AD\ANTECH Enabling an Intelligent Planet

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Date	2020/7/15	SR#	1-3477572285			
Category	■FAQ □SOP	Related OS	N/A			
Abstract	How to use RESTful API to	o access iRTU dev	vices			
Keyword	RESTful, API, browser, htt	ps				
Related		CU 1152				
Product	ADAM-3000, ECU-1251, E	200-1152				

Problem Description:

This document shows how to use RESTful API to access iRTU devices.

■ <u>Answer</u>:

RESTful is a Request-Response protocol in Client–Server network architecture. It composed by URL, HTTP Method, and Content.

For example,

- URL: http://myserver/tasks
- HTTP Methods: POST, GET, PUT, PATCH, DELETE
- Content: XML, JSON



Using browser to open a website is also using RESTful. For ADAM-3600, it is provided several useful RESTful APIs, and the method is listed as below.

Method	Function used in ADAM-3600
GET	Get Tag date/IO data
	Get version
	Get data logger information
	Get update information
PUT	Login/Logout
	Update Tag date/IO data (RW)

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РАТСН	Calibration	
	Time Setting	
	Data logger query	
POST	Firmware upload	
	Firmware update	
	Log message	

I. Install REST API Testing Tool

There is one Tool for testing REST API called as Restlet Client. User could search and install it in Google Chrome Plug-in.

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II. Add the ADAM-3600 webpage into safety website

Because of https protocol license authentication limitation, user needs to open ADAM-3600 webpage in the browser first.

Add the ADAM-3600 webpage (ex. https://172.16.12.141/login.html) into safety website

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← → C 介 ▲ 不安全 https://172.16.12.1	→ C 介 ▲ 不安全 https://172.16.12.135							
						1		
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4								
1	你的連線不是私人連線							
٦ ٤	欠擊者可能會試圖從 172.16.12.135 竊取你的資訊 (例如密碼、鄧件或伯用卡資料)。 <u>瞭解詳</u> 直							
Ν	IET::ERR_CERT_AUTHORITY_INVALID							
C]自動傳送部分 <u>素統資訊和調買內容</u> 給 Google,協助偵測危險的應用程式和網站。 <u>通私權政策</u>							
	感冒突全体激散							
6 6	司服器無法證明其屬於 172.16.12.135 網域;其安全性憑證未取得你電腦作業系統的信 王。這可能是因為設定錯誤,或有攻擊者攔截你的連線所致。							
[島猿前往 172.16.12.135 鋼站 (不安全)							

User may close the webpage once after adding the webpage into trust websites list.

III. Examples of ADAM-3600 RESTful Command

3.1 Log in

3.1.1 Refer to "ADAM-3600 RESTful Specification". Find URL, Method, and Content.

http://support.advantech.com.tw/Support/DownloadSRDetail New.aspx?SR ID=1-1KPLJQG&Doc Source=Download

2.10 Log in/log out

2.10.1 Log in

/sys/log_in

Description	Log in the device for configuration or image updating.						
URL Structure	https://10.0.0.1/sys/log_in/						
HTTP Method	PUT:						
GET	None						
PUT	Request: PUT /sys/log_in						
	[Example]:						
	Request: PUT /sys/log in						
	Content-type: application/json						
	{						
	"password":"00000000"						
	}						
	Response:						
	{						
	"sesion_id": "c9f4baf91d3e4ed7cfb18e598c5711f5",						
	}						

3.1.2 Select the method as "PUT", and key in the URL based on the ADAM-3600 IP

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"https://172.16.12.141/sys/log_in".

3.1.3 Select HTTP Header includes Referer "https://172.16.12.141/" and Content-Type

"application/json".

- 3.1.4 Fill the content with users' password {"password": "00000000"} in BODY.
- 3.1.5 Press Send button.
- 3.1.6 User may get the Response 200 OK and session id. It shows logging in successfully.

3.1.7 Copy the **session id** for further applications.

PUT		🔺 Send 👻
QUERY PARAMETERS		length: 32 bytes
HEADERS ⁽¹⁾ It	Form - + BODY ⁽¹⁾	Text -
	x 1 {"password":"00000000"}	
+ Add header P Add authorization	8	
	Text JSON XML HTML	a length: 23 bytes
Response		Cache Detected - Elapsed Time: 1.12s
200 OK		
HEADERS ⁽¹⁾	pretty • • BODY ⁽¹⁾	pretty 🛩
Content-Type: application/json Content-Length: 52 bytes Date: Thu, 19 Apr 2018 07:26:35 GMT	<pre> v (session_id : "000000775147890b68ce2dd524cd5e257c6") </pre>	
Server: lighttpd/1.4.41	lines nums O Top O Bottom Collapse 1	🛢 Open 🖹 2Request වී Copy 🛓 Downlo

3.2 Get Tags' information

- 3.2.1 Refer to "ADAM-3600 RESTful Specification". Find URL, Method, and Content.
 - 2.8 Tag Information.
 - 2.8.1 System Tag Data Acquisition+

```
/data/tags/⊹
Description.
                     Retrieves information about the digitaloutput value resource on
                     specific slot.«
URL Structure +
                     https://10.0.0.1/data/tags
                     System tags can't enter next level.4
HTTP Method +
                     GET: Returns the representation of all of tag resources include
                     value, quality and timestampe
GET₽
                     Multi-Tag Request: +
                     GET / data/tags/+/
                     [Example]:+
                        Request : GET /data/ tags /4/
                            Content-type: application/json+
                         Response: 200 OK +
                              {₽
                                      #SYS_UPTIME":
                                                          {₽
                                         "value": "733",+
                                          "quality": "0000H",↔
                                         "timestamp":
                                                         "1421395474.600190"+
```

3.2.2 Select the method as "**GET**", and key in the URL based on the ADAM-3600 IP "https://172.16.12.141/**data/tags**".

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3.2.3 Select HTTP Header includes:

msg.headers['Referer'] = 'https://127.0.0.1/'; msg.headers['Content-Type'] = 'application/json';

- msg.headers['Cookie'] = "ADAMSID="+sessionID;
- 3.2.4 Press Send button.

3.2.5 User may get the Response 200 OK and Tags information.

	 https://172.16.12.141/data/tags QUERY PARAMETERS 	Form		seev @			length: 31 bytes	A Send	d 🔻
Referer Content-Type Cookle Add header P A	: https://172.16.12.141 : application/json : ADAMSID=000d0d775 dd authorization	× × × 14789 ×		XHR does not allow payloads for GET request.					
Response 200 OK							Cache Detecte	d - Elapsed Tir	me: 421ms
HEADERS ⑦		pretty	• •	BODY ⁽¹⁾					pretty 🗸
Content-Type: Content-Length: Date: Server: • COMPLETE REQUEST	application/json 9 kilobytes Thu, 19 Apr 2018 07:29:23 GMT -1s lighttpd/1.4.41 HEADERS			<pre>* { user0 : * { value : "0.00", quality : "0000H", timestamp : "1524122426.827197" }, #SYS_UPTIME : * { value : "615", quality : "0000H", timestamp : "1524122962.908824" </pre>	• Тор • Во	ttom 🗖 Collapse	Open Kj₂Reque	st ඬු Copy	초 Download

3.3 Change DO value

3.3.1 Refer to "ADAM-3600 RESTful Specification". Find URL, Method, and Content.

PUT₽	Single Channel Request : 🖉
	PUT /data/do_value/slot_index/ch_num
	[Example]:+
	Request PUT /data/do_value/slot_0/ch_2+
	Content-type: application ison
	{e ²
	"Md":0,4/
	} <i>ψ</i>
	Response: 200 OK+
	له ا
	{ v'
	"Val":0,+'
	} <i>ψ</i>
	له. ا
	Response: 200 OK+
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	<i>Ф</i>
PATCH.₽	4
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• JSON array nan	nedefinition:√			
Fi	eld.,	Abbrevia n.,	tio Data T	Type.,
Array of Digital in	put configurations	, DOVal.,	Array.	7.5 4 ³
 Resource value 	definitions :+/			
Field.	Abbreviation.,	Data Type.,	Property.,	, Description.,
Channel Number.	Ch.	Number.	R .1	0, 1,: Digital output channel number
Mode.,	Md.	Number.	RW.	Digital output mode
				0., DO., + ²
				1., Pulse Output., + ³
Signal Logic Status.	Stat.	Number.	R .,	1, 0: Output signal is Logic High or Low
Channel Value.	Val.,	Number.,	RW.,	DO measurement data.

3.3.2 Select the method as "**PUT**", and key in the URL based on the ADAM-3600 IP "https://172.16.12.141/data/do_value/slot_0/ch_0".

3.3.3 Select HTTP Header includes **Referer** "https://172.16.12.141/", **Content-Type**

"application/json", Cookie "session id".

- 3.3.4 Fill the content with the modified channel value {"val": "1"} in BODY.
- 3.3.5 Press Send button.

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3.3.6 User may get the Response 200 OK and Write Success.

3.3.7 User could check if the channel 0 has been changed.

PUT -					
	https://172.16.12.141/data/do_value/slot_0/ch_0			🔺 Send	-
			length: 47 bytes		
	doert into the reno				
HEADERS ⑦ I [*]		Form 👻 🖪	Penv 0		Text 🕶
Referer : https://172.16.12.141		×	1 {"Vel": "1"}		
Cookie	: 000d0d775147890b68ce2dd524cd5e257c6	×			
Content-Type	: application/json	×			
+ Add header	d authorization	÷			
			Text JSON XML HTML 🛛 🗑 Enable body evaluation	會 lengt	th: 12 bytes
Response			Cache Detecte	- Elapsed Tir	me: 1.12s
200 OK					
		pretty 🛫 🖪	BODY [®]		pretty 👻
12.102.10		prony .			protty
Content-Type:	application/json				
.oncenc-Lengen:	27 bytes Thu. 19 Apr 2018 08:16:10 GMT -1s		Success : "Write Success"	61 Copy	🛓 Downloa
ate:					