

XRF User Manual

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Introduction

The XRF is designed for transmitting and receiving of serial data in a very to easy to use module. Data is sent in "packets", these short bursts are essential to the XRF running as the error checking, encryption etc has to be done at periodic intervals. This packet method does mean that the actual "streamed" rate is always lower than the baud rate actually set, this is very important to remember. Employing encryption adds extra overhead and reduces the stream rate also. We have emulated "a wire connection" as closely as is possible.

Reload factory default configuration

By shorting pins 19 and 20 (v1.5 or earlier) or 7 and 8 (v2.0 or later) during power up the XRF will power up in a factory default configuration. If you wish to retain this configuration then you need to use the ATWR command to apply this to permanent memory, otherwise at next power up the normal saved configuration will be used. This is useful for recovering from unknown configurations.

Changing settings and getting into AT or command mode

<http://www.openmicros.org/index.php/articles/84-xrf-basics/105-xcm-software-config-for-the-xrf>

)to alter

most

settings.

However

it's useful to

know
what's
actaully
going on
underneath.
Entering
command
mode is an
easy
procedure,
but "timing"
is everthing.
Here's how
to do it with
your
chosen
terminal
program. <http://www.openmicros.org/index.php/articles/84-xrf-basics/104-using-to-talk-to-a-xrf>

AT Command reference

The
list of
AT
comm
ands
is
availa
ble
here <http://www.openmicros.org/index.php/articles/84-xrf-basics/114-xrf-at-command-reference>

XRF Indicator pins

Various pins are set to output and give indication of activity, these can be useful for diagnosis

HEARTBEAT - PIN 6 - This pulses once a second and indicates that the main software loop is functioning, connecting this pin to an LED via a 330R (or above) resistor is a very useful indictaor that the XRF is running properly.

TRANSMIT - PIN 15 - This pin is high whilst the XRF is transmitting, connecting this pin to an LED via a 330R (or above) resistor is a very useful indictaor that the XRF is transmitting.

ON/SLEEP - PIN 13 - This pin is steady high whilst the XRF is awake and steady low whilst the XRF is asleep, connecting this pin to an LED via a 330R (or above) resistor is a very useful indicator that the XRF is awake or asleep. Implemented in firmware version 22 and above.

CTS - Pin 12 - (XBEE !CTS) is low whenever the XRF is ready to receive serial data. Implemented in firmware version 23 and above.

Control pins

These pins are set to input and are used to control the XRF

SLEEPREQ - PIN 9: this pin is used to request the XRF to go to sleep and conserve power. The use of this pin is disabled by default and enabled using the **ATSM** command - see the document on AT commands for more details.

RTS - PIN 4: this pin is used to control the serial output from the XRF. When high the XRF will buffer data until the pin goes low. By default this function is disabled, it is enabled by using the **ATFC** command - see the document on AT commands for more details.

Test Mode

Implemented in firmware version 22 and above.

For use whilst siting XRF units to evaluate signal strength.

Use **ATNT** to change node type

ATNT3 – Master – will transmit “aMMRSSI-----” once a second, anytime a packet is received will copy packet to serial and then send to serial “aMMRSSIM-nnn” indicating received RSSI

ATNT4 - Slave – any time a packet is received will transmit a packet “aSSRSSIS-nnn” indicating received RSSI, Will not output to serial unless in AT mode.

Both will ignore any serial input (except for +++ to enter AT mode and then normal AT commands).

RSSI - theoretically this is the correct dbm value. Note value is -ve and a lower value is weaker signal. A value of -19 is very good.

Troubleshooting

There is a very useful piece of (14 day trial) software at <http://www.serial-port-monitor.com> this will enable you to take a "dump" of the actual serial data sent and recieved between a PC and an XRF. It has been tested on our USB FTDI interface and also our URF dongle. We find "Request View" is the best option, it records the send/recieved data in red & blue as one long log file thats easy for a human to read. If you are to send us a dump, please could it be in this format.

Other software I've not tried

<http://www.serialmon.com/>

<http://www.232analyzer.com/232default.htm>

<http://www.aggsoft.com/serial-port-monitor/download.htm>