DECTRIS®

detecting the future

Quick Start Guide

MYTHEN Detector System

Version: V3

Quick Start Guide. MYTHEN Detector System. Version: V3

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1. Document History

1.1. Current document

Version	Date	status	prepared	checked	released
3	11.11.2015	released	DJ	**AM**	**AM**

1.2. Changes

Version	Date	Changes
1.0	18.03.2009	First public version
1.1	30.04.2009	MYTHEN Software Update
1.2	08.05.2009	MYTHEN GUI Improvements
1.3	14.08.2009	New GUI functions: trigger/gate; dynamic range
1.4	07.04.2010	GUI redesign, 6K compatibility, dead-time correction
1.5	05.03.2012	Document extension to entire MYTHEN product family
1.6	28.08.2012	Separate paragraph about VMWare image
2.0	19.10.2012	MYTHEN Web Client
2.1	11.06.2013	Adapted CD
3	11.11.2015	Updated to new postal address and phone number

2. How to use this documentation

Before you start to operate the MYTHEN detector system please read the User Manual and the Technical Documentation included in the documentation package carefully.

This document has been designed for the MYTHEN detector systems.

2.1. Address and Support

DECTRIS Ltd.
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Switzerland
Phone: +41 56 500 21 02
Fax: + 41 56 500 21 01

Website:

- www.dectris.com → support → Technical Notes → MYTHEN

- www.dectris.com → support → FAQ

- www.dectris.com → support → Problem Report
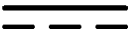
Email:

- support@dectris.com

Should you have questions concerning the system or its use, please contact us via phone, mail or fax.

⚠️   **Do not ship the system back before you receive the necessary transport and shipping information!**

2.2. Explanation of Symbols

Symbol	Description
📖i	Important or helpful notice
⚠	Caution. Please follow the instructions carefully to prevent equipment damage or personal injury.
⎓	DC-current
∿	AC-current
⏚	Ground
⏚	Functional earth

2.3. Explanation of Terms

Term	Description
GUI	**G**raphical **U**ser **I**nterface
DCS1	**D**etector **C**ontrol **S**ystem for **1** detector module
DCS6	**D**etector **C**ontrol **S**ystem for up to **6** detector modules
DCS24	**D**etector **C**ontrol **S**ystem for up to **24** detector modules
Detector module	The smallest fully functional unit of the detector (1280 channels).
DAC	**D**igital to **A**nalog **C**onverter

2.4. Disclaimer

DECTRIS Ltd. has carefully compiled the contents on this manual according to the current state of knowledge. Damage and warranty claims arising from missing or incorrect data are excluded.

DECTRIS Ltd. bears no responsibility or liability for damage of any kind, also for indirect or consequential damage resulting from the use of this system.

DECTRIS Ltd. is the sole owner of all user rights related to the contents of the manual (in particular information, images or materials), unless otherwise indicated. Without the written permission of DECTRIS Ltd. it is prohibited to integrate the protected contents published in these applications into other programs or other Web sites or to use them by any other means.

DECTRIS Ltd. reserves the right, at its own discretion and without liability or prior notice, to modify and/or discontinue this application in whole or in part at any time, and is not obliged to update the contents of the manual.

3. Warnings

⚠ **Please read these warnings before operating the detector system.**

- DO NOT TOUCH THE ENTRANCE WINDOW OF THE DETECTOR.

- Place the protective cover on the entrance window of the detector when it is not in use.

- The detector is not specified to withstand direct beam at a synchrotron. Such exposure will damage the exposed channels.

- The detector system should have enough space for proper ventilation. Operating the detector outside the specified ambient conditions could damage the system.

- The air inlets and outlets of the detector control system should not be blocked.

- Power down the detector system before connecting or disconnecting any cable.

- Before connecting the power supply to the mains-supply, check the supply voltage with the label on the power supply. Using an improper main voltage will destroy the power supply and could damage the detector.

- Make sure the cables are connected and properly secured.

- Avoid pressure or tension on the cables.

- Opening the detector, the detector control system or the power supply housing without explicit instructions from DECTRIS Ltd. will void the warranty.

- The embedded Linux operating system on the detector control system has customized software for controlling the MYTHEN detector system. Do not make any changes to the Linux operating system without explicit instructions from DECTRIS Ltd.

4. *Hardware Setup*

> ⚠ **The installation of the MYTHEN detector system is described in detail in the Technical Documentation available at DECTRIS Ltd. (see 2.1 for support). The cross-references in the following paragraphs refer to this document.**

4.1. Setting up the Control System and the Detector Modules

After mounting the detector module(s) and the detector control system (DCS) mechanically, the modules have to be connected to the DCS by the data cable.

For powering the detector system, the DCS has to be connected to the proper power supply. The power supply has to be connected to the proper supply voltage.

> ⚠ **Operate only detector module(s) with a DCS which has the same detector system serial number; e.g. D-M105-DCS1-nnn with D-M105-DET-nnn, since the appropriate configuration files for the detector module(s) are supplied by the DCS.**

4.2. Setting up a PC

To control the MYTHEN system, a PC with a network card is required. The DCS is delivered with the fix IP 192.168.0.90. The network card of the PC has to be configured to be in the same subnet as the DCS, *e.g.*

- IP: 192.168.0.100
- Subnet mask: 255.255.255.0

After connecting the DCS to the PC with a network cable, power up the DCS with the power switch and power on the control PC.

5. MYTHEN Web Client

5.1. Preliminary Note

All graphics in this document are showing the Web Client like it appears in the case of one connected detector module. But it is valid for all MYTHEN detector configurations with 1 to 24 modules.

5.2. Software Installation

The only prerequisite to run the MYTHEN Web Client is a browser supporting JavaScript and WebSockets. Dectris recommends to use Google Chrome 16+, but also supports Firefox 11+.

5.3. Starting the WebClient

Open *e.g.* a Google Chrome web browser and enter the IP of the DCS in the address bar (by default 192.168.0.90). You should see the MYTHEN start screen as below. If you do not see the start screen, please check that the system is running and properly connected to the PC. Make sure that the network settings of your PC are correct.

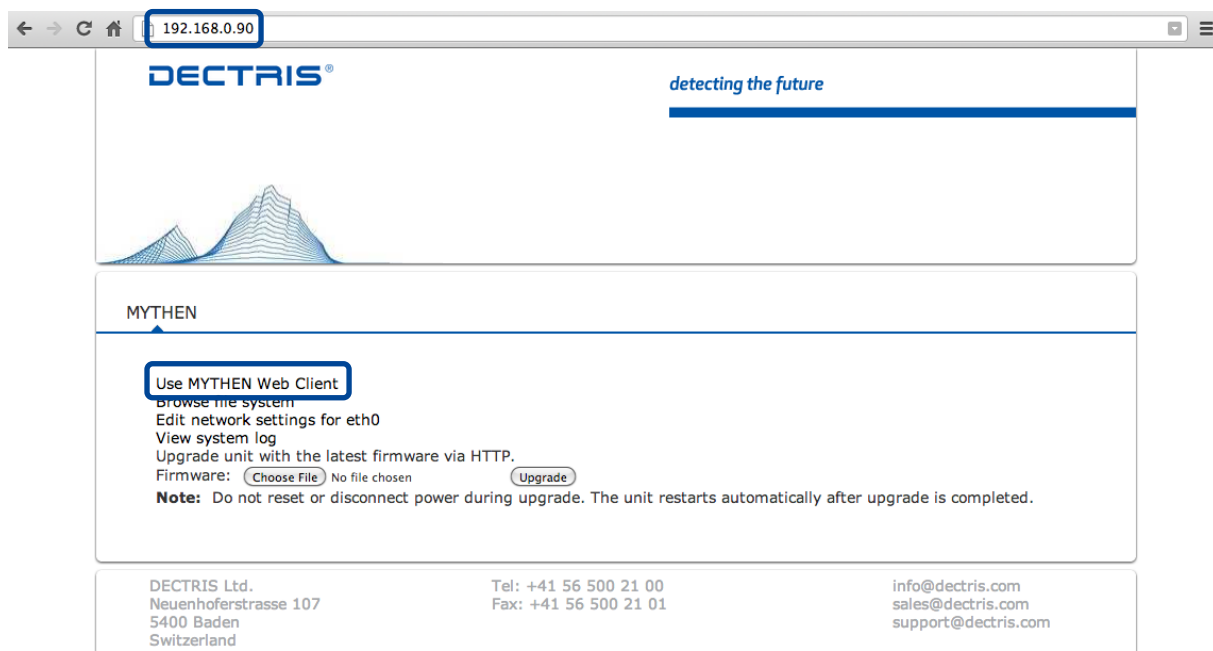Next choose the menu item "Use MYTHEN Web Client".

Figure 1 MYTHEN start screen.

After some seconds the MYTHEN Web Client will show up in the browser. The green bar indicates that a connection to the MYTHEN system has been established successfully. On the right, the serial number of the system is displayed. In case the status bar does not turn green after some seconds, make sure that you use a supported browser version (see above).
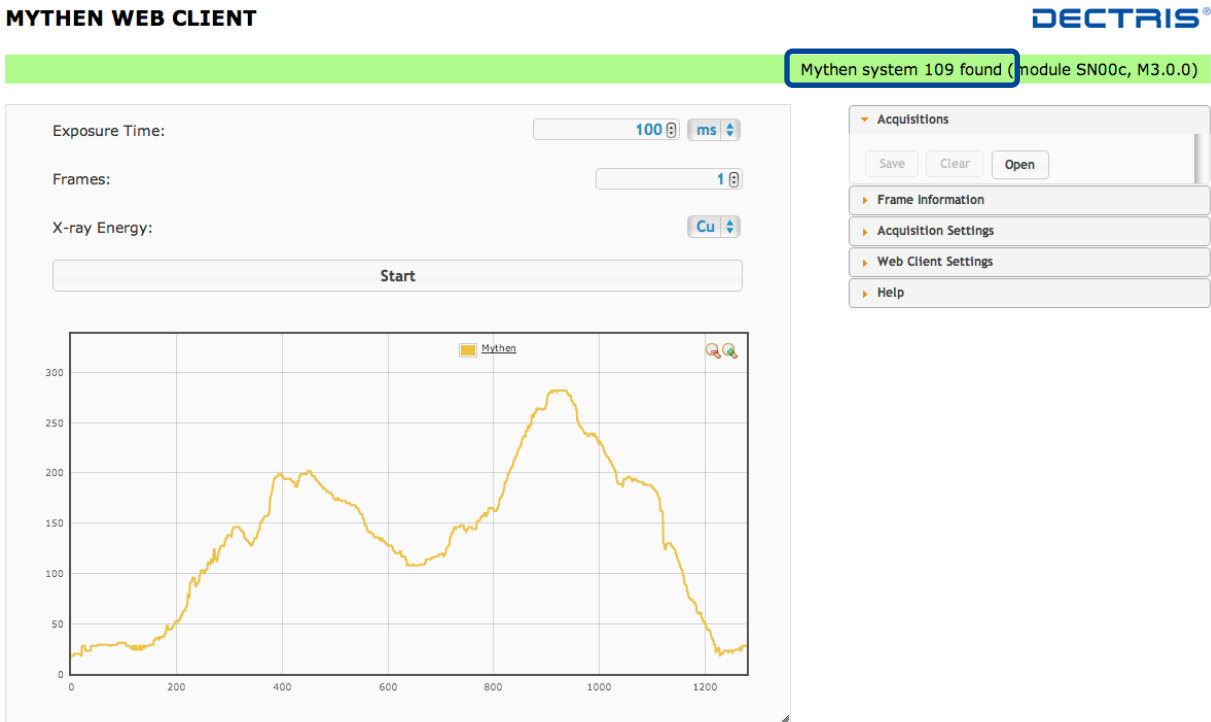

Figure 2 MYTHEN Web Client.

5.4.   Taking data with the Web Client

When the connection has been established the system is ready for taking data. In general, an acquisition consists of several frames. In the left part of the screen, you can specify the main settings like the exposure time of one frame, the number of frames to be acquired as well as the energy of your X-ray source.
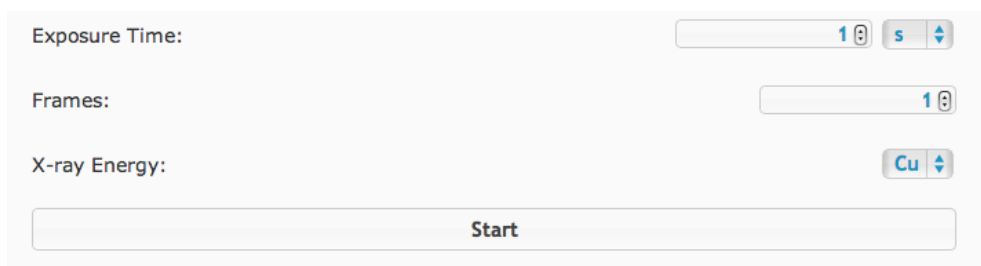

Figure 3 Main acquisition parameters

To start an acquisition, click the "Start" button. After the exposure has finished, the recorded counts are displayed in the lower part of the screen as a function of channel number. Without an X-ray source, you will only see very few counts due to background radiation like natural radioactivity or cosmic rays.
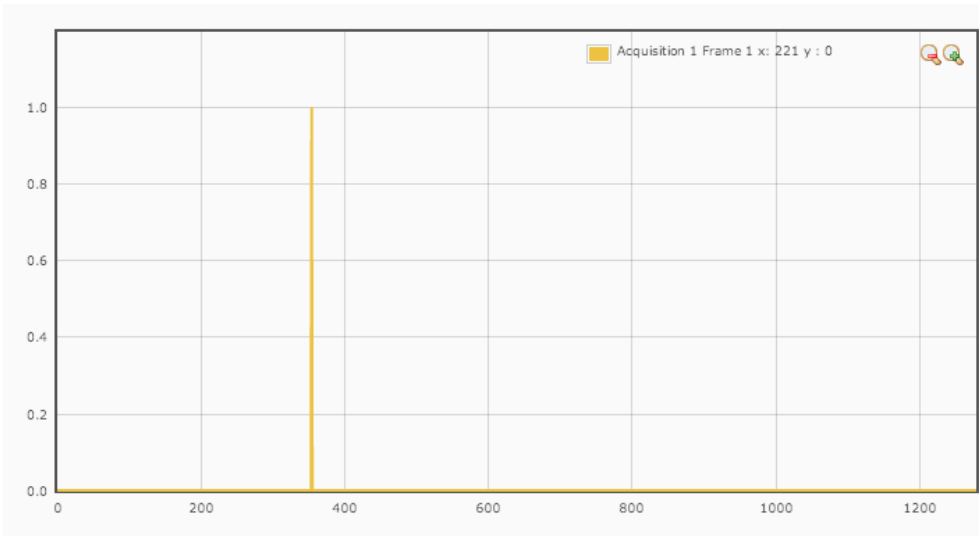

Figure 4 Result of a short acquisition without X-ray source.

The data of all frames and acquisitions can be accessed in the Acquisition accordion on the right. The data can be downloaded as compressed ZIP file by pressing the Save button (due to technical limitations the saved file may not have a proper file extension when using Firefox, please read the corresponding section of the documentation, c.f. section 5.6).
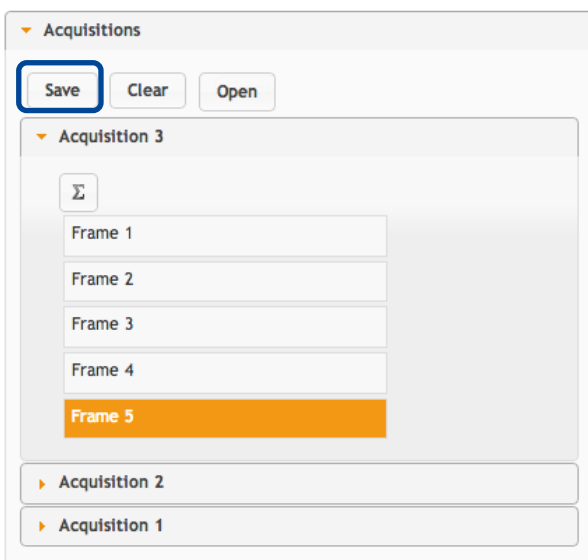

Figure 5 The Acquisition accordion.

5.5. Customizing the acquisition settings

The acquisition can be fully customized in the Acquisition Settings accordion on the right, see the complete documentation for more details.
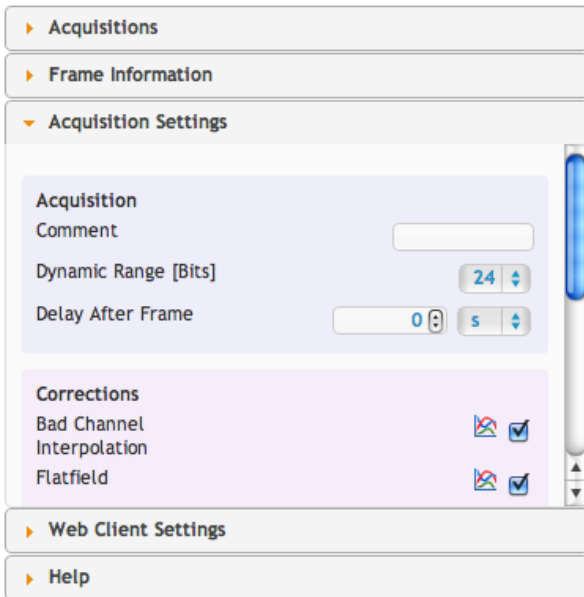

Figure 6 Acquisition Settings accordion.

In order to individually adjust the threshold energy and the X-ray energy, the Expert Mode has to be enabled in the Web Client Settings accordion. Two sliders for these parameters will become available in the main panel.
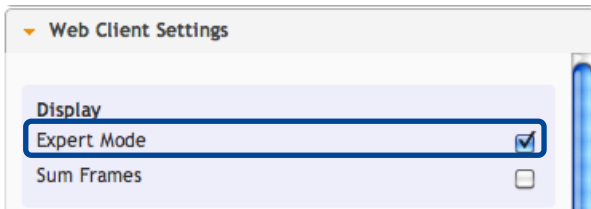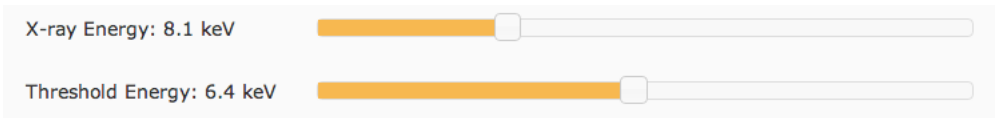

Figure 7 Enabling the Expert Mode

Figure 8 Slider for adjusting the X-ray energy the threshold energy.

5.6. Complete Documentation

The complete documentation of the Web Client can be found in the Help accordion on the right:
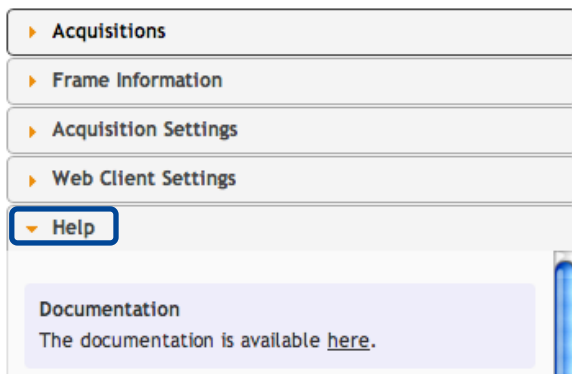

Figure 9 Access to the full documentation.

6. Appendix

6.1. Table of Figures

6.2. Referenced Documents

All the following documents are available through DECTRIS Ltd. homepage.

https://www.dectris.com/technical_mythen.html#main_head_navigation

Term	Description
Firmware Update Guide	Firmware_Update-MYTHEN-V2.pdf
Module Handling Instructions	Handling_Instructions-MYTHEN-V3.pdf
Linux Installation Guide	Linux_Installation-HowTo_MYTHEN-V2.pdf
Network Settings	Network_Settings-MYTHEN-V2.pdf
Quick Start Guide	QuickStart-MYTHEN-V3.pdf
Socket Interface Specifications	Socket_Interface_Spec-MYTHEN-V3.1.0-V1.pdf
Technical Documentation	Technical_Documentation-MYTHEN-V2.pdf
Trigger Notes	Trigger_Note-MYTHEN-V3.pdf
User Manual	User_Manual-MYTHEN-V3.pdf