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Revision	Description	Date
A	Initial Release – Ruizi Chen	2/13/2013

Subject: *Capturing signals using HSDC*

System(s) Affected: ICON, FastScan, MM8, Catalyst

Action Category: (As Required)

Summary: This procedure describes how to use high speed data capture signals. Example is given for HSDC capture during Engage process.

Introduction:

High speed data capture is a powerful tool to capture the signal behaviors. To open the High Speed Data Capture window, click Capture > High Speed Data Capture.



High Speed Data Capture

Channel Selection

Rate: 50 MHz ChannelA Data Type: Vertical Deflection

Rate: 500 kHz ChannelB Data Type: Lateral Deflection

ChannelC Data Type: Off

ChannelD Data Type: Off

Trigger Controls

Arm Trigger ☐ Auto Re-Arm

Force Trigger ☐ Delay Upload

Event: Edge

Channel: Height Sensor

Level: 0.00 V

Slope: Positive

Delay: -1.00 ms

Duration: 330 ms

Status: Canceled

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Channels A and B can capture data at 6.25 MHz and 50 MHz while channels C and D capture data at 500 kHz. Table below shows the available data types are available for capture. Note that not all AFM systems have the full list of data types. For example X, Y and Z sensors do not apply to Multimode.

Channel	Data Type	Frequency
A and B	Vertical Deflection	6.25 MHz
	Lateral Deflection	50 MHz
C and D	Height	500 kHz
	Signal Sum	
	X sensor	
	Y sensor	
	Z sensor	
	Amplitude	
	Phase	
	TM Deflection	
	Deflection Error	
	Friction	
	Z Feedback Output	
	Input 1	
	Input 2	
	Input 3	
	X Scan	
	Y scan	

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Duration: this specifies for how long you would like to capture the data. Maximum is 32000ms.

Force Trigger: this is the easiest way to start capturing signals. Simply select the channels you need to capture, set the duration, then click Force Trigger to start capturing data immediately.

Arm Trigger: this function can be used if you would like to use an event to trigger the start of data capturing. The following example illustrates how to configure HSDC to perform Arm Trigger.

Example: Capture X sensor and Y sensor during Engage process on ICON

1. Align the laser on a probe. Open a Contact Mode workspace. Enable or Disable XY closed loop, whichever is applicable.
2. Open the HSDC section (Capture -> High Speed Data Capture)
3. Turn ChannelA and ChannelB Data Type to Off
4. Set ChannelC and ChannelD to **X sensor** and **Y sensor**.
5. Set Event to '**Edge**'
6. Set Channel to '**X Sensor**'.
7. Set Level to '**0.1V**'
8. Set Slope to '**Positive**'
9. Set Delay to '**-1000ms**'
10. Set the Duration to **20000mS**
11. Click **Arm Trigger**
12. Engage or false engage
13. The system will collect data, let it collect data and then withdraw. There captured file will have a .hsrc extension.

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High Speed Data Capture

Channel Selection

Rate: 6.25 MHz

ChannelA Data Type: Off

ChannelB Data Type: Off

Rate 500 kHz

ChannelC Data Type: Xsensor

ChannelD Data Type: Ysensor

Trigger Controls

Arm Trigger

Force Trigger

☐ Auto Re-Arm
☐ Delay Upload

Event: Edge

Channel: Xsensor

Level: 0.100 V

Slope: Positive

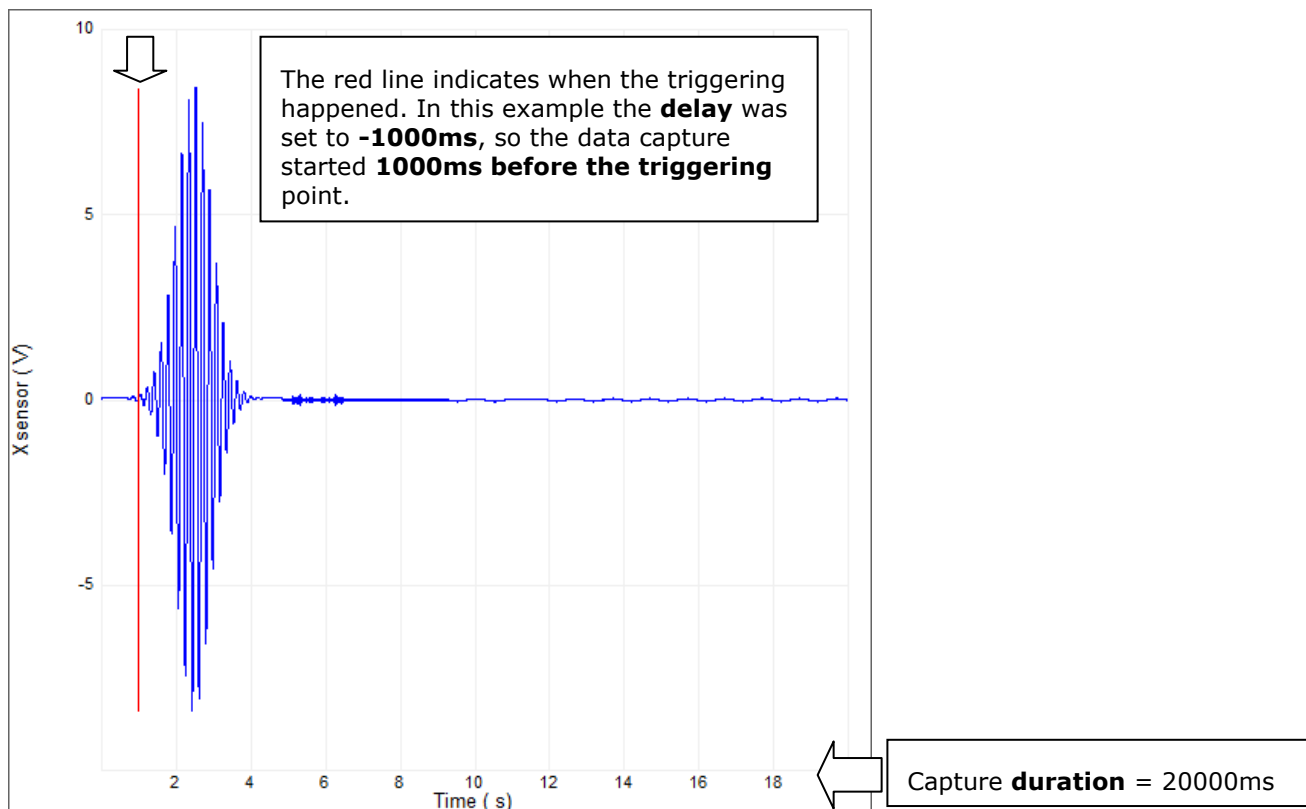
Delay: -1000 ms

Duration: 20000 ms

Status: Trigger Disarmed

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Here is what has been captured, on the x sensor channel:



Zooming in at the triggering point, and we will see the effects of other parameters.

