Hardware Triggered Scanning: Troubleshooting Solutions

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Scenario 1

Symptoms

Scan fails immediately with message:

Error from Malcolm Device Connection: Failed to connect to device 'BL47P-ML-SCAN-01' (ERROR: channel not connected)

Troubleshooting techniques

- Check the message from GDA – this indicates a problem with Malcolm
- Check the Malcolm web GUI is responding – http://localhost:8008/gui

Problem: Malcolm is not running

Solution

Restart the Malcolm process:

ioc-connect BL4xP-ML-MALC-01
Ctrl-X

Scenario 2

Symptoms

Scan running extremely slowly, possibly eventually failing with a TimeoutError

Troubleshooting techniques

- Check the motors are moving at the correct speed
- Check the frames are being written to disk (detector EDM screen)

Problem: File writing couldn't keep up with the frame rate

Solution

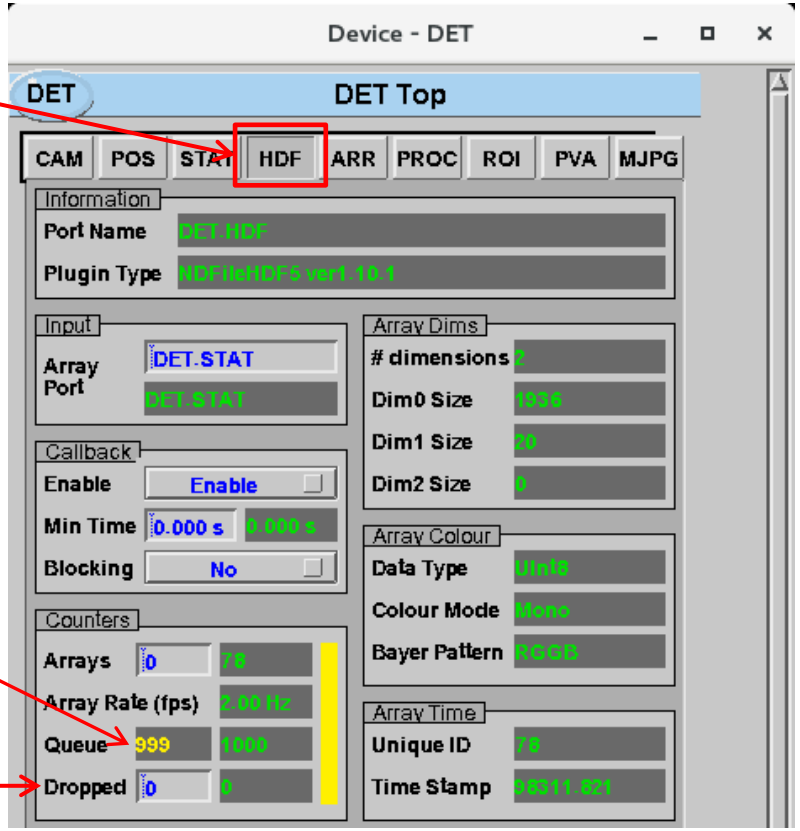
- Check the HDF chunking settings are valid
- If in doubt, set the column and row chunk sizes to 0 (defaults to frame size)

Scenario 2 Screenshot

Click on the HDF plugin tab

Check if input queue filling up

Check if any frames have been dropped



Scenario 3

Symptoms

Scan fails immediately with a message something like:

org.eclipse.scanning.api.malcolm.MalcolmDeviceException: Error from Malcolm Device Connection: NotWriteableError: Field ['BL49P-ML-SCAN-01', 'reset'] is not writeable, maybe because Block state = Aborting, cause:

Troubleshooting techniques

- Check the message from GDA – this indicates problem is downstream from Malcolm
- Check Malcolm GUI – shows PVs disconnected

Solution

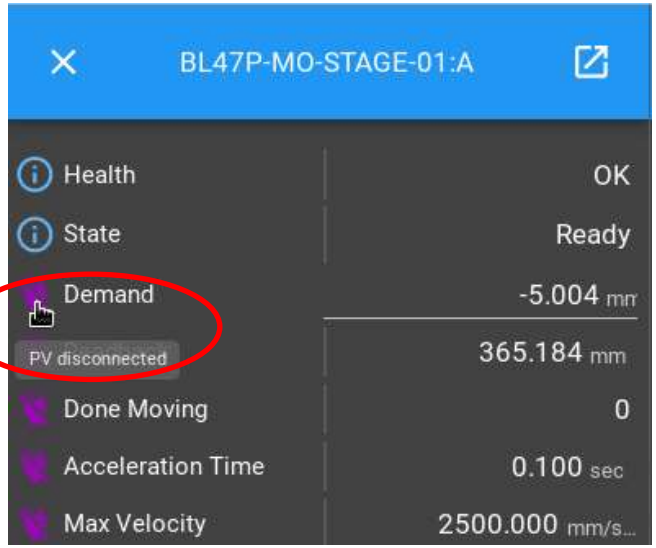
Reboot the EPICS IOC:

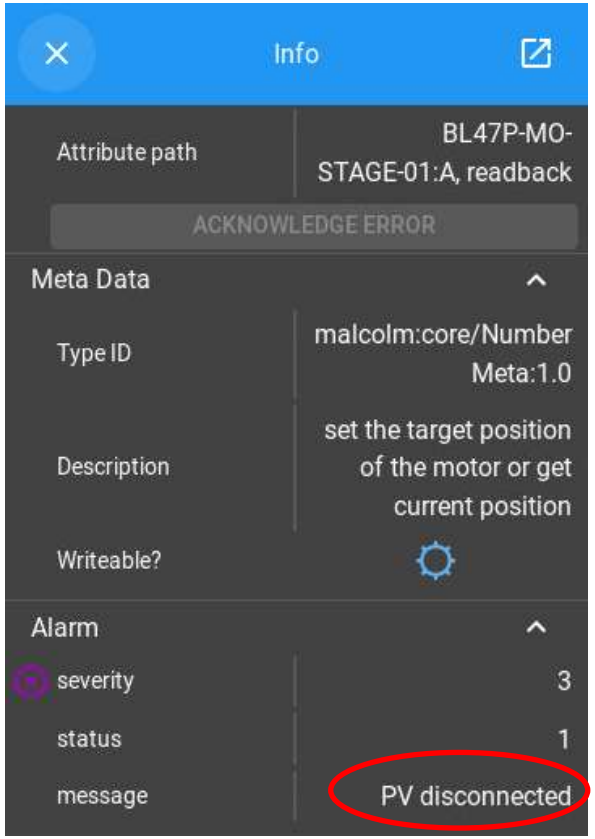
ioc-connect BL4xP-EA-IOC-01
Ctrl-X

Problem: EPICS IOC is not running

Scenario 3 Screenshots

Check the status of some EPICS devices in the Malcolm web gui





Scenario 4 (I)

Symptoms

Scan fails with error message:
org.eclipse.scanning.api.malcolm.MalcolmDeviceException: Error from Malcolm Device Connection: AssertionError: Velocity 499.750124938 invalid for 'stagea' with max_velocity 10.0, cause:

Troubleshooting techniques

- Check the motor record for stagea is setup correctly

Problem: VMAX is too small.

Solution

Set VMAX for stagea back to its original value (look in /tmp/ex4_values.txt)

From Training Rig edm screen: Motors -> Under A (right hand side) More -> Motion

Scenario 4 (II)

Symptoms

Scan is very slow and possibly times out

Troubleshooting techniques

- Notice that the stagea motor rotates and then everything stops -> something wrong with the stagex
- Check the VMAX motor record for stagex

Problem: VMAX too small but this time for stagex

Solution

Same as before. Correct value is in /tmp/ex4_values.txt.

Notice that the same underlying problem has different symptoms for each axis. Can you explain why?

Please run

> sh /tmp/ex4_restore.sh