This page (https://docs.thinger.io/mqtt) explains how to connect devices to the Thinger.io platform via the MQTT protocol. MQTT is a lightweight publish/subscribe messaging protocol, well-suited for communication between IoT devices and platforms. Below, I will summarize the content of the page and provide a step-by-step guide on how to connect your device to the Thinger.io platform using MQTT.

This article will detail how the NiuBoL sensor, through a data logger (gateway/data recorder), uses the MQTT protocol to connect to the Thinger.io platform. Thinger.io supports the MQTT protocol, allowing devices to communicate with the platform by publishing (Publish) and subscribing (Subscribe) to messages. Devices need to use specific MQTT topic formats and authenticate through a device token. This article will also explain how to configure the MQTT client, connect to Thinger.io's MQTT server, publish and subscribe to data, and manage device properties, resources, and callbacks.

\*Prerequisites:

- You already have a Thinger.io account. If not, please register.
- Your device supports the MQTT protocol.

Step-by-Step Guide

Step 1: Create a Device on Thinger.io

- 1. Login to Thinger.io
  - Open your browser, visit Thinger.io, and log in using your username and password.
- 2. Go to the Devices Management Page

- In the left menu, click "Devices."

3. Add a New Device

- Click the "Add Device" button.

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Let	Statistics		Devices > Add		
4	Devices		num num		-1/2
6	Dashboards		Device Details		• 1/2
8				€ Device Configuration	
	Endpoints		Device Type 🛈	MQTT Device	~
	Alarms		Device Id 📵	NußoL	
•			Device Credentials 🔘	WPLIKE PRW	Random 🔎
				Device Information	•
-			Device Name 🔘	Soil sensor	
			Device Description ()	Solf sensor NBL-S-TMC	
•				& Advanced Options	
0	Plugins		Asset Type 🛈	Select Type	
۵	Toolbox		Asset Group 🛈	Select Group	*
Admi					
-			Product ()	Select Product.	*
*			Enabled 🔘		
@					
	Brands		Add Device		

4. Choose Device Type

- Device Type: Select "MQTT Device."
- Device ID: Enter a unique device name, e.g., "NiuBoL."

- Device Credentials: This is the device security password, which can be randomly generated using the button at the bottom. Copy and save this token for later use.

- Description: Optional, fill in a description like "My MQTT device," I used "Soil sensor NBL-S-TMC."
- Click "Add Device" to save.

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E Statistics	Devices						
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2 Dashboards	Device	Description	Protocol	Last Connection	Туре	Group	Project
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Alarms	-	100	2.0	10-10-10-10-10-10-10-10-10-10-10-10-10-1			
Access Tokens	Showing 2 devices						
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🚔 File Storages 🧳							
Products							
Projects							

After creating the device, you can click to enter the device to set up or change its password.

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ш	Statistics		Devices > NiuBoL > Settings	Status	Properties	API	=
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			Device Name 🔘	Solf sensor			
-			Device Description	Soil sensor NBL-S-TMC			
	Products	6		J <sup>4</sup> Advanced Options			
	Projects	19	Asset Type 🔘	Select Type		÷	
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Adminis			Product 🕼	Select Product		*	
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@			• Opdate Device				

#### Notes:

- Device Type: "MQTT device" should be selected.
- Device Identifier: Must be unique among your devices.
- Device Description: Additional information to help identify each device.
- Device Credentials: This is the device security password, which can be randomly created using the button at the bottom.

When all information is entered, pressing the "Add Device" button will create a new device profile in the device list. If everything is correct, a confirmation message will appear, indicating that the Thinger.io platform is ready to receive data from your MQTT devices.

#### Step 2: Create a Dashboard

- Create a new dashboard and set up the necessary information.

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ш	Statistics		Dashboards > Add	
•	Devices		Dashboard Details	
Ð	Dashboards			
	Data Buckets		Dashboard id 🚺	Solldata
=	Endpoints		Dashboard name 🕕	Soildata
٠	Alarms		Dashboard description 💿	Enter dashboard description
۵	Access Tokens			
	Assets	•	<ul> <li>Add Dashboard</li> </ul>	
	File Storages	2		
	Products			
	Projects			

#### Adding a Dashboard and setting up related information

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Le Statistics	Dashboards				
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Dashboards	Dashboard	Description	Created	Modified	Project
Data Buckets Endpoints	Soildata		17h	4h	
🐥 Alarms	temperature 1		6d	17h	
Access Tokens	Showing 2 dashboards				
Assets >					
File Storages     Products					
Projects					
😌 Plugins 🛛					

- Once the dashboard is created, you can proceed to display data.

#### Step 3: Create Data Buckets

1. Store Data

- In the Thinger.io device dashboard, create a data bucket, such as "Soildata" or "Weatherdata," or customize it according to your preference.

- In the device settings, configure it to store the incoming MQTT data in the bucket.

	Statistics							
Ŧ	Devices			曼 Bucket Settings				
23	Dashboards		Bucket Id 🕕	Soildata				
8	Data Buckets			Bucket Information				
=	Endpoints		Bucket Name 🕦	Soil sensor data				
٠	Alarms		Bucket Description 🕕	Soll sensor data				
۵	Access Tokens			Bucket Configuration				
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-	File Storages	ē	Data Source 🕕	From MOTT Topic				
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dmin			Product (1)	Select Product				
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몲				Database Options				
@			Backend 🕕	MongoDB				
	Brands			Retention 1				

The following parameters need to be configured:

- Bucket ID: A unique identifier for the bucket, e.g., "Soildata" or "Weatherdata."

- Bucket Name: Use a representative name, like "Weather Data" or "Soil data" or the project name.
- Bucket Description: Provide any additional details, like "Soil sensor data."
- Enabled: Toggle data bucket recording on or off. Turn it on to enable it.

- Data Source: Typically defines the Thinger.io device or resource subscribed by the server. In this case, you should select "From MQTT Topic."

- MQTT Topic: Enter the MQTT topic that will be subscribed to by the server.

For example:

- MQTT Topic: yourusername/devices/NiuBoL/Soildata

This way, Thinger.io will configure the platform as an MQTT broker but also as a topic consumer, allowing additional features. The client must send data in JSON format.

Step 4: Configure Modbus Collection Rules and Parameters on Data Logger (Gateway)

Save & Apply

Save

## Changsha Zoko Link technology Co., Ltd

>	View	Basic Setting		
>	Setup	Date of the starting		
>	Secure	Data Collect	Enable O Disable	
>	VPN	Collect Period	10	② Seconds
>	Advanced			
$\checkmark$	Data Collect	Report Period	60	Seconds
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	Interface Setting	Enable Cache	🗹 🙋 Cache History Data	
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>	Administrate	Cache Path	System Storage	Path Where Data Is Stored
_0	gout			
		Send Minute Data		
		Send Hour Data		
		Send Day Data		

- Basic Settings: Set the Collect Period and Report Period according to your needs.

>	View	Interface S	Settina			
>	Setup		5			
>	Secure	COM1/RS485	COM2/RS	232		
>	VPN		-	-		
>	Advanced		Enabled	Enable O Disable		
$\checkmark$	Data Collect		Baudrate	9600	~	
	Basic Setting					
	Interface Setting		Databit	8	~	
	Modbus Rules Setting					
	Server Setting		Stopbit	1	~	
	Data query					
>	Administrate		Parity	None	~	
Lo	gout					
	7	Fra	ime Interval	400	🙆 ms	
		cc	M Protocol	Modbus	*	
		Comm	and Interval	200	🙆 ms	

#### - Interface Settings

>	View	Mo	dbus	Rules	Settin	g									
>	Setup														
>	VPN	IVIO	abus Rui	les									🖸 Con	nfigure import	and export
> A > D Bas Inte Mo Ser Dat > A	Advanced Data Collect Basic Setting	Orde	er Device Name	Interface	Factor Na	ame De	vice ID	Function Code	Start Address	Count s	Data Type	Reporting Center	Enable		
	Interface Setting Modbus Rules Setting Server Setting	1	soil sensor	COM1	temp	1		3	0	1	unsigned 1 6Bits AB	1		Edit	× Delete
	Data query Administrate	2	soil sensor	COM1	moisture	1		3	1	1	unsigned 1 6Bits AB	1	<b>V</b>	Z Edit	X Delete
Lo	ogout	3	soil sensor	COM1	EC	1		3	2	1	unsigned 1 6Bits AB	1		Z Edit	× Delete
		New	v Modbus Ri	ule											
			Order	Device Name	Interface	Factor Name	Device	ID Fu	nction ode	Start Address	Count	Data T	ype	Reporting Center	
					COM1 🗸		0~255	0~2	55	)~65535	1~120	Unsigned 1	6Bits 🗸	1-2-3-4-5	🖆 Add
												Save 8	& Apply	Save	Reset

- Modbus Rules Settings: Refer to the specific sensor data table.

> View	Modbus Rules -	soil sensor - COM1	
> Setup			
> Secure	enabled	Isable	
> VPN	Order	1	
Data Collect     Basic Setting	Device Name	soil sensor	]
Interface Setting Modbus Rules Setting	Belonged Interface	COM1 ~	
Server Setting Data query	Factor Name	temp	Multiple Factors Are Separated By Semicolon
> Administrate	Alias Name	7	Multiple Aliases Are Separated By Semicolon
Logout	Device ID	1	② 0~255
	Function Code	3	0~255
	Start Address	0	0~65535
	Count	1	1~120
	Data Type	Unsigned 16Bits AB	A highest byte
	Reporting Center	1	Multiple Servers Are Separated By Minus
	Unit	°C	Multiple Units Are Separated By Semicolon
	Operator	/	@ 0 + - * /
	Operand	10	]
	Accuracy	1 ~	<b>@</b> 0~6
	Enable Webshow	🛛 🎯 After checking, you can que	ery the collected data of the configuration item on the web page

- Set Sensor Output Units and Precision.

Step 5: Set MQTT Connection Parameters on Data Logger (Data Recorder/Gateway)

For example:

- Communication Protocol: MQTT
- Encapsulation Type: JSON
- Server Address: backend.thinger.io
- Port: 1883
- MQTT Public Topic: yourusername/devices/NiuBoL/Soildata
- MQTT Username: yourusername (your Thinger.io username)
- MQTT Password: This is the Device Credentials password.
- Client ID: The device identifier that was configured in the device form, such as "NiuBoL"

> Setup > Secure	Server Setting Server1 Settings Server	2 Settings Server3 Settings Server4 Settings Server5 Settings
> VPN > Advanced	Enabled	Enable O Disable
<ul> <li>Data Collect</li> <li>Basic Setting</li> </ul>	Protocol	MQTT
Interface Setting Modbus Rules Setting	Encapsulation Type	JSON
Server Setting Data query	Server Address	backend thinger io
Administrate	Server Port	1883
	Enable Cache	@ Cache When Fails To Send
	MQTT Public Topic	Arvi wen/d ices NiuBoL/Soildata
	MQTT Subscribe Topic	
	MQTT Username	Anjiwen
	MQTT Password	SJQdil <sub>4</sub> oh6ll3X
	Client ID	NiuEpL
	Enable TLS/SSL	
	Enable Self Defined Variable	
	Connection Status	CONNECTED

Save & Apply Save Reset

#### Notes:

- Broker Address: backend.thinger.io (without the http:// part)
- Broker Port: 1883 for non-secure connections, or 8883 for SSL/TLS
- Username: yourusername (not your email address).
- MQTT Public Topic:<username>/devices/<deviceID>/<resource>
- MQTT Subscribe Topic: Can be null
- MQTT Password: Must match the password you placed in the "Device Credentials" field on Thinger.io.
- Client ID: The device identifier you set up at the device form.
- 2. Test the Connection
  - Start the client and check if the connection is successful.
  - If the connection fails, check:
    - Whether the username and password are correct.
    - Whether the network is working (check if port 1883 is blocked by the firewall).

## Step 6: Verification and Debugging

- 1. Check the Thinger.io Dashboard
  - Go back to Thinger.io and enter the "Soildata" dashboard.
  - Check whether data has been received in "Device Properties" or "Data Buckets."



#### Once the device is online, it indicates a successful connection.

ы	Statistics		Buckets > Soildata > Da	ta	
4	Devices		C Refresh		
Ð	Dashboards		C Kellesi		
8	Data Buckets		() Date	params	
	Endpoints		2025/4/18 14:03:00	{"EC":27, "moisture":6.5, "temp":26.8}	
	Endpoints		2025/4/18 14:02:00	{"EC":27, "moisture":6.5, "temp":26.8}	
	Alarms		2025/4/18 14:01:00	{"EC":27, "moisture":6.5, "temp":26.7}	
4	Access Tokens		2025/4/18 14:00:00	{"EC":27, "moisture":6.6, "temp":26.8}	
	Access Tokens		2025/4/18 13:59:00	{"EC":27,"moisture":6.5,"temp":26.7}	
	Assets	>	2025/4/18 13:58:00	{"EC":27,"moisture":6.7,"temp":26.8}	
	File Storages	<b>a</b> 1	2025/4/18 13:57:00	{"EC":27,"moisture":6.7,"temp":26.7}	
			2025/4/18 13:56:00	{"EC":27, "moisture":6.7, "temp":26.8}	
	Products		2025/4/18 13:55:00	{"EC":27, "moisture":6.7, "temp":26.8}	
	Projects	<b>.</b>	2025/4/18 13:54:00	{"EC":31, "moisture":6.9, "temp":26.7}	
~			2025/4/18 13:53:00	{"EC":31,"moisture":7,"temp":26.8}	
•	Plugins	2	2025/4/18 13:52:00	{"EC":31, "moisture":7.1, "temp":26.7}	
۵	Toolbox	•	2025/4/18 13:51:00	{"EC":31,"moisture":7.1,"temp":26.7}	
			2025/4/18 13:50:00	{"EC":31,"moisture":7.1,"temp":26.7}	
			2025/4/18 13:49:00	{"EC":32,"moisture":7.1,"temp":26.7}	

You can check the Data Buckets to see if data is being received.

kets > Soildata > D	ata	Data	Import	Export
Ž Refresh				Inspe
() Data				
2025/4/18 14:04:00	("EC":27 "moisture":6.5 "temp":26.8)			
2025/4/18 14:03:00	("EC":27 "moisture":6.5 "temp":26.8)			
2025/4/18 14:02:00	{"EC":27, "moisture":6.5, "temp":26.8}			
2025/4/18 14:01:00	("EC":27, "moisture":6.5, "temp":26.7)			
2025/4/18 14:00:00	("EC":27, "moisture":6.6, "temp":26.8)			
2025/4/18 13:59:00	("EC":27, "moisture":6.5, "temp":26.7)			
2025/4/18 13:58:00	{"EC":27, "moisture":6.7, "temp":26.8}			
2025/4/18 13:57:00	{"EC":27, "moisture":6.7, "temp":26.7}			
2025/4/18 13:56:00	{"EC":27,"moisture":6.7,"temp":26.8}			
2025/4/18 13:55:00	{"EC":27, "moisture":6.7, "temp":26.8}			
2025/4/18 13:54:00	{"EC":31,"moisture":6.9,"temp":26.7}			
2025/4/18 13:53:00	{"EC":31,"moisture":7,"temp":26.8}			
2025/4/18 13:52:00	{"EC":31,"moisture":7.1,"temp":26.7}			
2025/4/18 13:51:00	("EC":31,"moisture":7.1,"temp":26.7)			
2025/4/18 13:50:00	{"EC":31,"moisture":7.1,"temp":26.7}			
2025/4/18 13:49:00	("EC":32, "moisture":7.1, "temp":26.7)			
2025/4/18 12:48:00	PEC":21 "moicture":7 1 "temo":26 71			

If you need to change the password, you can set it in the Data Buckets settings. No action is required if you do not need to modify it.

#### Step 7: Configure Data Storage and Display

- Create a dashboard (Dashboard), add charts, and bind them to the Data Buckets to view the data in real-time.



- Add a Tab or Widget.

# NiuBoĽ

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tł	ninger.io	1		
			Solldata Widget Settings	
			Widget Gauge Display Options	
			Title 🕕 Widget Title	
			Subtitle 🛈 Widget Subtitle	
			25.8 5.5 Link To G	
			26.0 Show Update U	
			25.5 Show Offline ① None ▼	
			25.0 g m Show Fullscreen ()	
			24.5 Background 🕕 👘 #ffffff +	
			24.0 Type () Gauge 🗸	
			Select widget type	
			7 Assets Map Assets Table	
			ApexCharts	
			4 Donte chart Progressbar Gauge	
			2 40.89 Tachometer Google Map	
			1 11:00 12:00 13:00 14:00 15:00 16:00 43:390 Image/MJPEG Text/Value	
			Led Indicator Clock	
			HTML Vruget HTML Time Series Group Widget	
			THINGER.ID © 2025 Device Control	

- Choose the type of Widget.

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M Stateta		Widget Setti	ings		
• nerices		Widget Gauge	Display Options		
📾 Dashboards		Data Source	From Data Bucket		
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## - Select the data source for the Widget.

ē D		
Soildata	Widget Settings	
	Widget Gauge Display Options	
	Units 🛛 °C	
	Min Value 🚺 0	
25.8 5.5	Max Value 🕕 100	
0 10 0 1		
26.0	Text Color 🕘 #1E313E	
255	Gradient 🕼 🏾 🌑	
	0-0-0000-0	
245	× Cancel ✓ Save	
and the second		

Email: sales@niubol.com

- Set the unit of measurement, maximum, and minimum values.



Data Display: Once set up, data will be displayed on the dashboard.

Final Debugging:

- If data is not displayed, check:
  - Whether the topic format is correct.
  - Whether the device token is valid.
  - Whether the message format is correct (e.g., JSON).

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