



LIPSMetric™

Measure Master SDK

User's Manual

June 2026
Revision 1.0



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Revision History

Revision	Description	Date
V1.0	Initial release.	2026/6/17

System Requirements

LIPSMetric™ Measure Master SDK is compatible only with the following systems:

- Windows 11 (x64)
- Windows 10 (x64)

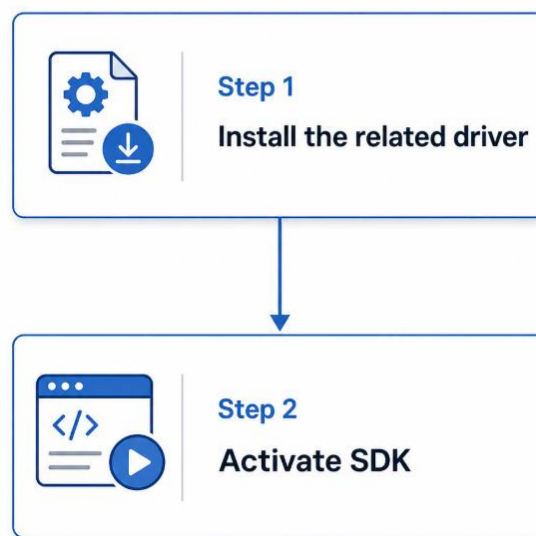
1. Overview

The LIPSMetric™ Measure Master SDK is a software development kit for integrating the LIPS Corp. all-in-one parcel dimensioning workstation into package measurement and packaging workflows. It runs on Windows 10 and Windows 11 devices, supports indoor calibration, and provides RGB image, width, length, height, and total dimension output. The SDK also supports RESTful API integration for measurement control, result retrieval, and system connection with external applications. Weight and print-out functions are available when the required external devices are connected.

2. Server Activation

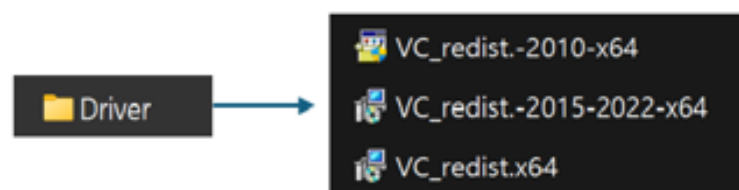
The LIPSMetric™ Measure Master SDK is included with the LIPSMetric™ Static Dimensioner. To use the SDK, install the required driver and start the SDK from the designated location.

SDK Startup Flow



1. Go to **Drivers** and install the related **drivers**:

Location: VC_redist.-2010-x64/ VC_redist.-2015-2022-x64/ VC_redist.x64



- Go to **ST110d > MeasureMasterSDK** and execute **start**.



- Upon successful activation, the system will prompt the following message:

```

Connect ret:0
2025-05-21 15:42:31.500 INFO Device::setImageRegistrationMode:1
2025-05-21 15:42:31.500 INFO Color_Stream::VideoMode is set to 640x480 @30 (RGB 888)
2025-05-21 15:42:31.581 INFO Depth_Stream::VideoMode is set to 640x400 @30 (1 mm)
2025-05-21 15:42:31.661 INFO IR_Stream::VideoMode is set to 640x480 @30 (Grayscale 16-bit)
Start Streaming
Create ruler instance
2500T91C50231

time="2025-05-21T15:52:24+08:00" level=info msg=".\\lips_lds_headless.exe"
Starting LIPS Metric Server...
  
```

3. SDK License

The LIPSMetric™ SDK Server will last for only 10min if users use the wrong license, and the 10min will be counted when users start the command for measuring. The server will show “free trial license expired” if users use the wrong license, like the below Windows example:

```

D:\Measure\APISYSTEMGROUP_101823-1\1.0.3101-RS\LIPS-Metric-API-win-1.1.0.3101\lips_metric_service.exe
time=2023-10-20T09:13:30+08:00 level=info msg=.\lips_lds_headless.exe
2023/10/20 09:31:02 free trail license expired

Microsoft Windows [Version 10.0.19045.3570]
(c) Microsoft Corporation. All rights reserved.

C:\Users\000310>curl -XPOST localhost:8080/v1/measure
{"code":200,"info":"","data":{"height":1300.5078125,"length":18.749692916870117,"px1":910.5038452148438,"px2":909.739501
953125,"px3":914.03125,"px4":914.7991943359375,"px5":706.9218139648438,"px6":704.4986572265625,"px7":719.8985595703125,"
px8":722.3690795898438,"py1":499.10760498046875,"py2":497.3687744140625,"py3":495.717529296875,"py4":497.45745849609375,
"py5":338.1651611328125,"py6":331.94482421875,"py7":324.90191650390625,"py8":331.1341247558594,"success":true,"timestamp
":1697764684138,"width":7.964866638183594,"weight":0,"temperature":null,"sn":null}}
C:\Users\000310>curl -XPOST localhost:8080/v1/measure
{"code":414,"info":"free trial license expired","data":{}}
```

The LIPSMetric™ SDK License is bundled with LIPSMetric™ SDK when users purchase it. If users found erroneous MeasureMaster SDK License, contact LIPS sales representatives at <https://www.lips-hci.com/> for the correct LIPSMetric™ SDK License.

4. API Endpoint Configuration

The LIPSMetric™ Measure Master SDK API provides REST API endpoints for 3D measurement, camera control, record management, ROI configuration, and image access. Use the following endpoint information to connect the SDK with local measurement workflows or external applications.

4.1 Basic Configuration

Basic configuration defines the server address and request content type required for API communication. Confirm these values before sending API requests.

- **Server Address:** `https://localhost:8080`
- **Content Type:** `application/json`

4.2 Camera Streaming

Camera streaming provides a live preview of the measurement area and ROI. The stream runs on port 7777 and is independent from the main API server on port 8080.

- Stream URL: `http://localhost:7777/camera`
- Format: MJPEG (Motion JPEG)

Usage Example:

View in browser:

`http://localhost:7777/camera`

<!-- Embed in HTML img tag -->

``

Description:

The camera stream is continuously pushed in MJPEG format, so polling is not required. It can be displayed directly in a browser or any MJPEG-compatible client. Local access does not require authentication. Use the stream for real-time preview of the measurement area and ROI.

4.2 Core Measurement Endpoints

Core measurement endpoints calibrate the camera, perform 3D measurement, and retrieve system information. Use these endpoints after the server and camera stream are available.

4.2.1 Calibrate Camera

Calibration measures the distance between the depth camera and the ground surface to support measurement accuracy.

Endpoint	GET /v1/calibrate
Request Example	curl -X GET https://localhost:8080/v1/calibrate
Response Example	
<pre>{ "code": 200, "data": { "height": 85.2, "success": true }, "info": "Calibration completed successfully" }</pre>	
Response Fields	
height	Distance from the camera to the ground, in centimeters. The error should be less than 1 cm from the actual distance.
sucess	Indicates whether calibration was successful.

4.2.2 Perform Measurement

Measurement calculates the object dimensions, corner coordinates, and related measurement data.

Endpoint	GET /v1/measure
Request Example	curl -X GET https://localhost:8080/v1/measure
Response Example	<pre>{ "code": 200, "data": { "width": 165.66665649414062, "length": 217.6666717529297, "height": 89.24185943603516, "px1": 833.41357421875, "py1": 384.050537109375, "px2": 650.2365112304688, "py2": 396.41387939453125, "px3": 633.2782592773438, "py3": 157.43719482421875, "px4": 816.2001953125, "py4": 141.47898864746094, "px5": 849.1298828125, "py5": 388.5976867675781, "px6": 641.6929931640625, "py6": 402.5044250488281, "px7": 622.5131225585938, "py7": 132.22145080566406, "px8": 829.6231079101562, "py8": 113.70721435546875, "sn": "TEST_BARCODE_001", "success": true, "temperature": 0.0, "timestamp": 1766990782455, "weight": 0.2, "image": "" } }</pre>



<pre> }, "info": "Measurement successful" } </pre>	
Response Fields	
width	Object dimensions, in millimeters.
length	
height	
px1 – px8	Pixel coordinates of the eight object corner points.
py1 – py8	
sn	Barcode serial number.
success	Indicates whether measurement was successful.
temperature	Temperature information.
timestamp	Measurement timestamp, in milliseconds.
weight	Weight, in kilograms.
image	Measurement image in Base64 format, if available.

3. System Information

System information returns the current SDK, product, camera, scale, and debug status.

Endpoint	GET /v1/system_info
Request Example	curl -X GET https://localhost:8080/v1/system_info
Response Example	
<pre>{ "code": 200, "data": { "apiVersion": "1.2.0", "product": "MeasureMaster", "cameraName": "LIPS AE400", "cameraSerial": "AE400-001", "cameraWidth": 640, "cameraHeight": 480, "isScaleEnabled": true, "scaleType": "METTLER_TOLEDO", "scalePort": "COM3", "rulerDebug": false }, "info": "System info retrieved" }</pre>	

4.3 Record Management Endpoints

Record management endpoints retrieve, delete, and count historical measurement records. Use these endpoints to review saved results or manage stored measurement data.

4.3.1 Query Records

Record query retrieves historical measurement records from the system.

Endpoint	GET /v1/record
Request Example	curl -X GET https://localhost:8080/v1/record
Response Example	
<pre>{ "code": 200, "data": [{ "id": 1, "height": 12.5, "length": 25.8, "width": 18.3, "weight": 150.0, "timestamp": 1708569469, "barcode": "1234567890" }], "info": "Records retrieved successfully" }</pre>	

4.3.2 Delete Records

Record deletion removes selected measurement records from the system.

Endpoint	DELETE /v1/record
Request Example	
<pre>curl -X DELETE https://localhost:8080/v1/record \ -H "Content-Type: application/json" \ -d '{ "recordIds": [1, 2, 3] }'</pre>	

4.3.3 Record Count

Record count returns the total number of stored measurement records.

Endpoint	GET /v1/record/count
Request Example	curl -X GET https://localhost:8080/v1/record/count
Response Example	
<pre>{ "code": 200, "data": { "count": 25 }, "info": "Record count retrieved" }</pre>	

4.4 Configuration Endpoints

Configuration endpoints set the measurement ROI and control whether the ROI bounding box is displayed. Configure ROI settings before measurement when a specific measurement region is required.

4.4.1 Set ROI (Region of Interest)

ROI setup defines the measurement region used by the system.

Endpoint	PUT /v1/set_roi
Request Example	
<pre>curl -X PUT https://localhost:8080/v1/set_roi \ -H "Content-Type: application/json" \ -d '{ "x": 100, "y": 100, "width": 400, "height": 300 }'</pre>	

4.4.2 ROI Display Control

ROI display control enables or disables the ROI bounding box on the camera preview.

Endpoint	PUT /v1/set_draw_roi
Request Example	
<pre>curl -X PUT https://localhost:8080/v1/set_draw_roi \ -H "Content-Type: application/json" \ -d '{ "enabled": true }'</pre>	

4.5 Static Files

Static file access provides a path for retrieving saved measurement images. Use the image endpoint when a measurement photo needs to be displayed or downloaded.

4.5.1 Image Access

Image access retrieves measurement photos by filename.

Endpoint	GET /images/<filename>
Example	
GET /images/1708569469.jpg	

4.5 Common Response Format

The common response format standardizes API output for status, message, and returned data. Check the code and info fields before processing the data field.

Response Format	
<pre>{ "code": 200, "info": "Operation message", "data": { /* Specific data */ } }</pre>	
Status Code Descriptions	
200	Success
400	Request error
500	Server error

4.6 Recommended Usage Flow

The recommended usage flow provides the basic sequence for ROI setup, calibration, measurement, and record review. Follow this order during normal operation unless the project workflow specifies otherwise.

1. **Set ROI:** Use PUT /v1/set_roi to set the measurement region, if required.
2. **Calibrate:** Use GET /v1/calibrate to calibrate the camera.
3. **Perform Measurement:** Use GET /v1/measure to perform 3D measurement.
4. **Query Records:** Use GET /v1/record to view historical measurement results.

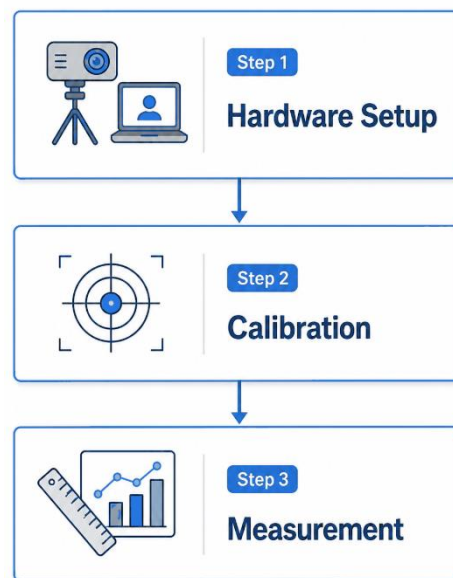
4.7 Important Notes

- Calibration must be performed before measurement to support measurement accuracy.
- Photo files are saved automatically and can be accessed by timestamp.
- Electronic scale integration is supported for weight information.
- ROI settings can improve measurement accuracy for specific measurement regions.

5. Measurement

Before starting this chapter, the measurement process follows three main stages: **hardware setup**, **calibration**, and **measurement**. Hardware setup prepares the required devices and connections before system operation. Calibration aligns the system to the installation environment so measurement can be performed with the configured settings.

Measurement Process



5.1 Hardware setup

Before installation, confirm that the camera is mounted at the suggested height. Ensure that both sides of the camera are horizontally aligned and not tilted. Proper camera height and horizontal alignment help maintain a stable field of view for calibration and measurement.

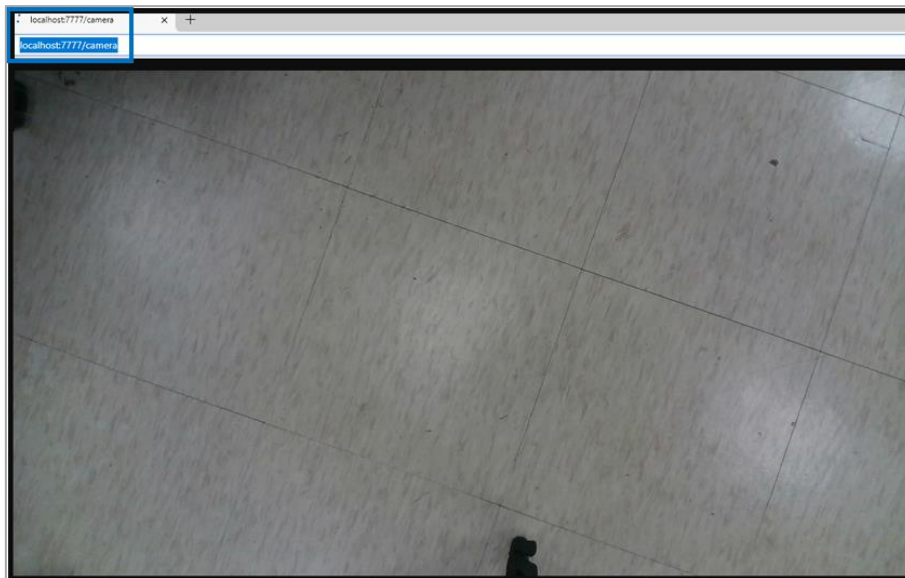


- ◆ **Height:** Suggested Camera Height to the ground: 150cm
- ◆ **Alignment:** Ensure both camera sides are mounted horizontally and not tilted.

5.2 Calibration

The calibration is executed through the RESTful API. As a result, Postman is used to conduct the calibration. Make sure the request method, URL, parameters, and values match the procedure before sending each request. After calibration is complete, disable the calibration ROI display to keep the camera view clear for normal operation.

1. Open the browser and activate the stream by entering “localhost:7777/camera”.



2. Activate the calibration ROI by entering the command below using Postman.

PUT localhost:8080/v1/set_draw_roi

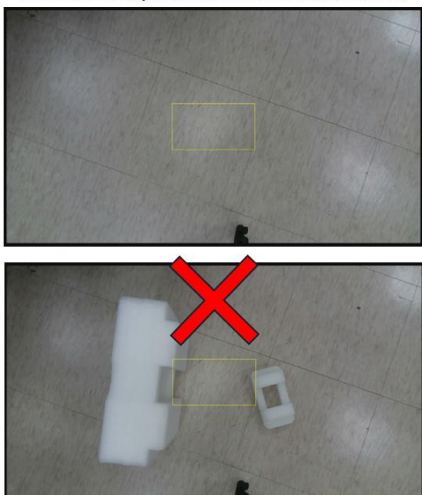
Params Authorization Headers (8) **Body** Pre-req

☐ none ☐ form-data ☐ x-www-form-urlencoded ☒ raw

```

1  {
2    "enable": true,
3    "type": "calibrate"
4  }
5  
```

Please ensure the Calibrate ROI is clear.
There are no objects close to the calibrated ROI.



3. Adjust the calibration ROI size before performing the calibration using Postman. The recommended size is between 0.15~0.3

PUT localhost:8080/v1/set_roi Send

Params Authorization Headers (8) **Body** Pre-request Script Cookies

☐ none ☐ form-data ☐ x-www-form-urlencoded ☒ raw ☐ binary Beautify

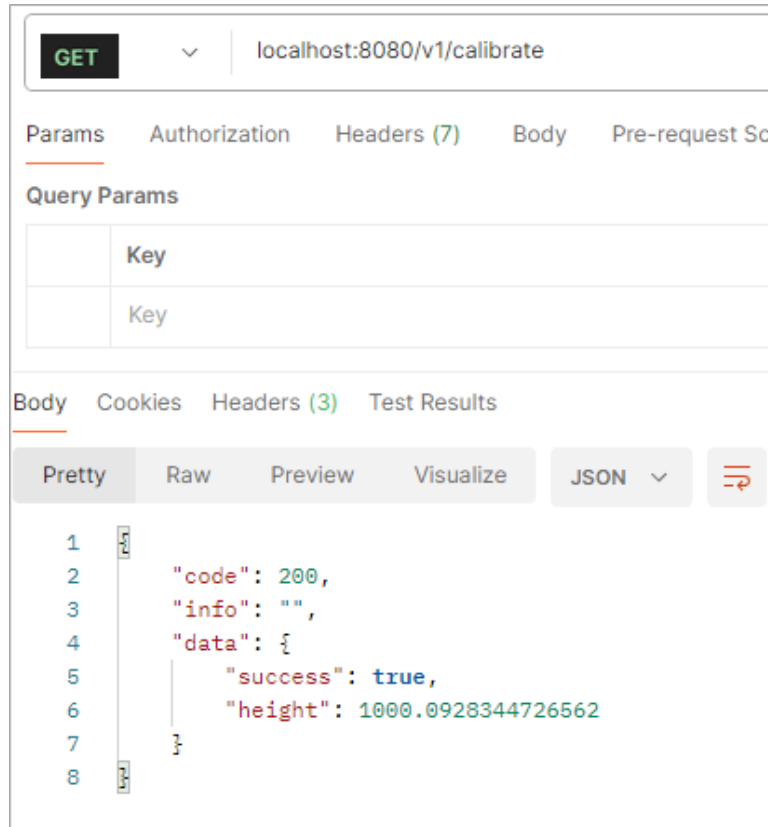
```

1  {
2
3    "height": 0.15,
4    "type": "calibrate",
5    "width": 0.15
6  }

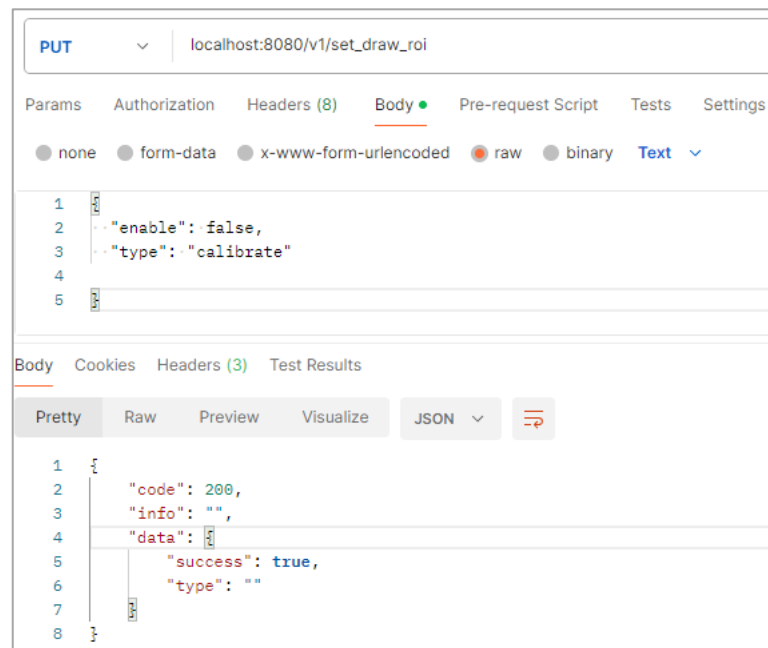
```



- Execute the calibration by entering “localhost:8080/v1/calibrate” using Postman”. We can see that the calibration value is equal to 1000mm, as shown in the result below. (1000mm here is an example)



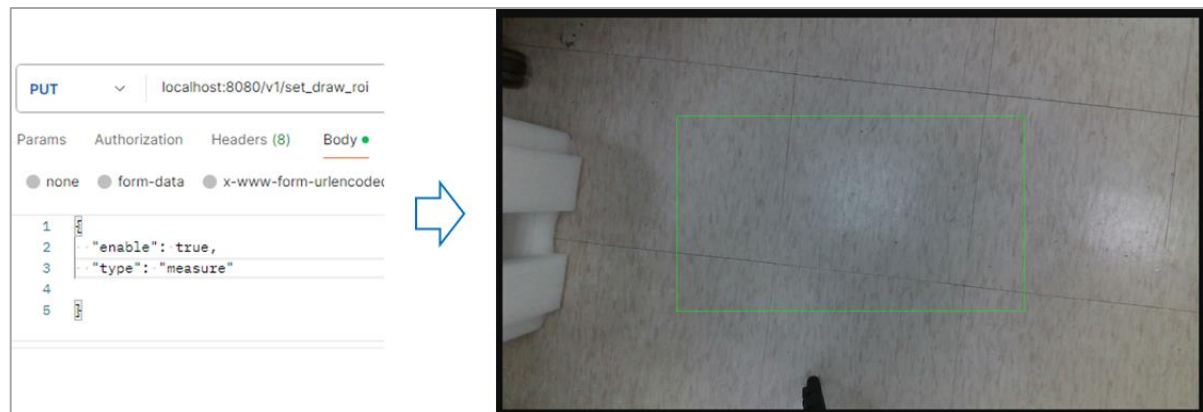
- After calibrating, please set the calibrate ROI to false. It aims to keep the screen clean.



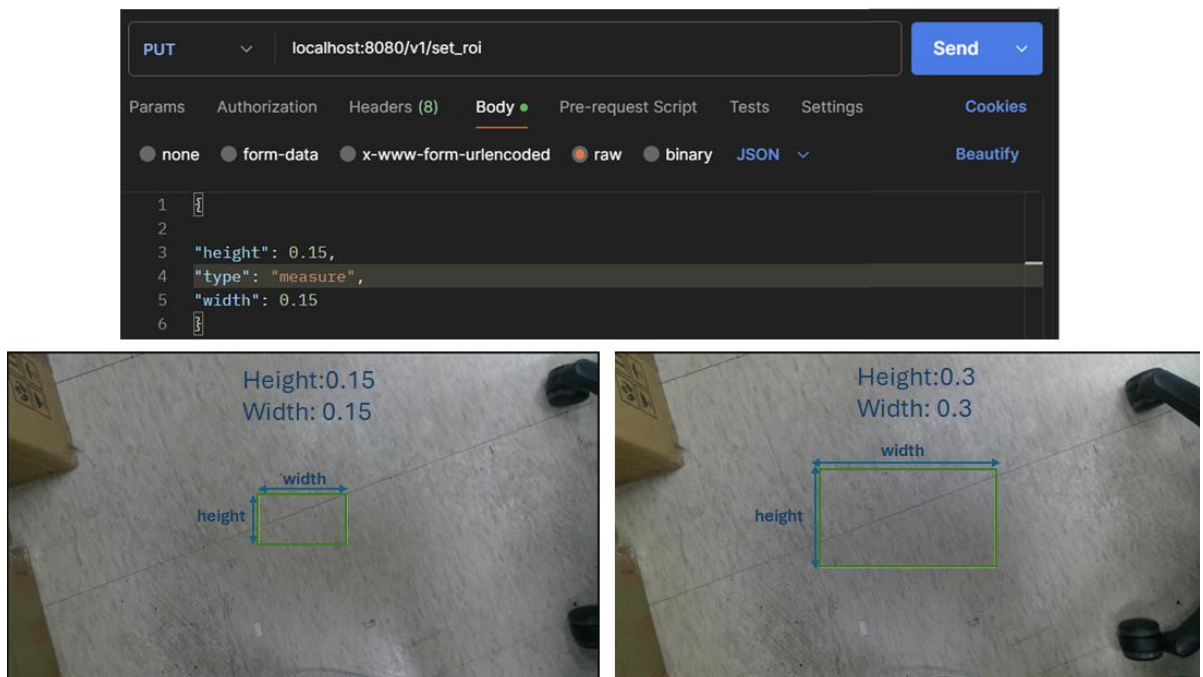
5.3 Measurement

Set the Measurement ROI according to the measurement area and verify that the object is correctly positioned inside the ROI. During measurement, keep the ROI clear of unrelated contact or interference to maintain result accuracy.

1. Activate the Measurement ROI and use the browser to check the stream.



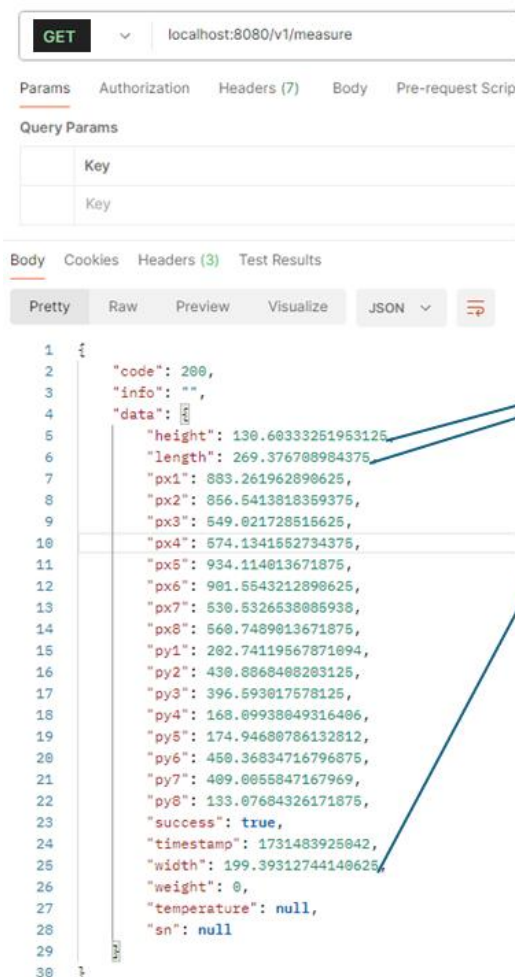
2. Adjust the Measurement ROI size before the measurement. (The recommended size is 0.15~0.3)



- Ensure that only an object is touched in the measurement ROI when users do the measurement.



- Execute the measurement by entering "localhost:8080/v1/measure" using Postman. Users can see the measurement result below.



Measurement Value:
Length: 269mm
Width: 199mm
Height: 130mm

Ground Truth Value:
Length: 267mm
Width: 200mm
Height: 132mm



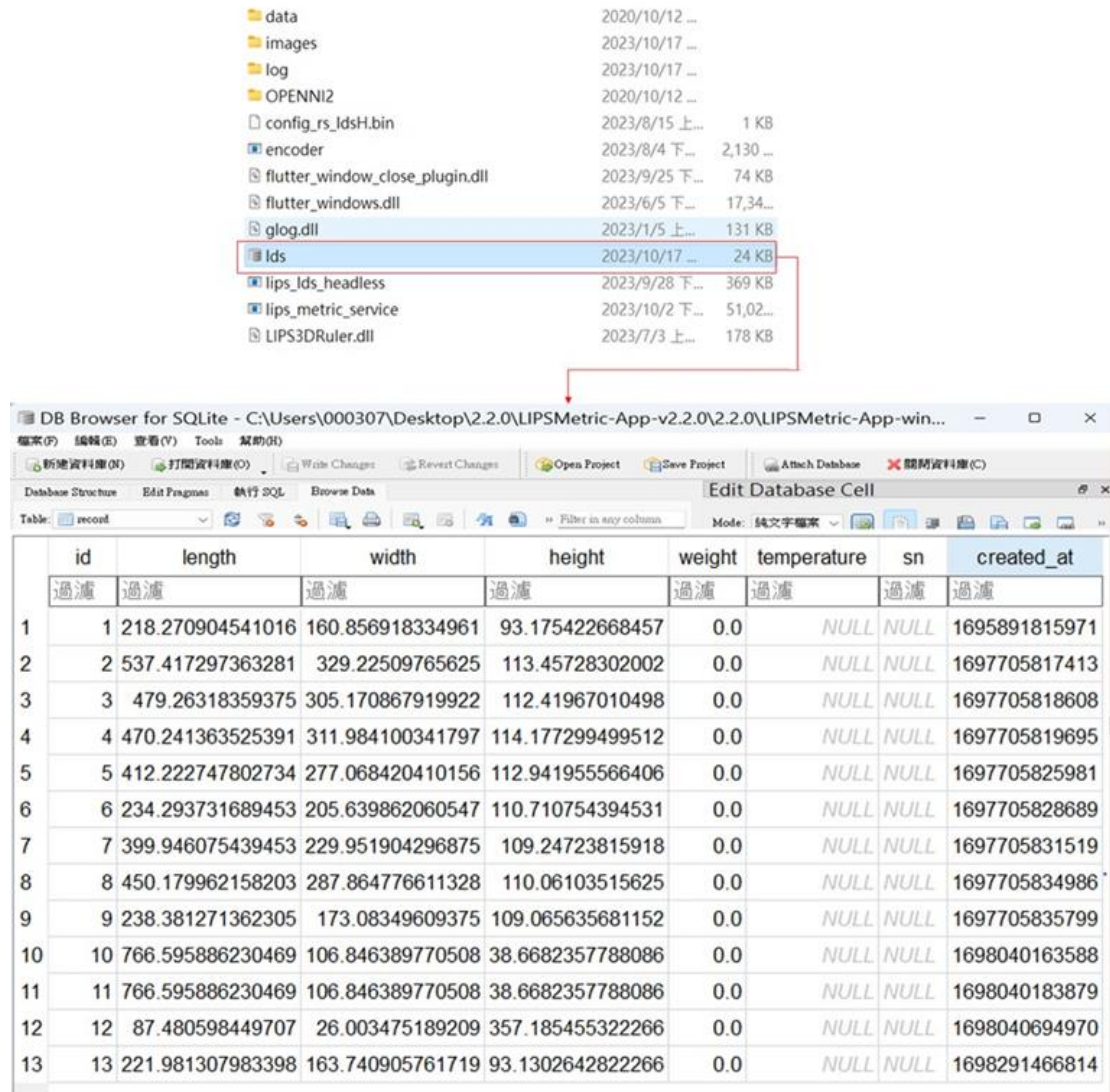
6. Data Log

The image and data log will be saved in separate folders on the user's PC, containing "images" and "LDS.sqlite."

1. Image: The measured image can be found in the " images " folder by following the path below.



- Data log: Users can use DB Browser for SQLite to query the data log from “LDS.sqlite” using the path below.



The first screenshot shows a file explorer window with the following files and their sizes:

File Name	Size
data	2020/10/12 ...
images	2023/10/17 ...
log	2023/10/17 ...
OPENNI2	2020/10/12 ...
config_rs_ldsH.bin	2023/8/15 上... 1 KB
encoder	2023/8/4 下... 2,130 ...
flutter_window_close_plugin.dll	2023/9/25 下... 74 KB
flutter_windows.dll	2023/6/5 下... 17,34...
glog.dll	2023/1/5 上... 131 KB
Lds	2023/10/17 ... 24 KB
lips_lds_headless	2023/9/28 下... 369 KB
lips_metric_service	2023/10/2 下... 51,02...
LIPS3DRuler.dll	2023/7/3 上... 178 KB

The second screenshot shows the DB Browser for SQLite interface. The table structure is as follows:

id	length	width	height	weight	temperature	sn	created_at
1	218.270904541016	160.856918334961	93.175422668457	0.0	NULL	NULL	1695891815971
2	537.417297363281	329.22509765625	113.45728302002	0.0	NULL	NULL	1697705817413
3	479.26318359375	305.170867919922	112.41967010498	0.0	NULL	NULL	1697705818608
4	470.241363525391	311.984100341797	114.177299499512	0.0	NULL	NULL	1697705819695
5	412.222747802734	277.068420410156	112.941955566406	0.0	NULL	NULL	1697705825981
6	234.293731689453	205.639862060547	110.710754394531	0.0	NULL	NULL	1697705828689
7	399.946075439453	229.951904296875	109.24723815918	0.0	NULL	NULL	1697705831519
8	450.179962158203	287.864776611328	110.06103515625	0.0	NULL	NULL	1697705834986
9	238.381271362305	173.08349609375	109.065635681152	0.0	NULL	NULL	1697705835799
10	766.595886230469	106.846389770508	38.6682357788086	0.0	NULL	NULL	1698040163588
11	766.595886230469	106.846389770508	38.6682357788086	0.0	NULL	NULL	1698040183879
12	87.480598449707	26.003475189209	357.185455322266	0.0	NULL	NULL	1698040694970
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.
 - Length: The Measurement length for an object.
 - Width: The Measurement length for an object.
 - Height: The Measurement length for an object.
 - Created_at: Record the measurement time using a Unix Timestamp.

Users can execute the formula below in Excel.

6.1 Timestamp Conversion

Follow the instructions to convert timestamps.

1. Copy → “Unix Timestamp number”
2. 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. Change the Date's type of Category to x/xx/xx xx:xx .

The screenshot illustrates the steps to convert Unix timestamps in the LIPS software:

- Spreadsheet:** A table with columns F, G, H, and I. Column H contains Unix timestamps (e.g., 1.69589E+12, 1.69649E+12). Column I contains the formula `=H2/86400000+DATE(1970,1,1)+8/24`. The formula bar shows the same formula.
- Context Menu:** A right-click menu is open over the spreadsheet. The 'Format Cells...' option is highlighted with a blue circle labeled '1'.
- Category List:** A 'Category:' dropdown menu is open, showing options like General, Number, Currency, Accounting, Date, Time, Percentage, Fraction, Scientific, Text, Special, and Custom. The 'Date' option is selected with a blue circle labeled '2'.
- Sample Data View:** A 'Sample' view shows the result of the conversion. The 'Type:' dropdown is set to 'Date'. The 'Locale (location):' is set to 'English (United States)'. The 'Sample' data shows the timestamp 1.69589E+12 converted to the date and time '9/28/23 17:03', which is highlighted with a blue circle labeled '3'.

7. Appendix (Private by owner)

7.1 Regulatory Compliance Notice



FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



FCC Label Notice



This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.



CE Compliance

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.



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