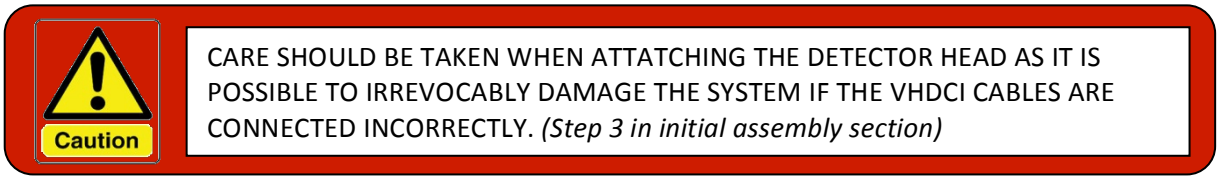
Merlin Quick Start Guide

This guide is intended as a quick reference to safely assemble the Merlin system and take initial images with it.



Hardware Components

The system as delivered will comprise the following components:

- A National Instruments PXIe chassis(1) with an integral controller PC(3), FLEXRio FPGA(4) card and low voltage supply card(5).
- A Merlin adapter card to be mounted in the FLEXRio port on the FPGA card(6).
- A Merlin Quad detector head.
- Two 5m VHDCI cables, one marked with yellow bands.
- A 5cm Lemo 2 pole power cable.
- A geographically appropriate mains power cable.

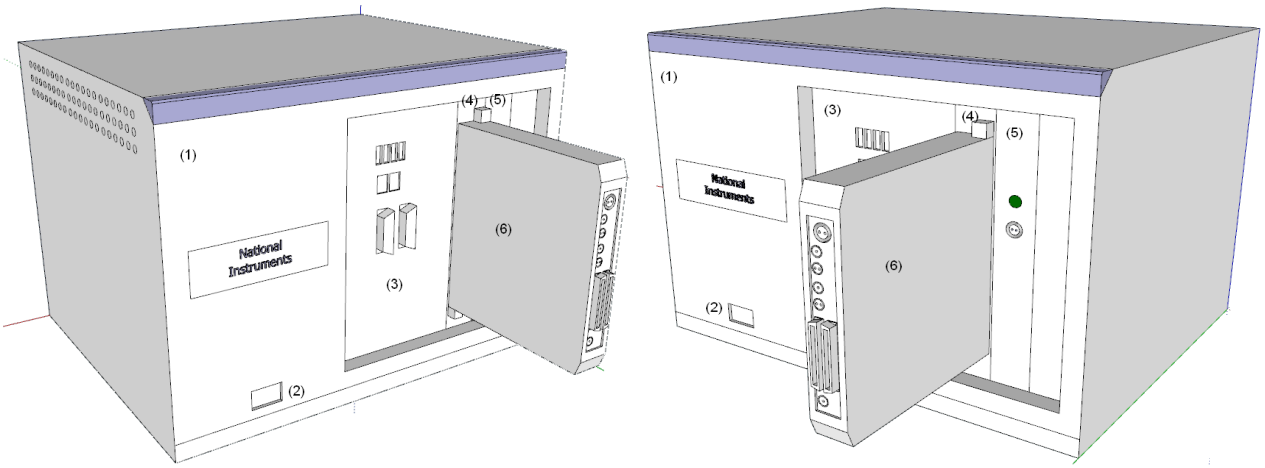


Figure 1 - The Merlin Readout Chassis

Initial Assembly

1) The Merlin Adapter Card should be mounted in the 7962 FLEXRio FPGA card slot and the appropriate fixing screws tightened to ensure a firm seating. The system should now resemble the diagram in Figure 1.

2) Using the small power jumper cable connect the Merlin Adapter Card to the power card that is preinstalled in the chassis, numbered (5) in Figure 1. Connect to the only socket on the power card and the topmost socket on the front of the adapter card, numbered (1) in Figure 2.

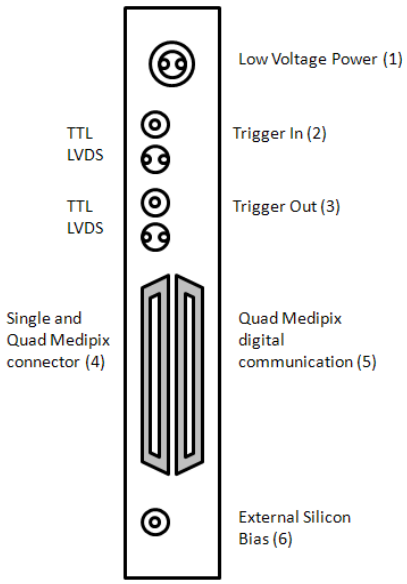


Figure 2 – Merlin Adapter Card Front Panel
As viewed from the front.

3) Connect the Merlin Quad Detector head to the Merlin Adapter Card using the two VHDCI cables supplied. The correct ports have been marked with yellow stickers and one of the cables has been marked to ensure the correct orientation is made. Be aware if the cables are connected the wrong way round the detector head will be irrevocably damaged. As the stickers indicate the connector on the adapter card marked in the Figure 2 as (4) should connect to the uppermost connector on the detector head when the sensor window is facing upwards. Ensure that the VHDCI cables are well seated and that the locking screws are finger tight at both ends of both cables.

4) Connect the Chassis to the mains and to a monitor, mouse and keyboard.

The system is now ready to be powered on.

Starting the System

1) Press the Chassis on to provide power and boot the internal PC.

2) Allow the PC to boot into the Windows7 operating system. It should now auto logon. If a password is requested it is 'merlin'.

3) Start the Merlin software from the desktop shortcut or the quick-launch bar.

NOTE: Power will only be applied to the detector head once the software has started, and when the software is stopped cleanly the power will be disabled. The detector head can be detached and reattached as long as the Merlin software is not running for this reason.

4) The Merlin Software will take several seconds to load the FPGA firmware and will then become operational. A green flashing indicator in the top right hand corner of the main screen indicates the system is running normally, this is referred to as the heartbeat and is a monitor for the PC to FPGA communication. An additional check that the system is running correctly is that all four detector chip Ids have been correctly read on the bottom left of the advanced tab. This indicates that the system has communication with the detector head.

5) The system is now ready to take an image, it will have preloaded default calibration and modes and pressing the Start Acquisition button on the bottom Right of the main screen will take an image that will be immediately displayed on the Image tab.

For more advanced operaiton see the Main Merlin User Manual.

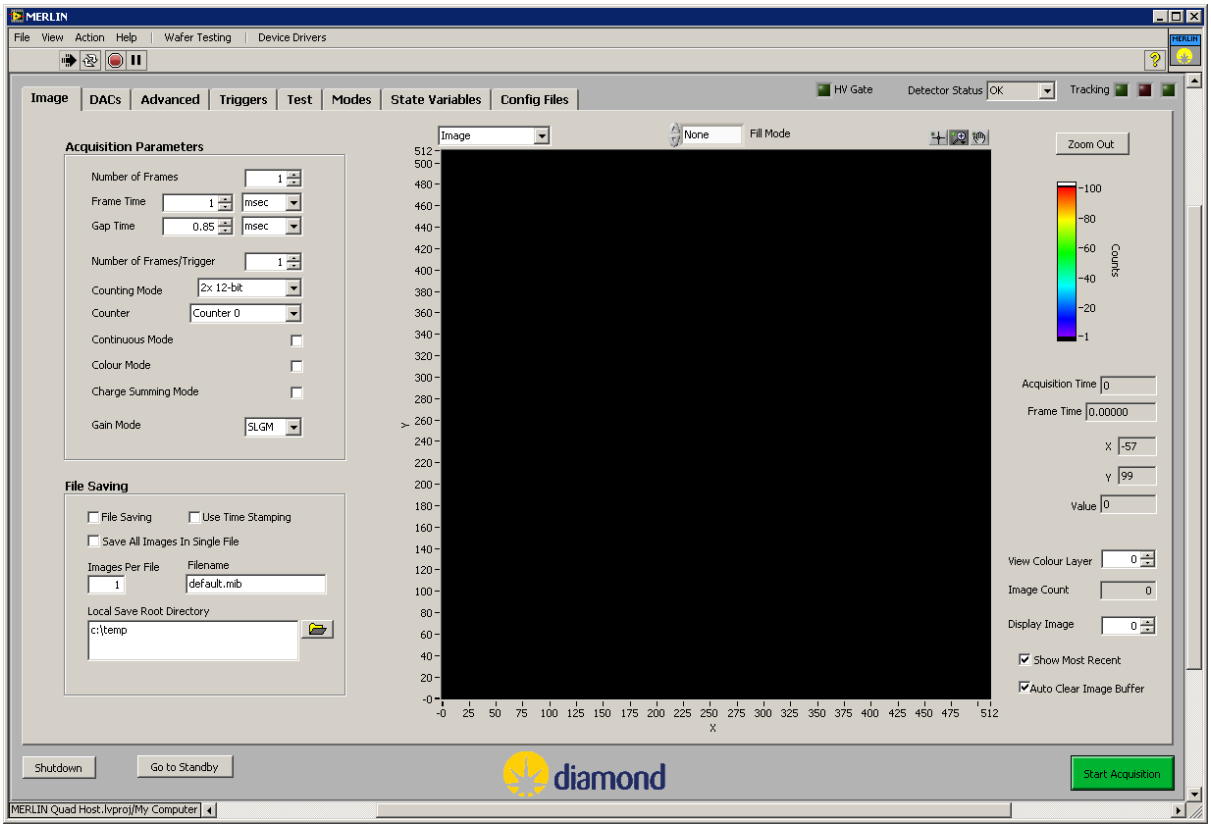


Figure 3 – A screenshot of the Merlin Software Main Image Tab