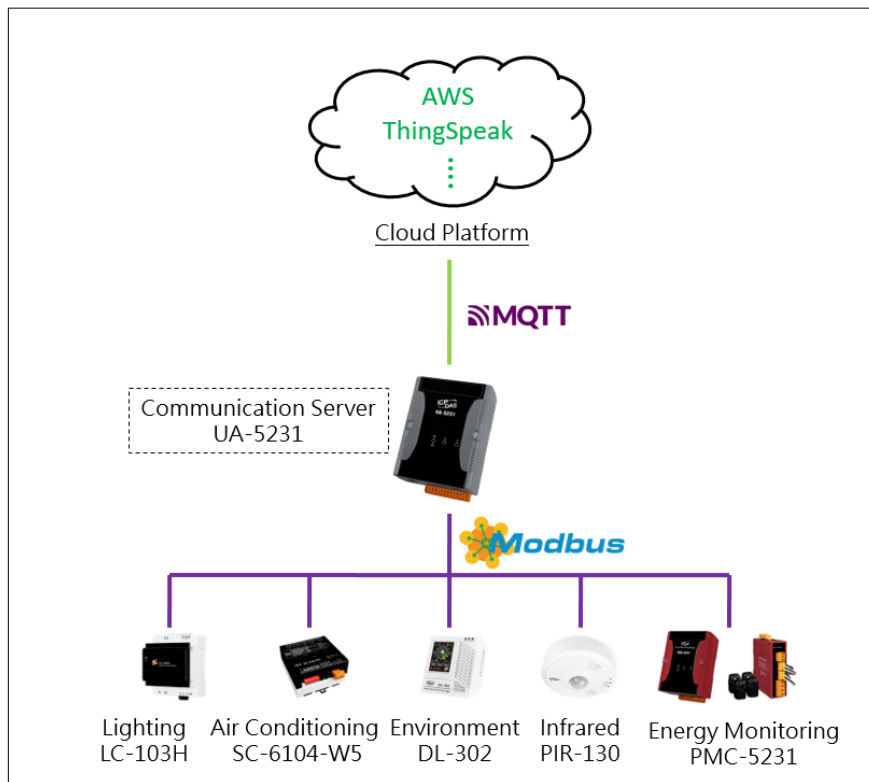


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FAQ-MQC-01: UA Web UI Function Wizard-MQTT Customized

- **How to upload the data collected from UA Series to ThingSpeak's MQTT server?**
(Example: UA-5231 transfers DL-302 data from Modbus TCP to ThingSpeak's MQTT server.)

ICP DAS's UA Series provides the ability to upload the Modbus RTU / Modbus TCP communication data to the IoT cloud platform. (Support for ThingSpeak / AWS / Bluemix and other Cloud Platforms). See the following diagram for how to use it.



The article will explain:

1. **How to set up a ThingSpeak environment?**
2. **Setting up the UA Series to upload data to ThingSpeak IoT Cloud Platform by [MQTT IoT Cloud] function of [MQTT Customized]**
3. **View the ThingSpeak data**

(Please follow the official website This example is for reference only.)

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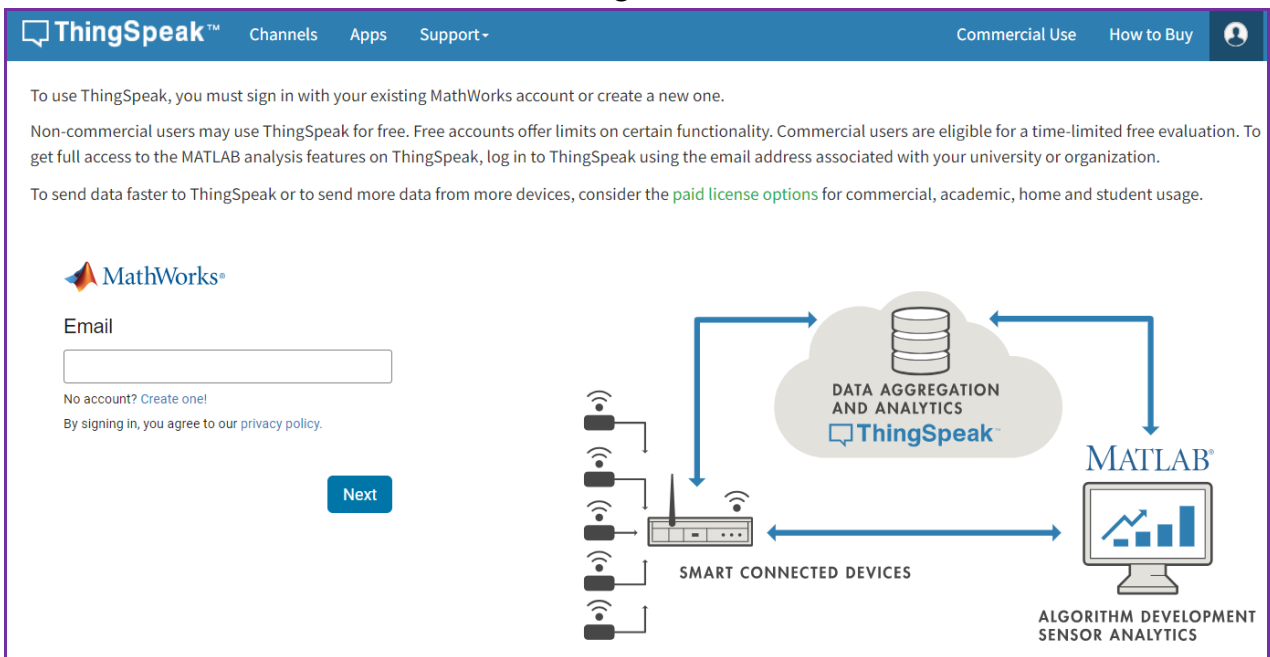
1. How to set up a ThingSpeak environment?

Go to the ThingSpeak website:

<https://thingspeak.com/login?skipSSOCheck=true>

Login

diagrams



Create Channels

The screenshot shows the 'My Channels' page on the ThingSpeak website. The 'Channels' dropdown menu is open, showing options: 'My Channels', 'My Image Channels', 'Watched Channels', and 'Public Channels'. A red box highlights the 'My Channels' option, with a red arrow labeled '(1)' pointing to it. Below the menu, a green 'New Channel' button is highlighted with a red box, and a red arrow labeled '(2)' points to it.

(1) Click [My Channels]

(2) Click [New Channel]

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New Channel

Name

Description

Field 1

Field 2

Field 3

Field 4

Show Channel Location

Latitude

Longitude

Show Video

YouTube

Vimeo

Video URL

Show Status

← (3)

(3) Fill in [Field] and click [Save Channel]

ThingSpeak™ Channels ▾ Apps ▾ Devices ▾ Support ▾

MQTT ← (4)

↑ (5)

Start here to add a new MQTT device.

No devices added

(4) Under [Devices], click [MQTT]

(5) Click [Add a new device]

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(6) Enter [Name]

(7) Setting Authorize channels to MQTT device

(8) Click [Add Channel]

Authorized Channel	Allow Publish	Allow Subscribe
room (2280707)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

(9) Click [Add Device]

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New Device Added

Device Information

ThingSpeak has added a new MQTT device and authorized it to access the channels you selected.

Device Name: DL-302

MQTT Credentials

Use these MQTT credentials to publish and subscribe to ThingSpeak channels. [Learn More](#)

Client ID: GScZ [redacted] [copy]

Username: GScZ [redacted] [copy]

Password: [redacted] [toggle] [copy]

⚠ ThingSpeak does not store a copy of your device's MQTT password. Download or copy it to keep it safe.

Download Credentials ▾

- MATLAB-file (*.m)
- Arduino (mqtt_secrets.h)
- Plain Text (*.txt)** ← (10)

(11) ↓

Done

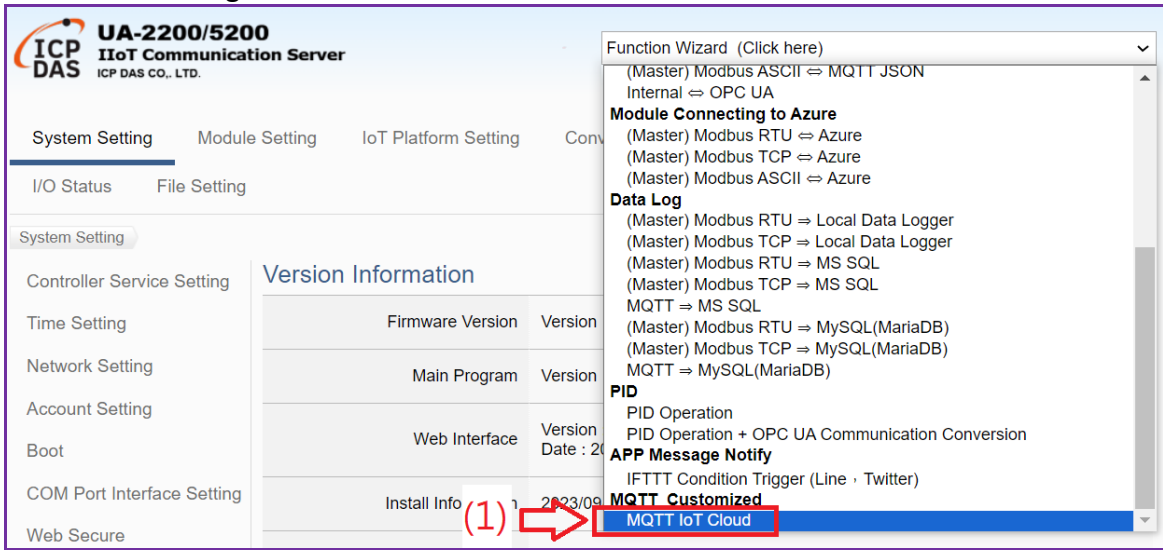
(10) Download txt files

(11) Click [Done]

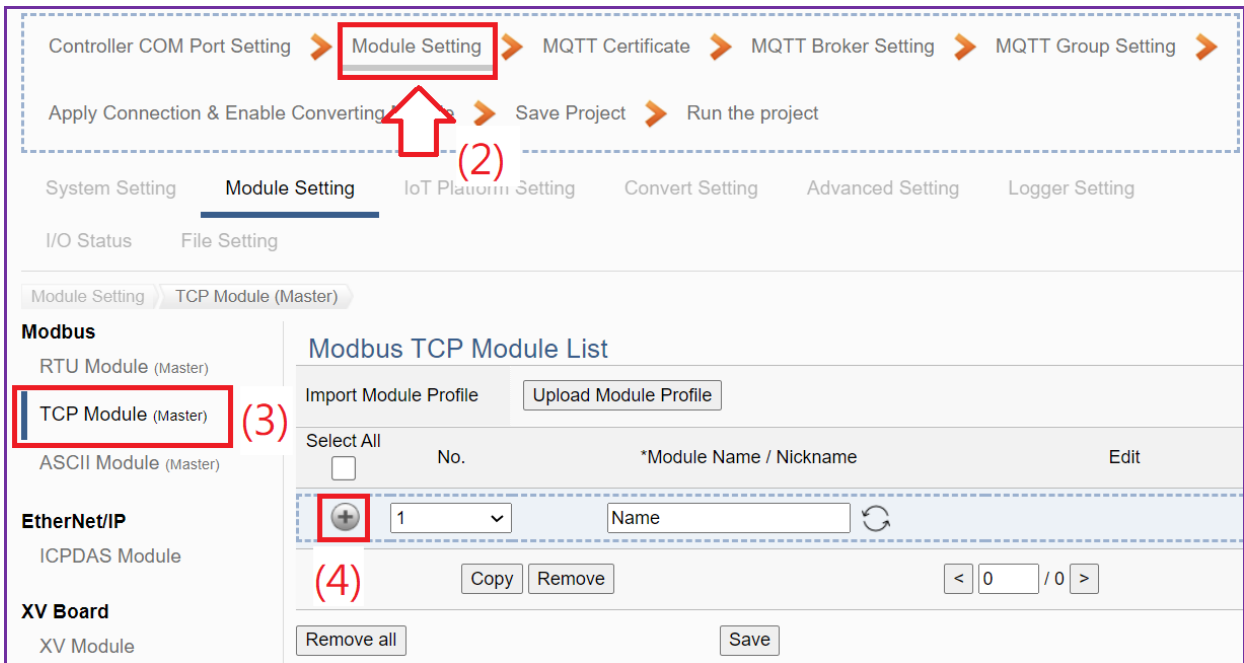
2. Setting up the UA Series to upload data to ThingSpeak IoT Cloud Platform by [MQTT IoT Cloud] function of [MQTT Customized]

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Login to the UA Series Page



(1) Select [MQTT IoT Cloud] in the [Function Wizard]



(2) Click [Module Setting]

(3) Click [TCP Module]

Please select according to the communication protocol of your device, if it is not TCP Module, please set Controller COM Port Setting.

(4) Click the plus sign

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Modbus TCP Module List

Import Module Profile

Select All	No.	*Module Name / Nickname	Edit
<input type="checkbox"/>	2	Name	
<input type="checkbox"/>	1	Name	(5) <input type="button" value="Edit"/>

(5) Click [Edit]

Module Content Setting

No.	1
Module Name	DL-302
IP	192 . 168 . 101 . 15
Port	502
Slave ID	1
Timeout(ms)	500
Polling Interval(ms)	500

Modbus Mapping Table Setting

Data Model	04 Input Registers(3x)
Start Address	0
Data Number	6
Type	16-bit Short
Create Tables	<input type="button" value="Add"/> Success.

(6) Nickname Scaling Bitwise

Coil Status(0x)	Input Status(1x)	Holding Registers(4x)	Input Registers(3x)								
			<table border="1"> <tr> <td>Address</td> <td>0</td> </tr> <tr> <td>Number</td> <td>6</td> </tr> <tr> <td>Type</td> <td>Short</td> </tr> <tr> <td colspan="2"><input type="button" value="Edit"/></td> </tr> </table>	Address	0	Number	6	Type	Short	<input type="button" value="Edit"/>	
Address	0										
Number	6										
Type	Short										
<input type="button" value="Edit"/>											

(6) Setting up Modbus

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Modbus Mapping Table		Address	Nickname	Scaling	Bitwise
01 Coil Status(0x)					
Table Display		<input type="button" value="Show"/> <input type="button" value="Hide"/>			
Address	Variable name	Data Type	Description		
02 Input Status(1x)					
Table Display		<input type="button" value="Show"/> <input type="button" value="Hide"/>			
Address	Variable name	Data Type	Description		

(7) Click [Nickname]


04 Input Registers(3x)					
Table Display		<input type="button" value="Show"/> <input type="button" value="Hide"/>			
Address	Variable name	Data Type	Swap	Description	
0	<input type="text" value="CO2"/>	Short	<input type="checkbox"/>	<input type="text"/>	
1	<input type="text" value="Relative_humidity"/>	Short	<input type="checkbox"/>	<input type="text"/>	
2	<input type="text" value="Temperature_Celsius"/>	Short	<input type="checkbox"/>	<input type="text"/>	
3	<input type="text" value="Temperature_Fahrenheit"/>	Short	<input type="checkbox"/>	<input type="text"/>	
4	<input type="text" value="Dew_point_temperature_C"/>	Short	<input type="checkbox"/>	<input type="text"/>	
5	<input type="text" value="Dew_point_temperature_F"/>	Short	<input type="checkbox"/>	<input type="text"/>	

(8)

(8) After setting [Nickname], click [OK]

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Controller COM Port Setting > Module Setting > MQTT Certificate > **MQTT Broker Setting** > MQTT Group Setting >

Apply Connection & Enable Converting Module > Save Project > Run the project  (9)


System Setting Module Setting **IoT Platform Setting** Convert Setting Advanced Setting Logger Setting

I/O Status File Setting

IoT Platform Setting > Remote Broker

MQTT Connection

Local Broker (10)

Remote Broker  (10)


MQTT Group Connection

Microsoft Azure Platform

OPC UA Connection

Local Server

Remote Broker List

Remove	Broker Name	IP / Domain	Port	Edit
<input type="checkbox"/>	Name			
 (11)				

Remove < 0 / 0 >

Save

(9) Click [MQTT Broker Setting]

(10) Click [Remote Broker]

(11) Click the plus sign

Remote Broker List

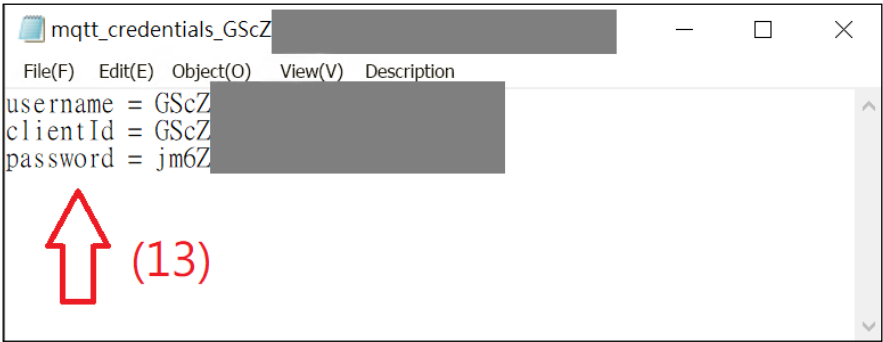
Remove	Broker Name	IP / Domain	Port	Edit
<input type="checkbox"/>	Name1			
<input type="checkbox"/>	Name	127.0.0.1	1883	Edit (12)

Remove < 1 / 1 >

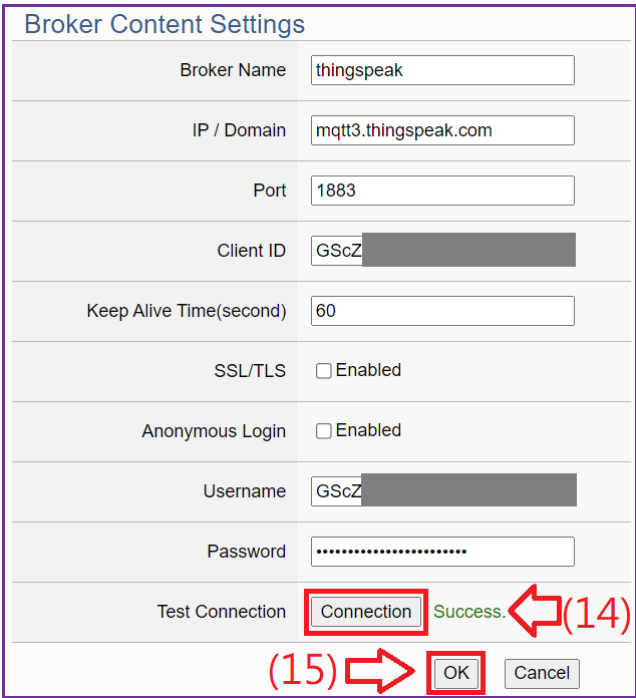
Save

(12) Click [Edit]

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(13) Open the txt file you just downloaded



(14) Fill in the connection information and click [Connection] to test the connection

- IP / Domain: mqtt3.thingspeak.com
- Port: 1883
- Client ID: Following the information in the txt file
- Keep Alive Time(second): 60
- SSL/TLS: Uncheck Enabled
- Anonymous Login: Uncheck Enabled
- Username: Following the information in the txt file
- Password: Following the information in the txt file

(15) Click [OK]

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Controller COM Port Setting > Module Setting > MQTT Certificate > MQTT Broker Setting > **MQTT Group Setting** >

Apply Connection & Enable Converting Module > Save Project > Run the project

(16) ↑

System Setting Module Setting **IoT Platform Setting** Convert Setting Advanced Setting Logger Setting

I/O Status File Setting

IoT Platform Setting > MQTT Group Connection

MQTT Connection

- Local Broker
- Remote Broker
- MQTT Group Connection**
- Microsoft Azure Platform

OPC UA Connection

- Local Server

MQTT Group Connection Name List

Remove	Group Name	Edit
<input type="checkbox"/>	Name	
<input type="checkbox"/>	Default	Edit

Remove < 1 / 1 >

Save

(16) Click [MQTT Group Setting]

(17) Click the plus sign

(18) Click [Edit]

MQTT Client Setting

No.

Group Name

Scan Rate(ms)

Dead Band

Will Topic

Will

Add Timestamp

MQTT Connection

Broker (Local)

thingspeak (Remote)

(19) →

(19) Check the MQTT remote connection

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Publish & Subscribe

Publish Topic	<input type="text" value="channels/2280707/publish"/>
Publish QoS	<input type="text" value="0"/>
Subscribe Topic	<input type="text" value="channels/2280707/subscribe"/>
Subscribe QoS	<input type="text" value="0"/>
Retain	<input type="text" value="No"/>

(20) →

(20) After setting the parameters, click [OK]

Parameters Setting:

Publish Topic: channels/[Channel ID]/publish (Example: channels/2280707/publish)

Publish QoS: 0

Subscribe Topic: channels/[Channel ID]/ subscribe (Example: channels/2280707/ subscribe)

Subscribe QoS: 0

Retain: No

Controller COM Port Setting > Module Setting > MQTT Certificate > MQTT Broker Setting > MQTT Group Setting > Apply Connection & Enable Converting Module > Save Project > Run the project

System Setting ↑ (21) Module Setting IoT Platform Setting Convert Setting Advanced Setting Logger Setting

I/O Status File Setting

OPC UA

Modbus RTU (Master)

Modbus TCP (Master)

Modbus ASCII (Master)

MQTT

EtherNet/IP

XV Module

MQTT IoT Cloud List

	No.	*Setting Name / Nickname	Edit	Connection Name	Enabled
<input type="checkbox"/>	1	thingspeak_room	+		<input type="checkbox"/>

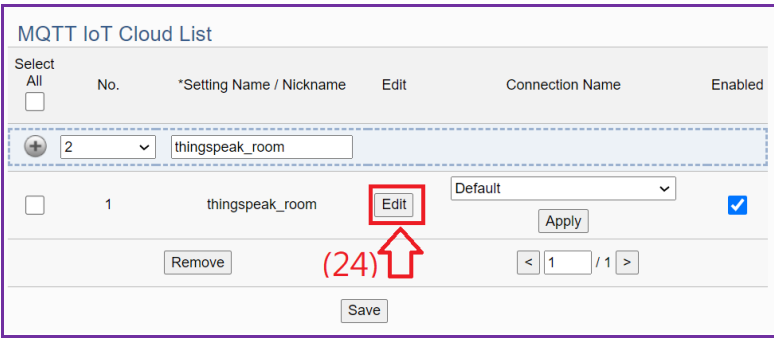
↑ (23)
Remove
↑ (22)
< 0 / 0 >

(21) Click [Apply Connection & Enable Converting Module]

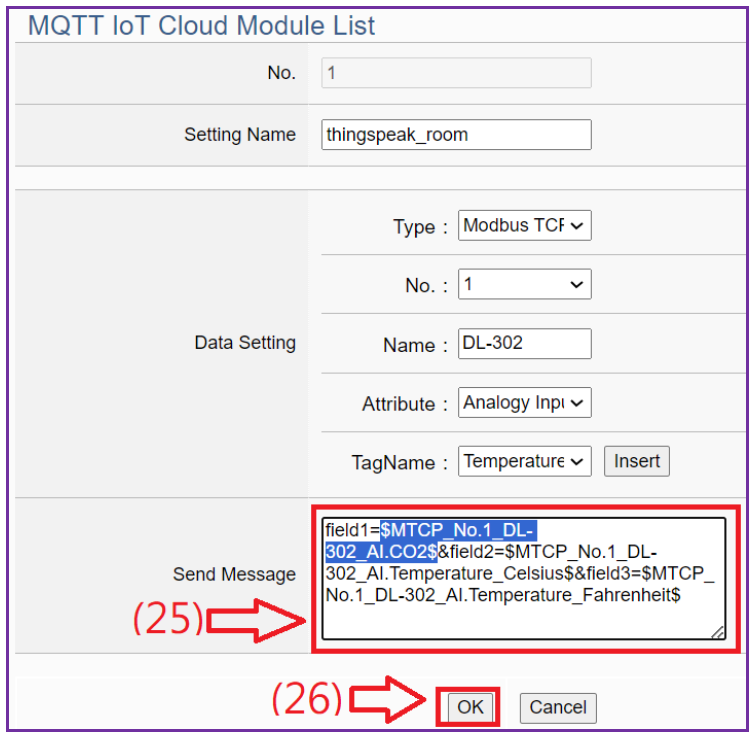
(22) Enter Setting Name

(23) Click the plus sign

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(24) Click [Edit]



(25) Fill in the MQTT IoT Cloud Module List

Three variables are used in this example: MTCP_No.1_DL-302_AI.CO2 and MTCP_No.1_DL-302_AI.Temperature_Celsius and MTCP_No.1_DL-302_AI.Temperature_Fahrenheit

To publish 3 fields at the same time in ThingSpeak as an example:

field1=\$MTCP_No.1_DL-302_AI.CO2&field2=\$MTCP_No.1_DL-302_AI.Temperature_Celsius&field3=\$MTCP_No.1_DL-302_AI.Temperature_Fahrenheit\$

(After selecting the variable and clicking [Insert], the variable name will be added to the [Send Message] field)

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(26) Click [OK]

MQTT IoT Cloud List

Select	No.	*Setting Name / Nickname	Edit	Connection Name	Enabled
<input type="checkbox"/>	2	thingspeak_room		Default	<input type="checkbox"/>
<input type="checkbox"/>	1	thingspeak_room	Edit		<input checked="" type="checkbox"/>

Buttons: Remove, Save, Apply

(27) Select the Connection Name

(28) Click [Apply]

(29) Check [Enabled]

Navigation: Controller COM Port Setting > Module Setting > MQTT Certificate > MQTT Broker Setting > MQTT Group Setting > Apply Connection & Enable Converting Module > Save Project > Run the project

System Setting | Module Setting | IoT Platform Setting (30) | Convert Setting (31) | Advanced Setting | Logger Setting

I/O Status | File Setting

Convert Setting | IoTCloud

OPC UA

- Modbus RTU (Master)
- Modbus TCP (Master)
- Modbus ASCII (Master)

MQTT

- EtherNet/IP
- XV Module
- Internal

MQTT IoT Cloud List

Select	No.	*Setting Name / Nickname	Edit	Connection Name	Enabled
<input type="checkbox"/>	2	thingspeak_room		Default	<input type="checkbox"/>
<input type="checkbox"/>	1	thingspeak_room	Edit		<input checked="" type="checkbox"/>

Buttons: Remove, Save, Apply

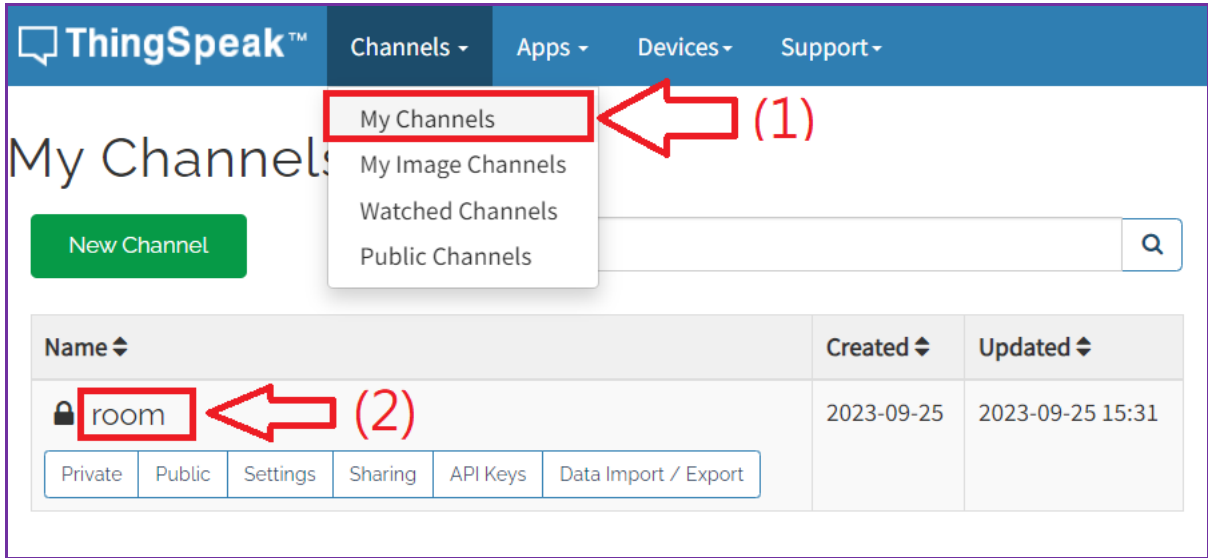
(30) Click [Save Project]

(31) Click [Run the project]

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3. View the ThingSpeak data

Go to the ThingSpeak page to login



(1) Click [My Channels]

(2) Go to the Channel you want to see

View the diagrams for ThingSpeak

