



DL-10xS-LRS Series User's Manual

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DL-10xS-LRS Series User's Manual

Document Revision

Version	Date	Description of changes
Rev1.0	2025-11-25	First release for DL-10xS-LRS Series



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1. Introduction

The DL-10xS-LRS Series devices utilize [Semtech's LoRa technology](#). Specifically, they incorporate spread spectrum modulation technique derived from chirp spread spectrum (CSS) technology, LoRa transceivers, enabling long-range, low-power wireless communication for IoT applications. This technology allows for significant range and robustness, making it suitable for various IoT deployments.

The DL-10xS-LRS Series Data Logger devices can be used to record temperature, humidity, dew point, Wet-Bulb and Air Pressure(DL-102S-LRS) information, including the date and time stamps for each record, with up to 650,000 downloadable records(CSV) able to be stored. Real-time data can be accessed by using the PC Utility. It includes 2-channel Photo MOS Relay Output using trigger source and range for Alarm Devices. DL-102S-LRS include an Air Pressure sensor.

DL-10xS-LRS Series are designed with own LoRa proprietary protocol. AES-128 encryption is used in wireless LoRa communications to ensure data security. AES-128 is a symmetric encryption algorithm that uses a 128-bit key to encrypt and decrypt data, balancing speed and security. It is suitable for general data security needs, for data protection. It needs to use Modbus TCP to communications with an Ethernet Gateway(GW-100-LRS) or Wi-Fi Gateway(GW-200-LRS), which makes perfect integration for monitoring or control in SCADA software and HMI Modbus.

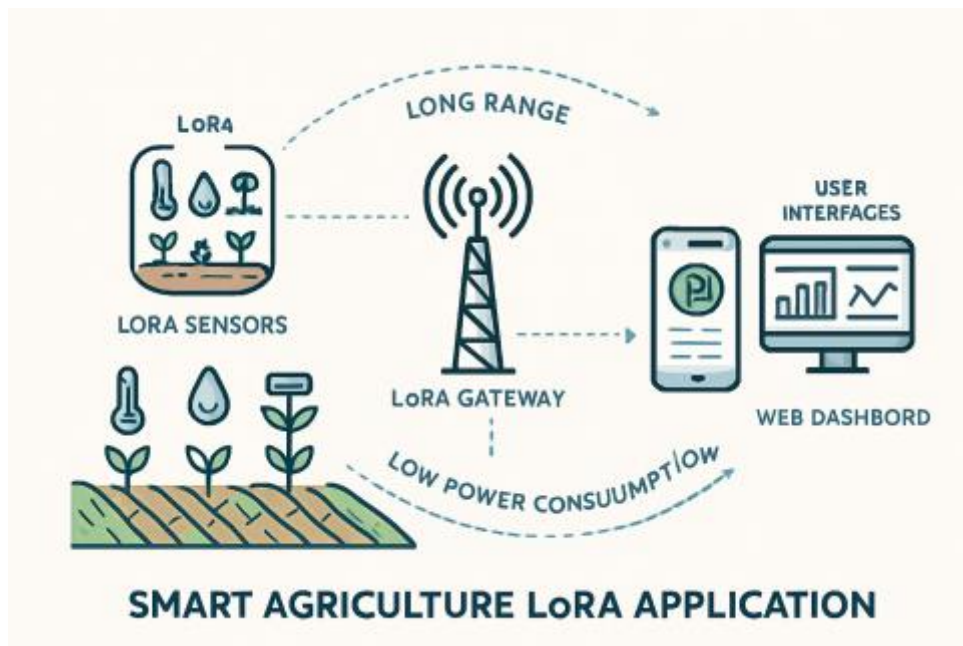


Figure 1-1: Application architecture for the DL-10xS-LRS



1.1 Features

- LoRa communication monitoring and configuration with a Modbus TCP Gateway
- Long Range communication.
- Support AES-128 wireless encryption
- Support Modbus TCP using with Gateway
- Wide power supply range
- Photo MOS Relay output
- Measure Temperature, Relative Humidity, Dew Point , Wet-Bulb, Date and Time
- Air Pressure, Altitude measure (DL-102S-LRS Only)
- Up to 650,000 data logger records
- IP65 Protection Approval
- DIN-Rail or Wall Mounted

1.1.1 Application

- Transportation of food or pharmaceuticals
- Food and beverage industry
- Blood stations, pharmacies
- Building and energy management
- Museums, archives, galleries
- Warehouses
- Smart Agriculture



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1.1.2 Features Description

Sub-GHz band LoRa proprietary protocol

DL-10xS-LRS is a proprietary wireless technology developed by Semtech[®] Corporation. It utilizes a spread spectrum modulation in the Sub-GHz band to enable long-range (greater than 10 miles) coverage, low-power consumption (up to 10 years battery power), robust communication and localization capability.

Support AES-128 wireless encryption

Wireless communication uses AES-128 (Advanced Encryption Standard), a symmetric encryption algorithm used to protect data security and privacy, to provide strong protection against unauthorized access.

Support Modbus TCP protocols

Use with Ethernet Gateway(GW-100-LRS) or Wi-Fi Gateway(GW-200-LRS), the Modbus TCP server function on the DL-10x-LRS can be used to provide data monitoring from HMI/SCADA software built with Modbus TCP driver.

Data Logger up to 650,000 records

Including the date and time stamps for each record, with up to 650,000 downloadable records CSV able to be stored. Each segment file size is 64Kbyte for 5376 record.

Chart View for PC Utility

The DL-LoRa Series PC Utility, can be used to configure the module and monitor real-time data, as well as display the chart, setting alarm events, setting the schedule or free run. The utility also allows the log data to be downloaded and exported to a .CSV file analysis from any other software.



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1.2 Specifications

Table 1-1: System Specifications

Device	DL-101S-LRS	DL-102S-LRS
Air Pressure		
Range	-	300 –1200 hPa
Accuracy	-	1 hPa
Resolution	-	0.1 hPa
Temperature Measurement		
Range	-20 to +60°C (-31 to +176°F)	
Resolution	0.1°C	
Accuracy	Typical: ± 0.4°C; refer to figure 2	
Relative Humidity Measurement		
Range	0 to 100% RH	
Resolution	0.1% RH	
Accuracy	Typical: ±3% RH @ 20 ~ 80% RH; refer to figure 1	
Digital Output		
Channels	2	
Output Type	PhotoMOS, Form A, SPST	
Max Load Current	1000 mA	
Load Voltage	100VDC	
Data Logger		
Records	650,000	
Wireless Interface		
Modulation	LoRa(CSS)	
Frequency Band	Sub-1G 900MHz	
Bandwidth	500KHz	
Bitrate	0.9 ~ 3.9K bps	
Encryption	AES-128	
Protocol	Proprietary protocol	
Transmit Power	15 dBm	



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Device	DL-101S-LRS	DL-102S-LRS
LED Indicators		
Power/Status/Indicator	2 colors LED, Blue for Power/Indicator(Quick Flash), Red for System alive status(Slow Flash).	
TX/RX/Config	Green for RX, Red for TX, Orange for Enter config	
Protection		
Waterproof Level	IP65	
ESD (IEC 61000-4-2)	±8 kV Air for Random Point	
EFT (IEC 61000-4-4)	±4 kV for Power	
Environment		
Operating Temperature	-20 ~ +60℃	
Storage Temperature	-30 ~ +80℃	
Humidity	5 to 95% RH, Non-condensing	
Mechanism		
Dimensions(WxLxH)	103mm x 135mm x 55mm	
Installation	DIN-Rail/Wall Mount	
Power Requirements		
Input Voltage Range	+9 ~ 48 VDC with Reverse Protection (+Vs to GND)	
Reverse Polarity Protection	Yes	
Consumption	0.35W	
Antenna		
Type	Dipole	
Connector	SMA Male (Plug)	
Gain (dBi)	2.8 dBi (Peak)	
Band	902 ~ 930 MHz	

2. Hardware

2.1 Outward Appearance



Figure 2-1: DL-101S-LRS/DL-102S-LRS

2.2 Config Switch & Config Channel Dip Switch

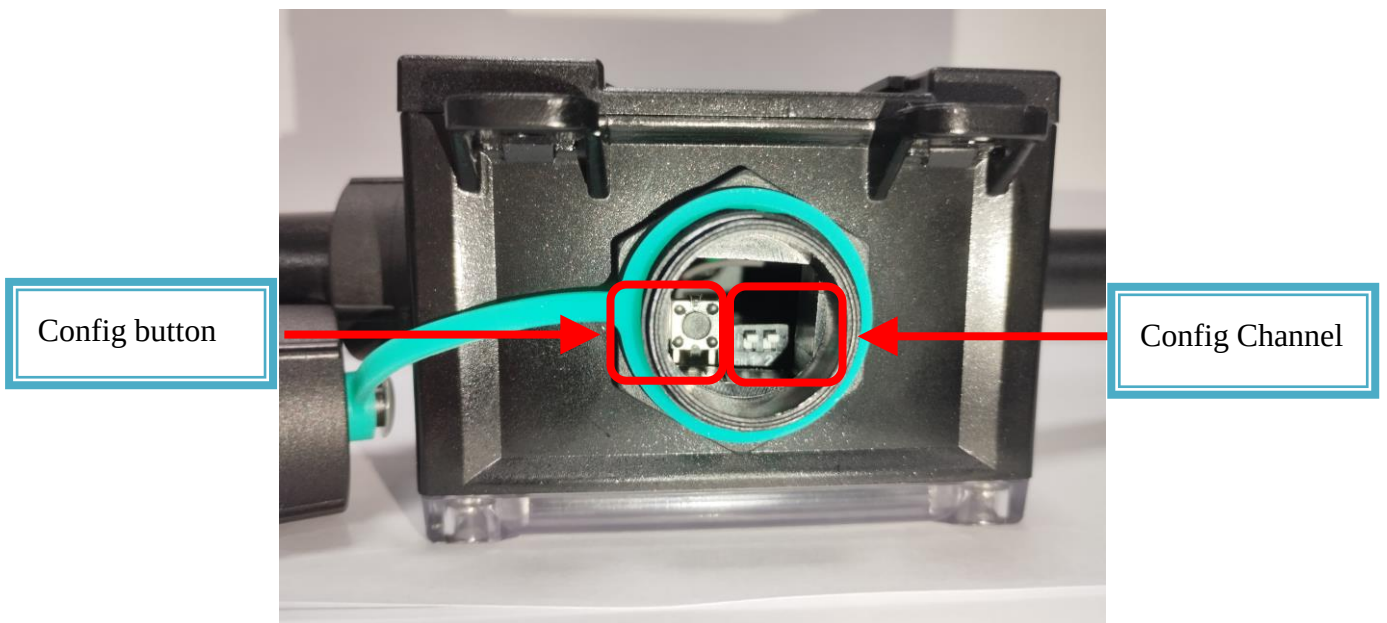


Figure 2-2: Switches inside the cover

To make the device enter config mode, remove the cover on the left side(Big cover), Set the dip switch for config channel, then Press & hold the Config button until the Orange LED(Config) goes on.

Config Channel	SW1	SW2
0	OFF	OFF
1	ON	OFF
2	OFF	ON
3	ON	ON

Figure 2-3: Dip Switches Config channel table

2.3 Connector & Pin Define

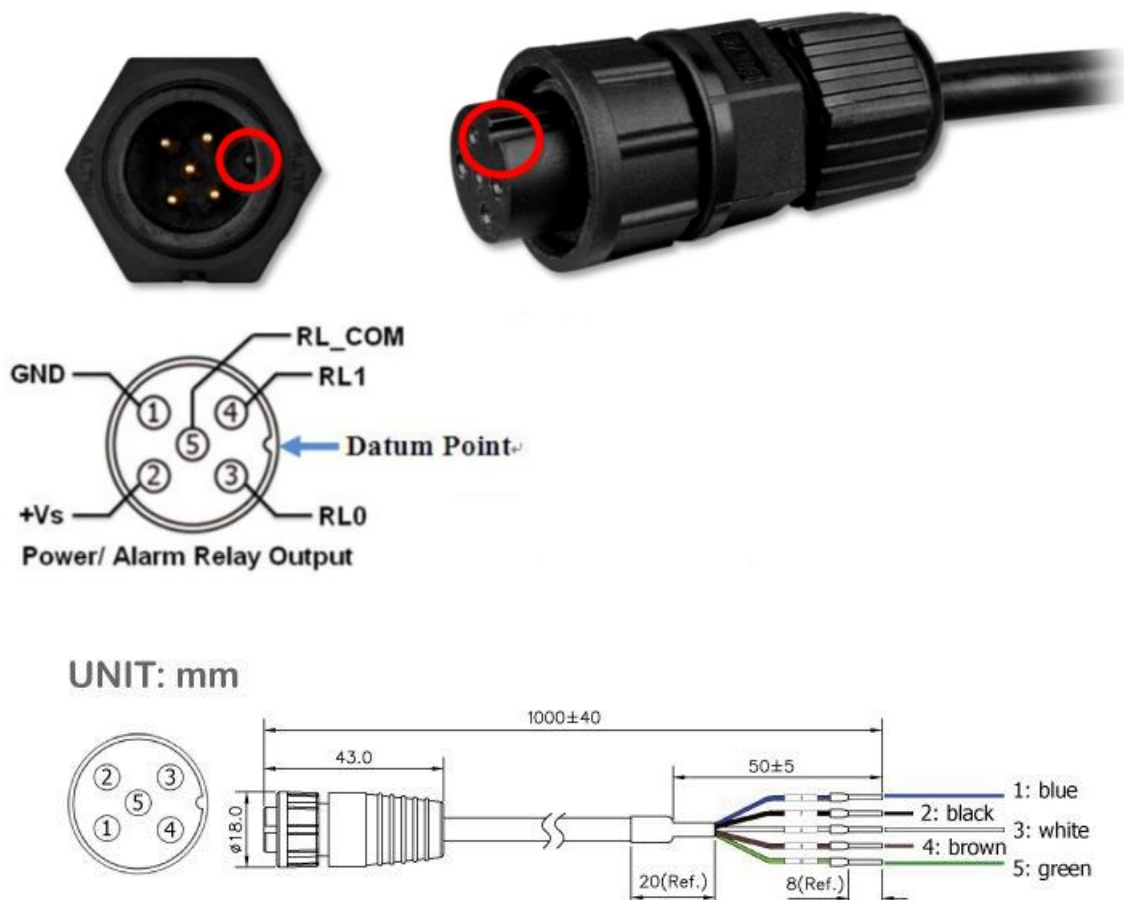


Figure 2-4: Connector for Power / Alarm Relay Output

2.4 RF Antenna

An antenna (SMA-Plug) is connect on the top of the device, make sure it is plug on the device before power ON.



2.5 Dimensions

The diagrams below provide the dimensions of the DL-1xxS-WF series to use in defining your enclosure specifications. All dimensions are in millimeters.

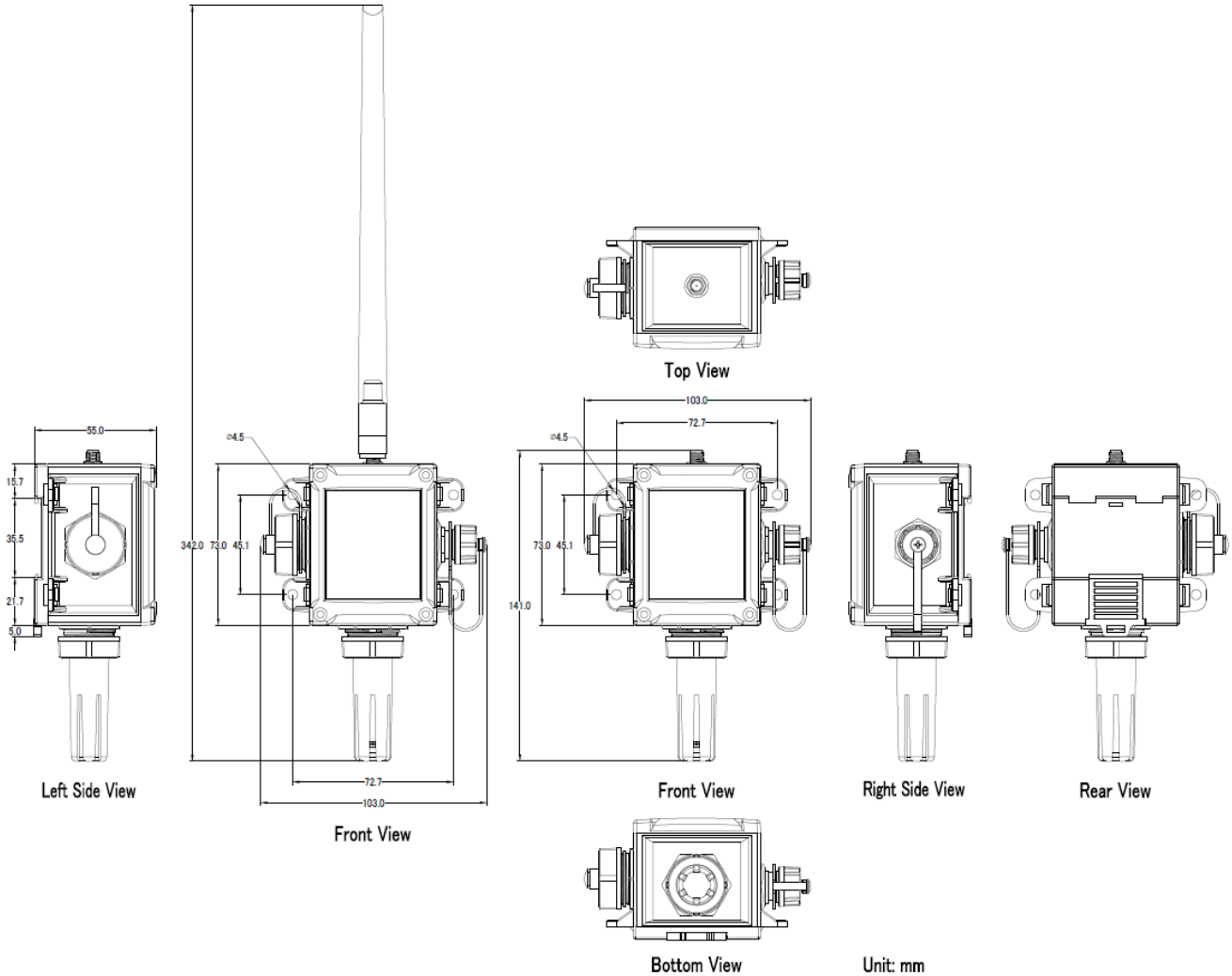


Figure 2-4: Dimension of the DL-10xS-LRS

2.6 Wire Connection

2.6.2 Digital Output (DO) wiring

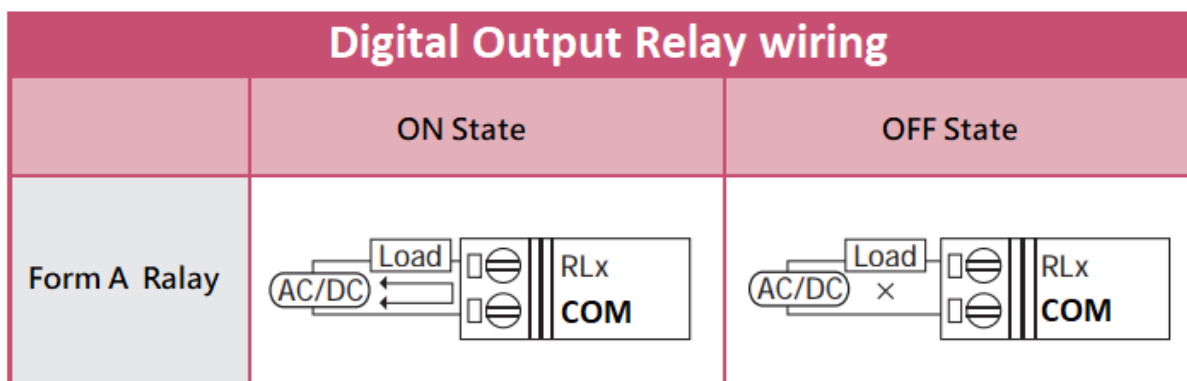


Figure 2-6: Photo MOS Output wiring

2.6.2 Power Input

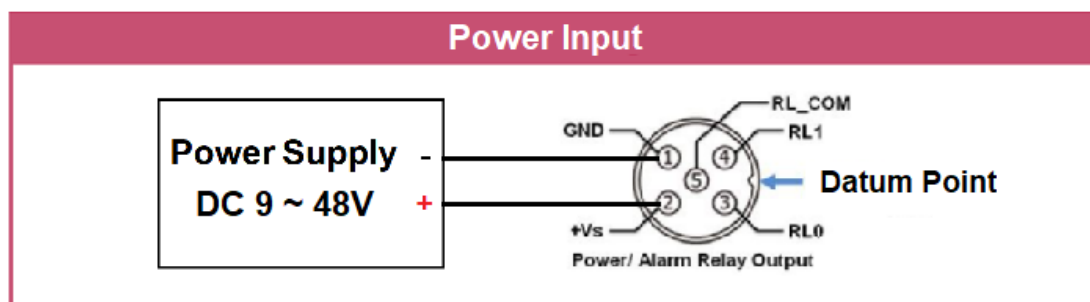


Figure 2-7: Power Input



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3. Config Device

3.1 Prepare Gateway

Whatever using GW-100-LRS Ethernet Gateway or GW-200-LRS Wi-Fi Gateway, open your web browser and enter the default IP address of your Gateway.(please reference to Gateway manual).

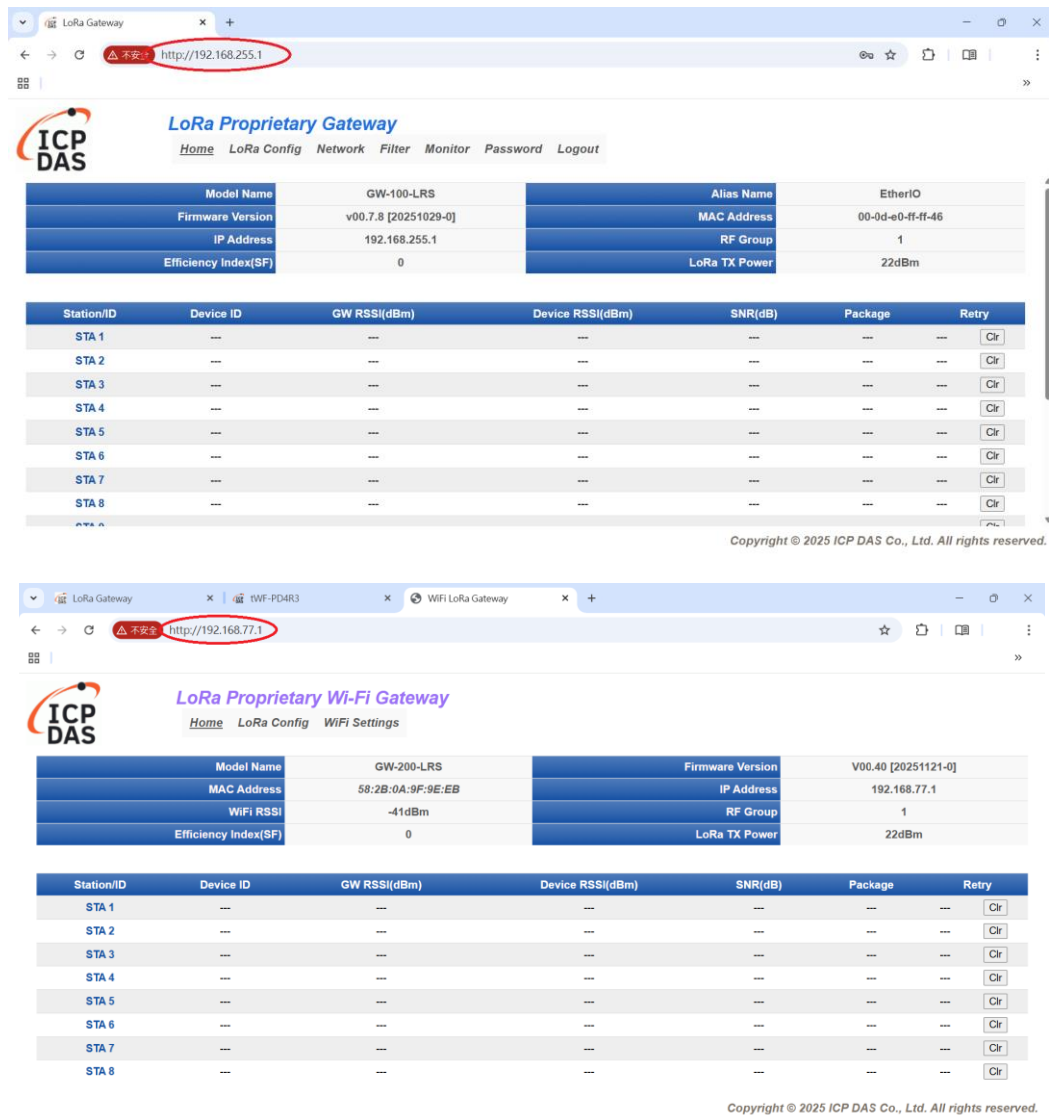
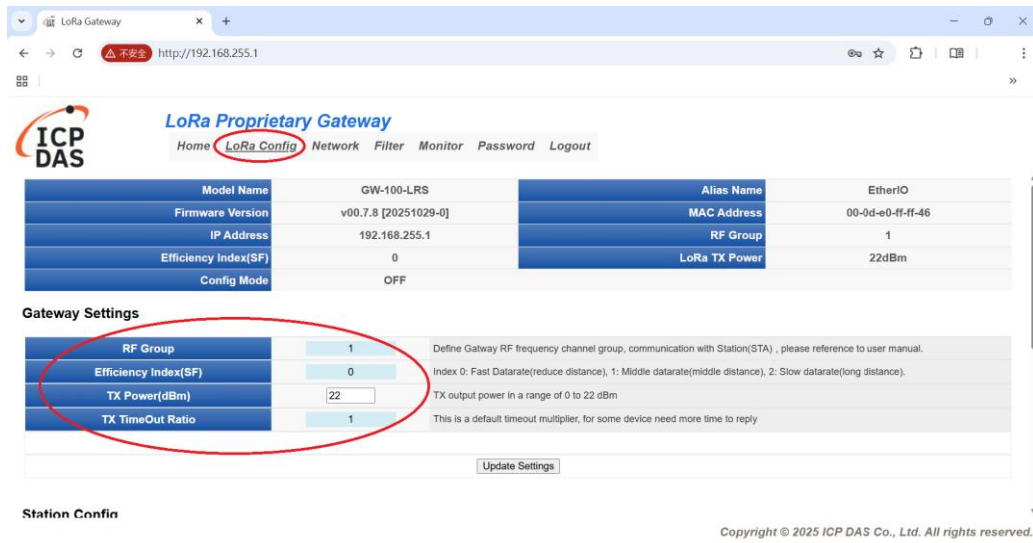


Figure 3-1: GW-100-LRS/ GW-200-LRS main page

3.2 Config Gateway

Enter “LoRa Config” page, Check & Set the Gateway setting, RF Group, Efficiency Index(SF) see Figure 3-5, TX power & TX Timeout Ratio.

To prevent selected to a busy RF group or Radio(RF) jamming group, after RF Group been update, watch the RX LED(Green), if it idle without any flashing means this group is clear to use, otherwise recommend select another group.



LoRa Proprietary Gateway

Home **LoRa Config** Network Filter Monitor Password Logout

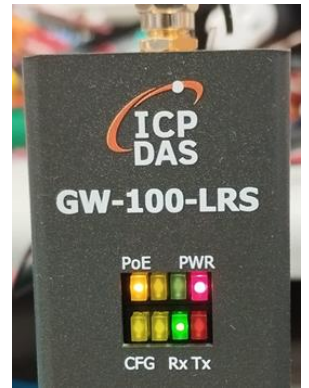
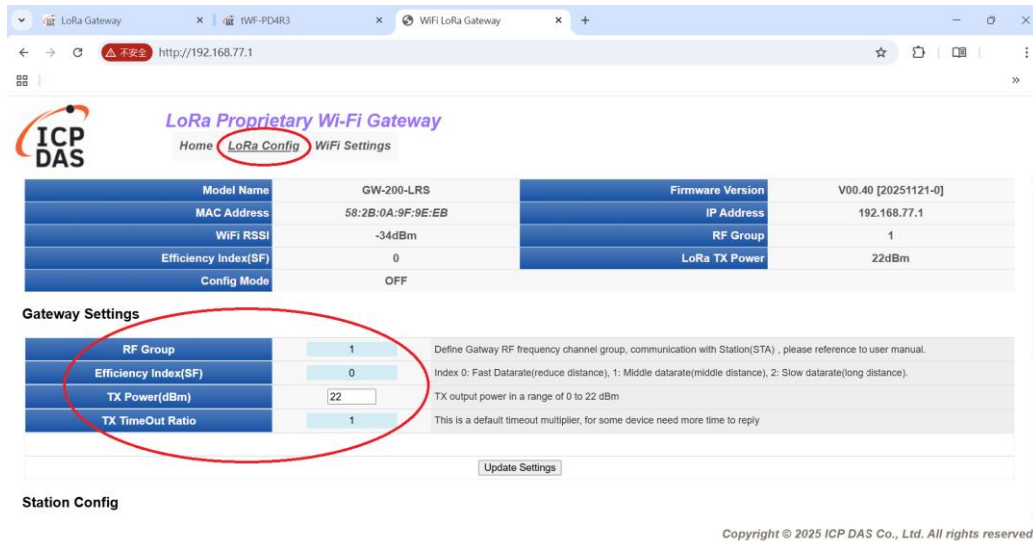
Model Name	GW-100-LRS	Alias Name	EtherIO
Firmware Version	v00.7.8 [20251029-0]	MAC Address	00-0d-e0-ff-ff-46
IP Address	192.168.255.1	RF Group	1
Efficiency Index(SF)	0	LoRa TX Power	22dBm
Config Mode	OFF		

Gateway Settings

RF Group	1	Define Gateway RF frequency channel group, communication with Station(STA) , please reference to user manual.
Efficiency Index(SF)	0	Index 0: Fast Datarate(reduce distance), 1: Middle datarate(middle distance), 2: Slow datarate(long distance).
TX Power(dBm)	22	TX output power in a range of 0 to 22 dBm
TX TimeOut Ratio	1	This is a default timeout multiplier, for some device need more time to reply

Station Config

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LoRa Proprietary Wi-Fi Gateway

Home **LoRa Config** WiFi Settings

Model Name	GW-200-LRS	Firmware Version	V00.40 [20251121-0]
MAC Address	58:2B:0A:9F:9E:EB	IP Address	192.168.77.1
WiFi RSSI	-34dBm	RF Group	1
Efficiency Index(SF)	0	LoRa TX Power	22dBm
Config Mode	OFF		

Gateway Settings

RF Group	1	Define Gateway RF frequency channel group, communication with Station(STA) , please reference to user manual.
Efficiency Index(SF)	0	Index 0: Fast Datarate(reduce distance), 1: Middle datarate(middle distance), 2: Slow datarate(long distance).
TX Power(dBm)	22	TX output power in a range of 0 to 22 dBm
TX TimeOut Ratio	1	This is a default timeout multiplier, for some device need more time to reply

Station Config

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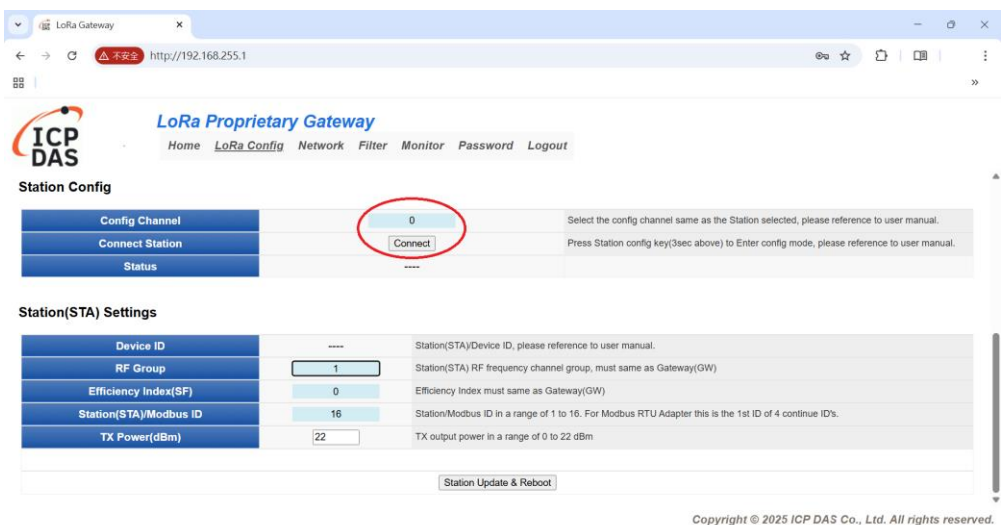
Figure 3-2: GW-x00-LRS Gateway Config

3.3 Adding Device

After Gateway ready, we can start to add device on it, scroll down the “LoRa Config” page to “Station Config”, select the Config channel 0~3, for example selected “0”.

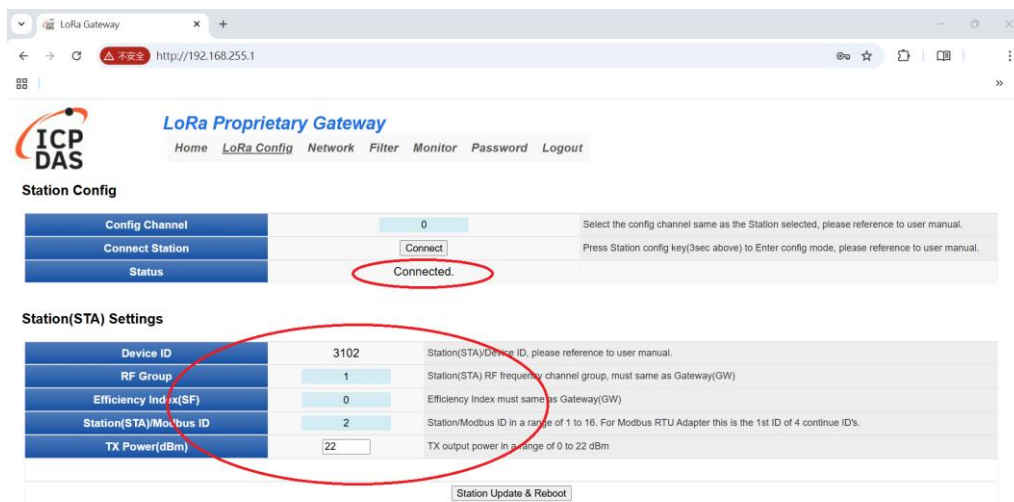
Then we prepare our device DL-101/2S-LRS, remove the cover on the left side(Big cover), Set the Dip switch for Config channel see Figure 2-2, 2-3 , same as Gateway selected “0”.

Press & hold the Config button until the Orange LED(Config) goes on.



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After that, click the “Connect” button of the “Station Config” , when connect success the status will change to “Connected”,



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“Station(STA) Settings” will found the Device ID 0x3102(DL-102S-LRS), the RF Group & Efficiency Index(SF) will auto load the same as Gateway for default(**these 2 item must same as Gateway, otherwise will cannot communication**).

You need to set the “Station(STA)/Modbus ID”, the LoRa Station(STA) is the same as Modbus station ID for further use. Also, you can change the “TX Power(dBm)” for getting more effect, the Max TX power is 22dBm, but it will caused the RF harmonic.

After finish setting, click “Station Update & Reboot” will make the device to take effect & reboot. If update success the “Status” will change to “Config Done.” The STA ID we have change to “2”, so we will access this device using Modbus TCP with ID “2”.

The screenshot shows the web interface of the LoRa Proprietary Gateway. The top navigation bar includes links for Home, LoRa Config, Network, Filter, Monitor, Password, and Logout. The main content area is divided into two sections: Station Config and Station(STA) Settings.

Station Config

Config Channel	0	Select the config channel same as the Station selected, please reference to user manual.
Connect Station	Connect	Press Station config key(3sec above) to Enter config mode, please reference to user manual.
Status	Config Done.	

Station(STA) Settings

Device ID	3102	Station(STA)/Device ID, please reference to user manual.
RF Group	1	Station(STA) RF frequency channel group, must same as Gateway(GW)
Efficiency Index(SF)	0	Efficiency Index must same as Gateway(GW)
Station(STA)/Modbus ID	2	Station/Modbus ID in a range of 1 to 16. For Modbus RTU Adapter this is the 1st ID of 4 continue ID's.
TX Power(dBm)	22	TX output power in a range of 0 to 22 dBm

At the bottom of the Station(STA) Settings section, there is a button labeled "Station Update & Reboot".

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Figure 3-4: GW-x00-LRS Adding Device

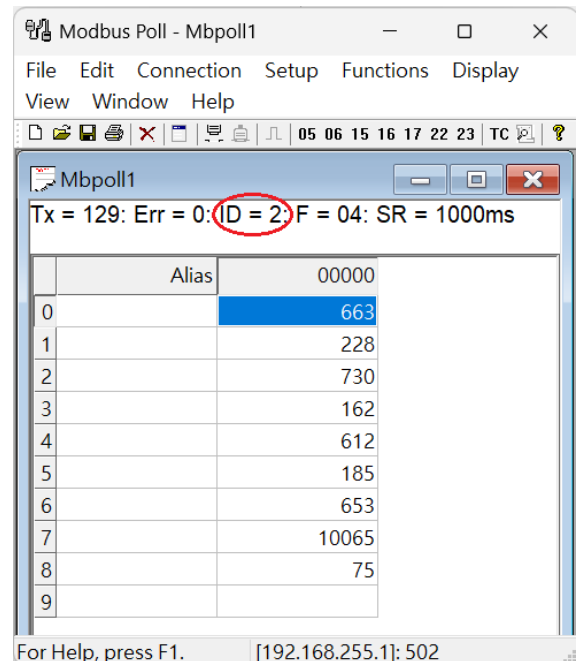
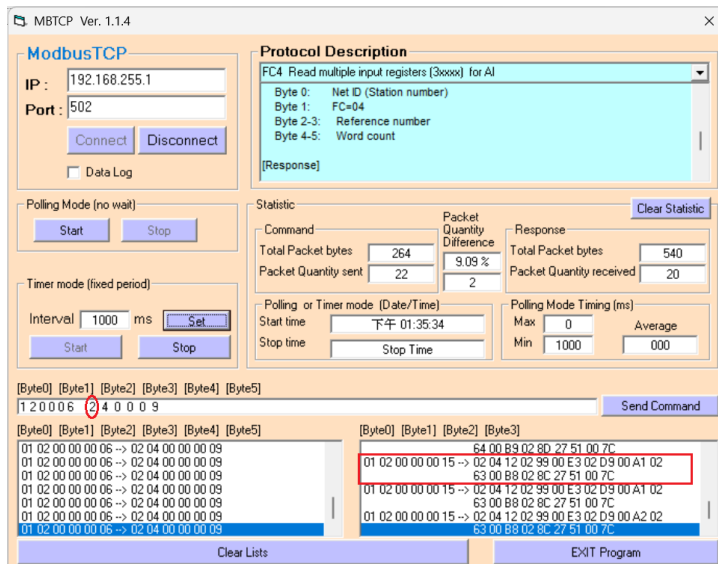
Notice: To prevent communication jamming, please stop the polling to this Gateway when config a device.



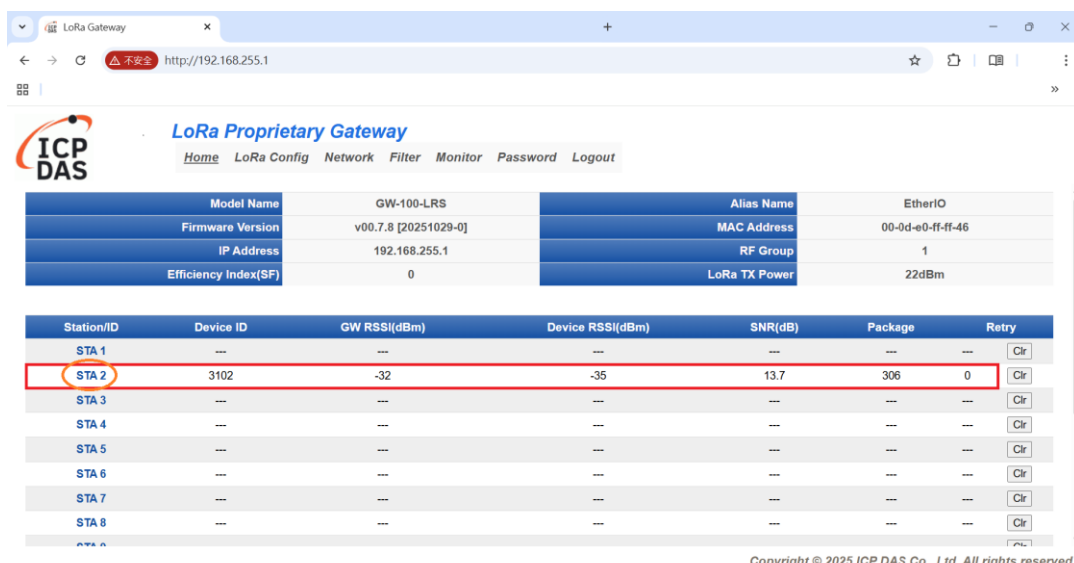
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3.4 Modbus Connect

Using “MBTCP.exe”, “MODBUS Poll” or other program you can get the result.

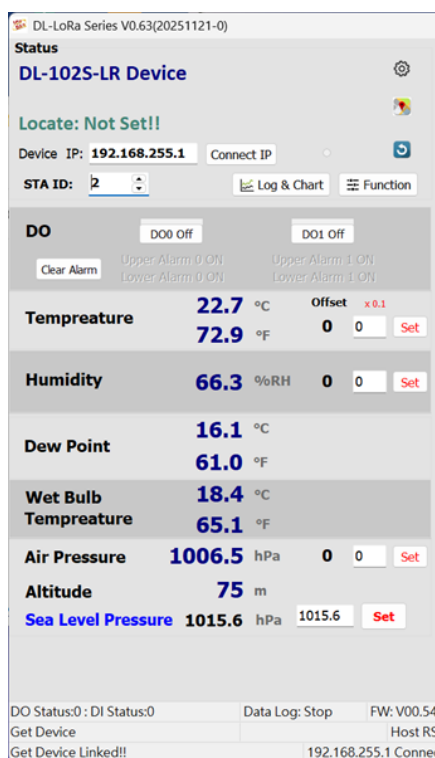


The device's RF connective status will show on the web of the Gateway.
Device RSSI, GW RSSI, SNR, Package Count, Retry Count. You can use this page for adjustment the antenna to get the best signal for communication.
RSSI near to 0 & SNR near to 14 is the better signal.



There is an additional function by click on the number of “Station/ID”, the device's Status LED(Blue) will quick flash, for find the device easier.

Also, we can use the DL-LoRa Series utility for DL-101/2S-LRS, DL-21 device, by setting Gateway IP address & Device ID then you can get the status of the device, detail will discuss in next section.



Notice: LoRa do not have a high communication speed, in LoRa Proprietary protocol we implement a retry mechanism, so the Modbus timeout setting recommend as below, each Modbus polling delay we recommend > 800ms.

Efficiency Index(SF)	bitrate[bps]	Recommend Modbus Timeout
0	3,906.25	>1500ms
1	1,953.13	>2000ms
2	976.56	>2500ms

Figure 3-5: Efficiency Index(SF) Table

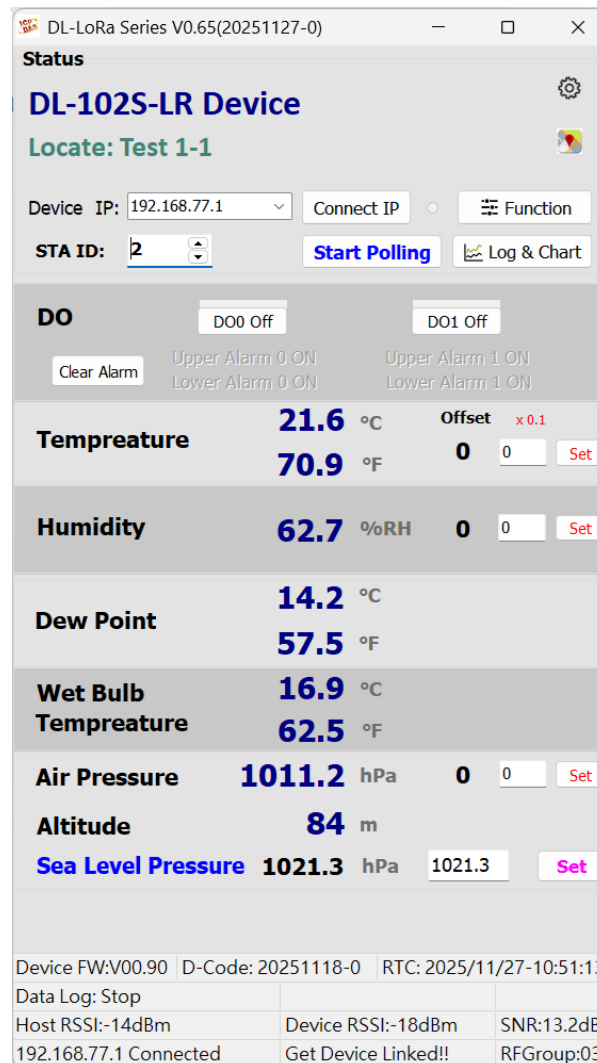
4. Software

4.1 DL-LoRa Series PC Utility

The Utility provides the simple way to operating and acquire status. It can use IP address & Station ID of the Gateway to access the DL-10xS-LRS series device.

The following is the main screens provided by Utility, these utility tools can be thought as a useful tool for configuration and monitoring on the DL-10xS-LRS. It supplies several functions, such as Monitoring, Control, Connection, Data Log function and F/W upgrade, etc...

4.1.1 Main Screen



DL-LoRa Series V0.65(20251127-0)

Status

DL-102S-LR Device

Locate: Test 1-1

Device IP: 192.168.77.1

STA ID: 2

DO

Upper Alarm 0 ON Lower Alarm 0 ON Upper Alarm 1 ON Lower Alarm 1 ON

Temperature 21.6 °C 70.9 °F Offset x 0.1 0

Humidity 62.7 %RH 0

Dew Point 14.2 °C 57.5 °F

Wet Bulb Temperature 16.9 °C 62.5 °F

Air Pressure 1011.2 hPa 0

Altitude 84 m

Sea Level Pressure 1021.3 hPa 1021.3

Device FW:V00.90 D-Code: 20251118-0 RTC: 2025/11/27-10:51:13

Data Log: Stop

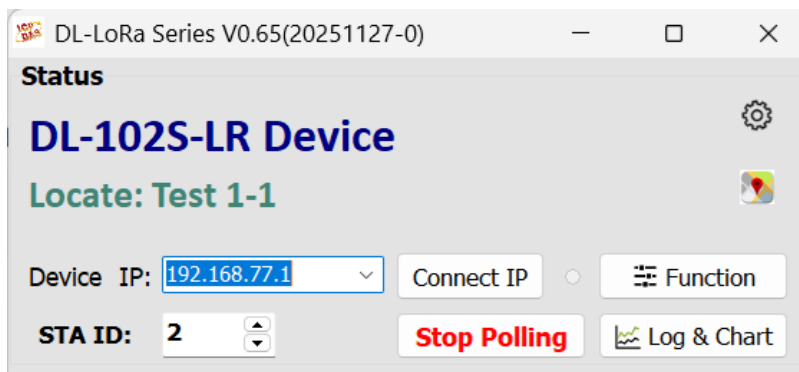
Host RSSI:-14dBm Device RSSI:-18dBm SNR:13.2dB

192.168.77.1 Connected Get Device Linked!! RFGGroup:03

Figure 4-1: Windows Utility main screen

4.1.2 Device Status

Show the connected LoRa device information, user define Locate string, Device IP , Station(STA) ID, Gateway IP Connect, Polling Start/Stop, Data Log & DO function, Data Log & Chart button, Setup & Locator button.



Status

DL-102S-LR Device

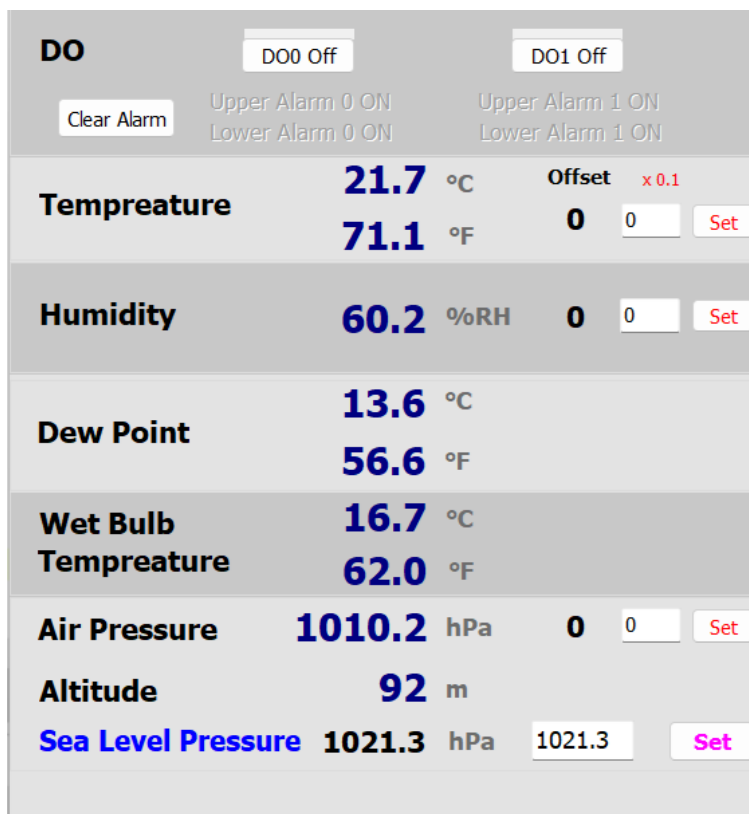
Locate: Test 1-1

Device IP:

STA ID:

4.1.3 Sensor & DO Output status

Show the Sensor value & DO Photo MOS output status.



DO

Upper Alarm 0 ON Lower Alarm 0 ON Upper Alarm 1 ON Lower Alarm 1 ON

Temperature	21.7 °C	Offset x 0.1	0	0	Set
	71.1 °F				
Humidity	60.2 %RH	0	0	Set	
Dew Point	13.6 °C				
	56.6 °F				
Wet Bulb Temperature	16.7 °C				
	62.0 °F				
Air Pressure	1010.2 hPa	0	0	Set	
Altitude	92 m				
Sea Level Pressure	1021.3 hPa	1021.3	Set		

4.1.4 Status Bar

Show the device's F/W version, Date Code, Real Time Clock, Data Log status, Both RF RSSI of Host & Device, SNR value, IP address is connect, Device status & RF Group Index number.

Device FW:V00.90	D-Code: 20251118-0	RTC: 2025/11/27-11:26:02
Data Log: Stop		
Host RSSI:-15dBm	Device RSSI:-19dBm	SNR:13.0dB
192.168.77.1 Connected	Get Device Linked!!	RFGroup:03

4.1.5 Icon Button

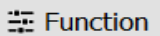
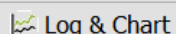
ICON	function	
	Setup	Open the Setup Screen
	Find Controller	Red Led blinking, use to find the connected Controller
	Function	PC Utility Function button use to setup Schedule/Free run, Alarm item & range.
	Offset	Offset adjustment for Sensor's
	Data Log & Chart	PC Utility Data Log manage & Chart view button use to download data log from device for chart view, save chart view buffer to CSV & .dlb(Data Log Binary File), load binary file to chart view.
	Sea Level Pressure	Enter your local area Sea level air pressure to get your correct Altitude.

Table 4-1: Icon Indicator

4.1.6 Configuration/Setup

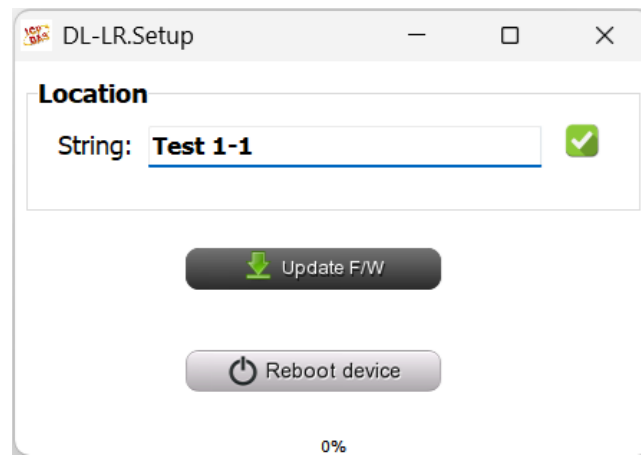
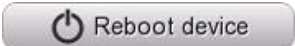


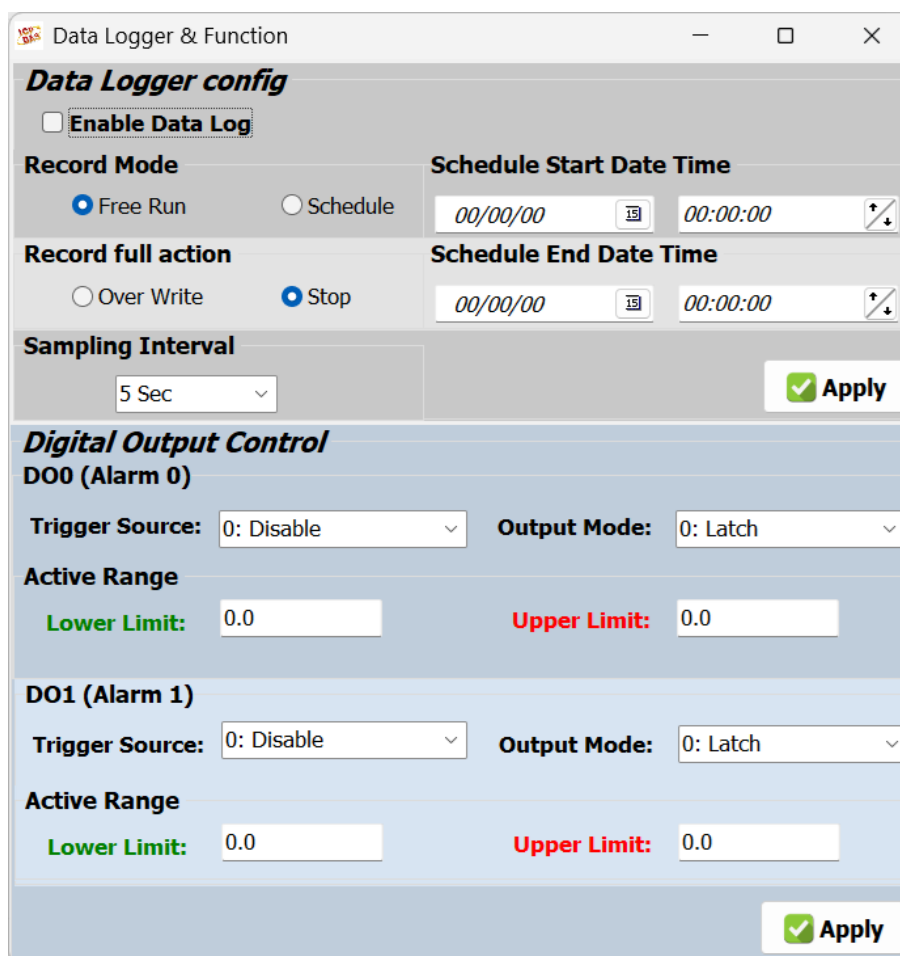
Figure 4-2: DL-LoRa Series Utility setup page

Click apply icon  to save each subject's setting.

Click  to Update Device F/W.

Click  to Reboot device.

4.2 Function page



Function page include Data Logger Config, Digital Output Control.

Data Logger Config :

Enable Data Log

Start/Stop the Data Logger & save all capture date in memory. It will start from the first record every time when enable start the Data Logger.

Record Mode

Select Data Logger running in **Schedule** or **Free Run** mode.

Record full action

Select the action roll over **Overwrite** record or **Stop** the record when Data Logger record full.

Schedule Start/Stop Date Time

To set the Start/Stop Date/Time when select Data Logger running in **Schedule** mode.

Sampling Interval

Select the interval time for sampling.(5,10,15,30Sec,1,5,10,15,30Min,1,12,24Hr)



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Digital Output Control (DO0/DO1) :

Trigger Source

Select which item for trigger the DO Photo MOS active,

- 0: Disable**
- 1: Humidity %RH**
- 2: Temperature °C**
- 3: Temperature °F**
- 4: Dew Point °C**
- 5: Dew Point °F**
- 6: Wet Bulb Temp °C**
- 7: Wet Bulb Temp °F**
- 8: Air Pressure hPa (DL-102S-LRS Only)**
- 9: Altitude m (DL-102S-LRS Only)**

Figure 4-3: Trigger Source item index

Output Mode

Select DO output mode **0: Latch** or **1: Momentary(1sec)**.

Active Range

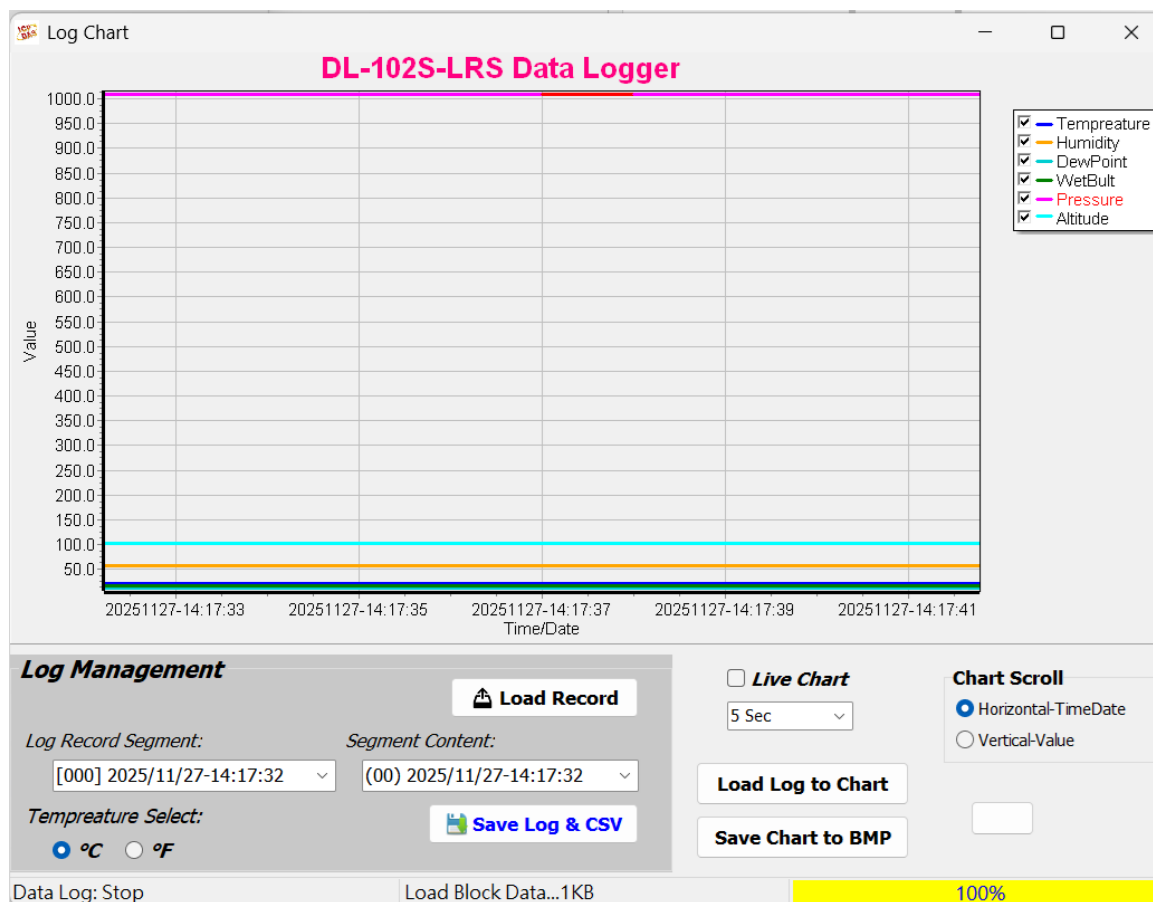
Lower Limit/Upper Limit

Set the value active between Lower & Upper limit.



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4.3 Log & Chart page



Log & Chart page include Chart View, Live Chart & Log Management.

	A	B	C	D	E	F	G	H
1	Date-Time	Humidity	Temp C	DewPoint C	WetBulb C	Pressure hPa	Altitude m	
2	20251127-14:17:32	57.1	21.6	12.7	16.2	1008.9	103	
3	20251127-14:17:33	57.1	21.6	12.7	16.2	1008.9	103	
4	20251127-14:17:34	56.9	21.6	12.7	16.1	1008.9	103	
5	20251127-14:17:35	56.9	21.6	12.7	16.1	1008.9	103	
6	20251127-14:17:36	56.7	21.6	12.6	16.1	1008.9	103	
7	20251127-14:17:37	56.7	21.6	12.6	16.1	1008.9	103	
8	20251127-14:17:38	56.7	21.6	12.6	16.1	1008.9	103	
9	20251127-14:17:39	56.7	21.6	12.6	16.1	1009	102	
10	20251127-14:17:40	56.7	21.6	12.6	16.1	1009	102	
11	20251127-14:17:41	56.7	21.6	12.6	16.1	1009	102	
12	20251127-14:17:42	56.7	21.6	12.6	16.1	1009	102	
13	20251127-14:17:43	56.7	21.6	12.6	16.1	1009	102	
14	20251127-14:17:44	56.7	21.6	12.6	16.1	1009	102	
15	20251127-14:17:45	56.7	21.6	12.6	16.1	1009	102	
16	20251127-14:17:46	56.7	21.6	12.6	16.1	1009	102	
17	20251127-14:17:47	56.7	21.6	12.6	16.1	1009	102	
18	20251127-14:17:48	56.7	21.6	12.6	16.1	1009	102	
19	20251127-14:17:49	56.7	21.6	12.6	16.1	1009	102	
20	20251127-14:17:50	56.8	21.6	12.7	16.1	1009	102	

CSV format Log



DL-10xS-LRS Series User's Manual

Chart View :

Use mouse Left/Right/wheel to control the Chart View area zoom, shift, show hint.

Chart Scroll :

Select Horizontal(Timeline)/Vertical(Value) direction on Chart View, use mouse wheel for Zoom In or Zoom Out.

Live Chart :

Check on Live Chat & select the interval time to draw the real time chart.

Log Management :

Load record from device, it will show the segment & segment content, select the segment/content range will change the chart view data.

Save Log & CSV will save the chart to a CSV file & .dlb (Data Log Binary) file.

Load Log to Chart allow you to open a .dlb file to show on the view.

Save Chart to BMP allow you to save the view to a BMP file.

5. Modbus Protocol

5.1.2 Function Code

The function code field of a Modbus data unit is coded in one byte. Valid codes are in the range of 1 ... 255 decimal (the range 128 - 255 is reserved and used for exception responses). When a Modbus request is sent from a Modbus Client to a Server device the function code field tells the Server what kind of action to perform.

The Modbus TCP feature of DL-10xS-LRS supports 5 function codes, which allows the reading and writing of data contents of registers.

Function Code	Descriptions
01 (0x01)	Read multiple Coil Status
03 (0x03)	Read multiple Analog Output registers
04 (0x04)	Read multiple Analog Input registers
05 (0x05)	Force Single Coil
06 (0x06)	Write single Analog Output registers register
15 (0x0F)	Write multiple Coil
16 (0x10)	Write multiple Analog Output registers register

Table 4-1: Supports Function Codes of DL-10xS-LRS

Any other function code request will be returned with an error response indicating the function code is not supported, as well as a request for too much data or data at a register address that not present.

5.1.3 Error Response

Byte Index	Field Name	Byte count	Description
00	Address	1 Byte	1 to 247
01	Function code	1 Byte	Function code + 0x80
02	Exception code	1 Byte	01

Table 4-2: Error response of Modbus Protocol

If a CRC mismatch occurs, the module will not respond.



5.2 Data Encoding

Modbus uses a “big-endian” representation for address and data items. This means that when a numerical quantity larger than single byte is transmitted, the most significant byte (MSB, also called the high-order byte) is send first. The following sub-topics describe the different byte of encoding and show how the data is encoded as it is within the Modbus packet.

5.2.1 Binary

A binary item is represented as a single bit within a data word. All binary is packed into 16-bits data words, which are accessed using function code 01 and 02. Therefore, a single register contains 16 bits of binary data, each having a specific meaning.

Value	1st	2nd
0xAA55 (1010101001010101)	0xAA (10101010)	0x55 (01010101)

Table 4-3: A single register contains 16 bits of binary data

5.2.2 16-bits Word

A 16-bits word item is transmitted with the most significant byte first. Function code 03 and 04 read 16-bits items at a time; therefore, each of these data items will fit within one register that is read.

Value	1st	2nd
0x1234	0x12	0x34

Table 4-4: A 16-bits word item

5.3 Modbus TCP Protocol Description

The Modbus protocol defines a simple protocol data unit independent of the underlying communication layers. The mapping of Modbus protocol on network can introduce some additional fields on the application data unit.

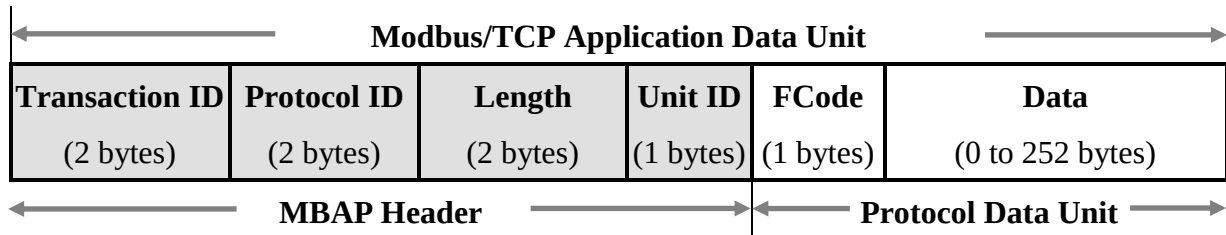


Figure 4-1: Modbus TCP Application Data Unit

5.3.1 MBAP

The Modbus TCP extension includes 7 additional bytes to the original Modbus protocol, which allows for transport over the TCP/IP layers.

A dedicated header is used on TCP/IP to identify the Modbus Application Data Unit. It is called the MBAP Header (MODBUS Application Protocol Header). The MBAP Header consists of 7 bytes of information:

Fields	Length	Description
Transaction Identifier	2 bytes	Identification of Request/Response transaction – Copied from request to response
Protocol Identifier	2 bytes	0 = Modbus protocol
Length	2 bytes	Number of following bytes - Includes the Unit Identifier
Unit Identifier	1 byte	Identification of remote slave. This ID byte is same as LoRa Station ID(STA).

Table 4-5: Modbus TCP Application Protocol Header

5.4 DL-10xS-LRS Address Mapping (Address Base = 0)

Address	CH/Length	Descriptions	Range	Access Type
00000	2	DO0~DO1 Output status	0/1=OFF/ON	R/W
00002	2	DO0~DO1 Alarm Enable	0/1=Disable/Enable	R/W
00004	2	DO0~DO1 Alarm Type	0/1=Latch/Momentary	R/W
00006	2	Read DO0~DO1 Alarm Hi status Write 1 to Clear status	0/1=Normal/Alarm	R/W
00008	2	Read DO0~DO1 Alarm Low status Write 1 to Clear status	0/1=Normal/Alarm	R/W

Table 4-6: FC01 Read, FC05/FC15 Write DO address (0xxxx)

Address	CH/Length	Descriptions	Range/Value	Access Type
40000	1	Relative Humidity %RH offset	Int16	R/W
40001	1	Temperature °C offset	Int16	R/W
40002	1	Air Pressure h/Pa offset	Int16	R/W
40004	2	DO0 ~ DO1: Alarm Item Index Select(0/1~9)=Disable/Sensor item 1~9 See Figure 4-3	Unsigned Int16	R/W
40006	2	DO0/1 Alarm Hi Trigger value	Int16	R/W
40008	2	DO0/1 Alarm Low Trigger value	Int16	R/W
40010	1	LoRa RF Channel Group (Reboot to take effect)	Unsigned Int16	R/W
40011	1	LoRa Station ID(STA)/Modbus ID (Reboot to take effect)	Unsigned Int16	R/W
40012	1	LoRa Efficiency Index(SF) (Reboot to take effect)	Unsigned Int16	R/W
40013	1	Sea-level pressure (DL-102S-LRS Only)	Unsigned Int16	R/W
40014	1	Reboot Device, Write:0x3577	Unsigned Int16	W
40015	1	Default Restore Default, Write:0x3577	Unsigned Int16	W

Table 4-7: FC03 Read, FC06/FC16 Write AO address (4xxxx)

Note: 40000~40002, Offset value is all in Decimal, will multiply by 0.1

E.g. Read value = 11, the offset will be 11 * 0.1 = 1.1

Address	CH/Length	Descriptions	Range/Value	Access Type
30000	1	Read Relative Humidity %RH value	Int16	R
30001	1	Read Temperature °C value	Int16	R
30002	1	Read Temperature °F value	Int16	R
30003	1	Read Dew Point °C value	Int16	R
30004	1	Read Dew Point °F value	Int16	R
30005	1	Read Wet-Bulb °C value	Int16	R
30006	1	Read Wet-Bulb °F value	Int16	R
30007	1	Read Air Pressure value	Int16	R
30008	1	Read Altitude value	Int16	R
30010	1	Read Device ID DL-101S-LRS : 0x3101 DL-102S-LRS : 0x3102	Unsigned Int16	R

Table 4-8: FC04 Read multiple AI address (3xxxx)

Note: 30000~8, Value is all in Decimal, will multiply by 0.1

E.g. Read value = 198, the real value will be $198 * 0.1 = 19.8$



Technical Support

If you have problems about using the DL-10xS-LRS Series device, please contact ICP DAS Product Support.

Email: service@icpdas.com