SIMULANT

systems ltd

SIMULANT - RETRO WIFI SI (R2)

Firmware: https://github.com/allenhuffman/Zimodem

Important Notes Before Use:

- To **RESET/REBOOT** the modem press the button nearest the serial port.

- The Wifi modem is lightweight but do take care that your USB cable doesn't put unnecessary weight on your serial port.

- **DO NOT OPEN** – Although this is a prebuilt kit and there are only screws to open the casing, we do advise extreme care and preferably it is best to not open the unit up. The case is 3d printed and when opened may be stressed or become fragile. The wires in the unit are also squeezed in very tightly and may disconnect or be difficult to fit back in! Opening the device may render it unusable or break the circuitry.

- **Terminal software** – To issue the following AT commands and use the Retro Wifi SI modem, you'll need Terminal software or a GUI based dialup modem program for your computer. It is hard to recommend software for every type of machine as there are hundreds, but any software that would of originally worked with a dialup modem "back in the day" should work well. On **IBM and XT** machines **MSDOS Kermit** is fantastic. On **Amigas** the best terminal emulator is called **Term** and can be downloaded from Aminet. **Amstrad CPC** requires a **PACE RS-232** interface or similar with software such as **HoneyTerm**.
For **Commodore 64/C128** use **Striketerm2014**.
Most computers should have good software terminal emulation packages available for download online.

User Instructions & Quick Setup:

Upon initialisation, or any time the modem is reset, it will display its version, and some information about the host hardware, re-establish the previously set baud rate, and then attempt to re-connect to the last connected wireless router. **The first time you plug in the Retro Wifi SI and power it up on your serial port, the firmware will set a baud rate of 1200 and may take 10-15 seconds to give its initial output.** Displaying ERROR ON SS is normal (this is due to it already being tested with WiFi before shipping, so the modem is looking for the test Wifi network when you first power it up – it won't find this network and will display ERROR). Once the serial terminal displays READY, it is ready to receive commands. (If you have already used the modem on a C64/C128 and wish to move to another computer, first type **AT&F to factory reset** from the C64/C128.)

The first command you'll probably want to enter is **AT+CONFIG** to connect to a wireless router, and set your flow control and other command mode settings. If you want to operate at a higher baud, you'll want to enter ATB2400 (or whatever baud rate you want to try – Amiga 1200s for example seem to work best at atb38400 - don't set a baud higher than your software allows!). Then set your terminal program also to that new baud rate. If everything looks good, and you want to keep the new baud rate across restarts, **save with AT&W**.

If you plan to use this primarily from a computer that doesn't need linefeeds, such as the C64, you'll want to enter ATR0 to go into carriage-return only mode, and then at&w to save this setting as well.

If you want to connect to a remote telnet server, eg amstrad.simulant.uk, port 464, you'll want to enter **ATD"amstrad.simulant.uk:464"** . Don't forget to set your terminal program to the proper translation mode (ANSI, ASCII, etc).

COMMODORE 64/128 "USER PORT" COMPUTERS
For use with our **Simulant C128-User Port to RS232 Adaptor** follow these steps:
1. Plug in the Retro Wifi SI, USB Power & User Port Adaptor. Load Striketerm.
2. Set the Modem type to "User Port" & Baud rate to "1200".
3. At Terminal screen carefully type (blindly if output is garbled): ATS56=1 Return
ATS48=1 Return **ATS50=1** Return (Output should say "OK" & text will no longer look garbled).
4. Type ATS46=3 Return (Steps 3 & 4 are to fix garbled carrier text & RTS/CTS flow control).
5. Once these commands are all typed output should say "OK". Repeat all commands if not.
6. Type AT&W Return (Saves your changes. Next follow normal Quick Setup instructions).

For use with our **Simulant C64-UP9600 to RS232 Adaptor** follow these steps:
1. First complete the steps above for Simulant C128-User Port to RS232 Adaptor.
2. Unplug Wifi modem USB power cable connected to Retro Wifi SI modem.
3. In Striketerm set Modem type to "UP9600".
4. Set Baud rate in Striketerm to "1200" & go to Terminal screen.
5. Now plug in USB power. Type ATB4800 Return **& set Striketerm baud to "4800" to match.**
Always enable Striketerm "UP9600" mode with Wifi modem unpowered first.
C64 UP9600 can achieve 9600 baud but we recommend using 4800 for more reliability.

FULL COMMAND SET (not case sensitive):

ATZ : closes all open socket connections (preserving the Access Point connection), stops all listeners, and resets the state of the Command processor to the saved configuration, preserving the current baud rate and wifi connection.

A/ : Repeats the previous command

ATI : re-shows the startup message, including wifi connection information.
ATI0 : same as ATI
ATI1 : Shows the current common variable settings, common 'S' registers.
ATI2 : Shows the modem's current IP address
ATI3 : Shows the modem's current Wireless Router connection
ATI4 : Shows only the firmware current version
ATI5 : Shows all the current variable settings, all 'S' registers.
ATI6 : Shows the current mac address.
ATI7 : Shows the current formatted time (see AT&T).
ATI8 : Shows the firmware build date/time

ATA : If a server listener has generated a RING, then ATA will switch the last rung connection to Stream mode (see ATD).

ATAn : Causes the modem to create a server listening on port n. When a connection is received, the terminal will generate 1 or more RINGs according to the ATS0 register, followed by a normal CONNECT respose. At this point, all other commands related to connections may be used normally, unless ATS41 is > 0, in which case incoming connections are automatically sent to Stream mode as per ATD or ATA. Listeners are listed along with other connections using ATCO.
ATAPn : Adding a P modifier causes all incoming connection input to be translated to PETSCII
ATATn : Adding a T modifier causes connection streaming input to be translated per TELNET when the changed to Stream mode
ATAEn : Adding a E modifier causes connection terminal echo to be enabled when the changed to Stream mode
ATAXn : Adding a X modifier causes connection XON/XOFF flow control to be enabled when the changed to Stream mode.
ATN0 : Shuts down all listeners, leaving client connections open
ATNn : if n > 0 then same as ATAn

ATE0 : Turns serial terminal echo off for command mode.
ATE1 : Turns serial terminal echo on for command mode.

ATV0 : Turns off verbose responses mode (Uses Terse Numeric response mode)

ATV1 : Turns on verbose responses mode (Uses Word response mode)

ATX0 : Turns off extended response codes (1/CONNECT instead of 5/CONNECT 2, etc..)
ATX1 : Turns on extended response codes (5/CONNECT 2 instead of 1/CONNECT, etc..)

ATF0 : Turns on rts/cts flow control.
ATF1 : Turns on xon/xoff flow control.
ATF2 : Turns on xon/xoff flow control, sets XON mode (if necessary), and, in command mode, will immediately go to XOFF when a single connection packet is received. This is very useful when the client wants to ensure it only receives one packet to process. You can think of this as an alternative way to use xon/xoff by having XOFF automatic between packets.
ATF3 : Similar to ATF2 except that the default is XOFF, and, in command mode, a XON code from the user will immediately trigger either an empty packet response [0 0 0], or a real packet if one is available. After this, as in ATF2, XOFF is automatically set.
ATF4 : Turns off flow control for command mode

ATQ0 : Turns off quiet mode (Sends response codes)
ATQ1 : Turns on quiet mode (Stops sending response codes)

ATR0 : Suppresses linefeed (\n $0a) in end of lines. Will only send carriage return (\r $0d).
ATR1 : Sends \r\n ($0d0a) as end of line string.
ATR2 : Sends \n\r ($0a0d) as end of line string.
ATR3 : Suppresses carriage return (\r $0d) in end of lines. Will only send linefeed (\n $0a).

ATBn : Sets a new serial Baud Rate. Takes effect immediately.
ATB"n,xYz" : Sets baud rate n, bits x, parity (E,O,M, or N) for Y, and stop bits z.

ATW : List all wireless network access points scanned within range. The response for each entry is the SSID, following by the RSSI, followed by an * character is the connection is encrypted.
ATWn : Where n > 0, this lists up to n wireless network access points scanned within range. The response for each entry is the SSID, following by the RSSI, followed by an * character is the connection is encrypted.
ATW"[SSI],[PASSWORD]" : Connects to the wireless access point with the given SSI, using the given password.
ATWP : Adding a P modifier is the same as all forms of ATW, with both arguments and results presented in PETSCII.

ATD : Start a streaming connection between the current opened connection. Use "+++" to exit back to Command mode.
ATDn : Where n > 0, this will start a streaming connection between the previously opened connection with an id the same as n. Use "+++" to exit back to Command mode.
ATD"[HOSTNAME]:[PORT]" : This opens a streaming connection between the terminal and the given host/port. Use "+++" to disconnect and exit back to command mode.
ATDP"[HOSTNAME]:[PORT]" : Adding a P modifier causes connection input to be translated to PETSCII during the streaming session.
ATDT"[HOSTNAME]:[PORT]" : Adding a T modifier causes connection input to be translated per TELNET during the streaming session.
ATDE"[HOSTNAME]:[PORT]" : Adding a E modifier causes terminal echo to be enabled that streaming session.
ATDX"[HOSTNAME]:[PORT]" : Adding a X modifier causes XON/XOFF flow control to be enabled that streaming session.
ATDnnnnnn : Where n=0-9, if the digits exist in the phonebook (see ATP), it will try connect to that host, with those modifiers, from the phonebook.

ATC : Shows information about the current network connection in the following format "[CONNECTION STATE] [CONNECTION ID] [CONNECTED TO HOST]:[CONNECTED TO PORT]"
ATC0 : Lists information about all of the network connections in the following format "[CONNECTION STATE] [CONNECTION ID] [CONNECTED TO HOST]:[CONNECTED TO PORT]", including any Server (ATA) listeners.
ATCn : Where n > 0, this changes the Current connection to the one with the given ID. If no connection exists with the given id, ERROR is returned.
ATC"[HOSTNAME]:[PORT]" : Creates a new connection to the given host and port, assigning a new id if the connection is successful, and making this connection the new Current connection. The quotes and colon are required.
ATCP"[HOSTNAME]:[PORT]" : Adding a P modifier causes all connection input to be translated to PETSCII
ATCT"[HOSTNAME]:[PORT]" : Adding a T modifier causes streaming input to be translated per TELNET when the changed to Stream mode
ATCE"[HOSTNAME]:[PORT]" : Adding a E modifier causes terminal echo to be enabled when the changed to Stream mode
ATCX"[HOSTNAME]:[PORT]" : Adding a X modifier causes XON/XOFF flow control to be enabled when the changed to Stream mode

ATH : Hangs up (disconnects and deletes) all open connections. Does not close Server listeners.
ATH0 : Hangs up (disconnects and deletes) the current opened connection.
ATHn : Hangs up (disconnects and deletes) the open connection with the given id. Closing a Server (ATA) listener does not close any connections received from that listener.

ATO : Re-enters a Streaming session (see ATD) under the previous settings, with the current (previous) connection.

ATP : Lists all existing phonebook entries, with the format phone number followed by ATD modifiers, followed by the host and port
ATP"[NUMBER]=[HOSTNAME]:[PORT]" : Adds or Modifies an entry to the phonebook with the given 7 digit number, host, and port. Use ATDnnnnn.. to connect.
ATPP"[NUMBER]=[HOSTNAME]:[PORT]" : Adding a P modifier causes connection input to be translated to PETSCII when connected to that entry.
ATPT"[NUMBER]=[HOSTNAME]:[PORT]" : Adding a T modifier causes connection input to be translated per TELNET when connected to that entry.
ATPE"[NUMBER]=[HOSTNAME]:[PORT]" : Adding a E modifier causes terminal echo to be enabled when connected to that entry.
ATPX"[NUMBER]=[HOSTNAME]:[PORT]" : Adding a X modifier causes XON/XOFF flow control to be enabled when connected to that entry.
ATP"[NUMBER]=DELETE" : Removes the phonebook entry with the given number.

ATS0=n : Changes the number of RING messages received before a CONNECT response is sent, on incoming Server listeners.
ATS1=n : Unimplemented, always returns OK
ATS2=n : Change the escape character (n = 0-255), Defaults to ASCII decimal 43 ("+")
ATS3=n : Change the Carriage Return Character   (n = 0-127), Defaults to ASCII decimal 13 (Carriage Return)
ATS4=n : Change the Line Feed Character (0-127), Defaults ASCII decimal 10 (Line Feed)
ATS5=n : Change the Backspace Character (0-32), ASCII decimal 8 (Backspace)
ATS6 ... 39=n : Unimplemented, always returns OK
ATS40=n : Change the size of the connection packets (n > 0), Defaults to 127 bytes
ATS41=n : When n > 0, all incoming Server listener connections are immediately sent to Stream mode. If n=0, connections remain in normal command mode (default).
ATS42=n : Set the CRC8 for an attached Transmit command. e.g. ATS42=123T"[MESSAGE]" returns error unless 123 is CRC8 of "[MESSAGE]".
ATS43=n : Sets a standby baud rate n for the next incoming or outgoing connection only. ATZ clears.
ATS44=n : Sets an automatic delay of n milliseconds after most bytes written to the Serial port. This is for computers that support a baud rate, but can't really keep up, and you don't want to use flow control.

ATS45=n : Changes how packet and at&g data is delivered. 0 is normal binary with normal headers, 1 is 78 char HEX digit streams followed by EOLN with hex digit headers, 2 is decimal digits followed by EOLN, with decimal digit headers.

ATS46=n : Changes DCD status. n=0 is default DCD=HIGH=online. n=1 is DCD=LOW=online. n=2 always HIGH. n=3 always LOW.

ATS47=n : Changes DCD pin number, n=2 is default

ATS48=n : Changes CTS status. n=0 is default CTS=HIGH=active. n=1 is CTS=LOW=active. n=2 always HIGH. n=3 always LOW.

ATS49=n : Changes CTS pin number, n=0 is default on ESP01, and default is 5 otherwise

ATS50=n : Changes RTS status. n=0 is default RTS=HIGH=active. n=1 is RTS=LOW=active. n=2 always HIGH. n=3 always LOW. (N/A on ESP01)

ATS51=n : Changes RTS pin number, n=4 is default (N/A on ESP01)

ATS52=n : Changes RI status. n=0 is default RI=HIGH=active. n=1 is RTS=LOW=active. n=2 always HIGH. n=3 always LOW. (N/A on ESP01)

ATS53=n : Changes RI pin number, n=14 is default (N/A on ESP01)

ATS54=n : Changes DTR status. n=0 is default DTR=HIGH=active. n=1 is RTS=LOW=active. n=2 always HIGH. n=3 always LOW. (N/A on ESP01)

ATS55=n : Changes DTR pin number, n=12 is default (N/A on ESP01)

ATS56=n : Changes DSR status. n=0 is default DSR=HIGH=active. n=1 is RTS=LOW=active. n=2 always HIGH. n=3 always LOW. (N/A on ESP01)

ATS57=n : Changes DSR pin number, n=13 is default (N/A on ESP01)

ATS60=n : When n > 0, immediately saves existing listeners and automatically restores them later. n=0 to clear.

+++ : With a 1 second pause with no other characters afterwards, this will disconnect the current opened connection.

ATT"[MESSAGE]" : Transmit the given text string, with \r\n at the end, on the current connection.

ATTn : Where n > 0, this starts a transmit of exactly n bytes to the current connection. The \n from entering this command must be followed by the n bytes to transmit.

ATTP"[MESSAGE]" : Transmit the given text string, translating petscii to ascii, with \r\n at the end, on the current connection.

ATTPn : Where n > 0, this starts a transmit of exactly n bytes to the current connection, translating petscii to ascii. The \n from entering this command must be followed by the n bytes to transmit.

ATT+"[MESSAGE] : A + argument may be used to force the "T" command to return the CRC8 of the message instead of OK, when successful.

ATL0 : Re-sends the most recently sent data packet again

ATLn : Re-sends the most recently sent data packet for connection id n.

AT&L : Reloads the saved configuration.

AT&W : Saves the current configuration: WiFi settings(ATW), baud rate (ATB), end of line (ATR) settings, flow control (ATF), echo mode (ATE), extended responses (ATX), verbose responses (ATV), quiet responses (ATQ), PETSCII mode (AT&P1), pin statuses (ATS46 - S58), Rings (ATS0), Listener Stream-mode (ATS41), and Listener restore (ATS60)

AT&F : Restores the modem to factory default settings.

AT&On : n is 1 to turn on internal serial-reception log, n is 0 to turn off or view a previously turned-on log.

AT&H : Shows a help file from the web, or brief help otherwise.

AT&U : Checks the firmware home page to see if a new version is available.

AT&U6502 : Will update the firmware from the home page on the web.

AT&U=x: Will update the firmware from the web to custom version x.

AT&Kn : Flow Control, similar to ATFn, n=0,1,2: disable, n=3,6: rts/cts, n=4,5: Xon/Xoff

AT&Pn : Where n > 0, all command mode input and output will be translated to/from PETSCII before internal processing. This will not affect received packet data, or the stream mode.

AT&Nx : Shows the status of ESP module I/O pin x

AT&Mn : Adds the byte denoted by n to a list of mask-out bytes. These are bytes that are not transmitted to the serial port in command mode incoming packets. If this command is followed by a C, N, or A command on the SAME LINE, then the setting will apply ONLY to that connection or listener.

AT&M : Resets the mask-out bytes list. No bytes will be masked-out. If this command is followed by a C, N, or A command on the SAME LINE, then the setting will apply ONLY to that connection or listener.

AT&Dn : Adds the byte denoted by n to a list of delimiter bytes. These are bytes that will compose the last byte in a command-mode incoming packet that is still shorter than the limit set by ATS40. This is useful for CR-LF formatted data. If this command is followed by a C, N, or A command on the SAME LINE, then the setting will apply ONLY to that connection or listener.

AT&D : Resets the delimiter bytes lis. No bytes will be delimited, and packets will contain as many bytes as are received and allowed by ATS40. If this command is followed by a C, N, or A command on the SAME LINE, then the setting will apply ONLY to that connection or listener.

AT&T"[TIMEZONE],[TIME FORMAT],[NTP URL]" : set up the NTP clock. DISABLE to disable. Format is like Java SimpleDateFormat, but with % escapes. Each argument is optional.

AT&G"[HOSTNAME]:[PORT]/[FILENAME]" : Streams a file from an HTTP source on the internet. The header contains channel 0, file length, and an 8-bit sum of all the bytes in the forthcoming file, followed by the bytes of the file, all formatted as a normal packet. An ASCII 3 (CNTRL-C) received during the transfer will abort. The S44 register can be used to create artificial delays in this output. XON/XOFF Flow control also remains in effect with, on a byte-by-byte basis for the auto and manual flow control systems.