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DTU-PRO Test Report

Product name: DTU-PRO

Version: DTU-PRO-V0.0.1-1104-1409

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1. General Information

1.1 Test objects

The object of this test is DTU-Pro, version number DTU-PRO-V0.0.1-1104-1409.

1.2 Purpose of the test

Verify that the changes take effect and confirm that the basic functions of the DTU are working properly.

1.3 Test configuration

equipment	model	Numbering
Micro inverse	MI-600 * 2	104142104579 104033102322
	MI-1200 * 2	106041600040
DTU	BTD-Pro	10F700000046
DC source	Chroma 62020H-150S*2	

1.4 Test Results

1.4.1 Test Case Statistics

number of test cases	Pass quantity	number of failures	Unmeasured quantity
21	21	0	0

1.4.2 List of untested cases

serial number	test case	Untested reason	follow up measures
N/A			

1.4.3 Failed use case list

serial number	test case	Defect number	follow up measures

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N/A			

1.4.4 Summary of problems encountered in testing

serial number		Subsequent processing method
1	Description When the DTU program is upgraded locally through the U disk, it is found that some U disks are not supported. It is recommended that the after-sales personnel use the upgradeable U disk model in Wang Hongze's hand.	

2. Test cases and records

2.1 Local upgrade DTU program

Test case name: local upgrade DTU program		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested

skills requirement

The DTU-Pro can be upgraded locally through U disk, the firmware storage path: root directory\Update\Update.hex.

precondition

Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.

test steps

Serial number	detailed description	Desired result	actual results	state
1	Upgrade the DTU firmware locally to the beta version.	After the upgrade the DTU works fine.	When the DTU program is upgraded locally through the U disk, it is found that some U disks are not supported. It is recommended that the after-sales personnel use the upgradeable U disk model in Wang Hongze's hand.	Test passed

Test Data

N/A

data analysis

N/A

Image/Waveform

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N/A
Remark
N/A

2.2 Site Construction and Networking

Test Case Name: Website Construction and Networking		
Test executor: Dai Tihu	Test Date: November 5, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
The platform was released and the networking was successful.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		

test steps

Serial number	detailed description	Desired result	actual results	state
1	Create a new power station, click Networking, and check the networking status.	The networking is correct.		Test passed

Test Data
N/A
data analysis
N/A
Image/Waveform

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Remark
N/A

2.3 Platform upgrade DTU program

Test case name: Platform upgrade DTU program		
Test executor: Dai Tihu	Test Date: November 6, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
Supports remote upgrade of DTU programs from the platform.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		
test steps		

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Serial number	detailed description	Desired result	actual results	state
1	Upgrade the DTU program on the platform to the previous release version.	The DTU upgrade was successful.	Upgrade to V0.0.1, the upgrade time is about 6 minutes.	Test passed
2	Upgrade the DTU program from the previous release version to this beta version on the platform.	The DTU upgrade was successful.	Upgrade to V0.0.1, the upgrade time is about 7 minutes.	Test passed
Test Data				
N/A				
data analysis				
N/A				
Image/Waveform				

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Remark
N/A

2.4 Platform upgrade micro-inverse program

Test case name: Platform upgrade micro-inverse program		
Test executor: Dai Tihu	Test Date: November 5, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
Supports remote upgrade of micro-inverse programs on the platform.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		

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test steps

Serial number	detailed description	Desired result	actual results	state
1	Upgrade the one-drag-two micro-inverse program to the latest release version on the platform.	The micro-inverse program was upgraded successfully.	Upgrading from V2.36 to V2.34 takes about 28 minutes. Upgrade from	Test passed
2	Upgrade the one-drag-four micro-inverse program to the latest release version on the platform.	The micro-inverse program was upgraded successfully.	V1.38 to V1.40, about 7 minutes.	Test passed

Test Data

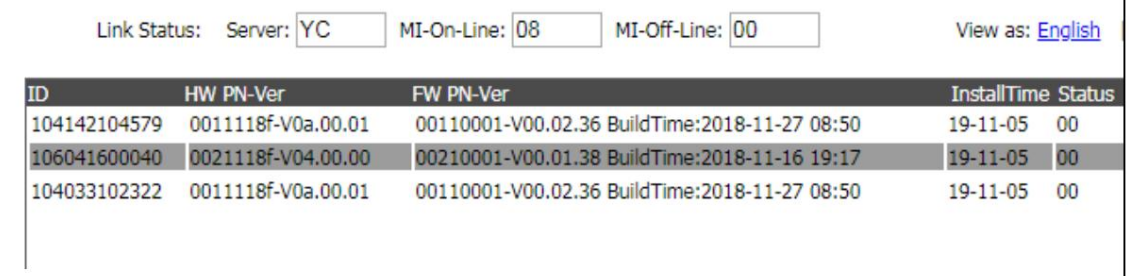
N/A

data analysis

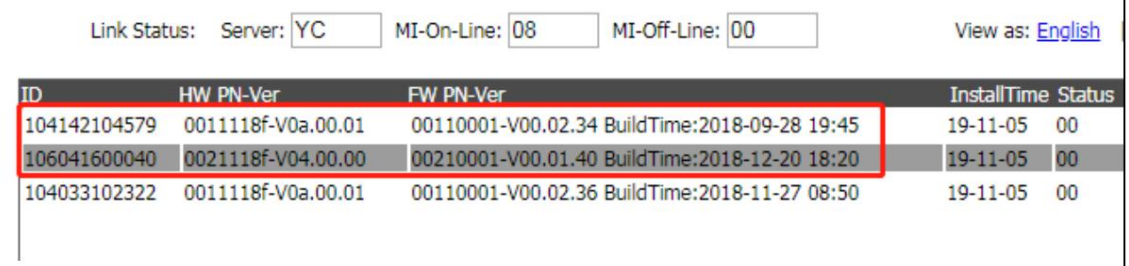
N/A

Image/Waveform

Before upgrading, use normal DTU to view the micro-inverse version:



After upgrade:



Remark

N/A

2.5 Platform upgrade grid-connected protection file

Test case name: Platform upgrade grid connection protection file		
Test executor: Dai Tihu	Test Date: November 6, 2019	Test Results: ÿPass, ÿFail, ÿUntested

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skills requirement

DTU-Pro currently does not support remote upgrade of grid-connected protection files on the platform.

precondition

Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.

test steps

Serial number	detailed description	Desired result	actual results	state
1	Upgrade the grid-connected protection file in the platform to LN_50Hz V1.1.0ÿ	The grid-connected protection file has been successfully upgraded.	DTU-Pro does not support upgrading current grid files.	test failed

Test Data

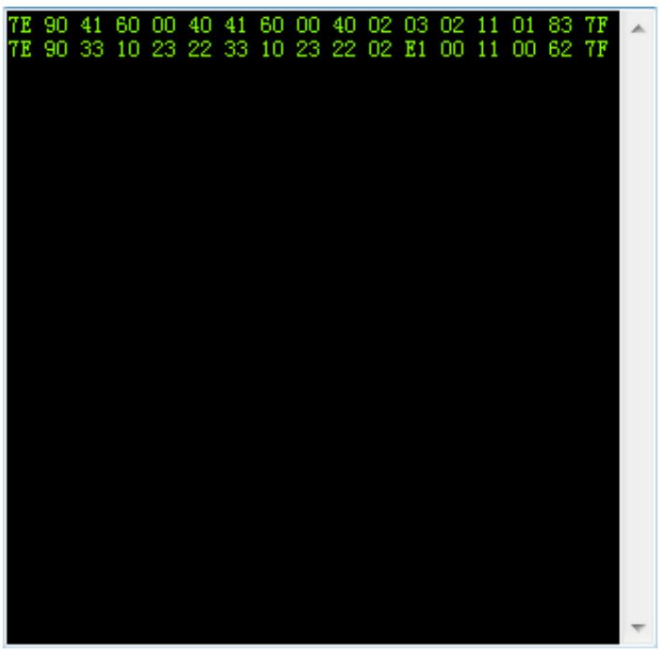
N/A

data analysis

N/A

Image/Waveform

Before sending:



Remark

N/A

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2.6 Version information display

Test case name: version information display		
Test executor: Dai Tihu	Test Date: November 6, 2019	Test Results: ÿPass, ÿFail, ÿUntested

skills requirement

The software and hardware version information related to the DTU and micro-inverse displayed on the platform is correct.

precondition

Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.

Test step serial

number	detailed description	Desired result	actual results	state
1	Check the DTU software version and hardware version on the platform. Check the micro-inverse hardware	Version information is displayed correctly. Version information is		Test passed
2	material, hardware version, software version and grid-connected protection file version on the platform.	displayed correctly.		Test passed

Test Data

N/A

data analysis

N/A

Image/Waveform

DTU version information displayed by the platform:

DTU-ID	状态	硬件版本	软件版本
10F700000046	在线	V09.03.01	V00.00.01

The microinverse version information displayed by the platform:

微逆-ID	告警状态	连接DTU	连接中继器	硬件料号	GridProfile version	硬件版本	软件版本
104142104579	正常	10F700000046	--	0011118F	--	H04.00.00	V00.01.38
106041600040	正常	10F700000046	--	0021118F	--	H04.00.00	V00.01.40
104033102322	正常	10F700000046	--	0011118F	LN_50Hz V1.1.0	H10.00.01	V00.02.36

Remark

N/A

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2.7 Heartbeat frame check

Test Case Name: Heartbeat Frame Check		
Test executor: Dai Tihu	Test Date: November 6, 2019	Test Results: ÿPass, ÿFail, ÿUntested

skills requirement

When the DTU does not send data frames, it sends heartbeat frames every 1 minute.

precondition

Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.

test steps

Serial number	detailed description	Desired result	actual results	state
1	Check the heartbeat frame uploaded by the DTU on the platform.	The heartbeat frame is correct.	The heartbeat frame is normal, but the heartbeat frame may be repeatedly sent when the network is unstable.	Test passed

Test Data

N/A

data analysis

N/A

Image/Waveform

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日志类型	设备SN	协议类型	原始内容	解析内容	流水号	服务器时间(北京时间)	包内时间	时区
↑	10F700000046	光伏心跳包	0880e101109ac589ee051818220c3130463730...	{"offset":28800,"time":1573020314,"csq...	86	2019-11-06 14:05:24	2019-11-06 14:05:14	28800
↑	10F700000046	光伏心跳包	0880e10110e3c489ee051817220c3130463730...	{"offset":28800,"time":1573020259,"csq...	85	2019-11-06 14:04:24	2019-11-06 14:04:19	28800
↑	10F700000046	光伏心跳包	0880e10110a2c489ee051816220c3130463730...	{"offset":28800,"time":1573020194,"csq...	84	2019-11-06 14:03:23	2019-11-06 14:03:14	28800
↑	10F700000046	光伏心跳包	0880e10110e3c389ee051818220c3130463730...	{"offset":28800,"time":1573020131,"csq...	83	2019-11-06 14:02:24	2019-11-06 14:02:11	28800
↑	10F700000046	光伏心跳包	0880e10110aac389ee051819220c3130463730...	{"offset":28800,"time":1573020074,"csq...	82	2019-11-06 14:01:43	2019-11-06 14:01:14	28800
↑	10F700000046	光伏心跳包	0880e10110aac389ee051819220c3130463730...	{"offset":28800,"time":1573020074,"csq...	82	2019-11-06 14:01:36	2019-11-06 14:01:14	28800
↑	10F700000046	光伏心跳包	0880e10110aac389ee051819220c3130463730...	{"offset":28800,"time":1573020074,"csq...	82	2019-11-06 14:01:23	2019-11-06 14:01:14	28800
↑	10F700000046	光伏心跳包	0880e10110f3c289ee051819220c3130463730...	{"offset":28800,"time":1573020019,"csq...	81	2019-11-06 14:00:43	2019-11-06 14:00:19	28800
↑	10F700000046	光伏心跳包	0880e10110f3c289ee051819220c3130463730...	{"offset":28800,"time":1573020019,"csq...	81	2019-11-06 14:00:43	2019-11-06 14:00:19	28800
↑	10F700000046	光伏心跳包	0880e10110f3c289ee051819220c3130463730...	{"offset":28800,"time":1573020019,"csq...	81	2019-11-06 14:00:31	2019-11-06 14:00:19	28800

日志类型	设备SN	协议类型	原始内容	解析内容	流水号	服务器时间(北京时间)	包内时间	时区
↑	10F700000046	光伏心跳包	0880e10110f3c289ee051819220c3130463730...	{"offset":28800,"time":1573020019,"csq...	81	2019-11-06 14:00:31	2019-11-06 14:00:19	28800
↑	10F700000046	光伏心跳包	0880e10110b7c289ee051819220c3130463730...	{"offset":28800,"time":1573019959,"csq...	80	2019-11-06 13:59:23	2019-11-06 13:59:19	28800
↑	10F700000046	光伏心跳包	0880e10110f9c189ee051818220c3130463730...	{"offset":28800,"time":1573019897,"csq...	79	2019-11-06 13:58:23	2019-11-06 13:58:17	28800
↑	10F700000046	光伏心跳包	0880e10110c0c189ee051818220c3130463730...	{"offset":28800,"time":1573019840,"csq...	78	2019-11-06 13:57:38	2019-11-06 13:57:20	28800
↑	10F700000046	光伏心跳包	0880e10110c0c189ee051818220c3130463730...	{"offset":28800,"time":1573019840,"csq...	78	2019-11-06 13:57:23	2019-11-06 13:57:20	28800
↑	10F700000046	光伏心跳包	0880e10110c2c089ee051818220c3130463730...	{"offset":28800,"time":1573019714,"csq...	76	2019-11-06 13:55:23	2019-11-06 13:55:14	28800
↑	10F700000046	光伏心跳包	0880e101108bc089ee051818220c3130463730...	{"offset":28800,"time":1573019659,"csq...	75	2019-11-06 13:54:23	2019-11-06 13:54:19	28800
↑	10F700000046	光伏心跳包	0880e10110ccbf89ee051818220c3130463730...	{"offset":28800,"time":1573019596,"csq...	74	2019-11-06 13:53:23	2019-11-06 13:53:16	28800
↑	10F700000046	光伏心跳包	0880e1011092bf89ee051818220c3130463730...	{"offset":28800,"time":1573019538,"csq...	73	2019-11-06 13:52:35	2019-11-06 13:52:18	28800
↑	10F700000046	光伏心跳包	0880e1011092bf89ee051818220c3130463730...	{"offset":28800,"time":1573019538,"csq...	73	2019-11-06 13:52:23	2019-11-06 13:52:18	28800

日志类型	设备SN	协议类型	原始内容	解析内容	流水号	服务器时间(北京时间)	包内时间	时区
↑	10F700000046	光伏心跳包	0880e10110d7be89ee051818220c3130463730...	{"offset":28800,"time":1573019479,"csq...	72	2019-11-06 13:51:23	2019-11-06 13:51:19	28800
↑	10F700000046	光伏心跳包	0880e101109bbe89ee051819220c3130463730...	{"offset":28800,"time":1573019419,"csq...	71	2019-11-06 13:50:23	2019-11-06 13:50:19	28800
↑	10F700000046	光伏心跳包	0880e10110dfbd89ee051818220c3130463730...	{"offset":28800,"time":1573019359,"csq...	70	2019-11-06 13:49:23	2019-11-06 13:49:19	28800
↑	10F700000046	光伏心跳包	0880e10110a3bd89ee051818220c3130463730...	{"offset":28800,"time":1573019299,"csq...	69	2019-11-06 13:48:23	2019-11-06 13:48:19	28800
↑	10F700000046	光伏心跳包	0880e10110e7bc89ee051818220c3130463730...	{"offset":28800,"time":1573019239,"csq...	68	2019-11-06 13:47:23	2019-11-06 13:47:19	28800
↑	10F700000046	光伏心跳包	0880e10110abbc89ee051818220c3130463730...	{"offset":28800,"time":1573019179,"csq...	67	2019-11-06 13:46:23	2019-11-06 13:46:19	28800
↑	10F700000046	光伏心跳包	0880e10110efbb89ee051818220c3130463730...	{"offset":28800,"time":1573019119,"csq...	66	2019-11-06 13:45:23	2019-11-06 13:45:19	28800
↑	10F700000046	光伏心跳包	0880e10110b3bb89ee051819220c3130463730...	{"offset":28800,"time":1573019059,"csq...	65	2019-11-06 13:44:23	2019-11-06 13:44:19	28800
↑	10F700000046	光伏心跳包	0880e10110f6ba89ee051818220c3130463730...	{"offset":28800,"time":1573018998,"csq...	64	2019-11-06 13:43:23	2019-11-06 13:43:18	28800
↑	10F700000046	光伏心跳包	0880e10110bbba89ee051818220c3130463730...	{"offset":28800,"time":1573018939,"csq...	63	2019-11-06 13:42:22	2019-11-06 13:42:19	28800

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↑	10F700000046	光伏心跳包	0880e10110bbba89ee051818220c3130463730...	{"offset":28800,"time":1573018939,"csq...	63	2019-11-06 13:42:22	2019-11-06 13:42:19	28800
↑	10F700000046	光伏心跳包	0880e10110c3b989ee051819220c3130463730...	{"offset":28800,"time":1573018819,"csq...	61	2019-11-06 13:40:22	2019-11-06 13:40:19	28800
↑	10F700000046	光伏心跳包	0880e1011086b989ee051818220c3130463730...	{"offset":28800,"time":1573018758,"csq...	60	2019-11-06 13:39:22	2019-11-06 13:39:18	28800
↑	10F700000046	光伏心跳包	0880e10110cbb889ee051818220c3130463730...	{"offset":28800,"time":1573018699,"csq...	59	2019-11-06 13:38:32	2019-11-06 13:38:19	28800
↑	10F700000046	光伏心跳包	0880e10110cbb889ee051818220c3130463730...	{"offset":28800,"time":1573018699,"csq...	59	2019-11-06 13:38:22	2019-11-06 13:38:19	28800
↑	10F700000046	光伏心跳包	0880e101108eb889ee051819220c3130463730...	{"offset":28800,"time":1573018638,"csq...	58	2019-11-06 13:37:22	2019-11-06 13:37:18	28800
↑	10F700000046	光伏心跳包	0880e10110d0b789ee051819220c3130463730...	{"offset":28800,"time":1573018576,"csq...	57	2019-11-06 13:36:22	2019-11-06 13:36:16	28800
↑	10F700000046	光伏心跳包	0880e1011097b789ee051818220c3130463730...	{"offset":28800,"time":1573018519,"csq...	56	2019-11-06 13:35:22	2019-11-06 13:35:19	28800
↑	10F700000046	光伏心跳包	0880e10110dbb689ee051818220c3130463730...	{"offset":28800,"time":1573018459,"csq...	55	2019-11-06 13:34:22	2019-11-06 13:34:19	28800
↑	10F700000046	光伏心跳包	0880e101109fb689ee051818220c3130463730...	{"offset":28800,"time":1573018399,"csq...	54	2019-11-06 13:33:22	2019-11-06 13:33:19	28800

日志类型	设备SN	协议类型	原始内容	解析内容	流水号	服务器时间(北京时间)	包内时间	时区
↑	10F700000046	光伏心跳包	0880e101109fb689ee051818220c3130463730...	{"offset":28800,"time":1573018399,"csq...	54	2019-11-06 13:33:22	2019-11-06 13:33:19	28800
↑	10F700000046	光伏心跳包	0880e10110e2b589ee051819220c3130463730...	{"offset":28800,"time":1573018338,"csq...	53	2019-11-06 13:32:22	2019-11-06 13:32:18	28800
↑	10F700000046	光伏心跳包	0880e10110a5b589ee051818220c3130463730...	{"offset":28800,"time":1573018277,"csq...	52	2019-11-06 13:31:22	2019-11-06 13:31:17	28800
↑	10F700000046	光伏心跳包	0880e10110e4b489ee051818220c3130463730...	{"offset":28800,"time":1573018212,"csq...	51	2019-11-06 13:30:22	2019-11-06 13:30:12	28800
↑	10F700000046	光伏心跳包	0880e10110aeb489ee051818220c3130463730...	{"offset":28800,"time":1573018158,"csq...	50	2019-11-06 13:29:22	2019-11-06 13:29:18	28800
↑	10F700000046	光伏心跳包	0880e10110f3b389ee051818220c3130463730...	{"offset":28800,"time":1573018099,"csq...	49	2019-11-06 13:28:22	2019-11-06 13:28:19	28800
↑	10F700000046	光伏心跳包	0880e10110b3b389ee051818220c3130463730...	{"offset":28800,"time":1573018035,"csq...	48	2019-11-06 13:27:22	2019-11-06 13:27:15	28800
↑	10F700000046	光伏心跳包	0880e10110bfb289ee051819220c3130463730...	{"offset":28800,"time":1573017919,"csq...	46	2019-11-06 13:25:22	2019-11-06 13:25:19	28800
↑	10F700000046	光伏心跳包	0880e1011081b289ee051818220c3130463730...	{"offset":28800,"time":1573017857,"csq...	45	2019-11-06 13:24:22	2019-11-06 13:24:17	28800
↑	10F700000046	光伏心跳包	0880e10110c5b189ee051818220c3130463730...	{"offset":28800,"time":1573017797,"csq...	44	2019-11-06 13:23:22	2019-11-06 13:23:17	28800

Remark
N/A

2.8 INFO FRAME CHECK

Test Case Name: InfoFrame Check		
Test executor: Dai Tihu	Test Date: November 6, 2019	Test results: ÿPass, ÿFail, ÿUntested
skills requirement		
The information frame sent by the DTU to the platform should not be excessive, resulting in an ID mismatch.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		
Test step serial		

number	detailed description	Desired result	actual results	state

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1	Edit the plant, power off the DTU and restart it, check the info frame. Repeat five times.	Information frames are not sent much.	In the micro-inverse version information uploaded by Dtu, different port version numbers of the same micro-inverse may be inconsistent. The platform only chooses to handle version information for the first port.	Test passed

Test Data
N/A
data analysis
N/A
Image/Waveform

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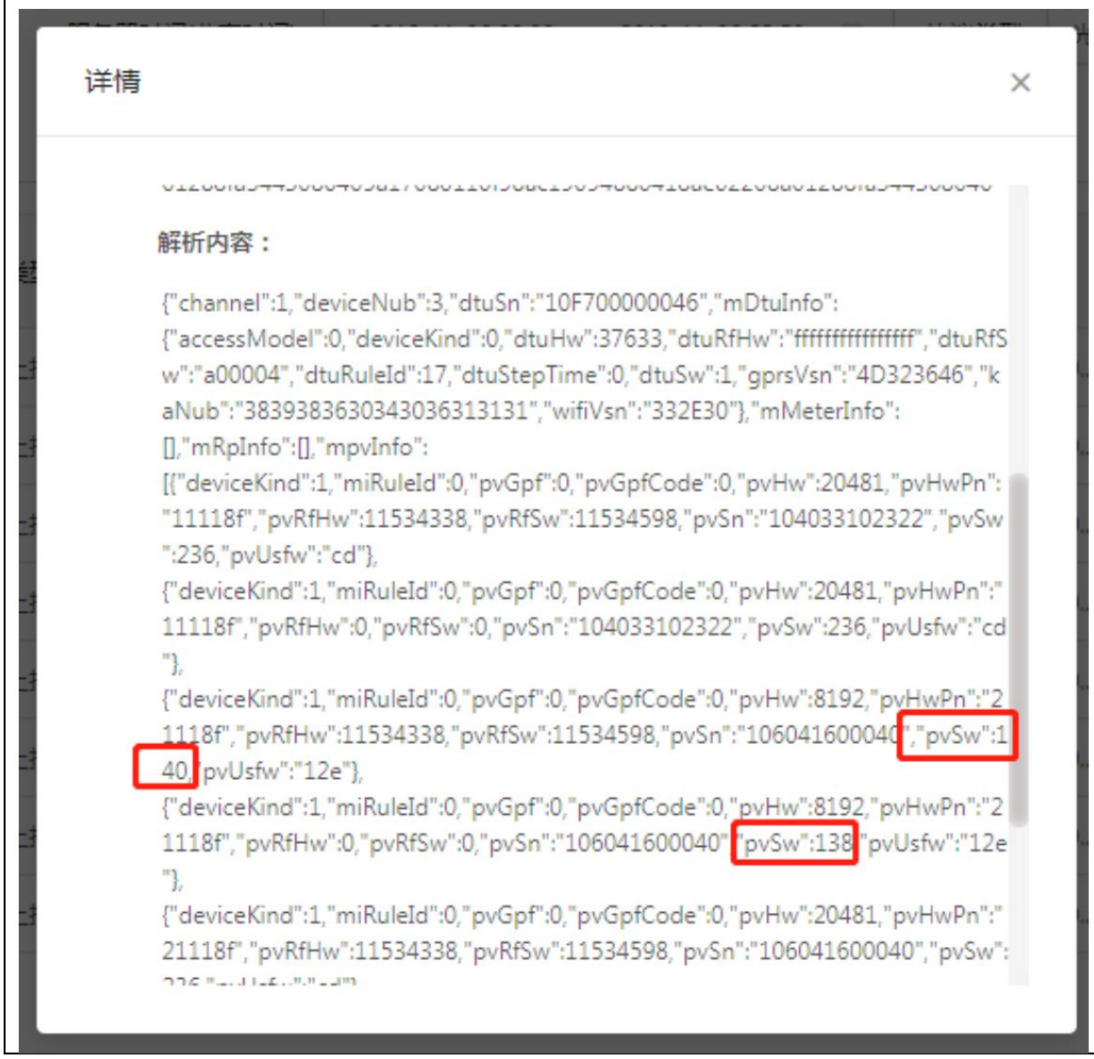

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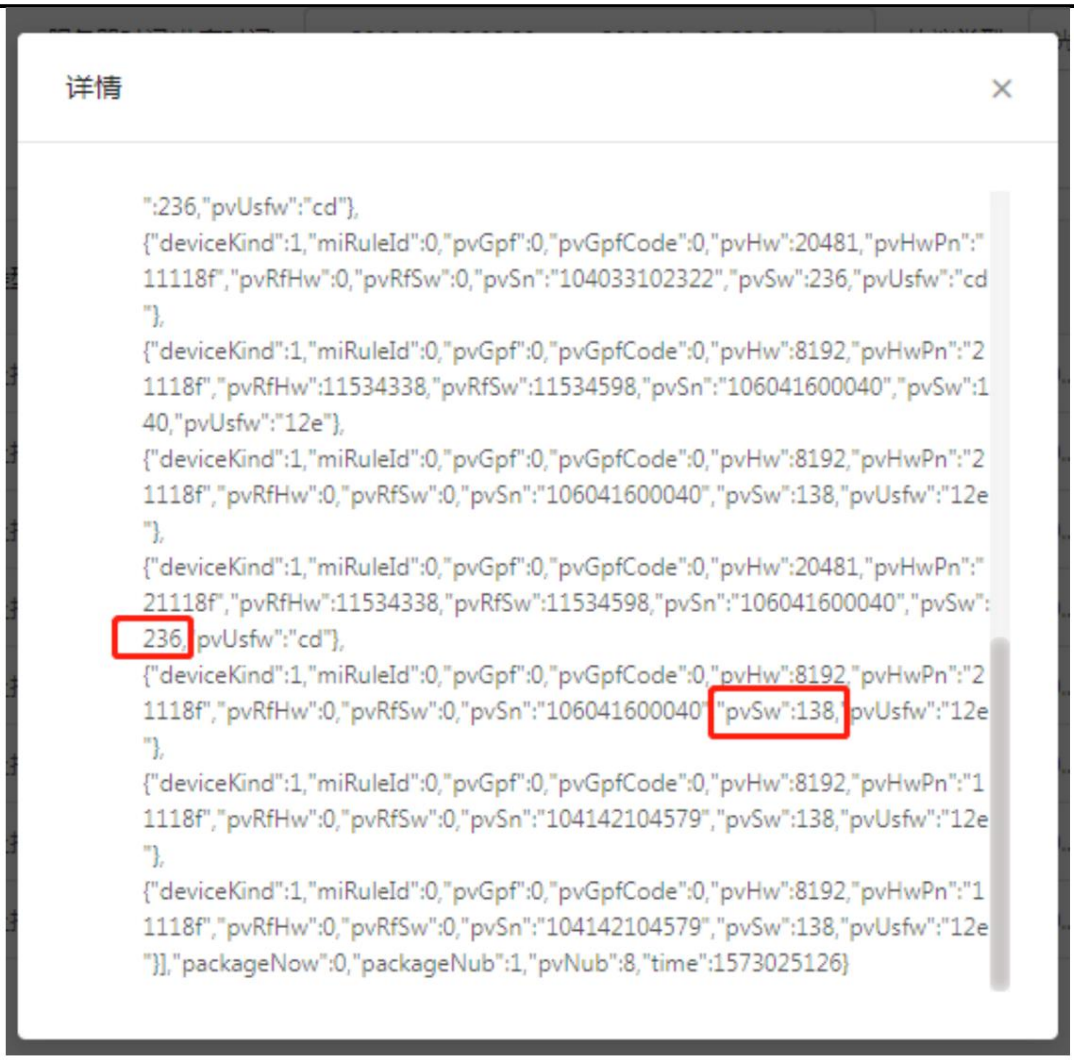

Remark
N/A

2.9 Data Frame Check

Test Case Name: DataFrame Check		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
DTU uploads data every 15 minutes, and if it is uploaded in sub-packets, the packet interval is about 10s.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		

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test steps				
Serial number	detailed description	Desired result	actual results	state
1	Edit the power station, check the data frame no less than five times.	Packet interval 10s. The first package of data in the early morning, the data such as the power generation of the day is cleared, and the cumulative power generation is consistent with the last package of the previous day.		Test passed
2	Check that the data in the dataframe is correct.	All data are correct and decimal places are correct.		Test passed
Test Data				
N/A				
data analysis				
N/A				
Image/Waveform				

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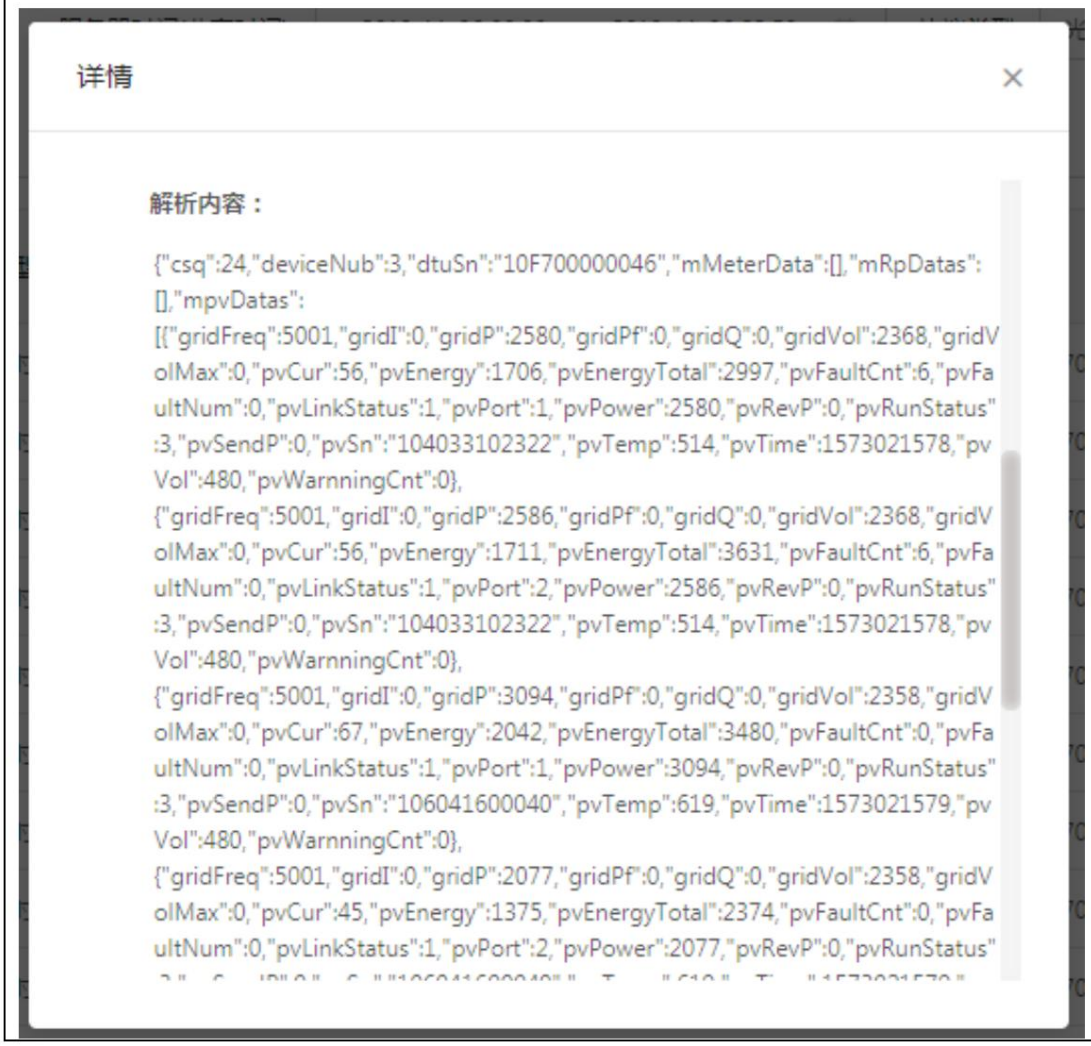

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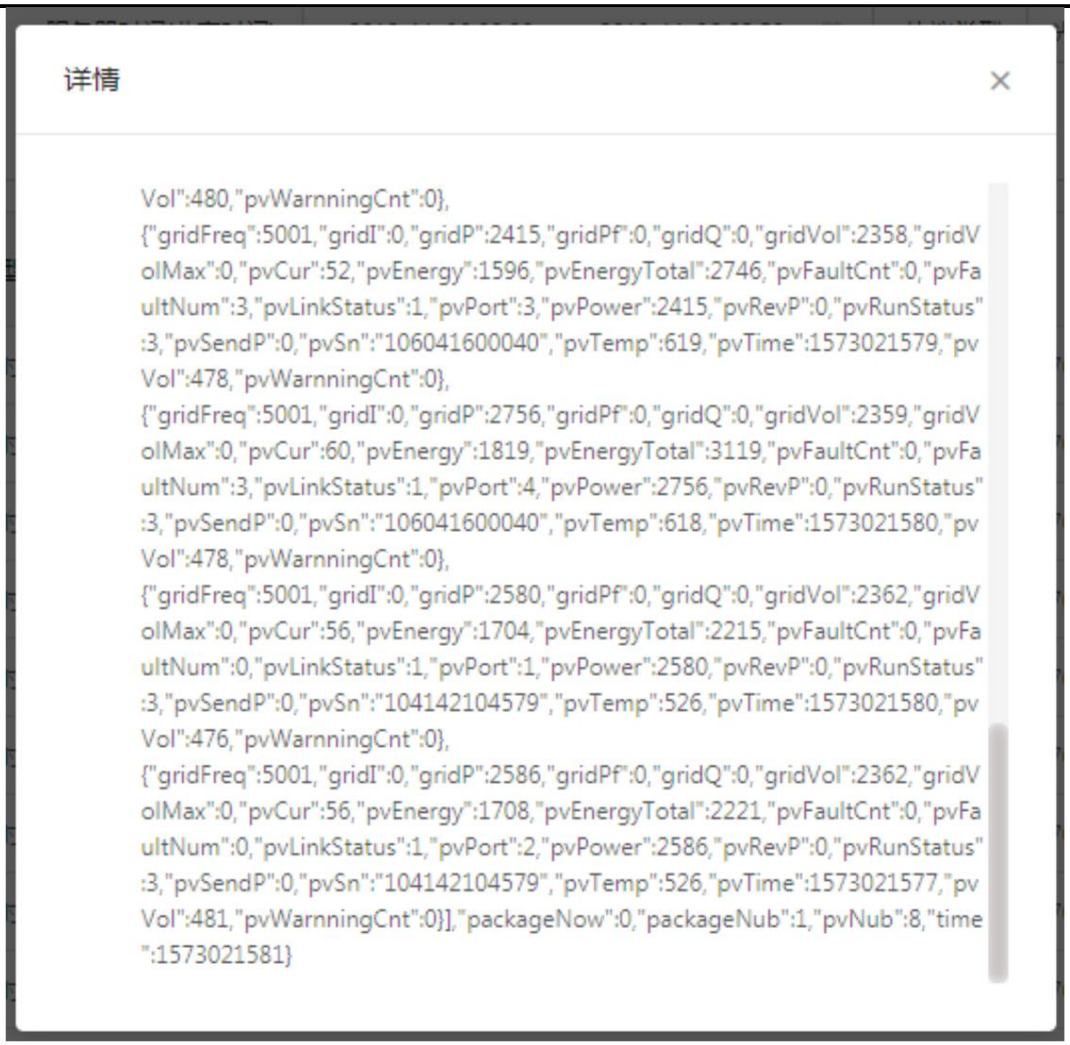

After 15 minutes:

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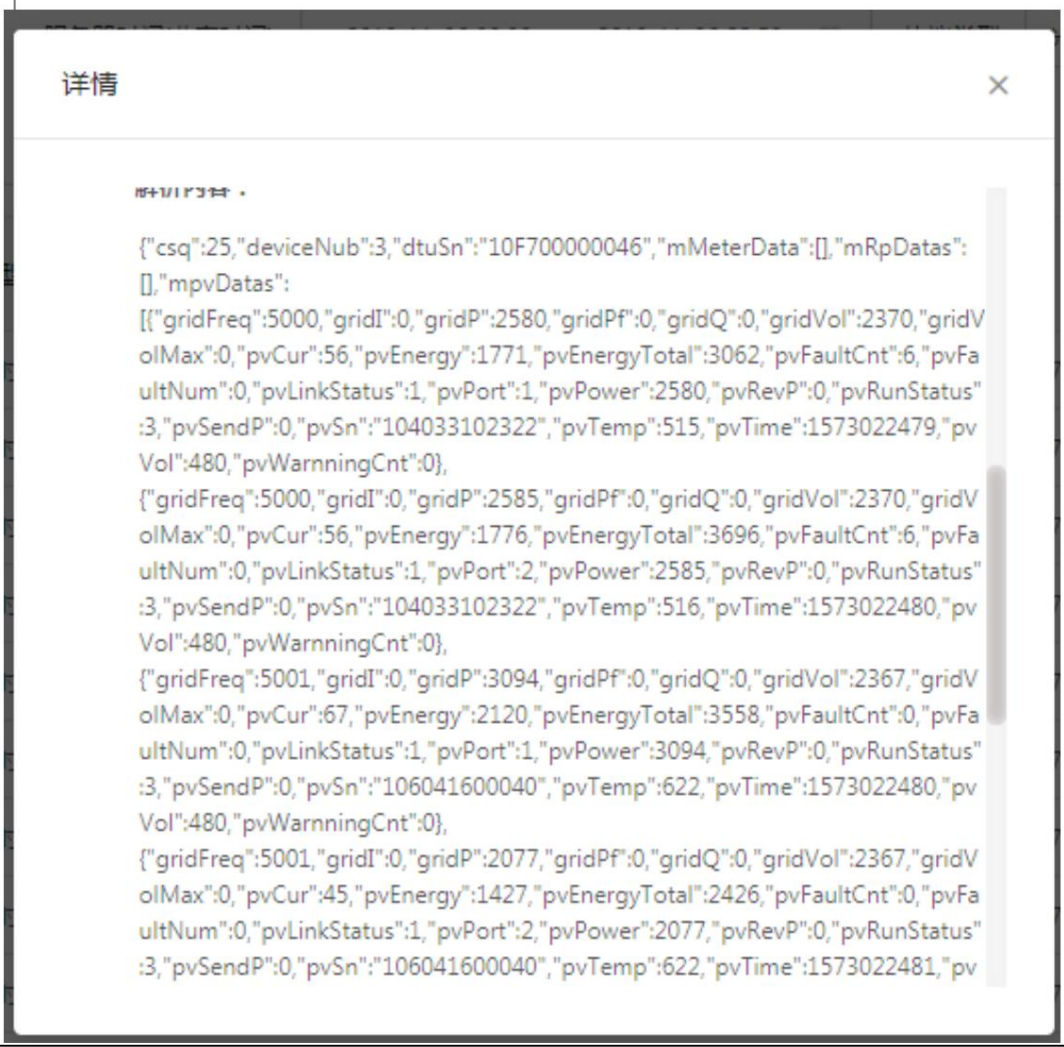
Link Status: Server: YC MI-On-Line: 06 MI-Off-Line: 02 View as: English |

ID	V-pv	V-grid	F-grid	P-grid	E-today	Temp	Time
104142104579-1	11. 5V	235. 4V	49.98Hz	257. 9W	1704Wh	52. 4C	2019-11-06 14:30:36
104142104579-2	11. 6V	235. 4V	49.98Hz	209. 6W	1708Wh	52. 4C	2019-11-06 14:30:36
106041600040-1	48. 0V	236. 7V	50.01Hz	309. 5W	2128Wh	62. 2C	2019-11-06 14:42:52
106041600040-2	48. 0V	236. 6V	50.01Hz	207. 8W	1432Wh	62. 2C	2019-11-06 14:42:52
106041600040-3	47. 8V	236. 6V	50.01Hz	241. 6W	1663Wh	62. 2C	2019-11-06 14:42:53
106041600040-4	47. 8V	236. 8V	50.02Hz	275. 8W	1895Wh	62. 2C	2019-11-06 14:42:54
104033102322-1	48. 0V	236. 9V	50.01Hz	257. 9W	1778Wh	51. 4C	2019-11-06 14:42:54
104033102322-2	48. 0V	236. 9V	50.01Hz	258. 5W	1782Wh	51. 4C	2019-11-06 14:42:55



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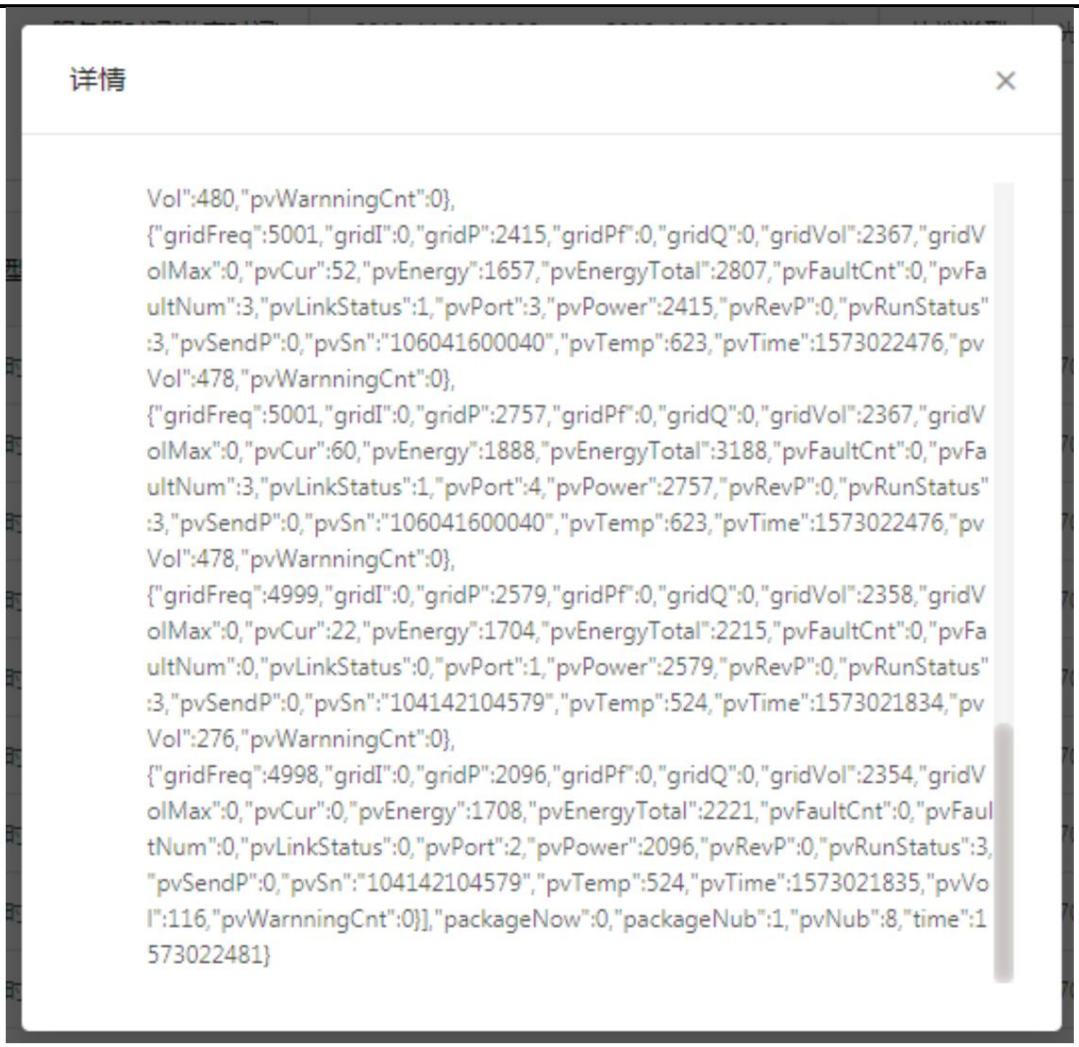

After 30 minutes:

Link Status: Server: YC MI-On-Line: 06 MI-Off-Line: 02 View as: English

ID	V-pv	V-grid	F-grid	P-grid	E-today	Temp	Time
104142104579-1	0. 0V	0. 0V	0.00Hz	0. 0W	1704Wh	0. 0C	2000-00-00 00:00:00
104142104579-2	0. 0V	0. 0V	0.00Hz	0. 0W	1708Wh	0. 0C	2000-00-00 00:00:00
106041600040-1	48. 0V	235. 7V	50.02Hz	309. 4W	2201Wh	62. 4C	2019-11-06 14:57:05
106041600040-2	48. 0V	235. 7V	50.02Hz	207. 6W	1481Wh	62. 4C	2019-11-06 14:57:05
106041600040-3	47. 8V	235. 7V	50.02Hz	241. 4W	1720Wh	62. 3C	2019-11-06 14:57:06
106041600040-4	47. 8V	235. 7V	50.02Hz	275. 6W	1961Wh	62. 3C	2019-11-06 14:57:07
104033102322-1	48. 0V	236. 1V	50.01Hz	257. 9W	1839Wh	51. 5C	2019-11-06 14:57:08
104033102322-2	48. 0V	236. 0V	50.01Hz	258. 6W	1843Wh	51. 6C	2019-11-06 14:57:02

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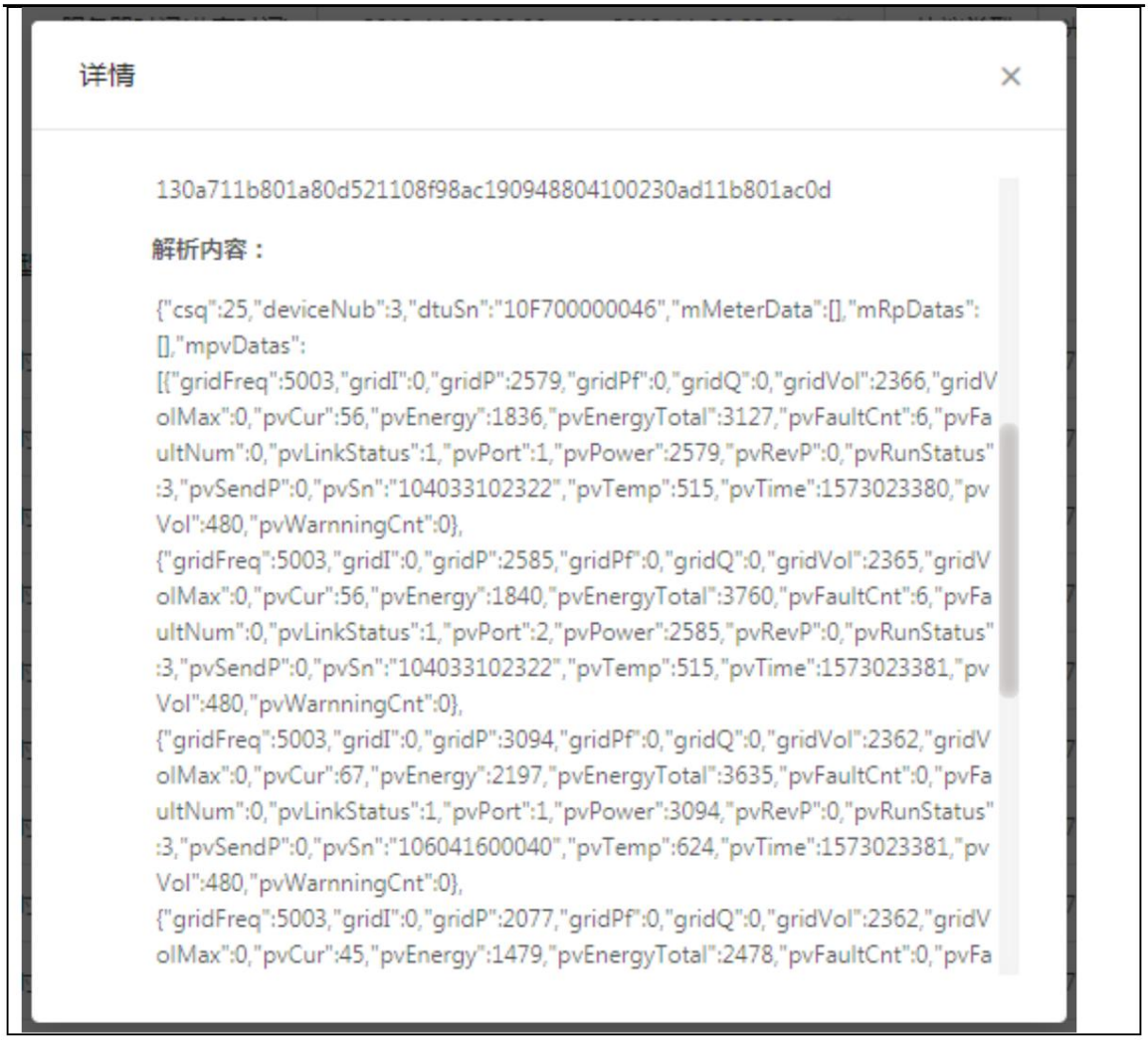

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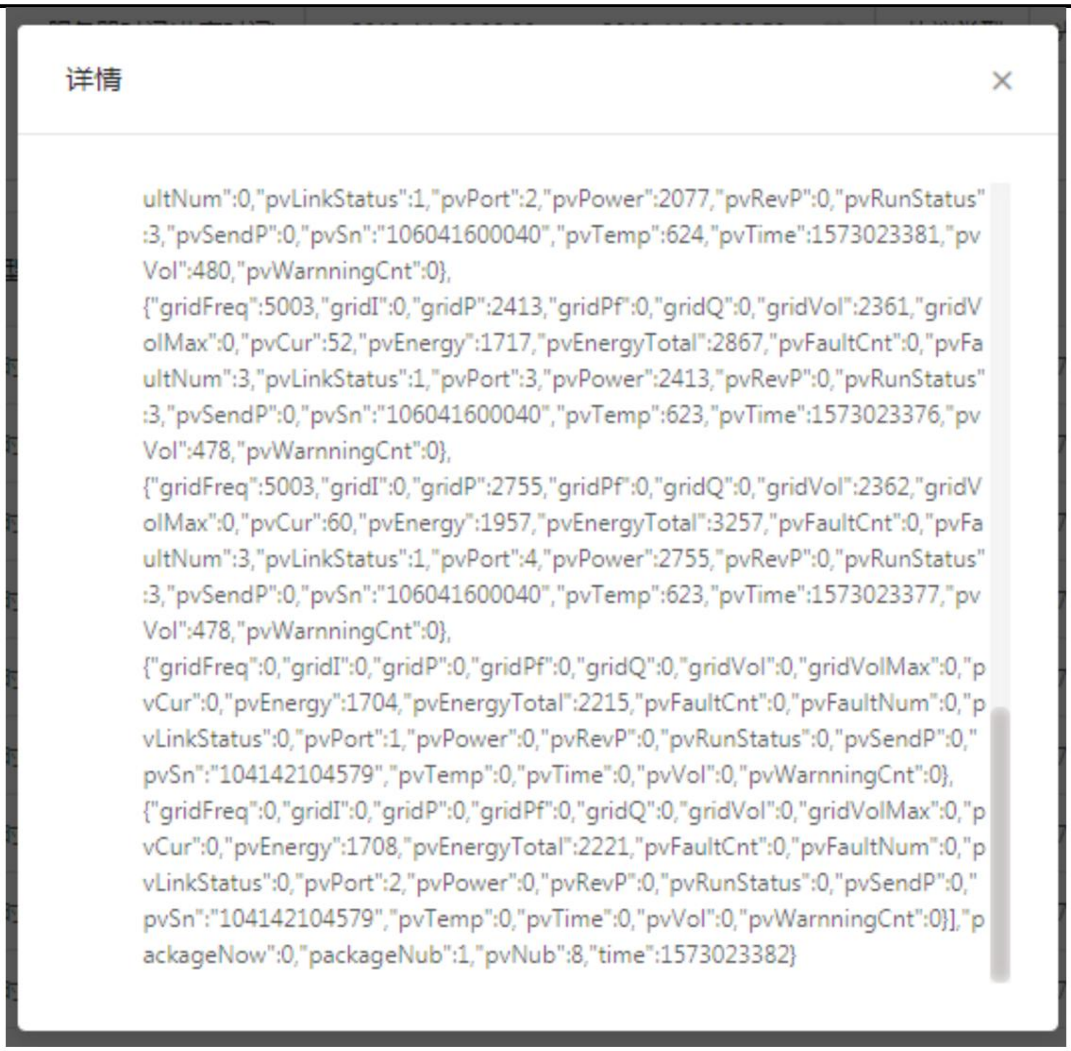

The last packet of data of the day:

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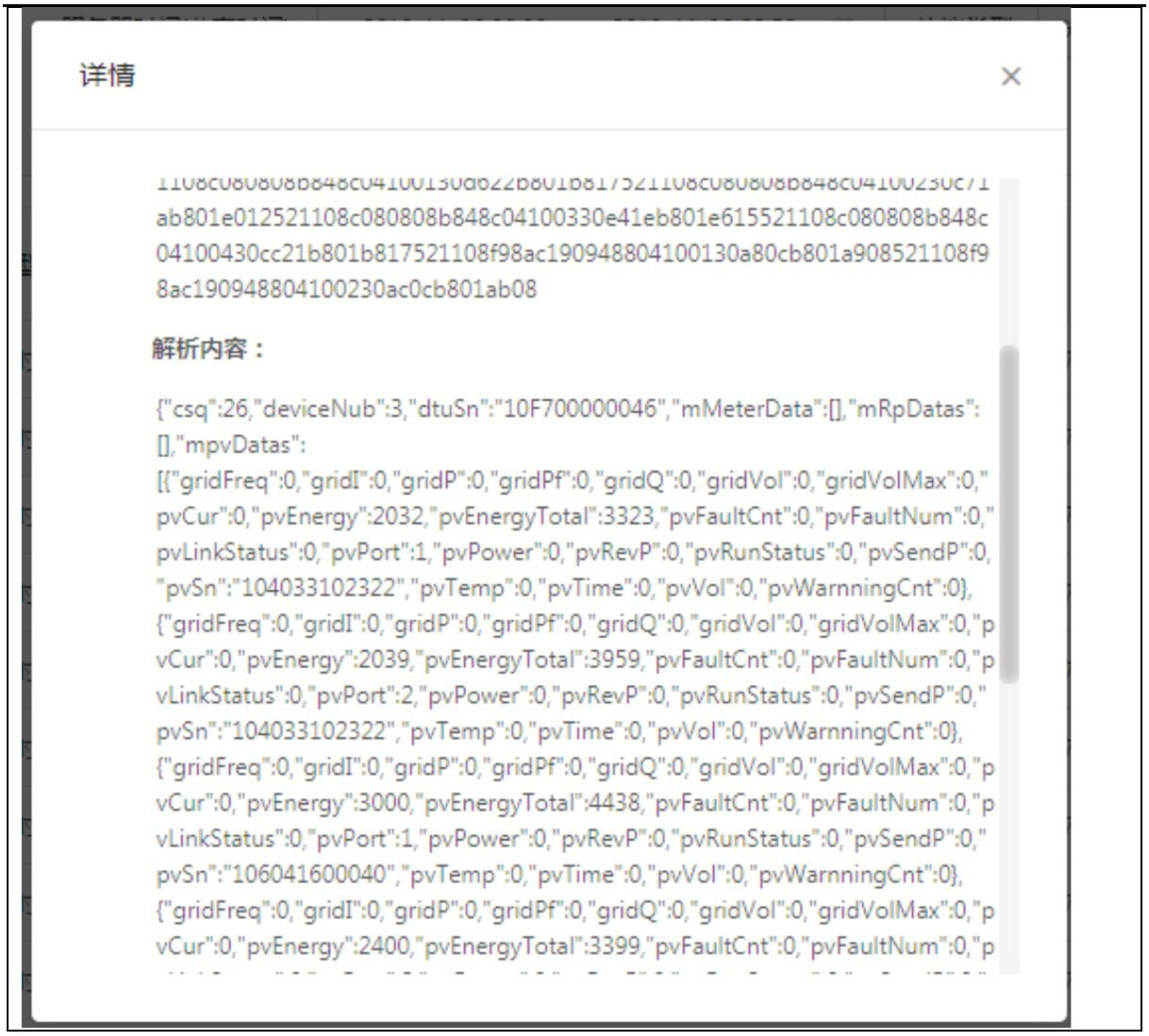

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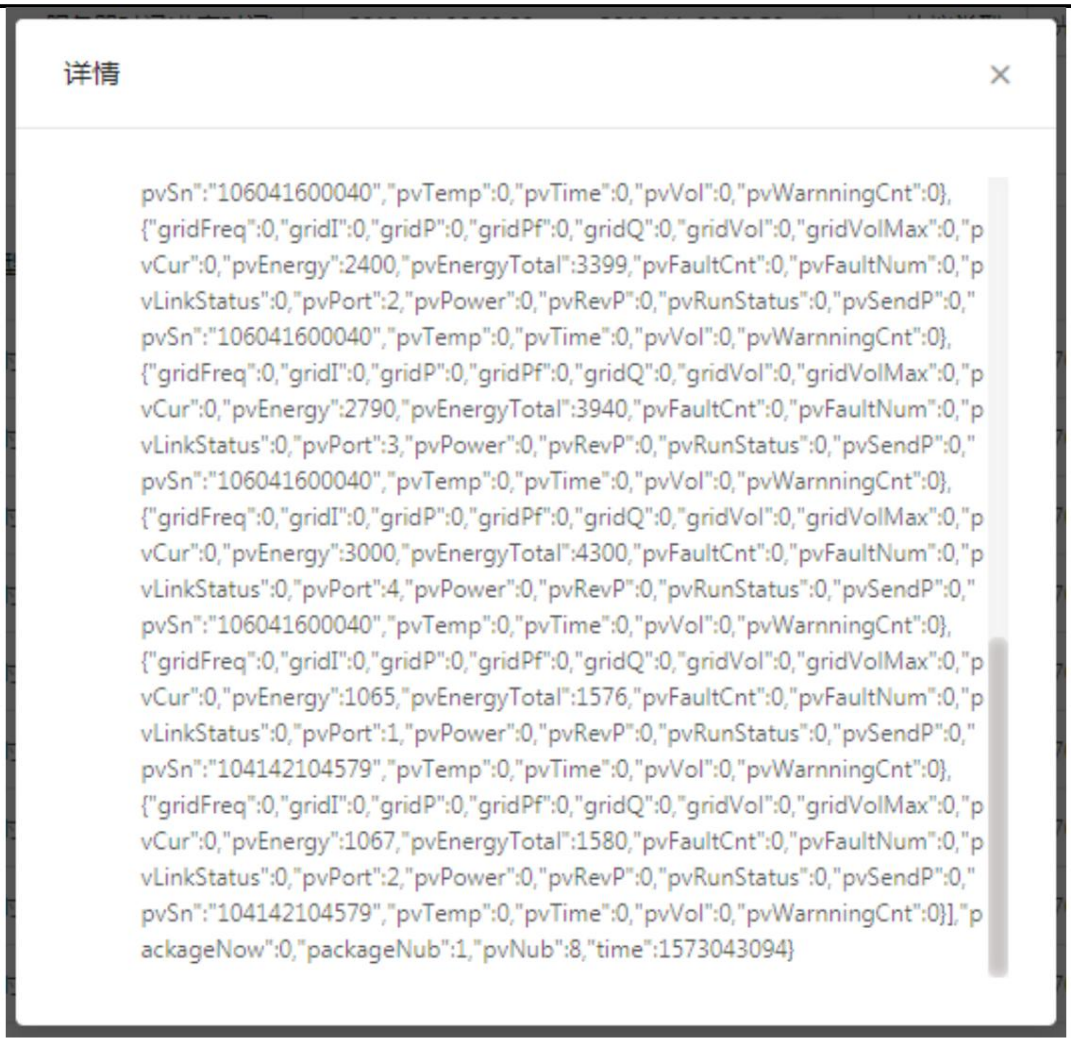

The first package of data in the early morning, the data such as the power generation of the day is cleared, and the accumulated power generation is consistent with the last package of the previous day:

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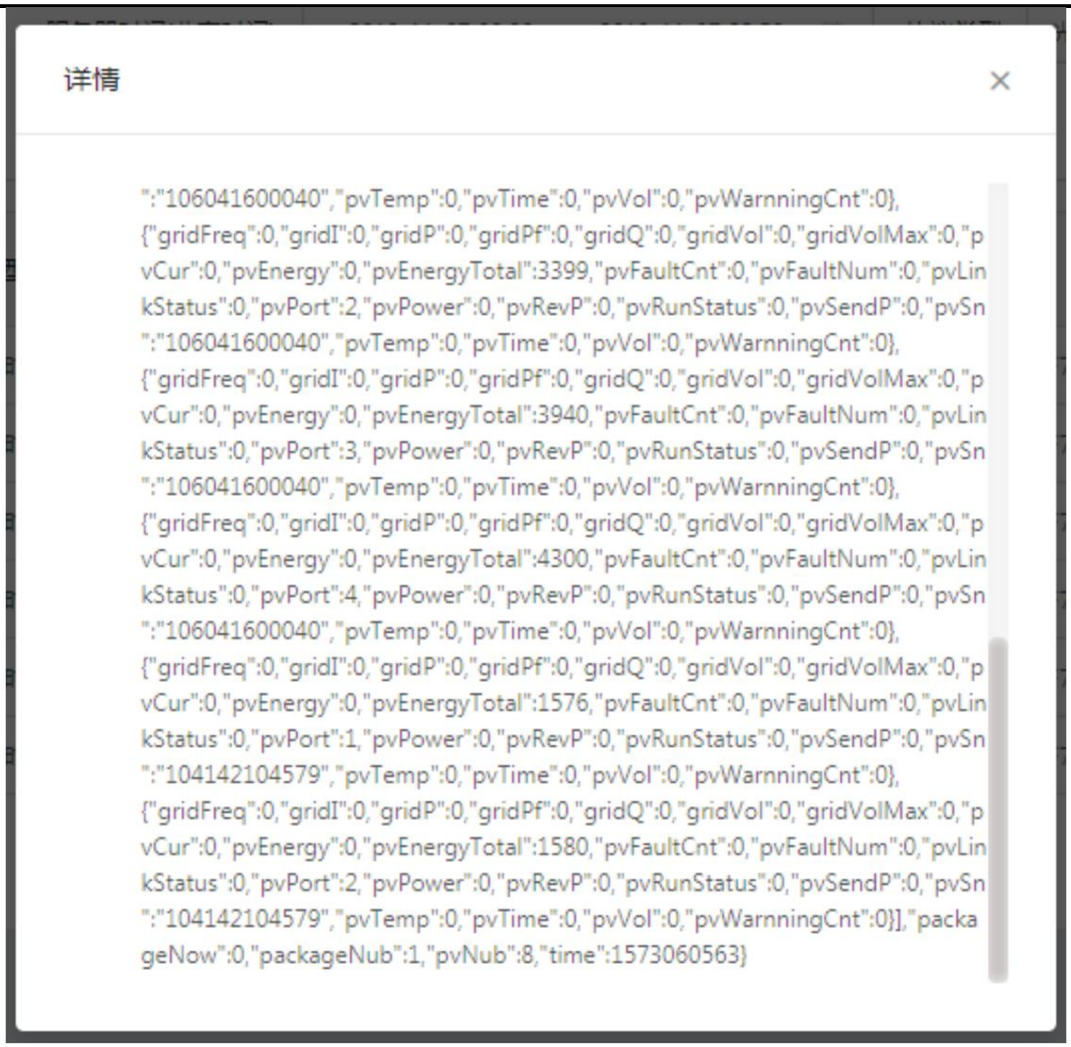

Remark
N/A

2.10 Platform data display

Test Case Name: Platform Data Display		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
The data uploaded by the DTU, such as load power, power generation power, and power generation amount, are correct.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		
test steps		

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Serial number	detailed description	Desired result	actual results	state
1	Check the relevant data displayed by the platform. The data appears normal.			Test passed

Test Data
N/A

data analysis
N/A

Image/Waveform
The power station shows:

Remark
N/A

2.11 Remote restart micro-inverse of the platform

Test case name: Platform remote restart micro-inverse		
Test executor: wearing a tiger	Test date: November 6, 2019	Test Results: ÿPass, ÿFail, ÿUntested

skills requirement
Support remote restart microinverse.

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precondition
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.

test steps				
Serial number	detailed description	Desired result	actual results	state
1	In the test station, choose to restart the microinverter. The restart was successful.			Test passed

Test Data
N/A

data analysis
N/A

Image/Waveform
N/A

Remark
N/A

2.12 Platform remote shutdown micro-inverse

Test case name: Platform remote shutdown micro-inverse		
Test executor: wearing a tiger	Test date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested

skills requirement
Support remote shutdown micro-inverse.

precondition
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.

test steps				
Serial number	detailed description	Desired result	actual results	state
1	In the test station, select Shutdown Micro-Inverter. Shut down successfully.		A single control is successful, Multiple units are not supported control (platform optional, But the prompt command is issued fail)	Test passed

Test Data
N/A

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data analysis
N/A
Image/Waveform

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Link Status: Server: YC MI-On-Line: 08 MI-Off-Line: 00 View as: English

ID	V-pv	V-grid	F-grid	P-grid	E-today	Temp	Time
104142104579-1	47. 6V	232. 0V	50.01Hz	257. 9W	439Wh	49. 6C	2019-11-07 09:50:05
104142104579-2	48. 1V	232. 0V	50.01Hz	258. 6W	440Wh	49. 7C	2019-11-07 09:50:00
106041600040-1	48. 0V	233. 6V	50.01Hz	291. 3W	13Wh	29. 3C	2019-11-07 09:50:01
106041600040-2	48. 0V	233. 6V	50.01Hz	225. 8W	10Wh	29. 3C	2019-11-07 09:50:01
106041600040-3	47. 7V	233. 4V	50.01Hz	240. 9W	11Wh	29. 6C	2019-11-07 09:50:02
106041600040-4	47. 7V	233. 4V	50.01Hz	276. 1W	12Wh	29. 6C	2019-11-07 09:50:03
104033102322-1	48. 1V	231. 5V	50.01Hz	0. 6W	15Wh	32. 3C	2019-11-07 09:50:04
104033102322-2	48. 1V	231. 5V	50.01Hz	1. 5W	17Wh	32. 3C	2019-11-07 09:50:04

ID	Event code	Status	Fault count	Time
104142104579-1	0000	0003	0000	2019-11-07 09:50:26
104142104579-2	0000	0003	0000	2019-11-07 09:50:27
106041600040-1	0000	0003	0000	2019-11-07 09:50:22
106041600040-2	0000	0003	0000	2019-11-07 09:50:23
106041600040-3	0000	0003	0000	2019-11-07 09:50:24
106041600040-4	0000	0003	0000	2019-11-07 09:50:25
104033102322-1	0031	0008	0000	2019-11-07 09:50:25
104033102322-2	0031	0008	0000	2019-11-07 09:50:26

Remark
N/A

2.13 Platform remote boot micro-inversion

Test case name: platform remote boot micro-inverse		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
Support remote boot micro-inverse.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		

Test step serial				
number	detailed description	Desired result	actual results	state
1	In the test station, choose to start the micro-inverter. The boot was successful.		Single control is successful, multiple control is not supported (platform is optional, but prompts command to issue	Test passed

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			fail)	

Test Data
N/A
data analysis
N/A
Image/Waveform

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ID	V-pv	V-grid	F-grid	P-grid	E-today	Temp	Time
104142104579-1	47. 6V	232. 6V	49.99Hz	258. 0W	457Wh	49. 7C	2019-11-07 09:54:14
104142104579-2	48. 1V	232. 7V	49.99Hz	258. 6W	459Wh	49. 7C	2019-11-07 09:54:14
106041600040-1	48. 0V	233. 4V	50.00Hz	291. 3W	34Wh	32. 0C	2019-11-07 09:54:15
106041600040-2	48. 0V	233. 5V	50.00Hz	226. 0W	26Wh	31. 9C	2019-11-07 09:54:16
106041600040-3	47. 7V	233. 3V	49.99Hz	240. 5W	28Wh	32. 1C	2019-11-07 09:54:11
106041600040-4	47. 7V	233. 3V	49.99Hz	276. 4W	31Wh	32. 1C	2019-11-07 09:54:11
104033102322-1	48. 0V	233. 0V	50.00Hz	252. 7W	19Wh	32. 7C	2019-11-07 09:54:17
104033102322-2	48. 0V	233. 0V	49.99Hz	258. 5W	20Wh	32. 6C	2019-11-07 09:54:13

ID	Event code	Status	Fault count	Time
104142104579-1	0000	0003	0000	2019-11-07 09:54:35
104142104579-2	0000	0003	0000	2019-11-07 09:54:36
106041600040-1	0000	0003	0000	2019-11-07 09:54:37
106041600040-2	0000	0003	0000	2019-11-07 09:54:37
106041600040-3	0000	0003	0000	2019-11-07 09:54:38
106041600040-4	0000	0003	0000	2019-11-07 09:54:38
104033102322-1	0000	0003	0000	2019-11-07 09:54:39
104033102322-2	0000	0003	0000	2019-11-07 09:54:34

Remark
N/A

2.14 Platform remote lock micro-inverse

Test case name: platform remote lock micro-inverse		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested

skills requirement
Supports remote locking of micro-inverses.

precondition
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.

test steps

Serial number	detailed description	Desired result	actual results	state
1	In the test station, choose to lock the micro-inverse.	Locked successfully.	A single control is successful, and multiple control at the same time is not supported (the platform is not optional)	Test passed

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Test Data
N/A
data analysis
N/A
Image/Waveform

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Link Status: Server: YC MI-On-Line: 08 MI-Off-Line: 00 View as: English |

ID	V-pv	V-grid	F-grid	P-grid	E-today	Temp	Time
104142104579-1	47. 7V	231. 3V	50.01Hz	0. 3W	485Wh	49. 6C	2019-11-07 10:03:03
104142104579-2	48. 2V	231. 7V	50.01Hz	0. 3W	487Wh	49. 6C	2019-11-07 10:03:09
106041600040-1	48. 0V	233. 3V	50.02Hz	290. 8W	76Wh	37. 4C	2019-11-07 10:03:04
106041600040-2	48. 0V	233. 3V	50.02Hz	226. 1W	59Wh	37. 4C	2019-11-07 10:03:04
106041600040-3	47. 7V	233. 4V	50.01Hz	240. 5W	63Wh	37. 5C	2019-11-07 10:03:05
106041600040-4	47. 7V	233. 4V	50.01Hz	276. 6W	73Wh	37. 5C	2019-11-07 10:03:06
104033102322-1	48. 0V	232. 7V	50.01Hz	257. 9W	57Wh	35. 1C	2019-11-07 10:03:07
104033102322-2	48. 0V	233. 0V	50.01Hz	258. 5W	59Wh	35. 0C	2019-11-07 10:03:07

ID	Event code	Status	Fault count	Time
104142104579-1	0032	0008	0001	2019-11-07 10:03:24
104142104579-2	0032	0008	0001	2019-11-07 10:03:25
106041600040-1	0000	0003	0000	2019-11-07 10:03:26
106041600040-2	0000	0003	0000	2019-11-07 10:03:26
106041600040-3	0000	0003	0000	2019-11-07 10:03:27
106041600040-4	0000	0003	0000	2019-11-07 10:03:28
104033102322-1	0000	0003	0000	2019-11-07 10:03:28
104033102322-2	0000	0003	0000	2019-11-07 10:03:29

Remark
N/A

2.15 Platform Remote Unlock Micro-Inverse

Test Case Name: Platform Remote Unlock Micro-Inverse		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
Supports remote unlocking of micro-inverses.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		

test steps

Serial number	detailed description	Desired result	actual results	state
1	In the test station, select Unlock Microinverse. Unlocked successfully.		A single unit is successfully controlled, and multiple units are not supported together	Test passed

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			Control (platform not selectable)	
Test Data				
N/A				
data analysis				
N/A				
Image/Waveform				

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Link Status: Server: YC MI-On-Line: 08 MI-Off-Line: 00 View as: English

ID	V-pv	V-grid	F-grid	P-grid	E-today	Temp	Time
104142104579-1	47. 6V	232. 4V	50.00Hz	257. 9W	485Wh	48. 1C	2019-11-07 10:09:10
104142104579-2	48. 1V	232. 4V	49.99Hz	258. 6W	487Wh	48. 1C	2019-11-07 10:09:05
106041600040-1	48. 0V	233. 8V	50.00Hz	290. 8W	106Wh	40. 6C	2019-11-07 10:09:06
106041600040-2	48. 0V	233. 7V	50.00Hz	226. 2W	82Wh	40. 5C	2019-11-07 10:09:07
106041600040-3	47. 7V	233. 7V	50.00Hz	240. 3W	88Wh	40. 5C	2019-11-07 10:09:07
106041600040-4	47. 7V	233. 8V	50.00Hz	276. 8W	100Wh	40. 5C	2019-11-07 10:09:08
104033102322-1	48. 0V	233. 0V	50.00Hz	257. 9W	83Wh	37. 2C	2019-11-07 10:09:08
104033102322-2	48. 0V	233. 0V	50.00Hz	258. 6W	85Wh	37. 2C	2019-11-07 10:09:09

ID	Event code	Status	Fault count	Time
104142104579-1	0000	0003	0000	2019-11-07 10:09:37
104142104579-2	0000	0003	0000	2019-11-07 10:09:37
106041600040-1	0000	0003	0000	2019-11-07 10:09:38
106041600040-2	0000	0003	0000	2019-11-07 10:09:39
106041600040-3	0000	0003	0000	2019-11-07 10:09:40
106041600040-4	0000	0003	0000	2019-11-07 10:09:40
104033102322-1	0000	0003	0000	2019-11-07 10:09:40
104033102322-2	0000	0003	0000	2019-11-07 10:09:36

Remark
N/A

2.16 Collect microinverse version information

Test case name: Collect microinverse version information		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
Supports collecting microinverse version information.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		

Test step serial

number	detailed description	Desired result	actual results	state
1	In the test plant, select Collect version information.	Send a registration frame to the platform after collection.	A single control is successful, and multiple control at the same time is not supported (the platform is not optional)	Test passed

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Test Data
N/A
data analysis
N/A
Image/Waveform

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日志类型	设备SN	协议类型	原始内容	解析内容	流水号	服务器时间(北京时间)	包内时间	时区
↓	10F700000046	光伏心跳响应	0880e101108a828eee051a13323031392d3131...	{"offset":28800,"time":1573093642,"ymd...	598	2019-11-07 10:27:22	2019-11-07 10:27:22	28800
↑	10F700000046	光伏心跳包	0880e1011087828eee051819220c3130463730...	{"offset":28800,"time":1573093639,"csq...	598	2019-11-07 10:27:22	2019-11-07 10:27:19	28800
↓	10F700000046	光伏心跳响应	0880e10110e3818eee051a13323031392d3131...	{"offset":28800,"time":1573093603,"ymd...	597	2019-11-07 10:26:43	2019-11-07 10:26:43	28800
↑	10F700000046	光伏心跳包	0880e10110d9818eee051819220c3130463730...	{"offset":28800,"time":1573093593,"csq...	597	2019-11-07 10:26:43	2019-11-07 10:26:33	28800
↓	10F700000046	光伏网络命令执行状态回复	08d9818eee051004180120e61b	{"time":1573093593,"action":4,"package...	596	2019-11-07 10:26:33	2019-11-07 10:26:33	28800
↑	10F700000046	光伏网络命令执行状态	0a0c313046373030303030303343610d0818eee...	{"action":4,"dtuSn":"10F700000046","es...	596	2019-11-07 10:26:33	2019-11-07 10:26:24	28800
↓	10F700000046	光伏注册响应	0a13323031392d31312d30372031303a32363a...	{"ymdHms":"2019-11-07 10:26:24","offse...	595	2019-11-07 10:26:24	2019-11-07 10:26:24	28800
↑	10F700000046	光伏上报注册帧	0a0c313046373030303030303343610c3818eee...	{"channel":1,"deviceNub":3,"dtuSn":"10...	595	2019-11-07 10:26:24	2019-11-07 10:26:11	28800
↑	10F700000046	光伏指令响应	0a0c313046373030303030303343610c2818eee...	{"dtuSn":"10F700000046","time":1573093...	65	2019-11-07 10:26:21	2019-11-07 10:26:10	28800
↓	10F700000046	光伏指令下发	08c2818eee0510041801200130e61b3a01304a...	{"action":4,"data":"0","devKind":1,"es...	65	2019-11-07 10:26:10	2019-11-07 10:26:10	28800

Remark
N/A

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2.17 Clearing the ground fault

Test Case Name: Clear Ground Fault		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
Support for clearing ground faults.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		

Test step serial

number	detailed description	Desired result	actual results	state
1	At the test station, select Clear Ground Fault.		A single control is successful, and multiple control at the same time is not supported (the platform is not optional)	Test passed

Test Data
N/A
data analysis
N/A
Image/Waveform

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Remark
N/A

2.18 The platform remotely restarts the DTU

Test case name: Platform remote restart DTU		
Test executor: wearing a tiger	Test date: November 6, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
Support remote restart of DTU.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		

test steps

Serial number	detailed description	Desired result	actual results	state
1	In the test station, select Restart DTU. The restart was successful.			Test passed

Test Data
N/A
data analysis
N/A
Image/Waveform

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Remark
N/A

2.19 Anti-theft function

Test case name: Anti-theft function		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
Support remote open anti-theft.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		
test steps		

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Serial number	detailed description	Desired result	actual results	state
1	Set the anti-theft password 00000001, check the dtu receipt, power off the dtu and micro-inverse, add the micro-inverse to other dtu, and check the micro-inverse status. If the wrong password is entered, it will prompt	The anti-theft setting is successful, and the micro-inverse is stolen.		Test passed
2	that the password is wrong, and the anti-theft settings cannot be modified. Change the anti-theft password to	Incorrect password prompt		Test passed
3	00000003, check the dtu receipt, and after powering off the dtu and micro-inverse, add the micro-inverse to other dtu, and check the micro-inverse status. Change the anti-theft password to 00000000, check the dtu receipt, power	The password is changed successfully, the anti-theft function is effective		Test passed
4	off the dtu and the micro-inverse, add the micro-inverse to other dtu, and check the micro-inverse status. Enter the super password 10165082, you can change the password	Anti-theft function exits.		Test passed
5		Super password is valid		Test passed

Test Data
N/A
data analysis
N/A
Image/Waveform

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Set the anti-theft password 00000001:

After adding to other micro-inverses, it shows stolen:

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ID	Event code	Status	Fault count	Time
104142104579-1	0000	0003	0000	2019-11-07 13:51:03
104142104579-2	0000	0003	0000	2019-11-07 13:51:04
106041600040-1	0000	0009	0000	2019-11-07 13:51:04
106041600040-2	0000	0009	0000	2019-11-07 13:51:00
106041600040-3	0000	0009	0000	2019-11-07 13:51:00
106041600040-4	0000	0009	0000	2019-11-07 13:51:01
104033102322-1	0000	0009	0000	2019-11-07 13:51:01
104033102322-2	0000	0009	0000	2019-11-07 13:51:02

Step 2:

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Step 3:

Change the password to 00000003:

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ID	Event code	Status	Fault count	Time
104142104579-1	0014	0009	0000	2019-11-07 14:58:11
104142104579-2	0014	0009	0000	2019-11-07 14:58:11
106041600040-1	0014	0009	0001	2019-11-07 14:58:33
106041600040-2	0014	0009	0001	2019-11-07 14:58:34
106041600040-3	0014	0009	0001	2019-11-07 14:58:35
106041600040-4	0014	0009	0001	2019-11-07 14:58:36
104033102322-1	0014	0009	0000	2019-11-07 14:58:31
104033102322-2	0014	0009	0000	2019-11-07 14:58:31

Step 4:

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ID	Event code	Status	Fault count	Time
104142104579-1	0000	0003	0000	2019-11-07 15:06:21
104142104579-2	0000	0003	0000	2019-11-07 15:06:21
106041600040-1	0000	0003	0001	2019-11-07 15:06:22
106041600040-2	0000	0003	0001	2019-11-07 15:06:23
106041600040-3	0000	0003	0001	2019-11-07 15:06:23
106041600040-4	0000	0003	0001	2019-11-07 15:06:24
104033102322-1	0000	0003	0000	2019-11-07 15:06:19
104033102322-2	0000	0003	0000	2019-11-07 15:06:20

Step 5:

Super Password:

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Remark
N/A

2.20 DTU data clear

Test case name: DTU data clear		
Test executor: Dai Tihu	Test Date: November 6, 2019	Test Results: ÿPass, ÿFail, ÿUntested

skills requirement
When the communication between the micro-inverter and the DTU is interrupted, about 30 minutes later, the DTU will clear the micro-inverter data to zero, and the power generation data will not be cleared.

precondition
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.

Test step serial

number	detailed description	Desired result	actual results	state
1	After the micro-inverter continues to output power for a period of time, the DTU will display the correct information such as power generation, voltage, and power generation. Disconnect the micro-inverter DC		14:31 Disconnect the micro inverter power	Test passed
2	power supply. Wait for a while until the data showing micro-inverse on the DTU is cleared. Grab the data packets uploaded by DTU to the platform and check the data.	Data is cleared.	14:56 The data in the data frame sent by DTU is cleared, about 25 minutes.	Test passed

Test Data
N/A

data analysis
N/A

Image/Waveform

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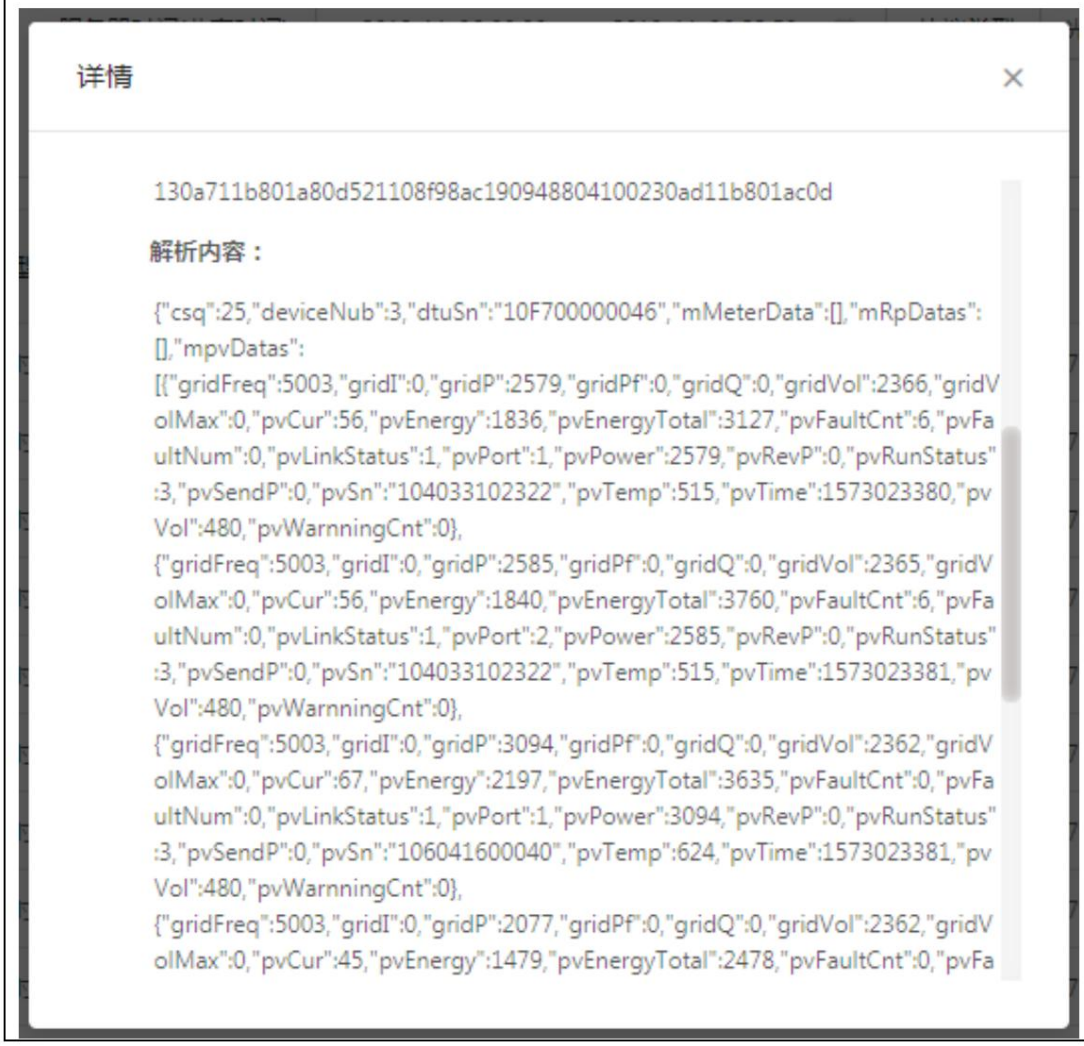

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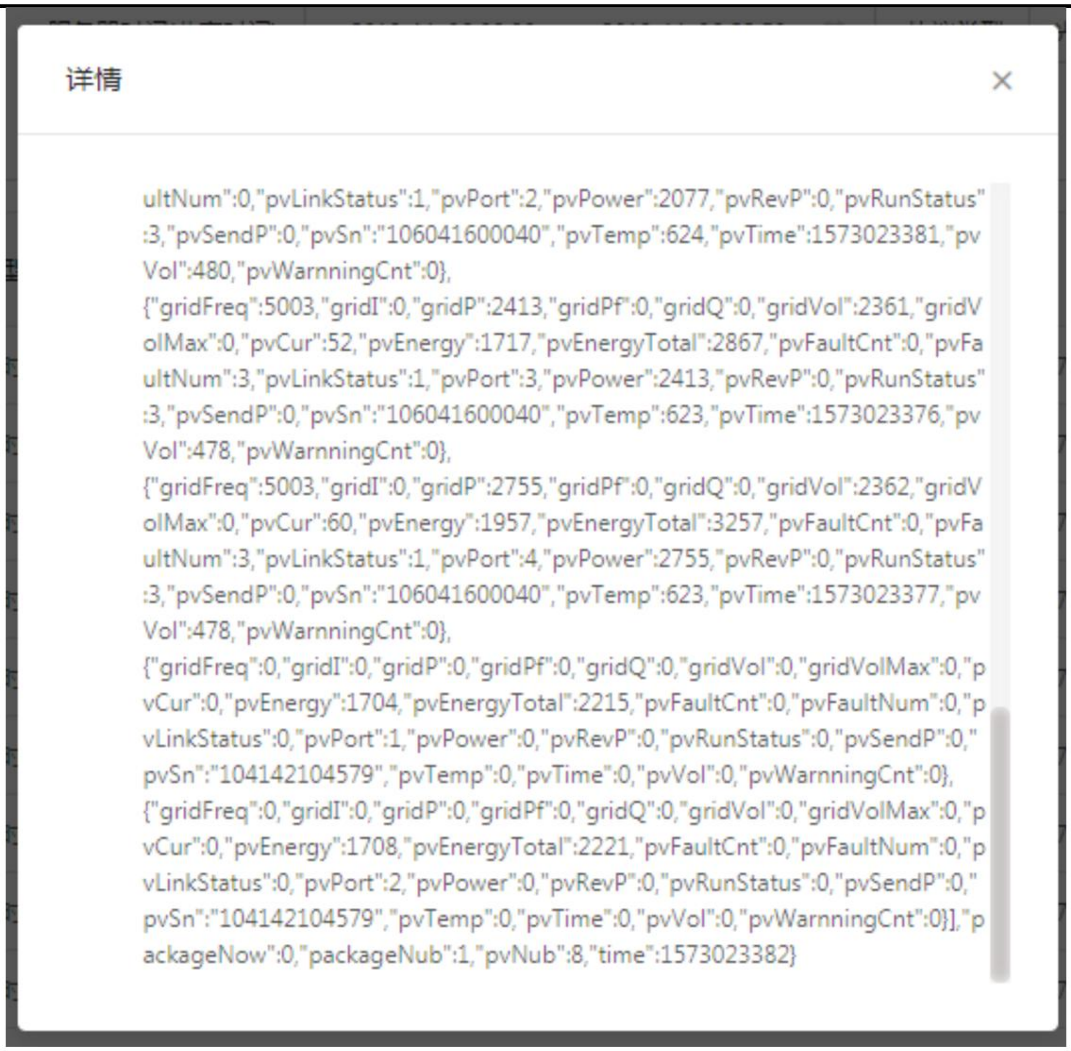

Remark
N/A

2.21 Switching the Networking Mode

Test case name: Networking mode switch		
Test executor: Dai Tihu	Test Date: November 7, 2019	Test Results: ÿPass, ÿFail, ÿUntested
skills requirement		
DTU-Pro supports modifying the networking mode on the platform: 0-GPRS mode, 2-network cable mode.		
precondition		
Correctly connect the power supply, micro-inverter, DTU and other equipment. After the check is correct, the power-on operation is normal.		
test steps		

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Serial number	detailed description	Desired result	actual results	state
1	Change the networking mode to network cable on the platform. After five minutes, please check the DTU networking status, and then plug in the network cable to check the networking status.	The switch to the network cable mode is successful.	After switching to the network cable mode, the DTU needs to be restarted to successfully connect to the network. But Wang Hongze's test can be switched successfully.	Test passed
2	Modify the networking method on the platform to GPRS, unplug the network cable after one minute, please check the network status of DTU.	The switch to GPRS mode is successful.		Test passed
Test Data				
N/A				
data analysis				
N/A				
Image/Waveform				

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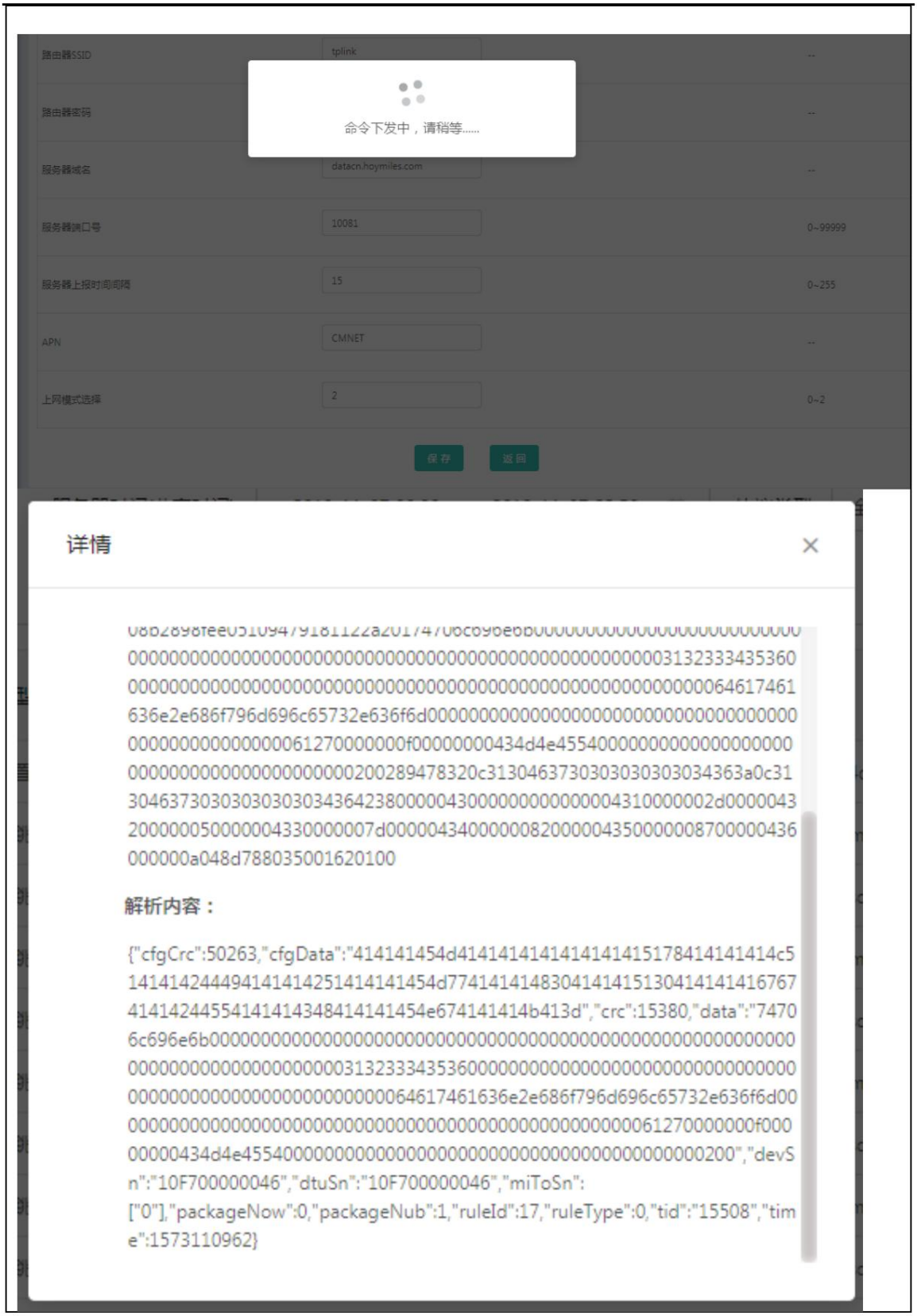

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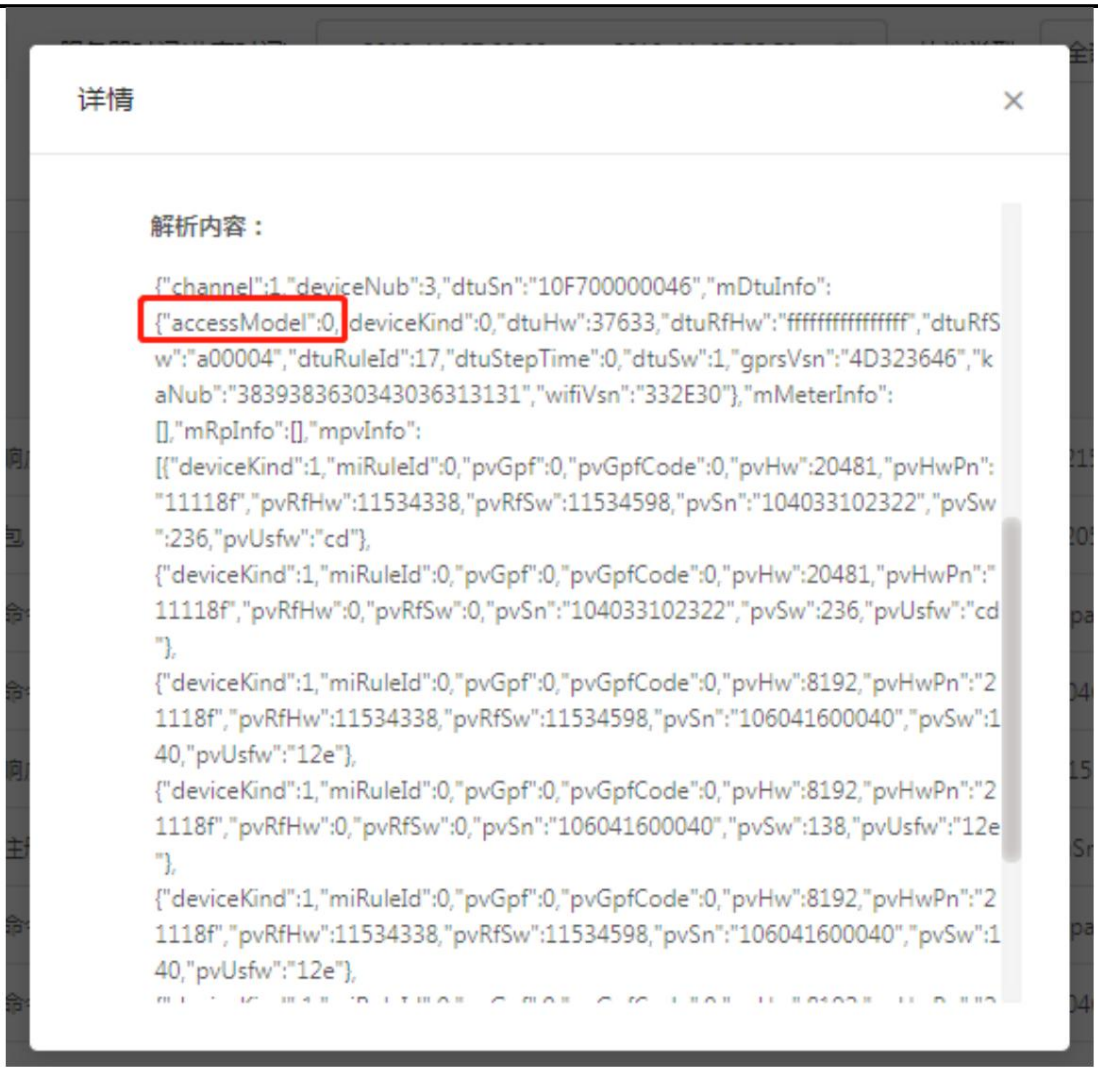

Remark
N/A

3. Test Analysis

N/A

4. Test data attachment

N/A

5. References and Standards

a) Instructions for use of Hemai photovoltaic system

b) Smart Electric Photovoltaic Project Requirements Specification

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