

# SanPlat™

## Data Concentrator Web Interface Instructions

*To Optimize Power Grid Value*



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# 1. Overview

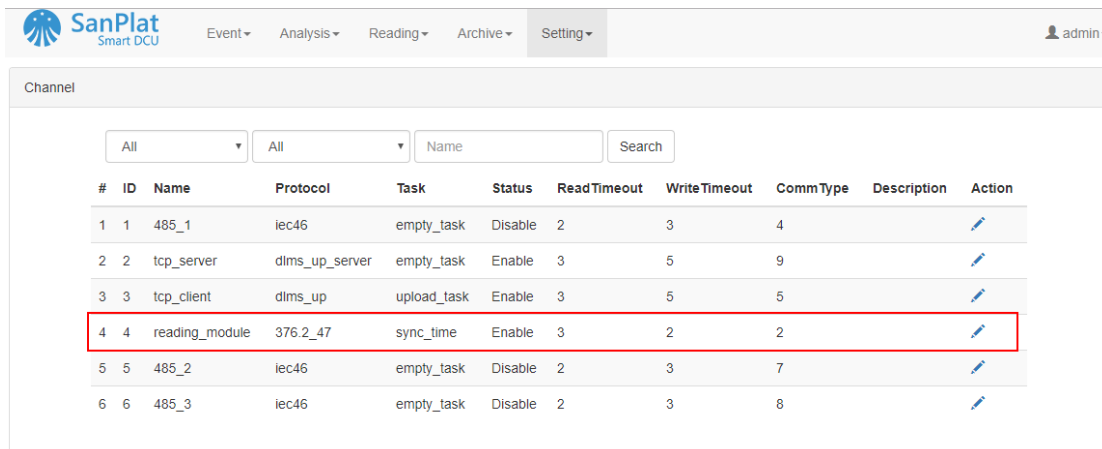
The main function of DCU (Data Concentrator Unit) is to read and collect data of load profile and events from meters via G3 PLC (Power Line Carrier). The DCU itself stores the captured data and sends data to HES (Head End System) via GPRS or Ethernet. DCU also supports transparent transmission of command frame those come from HES to meters. Thus, HES can control meters remotely.







The configuration of the DCU is described in the following aspects: Communication channel configuration, meter archives configuration, data collection task configuration, HES configuration, communication configuration, manually meter reading and other operations.


## 2. Configuration of Communication Channel

### 2.1 Channel List

Click the menu **Setting->Channel** to enter communication channel list page. All the communication channels supported by the DCU are listed in this page.



#	ID	Name	Protocol	Task	Status	ReadTimeout	WriteTimeout	CommType	Description	Action
1	1	485_1	iec46	empty_task	Disable	2	3	4		
2	2	tcp_server	dlms_up_server	empty_task	Enable	3	5	9		
3	3	tcp_client	dlms_up	upload_task	Enable	3	5	5		
4	4	reading_module	376.2_47	sync_time	Enable	3	2	2		
5	5	485_2	iec46	empty_task	Disable	2	3	7		
6	6	485_3	iec46	empty_task	Disable	2	3	8		

Click  to edit channel parameters.

**Name** channel name

**Protocol** communication protocol of this channel

**Task** shows which data collection task group is attached to this channel.

**Status** shows channel is enabled or disabled

## Tips:

“reading\_module” the channel of PLC module

“Tcp\_client” the channel used for DCU connecting with HES in client mode.

“Tcp\_server” the channel used for DCU connecting with client in server mode.

## 2.2 Communication Channel Parameters

Click the menu **Setting-> Channel Attribution** to configure communication parameters of channels.

#	ID	Channel	Key	Value	Description	Action
1	1	485_1	dev.file	/dev/ttyS3	485	
2	2	485_1	baud	9600		
3	3	485_1	databits	8		
4	4	485_1	stopbits	1		
5	5	485_1	parity	N		
6	6	tcp_client	ip.1	61.130.109.125		
7	7	tcp_client	port.1	2351		
8	8	tcp_client	ip.2	10.201.4.13		
9	9	tcp_client	port.2	2354		
10	10	tcp_client	ip.size	1		
11	11	tcp_client	connect.timeout	5		
12	12	reading_module	dev.file	/dev/ttyS2	PLC	
13	13	reading_module	baud	9600		
14	14	reading_module	databits	8		
15	15	reading_module	stopbits	1		
16	16	reading_module	parity	E		
17	19	tcp_server	idle.timeout	30	unit: second	
18	20	tcp_server	listen.port	9201	listening port	

Click on the right side of each parameter to edit values.

For example: for the reading\_module channel, there are Serial parameters between DCU and PLC modem, baud rate, databits, stopbits, checksum that need to be configured.

## 2.3 Communication Protocol

In **Setting->Protocol** page, all the communication protocols supported by the DCU are listed in this page.

Protocol

Search

#	ID	Name	ProtocolType	Description	Action
1	1	dlms_down	ToMeter	DLMS for meters	
2	2	<u>dlms_up</u>	ToHeadEnd	DLMS for master station	
3	3	376.2	ToMeter	376.2 + DLMS for meter	
4	4	sfsk	ToMeter	sfsk + 46 for meter	
5	5	376.2_645	ToMeter	376.2 + 645 for meter	
6	6	iec46	ToMeter	iec62056 - 46	
7	7	<u>376.2_47</u>	ToMeter	376.2_47	
8	8	<u>dlms_up_server</u>	ToHeadEnd	DLMS in server model	
9	9	G3	ToMeter	for meter	
10	10	sp300	ToMeter	for meter	

“376.2\_47” protocol is used for PLC module.

“dlms\_up” and “dlms\_up\_server” protocols are used to communicate with HES, respectively for client mode and server mode.

## 2.4 Communication Protocol Parameters

Click the menu **Setting->Protocol Attribution** to enter protocol parameters configure page.

SanPlat Smart DCU Event Analysis Reading Archive Setting admin

18	18	376.2_645	max.bytes	80	max bytes per packet	
19	19	376.2_645	send.retry	2	max retry after fail reading	
20	20	376.2_645	send.timeout	10	reading timeout	
21	21	376.2_645	send.silent	2	silent window after success	
22	22	iec46	max.bytes	256	max bytes per packet	
23	23	iec46	send.retry	2	max retry after fail reading	
24	24	iec46	send.timeout	6	reading timeout	
25	25	376.2_47	max.bytes	80	max bytes per packet	
26	26	376.2_47	send.retry	2	max retry	
27	27	376.2_47	send.timeout	15	timeout after send	
28	28	376.2_47	send.silent	2	silent window after success	
29	29	dlms_up_server	max.bytes	1024	max bytes per packet	
30	30	dlms_up_server	send.retry	3	max retry	
31	31	dlms_up_server	send.timeout	10	timeout after send	
32	32	dlms_up_server	server.mode	1	1:TCP server. 0:TCP client	

For example: if you want to modify the timeout value of PLC modem, you can modify the “send.timeout” of “376.2\_47” protocol which is bind to PLC modem.

## 2.5 Configuration of G3 Module parameters

### 2.5.1 Basic Configuration

In **Setting-> System** page, parameters with the name beginning with “g3” are used for G3-PLC module, as shown:

32	32	comm_profile.interval	300	interval of signal strength profile unit:second	
33	33	test.rs485_1_mode	0	0: communication 1: Debug 2: Debug_hw	
34	34	test.rs485_2_state	0	rs485 II state	
35	35	test.rs485_3_state	0	rs485 III state	
36	36	g3.whitelist.enable	0	enable G3 white list	
37	37	g3.encryption.enable	1	enable G3 encryption	
38	38	g3.band.mode	fcc	G3 band mode, fcc or cena	
39	39	g3.masktone.fcc	000000000000000000	G3 fcc mask	
40	40	g3.masktone_fcc.active_time	1970-1-1 0:0:0	fcc mask active time	
41	41	g3.masktone.cena	0000000000	g3 cena mask	
42	42	g3.masktone_cena.active_time	1970-1-1 0:0:0	cena mask active time	
43	43	g3.power.backoff	4	G3 power backoff	
44	44	4G_GPRS.workmode	AUTO	4G workmode	
45	45	4G_GPRS.reset_en	1	enable 4G module auto reset	
46	46	4G_GPRS.reset_time	22:20	time of 4G module auto reset	
47	47	4G_GPRS.HeartBeat_enable	1	4G heartbeat enable	

#### 1) g3.encryption.enable

G3 Module Communication Encryption.

“0”: no encryption

“1”: encryption

#### 2) g3.whitelist.enable

G3 module white list switch.

”0” : disable white list

“1” : enable white list

In white list mode, the DCU synchronizes the meter archives as a white list with the G3 routing module (the G3 module on the DCU) when the module is boot up. Only the meters in the white list are allowed to connect to this DCU, others will be rejected. In this way, DCU can avoid unwanted meters which are under other transformers.

When the white list is disabled, all the G3 meters are allowed to register to DCU automatically.

#### 3) g3.band.mode

Configure the G3 communication frequency band mode.

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“**cena**”: use the European CENELC-A standard frequency band to communicate.

“**fcc**”: use the US FCC standard frequency band to communicate.

**The frequency band mode of the G3 module on DCU must be the same as the module on meter.**

#### 4) **g3.masktone.fcc**

This parameter only takes effect when frequency band mode is FCC. It is 9 bytes, 72 bits. Each bit set to zero in the “**g3.masktone.fcc**” indicates that the associated tone will be used for the communication. Thus, masked subcarriers are not assigned phase symbols and their amplitude is zero. Less the significant bit represents the lowest frequency. The number of useful subcarriers is 72 for FCC bandplan. It is configured by a hexadecimal string, totally 18 characters, each character can be 0-F.

The G3 routing module’s frequency mask must be the same as meter’s G3 module.

#### 5) **g3.masktone\_fcc.active\_time**

This parameter only takes effect when frequency band mode is FCC. It is used to configure activate time of “**g3.masktone.fcc**”. If the activate time is earlier than system time, “**g3.masktone.fcc**” will take effect immediately, otherwise it will take effect until the configuration time.

#### 6) **g3.masktone.cena**

This parameter only takes effect when frequency band mode is CENELC-A. It is 5 bytes, 40 bits. The low 36 bits are valid. Each bit set to zero in the “**g3.masktone.cena**” indicates that the associated tone will be used for the communication. Thus, masked subcarriers are not assigned phase symbols and their amplitude is zero. Less the significant bit represents the lowest frequency. The number of useful subcarriers is 36 for CENELC-A bandplan. It is configured by a hexadecimal string, totally 10 characters, each character can be 0-F.

The G3 routing module’s frequency mask must be the same as meter’s G3 module.

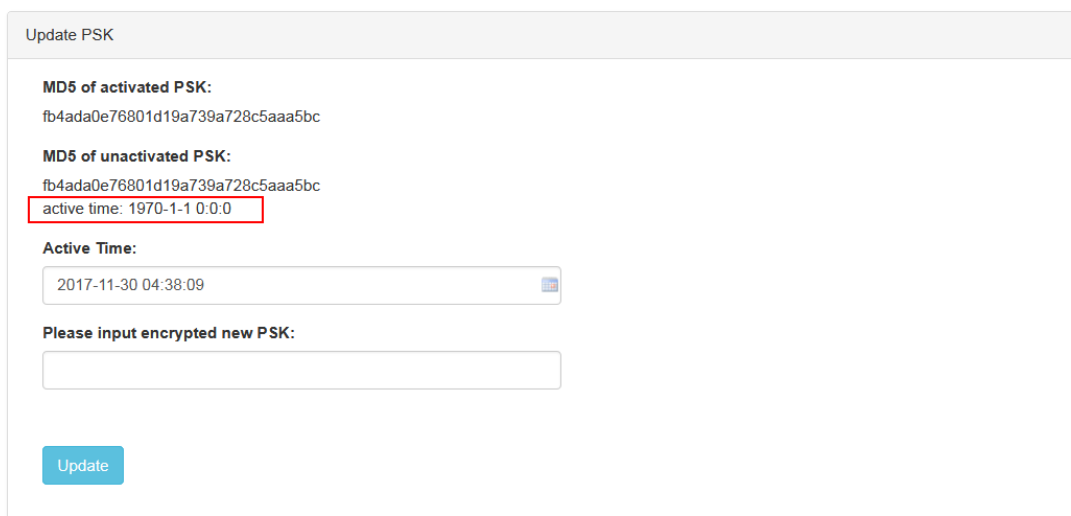
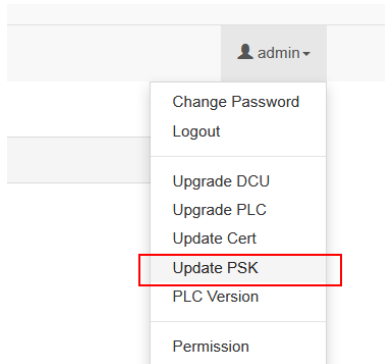
#### 7) **g3.masktone\_cena.active\_time**

This parameter only takes effect when frequency band mode is CENELC-A. It is used to configure activate time of “**g3.masktone.cena**”. If the activate time is earlier than system time, “**g3.masktone.cena**” will take effect immediately, otherwise it will take effect until the configuration time.

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## 2.5.2 PSK configuration

Click account **information menu** -> **Update PSK** to enter PSK configure page:

A screenshot of the 'Update PSK' configuration page. The page displays the following information:

- MD5 of activated PSK:** fb4ada0e76801d19a739a728c5aaa5bc
- MD5 of unactivated PSK:** fb4ada0e76801d19a739a728c5aaa5bc
- active time:** 1970-1-1 0:0:0 (highlighted with a red box)
- Active Time:** 2017-11-30 04:38:09
- Please input encrypted new PSK:** (empty text input field)
- Update** button

### 1) MD5 of activated PSK.

Used to display the MD5 code of PSK that is activated within the DCU.

### 2) MD5 of unactivated PSK

Used to display the MD5 code of PSK that is inactivated within the DCU.

The marked time is the activate time for inactive PSK.

### 3) Active Time

It is used to configure the activate time of the PSK.

### 4) Please input encrypted new PSK

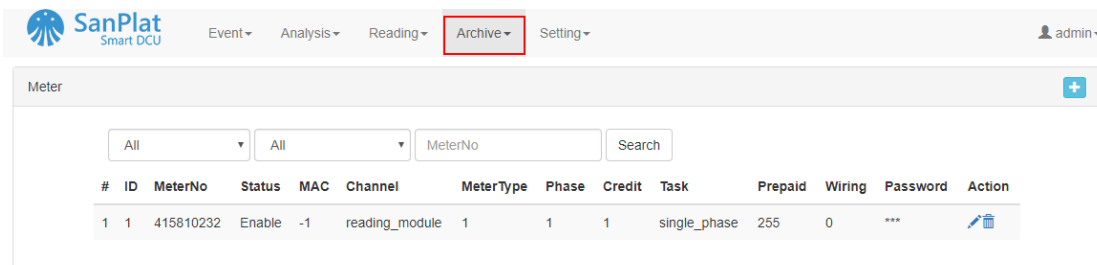
It is used to input PSK string which is encrypted.



### 3. Meter Archives Configuration


#### 3.1 Meter Archives List

Click the menu **Archive** to enter meter archive management page.





Click  to modify the meter archive parameters, click  to disable.

There are three methods to generate meter archives:

- 1) Issuing from HES
- 2) Create by meter automatic registration.
- 3) Click  to add archive manually

#### 3.2 Edit Meter Archives

Click add button  or edit button  to enter the meter archive page shown as below:

The screenshot shows the 'Edit Meter' form in the SanPlat Smart DCU interface. The form has the following fields: ID (1), MeterNo (415810232), Status (Enable selected), MAC (-1), Channel (reading\_module), MeterType (1), Phase (1), Credit (1), Task (single\_phase), Prepaid (255), Wiring (0), and Password (masked with asterisks). The 'MeterNo', 'Channel', 'Task', and 'Password' fields are highlighted with red boxes. At the bottom, there are 'Save' and 'Cancel' buttons.

The following 5 items are the key parameters, the rest can be remained default:

**Meter No** is editable when adding meter archive manually, it can not be edited in other situations.

**Channel** Communication channel which is connected to meter. The channel name of PLC module is “reading\_module”

**Task** Data collation task group attached to current meter. Data collation plan can be modified in Setting->Task menu

**Password** Password of meter for LLS communication security policy. (not in use as default, default security policy is HLS)

**Status** Enable or Disable meter.

**Note:**

**Reboot DCU is required if any meter archive was changed by Web-GUI.**

## 4. Configuration of Data Collection Task

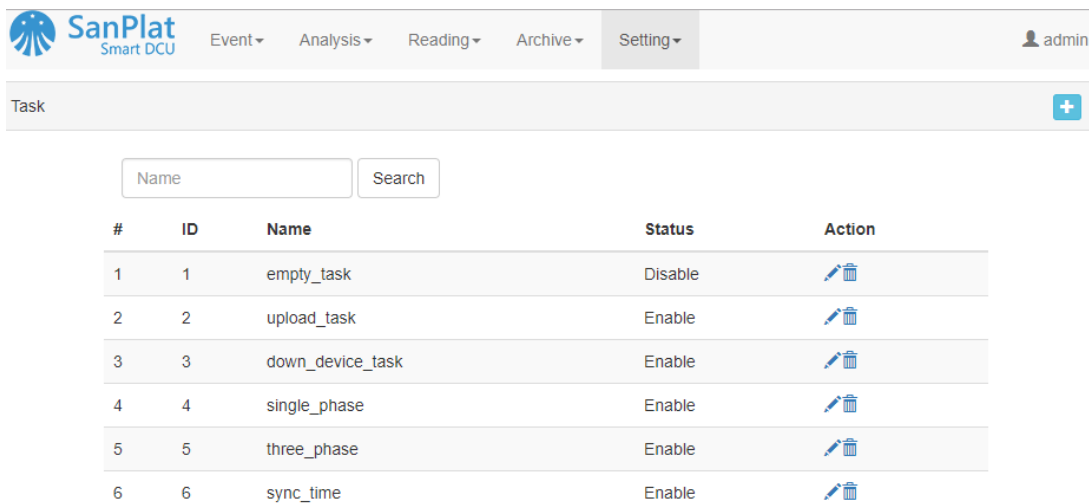
This section will describe how to configure the collection task.













Task item tells DCU when and what data should be collected from meter. “Task group” is composed of multiple task items. Task group (called Task) can be attached to meter archive.




Each type of meter can attach different task group.

### 4.1 Configuration of Task Group

In menu **Setting->Task** different task groups can be configured, as shown:



#	ID	Name	Status	Action
1	1	empty_task	Disable	 
2	2	upload_task	Enable	 
3	3	down_device_task	Enable	 
4	4	single_phase	Enable	 
5	5	three_phase	Enable	 
6	6	sync_time	Enable	 

Click  can add task group, click  can edit task group, click  can delete task group.

**Name** Name of task group.

**Status** Status of task group, Enable or Disable.

**empty\_task** Empty task group, reserved.

**upload\_task** Task group of uploading data to HES (only used in client mode).

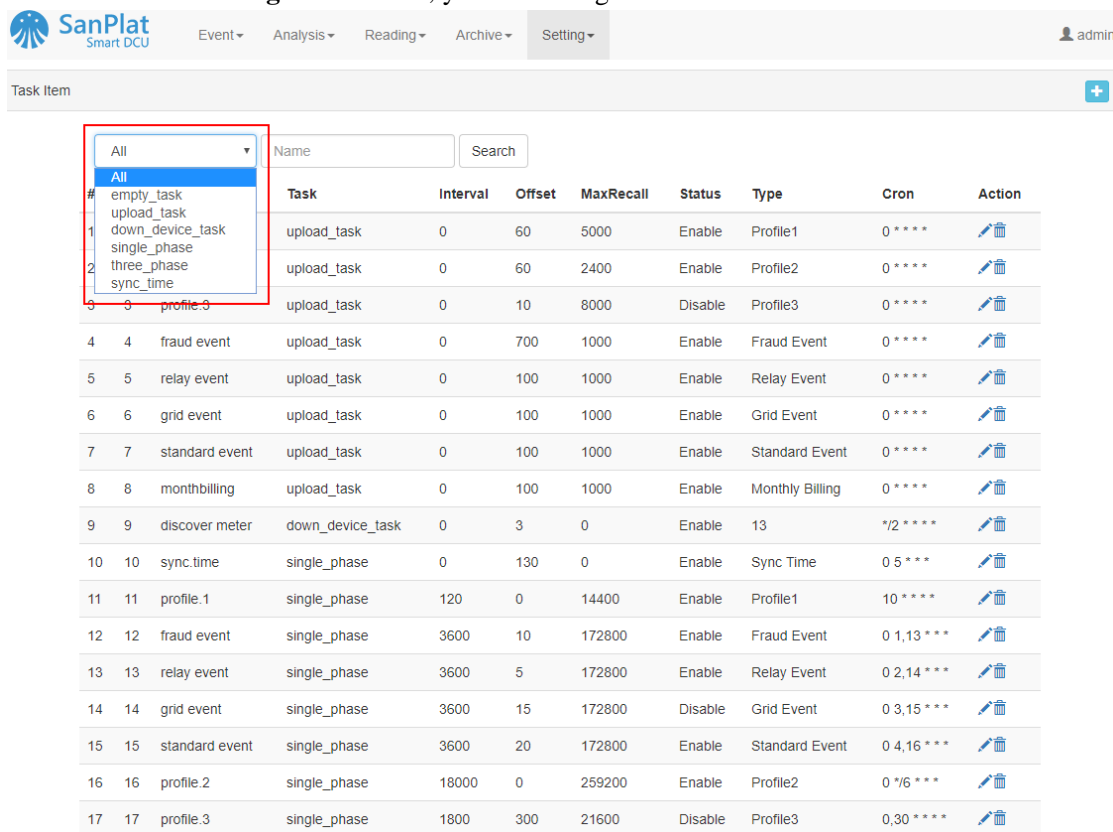
**single\_phase** Task group of collecting single-phase meter data.

**three\_phase** Task group of collecting three-phase meter data.



































**sync\_time** Task group of synchronizing meter time by broadcast.

## 4.2 Configuration of Task Item




Click menu **Setting-> Task item**, you can configure task items. As shown:





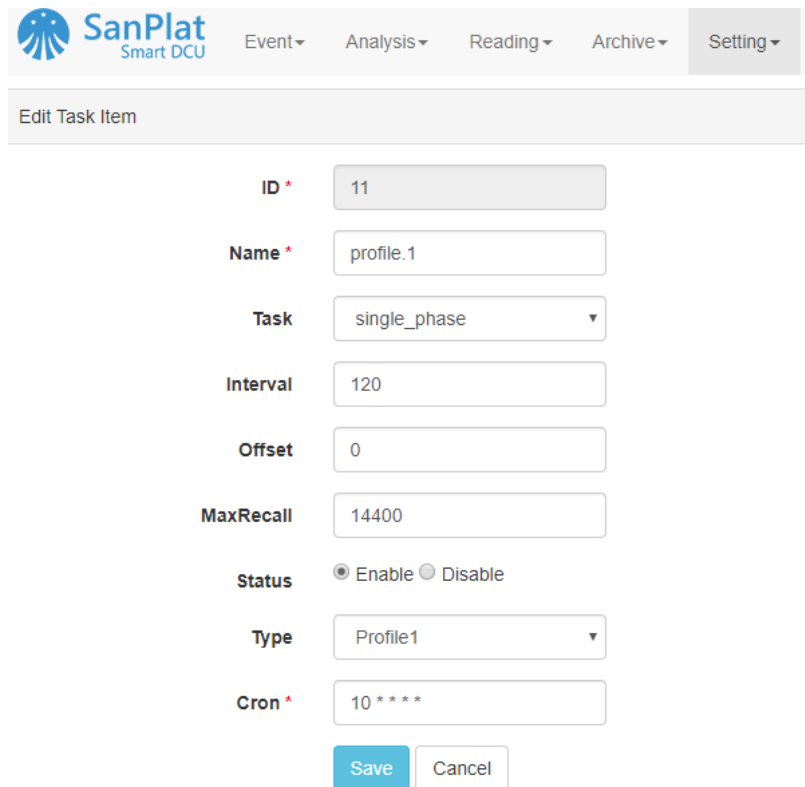
The screenshot shows the 'Task Item' configuration page in the SanPlat Smart DCU interface. The page has a navigation bar with 'Setting' selected and a user profile 'admin'. Below the navigation bar, there is a search bar and a table of task items. A red box highlights a dropdown menu in the upper left corner of the table area, which contains the following options: 'All', 'empty\_task', 'upload\_task', 'down\_device\_task', 'single\_phase', 'three\_phase', and 'sync\_time'. The table below has columns for '#', 'Name', 'Task', 'Interval', 'Offset', 'MaxRecall', 'Status', 'Type', 'Cron', and 'Action'. The table contains 17 rows of task items, each with a unique ID and name, and corresponding configuration values.

#	Name	Task	Interval	Offset	MaxRecall	Status	Type	Cron	Action
1	upload_task	upload_task	0	60	5000	Enable	Profile1	0 ****	 
2	upload_task	upload_task	0	60	2400	Enable	Profile2	0 ****	 
3	upload_task	upload_task	0	10	8000	Disable	Profile3	0 ****	 
4	fraud event	upload_task	0	700	1000	Enable	Fraud Event	0 ****	 
5	relay event	upload_task	0	100	1000	Enable	Relay Event	0 ****	 
6	grid event	upload_task	0	100	1000	Enable	Grid Event	0 ****	 
7	standard event	upload_task	0	100	1000	Enable	Standard Event	0 ****	 
8	monthbilling	upload_task	0	100	1000	Enable	Monthly Billing	0 ****	 
9	discover meter	down_device_task	0	3	0	Enable	13	* /2 ****	 
10	sync.time	single_phase	0	130	0	Enable	Sync Time	0 5 ****	 
11	profile.1	single_phase	120	0	14400	Enable	Profile1	10 ****	 
12	fraud event	single_phase	3600	10	172800	Enable	Fraud Event	0 1,13 ****	 
13	relay event	single_phase	3600	5	172800	Enable	Relay Event	0 2,14 ****	 
14	grid event	single_phase	3600	15	172800	Disable	Grid Event	0 3,15 ****	 
15	standard event	single_phase	3600	20	172800	Enable	Standard Event	0 4,16 ****	 
16	profile.2	single_phase	18000	0	259200	Enable	Profile2	0 * /6 ***	 
17	profile.3	single_phase	1800	300	21600	Disable	Profile3	0,30 ****	 

Click drop-down menu in the upper left corner of page, select task group, then click "Search" button to filter task groups.

Click “” to add a task item. Click “” to edit the task item. Click “” to delete the task item.

Click “” or “” to enter into the edit page. As shown:



The screenshot shows the 'Edit Task Item' page in the SanPlat Smart DCU interface. The page has a header with the SanPlat logo and navigation tabs: Event, Analysis, Reading, Archive, and Setting. The main form contains the following fields:

- ID \***: 11
- Name \***: profile.1
- Task**: single\_phase
- Interval**: 120
- Offset**: 0
- MaxRecall**: 14400
- Status**:  Enable  Disable
- Type**: Profile1
- Cron \***: 10 \* \* \* \*

At the bottom of the form are two buttons: 'Save' and 'Cancel'.

- Name** The name of the task item.
- Task** Select which task group the task item belongs to.
- Type** Select which type of data will be collected from meter.
- Status** Enable or disable current task item.
- Cron** The Cron-expression determines when the task is triggered and the triggering frequency. Minimum unit is minute. Rule of Cron-expression will be shown as follows.
- Offset** It defines how long the task will be delayed when task triggers. The time unit is second. You can use “offset” to organize the data collection order for different task items which are in the same task group.
- Interval** Set minimum period of task. The unit is second. When the task period is very short, less than Interval, the task will be ignored. This parameter used to limit trigger frequency of task.
- MaxRecall** It is a time period for data capture that starts from the task trigger time and counts backwards. This parameter indicates the length of this period. Time unit is second. It will determine the retry times of capturing a single record

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from meter.

Examples of tasks in the above picture are:

- 1) Collect data Profile1 from single phase meter
- 2) Collect data at 10th minute of every hour, without delay
- 3) Collect data of the past 4 hours ( $14400/3600 = 4$ )
- 4) The minimum period of task is 2 minutes

**Note: Reboot is required if any parameter changed. The configuration takes effect after the restart.**

### 4.3 Cron Expression

The Cron expression is a string, separated by 4 spaces, divided into 5 fields, each representing a different time unit.

Cron expression format:

```
10 * * * *
| | | | +---week
| | | +-----month
| | +-----day
| +-----hour
+-----minute
```

The range of values allowed in each field are as follows:

minutes	0-59 , */
hours	0-23 , */
days	1-31 , */
months	1-12 , */
weeks	0-6 , */ 0 means Sunday

Numbers Indicates the trigger time of task.

, Commas are used to separate items of a list.

\* Means any time

/ Slashes can be combined with ranges to specify step values.

**Example of Cron expression:**

0 1 \* \* \* means task will be executed at 1:00 am every day

30 23 \* \* \* means task will be executed at 23:30 every day

0 1 1 \* \* means task will be executed at 1:00 am on the 1st of each month

- \* / 5 \* \* \* \* means task executed every 5 minutes
- 0 \* / 2 \* \* \* means task executed every 2 hours
- 0 2 / 4 \* \* \* means task starts at 2:00 and is executed every 4 hours
- 26,29,33 \* \* \* \* means task executed at 26th minute, 29th minute and 33th minute every hour
- 0 0,13,18,21 \* \* \* means task executed at 0:00, 13:00, 18:00 and 21:00 every day

## 5. Configuration of HES Communication

### 5.1 Configuration of HES IP address

In Setting-> Channel Attribution page

#	ID	Channel	Key	Value	Description	Action
1	1	485_1	dev.file	/dev/ttyS3	485	
2	2	485_1	baud	9600		
3	3	485_1	databits	8		
4	4	485_1	stopbits	1		
5	5	485_1	parity	N		
6	6	tcp_client	ip.1	61.130.109.125		
7	7	tcp_client	port.1	2351		
8	8	tcp_client	ip.2	10.201.4.13		
9	9	tcp_client	port.2	2354		
10	10	tcp_client	ip.size	1		
11	11	tcp_client	connect.timeout	5		
12	12	reading_module	dev.file	/dev/ttyS2	PLC	
13	13	reading_module	baud	9600		
14	14	reading_module	databits	8		
15	15	reading_module	stopbits	1		
16	16	reading_module	parity	E		
17	19	tcp_server	idle.timeout	30	unit: second	
18	20	tcp_server	listen.port	9201	listening port	

#### tcp\_client

**ip.1** IP address of HES

**ip.port** Service port of HES

#### tcp\_server

**listen.port** Service port when DCU works as server mode

**idle.timeout** Timeout on client socket connection. If idle time is longer than this value, socket will be disconnected. The unit of value is second

## 5.2 Server Mode/Client Mode

In **Setting->Protocol Attribution** page, there is parameter list of protocols.

#	ID	Protocol	Key	Value	Description	Action
1	1	dlms_down	max.bytes	80	max bytes per packet	
2	2	dlms_down	send.retry	3	max retry after fail reading	
3	3	dlms_down	send.timeout	10	reading timeout	
4	4	dlms_down	send.silent	2	silent window after success	
5	5	dlms_up	max.bytes	1024	max bytes per packet	
6	6	dlms_up	send.retry	3	max retry	
7	7	dlms_up	send.timeout	10	timeout after send	
8	8	dlms_up	server.mode	0	1:TCP server. 0:TCP client	
9	9	dlms_up	heartbeat	300	interval of heartbeat	
10	10	376.2	max.bytes	80	max bytes per packet	
11	11	376.2	send.retry	2	max retry after fail reading	

The parameter “**server.mode**” in “**dlms\_up**” protocol determines whether the DCU works in client mode or server mode .

“**0**”: client mode

”**1**”: server mode

## 6. Configuration of Communication

### 6.1 Configuration of Ethernet

In **Setting->System** page, parameters with the name beginning with “eth” is for Ethernet:

42	eth.ipv4	10.201.4.200	local ip address, can be set to dhcp	
43	eth.netmask	255.255.255.0	netmask	
44	eth.default.gateway	10.201.4.1	default gateway	

**eth.ipv4** IP address of DCU. This parameter will enable DHCP function if it is set to lower-case “dhcp”. IP address will be set by DHCP server

dynamically.

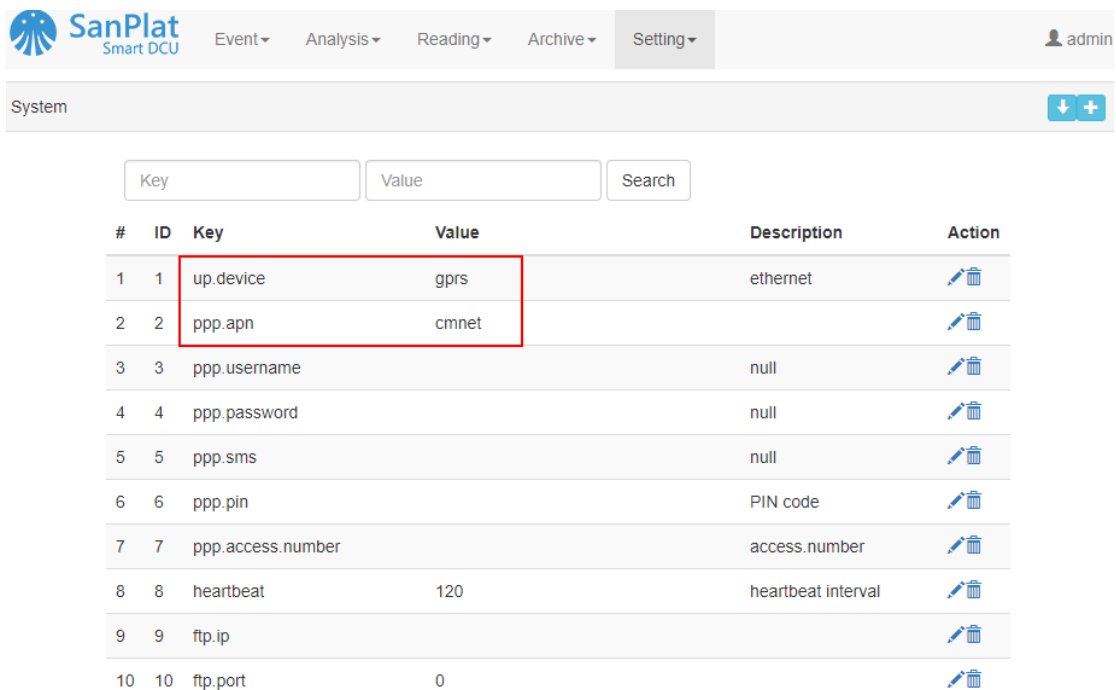
**eth.netmask** Subnet mask of DCU. If DHCP function turns on, this parameter will be invalid

**eht.default.gateway** Gateway of DCU. If DHCP function turns on, this parameter will be invalid





















**Note:** Before turn on DHCP function, please make sure that there is available DHCP server in network.

## 6.2 GPRS Parameter

In **Setting->System** page, GPRS parameters are shown as below:



The screenshot shows the SanPlat Smart DCU web interface. The top navigation bar includes the SanPlat logo, a user profile for 'admin', and several menu items: Event, Analysis, Reading, Archive, and Setting. The main content area is titled 'System' and contains a table of GPRS parameters. The table has columns for #, ID, Key, Value, Description, and Action. The first two rows are highlighted with a red border: row 1 with Key 'up.device' and Value 'gprs', and row 2 with Key 'ppp.apn' and Value 'cmnet'. Other rows include 'ppp.username' (null), 'ppp.password' (null), 'ppp.sms' (null), 'ppp.pin' (PIN code), 'ppp.access.number' (access.number), 'heartbeat' (120), and 'ftp.ip' (null).

#	ID	Key	Value	Description	Action
1	1	up.device	gprs	ethernet	 
2	2	ppp.apn	cmnet		 
3	3	ppp.username		null	 
4	4	ppp.password		null	 
5	5	ppp.sms		null	 
6	6	ppp.pin		PIN code	 
7	7	ppp.access.number		access.number	 
8	8	heartbeat	120	heartbeat interval	 
9	9	ftp.ip			 
10	10	ftp.port	0		 

**up.device** This parameter will enable the GPRS module if it is set to lower-case “gprs”. DCU will connect to GPRS network automatically after it starts up (SIM card is required). If set this parameter to other value, the GPRS module will be turned off.

**ppp.apn** APN server address

**ppp.username** GPRS user name

**ppp.password** GPRS password

**heartbeat** GPRS heartbeat interval (only take effect in client mode)

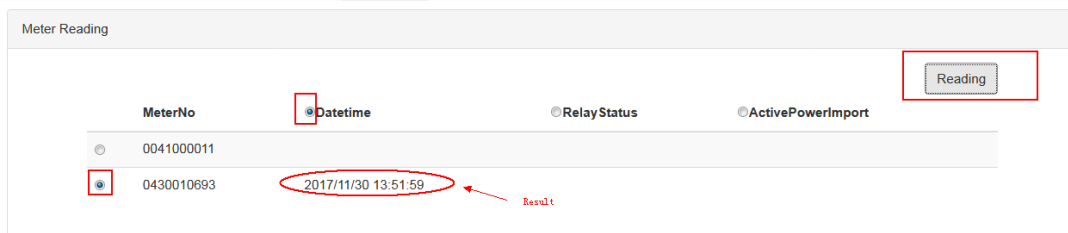


27	4G_GPRS.workmode	AUTO	4G workmode	 
28	4G_GPRS.reset_en	0	enable 4G module auto reset	 
29	4G_GPRS.reset_time	11:15	time of 4G module auto reset	 
30	4G_GPRS.HeartBeat_enable	1	4G heartbeat enable	 

- 4G\_GPRS.work mode** GPRS network mode. Can be set as AUTO/4G/3G/2G
- 4G\_GPRS.reset\_en** GPRS module daily reset function switch.
- 4G\_GPRS.reset\_time** GPRS module daily reset time.
- 4G\_GPRS.HeartBeat\_enable** GPRS heartbeat switch. Reserved parameter, only take effect in client mode. It will be invalid in server mode.

## 7. Manually Reading Meter

In **Reading->Meter** page, we can read data from meter manually. This function can be used to test the connection between meter and DCU.

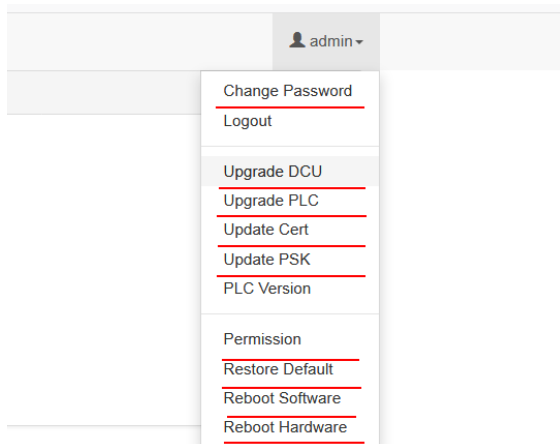


Operation procedure:

- 1) Select meter number and data type.
- 2) Click “Reading” button to read date from meter.

## 8. Other Operations

Account information menu shows other DCU functions as follow:



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**1) Change Password**

Modify password of tech account.

**2) Upgrade DCU**

Upgrade DCU firmware locally.

**3) Upgrade PLC**

Upgrade G3-PLC firmware locally.

**4) Update PSK**

Set PSK and activate time.

**5) Permission**

Configure permissions of tech account.

**6) Restore Default**

Restore DCU parameters as factory default.

**Note: This operation will clear all the data in DCU. Please make sure that all the useful data has been uploaded to HES before make this action.**

**7) Reboot Software**

Restart DCU software

**8) Reboot Hardware**

Restart DCU hardware