



LMIoT Smart Sensors for Life™ User Guide

User Guide

1. Introduction

The LMIoT Smart Sensors for Life™ series of continuous monitors are Internet-of-Things (IoT) devices that provide a scale-out, cloud-connected network of research-grade sensors. The line of sensors offer a range of individual and combined sensing elements aimed at providing more comfortable, more efficient, more productive, and safer working environments. The product architecture combines expert sensing technology with industry-standard cloud connectivity and security. The result is simple, accurate sensing for one to thousands of connected sensors.

This User Guide describes the basic usage of the device and a description of the parameters monitored. It also includes important copyright and license notices.

2. LMIoT Models

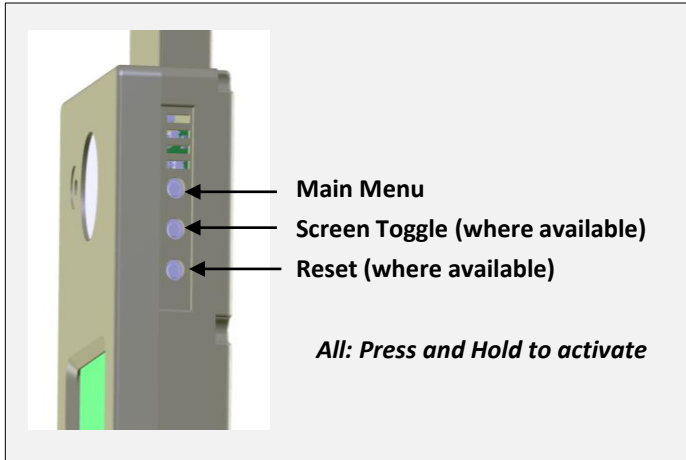
There are a number of models available in the LMIoT product line. These models are summarized below. The device usage of each model is described further below.

LMIoT Model	Short Description	Integrated Sensors									
		Temperature	Relative Humidity	Visible Light Level	Flicker	Spectrum	UVA/B	Presence	Melanopic Lux, Ratio [Fast] Light Level Peak	Isolated Voltage	
LMIoT-Eval	Evaluation Model	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
LMIoT-RHT	RH and Temp	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
LMIoT-RHTL	RH/Temp/Light	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
LMIoT-LUX	LUX/Light Levels			<input checked="" type="checkbox"/>							
LMIoT-Flicker	Flicker/Light Levels			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
LMIoT-Spectrum	Visible to NIR Spectrum					<input checked="" type="checkbox"/>					
LMIoT-UVAB	UVA and UVB Exposure						<input checked="" type="checkbox"/>				
LMIoT-EM	Environmental Monitor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
LMIoT-Collections	Collections Monitor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
LMIoT-Circadian	Circadian Light Monitor			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		
LMIoT-LPI	Laser Peak Irradiance									<input checked="" type="checkbox"/>	
LMIoT-Signage	Sign Power Monitor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>

3. Common usage across all models

The following usage is common across all the LMIoT models.

3-1. Main Screen Buttons



Main Menu Button

- Bring up the Main Menu (more information below)

Screen Toggle

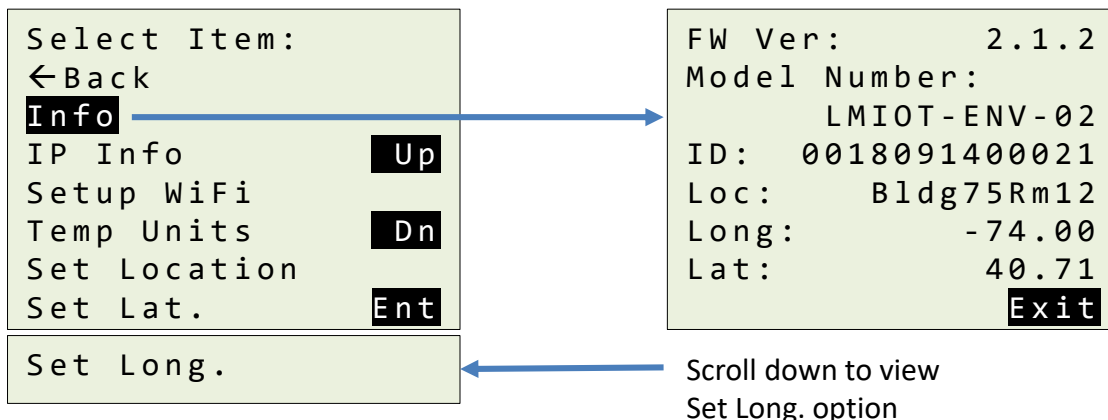
- Some models provide two viewing modes. This button toggles between the two modes.

Reset

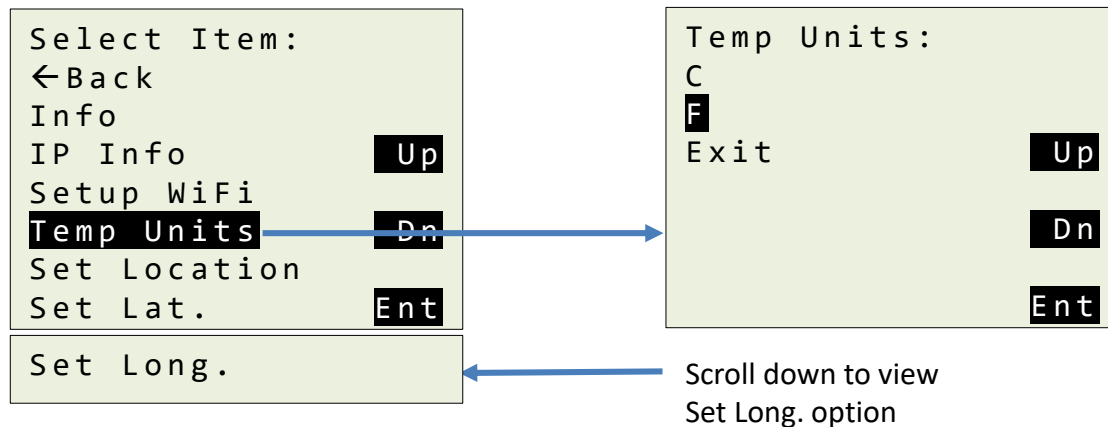
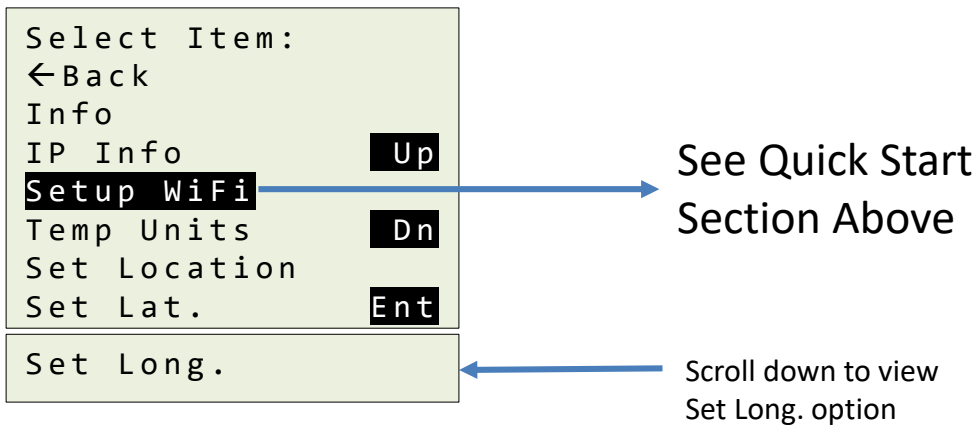
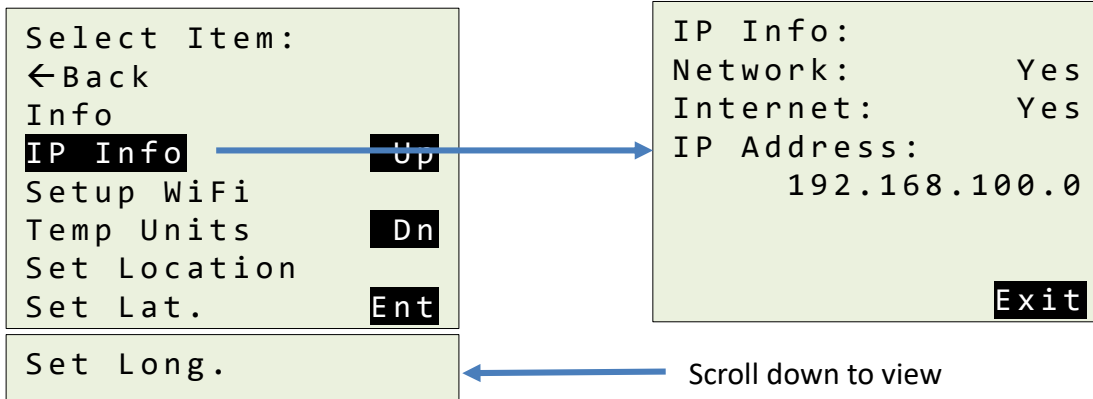
- Some models provide an ability to reset readings, such as a peak light level reading, locally as well as via an IoT API.

3-2. Main Menu

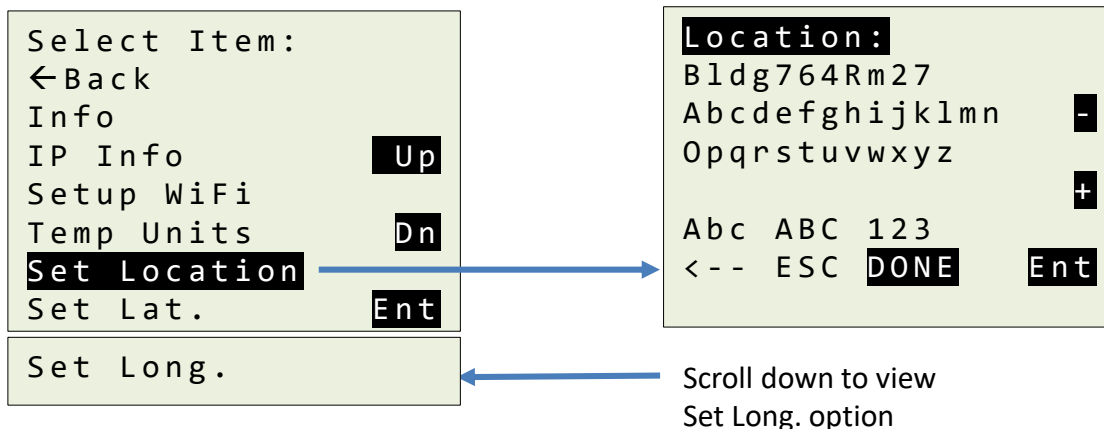
The Main Menu presents information about the device as well as the ability to change the temperature units and the identification information (Location, Latitude, and Longitude) presented to the cloud-based database. The Main Menu also provides an item to Setup WiFi (explained in the Quick Start guide above). In Eval models, a Set Model item replaces the Temp Units item, allowing one to switch among model behaviors.



3-2. Main Menu (cont.)

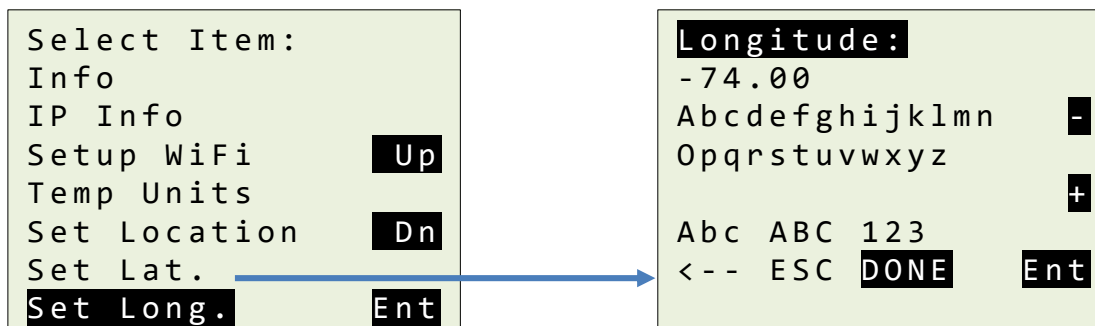
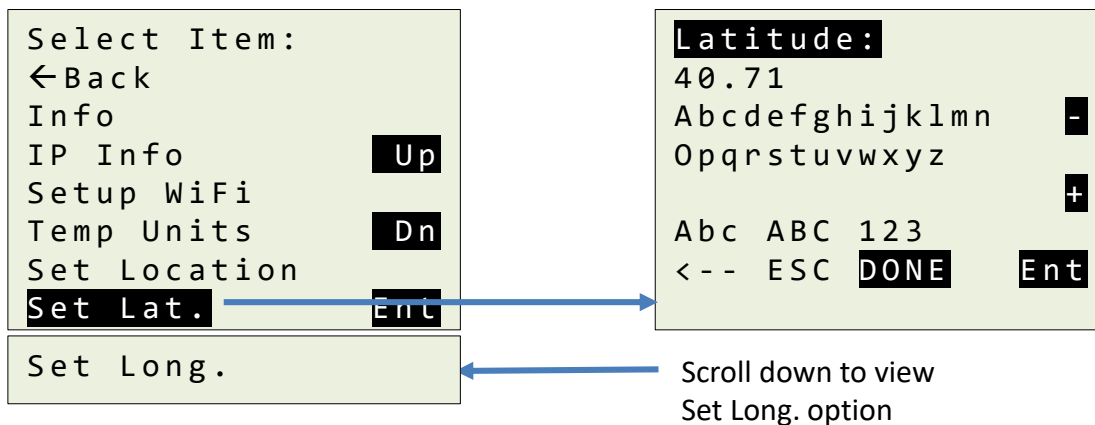


3-2. Main Menu (cont.)



IMPORTANT:

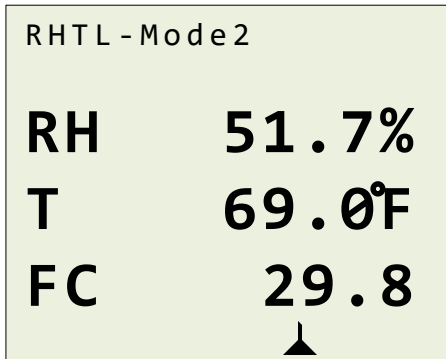
The "Location" becomes the unique identifier in the database and, as a result, all the charts and analytics. As a result, the "Location" must be unique among all LMIoT devices.



3-3. The Internet-Connected Icon

As an IoT, Internet-of-Things, device it is imperative that the unit is connected to the Internet to ensure proper data connectivity to the cloud-based IoT-Hub, database, and applications.

The icon shown below indicates that the internet connectivity is in place. If this is not the case the unit will periodically re-attempt to establish connectivity.



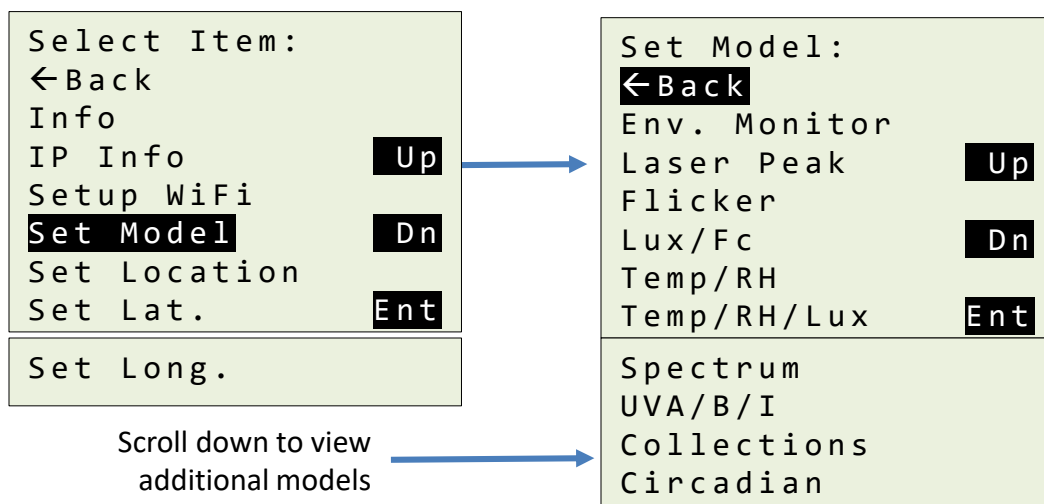
Internet connectivity icon.

4. Evaluation Model

A special Evaluation Model is available for customers looking to evaluate multiple models. The Evaluation Model incorporates the full set of sensor technology and includes a special `Set Model` menu, that allows the device to mimic the behavior of many of the available models.

4-1. Set Model Menu

The Evaluation Model includes a “Select Model” item within the Main Menu. This menu item is used to switch among the various model behaviors. Each model behavior is described in the sections below.

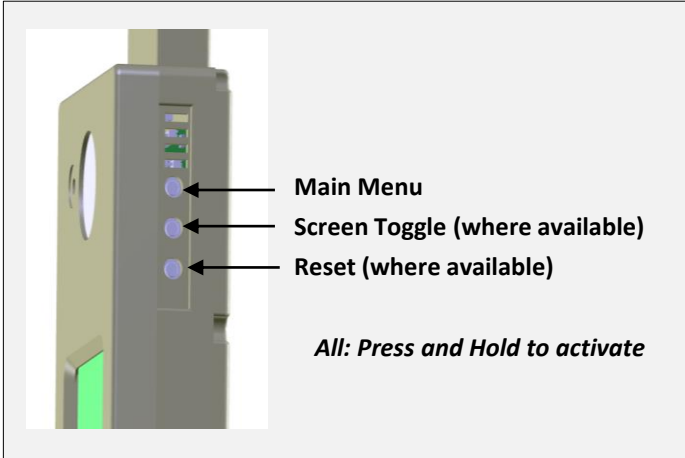


NOTE:

The `Set Model` menu item on the Evaluation Model replaces the `Temp Units` menu item. As a result, the temperature units are fixed on the Evaluation Model (deg F).

5. LMIoT-RHT

5-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

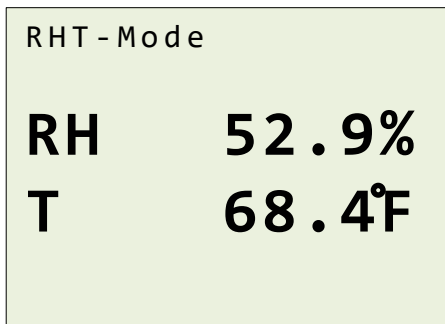
Screen Toggle

- Not used.

Reset

- Not used.

5-2. Screen Mode(s)

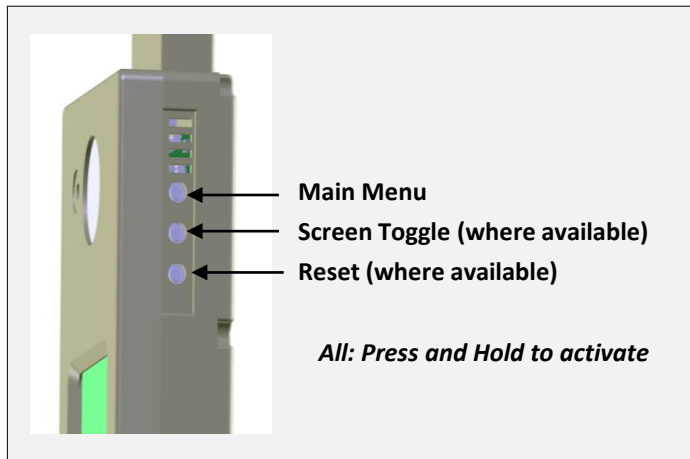


NOTE:

The temperature units will reflect the settings from the Main Menu.

6. LMIoT-RHTL

6-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

Screen Toggle

- Toggles between the screen modes below.

Reset

- Not used.

6-2. Screen Mode(s)

RHTL - Mode 1	
RH	51.7%
T	69.0°F
LUX	320

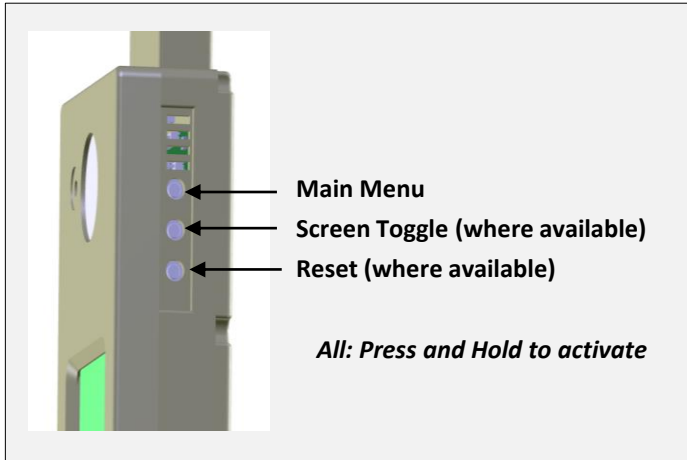
RHTL - Mode 2	
RH	51.7%
T	69.0°F
FC	29.8

NOTE:

The temperature units will reflect the settings from the Main Menu.

7. LMIoT-LUX

7-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

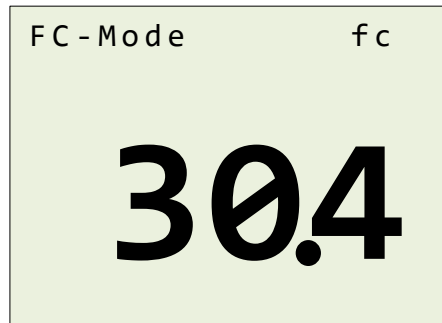
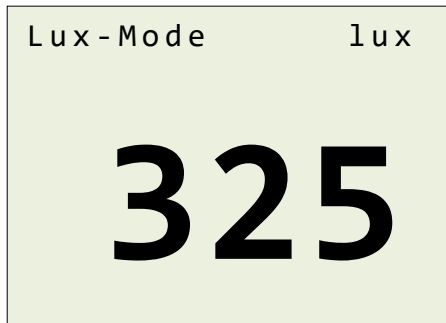
Screen Toggle

- Toggles between the screen modes below.

Reset

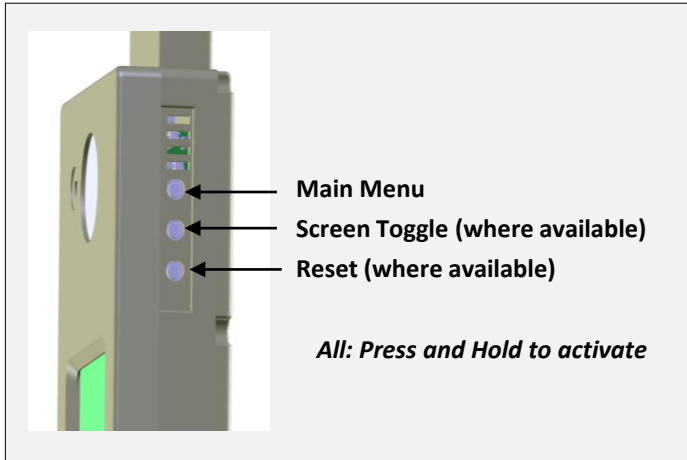
- Not used.

7-2. Screen Mode(s)



8. LMIoT-Flicker

8-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

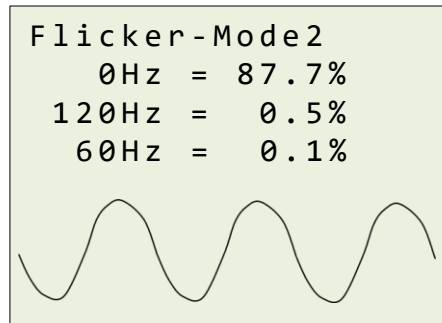
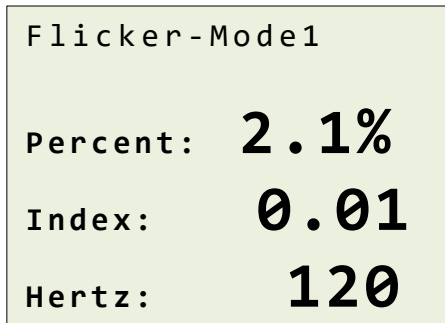
Screen Toggle

- Toggles between the screen modes below.

Reset

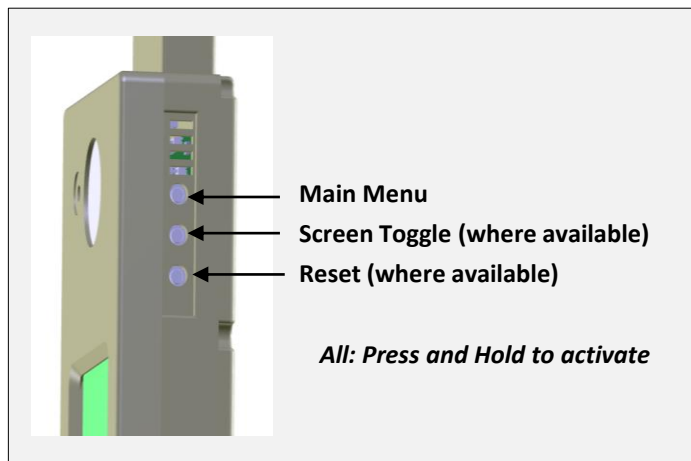
- Not used.

8-2. Screen Mode(s)



9. LMIoT-Spectrum

9-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

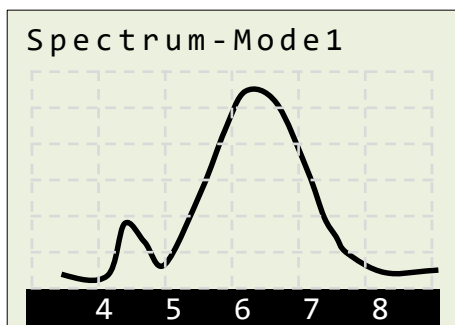
Screen Toggle

- Toggles between the screen modes below.

Reset

- Not used.

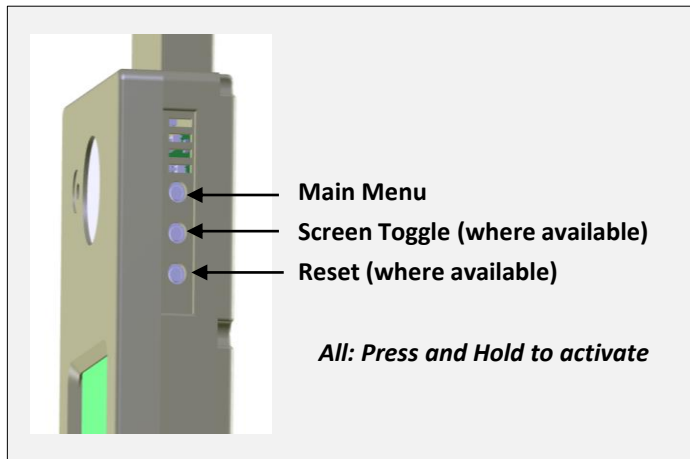
9-2. Screen Mode(s)



Spectrum-Mode2
CCT = 2305
Peak 1 = 471nm
Peak 2 = 622nm

10. LMIoT-UVAB

10-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

Screen Toggle

- Not used.

Reset

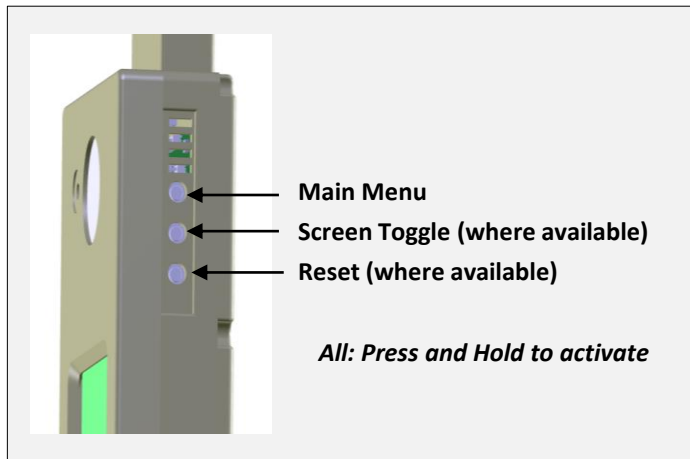
- Not used.

10-2. Screen Mode(s)

UV - Mode	$\mu\text{W} / \text{cm}^2$
UVA :	54
UVB :	12
UVI :	0

11. LMIoT-EM (Environmental Monitor)

11-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

Screen Toggle

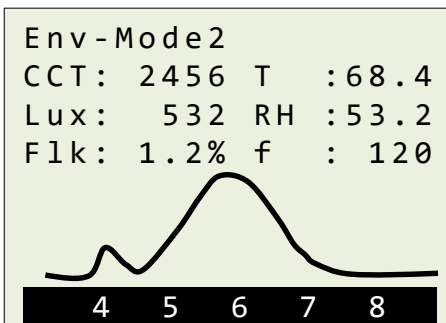
- Toggles between the screen modes below.

Reset

- Not used.

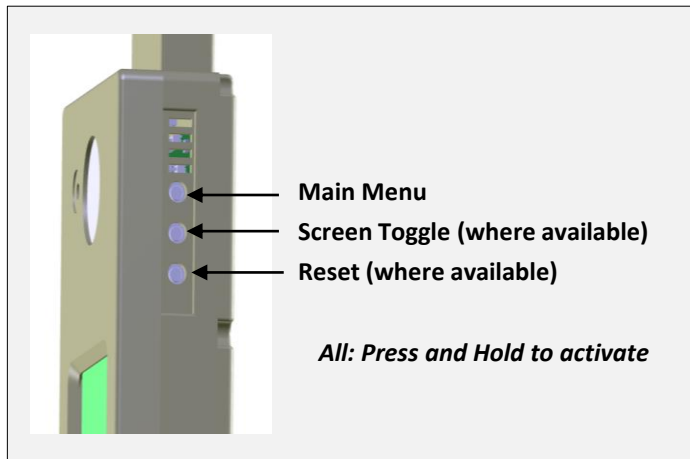
11-2. Screen Mode(s)

```
Env - Mode1
Tmp: 68.4 Flicker
RH : 53.2 % 1.2
CCT: 2456 f 120
Lux: 532 Idx 0.0
UVA: 0 DC 57%
UVB: 0
```



12. LMIoT-Collections

12-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

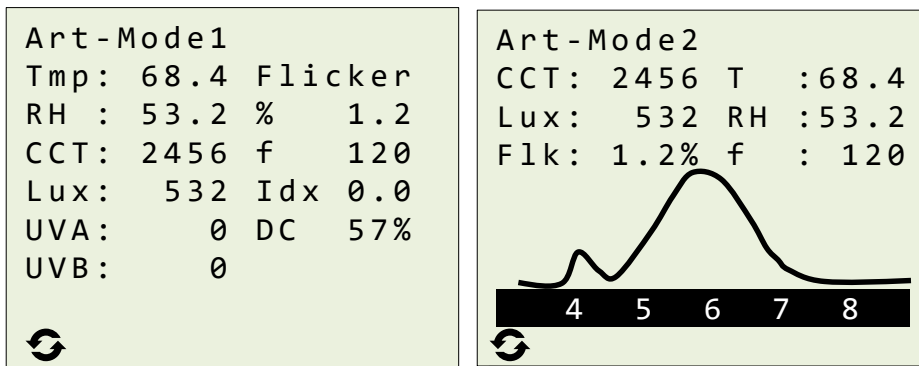
Screen Toggle

- Toggles between the screen modes below.

Reset

- Not used.

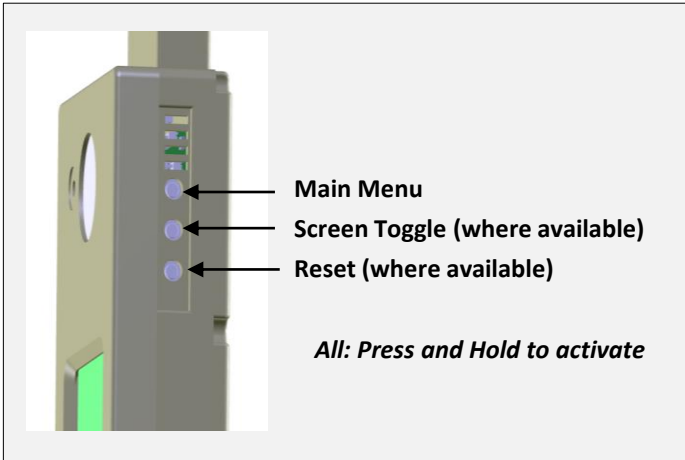
12-2. Screen Mode(s)



Human Presence Sensor active. This feedback is used for viewing time and viewing transitions data.

13. LMIoT-Circadian

13-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

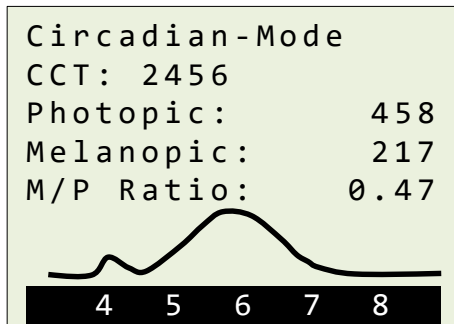
Screen Toggle

- Not used.

Reset

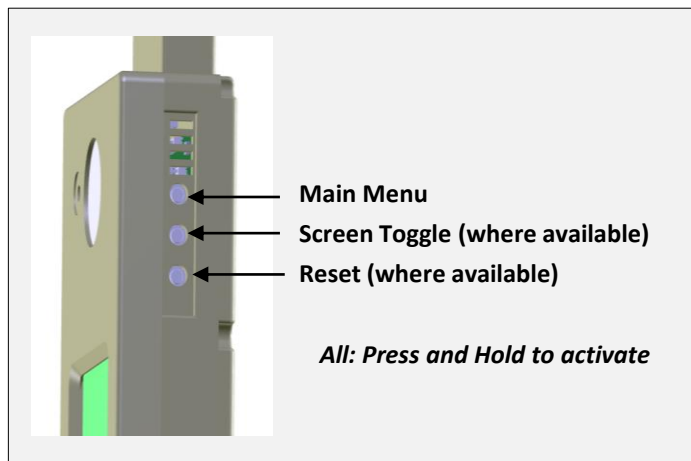
- Not used.

13-2. Screen Mode(s)



14. LMloT-LPI (Laser Peak Irradiance)

14-1. Button Functions



Main Menu Button

- Bring up the Main Menu (see 3.2 above)

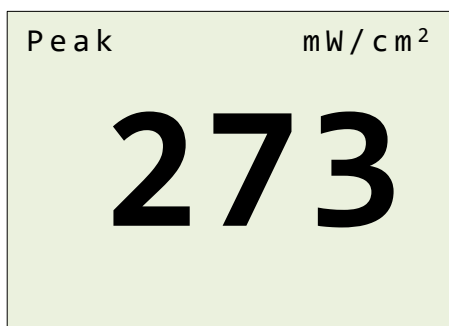
Screen Toggle

- Not used.

Reset

- Reset the maximum irradiance level.

14-2. Screen Mode(s)



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L & M Instruments LMloT Application Software and Device Firmware

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