

## Task List of FCAL2 installation

March 22, 2023 - May 15, 2024

Tentative plan, Sasha & Arshak

This document contains major milestones of the FCAL2 detector installation



DSG  
FE

Will be handled by the JEF and Hall D physics  
Detector support Group  
Fast Electronics group (Chris C., Fernando B.)

### STEP 1 : Disassemble FCAL

Task	Start	End	Duration	Group	Comments
Remove TOF, prepare FCAL upstream platform	3/22/2023			Tim's group	
Label bad lead glass (LG) modules and disconnect detector cables, bundle cables, etc.	3/29/2023	4/28/2023	4 weeks	Mark, Malte, Chris S	
Prepare to remove FCAL LG modules (remove cable bundles, trays, remove dark room, place LG cables on support stands, etc.)	5/1/2023	5/21/2023	3 weeks	Tim's group	
Remove FCAL modules	5/22/2023	6/26/2023	4 min per module 5 weeks	YerPhi, Sasha, Arshak, Igal, students, Mark, Malte	HDList (Tim, Sasha, Arshak, Mark, Malte)

## STEP 2: Prepare for detector installation

Remove/modify liftable frame, assemble new FCAL frame, install cooling blocks, etc	6/26/2023	7/25/2023	4 weeks	Tim's group	
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## STEP 3: Detector Installation

Install LG and PbWO modules (install dividers on stacked PbWO modules)	7/26/2023	10/18/2023	7 min per module 12 weeks	YerPhI, Sasha, Arshak, students	HDList, Tim, Sasha, Arshak, req. "crane support "
Prepare and install dark room cable trays, etc (ready for cabling)	10/18/2023	11/8/2023	3 weeks	Tim's group	
Install LMS	11/10/2023	11/25/2023	2 weeks	Arshak, Sasha, Tim's group	

## STEP 4: Install Racks and Crates

Install 4 racks	10/18/2023	10/25/2023	1 week	Tim's group	
Install VXS crates, HV crates, LV crate (and electronics module)	10/26/2023	11/8/2023	2 weeks	Chris S., FE group, Sasha, Arshak	
Install optical links	10/26/2023	11/8/2023	1 week	FE group	
Install trigger modules (in trigger crates)	10/26/2023	11/26/2023	4 weeks	FE group, Sasha, Arshak	
Install Ethernet switch (if needed)	10/27/2023	11/3/2023	1 week	Sergey (IT division)	

### STEP 5: Install Cables

Install LG cables	11/9/2023	12/22/2023	1.5 months	Chris S., Mark, Malte	
Install PbWO cables (HV, LV, signal) connect to dividers	11/9/2023	2/14/2024	18 min per module 3 months	FE group, Chris S. Sasha, Arshak	

### STEP 6: Final test of the FCAL 2

Integrate FCAL2 inser into the GlueX slow control (HV, scalers, environment, etc)		2/15/2024		Hovanes	
Integrate FCAL2 insert into trigger and DAQ	2/15/2024	5/1/2024	10 weeks	Sasha, Arshak	
Test the FCAL2 detector	2/15/2024	5/15/2024	12 weeks	Sasha, Arshak, Mark, Malte	

Work performed in parallel with the detector installation

### Refurbish FCAL lead glass modules

Visually inspect uninstalled LG modules	5/22/2023	7/30/2023	5 weeks	DSG group, Sasha, Arshak, Mark, Malte, Igal, students	HDList (Sasha, Arshak, Mark, Malte)
Repair LG modules (if needed)	5/22/2023	9/29/2023	19 weeks	DSG group, Sasha, Arshak, Mark, Malte, Igal, students	
Replace LG PMTs	5/22/2023	9/29/2023	19 weeks	Mark, Malte, Chris S.	
Replace / fix PMT dividers	5/22/2023	9/29/2023	19 weeks	Mark, Malte, Chris S.	

### Prepare PbWO detector for installation (1596 modules)

Prepare cables (install connectors, etc)	5/1/2023	7/3/2023	10 weeks	Chris S., FE group, DSG group	HDLList (Tim, Sasha, Arshak)
Label cables	5/15/2023	8/18/2023	14 weeks	DSG group, Chris S., Sasha, Arshak, students	
Connect signal cables (inside dark box) to patch panel	6/15/2023	8/15/2023	10 weeks	Sasha, Arshak, Chris S., students	
Prepare cables for installation (bundle, ring)	5/15/2023	8/15/2023	14 weeks	Sasha, Arshak, Chris S., students	
Check dividers	5/15/2023	7/26/2023	10 weeks	Sasha, Arshak, DSG, Chris S., students	
Move modules to the hall, fix module assemblies (if needed)	5/15/2023	8/18/2023	14 weeks	Sasha, Arshak, students	
Check modules with LED	5/15/2023	8/18/2023	14 weeks	Sasha, Arshak, Igal, Chris S., DSG, students	

### LMS system

Finalize design of the LMS for the PbWO insert		3/1/2023		Arshak, Sasha, Tim's group	HDLList (Tim, Arshak, Sasha)
Prepare all parts	3/2/2023	6/1/2023	12 weeks	Arshak, Sasha, Tim's group	
Test LMS in the lab	5/2/2023	6/2/2023	4 weeks	Arshak, Sasha, students	
Refurbish LMS for the FCAL LG region	5/22/2023	9/1/2023	14 weeks	Arshal, Sasha, Tim's group	