

softMC Training – Module 8

Data Recording



Overview

- Recording can be performed in two ways:
 - ControlStudio – normally used
 - Explicit instructions in MC-Basic – useful when tight control of recording is needed within a task
- The process of recording creates a *.REC file on the softMC.
- Recording files are saved on the softMC RAM disk; they are lost at power off.

ControlStudio

Recording Interface

ControlStudio Signal Recorder

- View menu > Signal Recorder
- Sets up the data recording

The screenshot shows the 'Signal Recorder' window in ControlStudio. The window has a title bar with a dropdown arrow, a maximize button, and a close button. Below the title bar is a toolbar with three buttons: a green play button, a red stop button, and a blue double vertical bar button. A horizontal progress bar is located below the toolbar. The main area of the window is divided into two sections. The top section, titled 'Signals to record', contains a table with 6 rows. The bottom section contains a list of recording parameters. Annotations with purple arrows point to various elements: 'Start recording' points to the green play button; 'Stop recording' points to the red stop button; 'Recording progress bar' points to the horizontal progress bar; 'Signals to be recorded (expressions)' points to the table in the 'Signals to record' section; 'Recording file name (*.REC)' points to the 'Session name' field; 'Number of motion bus cycles between recording samples' points to the 'Data points' field; and 'Size of the recording buffer' points to the 'Recording duration' field.

Start recording

Stop recording

Recording progress bar

Signals to be recorded (expressions)

Recording file name (*.REC)

Number of motion bus cycles between recording samples

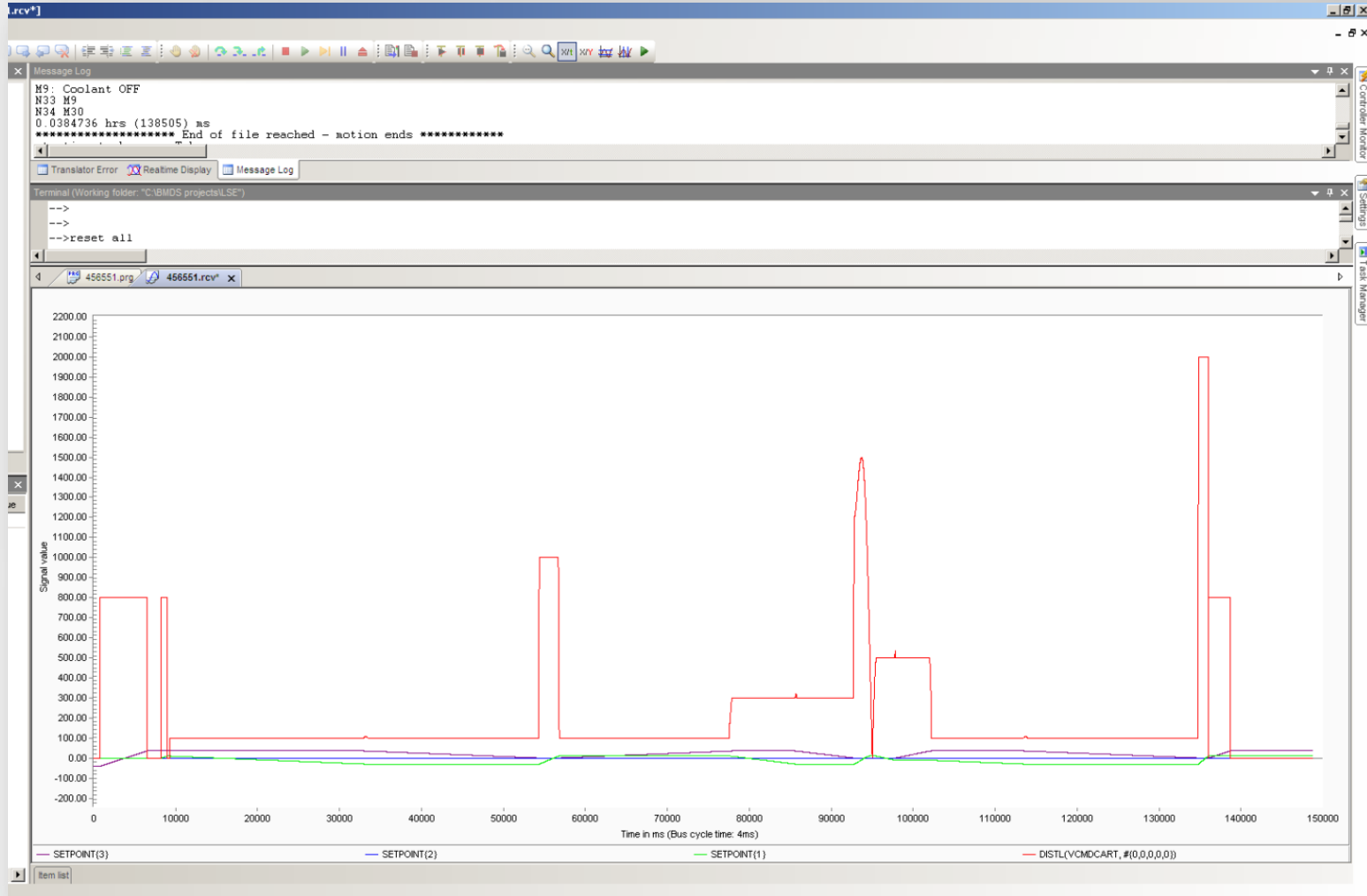
Size of the recording buffer

Signals to record	
Number of Signals	6
Signal 1	axb.vcmd
Signal 2	setpoint{1}
Signal 3	Setpoint{2}
Signal 4	Setpoint{3}
Signal 5	Setpoint{4}
Signal 6	Setpoint{5}

Session name	Default
Record Gap	1
Data points	10000
Bus cycle time	4000 μ s
Recording duration	40000 ms
Show record	In a new document

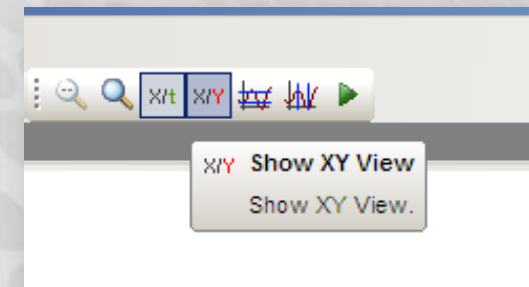
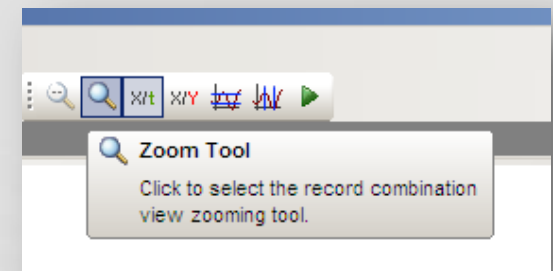
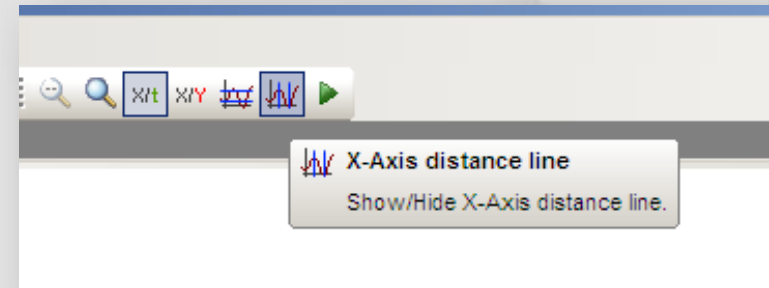
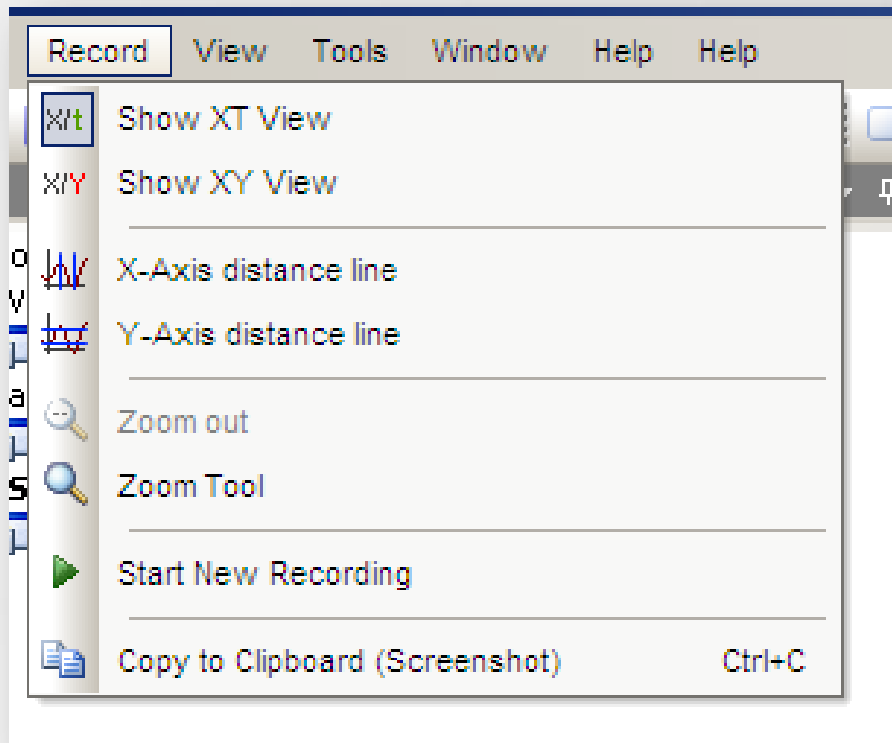
ControlStudio Recorder Viewer

- When recording is complete, the **Recorder Viewer** automatically opens and displays the recorded signals



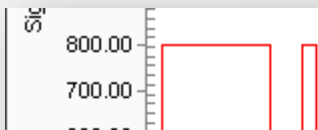
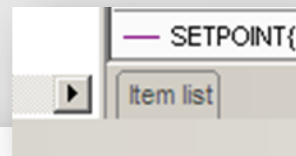
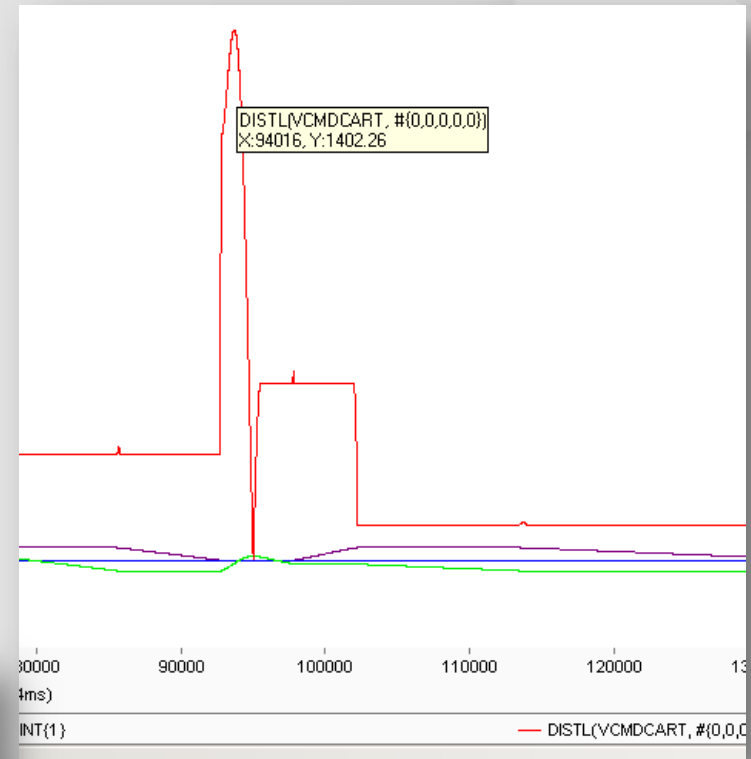
ControlStudio Recorder Tools

- Recorder menu
- Recorder buttons on toolbar



ControlStudio Recorded Traces

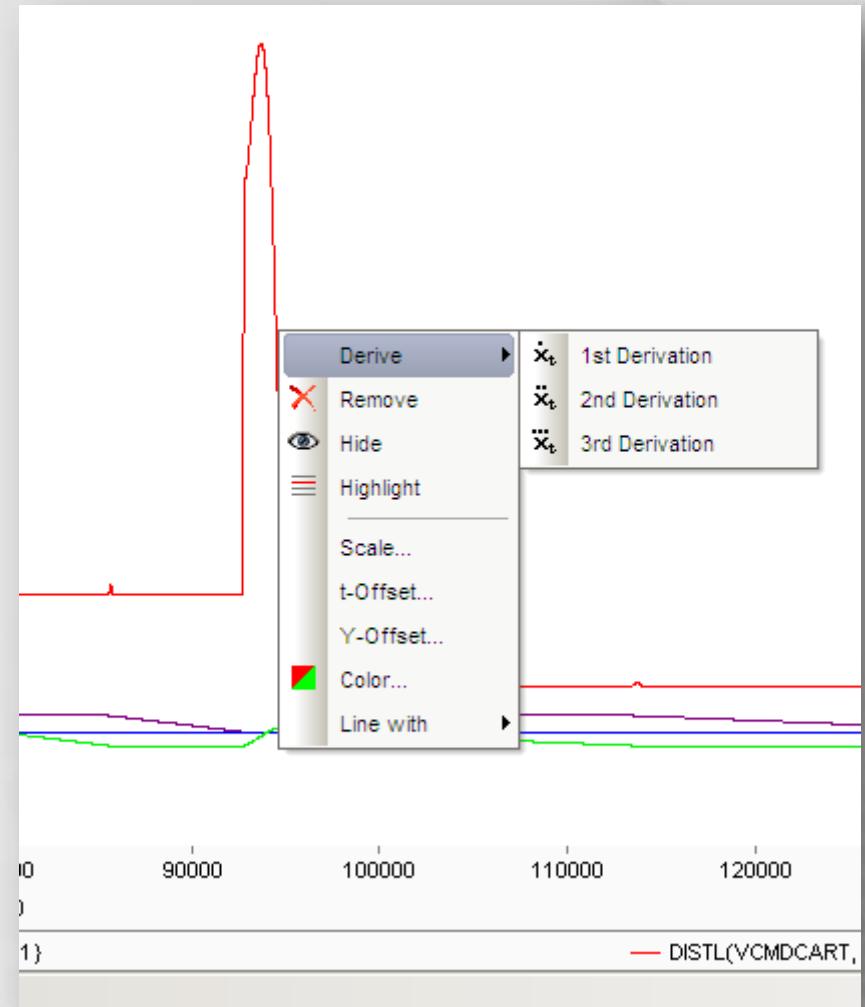
- Hovering over a trace shows the XY values of the trace at the point of the mouse cursor
- X-axis is always time (ms)
- The **Item List** pane shows all traces and allows the user to manipulate traces and to add traces (from other files)
- The Item List button at the bottom left of the screen opens the pane.



Item list											
			Source/Type	Reference	Scale	t-Offset	Y-Offset	Color	Line width	Marker	
✗	1	👁	Default	DISTL[VCMD CART, #{0,0,0,0}]	1.0	0	0.0	Red #ff0000	1	None	
✗	2	👁	Default	SETPOINT{1}	1.0	0	0.0	Green 00ff00	1	None	
✗	3	👁	Default	SETPOINT{2}	1.0	0	0.0	Blue 0000ff	1	None	
✗	4	👁	Default	SETPOINT{3}	1.0	0	0.0	Purple 800080	1	None	
✗	5	👁			1.0	0	0.0	Magenta #ff00ff	1	None	

ControlStudio REC and RCV Files

- .REC file, like all other softMC files, can be retrieved and saved to host PC.
- .REC file is a binary file that can be viewed in other applications, such as MatLab or SciLab.
- To view the file, open it through **File Manager**.
- Files can be saved to PC as .REC or .RCV file.
- The .RCV file contains the last view of the recorded file: zoom level, cursors, selected traces, etc.
- Right-click on trace for viewing options and derivatives.



MC-Basic Recording Functions

MC-Basic RECORD Function

- Used to arm (not trigger) data recording.
- Data is recorded into a specified file, which is then retrieved for viewing.
 - Recorded data file always has extension REC.
 - Recorded data file is stored in softMC RAM disk and deleted at power off; save to PC if required
- RECORD can be used to record variables and/or expressions

MC-Basic RECORD Syntax

```
RECORD <record file name> <number of lines> {Gap = <record gap>}  
{RingBuffer = <ON | OFF>} RecData = <expression>{, <expression>}*
```

- <line> is the data specified by the RecData property:

RecData = <expression>{, <expression>}*

- <number of lines> to be recorded must be specified
- Each line records a set of data for one motion sample.
- <record gap> specifies the number of motion bus cycles between samples; if not specified, gap is one cycle.
- <RingBuffer> allows continuous recording until recorder is either paused or stopped. In this case only the <number of lines> in the buffer are kept.
- The recorder may be stopped before the specified number of points have been recorded (using RECORDOFF)

MC-Basic RECORD Example

```
Record Motion.rec 1000 Gap = 1 RecData = a1.pcmd, a1.pfb, a2.pcmd,  
MyVar RecordOn
```

- Arm using the command **RECORD**
- Start (trigger) recording using the command **RECORDON**
- Check status of recording using the query **?RECORDING**
 - **RECORDING 4** indicates that recording is complete, and data is ready for retrieval
- Use **RECORDOFF** to pause the recording; use **RECORDON** to resume
- Use **RECORDCLOSE** to stop the recording and close the recording file

END