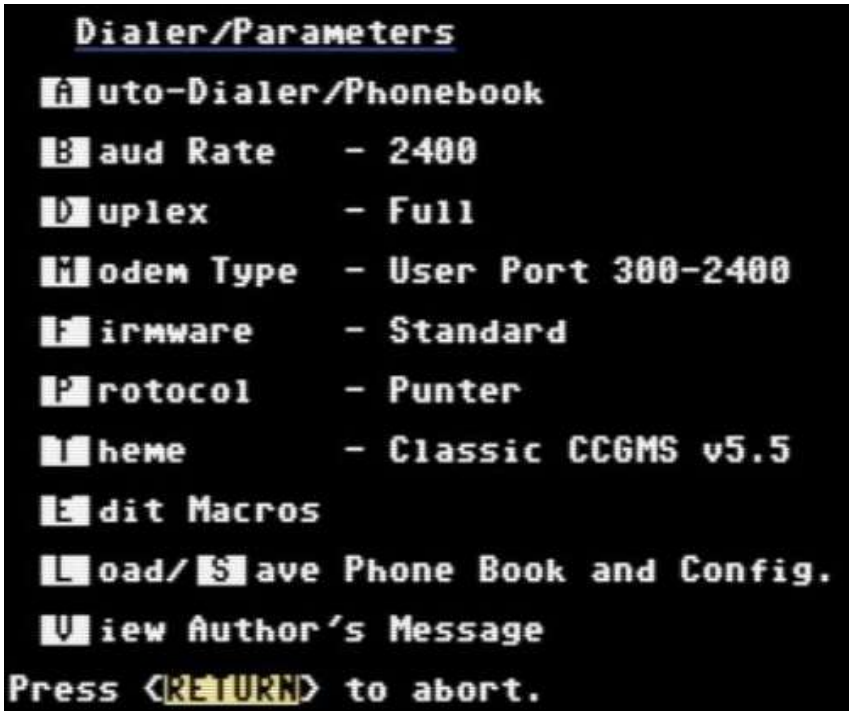
Quick start terminal guide for Link-232-Wifi Zimodem firmware modem.

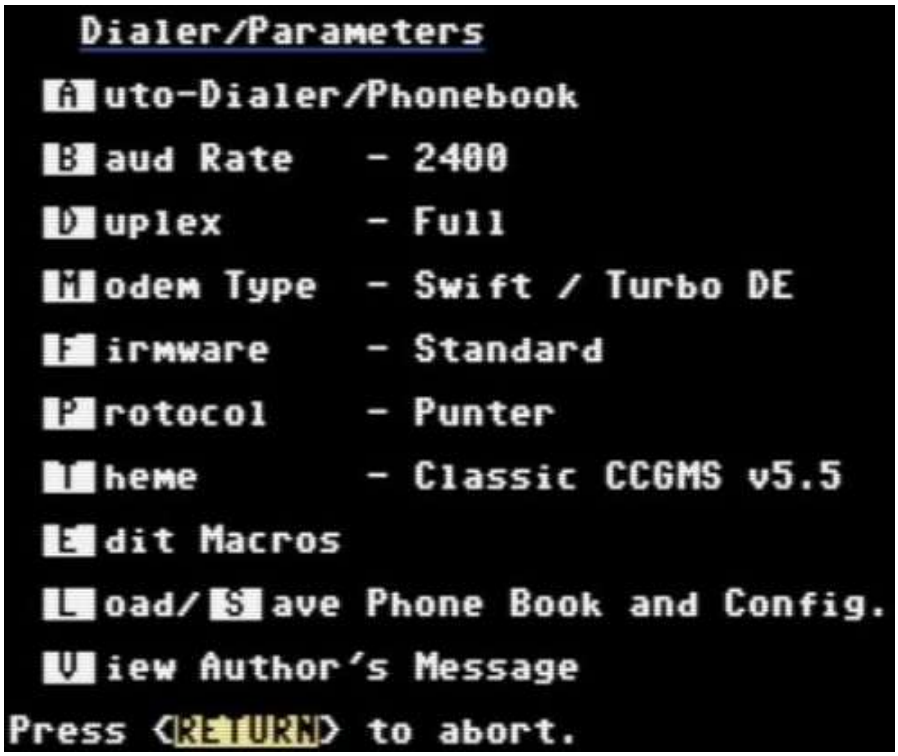
First start by getting a copy of CCGMS 2021, it's available at https://csdb.dk/release/?id=198392

Load it up and you will be greeted with the following screen.

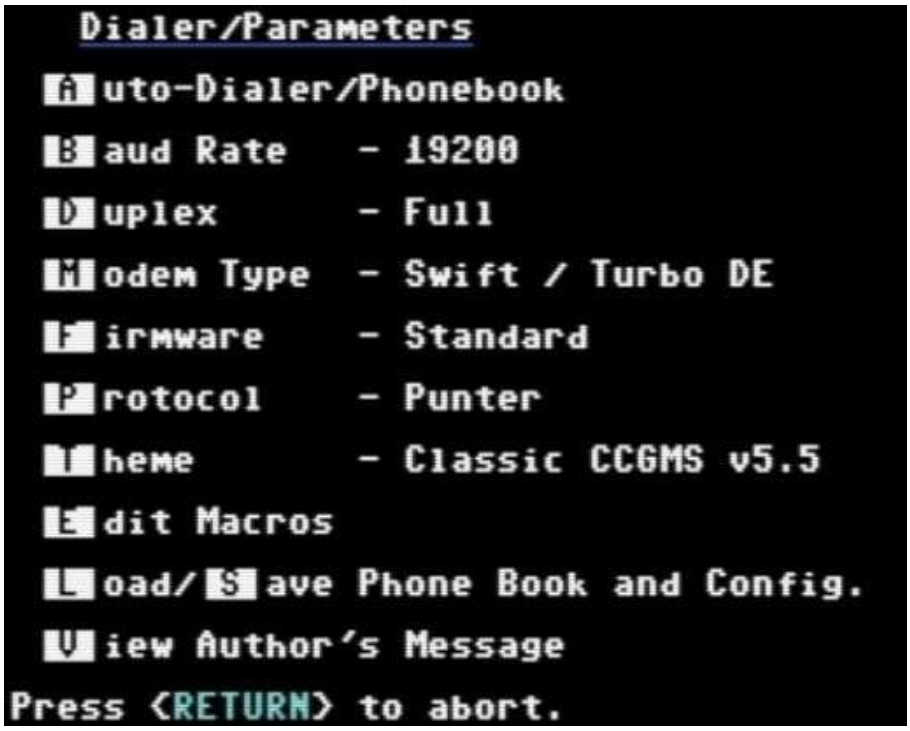
The default for the Link-232-Wifi Cart is DE00/NMI. So let's set the terminal program to talk to the modem. Press F7, for the following menu.



Press M until the Modem Type reads like in the picture below.



Now that the modem type is correct, change the baud rate to 19200, by pressing B until 19200 appears.



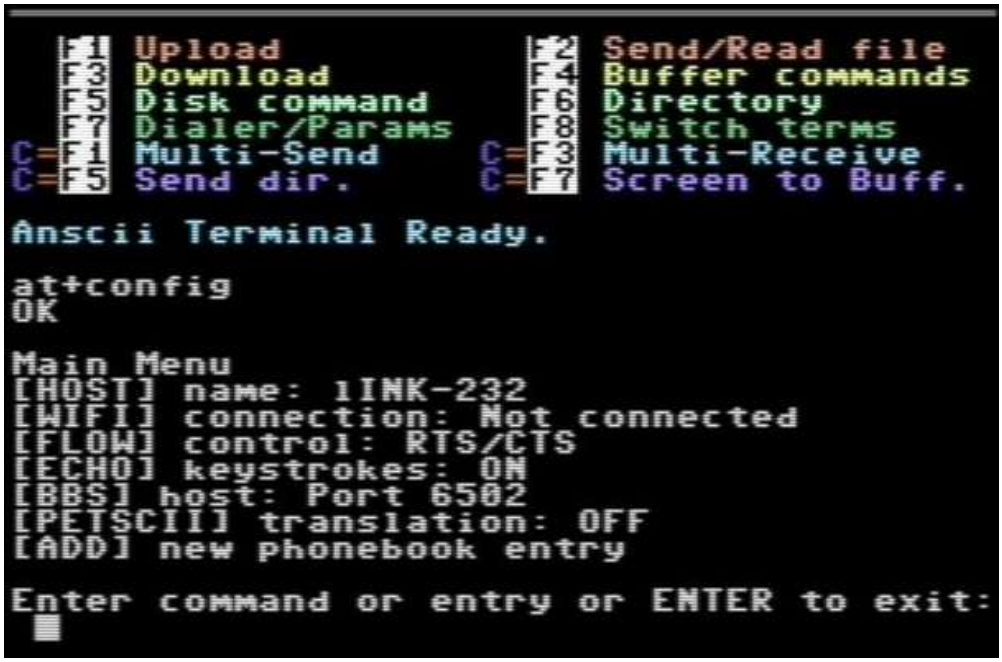
Now press S to save the config. Just press return to leave the default filename of ccgms-phone.

Now press Return to exit to terminal mode.

Now press F8 to get to the ASCII terminal mode. It shows as follows.

Now type at+config and press enter to access the modem config menu.

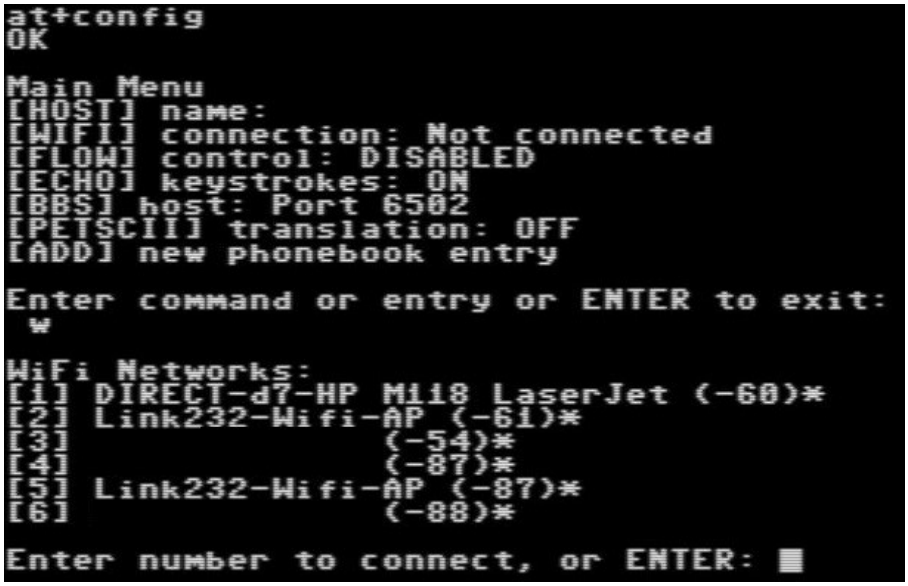
If the Link232-Wifi is connected and working correctly, you should get the following screen.



Press w, then press Return to connect to a wifi access point.

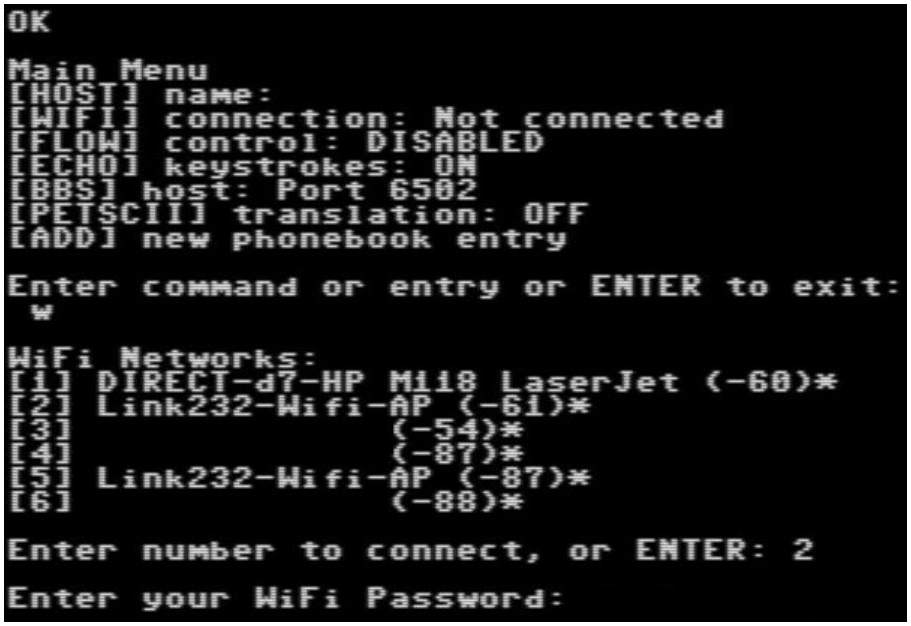
This will list all the access points that the modem sees.

(The following pics have been edited to remove peoples last names that they put in their SSIDs..)



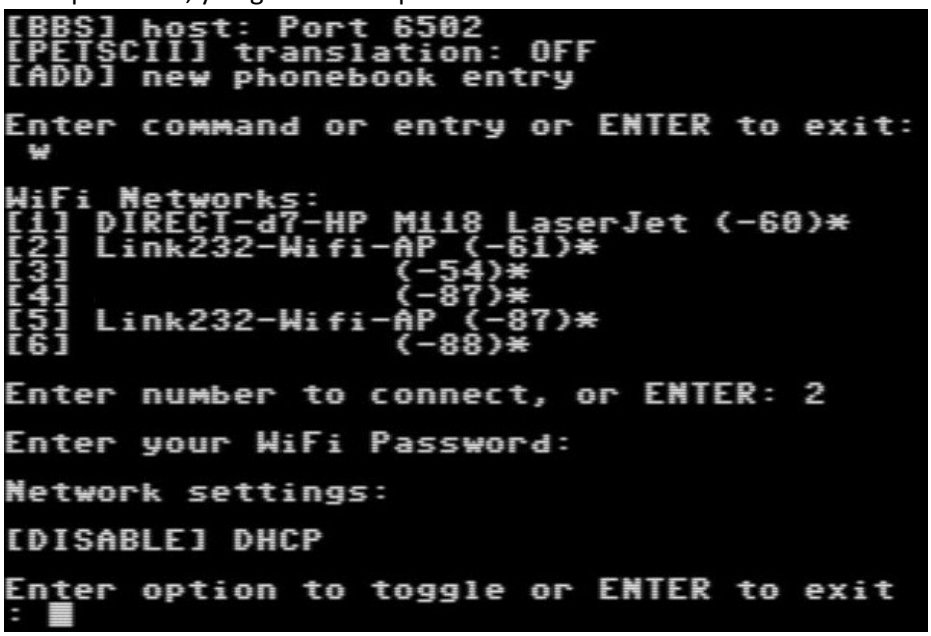
Here I have 2 access points with the name Link232-Wifi-AP. The lower the number in (), the stronger the signal.

Enter the number for your access point and press enter.



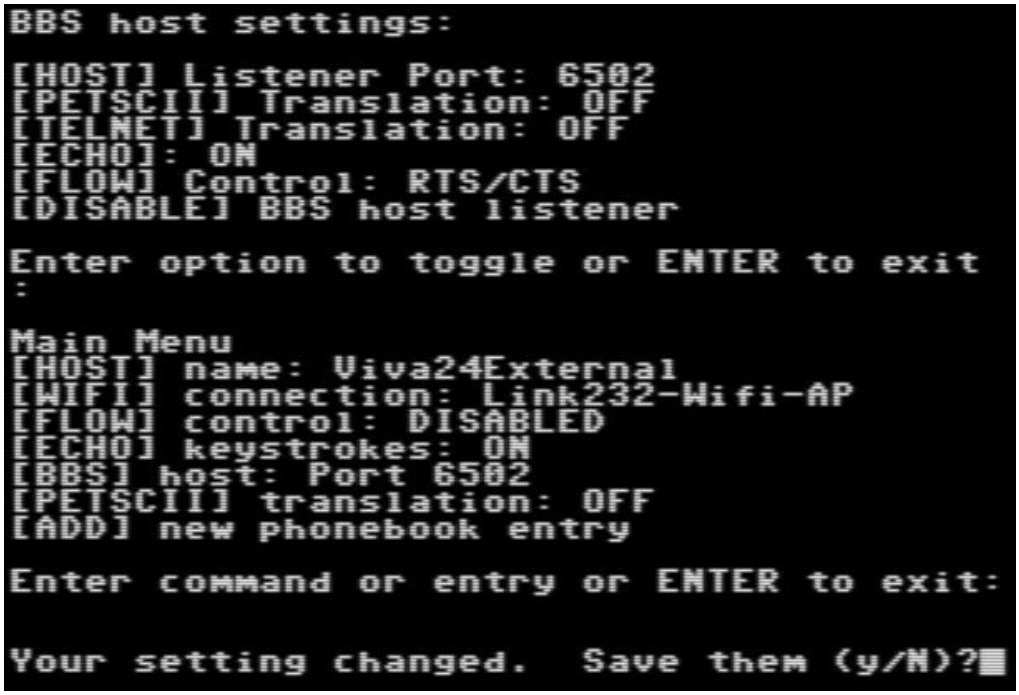
Now enter your password, then press enter. (Password is shown as you type)

After password, you get a DHCP question.



If you ARE NOT setting a fixed ip, just press enter here. For fixed IP, the menu options are the usual IP, Netmask, DNS and gateway. (Note, earlier versions of the firmware don't have the DISABLE DHCP option.)

The Main Menu will return, and to save, press enter without an option, it will then ask if you want to save.



Now press F8 to go back to PETSCII mode.

The press F7, and save the terminal setting to PETSCII (press s)

The Press return to get back to the terminal.

For a quick test I like calling theoldnet.com, it's a Commodore compatible BBS running on a PI.

Just enter

atd"theoldnet.com:6400

The Firmware on the Link232-Wifi is based on Zimodem, which is still in constant development.

To update your Link232-Wifi, the command is at&u=6502. This will download and install the latest tested firmware from my server.

Here are the basic AT commands for the Link232-Wifi

Command Set:

The command set is as follows (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

ATI9 : Same as I3, but also includes any static settings, same order as ATW

ATI10: Shows the last printer url used.

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 ATC0.

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.

ATW"[SSI],[PASSWORD],[IP],[DNS],[GATEWAY],[SUBNET]" : as ATW, but with more options

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.

ATDnnnnnnn : 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. Add ? to also get notes.

ATP"[NUMBER]=[HOSTNAME]:[PORT],[NOTES]" : Adds or Modifies an entry to the phonebook with the given 7 digit number, host, port, and notes. Use ATDnnnnn.. to connect.

ATPP"[NUMBER]=[HOSTNAME]:[PORT],[NOTES]" : Adding a P modifier causes connection input to be translated to PETSCII when connected to that entry.

ATPT"[NUMBER]=[HOSTNAME]:[PORT],[NOTES]" : Adding a T modifier causes connection input to be translated per TELNET when connected to that entry.

ATPE"[NUMBER]=[HOSTNAME]:[PORT],[NOTES]" : Adding a E modifier causes terminal echo to be enabled when connected to that entry.

ATPX"[NUMBER]=[HOSTNAME]:[PORT],[NOTES]" : 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, 3 is normal without SUM header.

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.

ATS61=n : When n > 0, sets the number of seconds to timeout a print job stream (AT+PRINT). Default is 5 seconds

+++ : 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&H : Shows a help file from the web, or brief help otherwise. Use &H6502 to reiforce web download.

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), printer spec (AT+PRINT), and busy message.

AT&F : Restores the modem to factory default settings. Use &F86 to reformat the SPIFFS.

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, n is 88 to turn on ESP32 debug port.

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 list. 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&S"40=[HOSTNAME]" : Change the modem hostname

AT&S"41=[TERMTYPE]" : Change the telnet 'termtype' response string

AT&S"42=[BUSYMSG]" : Change the stream connection 'busy message'

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. Requires flash space for caching, or S45=3 to eliminate the SUM header.

AT&Y : Resets the state machine string. No state machine will be executed.

AT&Yn : Change the current state (for command mode AND current connection) to state n, where n is a decimal number.

AT&Y"[CODED STATE MACHINE]" : Adds the coded format string to a state machine. 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. State Machine Format: MMcCCNN ... States are numbered by their order in the list starting with 00. Non-matches automatically go to the next state until a match is made. 'MM' is hex byte to match (or 00 to match all). 'c' is one of these commands :e=eat byte, p=push byte to que, d=send byte, q=send all queued, x=flush queue, r=replace with byte represented by hex CC. 'C' is either '-', one of the command letters above, or a hex byte value if the first command was 'r'. 'NN' is the next state to go to, with 00 being the first state.