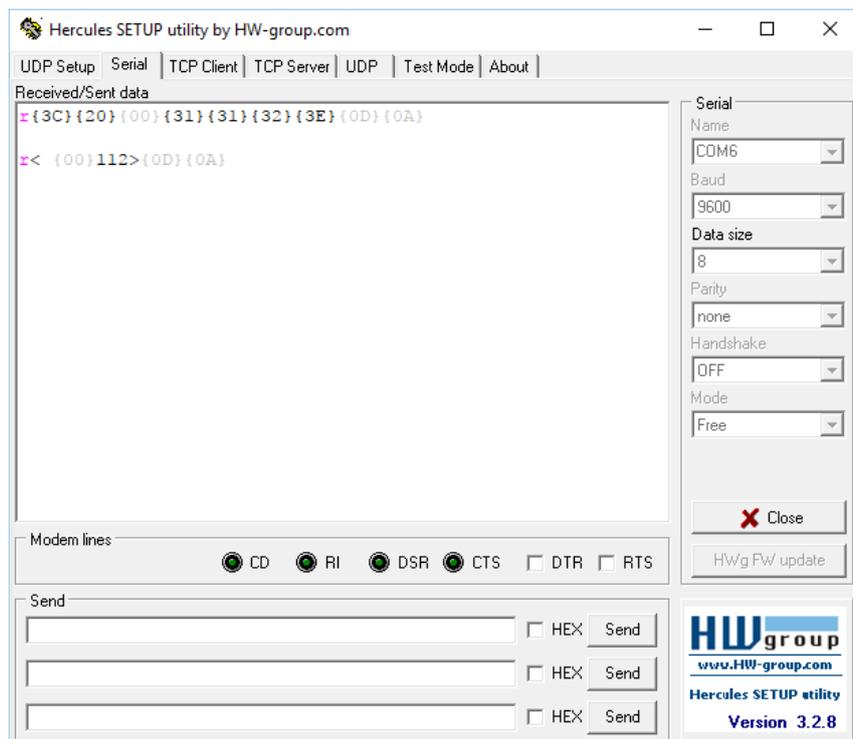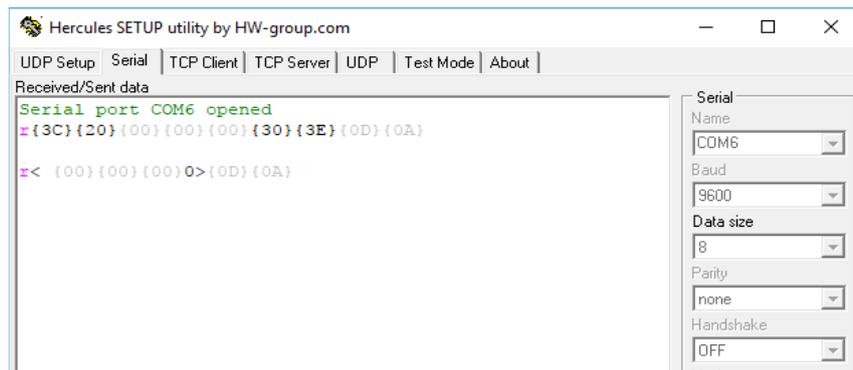
Please note:
The format of the data packet is not a standard ascii string because there is a blank (0x20) and some 0x00 characters.
The next string shows a concentration of 112 Bq/m^3:

r{3C}{20}{00}{31}{31}{32}{3E}{0D}{0A}

An interfacing software must send the 'r' command and wait for the answer managing some retries because the module sometimes can be busy and the command is lost.
Once received the answer, the radon value starts from the first ascii number value (from '0' to '9',

0x30...0x39) to the one before the '>' (0x3E) character