



# LUMA

Multi-Channel Vacuum  
Ultraviolet Detector

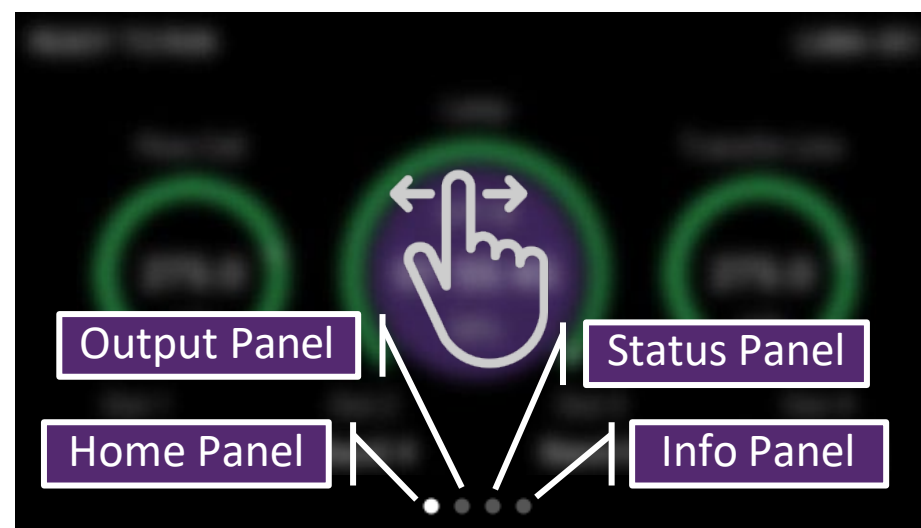
## Operator's Guide



## Detector Navigation

The LUMA detector is equipped with a capacitive touch screen that allows you to control many functions of the detector.

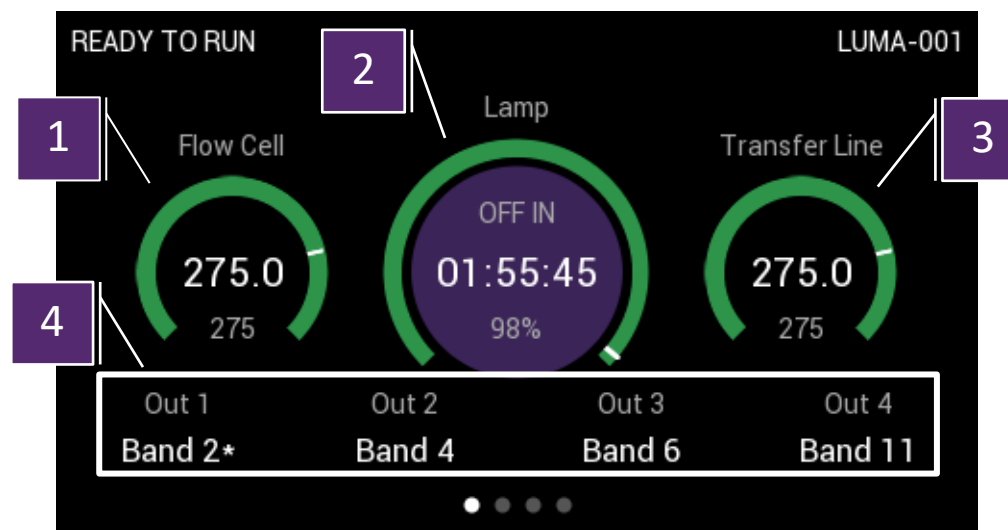
Navigation between panels is done by swiping left and right anywhere on the screen.



## Home Panel

The LUMA detector Home Panel displays important information such as status, temperature readings, and output configuration.

1. Flow Cell Temperature and Setpoint
2. Lamp Status and Control
3. Transfer Line Temperature and Setpoint
4. Output Configuration



## Home Panel cont.

Tap Lamp Control to prepare LUMA for usage.  
Tap again to turn off.

Long press to:

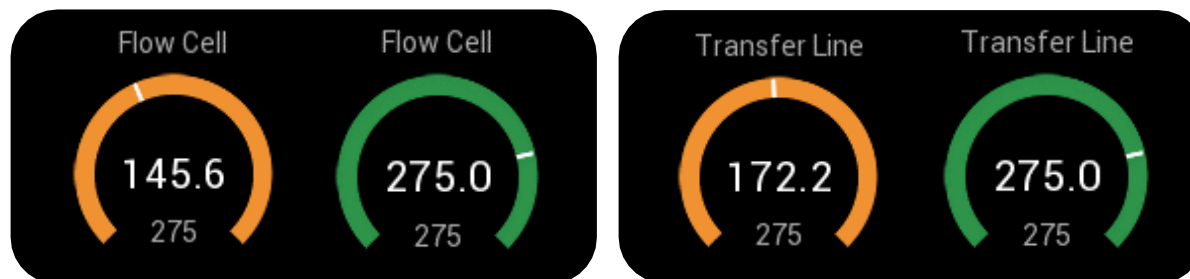
- Skip the WARMING UP LAMP state
- Reset the timeout in the READY TO RUN state



## Gauge Indicators

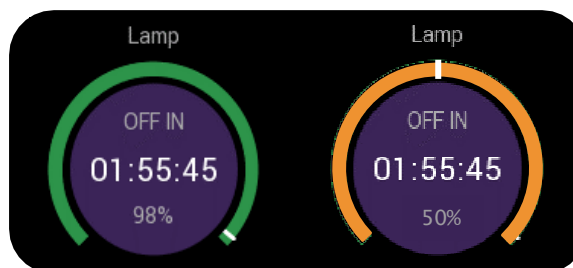
Flow Cell/Transfer Line gauge colors:

- Orange – component has not reached the temperature setpoint
- Green – component has reached the temperature setpoint



Lamp gauge colors:

- Orange - Lamp health is less than 60%
- Green – Lamp health is greater than 60%



## Home Panel cont.

### Faults

Faults are indicated by the gauges turning red

- Lamp fault – indicates an issue with the lamp fans
- Flow cell fault – indicates an issue with the flow cell RTD
- Transfer line fault – indicates an issue with the transfer line RTD
  - A flow cell or transfer line fault will automatically turn off the heater

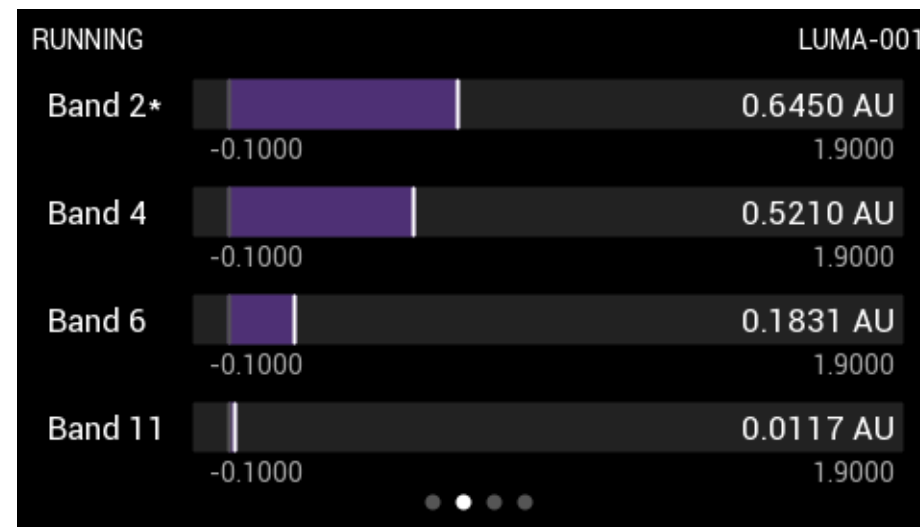


If a fault is encountered, tapping the lamp button will reset the fault and turn the heater back on.

## Output Panel

The Output Panel displays real-time acquisition data for each of the selected acquisition bands.

An asterisk beside the band label indicates that the output has been configured to carry out a mathematical operation.



## Accessing LUMA via Computer



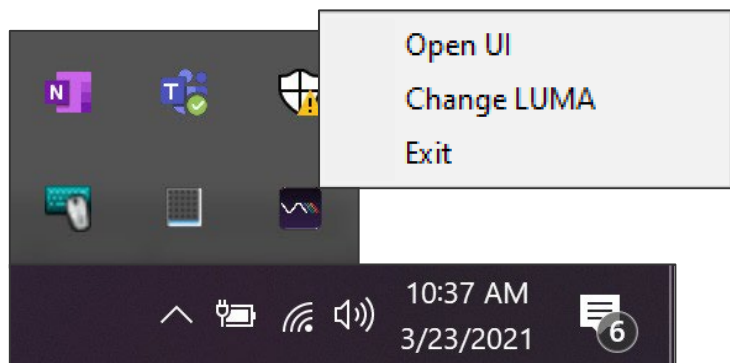
The LUMA Digital Service is a Windows-based client that allows users to remotely access LUMA detectors on the local network.

Please see the LUMA installation guide on learning how to install and run the LUMA Digital Service, in addition to adding user profiles.

When running, the LUMA Digital Service UI can be opened from the icon located in the Windows System Tray.

Selecting "Open UI" will open the most recently accessed LUMA interface.

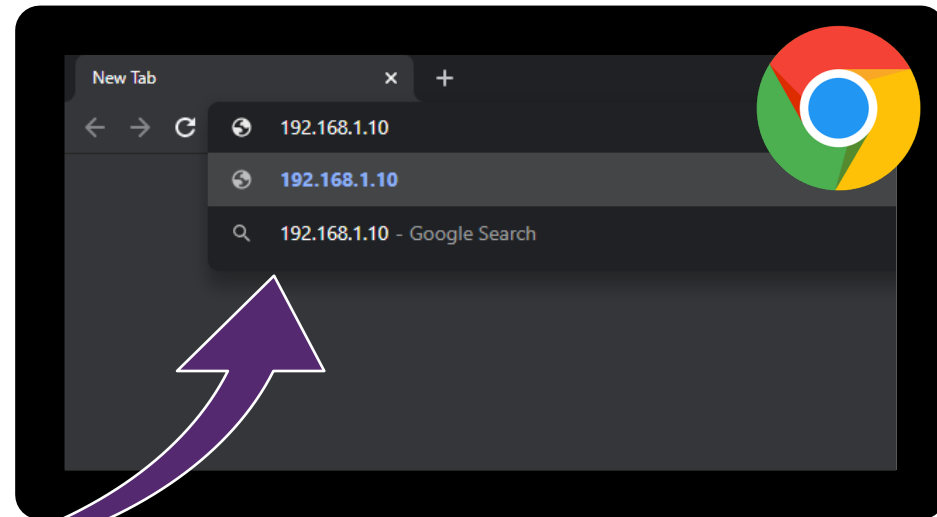
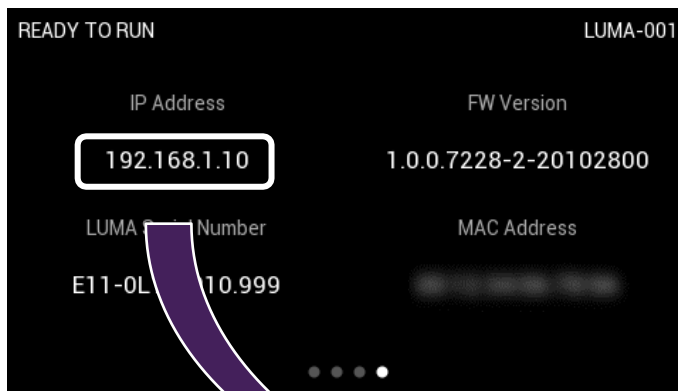
Selecting "Change LUMA" will allow you to select a specific LUMA on your network.



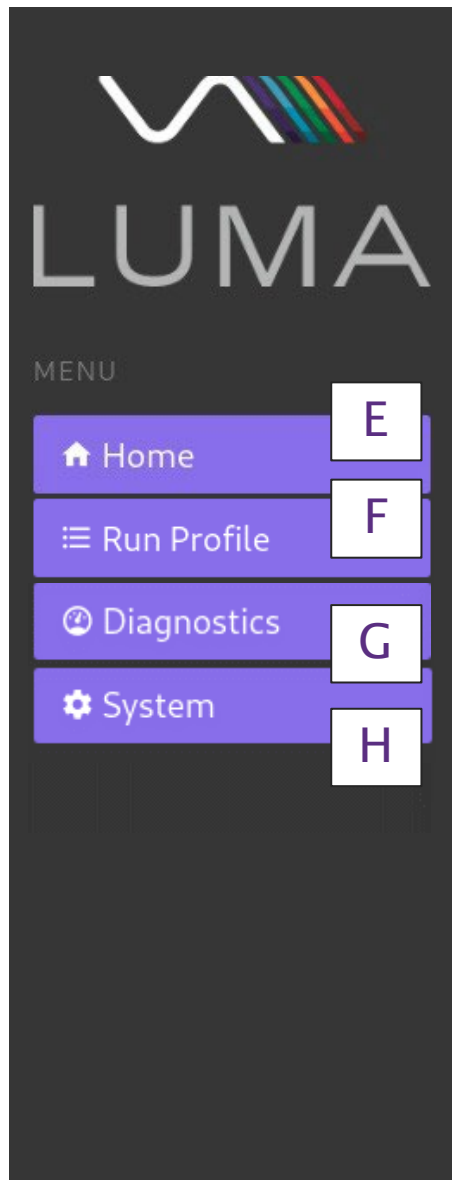
## Accessing LUMA via Computer cont.

Accessing the LUMA detector can also be accomplished by entering the LUMA IP address into a Chrome™ browser address bar. The IP address can be found within the detector Info Panel. Both the LUMA and computer must be on the same network.

Please note that all capabilities provided by the LUMA Digital Service are not accessible when using this method.



## LUMA Web Interface



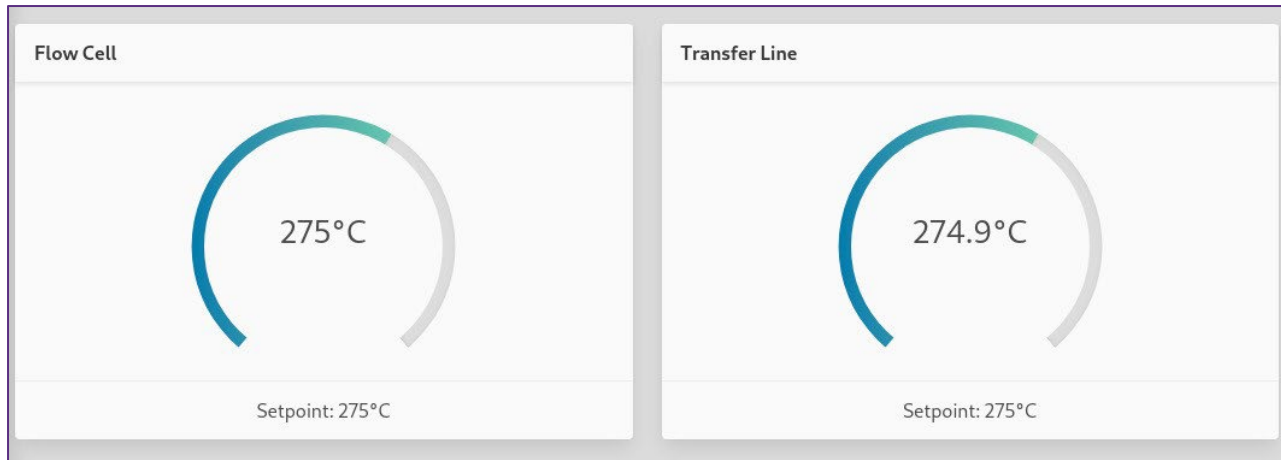
- A. Connection Status  
Displays the current status of the LUMA detector.
- B. Detector Identity  
Shows the name and IP address of the LUMA detector.
- C. Profile Role  
The role type of the user currently signed in.
- D. Notification Bell  
Provides important notifications related to the operation of the detector.
- E. Home  
View device status, real time channel data, manual controls, stored data (LUMA Digital Service only)
- F. Run Profile  
Save, load, and change detector acquisition settings.
- G. Diagnostics  
View diagnostic data for troubleshooting/service purposes.
- H. System  
Update firmware, manage users, and manage other system settings.



## LUMA Web Interface – Home Screen

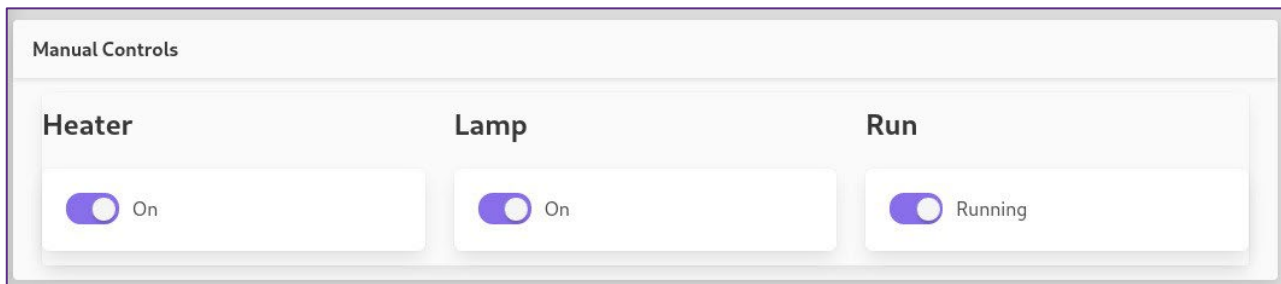
### Temperature Status

Displays current temperatures and set point of the Flow Cell and Transfer Line of the LUMA detector.



### Manual Controls

Allows manual control of the heaters (Flow Cell and Transfer Line), the deuterium lamp, and acquisition.

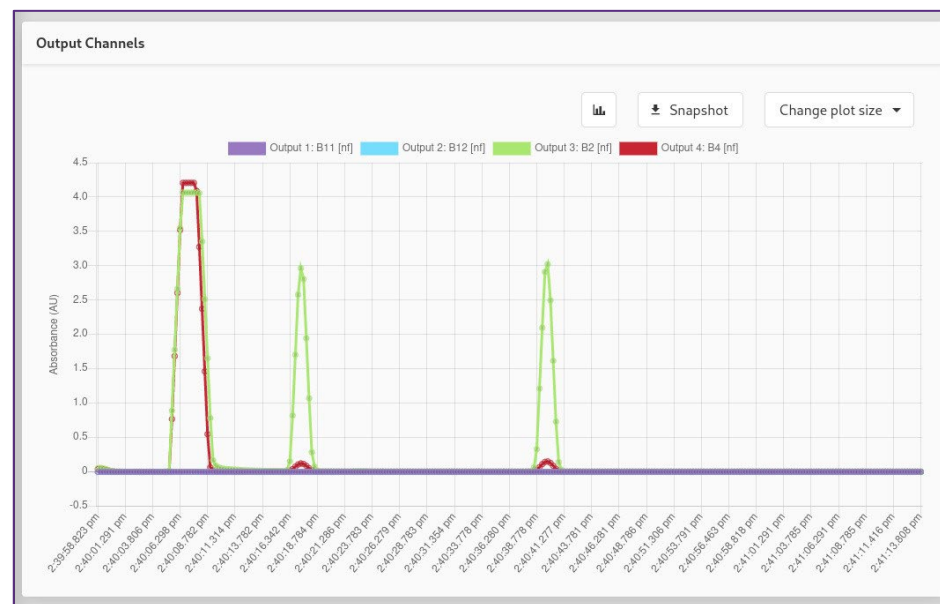




## LUMA Web Interface – Home Screen cont.

### Output Channels

View output channel signals in real time.



### Stored Data

View and download previously acquired data from LUMA detectors connected to the network. Only available with the LUMA Digital Service.

The figure is a screenshot of the "Stored Data" section of the LUMA Web Interface. It displays a table with the following columns: Time, Device Name, Duration, and Size. Each row has a checkbox on the left and a "view" link on the right. At the bottom of the table, there are "save" and "clear" buttons.

<input type="checkbox"/>	Time	Device Name	Duration	Size	
<input type="checkbox"/>	March 16th 2021, 4:43:23 PM	blake-luma2	0.09 minutes	45.92 KB	<a href="#">view</a>
<input type="checkbox"/>	March 16th 2021, 5:17:25 PM	blake-luma2	0.07 minutes	35.72 KB	<a href="#">view</a>
<input type="checkbox"/>	March 16th 2021, 6:26:43 PM	blake-luma2	0.09 minutes	47.96 KB	<a href="#">view</a>
<input type="checkbox"/>	March 16th 2021, 6:27:34 PM	blake-luma2	0.1 minutes	50 KB	<a href="#">view</a>
<input type="checkbox"/>	March 16th 2021, 6:28:42 PM	blake-luma2	0.17 minutes	84.7 KB	<a href="#">view</a>
<input type="checkbox"/>	March 16th 2021, 6:33:25 PM	blake-luma2	0.04 minutes	21.43 KB	<a href="#">view</a>
<input type="checkbox"/>	March 17th 2021, 2:21:35 PM	7890	0.12 minutes	63.27 KB	<a href="#">view</a>

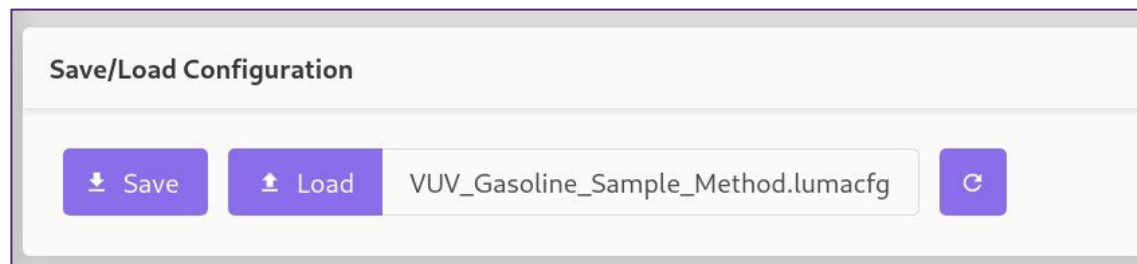
save clear



## LUMA Web Interface – Run Profile

### Save/Load Configuration

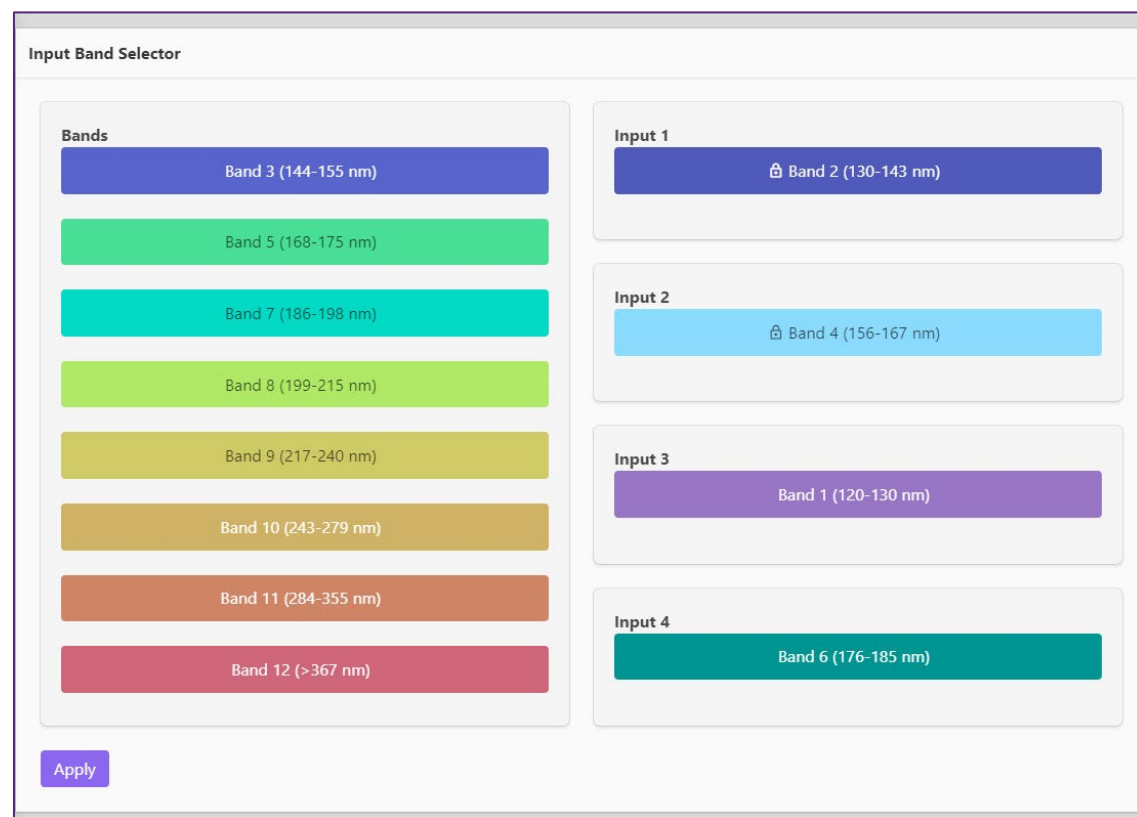
Save the current run profile configuration or load a previous one.



### Input Band Selector

Configure the selected acquisition bands by dragging and dropping available bands into the unlocked Inputs (Input 3 & Input 4).

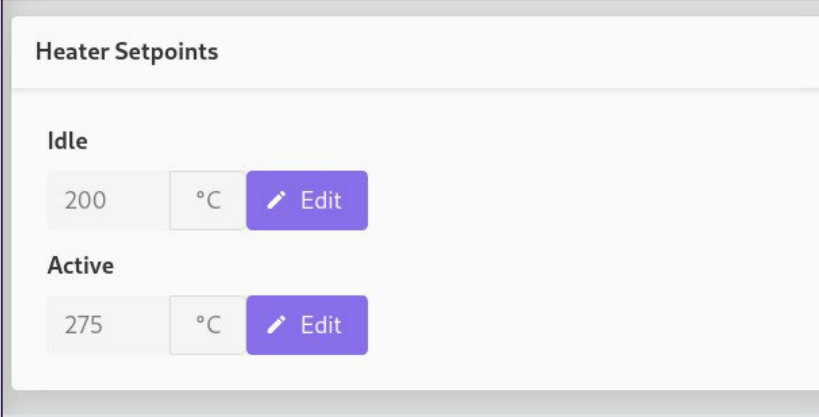
Band 2 and Band 4 are fixed to Input 1 and Input 2, respectively.



## LUMA Web Interface – Run Profile cont.

### Heater Setpoints

The Heater Setpoint setting can be changed for both "Idle" and "Active" detector status.



The screenshot displays the "Heater Setpoints" configuration page. It features two sections: "Idle" and "Active". Each section contains a numerical input field, a unit selector (°C), and an "Edit" button with a pencil icon.

Status	Setpoint (°C)	Action
Idle	200	Edit
Active	275	Edit

## LUMA Web Interface – Run Profile cont.

### Output Configuration

The Output Configuration screen provides the user several tools to configure onboard mathematics and data smoothing.

Each Output Channel can be independently configured using any number of selected bands and mathematical functions.

#### *Low Pass Filter*

When checked, a 513-point moving average filter is applied to the input data.

#### *Noise Reduction*

When checked, a region with zero absorbance is subtracted from the signal, reducing noise.

The screenshot displays the 'Output Configuration' interface for three channels. Each channel has a 'Select Output Band' section with a 'Low Pass Filter' checkbox (checked for Channel 1 and 2, unchecked for Channel 3) and a 'Noise Reduction' checkbox (unchecked for all). Below these are input fields for 'Absorbance max', 'Absorbance min', and 'Scaling'. A 'Band' dropdown menu is also present, with an asterisk indicating a selected band. Channel 1 has 'Band 9 (217-240 nm)'. Channel 2 has 'Band 4 (156-167 nm)'. Channel 3 has 'Band 9 (217-240 nm)'. Each channel also has a 'Math Step 1' section with a red delete button, an 'Operation' dropdown (set to '+' for Channel 1, '\*' for Channel 3), a 'Scaling' input field (set to 4 for Channel 1, 1 for Channel 3), and a 'Band' dropdown (set to 'Band 4 (156-167 nm)'). At the bottom of each channel's configuration area is an 'Add Step' button. At the very bottom of the interface are 'Apply' and 'Cancel' buttons.



## LUMA Web Interface – Run Profile cont.

### Output Configuration

#### *Absorbance max/min*

Only impacts analog output signal. Maps the absorbance range to fit within the limits specified. A larger range will allow capture of larger peaks, while a lower range will provide more detail with smaller peaks.

#### *Scaling*

Applies a scaling factor to the output signal.

#### *Band*

Use this field to select one of the four previously specified bands found in the Input Band Selector.

#### *Math Step*

Allows the user to perform mathematical operations on the selected bands. Operations available are addition, subtraction, and multiplication, as well as scaling for each.

The screenshot displays the 'Output Configuration' interface for three channels. Each channel has a 'Select Output Band' section with checkboxes for 'Low Pass Filter' and 'Noise Reduction', and input fields for 'Absorbance max', 'Absorbance min', and 'Scaling'. Below this is a 'Math Step 1' section with a dropdown for 'Operation' and a 'Scaling' field. At the bottom of the interface are 'Add Step', 'Apply', and 'Cancel' buttons.

Channel	Low Pass Filter	Noise Reduction	Absorbance max	Absorbance min	Scaling	Band	Math Step 1 Operation	Math Step 1 Scaling	Math Step 1 Band
Channel 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	0.01	2.456	Band 9 (217-240 nm)	+	4	Band 4 (156-167 nm)
Channel 2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.9	-1	4.786	Band 4 (156-167 nm)	-	1	Band 4 (156-167 nm)
Channel 3	<input type="checkbox"/>	<input type="checkbox"/>	1.9	-0.1	0.005	Band 9 (217-240 nm)	*	1	Band 4 (156-167 nm)



## LUMA Web Interface – Diagnostics

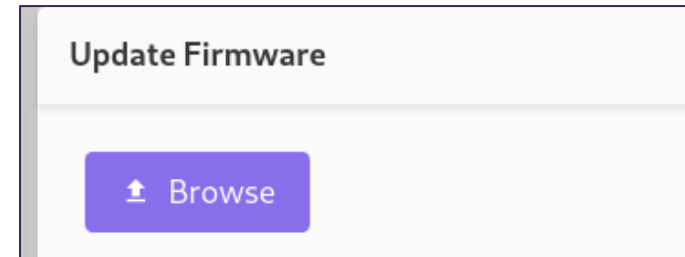
**The Diagnostics screen provides tools helpful in troubleshooting the detector. These settings should not be changed unless guided by an authorized service representative.**



## LUMA Web Interface – System

### Update Firmware

When LUMA firmware becomes available, it can be updated by selecting "Browse" and navigating to the file.



### LUMA Version

Shows currently installed versions of the LUMA Web application and LUMA firmware.



## LUMA Web Interface – System cont.

### Manage Users

User profiles can be edited or created within the "Manage Users" section of the System screen.

Available roles are:

#### *Administrator*

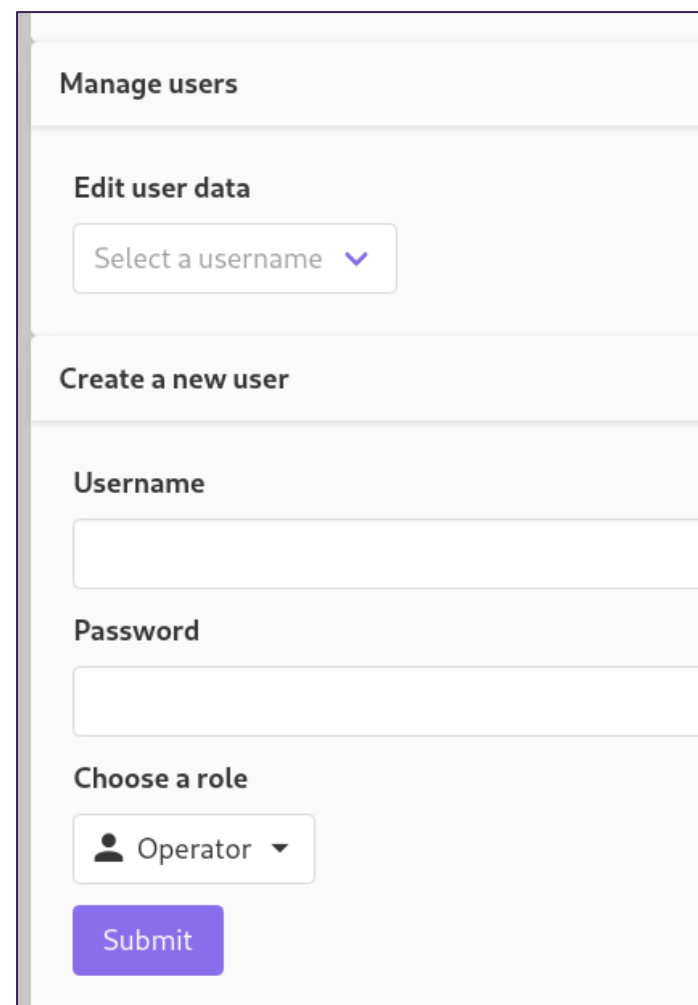
Full permission set and able to manage users.

#### *Manager*

Does not have access to Diagnostics or System

#### *Operator*

Limited to operating detector and loading configurations.



The screenshot shows the 'Manage users' section of the LUMA web interface. It contains three main sections: 'Edit user data', 'Create a new user', and 'Choose a role'. The 'Edit user data' section has a dropdown menu labeled 'Select a username'. The 'Create a new user' section has two input fields: 'Username' and 'Password'. The 'Choose a role' section has a dropdown menu with a person icon and the text 'Operator'. A blue 'Submit' button is located at the bottom of the form.



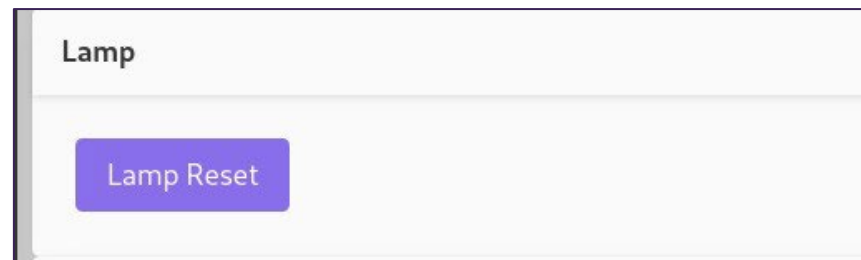


## LUMA Web Interface – System cont.

### Lamp

The deuterium lamp used by LUMA has a specified lifetime of 2000 operational hours, and this lifetime can be monitored on the LUMA touchscreen interface.

When the lamp is replaced, the 2000-hour timer can be reset by clicking "Lamp Reset" within the System screen.



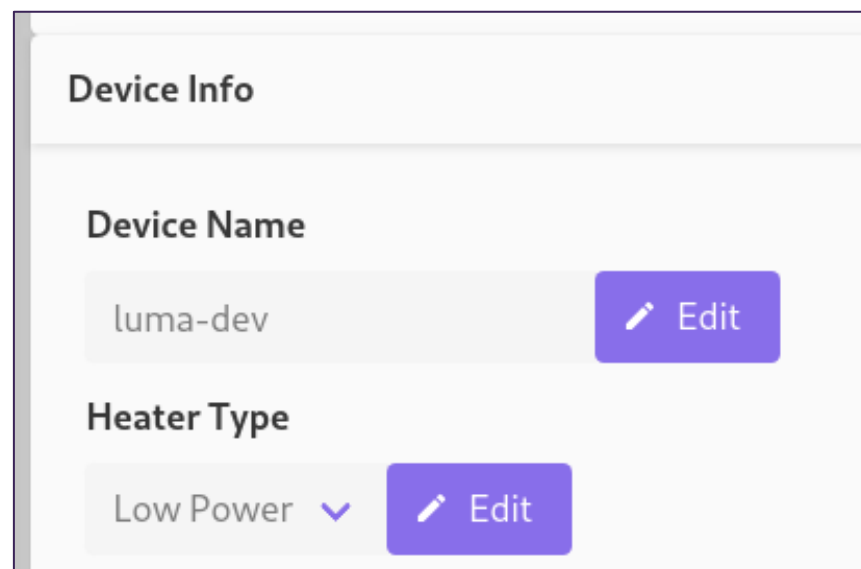
### Device Info

#### Device Name

The device name as it appears on the LUMA touchscreen and on the network.

#### Heater Type

Available choices are Low Power and Standard.



## LUMA Web Interface – System cont.

### LUMA Digital Service

Only available when using LUMA Digital Service

Used to connect to and discover LUMA detectors on the network. Please see the LUMA Installation Guide for additional details.

LUMA Digital Service

Select or input an instrument hostname to connect to Advanced ▾

luma-test@169.254.236.234





V U V   A N A L Y T I C S <sup>TM</sup>

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