

# FACET-II DAQ

## Troubleshooting common issues with DAQ

Issue	Solution/Workaround
Warning: EVR state of camera does not match default state. Camera will revert to default after DAQ.	This is not an error. DAQ should not fail if you see this warning.
Cannot determine EVR/Trigger state of camera. Aborting	Usually this error occurs when a DAQ fails and the trigger gets stuck on EC 214.  Solution: "Fix Cameras" button in GUI <b>OR</b> open the Triggers panels for the cameras you are using. Make sure that only one trigger is selected for each channel.
DAQ not saving scalar data (BSA and non-BSA) and getting F2_EventClass error	<del>This is caused by a bad PV in one of the lists</del>
DAQs returning no matches and UniqueId_RBV PV not updating + fiducial rate stuck and/or red	Reboot the server
DAQ (1D or 2D) fails and shows the following error:  Error using repelem Replication factors must be nonnegative integer-valued scalars or vectors.  <a href="http://physics-clog.slac.stanford.edu/facetolog/show.jsp?dir=/2024/24/15.06&amp;pos=2024-06-15T21:36:00">http://physics-clog.slac.stanford.edu/facetolog/show.jsp?dir=/2024/24/15.06&amp;pos=2024-06-15T21:36:00</a>	<del>This happens when a camera trigger is not set up correctly</del>  A workaround is to find a camera that is on the same trigger and add it to your DAQ  Ask Sharon for help if this isn't clear

## Bugs and Robustness

Add bugs here, newest entries on top:

Issue	Person	Priority	Status	Notes
DAQ should save an HDF5 file at the end of each step per camera	Sharon	High	DONE	Seems to be working, doing more testing  DAN updated
Load/clear config buttons don't work	Sharon	Low	DONE	
Warning: Unable to save App Designer app object. Save not supported for matlab.apps.AppBase objects. Warning: <a href="#">org.epics.ca.Context@42373389</a> is not serializable Warning: <a href="#">org.epics.ca.impl.ChannellImpl@3a027fd6</a> is not serializable	Sharon	Low	DONE	Seems to be harmless  I just suppressed the warnings
DAQ crashes and takes down the whole SIOC when total number of shots exceeds 2200 (no streaming, try with streaming on)				Reproduced this with PM03  Has to be more than 5 cameras
Background not being saved	Sharon	High	DONE	
Implement HDF5 file saving for images	Sharon	High	DONE	
Modify DAQ to write image data to "RAM disk"		High	N/A	

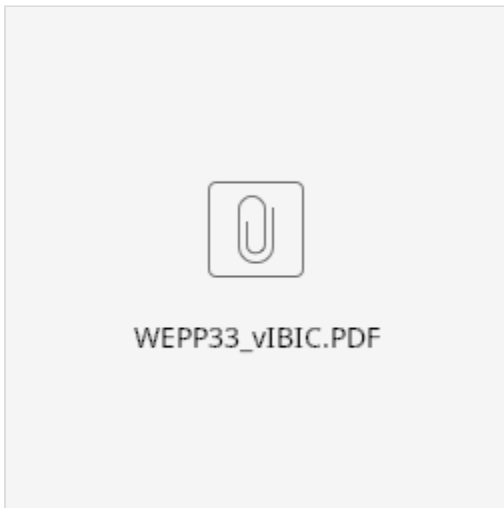
Calculate how much space on disk is required		High		
Install 10G switch and NAS in S10	Arjun, Charley	High	<b>DONE</b>	
Check what happens if new DAQ is started before old one is finished (failed abort)		High		
Fix binning and ROI for CMOS cameras		Medium		
Can't get magnet values on first DAQ?		Medium		
Check that the beam rate is not equal zero if rate set to "BEAM"	Spencer	Medium		
Fix "Use_PV" functionality.	Sharon	Medium	<b>DONE</b>	
Fix camera triggers if DAQ fails.	Sharon	High	<b>DONE</b>	
"Fix cameras" button disabled if DAQ hasnt run yet	Sharon	Medium	<b>DONE</b>	
"Fix cameras" button should use default values? - yes	Sharon	Medium	<b>DONE</b>	
Timestamping fails on certain ROI settings?	Spencer	High	<b>DONE</b>	
Upgrade all machines in S20 to 10G connection	Spencer	Medium	<b>DONE</b>	
Camera binning messes up pulse ID finding	Spencer	Medium	<b>DONE</b>	

## Feature requests

Issue	Person	Priority	Status
Adding UV Vis Spectrometer	Sharon	High	<b>DONE</b>
Add no-camera DAQ	Zack	Medium	
Add SCP Buff Acq	Zack	Medium	
Support 5-10 cameras (E320 request)			
(Maybe) a feature where if a camera goes down, the rest of the DAQ continues without it			
Follow up to the request above:  Print a "match matrix" at the end that shows matches between cameras instead of just total matches across all cameras (useful if one camera goes down but the rest of the cameras have good matches)			
Add check/remove bad PVs and notify user in an obvious way	Sharon		
Add nonBSA arrays so we can get UV spectrometer (Claudio request)	Sharon	High	<b>DONE</b>
DAQ Monitor GUI	Sharon	High	<b>DONE</b>
Find a way to globally trigger a modifier bit (e.g. "DUMP_2_9").	David		
Scan function that pauses until you click 'ok'			
Generate "camera config" file including trigger info and add a save/restore button. Monitor if this finished ok or not.	Sharon		
Load/Save Config files. Default config files.	Claire		
Robustness issues. . .	Spencer	High	In progress
DAN features	Sharon		
Documentation/commenting	Spencer	High	In progress
Fix "Use_PV" functionality.	Sharon	Medium	<b>DONE</b>

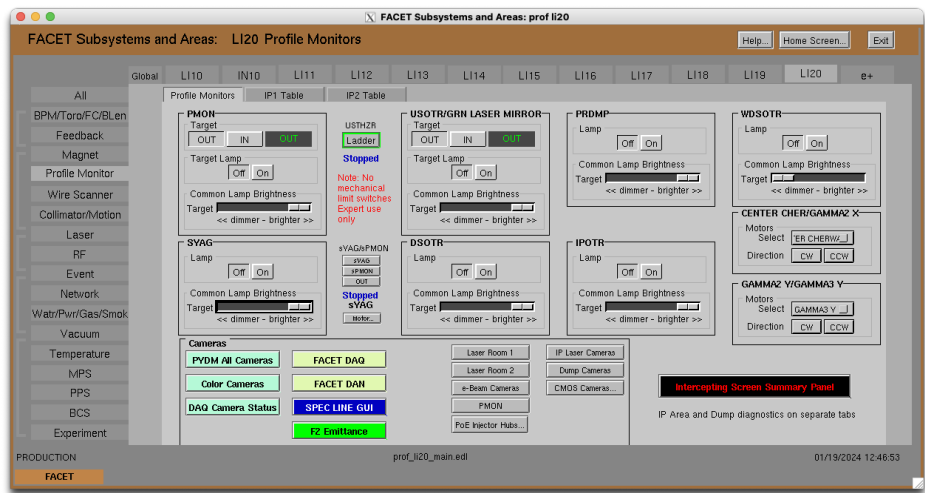
## Documentation

For now, the main references on the DAQ are these attached PDFs from IBIC 2021.



GUI Interface

Main screen Profile Monitor LI20 FACET DAQ (green button)



Wait for a bit after pressing the FACET DAQ button.

**FACET-II DAQ (on facet-srv20)**

**DAQ Settings**

Experiment **E300** Comment ...

Event Code

☒ 223 Beam 10 Hz  
☐ 53 TS5 10 Hz

Shots per step **20** ☒ Print to eLog?

☒ Save background Load Preset

Background shots **1** Clear Preset

**Camera Config**

- ▶ S10 Inj
- ▶ S10 Laser
- ▶ S11 Linac
- ▶ S14 Linac
- ▶ S15 Linac
- ▶ S20 Chicane
- ▶ S20 Exp
- ▶ S20 Laser
- ▶ S20 sCMOS

Add Remove

**PV Lists**

**BSA Data**

BSA\_List\_S10  
BSA\_List\_S11  
BSA\_List\_S14  
BSA\_List\_S20

Add Remove Display

☐ Include SCP Display

**non-BSA Data**

nonBSA\_List\_LaserS10  
nonBSA\_List\_LaserS20  
nonBSA\_List\_S10  
nonBSA\_List\_S11

Add Remove Display

☐ Include non-BSA Arrays

**Run**

Run Abort

Loaded 63 cameras.  
Loaded 4 BSA Lists.  
Loaded 4 non-BSA Lists.  
Loaded 5 Scan functions.

**Scan**

Scan Type  
**Single Step**

**First Dimension**

Scan function  
**Dummy\_Scan**

PV

Tolerance

Start

Stop

Steps

Scan Values

**Second Dimension**

Scan function  
**Dummy\_Scan**

PV

Tolerance

Start

Stop

Steps

Scan Values

## DAQ Camera Status GUI

Main screen Profile Monitor LI20 DAQ Camera Status

**FACET Subsystems and Areas: prof li20**

**FACET Subsystems and Areas: LI20 Profile Monitors** Help... Home Screen... Exit

Global LI10 IN10 LI11 LI12 LI13 LI14 LI15 LI16 LI17 LI18 LI19 LI20 e+

Profile Monitors IP1 Table IP2 Table

**PMON**

Target  **OUT** **IN** **OUT**

Target Lamp  **Off** **On**

Common Lamp Brightness

Target  << dimmer - brighter >>

**SYAG**

Lamp  **Off** **On**

Common Lamp Brightness

Target  << dimmer - brighter >>

**Cameras**

**PYDM All Cameras** **FACET DAQ**

**Color Cameras** **FACET DAN**

**DAQ Camera Status** **SPEC LINE GUI**

**F2 Emittance**

**USTHR**

Ladder **Stopped**

Note: No mechanical limit switches Expert use only

**USOTR/GRN LASER MIRROR**

Target  **OUT** **IN** **OUT**

Target Lamp  **Off** **On**

Common Lamp Brightness

Target  << dimmer - brighter >>

**DSOTR**

Lamp  **Off** **On**

Common Lamp Brightness

Target  << dimmer - brighter >>

**PRDMP**

Lamp  **Off** **On**

Common Lamp Brightness

Target  << dimmer - brighter >>

**IPOTR**

Lamp  **Off** **On**

Common Lamp Brightness

Target  << dimmer - brighter >>

**WDSOTR**

Lamp  **Off** **On**

Common Lamp Brightness

Target  << dimmer - brighter >>

**CENTER CHER/GAMMA2 X**

Motors Select **ER CHERW J**

Direction **CW** **CCW**

**GAMMA2 Y/GAMMA3 Y**

Motors Select **GAMMA3 Y J**

Direction **CW** **CCW**

**Intercepting Screen Summary Panel**

IP Area and Dump diagnostics on separate tabs

PRODUCTION **FACET** prof\_li20\_main.edi 01/19/2024 12:46:53

Indicator lamps light up when a camera is being used by the DAQ, and the "Shots Recorded" field updates as the DAQ runs

