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E-LINTER PV-CSP

Open API Manual

V211004-R

http://www.e-linter.com

Revision History

Date	Author	Version	Description
2018/09/17	Ken.cui	V180917-R	First Release
2020/04/29	Chengze	V200429-R	Update Inverter param setting
2021/03/13	Chengze	V210315-R	1.API manual style modification. 2. Update user login mode 3. When getting data, you need to pass the usertoken
2021/09/22	Hanweigang	V210922-R	1. Adjust global interface address 2. Add power station operation interfaces 3. Add inverter data interfaces
2021/10/04	Hanweigang	V211004-R	1. Modify field description of Work mode setting.

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1. Brief

1.1. Purpose

The E-linter CSP Platform Open API access to get data of PV plant, you can get data from this API, and embed them in your application or website, to customize your personalized presentation.

This document will explain how to use the APIs, for developer and maintainer.

1.2. Range

This document applies only to manufacturers a partnership with E-LINTER of communicationbetween the device and its E-LINTER of SP. E-LINTER have the final interpretation of the agreement.

1.3. Abbreviations and Definitions

- Client — and all third-party devices or server calls E-LINTER services.
- SP — E-LINTER cloud services platform.
- HTTPS — Hypertext Transfer Protocol over Secure Socket Layer.
- JSON — lightweight data interchange format RFC https://tools.ietf.org/html/rfc7159
- GET — Http protocol method, points to the server requesting to read data.
- POST — Http protocol method, submit data point to the server.

2. Design Summary

2.1. Global agreement

- The Client and the SP communicate via HTTP protocol.
- '{}' is a placeholder, without the addition of practical use.
- Timestamp format yyyy-MM-ddTHH:mm:ssZ.

2.2. Request

2.2.1. Request path

http://openapi.inteless.com/v1/{resource}?{queryString}

- The current protocol version v1
- 'resource' is resource name, Please see the Api list for details.
- {queryString} in key / value must be processed by urlencode, and must be UTF-8

2.2.2. Request method

- Parameters submission: application / x-www-form-urlencoded

2.2.3. Request header

Authorization: "Bearer"+access_token , The access_token will be returned after login.

2.3. Response

- Response packet format is JSON, output is the UTF-8 encoding.
- Header of the response packet in Content-Type header will be set to: application /json; charset = UTF-8.

2.3.1. Response format: JSON

Table 2-3-1 respond to public information

No	Parameter	Type	Necessary	Description
1	code	int	Y	error code 0 - Success Non-0 - Failed
2	message	String	Y	Error message, details refer to error code definitions.

3	data	Array	Y	See detailed Parametersfor each API to return.

Example response:

- Success

```
{
  “code”:0,
  “message”:”success”,“data”:[
            “status”:”00”
      ]
}
```

- Failure

```
{
  “code”:3,
  “message”: "Insufficient permissions",
  “result”:[]
}
```

2.4. Operating environment

See Header “X-Ca-Stage” of 5.2.

2.5. Error code

API error code may be divided into two parts, Http protocol layer and application layer statuscode status code. 400 series indicates that the client request methods such as mass participation or wrong, SP 500 series represents an error. The following error codes defined inthe application layer.

Table 2-4 Error Codes

Error code	Description
1	no record
2	Signature error
3	Parameter format error

3. API List

3.1. User

3.1.1. Get token

API Description: Get token

Resource Name: oauth/token

Request method: POST

Table 3-1-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	username	string	Y	account
2	password	string	Y	password
3	grant_type	string	Y	Login mode, default “password”
4	client_id	string	Y	Service unique identifier, default “csp-web”

Table 3-1-2 Response Parameters

No	Parameter	Type	Description
1	access_token	string	access token, each subsequent request should be accompanied by this token
2	expires_in	int	expire time of access token, unit is seconds
3	refresh_token	string	refresh token, the function is to obtain a new token after theaccess token has expired
4	scope	string	scope of service project, default “all”
5	token_type	string	token type

3.1.2. Check user

API Description: Check User

Resource Name: anonymous/checkAccount

Request method: GET

Table 3-2-1 request Parameters:

No	Parameter	Type	Necessary	Description
1	username	String	Y	account

3.1.3. Create user

API Description: Create a User

Resource Name: anonymous/signup

Request mode: POST

Table 3-3-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	username	String	Y	account
2	password	String	Y	password
3	code	String	Y	verification code

3.1.4. Edit user

API Description: Edit User

Resource Name: user /{userId}

Request mode: POST

Table 3-4-1 request Parameters:

No	Parameter	Type	Necessary	Description
1	nickname	string	Y	nickname
2	avatar	string	N	avatar url
3	gender	int	Y	gender
4	mobile	string	N	mobile
5	tempUnit	int	Y	Choose temp unit(0-℃,1-℉)

3.1.5. Upload avatar

API Description: upload avatar

Resource Name: user/{userId}/avatar

Request mode: POST

Table 3-5-1 request Parameters:

No	Parameter	Type	Necessary	Description
1	file	File	Y	image

Table 3-5-2 response Parameters

No	Parameter	Type	Description
1	url	string	image path

3.1.6. Get verification code

API Description: get verification code

Resource Name: anonymous/getCode

Request method: GET

Table 3-6-1 request Parameters:

No	Parameter	Type	Necessary	Description
1	username	String	Y	account number
2	lan	string	Y	language (Chinese: zh, English: en)

3.1.7. Retrieve password

API Description: retrieve passwod

Resource Name: anonymous/resetPwd

Request mode: POST

Table 3-7-1 request Parameters:

No	Parameter	Type	Necessary	Description
1	username	String	Y	account number
2	password	String	Y	password
4	code	string	Y	verification code

3.1.8. Change password

API Description: Change password

Resource Name: user/{userId}/pwd

Request mode: POST

Table 3-8-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	oriPwd	String	Y	password
2	newPwd	String	Y	new password

3.2. Plant

3.2.1. Get plant list

API Description: Discover the next power station account

Resource Name: plants

Request method: GET

Table 3-2-1-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	page	int	Y	page, default 1
2	limit	int	Y	the number of records per page, default 20
3	status	string	N	plant status(0-offline,1-normal,2-warning,3-fault)
4	name	int	N	plant name

Table 3-2-1-2 Response Parameters

No	Parameter	Type	Description
1	pageNumber	int	current page
2	pageSize	int	page size
3	total	int	total
4	infos	array	data domain

Table 3-2-1-3 Response Parameters

No	Parameter	Type	Description
1	id	int	plant ID
2	name	string	plant name
3	thumbUrl	string	plant thumbnail url
4	status	int	plant status (0-offline,1-normal,2-warning,3-fault)
5	type	int	plant type: 1 Grid-Tied,0 ESS(DC), 2 ESS(AC)
6	address	string	plant address
7	pac	decimal	current power (kW)
8	efficiency	decimal	the plant production efficacy
9	etoday	decimal	today electricity (kwh)
10	etotal	decimal	total generating capacity (kWh)
11	updateAt	string	update time
12	plantPermission	array	operation authority to the power station, for example “station.edit”

3.2.2. Get plant detail

API Description: Get plant detail

Resource Name: plant/{plantId}

Request method: GET

Table 3-2-2-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	lan	string	Y	Language, Chinese: zh, English: en

Table 3-2-2-2 Response Parameters

No	Parameter	Type	Description
1	id	int	plant ID
2	name	string	plant name
3	totalPower	decimal	installed capacity
4	thumbUrl	string	plant thumbnail url
5	joinDate	string	the plant operating date
6	type	int	plant type (1 Grid-Tied,0 ESS(DC), 2 ESS(AC))
7	status	int	plant status (0-offline,1-normal,2-warning,3-fault)
8	charges	array	pricing mode domain
9	lon	decimal	longitude

10	lat	decimal	latitude
11	address	string	Plant address
12	master	object	see master domain
13	currency	object	see dict domain
14	timezone	object	see dict domain
15	realtime	object	Realtime domain, see table 3-2-3-1
16	createAt	string	create time
17	phone	string	phone
18	email	string	email
19	installer	string	installer
20	principal	string	principal
21	invest	double	investment costs
22	plantPermission	array	operation authority to the power station, for example “station.edit”

Table 3-2-2-3 Master Domain

No	Parameter	Type	Description
1	id	long	Owner id
2	mobile	string	mobile
3	nickname	string	Nickname

Table 3-2-2-3 Dict Domain

No	Parameter	Type	Description
1	id	long	id
2	code	string	code
3	text	string	text

3.2.3. Get plant realtime

API Description: Get plant realtime

Resource Name: plant/{plantId}/realtime

Request method: GET

Table 3-2-3-1 Response Parameters

No	Parameter	Type	Description
1	pac	decimal	Current power(kW)
2	etoday	decimal	today electricity (kWh)
3	emonth	decimal	month electricity (kWh)
4	eyear	decimal	year electricity (kWh)
5	etotal	decimal	total generating capacity (kWh)
6	income	decimal	today income
7	efficiency	decimal	the plant production efficacy
8	updateAt	decimal	update time
9	currency	object	currency domain, see table 3-2-2-5
10	updateAt	string	update time
11	totalPower	string	installed capacity

3.2.4. Get plant flow

API Description: Analyzing the data flow.

Resource Name: plant/energy/{plantId}/flow

Request method: get

Table 3-2-4-1 Response Parameters

No	Parameter	Type	Description
1	toGrid	boolean	true: Inverter to grid, false: Not Flow
2	gridTo	boolean	true: grid to inverter, false: No Flow
3	toLoad	boolean	true: inverter to grid, false: No Flow
4	pvTo	boolean	true: pv to inverter, false: No Flow
5	batTo	boolean	true: battery to inverter, false: No Flow
6	toBat	boolean	true: inverter to battery, false: No Flow
7	genTo	boolean	true: generator to inverter, false: No Flow
8	minTo	boolean	true: Min Inverter to inverter, false: No Flow
9	battPower	int	Battery power
10	soc	int	Battery SOC
11	loadOrEpsPower	int	Load power
12	gridOrMeterPower	int	Grid power
13	pvPower	int	pv power
14	genPower	int	Generator power
15	minPower	int	Min Inverter power
16	existsGen	boolean	true: Exist Generator, false: Hide Generator
17	existsMin	boolean	true: Show Min Inverter, false: Hide Min Inverter

3.2.5. Get plant inverter

API Description: Query the inverter specified power station

Resource Name: plant/{plantId}/inverters

Request method: GET

Table 3-2-5-1 Request Parameters

No	Parameter	Type	Necessary
1	page	int	Y
2	limit	Int	Y
3	status	int	N

4	sn	string	N
5	type	int	N

Table 3-2-5-2 Response Parameters

No	Parameter	Type	Description
1	sn	string	SN Inverter
2	alias	string	Alias
3	gsn	string	SN gateway
4	status	Int	Inverter status (0 offline, 1 normal, 2 warning, 3 fault , 4 upgrading)
5	type	int	Inverter type (1:grid 2:ess 8:meteorological ,-1:ALL, -2: not meteorological)
6	commTypeName	string	communication type name
7	version	object	version domain
8	model	string	model
9	pac	decimal	current power(W)
10	etoday	decimal	today electricity (kWh)
11	etotal	decimal	total generating capacity (kWh)
12	updateAt	string	update time

Table 3-2-5-3 version domain parameter

No	Parameter	Type	Description
1	masterVer	string	Master version
2	softVer	string	Software version
3	hardVer	string	Hardware version
4	hmiVer	string	Him version
5	bmsVer	string	Bms version

3.2.6. Count plant status

API Description: Count plant status

Resource Name: user/{userId}/plantCount

Request method: GET

Table 3-2-6-1 Response Parameters

No	Parameter	Type	Description
1	total	int	Total number
2	offline	int	Offline number

3	normal	int	Normal number
4	fault	int	Fault number
5	warning	int	Warning numbers

3.2.7. Get day chart

API Description: Query day chart

Resource Name: plant/energy/{plantId}/day

Request method: GET

Table 3-2-7-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	string	Y	Date pattern”yyyy-MM-dd”
2	lan	string	Y	Language, English: en, China: zh

Table 3-2-7-2 Response Parameters

No	Parameter	Type	Description
1	infos	array	Data domain

Table 3-2-7-3 data domain Parameter

No	Parameter	Type	Description
1	label	string	Value description
2	unit	string	Value unit
3	records	array	Data1 domian

Table 3-2-7-4 data1 domain Parameter

No	Parameter	Type	Description
1	time	string	Time, pattern “mm:ss”
2	value	string	value

3.2.8. Get month chart

API Description: Query month chart

Resource Name: plant/energy/{plantId}/month

Request method: GET

Table 3-2-8-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	string	Y	Pattern yyyy-MM
2	lan	string	Y	Language, English: en, China: zh

3.2.9. Get year chart

API Description: Query year chart

Resource Name: plant/energy/{plantId}/year

Request method: GET

Table 3-2-9-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	string	Y	Pattern yyyy
2	lan	string	Y	Language, English: en, China: zh

3.2.10. Get total chart

API Description: Query total chart

Resource Name: plant/energy/{plantId}/total

Request method: GET

Table 3-2-10-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	lan	string	Y	Language, English: en, China: zh

3.2.11. Create plant

API Description: Create plant

Resource Name: plant

Request method: POST

Table 3-2-11-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	gsn	string	Y	Gateway sn
2	key	string	Y	Gateway key
3	plantInfo	object	Y	See plant info domain
4	plantIncome	object	Y	See plant income domain
5	plantContacts	object	Y	See plant contacts domain

Table 3-2-11-2 Plant info Domain

No	Parameter	Type	Necessary	Description
1	name	string	Y	plant name
2	totalPower	decimal	Y	installed capacity, the minimum value is 1.
3	thumbUrl	string	N	plant thumbnail url
4	joinDate	string	Y	the plant operating date
5	lon	decimal	Y	longitude
6	lat	decimal	Y	latitude
7	address	string	Y	plant address
8	installer	string	N	Account of installer
9	timezone	long	Y	Id of timezone

Table 3-2-11-3 Plant income Domain

No	Parameter	Type	Necessary	Description
1	currency	int	Y	Id of currency
2	charges	array	Y	See price domain
3	invest	decimal	Y	Investment costs

Table 3-2-11-4 Price Domain

No	Parameter	Type	Necessary	Description
1	startRange	string	N	start range. (Required when type is equal to 2)
2	endRange	string	N	end range. (Required when type is equal to 2)
3	price	string	Y	price
4	type	decimal	Y	Income type. (1-Fixed price,2- Interval price)

Table 3-2-11-5 Plant contacts Domain

No	Parameter	Type	Necessary	Description
1	principal	string	Y	Account of principal
2	phone	string	Y	Phone of principal
3	email	string	N	Email of principal

3.2.12. Edit plant info

API Description: Edit plant info

Resource Name: plant/{plantId}/info

Request method: POST

Request Parameters see Table 3-2-11-2

3.2.13. Edit plant income

API Description: Edit plant income

Resource Name: plant/{plantId}/income

Request method: POST

Request Parameters see Table 3-2-11-3

3.2.14. Edit plant contacts

API Description: Edit plant contacts

Resource Name: plant/{plantId}/contacts

Request method: POST

Request Parameters see Table 3-2-11-5

3.2.15. Add gateway

API Description: Add gateway

Resource Name: plant/{plantId}/gateway

Request method: POST

Table 3-2-15-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	gsn	string	Y	gateway sn
2	key	string	Y	gateway key

3.2.16. Delete plant

API Description: Delete plant

Resource Name: plant/{plantId}/delete

Request method: POST

3.3. Inverter

3.3.1. Status count

API Desc: Inverter status count

Resource name: /inverters/count

Request method: GET

Table 3-3-1-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	type	int	Y	1: grid 2: ess 8: meteorological , -1: ALL, -2: not meteorological

Table 3-3-1-2 Response Parameters

No	Param	Type	Description
1	total	Int	Total
2	normal	Int	Normal
3	warning	Int	Warning
4	fault	Int	Fault
5	offline	Int	Offline

3.3.2. List

API Desc: Inverter list

Resource name: /inverters

Request method: GET

Table 3-3-2-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	page	int	Y	current page number
2	limit	int	Y	page size
3	status	int	N	0-offline,1-normal,2-warning,3-fault ,4upgrading
4	sn	string	N	
5	plantId	int	N	
6	type	int	Y	1: grid, 2: ess, -1:all
7	gsn	string	N	gateway sn, left like
8	softVer	string	N	soft version, left like
9	agentCompanyId	int	N	Customer id, default=-1
10	hmiVer	string	N	HIMI version

Table 3-3-2-2 Response Parameters

No	Parameter	Type	Description
1	sn	string	serial number
2	alias	string	
3	gsn	string	gateway serial number

4	status	int	0 offline, 1 normal, 2 warning, 3 fault, 4 upgrading
5	type	int	1 inverter, 2 ess module, 3 micro inverter, 4 convert, 5 meter, 6 battery
6	plant	object	see [Table 3-3-2-3 Plant]
7	pac	decimal	Power
8	etoday	decimal	daily production
9	etotal	decimal	total production
10	updateAt	string	data update time
11	custCode	int	protocol code
12	opened	int	1: opened, 0: closed
13	commTypeName	string	Comm Type Name
14	version	object	see [Table 3-3-2-3 Version]
15	model	string	Model

Table 3-3-2-2 Plant

No	Parameter	Type	Description
1	id	int	
2	name	string	plant name
3	type	int	plant type, 1 Grid-Tied, 0 Energy Storage System (DC), 2 Energy Storage System (AC)

Table 3-3-2-3 Version

No	Parameter	Type	Description
1	masterVer	string	master software version (MCU)
2	softVer	string	slave software version
3	hardVer	string	hardware version
4	hmiVer	string	COMM
5	bmsVer	string	

3.3.3. Set alias

API Desc: Set alias

Resource name: /inverter/{sn}/alias

Request method: Post

Table 3-3-2-2 Response Parameters

No	Parameter	Type	Necessary	Description
1	alias	String	Y	Alias

3.3.4. Delete

API Desc: Delete inverter

Resource name: /inverter/{sn}/delete

Request method: Post

3.3.5. Output realtime data

API Desc: Output realtime data

Resource name:/inverter/{sn}/realtime/output

Request method: Get

Table 3-3-5-1 Response Parameters

No	Parameter	Type	Description
1	vac1	string	ac voltage 1
2	vac2	string	ac voltage 2
3	vac3	string	ac voltage 3
4	iac1	string	ac current 1
5	iac2	string	ac current 2
6	iac3	string	ac current 3
7	fac	string	ac frequence
8	pInv	string	ac side total active power

3.3.6. Output Power,Vac,Iac,Fac,Ppv

API Desc: Output chart data

Resource name:/inverter/{sn}/output/day

Request method: Get

Table 3-3-6-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy-MM-dd'
2	lan	String	Y	i18n: zh , en
3	column	String	Y	Output power column: p_total Vac column: vac1,vac2,vac3 (There are three parameters) Iac column: iac1,iac2,iac3 (There are three parameters) Fac column: fac Ppv column: pac

Table 3-3-6-2 Response Parameters

No	Parameter	Type	Description
1	label	string	parameter's i18n name

2	unit	string	
3	records	list	same as plant chart, include time value

3.3.7. Generation month

API Desc: Generation month

Resource name:/inverter/{sn}/month

Request method: Get

Table 3-3-7-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy-MM'
2	lan	String	Y	i18n: zh , en

Response: See Table 3-3-6-2

3.3.8. Generation year

API Desc: Generation year

Resource name:/inverter/{sn}/year

Request method: Get

Table 3-3-8-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy'
2	lan	String	Y	i18n: zh , en

Response: See Table 3-3-6-2

3.3.9. Generation total

API Desc: Generation total

Resource name:/inverter/{sn}/total

Request method: Get

Table 3-3-9-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	lan	String	Y	i18n: zh , en

Response: See Table 3-3-6-2

3.3.10. Input realtime data

API Desc: Input realtime data

Resource name:/inverter/{sn}/realtime/input

Request method: Get

Table 3-3-10-1 Response Parameters

No	Parameter	Type	Description
1	etoday	string	Today generation
2	etotal	string	Total generation
3	pac	string	Active power
4	pvIV	array	See DC Data

Table 3-3-10-1 DC Data

No	Parameter	Type	Description
1	pvNo	string	DC number
2	vpv	string	DC voltage
3	ipv	string	DC current
4	ppv	string	DC power

3.3.11. Vpv,Ipv

API Desc: Inverter data chart

Resource name:/inverter/{sn}/input/day

Request method: Get

Table 3-3-11-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy-MM-dd'
2	lan	String	Y	i18n: zh , en
3	column	String	Y	Vpv column: vpv Ipv column: ipv

Response parameters see table 3-3-6-2

3.4. Grid

3.4.1. Realtime data

API Desc: Realtime data

Resource name:/inverter/grid/{sn}/realtime

Request method: Get

Table 3-4-1-1 Request Parameters

No	Parameter	Type	Description
1	vac1	string	grid voltage 1
2	vac2	string	grid voltage 2

3	vac3	string	grid voltage 3
4	iac1	string	grid current 1
5	iac2	string	grid current 2
6	iac3	string	grid current 3
7	pac1	string	grid power 1
8	pac2	string	grid power 2
9	pac3	string	grid power 3
10	fac	string	grid frequence
11	pac	string	grid side total active power
12	status	int	-1: Grid Export 0: -- 1: Grid Import
13	etodayFrom	string	etoday from grid
14	etodayTo	string	etoday to grid
15	etotalFrom	string	etotal from grid
16	etotalTo	string	etotal to grid
17	qac	string	grid side total reactive power
18	pf	string	power factor
19	externalLimter1Power	string	External Limter1 Power
20	externalLimter2Power	string	External Limter2 Power

3.4.2. Daily power

API Desc: Daily power

Resource name:/inverter/grid/{sn}/day

Request Method: Get

Table 3-4-2-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy-MM-dd'
2	lan	String	Y	i18n: zh , en
3	column	String	Y	Column= pac

Table 3-4-2-2 Response Parameters

No	Parameter	Type	Description
1	name	string	parameter name
2	label	string	parameter's i18n name
3	unit	string	
4	records	list	same as plant chart, include time value

3.4.3. Generation month

API Desc: Generation month

Resource name: /inverter/grid/{sn}/month

Request method: Get

Table 3-4-3-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy-MM'
2	lan	String	Y	i18n: zh , en

Response: See Table 3-4-2-2

3.4.4. Generation year

API Desc: Generation month

Resource name:/inverter/grid/{sn}/year

Request method: Get

Table 3-4-4-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy'
2	lan	String	Y	i18n: zh , en

Response: See Table 3-4-2-2

3.4.5. Generation total

API Desc: Generation total

Resource name:/inverter/grid/{sn}/total

Request method: Get

Table 3-4-5-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	lan	String	Y	i18n: zh , en

Response: See Table 3-4-2-2

3.5. Battery

3.5.1. Realtime data

API Desc: Battery realtime data

Resource name: /inverter/battery/{sn}/realtime

Request method: Get

Table 3-5-1-1 Response Parameters

No	Parameter	Type	Necessary
1	time	string	update time
2	current	string	Current
3	voltage	string	Voltage
4	power	string	Power
5	temp	string	Temp
6	etodayChg	string	etoday charge
7	etodayDischg	string	etoday discharge
8	emonthChg	string	emonth charge
9	emonthDischg	string	emonth discharge
10	eyearChg	string	eyear charge
11	eyearDischg	string	eyear discharge
12	etotalChg	string	etotal charge
13	etotalDischg	string	etotal discharge
14	status	int	0:Static 1：Charge 2：Discharge
15	capacity	int	capacity
16	correctCap	int	correct capacity
17	type	int	0: Lead acid 1: lithium

3.5.2. Power, SOC, Voltage, Current, Temp, Capacity

API Desc: Battery chart data

Resource name: /inverter/battery/{sn}/day

Request method: Get

Table 3-5-2-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy-MM-dd'
2	lan	String	Y	i18n: zh , en

3	column	String	Y	Column: soc, p_bms ,v_bms, i_bms, t_bat, current_cap

Response parameters: See Table 3-4-2-2

3.5.3. Charge or Discharge month

API Desc: Charge or Discharge month

Resource name: /inverter/battery/{sn}/month

Request method: Get

Table 3-5-3-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format: 'yyyy-MM'
2	lan	String	Y	i18n: zh , en

Response parameters: See Table 3-4-2-2

3.5.4. Charge or Discharge year

API Desc: Charge or Discharge year

Resource name: /inverter/battery/{sn}/year

Request method: Get

Table 3-5-4-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy'
2	lan	String	Y	i18n: zh , en

Response parameters: See Table 3-4-2-2

3.5.5. Charge or Discharge total

API Desc: Charge or Discharge total

Resource name: /inverter/battery/{sn}/total

Request method: Get

Table 3-5-5-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	lan	String	Y	i18n: zh , en

Response parameters: See Table 3-4-2-2

3.6. Load

3.6.1. Load realtime

API Desc: Load realtime data

Resource name: /inverter/load/{sn}/realtime

Request method: Get

Table 3-6-1-1 Response Parameters

No	Parameter	Type	Description
1	totalUsed	string	total used generation
2	dailyUsed	string	total day generation
3	loadPower1	string	load power 1
4	loadPower2	string	load power 2
5	totalPower	string	load total power
6	loadVoltage1	string	load voltage 1
7	loadVoltage2	string	load voltage 2
8	smartLoadStatus	int	-1: -- ,0: Off 1: On

3.6.2. Load day

API Desc: Load day

Resource name: inverter/load/{sn}/day

Request method: Get

Table 3-6-2-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format:'yyyy-MM-dd'
2	lan	String	Y	i18n: zh , en
3	column	String	Y	Column= “pac”

Response parameters: See Table 3-4-2-2

3.6.3. Load month

API Desc: Load month

Resource name: /inverter/load/{sn}/month

Request method: Get

Table 3-6-3-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format: 'yyyy-MM'
2	lan	String	Y	i18n: zh , en

Response parameters: See Table 3-4-2-2

3.6.4. Load year

API Desc: Load month

Resource name:/inverter/load/{sn}/year

Request method: Get

Table 3-6-4-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	date	String	Y	format: 'yyyy'
2	lan	String	Y	i18n: zh , en

Response parameters: See Table 3-4-2-2

3.6.5. Load total

API Desc: Load month

Resource name:/inverter/load/{sn}/total

Request method: Get

Table 3-6-5-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	lan	String	Y	i18n: zh , en

Response parameters: See Table 3-4-2-2

3.7. Event

3.7.1. List

API Desc: Event list

Resource name: /events

Request method: Get

Table 3-7-1-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	sn	string	N	device sn
2	plantId	int	N	
3	sdate	string	Y	Start time YYYY-MM-DD
4	edate	string	Y	End time YYYY-MM-DD
5	type	int	Y	1 info, 2 warning, 3 fault
6	page	int	Y	
7	limit	int	Y	
8	lan	string	Y	
9	nextToken	string	N	Next page

Table 3-7-1-2 Response parameters

No	Parameter	Type	Description
1	id	int	
2	sn	string	
3	time	string	
4	type	int	1 info, 2 warning, 3 fault
5	eventCode	int	
6	eventDescription	string	
7	plantName	string	
8	nextToken	string	

3.8. Work Data

3.8.1. List

API Desc: Work data list

Resource name: /workdata

Request method: Get

Table 3-8-1-1 Request Parameters

No	Parameter	Type	Necessary	Description
1	page	int	Y	current page number

2	limit	int	Y	page size
3	sn	string	Y	
4	dateRange	string	Y	yyyy-MM-dd HH:mm:ss,yyyy-MM-dd HH:mm:ss

4. Appendix

4.1. Signing key

App Key and App Secret required to apply for E-Linter. As below:

Key: 204013305
Secret: zlQJeoPRXCjDV5anS5WIH7SQPAgdVaPm

4.2. System-level Header

[Required] X-Ca-Key: App Key.

[Required] X-Ca-Signature: signature string.

[Optional] X-Ca-Stage: Operating environment. “TEST” means testing environment, “RELEASE” means production environment. Default environment is “RELEASE”;

[Optional] X-Ca-Timestamp: API caller passes the time stamp is the number of milliseconds the current time, that is, starting from January 1, 1970 has time to milliseconds, the time stamp valid for 15 minutes.

[Optional] X-Ca-Nonce: API caller generated UUID, in conjunction with anti-replay time stamp.

[Optional] Content-MD5: when a request for non-Body Form form, MD5 value may be calculated for Body Body MD5 checksum is transmitted to the gateway.

4.3. Signature verification

Organizations involved in a string of signature calculation

```
String stringToSign=
HTTPMethod + "\n" +
Accept + "\n" +                 //建议显示设置 Accept Header。当 Accept 为空时，部分 Http 客户端会给 Accept 设置默认值为 */*，导致签名校验失败。
Content-MD5 + "\n"
Content-Type + "\n" +
Date + "\n" +
Headers +
Url
```

HTTP Method all uppercase, such as POST.

Accept, Content-MD5, Content-Type, Date If you need to add an empty line break "\ n",Headers If you do not add "\ n" is empty.

- Content-MD5
  Content-MD5 MD5 value refers to the Body, only when a non-Form Form Body MD5calculation, is calculatedas:String content-MD5 = Base64.encodeBase64(MD5(bodyStream.getbytes("UTF-8")));
  bodyStream byte array.
- Headers.
  Headers signature calculation refers to the participation of the Header Key, Value stringsplicing is recommended for the beginning of the X-Ca Custom Header and signature

calculation, pay attention to the following Parameters is not involved Headers signature calculation: X-Ca-Signature, X-Ca-Signature -Headers, Accept, Content-MD5, Content-Type,Date.

Headers organization:

Header Key to the participation Headers signature calculated in accordance with thedictionary ordering the following ways splicing, if a Header of Value is empty, the HeaderKey + ":" + "\ n" to participate in the signature, the need to retain Key and colon.

```
String headers =
HeaderKey1 + ":" + HeaderValue1 + "\n"\+
HeaderKey2 + ":" + HeaderValue2 + "\n"\+
...
HeaderKeyN + ":" + HeaderValueN + "\n"
```

The Headers signature Header of Key comma split in the Header Request, Key to: X-Ca-Signature. -Headers

Url

Url means in Path + Query + Body Form Parameters, tissue Methods: Query Form + Key Parameters in accordance with the dictionary of the sorting as follows stitching, or if the Query Form Parameter is empty, Url = Path, no need to add? If a Parameter is null Value retain only the Key to participate in the signature, then add an equal sign does not require asignature.

```
String url =
Path +
"?" +
Key1 + "=" + Value1 +
"&" + Key2 + "=" + Value2 +
...
"&" + KeyN + "=" + ValueN
```

Note that Query or Form Parameters Value may have more, just take more time toparticipate in the first Value signature calculation.

4.4. Computing a signature

APP is the secret key.

```
Mac hmacSha256 = Mac.getInstance("HmacSHA256");
byte[] keyBytes = secret.getBytes("UTF-8");
hmacSha256.init(new SecretKeySpec(keyBytes, 0, keyBytes.length, "HmacSHA256"));
String sign = new String(Base64.encodeBase64(hmacSha256.doFinal(stringToSign.getBytes("UTF-8")),"UTF-8"));
```

4.5. Transfer signature

The signature calculation results into the Header Request, Key is: X-Ca-Signature.