CDH-TM Data Logger Operating Instruction & Communication

Protocol

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1 Function

CDH-TM Data Logger with data acquisition, storage, transmission and management, and other functions, is the core component of automatic weather station, which can connect 32 parameter at the same time, and has the settings and color LCD display. It can communicate with server via wired or wireless connection, and communication protocol is available for secondary development.

Note: The manual contains instructions for the solar control system. If you have not purchase it, please skip that part.

Specification

| Item	Details
Display	7" color touch screen with backlight
Screen sleep	Support
Backlight adjustable	Support
Communication status indication	Support
Internal storage	It allows storage of every hour for 6 years; every 10 minutes for 1 year; and very minute for 3 months.
Sensor connection	Waterproof connector
Communication interface	RS485, Ethernet, GPRS/2G/3G/4G, WIFI
	Lora (optional)
	Zigbee (optional)
Communication protocol	Modbus-Rtu
Supply	Solar power, DC12-24V, AC100-240V
Measurement parameters	32 max.
Recording interval	1-240min settable
U_disk download	Support
Relay output	customized
Average consumption	<3.5W
CPU	ARM Cortex-A8 (720MHZ)
ESD	Class 4, ±8kV
Operation temperature	-40-+75℃
Shock	10-25Hz (X,Y,Z 2g@30min)
FCC	Class A
CE	EN55022 & EN55024
Protection box	400*500*200mm, support solar power system
IP(with protection box)	IP55

2 Dimensions

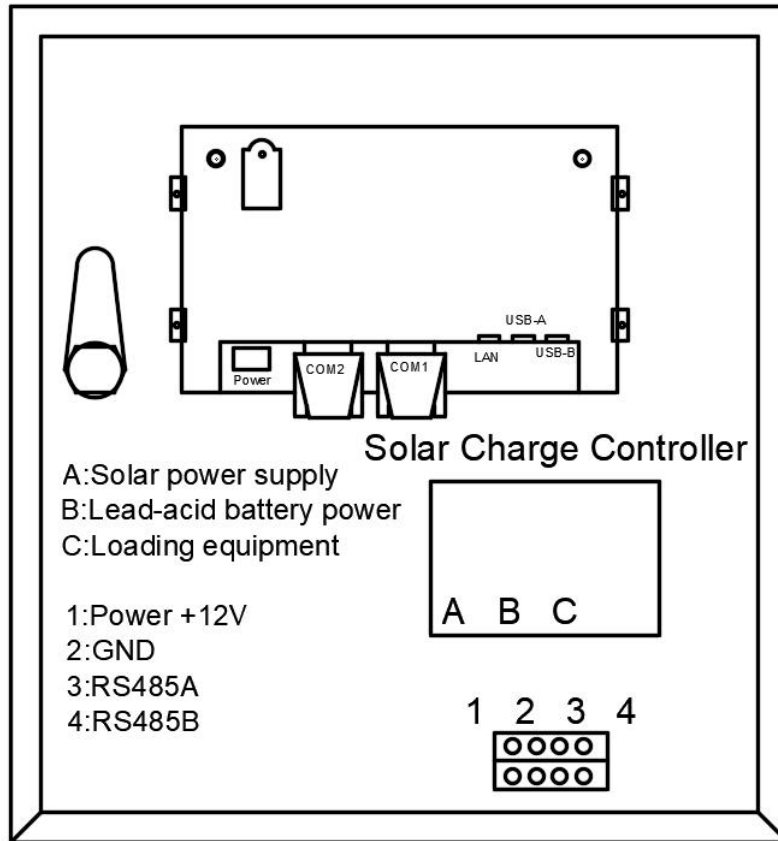**Dimensions**
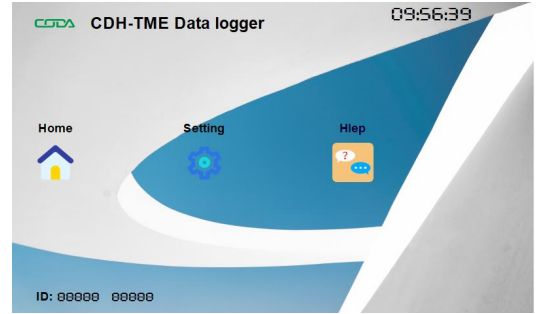
7 inch HMI
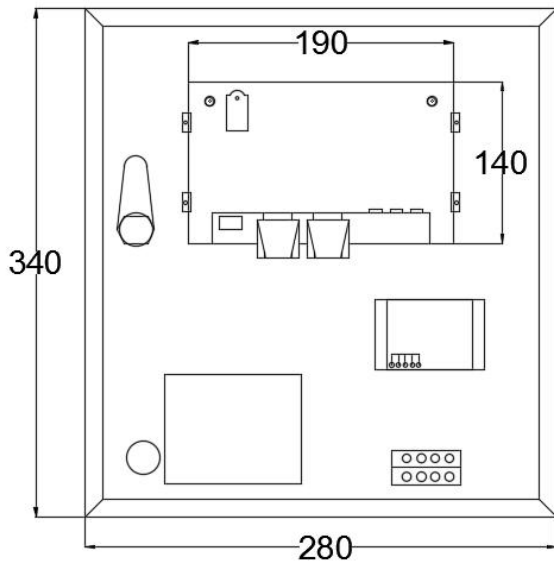
Inner size
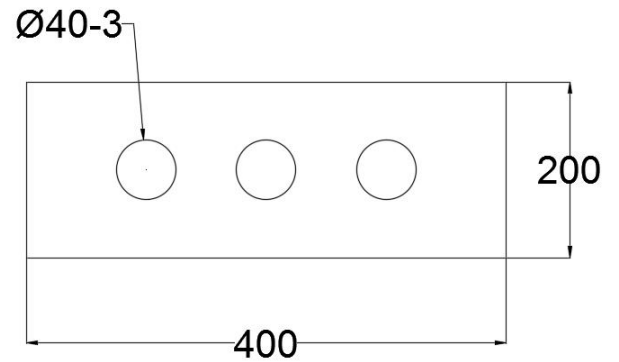
Bottom size

Instructions：

1.The datalogger works directly after power-on, without switch.

2.Rotating handle: Use this handle to open or lock the inner door.

3 Wiring

3.1 Layout

Please first connect the loads，Then the batteries

and the end Connect solar panels one by one

You can supply power directly with a 12V adapter,
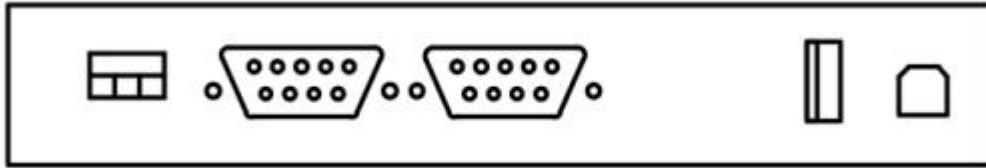
connected to the 1-2 interface terminals.

Sensor cable sequence Reference Instructions

If you have any questions, contact Coda.

Note: The power cables cannot be reversed

3.2 Port description

HMI interface

HMI Power   Com2   Com1   USB-A   USB-B
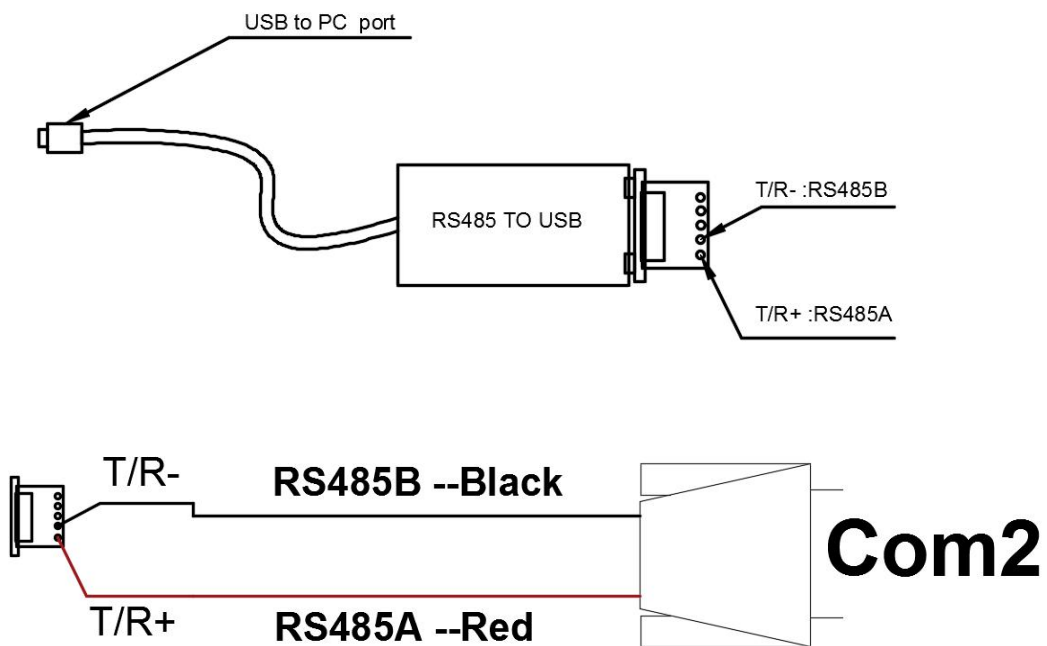
HMI Power:Power supply.

**COM2: Output---RS485(Modbus-rtu,Red-RS485A,Black-RS485B).
Connect to the server or computer.**

**COM1: Input---RS485(Modbus-rtu,Red-RS485A,Black-RS485B).
Connect to the sensor.**

USB-A:Export data from U disk or Update the HMI program.

USB-B:The programmer downloads the program, the operator does not need to use it.
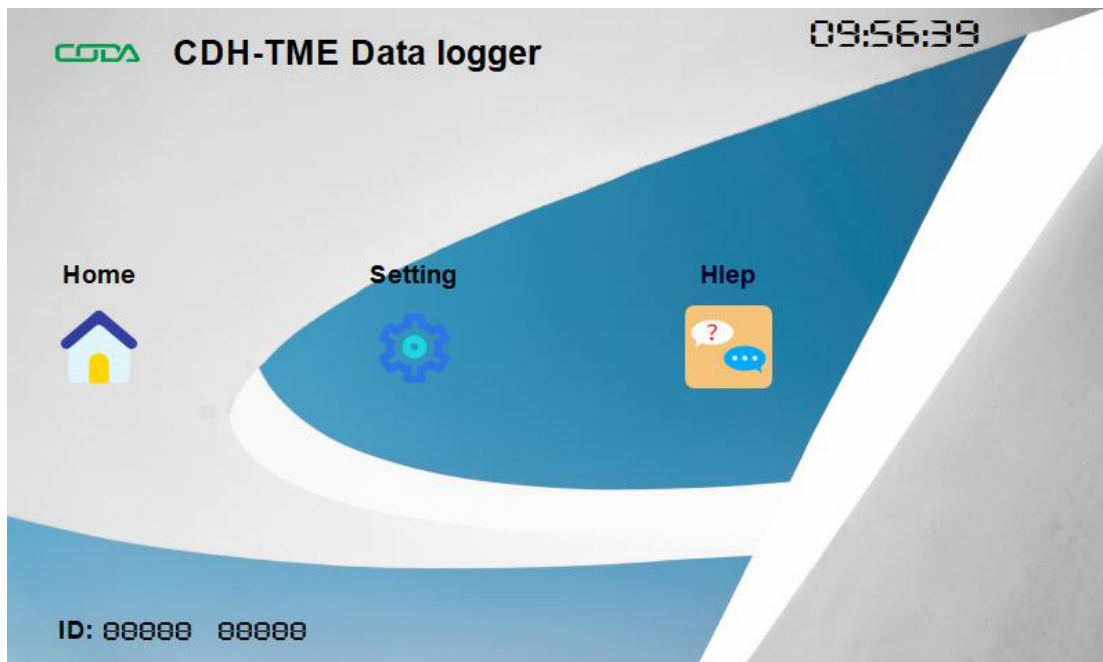
RS485 to USB converter: to connect COM2 port

HMI Power Indicator

DEVICE STATUS	Green LED(PWR)	Yellow LED (RUN)	Yellow LED (COM)
no power	○	○	○
power on	●		
CPU works fine	●	●	
Communicate with connected devices	●	●	※
○: LED off ●: LED on ※: LED flashes			

3 Display interface and menu
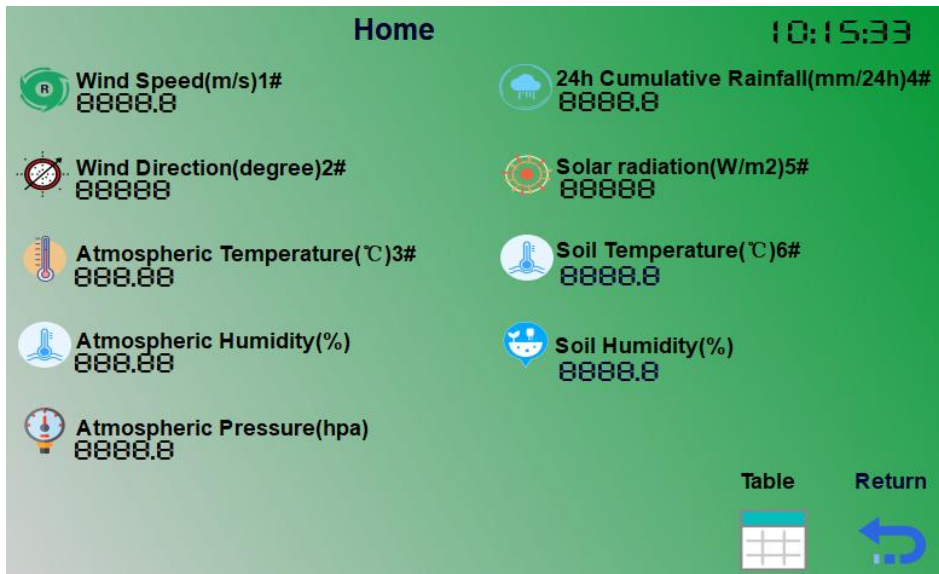**3.1 Main interface**

Main interface information:
HOME icon button:View real-time data, historical data tables and curves, download historical data.
Setting icon button:To enter the recorder setting interface
Help icon button:Help information can be viewed.
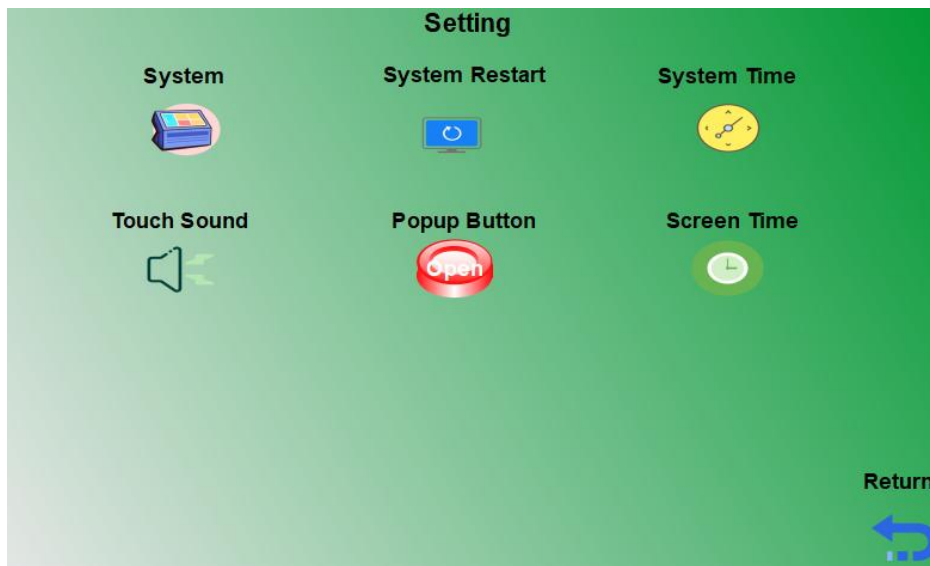ID: Cloud data ID number.

3.2 Home interface

After entering the HOME interface, you can view real-time sensor data.

Table:View historical data table.

3.3 Setting interface

After entering the Setting interface,you can set the recorder parameters.
System:Enter the Android system settings interface.
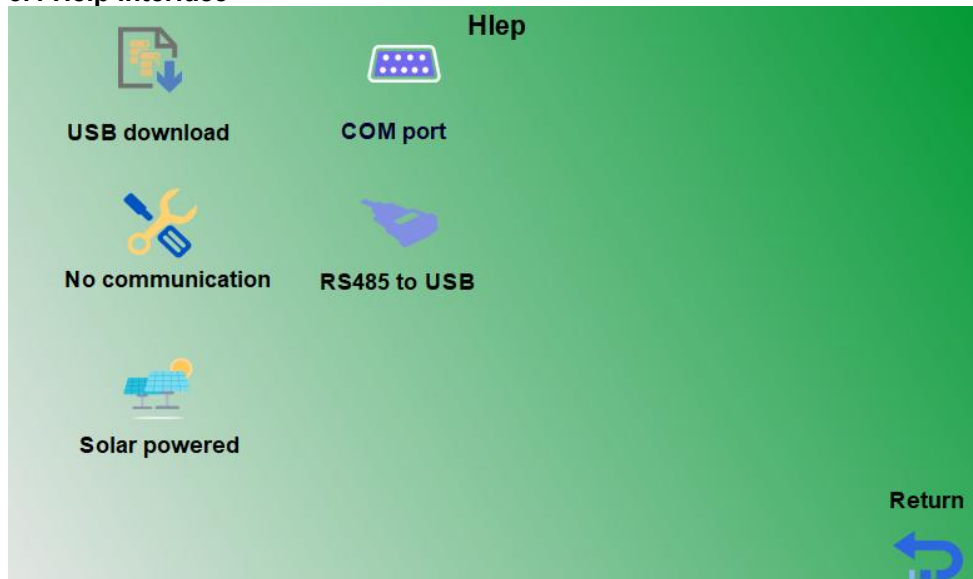
System Time:set system time.

Touch Sound:Turn button sounds off or on.

Screen Time:Screen saver interval.

Popup Button:Newsletter popup button.

System Restart:Restart the recorder.

3.4 Help interface

After entering the Help interface,View help documentation.
Suggestion: Before using the recorder, watch the content in the help document, you can quickly understand the functions of the recorder

5 4G Communication Protocol

Method 1:

HTTP POST WAY

- Provide the IP address and port number of the server

- Data format:JSON

Example：

```
{
        "CODAID":"C23051201",
        "Solar radiation(W/m2)":800,
        "Rain(mm/24h)":12.5,
        "Rain(mm/min)":1.2,
        "Time":1689578292622
}
```

station IP :C23051201

Sesnor name：Solar radiation(W/m2)

Sensor value：800

Time：1689578292622(13 bit time stamp) 2023-07-17 15:18:12

- Time of sending the server
-

Set by PC software, unit (ms)

Method 2:

MQTT WAY

- Provide the MQTT server IP and MQTT server port number of the server

  User name

  Key

  MQTT ID

  Subscription topic

  Publish topic
- Data format:JSON

  Example：
  ```
  {
          "CODAID":"C23051201",
          "Solar radiation(W/m2)":800,
          "Rain(mm/24h)":12.5,
          "Rain(mm/min)":1.2,
          "Time":1689578292622
  }
  ```
  station IP :C23051201

  Sesnor name：Solar radiation(W/m2)

  Sensor value：800

  Time：1689578292622(13 bit time stamp) 2023-07-17 15:18:12
- Time of sending the server
-

Set by PC software, unit (ms)

Method 3:

API WAY

- The current sensor data is obtained through the Get mode of the API interface

- GET method

  IP:8.142.167.0:8811/api/getsensor/

  Payload:account

- You can directly output the URL with IP plus parameters

- Example：

  http://8.142.167.0:8811/api/getsensor/?account=********

  ```
  [{"Solar radiation(W/m2)": 800}, {"Rain(mm/24h)": 12.5}, {"Rain(mm/min)": 1.2},
  {"Time": 1689578292622.0}, {"account": "C23051201"}]
  ```

- python code

- import requests #import module

  payload = {"account":"***********"}#Site parameter

  response = requests.get(url="http://8.142.167.0:8811/api/getsensor/", params=payload)
  #GET requests

  print(response.text)#list and dictionary formats

  ```
  [{"Solar radiation(W/m2)": 800}, {"Rain(mm/24h)": 12.5}, {"Rain(mm/min)": 1.2},
  {"Time": 1689578292622.0}, {"account": "C23051201"}]
  ```

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