

LMDX 'NS' and 'O' commands explanation

Data capturing function "NS", "CB", "O"

a) Data capturing setting "NS"

Usage:

"NS *p1 p2 p3 p4 p5*;"

It is used to set the physical quantities to be captured into driver's buffer. Up to 3 physical quantities could be captured at one time.

p1 – first pointer to a physical quantity

p2 – second pointer to a physical quantity

p3 – third pointer to a physical quantity

p4 – how many data totally to capture for all physical quantities ; max. 8000

p5 – every *p5* interrupts, do capture; (sampling frequency)

If only one quantity to capture, set *p2* and *p3* to 0. If only two quantities, set *p3* to 0. For *p1*, *p2*, *p3*, please refer to the number in the following table:

Number	Variable	Format	Explanation
1	Analog[0]	Integer	Sensor signal, X1 A
2	Analog[1]	Integer	Sensor signal, X1 B
3	Analog[2]	Integer	Sensor signal, X2 A
4	Analog[3]	Integer	Sensor signal, X2 B
5	Analog[4]	Integer	Sensor signal, Y A
6	Analog[5]	Integer	Sensor signal, Y B
7	ABS_LIN[0]	Float	Feedback X1-position
8	ABS_LIN[1]	Float	Feedback X2-position
9	ABS_LIN[2]	Float	Feedback Y-position
10	s_dem[0]	Float	Command X-position
11	s_dem[1]	Float	Command Y-position
12	XN_1[0]	Float	Error rotational, (n-1)
13	XN_1[1]	Float	Error X, (n-1)
14	XN_1[2]	Float	Error Y, (n-1)
15	YN[0]	Float	Force rotational
16	YN[1]	Float	Force X
17	YN[2]	Float	Force Y
18	XXN[0]	Float	Error rotational
19	XXN[1]	Float	Error X
20	XXN[2]	Float	Error Y

21	A0[1]	Float	Feed-forward X
22	A0[2]	Float	Feed-forward Y
23	A0[2]	Float	Feed-forward Y

For example: "NS 7 9 0 2000 1" This command will set the driver, so that the feedback position of X1 and Y will be captured. And there would be totally about 2000 captured data, including X1 and Y. And every 1 CPU interrupt cycle, data will be captured.

If you set p4 to be bigger, there would be more captured data, which means also longer data transfer time later.

You can adjust p5, so that it is easier to capture data for a longer time frame. Because in some cases, it not necessary to capture data every 1 interrupt.

The capturing will occur every time when you run with "PR" or "PA" commands in stand alone mode.

It is also possible to do capture in pulse command mode: The capturing will occur every time when you enter "CB" (Clear Buffer) command.

b) Clear Buffer "CB"

Usage:

"CB;"

To do capture in pulse command mode: The capturing will occur every time when you enter 'CB' command. Enter 'CB' and very quickly after that, send pulses to move the motor. Be sure that there is as little time as possible between your pressing enter key and sending pulses.

c) Download captured data to PC "O"

Usage:

"O;"

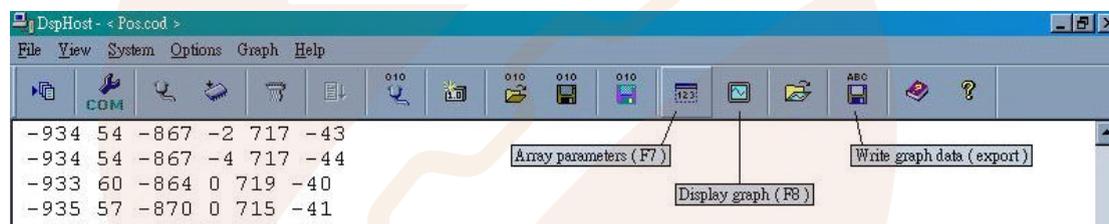
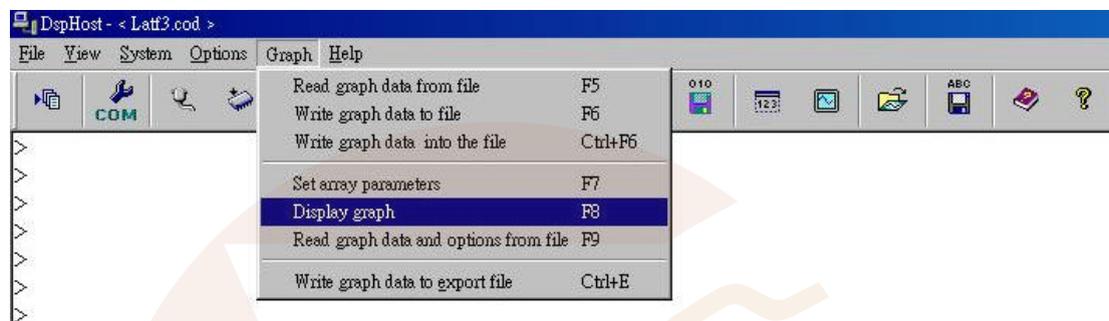
After data are captured, it is possible to use this command to download via RS-232 the data to DspHost Terminal program.

After pressing "O" and enter, the DspHost will start downloading and show a progress bar.

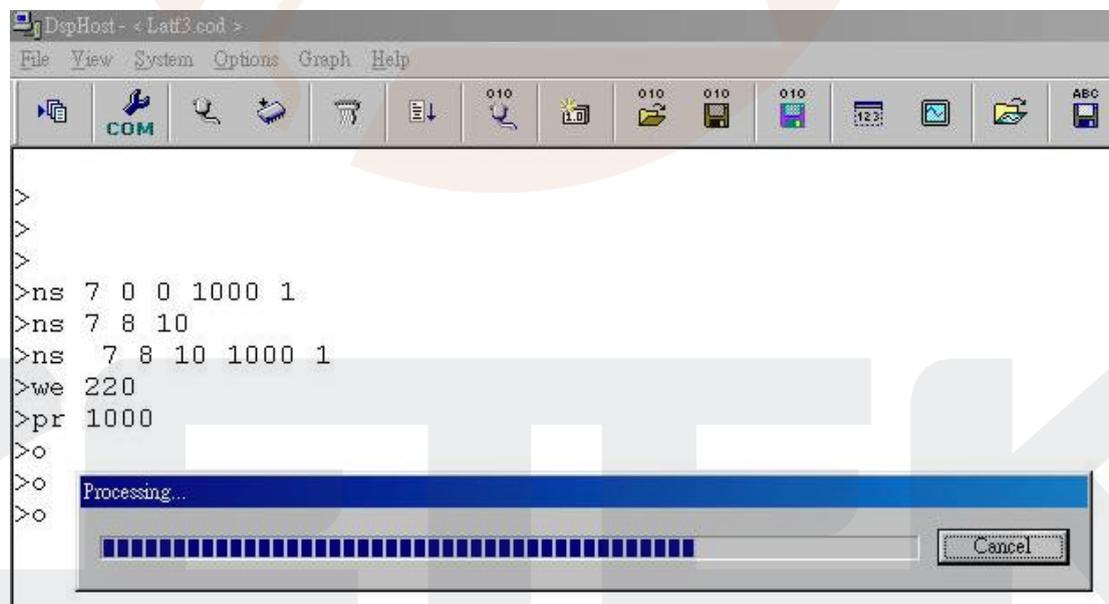
Explanation of DspHost graphic tool

Using the graph function under DspHost, it is possible to show the captured data using 'O' command.

Under Graph menu, there are some related item like below:



Step 1: Use 'O' command to download data to PC. Like below:



Step 2: After downloading data with 'O' command, it is necessary to set array parameters (F7-key), the picture will show like below.

Data type				Space discrete
Float DSP32				1 mkm
Variable	Variable type	Factor	Offset	Interrupt period
Variable 1	Number	1	0	250 mks
Variable 2	None	0	0	Multiplicity
Variable 3	None	0	0	1
Variable 4	None	0	0	Apply
Variable 5	None	0	0	OK Cancel

Please set Data type to Float DSP32, as in the picture.

Regarding variable type, please set them according to “NS”. If in “NS” command, you set only p1 to a non zero value, and set p2=p3=0, you have to set variable type of Variable 1 to “Number”, and all others set to “None”.

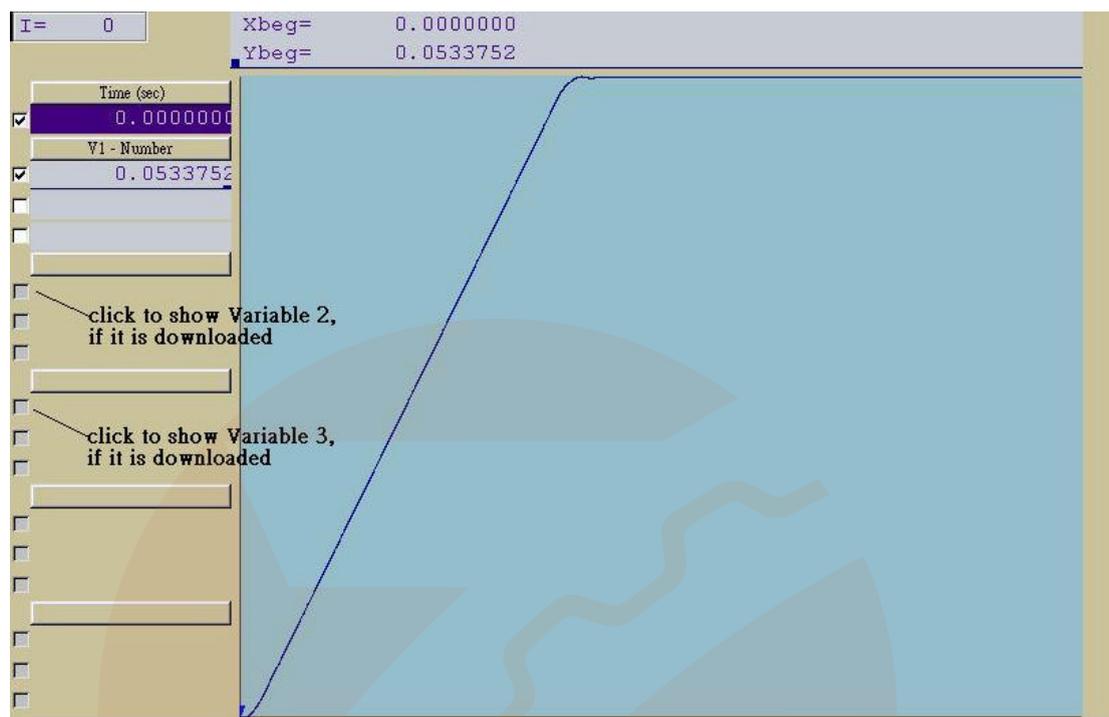
Please set Interrupt period to the value which is shown by the first parameter of “T” command in LMDX driver. All other parameters, please set as in the above picture.

Step 3: Choose the menu of “Display Graph” (F8-key) to show the downloaded graph like below:

In the following graph, you see V1-Number, and below it no any other variables. This is because in this example we download only one physical quantity and set in step 2.

If you have downloaded 2 or three physical quantities, you have to click the corresponding check box to show their graph, otherwise they will not appear on the graph.

When the graph is shown, you can press F5-key to display grid of dash line.



Step 4: If necessary, it is possible to save the downloaded data to a file in binary format. Please use "Write graph data to file" (F6-key). To read the file, use "Read graph data from file" (F5-key). However, after clicking OK, you have to set array parameters (like in step 2) according to data which are saved in the file.

Step 5: If necessary, it is possible to save the downloaded data to a file in ASCII format. Please use "Write graph data to export file" (CTRL+E).

In the ASCII file, numbers in a row are separated by semicolons. The first column of data is time. They are arranged in column like below:

1	2	3	4	5	6	7	8	9	10
time	Variable 1			Variable 2			Variable 3		