

ST Robotics help sheet 6

Instructions for Mk3 and Mk4 controller and ROBOFORTH II v6 and 7

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Making more room for data (at expense of program area)

The standard controller is fitted with one bank of memory i.e. 65K bytes. The memory map for this is as follows:

FFE0	<i>non protected Memory</i>	Top of page (TOP)
D000		1 Start of user dictionary
A200	<i>coordinates data</i>	Start of data area
9C00		FORTH workspace
8500	<i>text buffer</i>	
8000	<i>Protected Memory</i>	End of protected memory
2000		Device I/O routines, start of RAM
0400		Start of FORTH
0000	EPROM	System (BIOS)

There are two pointers:

dictionary pointer, DP. check it with HERE X.

data pointer, NEXT. check it with NEXT @ X.

Note X. is a two-character word, X and a period, and means print a four-figure hexadecimal value.

Please refer to help sheet #2, powering up the controller. After a cold start the DP points to a place in protected memory where there is the word ROBOFORTH. On pressing the enter key ROBOFORTH is executed which moves the DP to the boundary, normally C800. As user words are added the DP moves up memory. The word ROBOFORTH will always restore it to the boundary, C800.

As coordinates are added NEXT moves up the data area, starting at RUN-LIST or A200. This pointer may not pass the boundary or it will corrupt the user dictionary.

TO MOVE THE BOUNDARY:

1. SAVE what you've got (.RUN and .ED1 files)
2. Perform a cold start and press enter.
3. Un-protect memory
4. Enter the new value into address 77FA

for example for a boundary of D800 enter:

D800 77FA !

5. Protect memory
6. Perform another cold start and press enter.
7. Check with HERE X. should print D800

You now have another 800hex data area, sufficient for 128 lines in a route or about 42 places. The space for program is reduced to 10K which is sufficient for most conceivable programs bearing in mind the compact nature of FORTH. To give you an idea it is sufficient for about 1,700 null words (words that don't do anything) or a single word defined in terms of around 5000 pre-existing words. Real software will be somewhere in between.