



LIPSMetric™ Handheld HA115a-MH

User's Guide

Aug 2024

Revision 2.4.5

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Sep 2023



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Revision History

Revision	Description	Date
2.4.5	Add the ROI measure feature in Chapter 3.2.4.	2024/ 8/ 1
2.4.4	Modified the pic of Chapter-2 Step-1	2024/ 1/ 10
2.4.3	Adjust the architecture of the User Guide,	2024/ 1/ 3
2.4.2	Modified the hardware installation of Chapter 1.2	2024/ 12/ 29
2.3.2	1.) Modified the pic for the correct photo angle for 1.2 A Hardware Overview. 2.) Modifying the calculation of DIMwt on page 8.	2023/ 09/ 14
2.3.1	Modifying the wording for a barcode scanner on page 13.	2023/ 09/ 13
2.3	1.) Modifying the user guide for the barcode scanner on page 13. 2.) Modifying the Calibration user guide: The guideline is on page 16/17.	2023/ 09/ 12
2.2	1.) Add LIPSMetric_APP-v2.1.4 in the Package List 2.) Modified the description of item 3 under the 2.2-A	2023/ 09/ 01
2.1	Modifying Package list information	2023/ 08/ 31
2.0	Updated new architecture	2023/ 08/ 16
1.1	Updated vital software functions	2023/ 02/ 16
1.0	The initial release of the internal version	2023/ 12/ 30

1. Overview

1.1 Packaging List

The packing list references package contents, including the product's hardware and software. If anything is missing, contact info@lips-hci.com.

No.	Name	Qty.
1.	Microsoft Surface Go protective case	1
2.	LIPSedge™ L210u protective case	1
3.	LIPSedge™ L210u power cable	1
4.	LIPSedge™ L210u	1
5.	Microsoft Surface go 3 (Please refer to Microsoft's website for the hardware spec) Microsoft Surface Go3 Spec	1
6.	LIPSMetric™ Handheld HA115a-MH Object Dimensioner Software (Version: LIPSMetric_APP-vx.x.x)	1

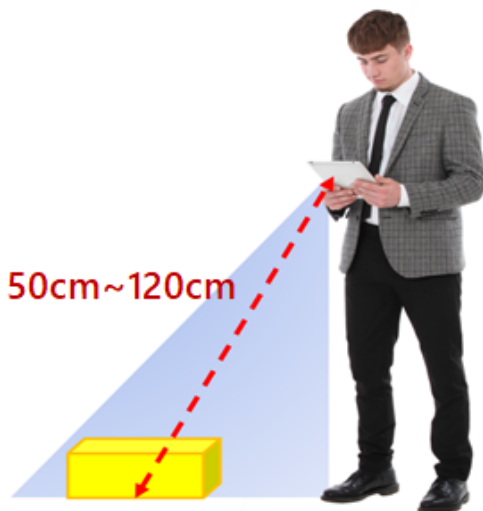


1.2 Measurement Spec

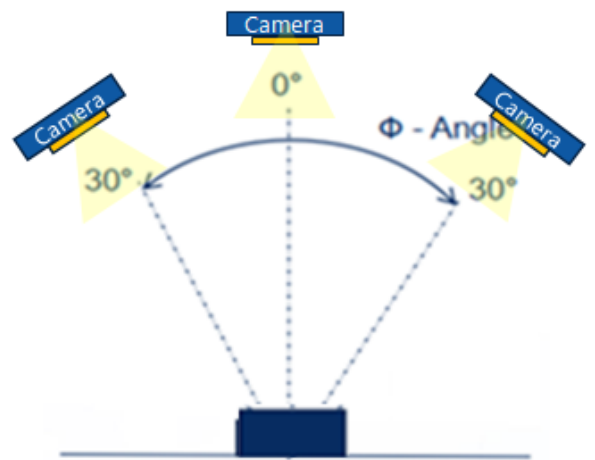
The measuring spec and accuracy of HA115a-MH are below

Recommend Measurement Spec	Ground to 3D Camera	
	Min	Max
Range	50cm	120cm
Object Size (Length * Width * Height)	10 * 10 * 5cm	60 * 40 * 30cm
Angle	+/-30° (Cubic/ Non-Cubic)	
Accuracy	+/- 1cm at best case in 50~70cm & 0° (Cubic) +/- 2cm at other cases (Cubic) +/- 3cm (Non-Cubic)	

Measurement Range



Measurement Angle



2. Hardware Installation

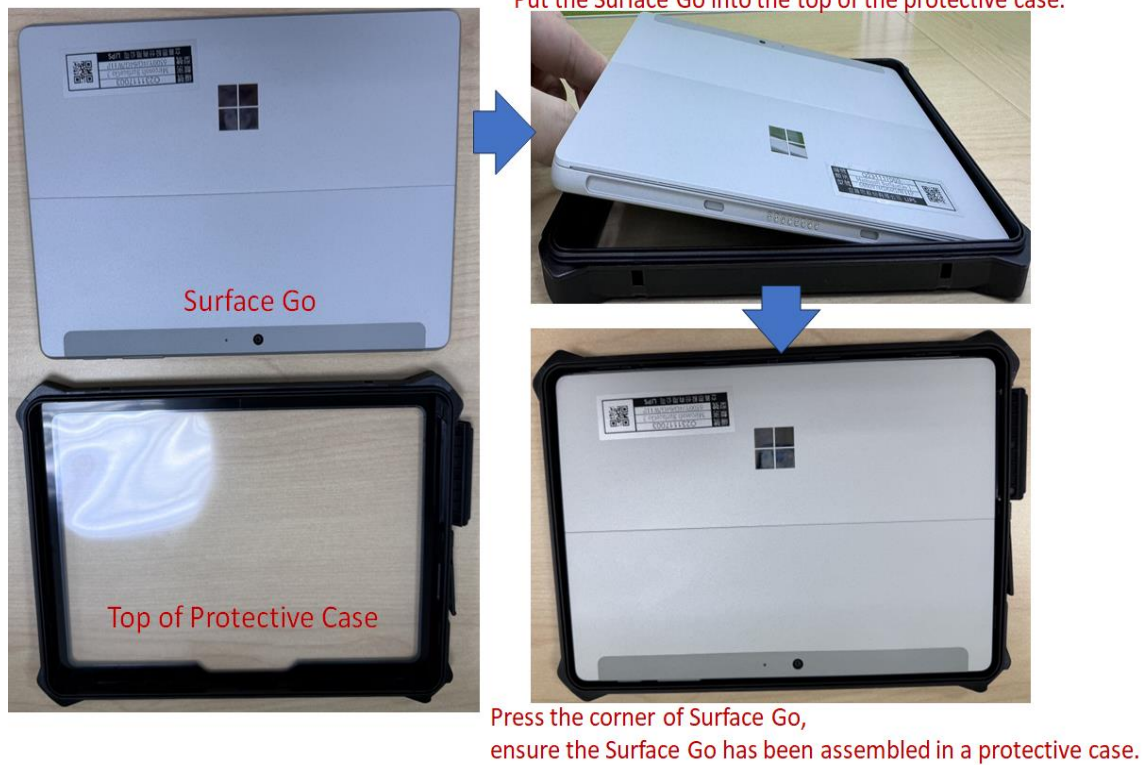
Before the installation, refer to the *1.1 Packing List* to check the hardware contents.

Follow the instructions below to install and assemble the LIPSMetrics™ Handheld hardware, and refer to the relevant section if needed.

Step-1. Top case Installation
↓
Step-2. Bottom Case Installation
↓
Step-3. Type-C Cable Installation

Step-1: Top Case Installation

Please put the Surface Go into the Top of the protective case and make sure it has been assembled in a protective case.



Step 2: Bottom Case & Installation

Put the bottom of the protective case into the Surface Go with the top protective case.



Put the Bottom Protective Case into the top of the protective case.



Press the corner of the bottom of the protective case.

Step 3: Type-C Cable Installation

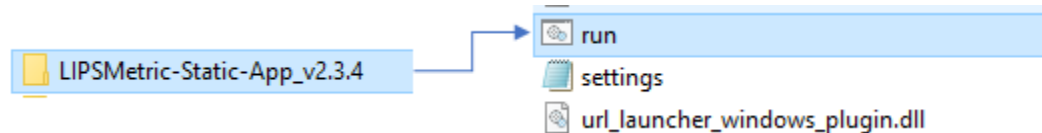
Please ensure the type C cable has been connected to the Surface Go before using it.



3. Software Operation

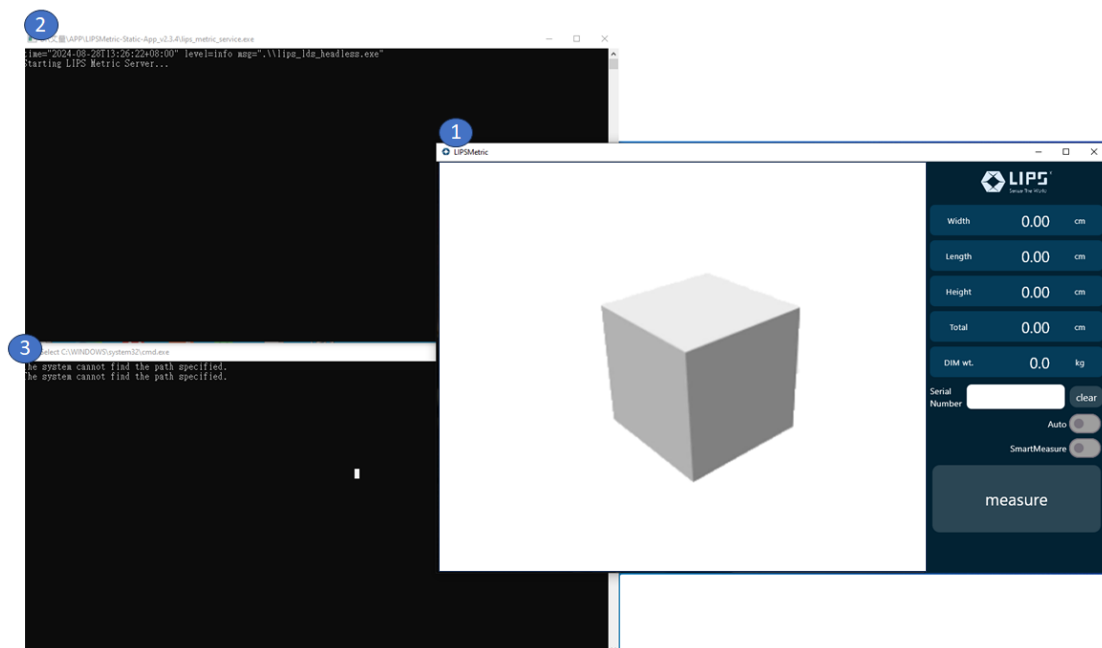
From the Folder of LIPSMetric_App-vx.x.x, start the pre-installed LIPSMetric™ Handheld APP.

LIPSMetric_App-vx.x.x's location: **Desk→ LIPSMetric Handheld APP x.x.x→ run**



The system will show 3 application.exe.

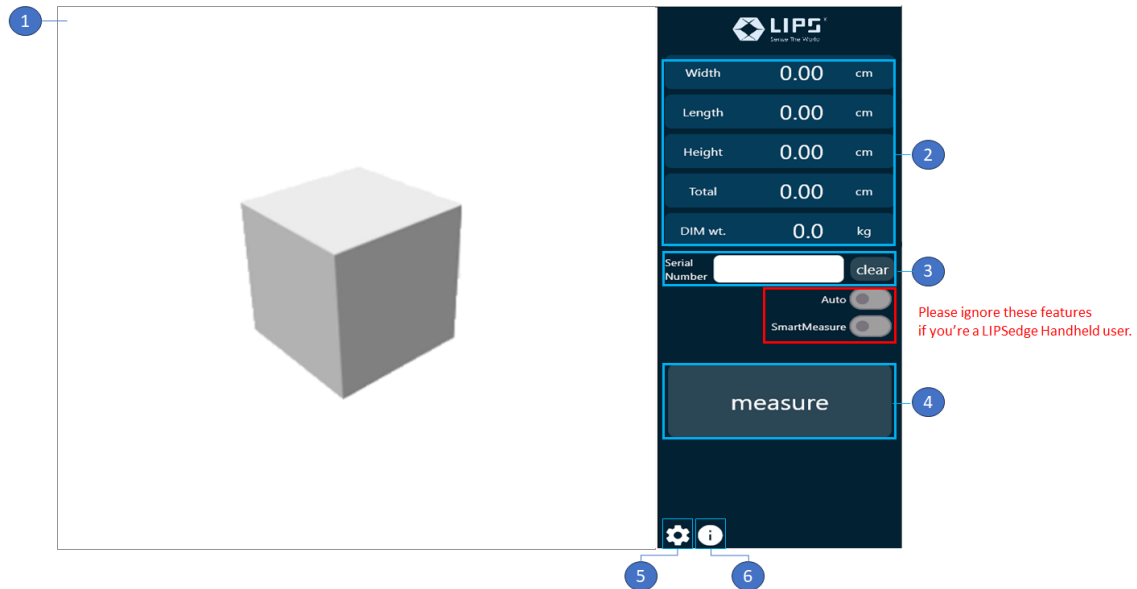
- 1: LIPSMetric Handheld APP
- 2: LIPSMetric_Service
- 3: cmd.exe (This one is a bug, but please don't close this cmd.exe, or the APP will be closed too.)



Note: For cases where the LIPSMetric APP does not activate, verify the The USB-C connector of the LIPSedge L210u is fully plugged into the Microsoft Surface Go 3 USB-C port.

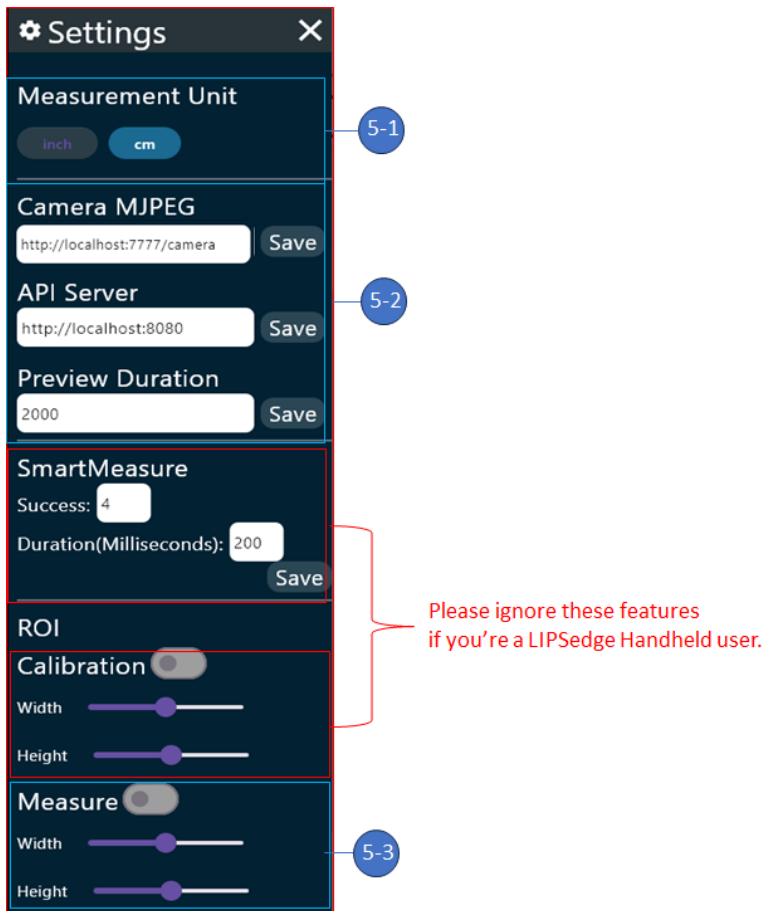
3.1 Software Interface

After launching the LIPSMetric Handheld APP, users can see the main page displayed:



1. **Preview Window:** Shows the camera view.
2. **Object metrics:** Shows the object metrics in cm /kg:
 - **Length:** The length of the target object (cm).
 - **Width:** The width of the target object (cm).
 - **Height:** The height of the target object (cm).
 - **Total:** The sum of the target object's length/width/height (cm).
 - **DIM wt:** The dimension weight of the target object. The formula is:
 Unit is cm: $\text{Length} \times \text{Width} \times \text{Height} / 5000$.
 Unit is inch: $\text{Length} \times \text{Width} \times \text{Height} / 305$.
3. **Barcode:** If users connect to the Bluetooth scanner. The blank will show the barcode information when users scan the barcode.
Clear: Clear the measurement of the Barcode value.
4. **Measure:** Find the size/weight of the target object. Ensure no shaking when users do the measurement. The best way is to first target the object for 0.5s and press the measurement button.

5. **Settings:** Adjust the following LIPSMetric Handheld APP settings, including the measurement unit/camera MJPEG/ API Server/ Preview Duration.



5-1:

- **Measurement unit:** Select the unit of measurement between cm/inch.

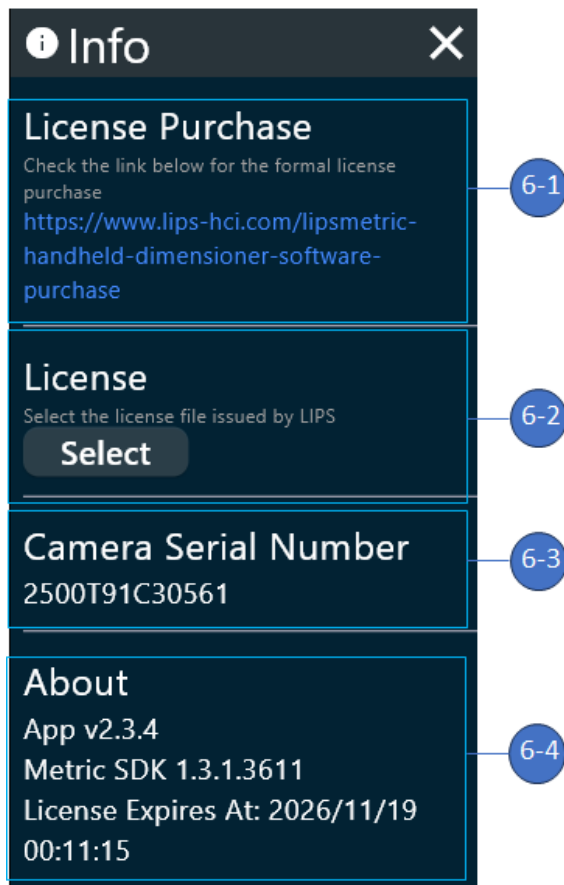
5-2:

- **Camera MJPEG:** MJPEG is a dynamic image compression technology developed based on JPEG's static image compression technology, which can generate serialized moving images.
Users can monitor the scene from the camera through the HostPC(<http://localhost:7777/camera>).
HostPC means the PC that activates the LIPSMetric_service or LIPSMetric Handheld APP.
- **API Server:** is the API server's IP.
- **Preview Duration:** this is the preview image update frequency. The unit is ms. With the minor number, the preview image update frequency will be faster.

5-3:

- **ROI Measure:** This feature will help users target the object

6. **Information:** Shows the current version number / License of LIPSMetric Handheld APP and Camera Serial Number.



6-1:

- **License Purchase:** Show the LIPS website so that users can purchase or check the latest version of the LIPS website.

6-2:

- **License:** The user can change the license version/type here after purchasing the license from LIPS.

6-3:

- **Camera Serial Number:** Show the Camera P/N.

6-4:

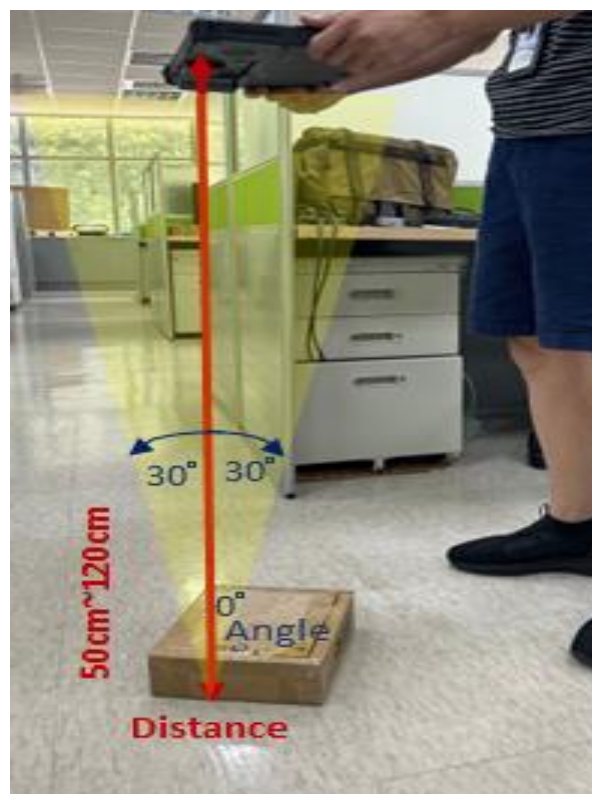
- **About:** Including the APP/Metric SDK version and the current license's expiration date.

3.2 Measurement

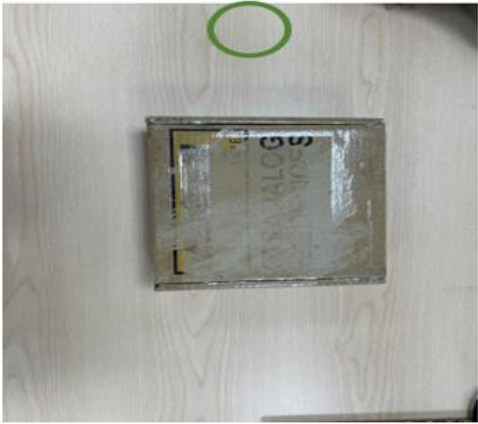
3.2.1 Handling & Environment

For the best results, please ensure the following requirements when measuring objects.

- ◆ **Orientation:** Hold the Microsoft Surface Go 3 horizontally and position the LIPSedge™ L210u's field of view toward the object during scanning.
- ◆ **Distance:** Keep a 50 – 120 cm distance between the camera and the target object.
- ◆ **Camera angle:** Align the camera perpendicular to the target object. The camera's field of view encompasses a 30° angle around the object.

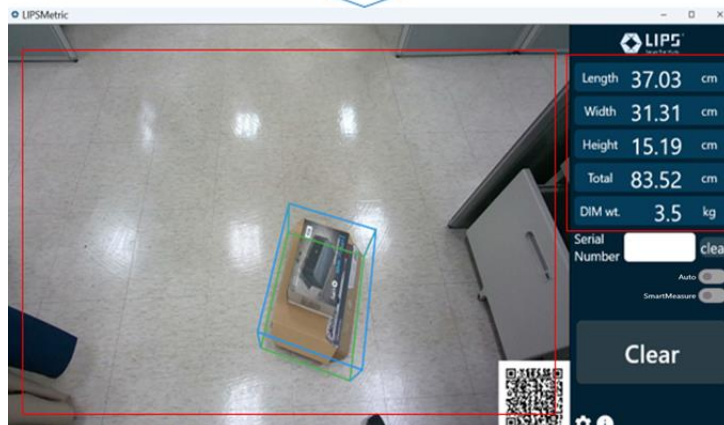
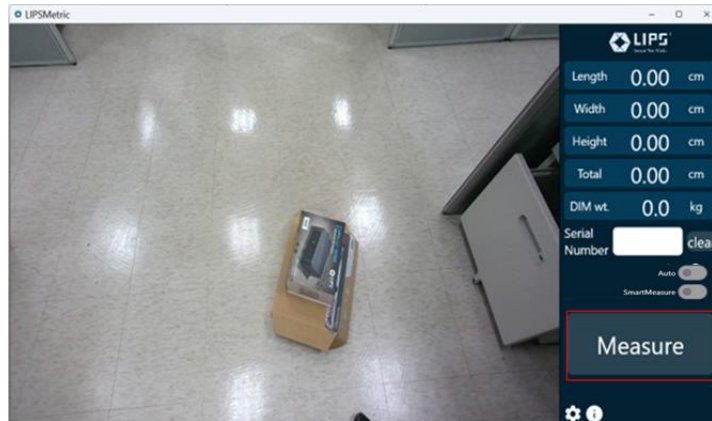


- ◆ **Environment:** Place the object on a level surface, free from other nearby objects.
- ◆ **Position:** Place the object within the center of LIPSedge™ L210u's FoV.
- ◆ **Object:** Ensure that the LIPSedge™ L210u's field of view captures **ONLY** a single object during scanning.

A single object placed at the center of the camera's FoV on the level surface	The target object is placed next to a cup-like object, which may interfere with the measurement.
	

3.2.2 Measurement

1. Aim the camera at the target object. Ensure the target object is positioned at a level panel with no other objects around.
2. Click Measure. The LIPSMetric Handheld APP will show the object's metrics.

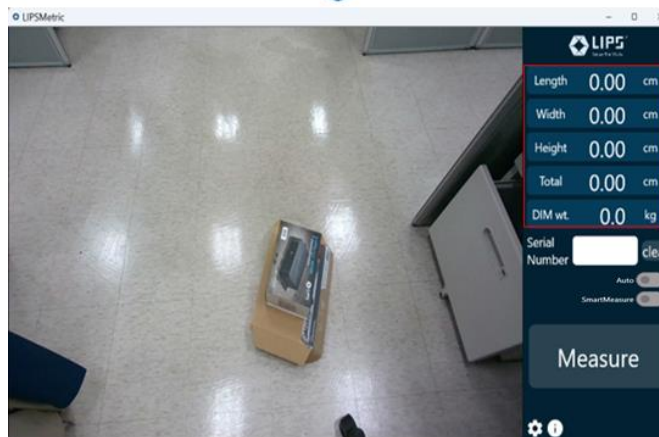


The result will show on the windows.
And the preview will be paused

3. Click the “Clear” button to continue for the subsequent measurement.



Users can continue for measurement when press the “Clear” button.



The result of measurement will return to 0 once pressing the “Clear” button.

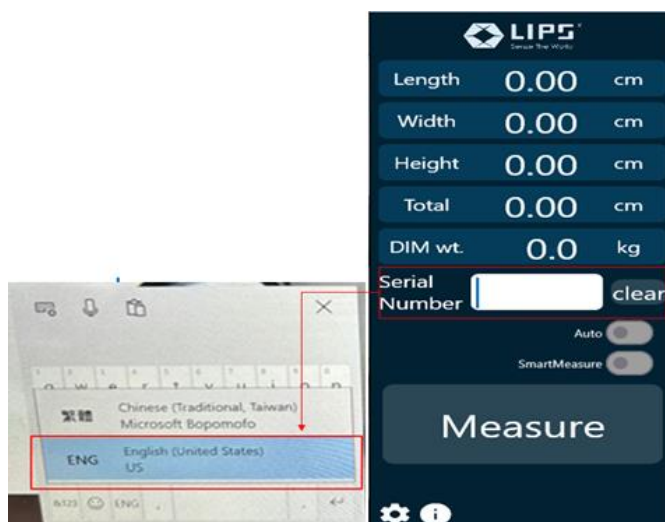
3.2.3 Barcode Scanner

LIPSMetric™ Handheld APP enables users to scan a target object with a barcode using a Bluetooth barcode scanner.

1. Connect the Bluetooth barcode scanner to the Microsoft Surface Go 3.
2. Activate the LIPSMetric Handheld APP.
3. Make sure to click the blank area of the barcode below.



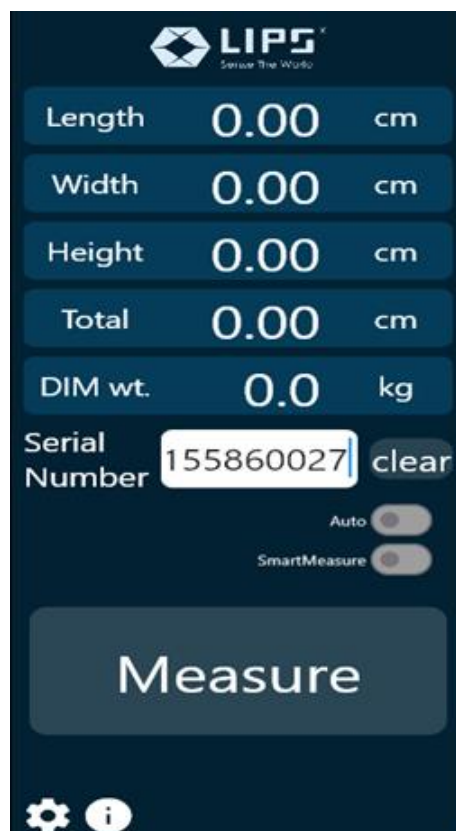
4. Make sure the input method engine is English input method before using the scanner.



5. Scan the barcode on the target object by using the Bluetooth barcode scanner.



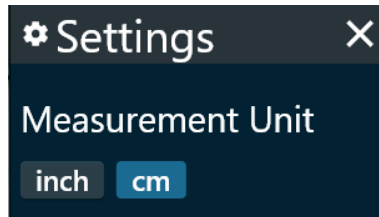
6. The barcode will be displayed in the LIPSMetric Handheld APP.



3.2.4 Setting

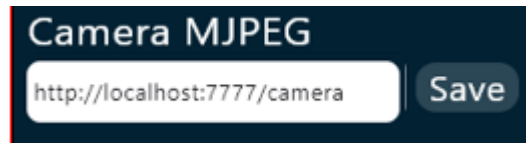
Users can adjust the LIPSMetric APP's settings for different functions for applications.

[Measurement Unit]



1. Start LIPSMetric Handheld APP and click at the lower right corner.
2. Under the Measurement Unit, users can choose the unit of target object metrics as centimeters (cm) or inches (inch).

[Camera MJPEG]



MJPEG is a dynamic image compression technology developed based on JPEG's static image compression technology, which can generate serialized moving images.

Users can monitor the scene from the camera through the IP of **Camera MJPEG**: `http://"Key in server's IP address":7777/camera`

Example:

1. Open the cmd file and key in "ipconfig" to check the server's IP address.

```
C:\Users\000310>ipconfig

Windows IP Configuration

Ethernet adapter 乙太網路:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter 區域連線* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter 區域連線* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

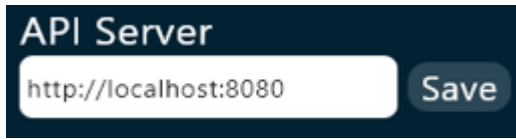
    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::ed63:e2ee:ca68:8076%10
    IPv4 Address. . . . . : 172.26.50.5
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 172.26.50.1

Ethernet adapter 藍牙網路連線:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
```

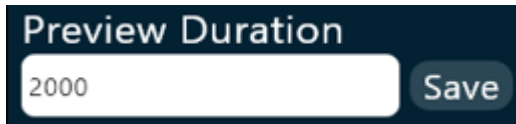
2. Open the LIPSMetric Handheld APP.
3. Copy and paste the `http://172.26.50.5:7777/camera` into the browser. Then, users can monitor the scene from the server.
4. Ensure other PCs' IP addresses are under the same IP address if users want to preview the scene from different PCs.

[API Server]

A dark-themed UI element titled "API Server". It contains a text input field with the value "http://localhost:8080" and a "Save" button to its right.

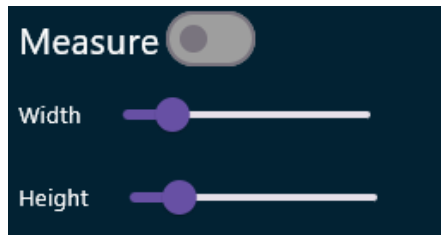
<http://localhost:8080> is the API Server's IP; users can execute it by following the "LIPSMetric SDK User Guide_v1.0 (English)."

[Preview Duration]

A dark-themed UI element titled "Preview Duration". It contains a text input field with the value "2000" and a "Save" button to its right.

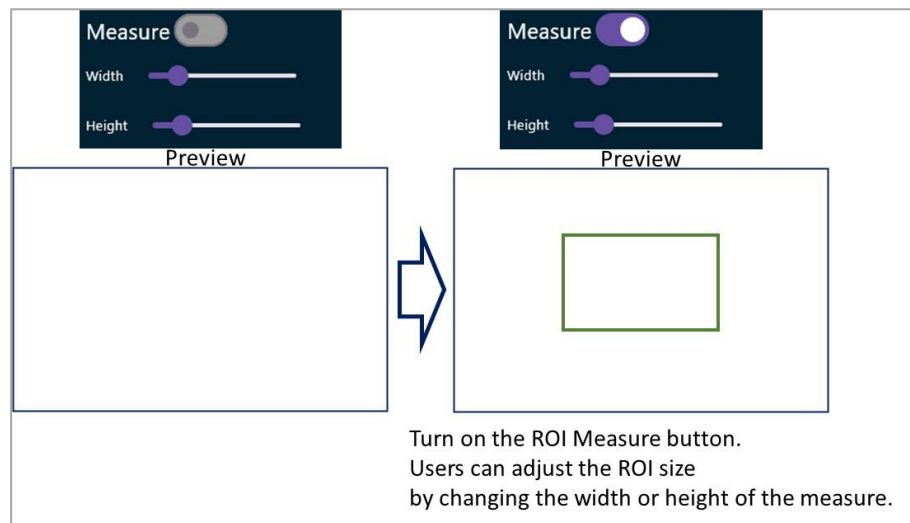
Preview Duration is the preview image update frequency. The unit is ms. The smaller the number, the faster the preview image update frequency.

[ROI Measure]

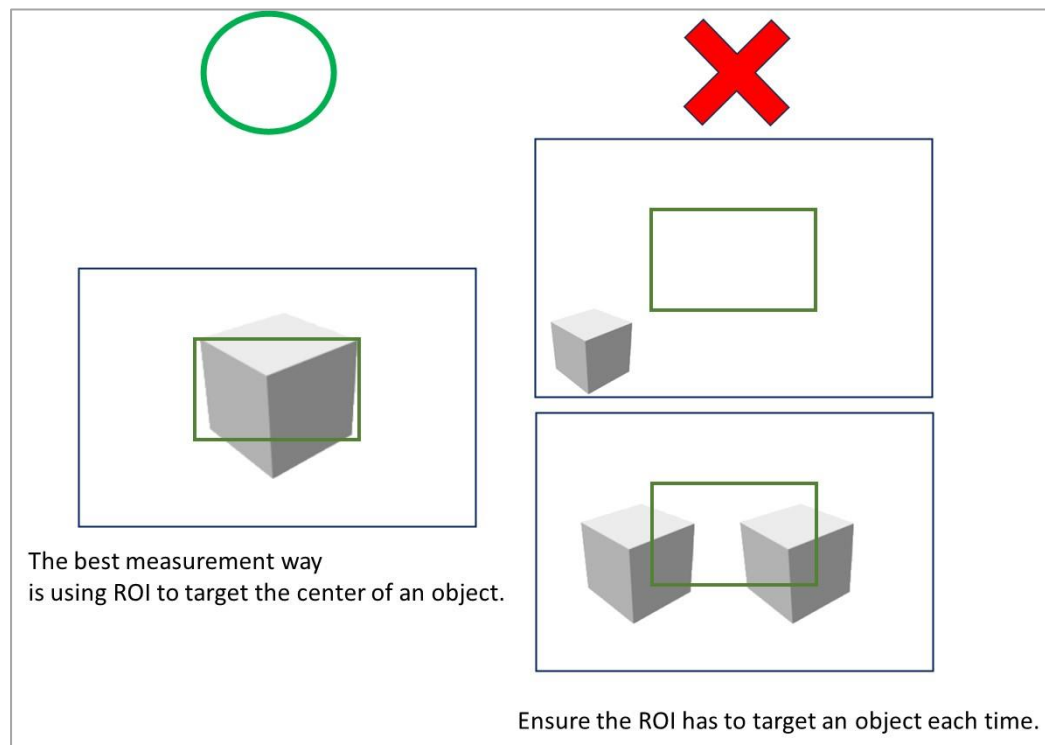


This feature can help users target an object quickly. Please follow the step below for measurement.

Step1:



Step2:



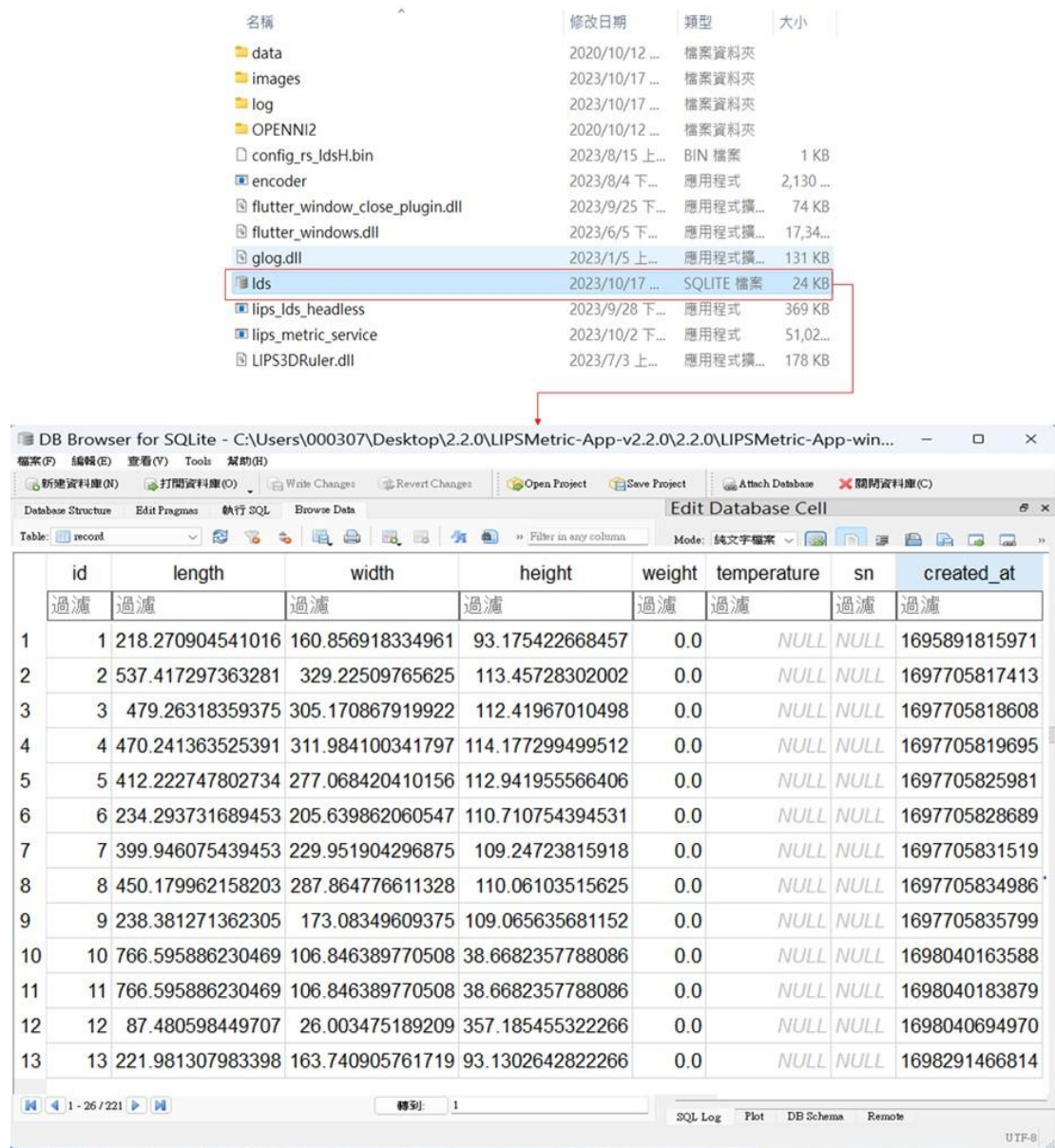
3.2.5 Data Log

The image and data log will be saved separately in the folders “images” and “LDS. sqlite.”

1. Image: users can find the measured image in the " images " folder like the path below.



2. Data log: users can use DB Browser for SQLite to query the data log from “lds.sqlite” like the path below.



The screenshot shows a file explorer window with the following files and folders:

名稱	修改日期	類型	大小
data	2020/10/12 ...	檔案資料夾	
images	2023/10/17 ...	檔案資料夾	
log	2023/10/17 ...	檔案資料夾	
OPENNI2	2020/10/12 ...	檔案資料夾	
config_rs_ldsh.bin	2023/8/15 上...	BIN 檔案	1 KB
encoder	2023/8/4 下...	應用程式	2,130 ...
flutter_window_close_plugin.dll	2023/9/25 下...	應用程式擴...	74 KB
flutter_windows.dll	2023/6/5 下...	應用程式擴...	17,34...
glog.dll	2023/1/5 上...	應用程式擴...	131 KB
lds	2023/10/17 ...	SQLITE 檔案	24 KB
lips_lds_headless	2023/9/28 下...	應用程式	369 KB
lips_metric_service	2023/10/2 下...	應用程式	51,02...
LIPS3DRuler.dll	2023/7/3 上...	應用程式擴...	178 KB

The 'lds' file is highlighted with a red box. An arrow points from this box to the DB Browser for SQLite window below.

The DB Browser for SQLite window shows the following table structure and data:

	id	length	width	height	weight	temperature	sn	created_at
1	1	218.270904541016	160.856918334961	93.175422668457	0.0	NULL	NULL	1695891815971
2	2	537.417297363281	329.22509765625	113.45728302002	0.0	NULL	NULL	1697705817413
3	3	479.26318359375	305.170867919922	112.41967010498	0.0	NULL	NULL	1697705818608
4	4	470.241363525391	311.984100341797	114.177299499512	0.0	NULL	NULL	1697705819695
5	5	412.222747802734	277.068420410156	112.941955566406	0.0	NULL	NULL	1697705825981
6	6	234.293731689453	205.639862060547	110.710754394531	0.0	NULL	NULL	1697705828689
7	7	399.946075439453	229.951904296875	109.24723815918	0.0	NULL	NULL	1697705831519
8	8	450.179962158203	287.864776611328	110.06103515625	0.0	NULL	NULL	1697705834986
9	9	238.381271362305	173.08349609375	109.065635681152	0.0	NULL	NULL	1697705835799
10	10	766.595886230469	106.846389770508	38.6682357788086	0.0	NULL	NULL	1698040163588
11	11	766.595886230469	106.846389770508	38.6682357788086	0.0	NULL	NULL	1698040183879
12	12	87.480598449707	26.003475189209	357.185455322266	0.0	NULL	NULL	1698040694970
13	13	221.981307983398	163.740905761719	93.1302642822266	0.0	NULL	NULL	1698291466814

The data log will save the length/ width/ height/ created_at(date) and measurement sequence.

- A. Length: The Measurement length for the object.
- B. Width: The Measurement length for the object.
- C. Height: The measurement of the length of the object.

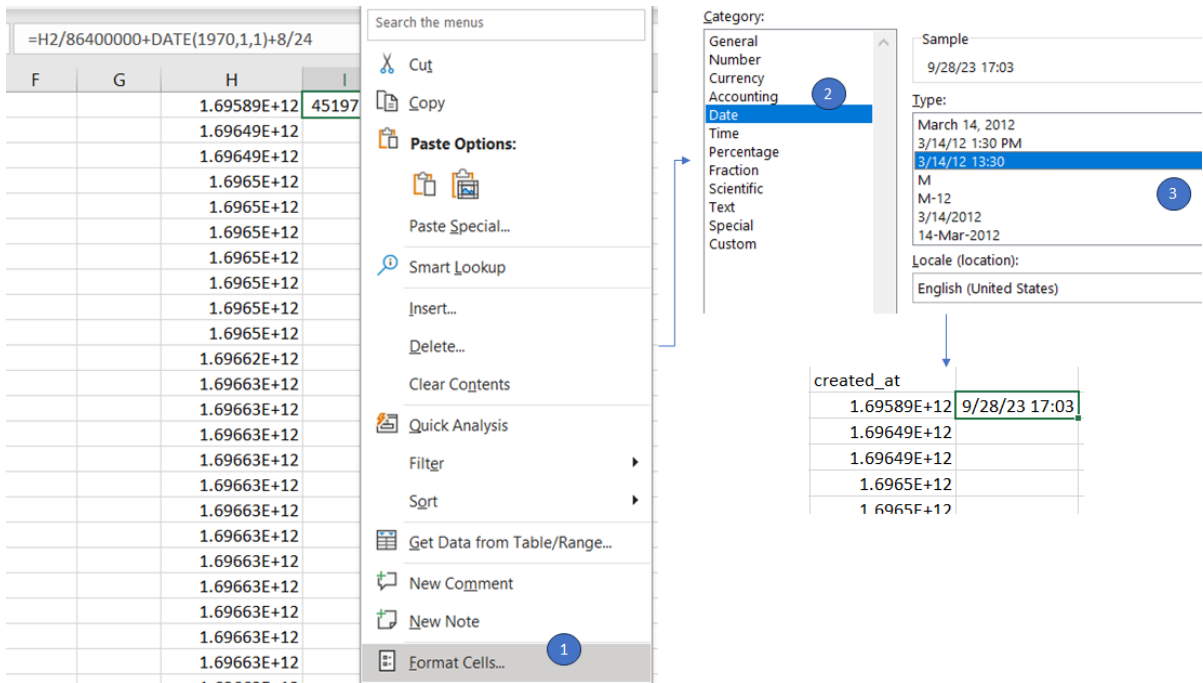
D. Created_at: Use Unix Timestamp to record the measurement time.

Users can use the below formula for Excel execution.

1. Step1: Copy → "Unix Timestamp number"
2. Step2: Key in → "Unix Timestamp number"/86400000+DATE(1970,1,1)+8/24

H	I	J	K
created_at			
1.69589E+12	=H2/86400000+DATE(1970,1,1)+8/24		
1.69649E+12			
1.69649E+12			
1.6965E+12			
1.6965E+12			

3. Step3: Change the Date's type of Category to x/xx/xx xx:xx .



The screenshot illustrates the steps to format a date in Excel. The main window shows a spreadsheet with Unix timestamps in column H. A right-click context menu is open over cell I2, with 'Format Cells...' selected (marked with a blue circle 1). To the right, the 'Format Cells' task pane is open, showing the 'Date' category selected (marked with a blue circle 2). Within the 'Date' category, the 'M-D-Y' format is chosen (marked with a blue circle 3). Below the task pane, a preview of the formatted date '9/28/23 17:03' is shown next to the original timestamp '1.69589E+12'.



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