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RICH testbeam with miniDAQ2

How to configure the PDMDB

Configure the master link GBTx

The bootstrapping of the master link GBTx is done via an external I2C master. This function is served by the trigger board via cables connected from the Tengja board to the PDMDB. %The trigger board connections can be found in the JRichTBTrigger topic.

Configuration of the PDMDB

Once the master link is configured, the control functions for the elementary cells should be usable immediately. After power-up the SCA should be initialised before any other control function is used. There is an `Initialise` button on the RICH panel to do this. It activates all the required SCA interfaces (I2C, GPIO, JTAG, ADC, DAC). At this point it is possible to configure the CLAROs by clicking the appropriate button on the panel. In general, when clicking buttons in the panel, check that the action has completed successfully (output in window on panel) before proceeding with the next operation.

The next step should be to configure the DTM modules. The DTMs are in pairs - DTM0 must always be configured before DTM1. You can configure all of the using the button: `Configure all GBTx`.

The firmware of the FPGAs can now be uploaded. There is a button

Now the PDM is ready to receive TFC commands and to send data.

How to take a run with an external trigger using miniDAQ1 + miniDAQ2

In order to take a run using an external trigger (laser, beam, ...), it is necessary to use a hybrid system composed of a MiniDAQ1 and a MiniDAQ2. The MiniDAQ1 is able to receive the trigger from the outside world, it will propagate the TFC signal to the MiniDAQ2 system which is able to acquire the data. The connection between MiniDAQ1 and MiniDAQ2 system is done through the fibre 6 in the bunch of fibre (1A) exiting from MiniDAQ1 which is connected to fibre 6 of the bunch of fibres which goes in the first outlet from the left (looking from the back) of the MiniDAQ2.

From the MiniDAQ2 Expert panel on the PDMDB panel, click on the button `Restart control managers`
From the MiniDAQ2 FSM top panel send a `RESET` command

Navigate down through the FSM tree in `TFC, SOL40_test` (it refers to MiniDAQ1), `Link0`. In the Subdetector type text field, type `EXT_TFC`. Press return. The exclude the `SOL40_test` partition (clicking on the lock).
Navigate down through the FSM tree in `TFC, SODIN_test` (it refers to MiniDAQ1), `Core0`. Tick `TAE`, `External trigger` and `Limit trigger`. Click on `Apply Enable`. Include in the tree `SODIN_test2` (it refers to MiniDAQ2) partition. From the top of the FSM send a `Configure` command. Exclude (clicking on the lock) the `SODIN_test2` (it refers to MiniDAQ2) partition. Navigate down in the `SODIN_test2` partition, `SODIN, Core0`. Tick `External TFC`. Click on `Apply Enable`.

Now you will have only the `SODIN_test` and the `SOL40_test2` partitions included in the tree.

In case of problems (e.g. the `SOL40_test` and/or the `SODIN_test` partitions are greyed out or they are DEAD) proceed as following:

- Do a `Stop_All` from the MiniDAQ2 Device Editor and Navigator (FSM tab) from the `lbminidaq2-06` VNC connection;

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- Move to the pclbrich02 VNC connection (MiniDAQ1) and check if the Gbt server is running (on workspace 1 there should be a connection to the ccpc1); probably it will be stuck, so the ccpc1 must be rebooted;
- Reload the firmware on the MiniDAQ1, open a connection to the ccpc1 using `ssh root@ccpc1`;
- type `hostname`. If the resulting hostname is CCPC1 in capital letters, type `hostname ccpc1`. Send the `ecsdrv` command (Bar0 and Bar2 must give successful messages, if not reboot the ccpc). Restart the GBT server
- type "echo \$DIM_HOST_NODE" if the output is not "ccpc1" you have to type: `export DIM_HOST_NODE=ccpc1`
- move to pclbrich02 workspace 6, open the MiniDAQ Expert panel and check the `GBT server connection` and `Configure subscriptions` are green (if not something went wrong in the procedure and the steps before must be repeated)
- send a Stop_All from the MiniDAQ1 Device Editor and Navigator panel (FSM tab)
- Right click on Sol40_test partition and click on Start/Restart node. Do the same for the Sodin_test partition
- Move to the lbminidaq2-06 VNC connection and send a Start/Restart all from the Device Editor and Navigator FSM tab
- Now the commands sent through the MiniDAQ2 FSM top node should propagate correctly to the MiniDAQ1 TFC/Sol40_test and TFC/Sodin_test partitions

-- RobertaCardinale - 2017-10-01

This topic: LHCb > RichTestBeamMiniDaq2

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