

Table of Contents

Introduction.....	1
System description.....	2
Cabling of calibration distribution board and FEBs.....	2
Mapping of FEB channels and trigger towers.....	2
Backplane.....	2
Calibration.....	2
Power.....	2
Configuration.....	3
Firmware.....	4
Description.....	4
Latest Version.....	4
.SVN.....	4
Online software.....	5
Caution :.....	5
Turning the FE crate ON.....	5
Step by step instruction.....	5
Operations will be performed form the lar-xx-xx-xx machine on the EMF premisses.....	5
Specific instructions for taking RAMP:.....	6
Specific instructions for taking PEDESTAL:.....	6
Specific instructions for cross talk measurements:.....	6
Setting FEB delays.....	6
Making files available to the /shared directory in P1.....	6
Looking at the data while still in P1.....	7
Copying files to EOS.....	7
The EMF computers names and what they are:.....	7
The EMF computers names and what they are:.....	7
The EMF computers names and what they are:.....	7
Offline software.....	8
Creating the.....	8
EOS data file.....	8
SVN.....	8
.....	9

Introduction

This page describes the demonstrator test stand

System description

- **Cabling of calibration distribution board and FEBs**

The boards are cabled in a way that by pulsing one line of the calibration distribution board, one pulses one line in each FEB. By pulsing i.e. channel 0, channel 0 of all FEBs will be pulsed.

- **Mapping of FEB channels and trigger towers**

One trigger tower consists of 60 calorimeter cells; 4 in the presampler, 32 in the front layer, 16 in the middle layer and 8 in the back layer.

- **Backplane**

- **Calibration**

- **Power**

Configuration

Firmware

- Description
- Latest Version
- SVN

Online software

(Instructions from Yuji Enari, as from 21/03/2014)

The EMF uses the TDAQ panel GUI for configuring and taking data. The system will use therefore a specific partition [partition name] separated from the LAr usual partition.

As of now, people should not use the "daily" or "weekly" calibration settings as this is not completely setup for the particularities of EMF.

- **Caution :**

- ◆ Make sure you configure the crate as soon as possible when powering it on (the power supplies must not run without load)
- ◆ Do not change anything on FE crate. Ask Stefan Simion if you need or are in doubt about anything

- **Turning the FE crate ON**

- ◆ Make sure the pressure and temperature of the water cooling system is within the range. This can be checked on the wall, in a panel just above the crate (see picture below)
 - ◇ [pressure range]
 - ◇ [temperature range]

- **Step by step instruction**

- ◆ **Operations will be performed from the *lar-xx-xx-xx* machine on the EMF premises**

- 1. Login with your P1 account (if you are not authorized, request access as per instructions in [xxxx.cern.ch](#))
 2. Open a new terminal (little door icon on the bottom menu)
 3. From this, create 3 more new xterms
 4. Start the TDAQ GUI :
 1. `source /det/lar/project/scripts/sod-401-29-01.sh`
 2. `cd /det/lar/project/testarea/401.29.01/EMF/v2r2/cmt`
 3. `source setup.sh -tag_add=LTDB`
 4. `daq`
 5. If not already on, power the FE crate ON as per instructions in [xxxxxx](#)
 6. Configure the FE crate with TDAQ GUI
 1. Load panel: MasterPanel
 2. BOOT
 3. INITIALIZE
 4. Go to calibration manager and choose the type of run (Pedestal, Ramp, Delay) following the instructions below
 5. SAVE
 6. LOAD
 7. CONFIG
 7. Check Record Status

8. Start taking data, once it stops, you need to
 1. UNCONFIG
 2. TERMINATE
 3. SHUTDOWN

• Specific instructions for taking RAMP:

- ◆ go to the directory
/det/lar/project/testarea/401.29.01/EMF/v2r2/database/lar/ltdb/lar/config/Calibration/Ramp
- ◆ edit the file Global.dat for the number of events :
◇ xxxx example of Global.dat file
- ◆ (if in High gain) go to the directory emf/HighRamp/
- ◆ edit parameters.dat for changing the DAC, delay and pulsing pattern
◇ xxx example of parameters.dat for calibration
- ◆

• Specific instructions for taking PEDESTAL:

- ◆ go to the directory
/det/lar/projects/testarea/401.29.01/EMF/v2r2/database/lar/ltdb/config/Calibration/Pedestal
- ◆ edit the file global.dat for the number of events *

• Specific instructions for cross talk measurements:

- ◆ this command has to be issued before BOOT in each run!
- ◆ go to the directory /det/lar/project/yenari/modify_config
- ◆ run the script SetTriggerTowerConfig.sh:
◇ ./SetTriggerTowerConfig.sh x y
- ◆ x is the parameter for the number of samples, y is the configuration number listed in ConfigPatternList.txt
- ◆ configuration 0 is for taking a pedestal run. All switches will be enabled *

• Setting FEB delays

Finedly1 controls the phase of the sampling clock, one unit is 25 ns / 240. It should be set to 0 for all FEBs except for the M2 FEB (FEB_EMF1_00_12), where it should be set to 30. One can set Finedly1 in the TDAQ GUI in the parameter files for the FEBs or as follows:

- ◆ issue BOOT, INITIALIZE and CONFIG in the TDAQ GUI
- ◆ login into sbc-emf-rcc-01
- ◆ execute set_TTCrx:
◇ /atlas-home/0/simions/.FEB_Jun2005/feb2001/set_TTCrx -S [SPAC address] -d [Finedly1]
◇ the SPAC addresses are in
/atlas-home/0/simions/.FEB_Jun2005/feb2001/SPAC_addr.txt
- ◆ in order to check the Finedly1, you can execute read_TTCrx_status:
◇ /atlas-home/0/simions/.FEB_Jun2005/feb2001/read_TTCrx_status -S [SPAC address] -a

• Making files available to the /shared directory in P1

- ◆ login into **pc-emf-eb-01**
- ◆ cd /shared/data/EMF
- ◆ run the script with the appropriate comment relative to the run number : * ./store_data.sh "your comments"

- ◆ this will copy both the run data and the parameters data above for further analysis
- ◆ make sure to save the data to the /shared directory before changing the parameter.dat and global.dat file, because the script will store the current files to the directory

• Looking at the data while still in P1

- ◆ login into **pc-emf-eb-01**
- ◆ source /det/lar/projects/scripts/sod-401-29-01.sh
- ◆ data is stored in /tmp/data until the pc is rebooted
- ◆ run dumpecode * make clean * make dumpeformatroot * ./dumpeformatroot -f "name of raw data file" -g "name of output file"
- ◆ root -l -q -b pl.c to create a PostScript file (t.ps) with the histograms

• Copying files to EOS

- ◆ An EOS area was set on ATLAS to store the EMF data: /eos/xxxxxxx
- ◆ login into lxplus
- ◆ to use EOS as a regular file system do the following :
 - ◇ mkdir \$(HOME)/eos
 - ◇ eosmount \$(HOME)/eos
- ◆ use scp (or sftp) :
 - ◇ data file: scp atlasgw.cern.ch:/shared/xxxxx /eos/xxxxxxx
 - ◇ parameters files: scp atlasgw.cern.ch:/shared/xxxxx /eos/xxxxxxx

• The EMF computers names and what they are:

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- pc-emf-eb-01:
- sbc-emf-vp417-01:

Offline software

Once the files are available on lxplus, you can create a D3PD containing the LAr digits information. Refer to the D3PDMaker and LAr D3PD if you want more details. Several files should be already processed and are stored in /eos/EMF/D3PD

• Creating the

- ◆ Since the setup has a non-usual part of hardware (the FADC that reads the Trigger Tower Builder), it was necessary to "fake" a FEB for this hardware. A new ByteStream converter was prepared by Denis Damazio to read this data:
- ◆ Instruction for installing Dennis' stuff
 1. copy the file ~damazio/public/Flash.sh to the directory where you checked out the LArCalorimeter package.
 2. yyy
 3. zzzz
- ◆ Edit the job option file (xxx.py) to reflect the file(s) you want to process.
- ◆ setup and run athena (if not set up already) from the directory where the LArByteStream decoder was checked out:
 - ◇ asetup 18.1.0, here,setup
 - ◇ athena xxx.py
- ◆ This will produce a D3PD (root file) in the directory specified in the job option file
- ◆ D3PD structure and what it means:

• EOS data file

• SVN

-- MarcoALeite - 17 Mar 2014

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