How to Use RESTful API to Connect to the ioThinx 4510 Series

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How to Use RESTful API to Connect to the ioThinx 4510 Series

In this tutorial you will learn how to use Restful API to send a GET request and a PUT request to the ioThinx 4510.

Prepare the Following Items

- ioThinx IIoT Starter Kit (ioThinx 4510, 45MR-1601, 45MR-2600, and 45MR-3800)
- Software: Postman, ioThinx 4510 (with firmware v1.1 installed)

Using RESTful API via Postman

Introduction to Postman

For information about Postman, please refer to the following web page:

<u>https://www.getpostman.com/</u>. Step-by-step procedures on how to use Postman are described below.







Postman(RESTful API client) IP address: 192.168.127.200 Moxa ioThinx 4510 IP address: 192.168.127.254

Install Postman

Download **Postman** from the following website and install it: <u>https://www.getpostman.com/downloads/.</u>

Enable the RESTful API service on the ioThinx 4510

1. Log in to the ioThinx 4510

Step 1: Open your web browser and type the default IP address of the device: 192.168.127.254.

Step 2: On the login page, type the default username/password (admin/moxa) to log in to the Web Console.

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2. Click **Security** in the left menu and then select **RESTful API via HTTP** Service Settings.

MOXA	ioThin	ix 4510				Save	& Restart
Dashboard		Service Settings	User Settings	Account Settings	Access Control	Certific	cate Settings
System	Soni	co Sottings					
Security	Servi	ce settings					
Network		No.		Service		TCP/UDP	Port
Module	ø	1	We	b Service via HTTP		TCP	80
Serial Port		2	We	b Service via HTTPS		TCP	443
1/0		MUCTim	most the celf signed certificate be	iere enabling the ush convice via	https://sr.ths.browsers.psou		
Internal Register		MUSTIN	port the sen-signed certificate be	ock the connection	https, of the browsers may		
Protocol -		3	RE	STful API via HTTP		TCP	80
Modbus		4	RE	STful API via HTTPS		TCP	443
SNMP		5		SNMP Agent		UDP	161
MQTT	-	6		Indhus/TCP Slave		TCP	502
	_	-					302
	_	7	М	odbus/RTU Master		-	-
		8		MQTT Client		TCP	
		9	IOxp	ress/MCC Tool/MXIO		TCP/UDP	10124/480

3. Click **Save & Restart** in the top right corner of the page and then click **Save and Restart** in the center of the page.

MOXA ioThinx 4510	1 Save & Restart Logout
Dashboard	
System	
Security	
Network	
Module	
Serial Port	
I/O	
Internal Register	
Protocol Configuration has been modified	
Modbus Do you want to save current setting to device?	
SNMP Save and Restart Cancel	
MQTT	

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Configuring Postman

- 1. Open Postman and create a new **Request** (named **GET example**).
- 2. Create a **Collection**.
- 3. Save the new **Request** in the created **Collection**.
- 4. Create another new **Request** (named **PUT example**) and save it in the created **Collection**.

New Minport Runner	👪 My Workspace 👻 🎄 Invite	🧿 😢 🖨 🛦 🖤 Sign In
Q Filter History Collections Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat Treat T	IDDLETED] 4TT GET @ SAVE REQUEST 192.168.127.254/ Request name PUT * GET example Request description (Optional) Params Authory KEY Key Response Adding a description makes your docs better	X No Environment Send Save Cookies Code Comments(0) Description Useription
Concorons are you group related requests, making them easier to access and run.	Descriptions support Markdown Select a collection or folder to save to: Q Search for a collection or folder All Collections Create Collection Cancel	sponse.

 Select the GET method on the GET example tab, and select the PUT method on the PUT example tab.

GET GET	T example X PUT PUT example	+	No Environment	*	•	\$
▶ GET e	xample			Exam	ples (0)	•
GET	▼ 192.168.127.254/api/io/di/GET_Demo@	Button/diStatus	Send	• s	ave	*
Params	Authorization Headers (2) Body P	re-request Script Tests	Cookies	Code Co		
KE	Y	VALUE	DESCRIPTION		Bulk E	dit
Kr	ry	Value	Description			
GET GE	ET example	× + •••	No Environment	*	\odot	٥
PUIG	example			Exan	nples (0	n) -
PUT	 192.168.127.254/api/io/do/PUT_Demoi 	@Light/doStatus	Send	Exan	n <mark>ples (0</mark> Save)) -
PUT	192.168.127.254/api/io/do/PUT_Demo Authorization Headers (2) Body •	⊉Light/doStatus Pre-request Script Tests	Send	Exan	nples (0 Save)) 👻
PUT Put Params	192.168.127.254/api/io/do/PUT_Demot Authorization Headers (2) Body	BLight/doStatus Pre-request Script Tests VALUE	Cookies DESCRIPTION	Exan	nples (0 Save ommen Bulk)

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- 6. Create the following content in the **Headers** of the **GET example** tab and **PUT example** tab.
 - Content-Type: application/json
 - Accept: vdn.dac.v2

Para	ms Authorization	Headers (2)	Body Pr	e-request Script Tests		Cookies Code Comments (0)
	KEY			VALUE	DESCRIPTION	•••• Bulk Edit Presets 💌
\checkmark	Content-Type			application/json		
\checkmark	Accept			vdn.dac.v2		

Send a GET request and a PUT request

RESTful API List Rules

You can check the RESTful API list in the Appendix of the ioThinx 4510 User's Manual: RESTful API Rules.

RESTful API	Description	Access	Format
/api/io/do/{ioName}/doStatus	DO - status (0: OFF, 1: ON)	R/W	0 or 1
/api/io/do/{ioName}/doPulseCount	DO - Pulse mode - count	R/W	0 to 65535
/api/io/do/{ioName}/doPulseOnWidth	DO - Pulse mode - ON width	R/W	1 to 65535
	(unit: 500us)		
/api/io/do/{ioName}/doPulseOffWidth	DO - Pulse mode - OFF	R/W	1 to 65535
	width (unit: 500us)		
/api/io/do/{ioName}/doPulseStatus	DO - Pulse mode - status	R/W	0 or 1
	(0: Stop 1: Start)		

The {ioName} is composed of three elements: Module_Name, @, and I/O_Channel_Name. For example, the {ioName} associated with module name "45MR-2600-0" and DO channel name "DO-00" is 45MR-2600-0@DO-00.

Note: The module and I/O channel name can be changed in Module Settings and I/O Settings.

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1. In this demonstration, we change the name of module **45MR-1601** to **GET_Demo** and the name of **45MR-2600** to **PUT_Demo**.

MOXA	ioThinx 4	510		Save & Restart Logout
Module	Module Se	ettings		
	Match	Click finish button to cor	nplete module settings.	
	🛩 Sav	e Settings × Cancel	▲	
	Slot	Detected Module	Configured Module	
	1	45MR-1601 →	45MR-1601 GET_Demo 🖸 🚍	
	2	45MR-2600 →	45MR-2600 PUT_Demo	
	3	45MR-3810 →	45MR-3810 45MR-3810-0	

2. Change the **DI-00** channel name to **Button**.

	oThinx 4510	Logout
Dashboard	I/O Sattings	
System		
Security	GET_Demo 👻	
Network		
Module	DI-00 DI • Button	
Serial Port		
1/0	DI-01 DI • DI-01	•
Internal Register		
Protocol +	DI-02 DI • DI-02	•

3. Change the **DO-00** channel name to **Light**.

		Thinx 45	10			Save	& Restart Logou	
Da	shboard	I/O Setting						
Sy	stem	i o octunge	-					
Se	curity	PUT_Dem	no *					
Ne	twork							
Mo	odule	DO-00	DO •	Light		•		
Se	rial Port							
1/0	0	DO-01	DO •	DO-01		•		
Int	ernal Register							
Pro	otocol +	DO-02	DO 🔹	DO-02		•		

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How to Use RESTful API to Connect to the ioThinx 4510 Series

Send a GET request

1. Enter the request URL based on the IP address, file type, and API map. For this example, the request URL should be written as:

192.168.127.254/api/io/di/GET_Demo@Button/diStatus

2. Click the **Send** button. You should see the status code, response time, and results.

GET GET example X PUT PUT example	• +	No Environment 🔻 📀 暮
▶ GET example		Examples (0) 🔻
GET = 192.168.127.254/api/io/di/GET_Demo@Bu	utton/diStatus	Send 🔻 Save 👻
Params Authorization Headers (2) Body Pre	-request Script Tests	Cookies Code Comments (0)
KEY	VALUE	DESCRIPTION *** Bulk Edit Presets 🔻
Content-Type	application/json	
Accept	vdn.dac.v2	
Кеу	Value	Description
Body Cookies Headers (3) Test Results	Status: 200 OK	Time: 70 ms Size: 113 B Save Download
Pretty Raw Preview JSON 🔻 📮		■ Q
1 velue": 0		

3. Press the DI0 button on the starter kit to trigger the DI-00 channel, and then click **Send** again. In response, the DI value will change.

Body Cookies Headers (3) Test Results	Status: 200 OK Time: 56 ms Size: 113 B Save Download
Pretty Raw Preview JSON -	T Q
1 * { 2 "value": 1 3 }	

How to Use RESTful API to Connect to the ioThinx 4510 Series

Send a PUT request

1. Enter the following request URL:

192.168.127.254/api/io/do/PUT_Demo@Light/doStatus

- 2. Locate the **Body** tag, select raw, and choose the **JSON** format.
- 3. Enter the following message:

1 -	{		
2	-	"value":	1
3	}		

4. Click **Send**. The DO-00 channel should respond by turning the light on.

PUT example 4 Examples (0) PUT 192.168.127.254/api/io/do/PUT_Demo@Light/doStatus Send Save Params Authorization Headers (2) Body Pre-request Script Tests Cookies	GET GET e	example		PUT PUT example		• +	••••			No En	vironment	Ŧ	٩	\$
PUT 192.168.127.254/api/lo/do/PUT_Demo@Light/doStatus Send Save Params Authorization Headers (2) Body Pre-request Script Tests Cookies Code Comments (1) Image: Comment of the second of the sec	▶ PUT exa	ample	1								4	Exa	amples (0)) -
Params Authorization Headers (2) Body Pre-request Script Tests Cookies Code Comments (1) none form-data x-www-form-urlencoded raw binary JSON (application/json) Beautify Beautify	PUT	*	192.168.127.254/a	api/io/do/PUT_Demo	o@Light/do	Status					Send	•	Save	*
none form-data x-www-form-urlencoded raw binary JSON (application/json) Beautify	Params	Authoriz	ation Headers	; (2) Body •	Pre-req	uest Script	Tests				Cookies	Code		
3 a - [r]	none	• form	-data 🔍 x-www	-form-urlencoded	raw	binary	JSON (ap	plication/json)	•				Beau	tify
2 "value": 1		"value":	1											