

Manual Command Table Editing Procedure

Version srs0096h
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There are two command tables stored in program memory. The first contains the Cxxx commands that are built in. It cannot be changed. The second currently contains a bunch of commands that call macros, including the standard Cactus commands. This is the one you can change.

The procedure to edit the macro command table is as follows:

1. Copy the table from program memory, where it is used, to a scratch area in the upper part of the serial eeprom
2. Edit the command table
3. Write it back to program memory.

The commands used to do that are:

1. C10B address nbytes <CR> -> get nbytes from the serial eeprom
2. C10A address byte1 byte2 ... byte16 <CR> -> set bytes in the serial eeprom, starting at address. Up to 16 can be entered each time the command is called
3. C10C -> copy the macro command table to eeprom, starting at address 41505
4. C10D -> write the macro command table back to program memory

The command table size cannot be changed (except by recompiling the program). In software version 0.96, there is space for 250 entries in the table. By default, the first 50 are assigned command names of "000" to "049" and point to macros 0..49. The rest are assigned common Cactus command names which point to macros 50..128. A few at the end are used for program housekeeping. The last one is the end marker for the table, and is "end" with a command number of 0. This one should not be changed, although it can be moved, as the actual number of table entries expands to fill the maximum number of 250.

Each entry consists of 9 bytes.

Bytes 0..5: Null terminated ascii string of up to 5 characters containing the command name

Bytes 6,7: 16 bit internal command number, low order byte first

Byte 8: Permission byte

The internal 16 bit command number for macros is $0x5000 + (\text{macro number})$. $0x50$ is 80 decimal ($5 * 16$), so macro zero is executed by calling command number $0x5000$, which is displayed by the C10B command as 00 80. Internal commands can also be directly entered into the table. The internal command numbers for Cxxx commands are hexadecimal xxx. The internal command numbers for Sxxx commands are hexadecimal

xxx0. The single exception is the reset command (C000), for which the internal command number is 0xFFFE.

Starting with software version 0094w, the position of the command in the command table corresponds to the macro number to which it points. Refer to the SRSC Cactus Macro Command List document for the macro numbers.

The “809” command points to macro 93. The corresponding command number $0x5000+93 = 0x505D$. All commands to call macros should have permission 0 (the macro contains its own permission). The command starts at eeprom address $41505+93*9=42342$, if you enter:

C10B:42342 9, you will get

EB42342 56 48 57 0 xxx xxx 93 80 0.

The xxx xxx happened to contain 120, for reasons that I don’t understand; the compiler set that when I initialized the string to “809”.

To change the command name to “807”, you change the 57 to a 55, and write the whole table back to program memory.

An external PC program for editing this table should not write the entire table back every time you change one command. Do it all at once. The program memory can only be written a large, but finite number of times.

The following additional files are provided to aid in developing an application to edit the table: “Cmd table editing example.txt”, and “m command table address.xls”. The txt file is a commented example that was taken from a screen shot of hyperterminal as I was testing the program. It uses the same example as described above to change the 809 command to 807. The excel file is a spreadsheet to show the address in eeprom memory where each command resides after you use the C10C command to copy it there. It was constructed from a dump of the actual C file used to construct the command table, so shows precisely what is in every location in the command table by default.