# x6000-04 S E R V I C E N O T E Supersedes:

Medalist x6000 Systems

Serial Numbers: N7280A = ALL

# Motion Scope Instructions for potential Camera Trigger Phase Lock Loop Problems

Parts Required: P/N

Description

Qty.

NONE

# ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION:				
INFORMATION ONLY				
AUTHOR: JPP	PRODUCT LINE: 80			
ADDITIONAL INFORMATION:				
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NONE

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During startup or board inspection some systems may exhibit a camera-trigger related error message such as "Fewer trigger signals were received by the camera than expected". Abnormal friction in the stage Y-axis can cause the motion control circuit to become unstable. This causes the Phase Lock Loop (PLL) circuit of the camera triggering control to "Jump" in and out of lock because the circuit cannot keep up with the instability. This "Jump" in the PLL circuit results in the received error message about camera triggering.

#### Solution/Action:

The following are instructions on how to set up the MEI software Motion Scope to display the PLL lock indicator and the Motion position data.

**Note:** Customers can perform the following procedure **only** under the supervision of Qualified Agilent Personnel. Improper use of the Motion Scope can damage the X-Y stage components.

- 1. Minimize or Exit out of the X6000 GUI software.
- 2. To start Motion Scope, navigate to the C:\Program files\Agilent\X6000\1.1\bin directory and double click on the **MS\_XMP\_NT.EXE** program. Note: MC\_XMP\_NT.EXE program is Motion Console, make sure that you do not launch the incorrect software.
- 3. Click on the "File" button and select NEW.

#### Figure 1

Motion Scope	
File View Help	

4. Select Device (MPI) radio button and Controller #0. Click OK.

# Figure 2

Pa	ane Mode 🛛 🔀	
	Data Source  Demo  Device (MPI)  Controller #: 0  Enert (MPI)  Controller #: 0  Port: 3300	
	Acquire Cycle Time (ms): 50 BedrawTime (ms): 200 Redraw on Done/Full Only	

5. Click on the Traces button in the Motion Scope toolbar to configure the traces (see figure #3)

Motion	Scope [Contro	oller 0, Recorder 0]							2	
■ Die 10	ew Bane Diace	Window Help			-					- # ×
	Masfiul)	ma) 10000 >Flange(ma)	10000 ×0	(hethet)	Display	Traces. To p	et Go	at line		
Trace: An 2	TC.Acoel +	Edil YScale 28515000	YOftet 0	A/5	Zormin Zorm	- and	Step In Step 0	lut		
P-	-					- 55				
	2									
	2		- 22				8			
										- 11
MILLSaut	0 10	00 2000	3000	4000	1000	8000	7000	uoco	8000	
(k,y) = (481	,21)									

6. Click on the New button

# Figure 4

Select Traces Set		
Select Traces From This List Ax 0 Cmd Pos Ax 0 Act Pos Ax 0 TC.Velocity Ax 0 TC.Velocity Ax 0 TC.Velocity Ax 0 TC.Accel FI 0 DAC Out MS 0 Status.AtT arget MS 0 Status.InCoarsePosition MS 0 Status.InCoarsePosition Ax 1 Cmd Pos Ax 1 Act Pos Ax 1 Act Pos Ax 1 Act Pos Ax 1 TC.Velocity Ax 1 TC.Velocity Ax 1 C.CAccel FI 1 DAC Out MS 1 Status.AtT arget MS 1 Status AtT arget MS 1 Status.AtT arget MS 1 Status AtT arget	Trace Set for Pane         New         Edit         Dejete         Trace Ordering         UserName         MapName         Address         Status Banding         Enable Banding         OK	Eroup highlighted Traces

7. Select SqNode I/O (see figure #5)

# Figure 5

Choose New Trace Type	×
Trace Type	
C Controller I/O	
C Motor I/O	
SqNode I/O	
C All Others (User-defined)	
Continue Cancel	

8. Select node 2

Create SqNode 10 Trace 🛛 🛛 🛛
Select SqNode: Update List
Create Cancel

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9. Click on Update List

# x6000-04

# Figure 7

Create SqNode 10 Trace 🛛 🛛 🔀
Select SqNode: 2
dgitaln_0 dgitaln_1 dgitaln_2 dgitaln_3 dgitaln_4 dgitaln_5 dgitaln_5 dgitaln_6 dgitaln_7 dgitaln_8 dgitaln_9 dgitaln_10 dgitaln_11 dgitaln_12 dgitaln_13 dgitaln_13 dgitaln_14 dgitaln_14 dgitaln_15 dgitaln_15 dgitaln_14 dgitaln_15 dgitaln_14 dgitaln_14 dgitaln_15 dgitaln_14 dgitaln_15 dgitaln_14 dgitaln_15 dgitaln_14 dgitaln_15 dgitaln_15 dgitaln_15 dgitaln_14 dgitaln_15 dgitaln_15 dgitaln_15 dgitaln_15 dgitaln_14 dgitaln_15 dgitaln_15 dgitaln_15 dgitaln_15 dgitaln_14 dgitaln_15 dgitaln_15 dgitaln_15 dgitaln_14 dgitaln_15 dgitaln_16 dgitaln_16 dgitaln_16 dgitaln_17 dgitaln_17 dgitaln_18 dgit
Creste

10. Select digitalIn 27 (PLL Lock) Click on Create.

Create SqNode IO Trace	
Select SqNode: 2	pdate List
digitalIn_27	
digitaln_17 digitaln_18 digitaln_29 digitaln_20 digitaln_21 digitaln_23 digitaln_23 digitaln_24 digitaln_24 digitaln_25 digitaln_26	
digital0.27 digital0.40 digital0.41 digital0.42 digital0.43 digital0.44 digital0.45	>
Create Cancel	

11. The digital input appears in the Select Trace for Pane box.

#### Figure 9

Calact Traces From This List	clare Set for Page	15	Group linkshilded Traces
Ax 0 Crind Pos Ax 0 Act Pos Ax 0 Act Pos Ax 0 TC Velocity Ax 0 Act Velocity Ax 0 TC Velocity Ax 0 TC Accol Fit DAC Out HS 0 Status At reget HS 0 Status At reget HS 0 Status Toore HS 0 Status Informet Position MS 0 Status Informet Position As 1 Ord Pos As 1 Crind Pos	dgrah_2?	ModiyTrace	
Ax 1 TC Velocity Ax 1 Act Vel Ax 1 TC Accel R1 DAC Out MS 1 Status AT aget MS 1 Status AT aget MS 1 Status AT aget	Status Banding	nding Astr (1	bbA

12. Add other traces as desired for position and velocity. If you want to see the torque command, that is called "DAC Out". For example, "Fl 2 DAC Out" means, "Filter 2 DAC Output", the torque command sent to the drive, full scale is 32767.

#### Figure 10

elect Traces From This List	Trace Set for Bans	Half Trees	Group highlighted Traces
Ax 0 Cried Pos Ax 0 Act Pos Ax 0 Pos Ein Ax 0 TC Velocity Ax 0 TC Velocity Ax 0 TC Accel Fit DAC Out MS 0 Status At aget MS 0 Status At aget MS 0 Status InCoaree Position MS 0 Status InCoaree Position MS 0 Status InCoaree Position Ax 1 Cried Pos Ax 1 Act Pos	Ax 8 Act Pos Ax 8 TC: Velocity Ax 2 TC: Velocity Ax 2 TC: Velocity R 2 DAC Out tigReln_27	Mody/race <u>New</u> Edk. Deline Trace Ordeing C UserNarie C <u>SepNarie</u> C Addjess	
Ax 1 Act Vel Ax 1 TC Accel F1 DAC Dut MS 1 Statuc All arget MS 1 Statuc All arget MS 1 Statuc All arget	Status Banding	nding Aşit 0	

13. Back at the main Motion Scope window, set the MaxBuffer and Xrange to 10000.

14. Click on the Trigger button on the Motion Scope toolbar and configure the trigger.

#### Figure 11

Motion Scope Controller D De Yew Bane Droce Win D 😂 🖬 🖶 MasBuljinst	r 0, Recorder 0) idow Beb 10000 XRange(ms) 10000	XDifaet(ms) 0 Displ	ay Trace. Tegget	o Tenni I the	- 4
ace: An 2 TC.Acoel 💌 Ed	9 YScale 28515000 YOffset	0 A/5 [	Zonn Die Fulbur Step	in Step Out	
-					
UlSent 0 1000	200 300	4000 4000	ACCOUNTS OF THE OWNER	7000 8000	8000

15. Select the following trigger conditions.

Trigger Conditions	
Pre Condition	
· Nona	
Stat Condition	
Go button	
C Motion Start	Ene-Acquire (ms)
C Interations	letter.
C User Condition	Setue:
End Condition	
🕫 Stop button	
C Buller Full	
C Motion Done	Post Acquire (ms)
C EgendLoot 1	lates:
C User Condition	Service -
Moton Stat/Done Trigge	r Souce
Motion Supervis	04
DK.	Cancel

- 16. Next you will need to go to the X6000 GUI service menu, Digital I/O and enable "X-ray Cameras Synthetic Trigger On Bar". This enables the triggering based on Y-axis stage position and not synthetic. X-ray Cameras Synthetic Trigger On... Forgetting to turn feature this ON will cause a flat signal in the traces plot.
- 17. Go to the Panel Positioner tab and select Long Scans profiles. Once selected click on the loop box and then the "Run All" button to start moving the stage.
- 18. Once the Scan starts, minimize the x6000 GUI and view the Motion Scope window. Click on the "GO" button. It should start displaying traces of the selected data.



19. Figure #13 is a typical trace on properly operating system while running AgilentLongScans from the service window. The White trace is PLL lock. As you can see, the PLL stays in LOCK the whole duration of the scan (Green Trace). If the system is "Jumping" out of PLL, you will see more than one transition during the scan.

#### Figure 14



The trace is flat because the triggers were not enabled.

#### Figure 15

Agilent	Medalist x6000	X
0	*********	
•••	If properly trained, perform the following procedure. ************************************	
	Exception on Image Reconstruction Processor # 5.	
	The X-ray camera received insufficient triggers.	
	ID: 11	
	IP Address: 192.168.128.11	
	Port: 8080	
	Number of triggers expected: 28499	
	Number of triggers received: 28497	
	For a more detailed troubleshooting procedure, open the help system and navigate to: Service Documentation > Troubleshooting > X-ray Carr (HW_XRAY_CAMERA_INSUFFICIENT_TRIGGERS_KEY)	iera.
	If problems persist, contact Agilent Technical Support by going to http://www.agilent.com/see/support and click on Contact Us.	

Sample insufficient triggers error. The triggers expected and received are not the same.

#### Figure 16



The PLL Lock is lost many times during the scan in Figure 16. The problem is at one end of the scale, see that the forward motion started without any problems but coming close to the end it started losing the lock, then in the reverse direction it started losing the lock and stopped the motion without any loss of the lock.

Note: If you use Panel Positioner scan motion in the service window to check the PLL lock operation, you **must** disable synthetic triggers in the Digital I/O tab.

Note: If you have problems with the PLL not staying locked then check the read head cleanliness, it is also possible that the lead screw may require re-alignment. If you do replace parts it is a good idea to mark with a color pen a line first on the original end-bearing, coupler, X or Y motor mount bracket position, etc., then disassemble everything before installing the new parts. If you have to take apart the Y stage end-bearing then you will require tool E7200-00070 to make your job easier (but it is not necessary to have this tool). The X axis does not require this tool for disassembly.