Chlorophyll Meter

LMYM-A100

www.labmate.com | info@labmate.com

Index

1. Introduction

Chlorophyll Meter LMYM-A100 detects nitrogen up to 99.9 mg/g and humidity levels up to 99.9%RH on leaf surfaces. It features rapid analysis, providing readings within 3 seconds for agricultural and research activities. Incorporated with a data storage capacity of 999 sets, allowing seamless tracking of recorded values. Equipped with an advanced optical 2×2 mm sensor, facilitating minimal contact sampling for plant assessments. Our Chlorophyll Meter LMYM-A100 aids in evaluating vegetation health while preserving their structural integrity.

2. Features

- Multi-Parameter Measurement
- Portable and Lightweight
- Rechargeable Lithium-ion battery
- Low Power Consumption
- High-Resolution Display

3. Specifications

Model No.	LMYM-A100
Test Parameters	Chlorophyll content, Nitrogen content, Leaf temperature, Leaf humidity
Measuring Range	Chlorophyll: 0.0 to 99.9 SPAD, Leaf surface temperature: -10 to 99.9°C, Nitrogen content: 0.0 to 99.9mg/g, Leaf surface humidity: 0.0 to 99.9%RH
Measuring Accuracy	Chlorophyll: ± 1.0 SPAD (values range from 0 to 50 at room temperature), Leaf surface temperature: ±0.5°C, Nitrogen content: ±5%, Leaf surface humidity: ±0.5%
Repeatability	Chlorophyll: ± 0.3 SPAD (values range from 0 to 50), Leaf surface temperature: ±0.2°C, Nitrogen content: ±0.5, Leaf surface humidity: ±0.5%
Measuring Time Interval	Less than 3 Seconds
Data Storage Capacity	999 groups
Memory	30 KB
Operating Temperature	0 to 50°C
Storage Temperature	-20 to 55°C
Working & Storage Environment	-10 to 50°C, 85% RH
Battery Capacity	2000mAh
Power Supply	4.2V rechargeable Lithium-ion (Li-ion) Battery
Measuring Area	2×2mAh
Weight	200 grams

4. Applications

Chlorophyll Meter LMYM-A100 is essential for crop health assessment, enhances fertilizer efficiency, and detects plant stress factors like drought, nutrient deficiencies, and diseases in agriculture and farming.

5. Working Principle

The working principle of chlorophyll analyzer:

1) Two LED light sources emit two kinds of light, one is red (peak wavelength 650nm), and one is infrared (940nm), two kinds of light through the blade, hit the receiver, and the optical signal into analog signals, The analog signal is amplified by the amplifier, converted by the analog/digital converter into a digital signal, the digital signal is processed by the microprocessor, the SPAD value is calculated and displayed on the display.
2) Calibration and calculation of chlorophyll analyzer measurements:
   - During the calibration process, the indenter is not clamped, the two LEDs are illuminated in turn, and the received light is converted into an electrical signal. The ratio of the light intensity is used to calculate.
   - After the sample is clamped on the indenter, the two LEDs are illuminated again, and the light transmitted through the blade is hit on the receiver and converted into an electrical signal. The intensity ratio of the transmitted light is calculated.
   - The values of steps 1 and 2 are used to calculate the SPAD measurements, which represent the relative chlorophyll content of the sandwiched sample leaves.

Figure-1

6. Software Operations

6.1 Calibration

1) Open the power switch, into the main interface as follows.

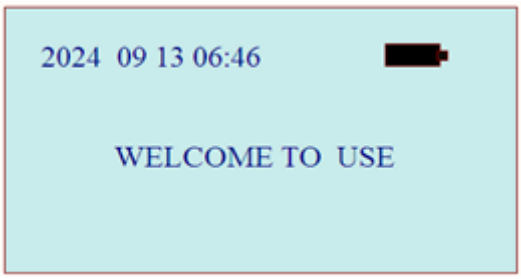


Figure-2

2) Press the measurement indenter to calibrate (at this time not allowed to place any objects in the measurement position) until the display shows "**check successful**", while the buzzer will be issued a "**drops**" sound, indicating that the instrument has been calibrated, then loose Open the measurement head, you can start measuring, as shown below:

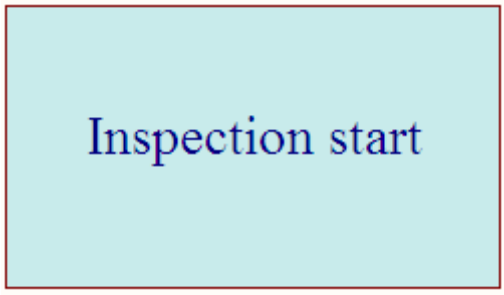


Figure-3

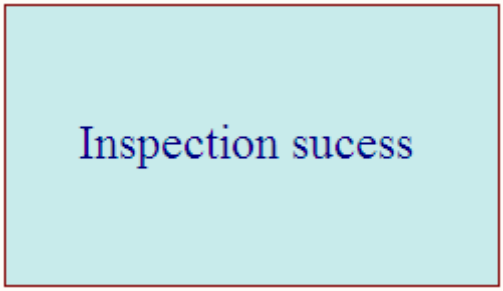


Figure-4

6.2 Measurement

When measuring plant leaves into the measurement position, and pressing the measurement pressure head for two to three seconds, the display will automatically show the measured leaf chlorophyll value, nitrogen value, leaf moisture value, and leaf temperature value, While the buzzer will send out a "**drop**" sound, then release measurement head, as shown below:

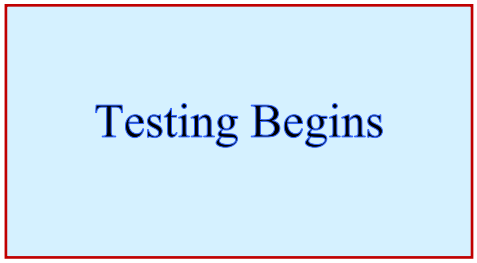


Figure-5

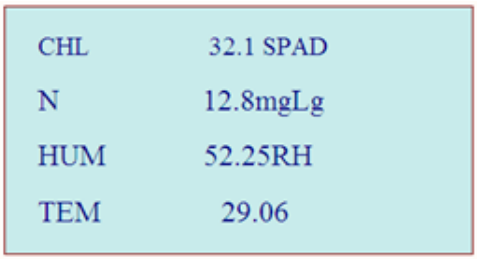


Figure-6

Chlorophyll: 32.1 SPAD
Nitrogen content: 12.8 mg/g
Leaf humidity: 52.25RH%
Leaf temperature: 29.06°C
Press the measuring head again. Then, you can measure directly to the next. After the measurement, the users can do it directly through the shutdown button to turn it off.

6.3 Average value

Under the main interface, long press the **ok** key for 3 seconds, recent average data is shown in the figure below:

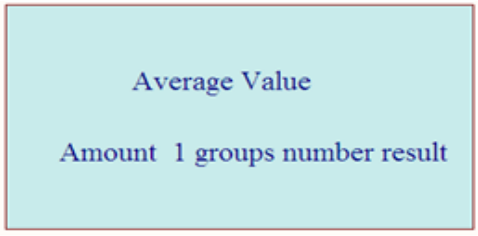


Figure-7

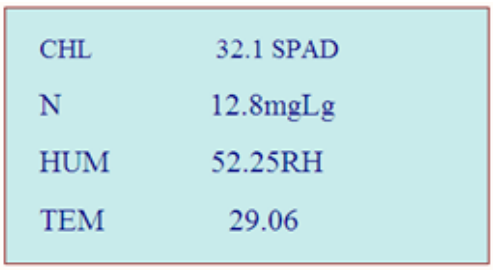


Figure-8

Absence of new measurement data, the average value will appear below:

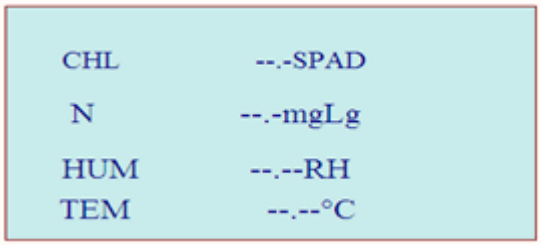


Figure-9

Chlorophyll – SPAD
Nitrogen content – mg/g
Leaf humidity – RH%
Leaf temperature - °C

6.4 Setting menu

Under the "main screen" press the "**function**" key to enter the "**system setting**" interface, which can be carried out in "System Settings", "view data", "delete data", and "about us" operations, the following figure.

Figure-10

System settings
View data
Delete data
About us

6.5 System settings

In the "**System setting**" interface, can be set "clock", "energy saving Settings", "language", and "backlight Settings" operations.

6.5.1 Clock setting

“Menu interface" press the "**ok**" button to enter the "**Clock Settings**" interface, according to the "function" key to move the cursor, press the "**direction**" key to adjust the number, press the "**ok**" key to exit, set up the success, following figure.

Figure-11

System settings
View data
Delete data
About us

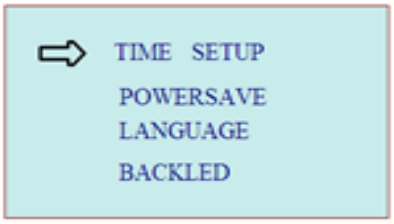


Figure-12

Clock setting
Energy saving settings
Language settings
BACK LED

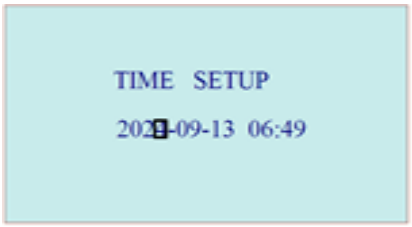


Figure-13

Clock settings
2013-12-12 12:12

"Menu interface" press the "**ok**" button to enter the "energy saving Settings" interface, press the "**direction**" key to adjust the number, press the "**ok**" key to exit, and set up the success, the following figure:

6.5.2 System Setting

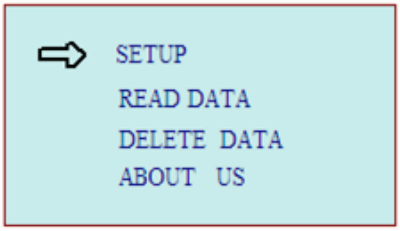


Figure-14

System settings
View data
Delete data
About us

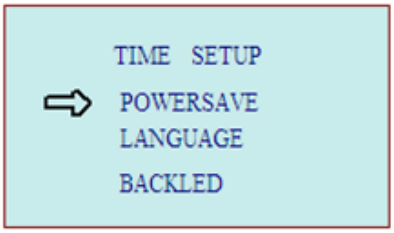


Figure-15

Clock setting
Energy saving setting
Language settings
Backlight settings

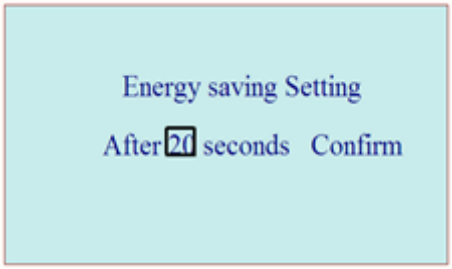


Figure-16

Energy saving setting
After 20 seconds Confirm

Note: Time set to 00 seconds is not a standby state.

6.5.3 Language settings

Under "menu interface" press the "**ok**" button to enter the "**language Settings**" interface, press the "function" key to switch, press the "**ok**" key to exit, and set up the success, the following figure:

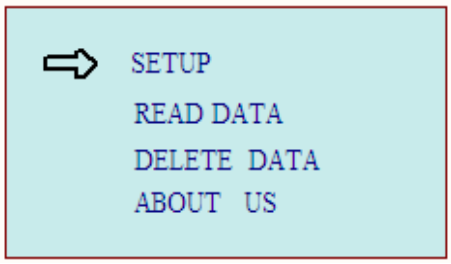


Figure-17

System setting
Seen data
Delete data
About Us

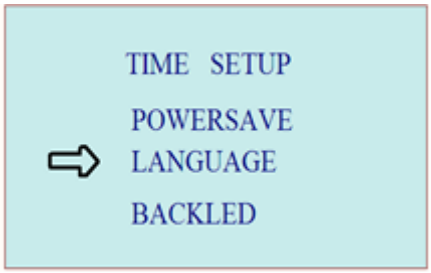


Figure-18

Clock setting
Energy saving setting
Language setting
Backlight setting

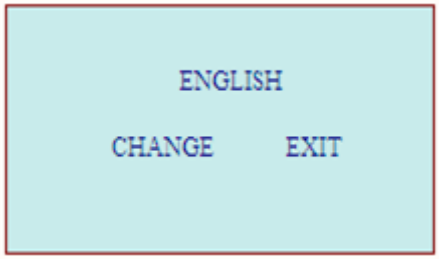


Figure-19

English
Swift Confirm

6.5.4 Backlight settings

Under "menu interface" press the "**ok**" button to enter the "**backlight Settings**" interface, press the "**direction**" key to adjust the value, press the "**ok**" key to exit, and set up the success, the following figure:

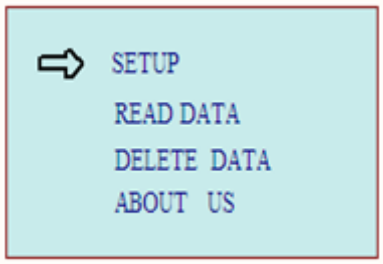


Figure-20

System setting
Seen data
Delete data
About us

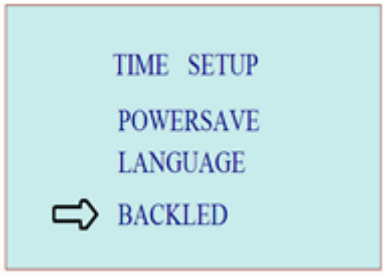


Figure-21

Clock setting
Energy saving setting
Language setting
Backlight setting

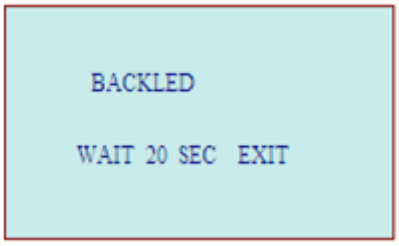


Figure-22

Backlight
After 20 seconds Confirm

6.6 Check data

Order View:
Press the "**OK**" button to enter the "**view data**" interface, press the "**direction**" button to view the number of groups, and press the "**OK**" button to exit, as shown below:

Figure-23

System setting
Check data
Delete data
About us

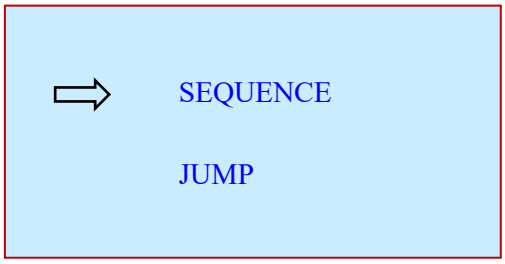


Figure-24

Order to view
Jump to view

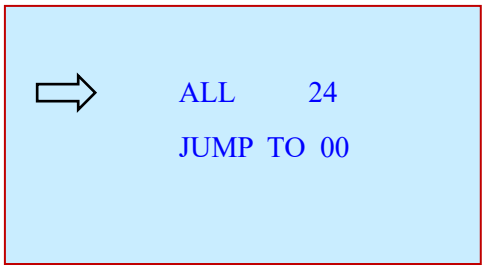


Figure-25

Total 1 group records
First group records

6.7 Delete data

Delete All Data:
Press the "**ok**" button to enter the menu interface "**data**" delete "interface, select" delete all ", and remove all data (**Note:** Careful operation), the following figure:

Figure-26

System setting Delete All Total One group data
Check data Delete One Data Jump to the – group data Delete
Delete data
About us
Note: To delete a single, only delete data, the group number remains the same.

6.8 PC Software

6.8.1 Software Overview

The chlorophyll analyzer system is the plant chlorophyll, and leaf temperature (nitrogen value, or leaf moisture) data to read, query, and export the software, user-friendly query management data and provide intuitive and accurate data analysis.

6.8.2 Software Interface Introduction

Software interface including area of toolbars, query, display area.
Main interface:
Start the software, automatically monitoring the USB device, if there is no monitoring to pop up the following interface.
1) Open the package, as shown below, and click open to run the software.

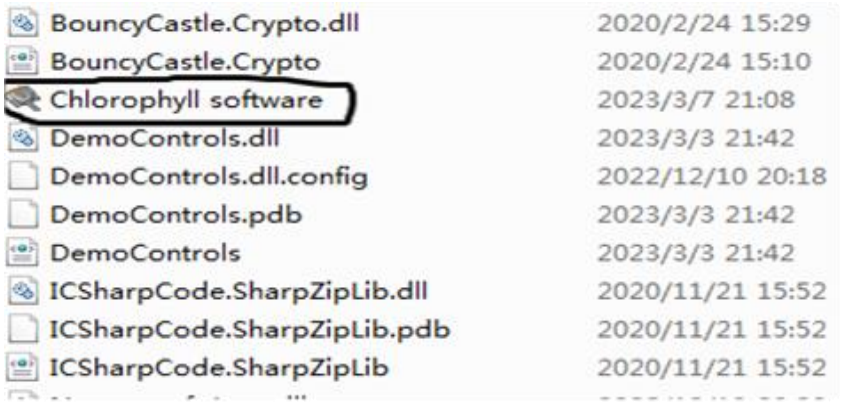


Figure-27

2) Select the baud rate of 9600, other settings default.

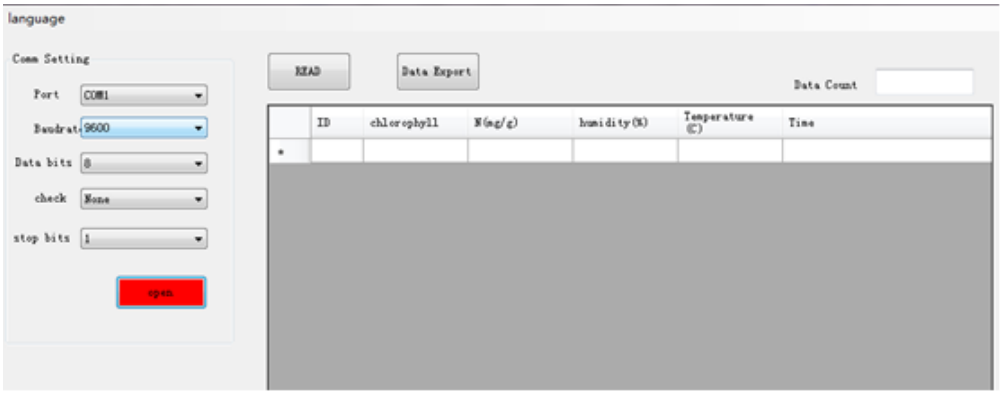


Figure-28

The operation is shown below.

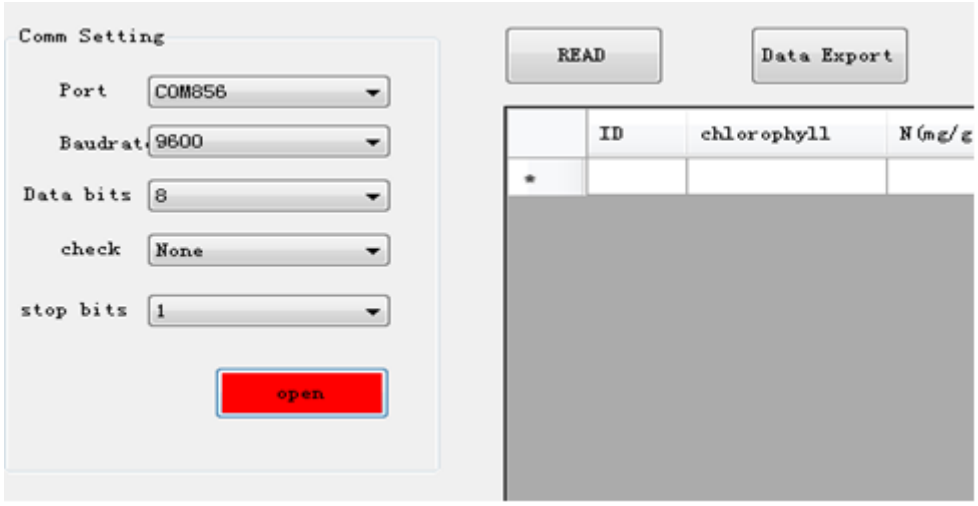


Figure-29

Figure-30

3) Open the serial port, and open the green flag successfully, the default is read; follow the figure below.

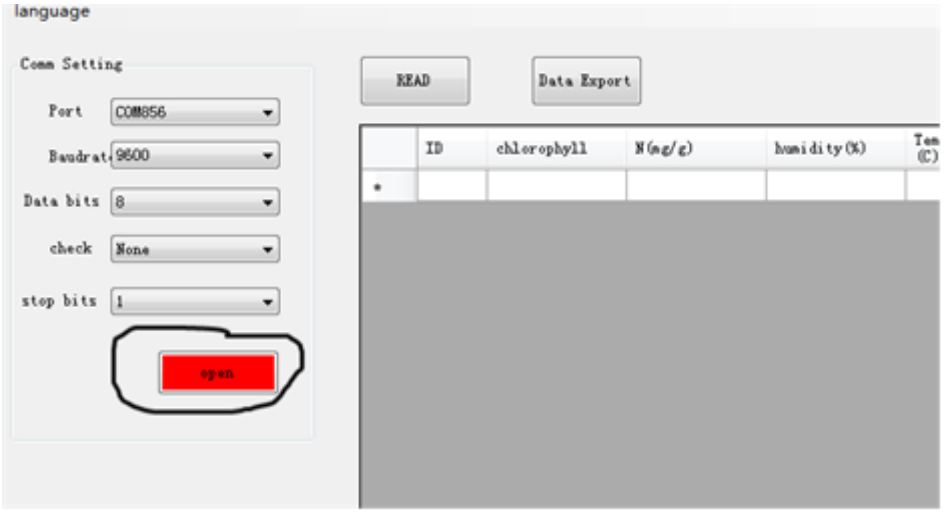


Figure-31

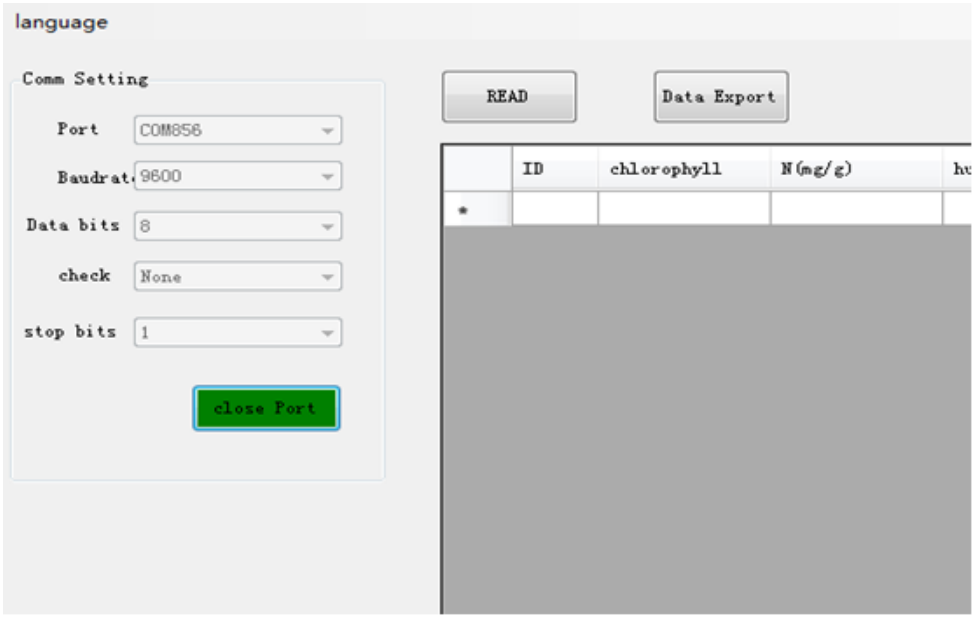


Figure-32

4) Turn on the chlorophyll meter switch (already connected to your computer via USB).
5) Read the data as shown below. Make sure the chlorophyll meter is bright on the screen when reading the data, and click the "**Read**" button at the first interface of the instrument.

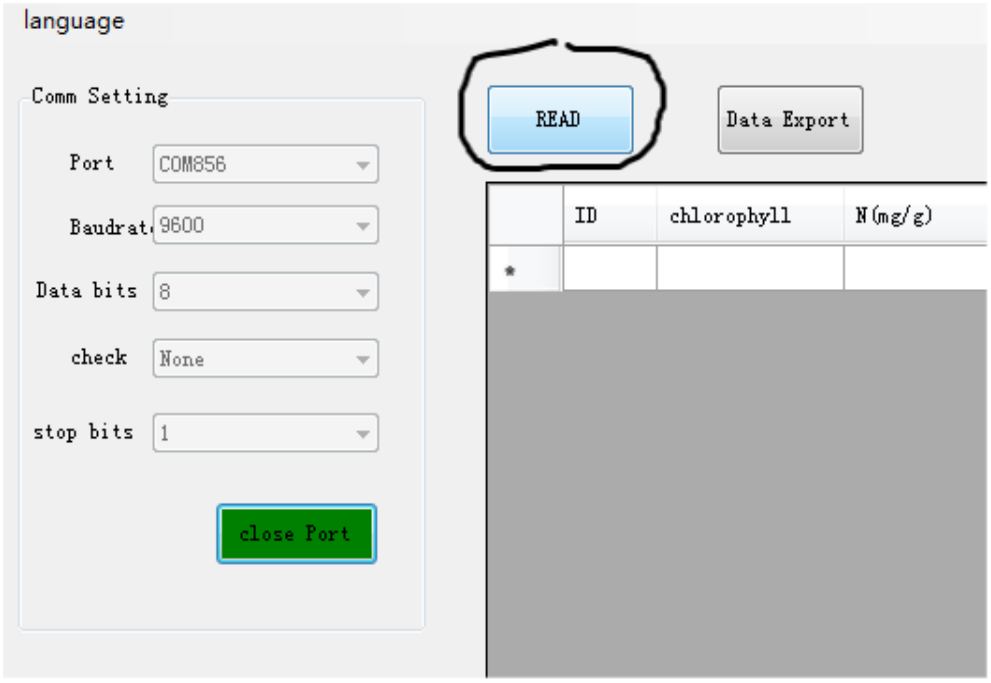


Figure-33

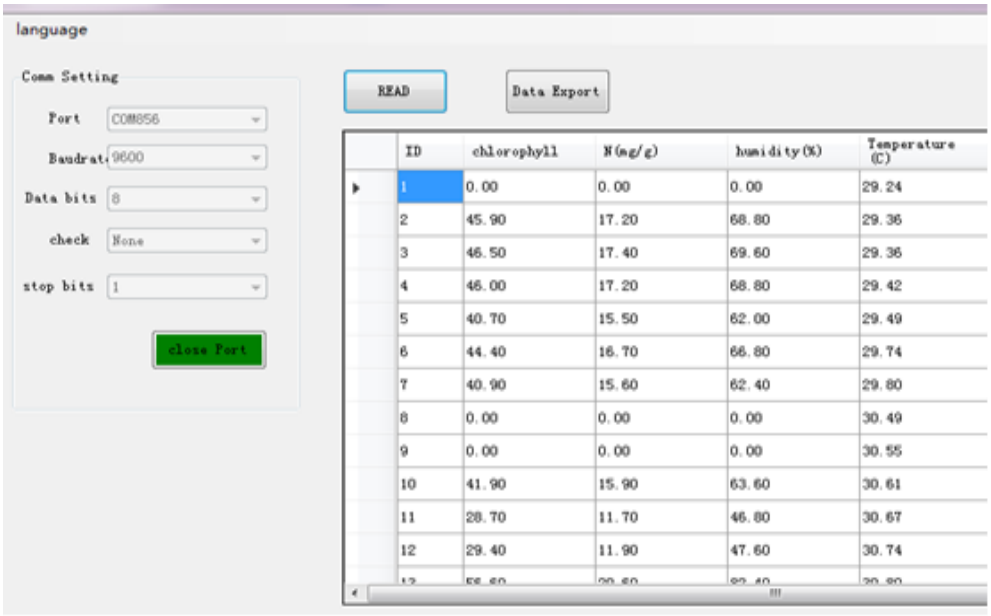
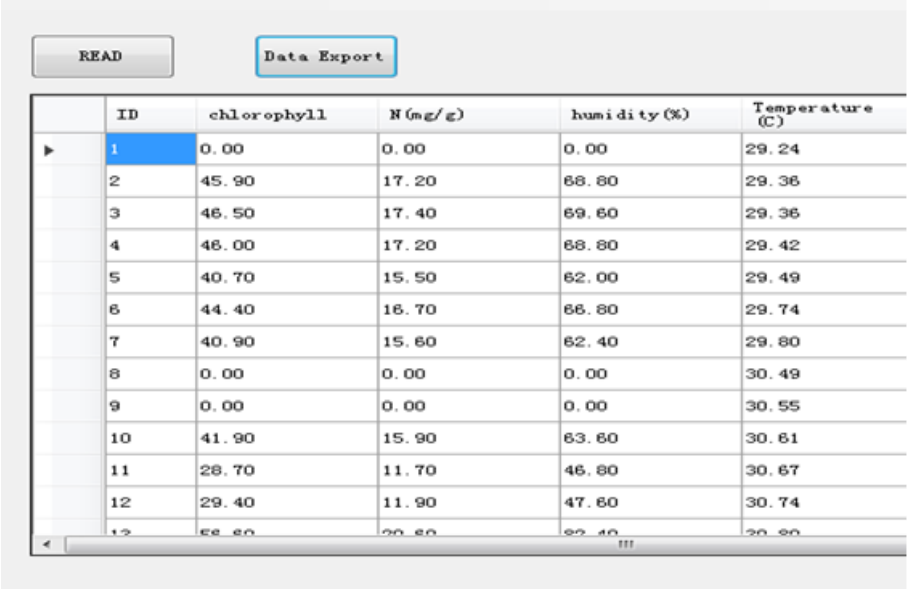


Figure-34



ID	chlorophyll	N(mg/g)	humidity(%)	Temperature (C)
1	0.00	0.00	0.00	29.24
2	45.90	17.20	68.80	29.36
3	46.50	17.40	69.60	29.36
4	46.00	17.20	68.80	29.42
5	40.70	15.50	62.00	29.49
6	44.40	16.70	66.80	29.74
7	40.90	15.60	62.40	29.80
8	0.00	0.00	0.00	30.49
9	0.00	0.00	0.00	30.55
10	41.90	15.90	63.60	30.61
11	28.70	11.70	46.80	30.67
12	29.40	11.90	47.60	30.74

Figure-35

Note: When the instrument is connected to the computer, it will press the install driver. The corresponding driver can be downloaded from the internet or searched for automatically. We also provide drivers. The USB driver chip is FT232RL.