1. 接口说明 Interface Description

1.1 topic 规范 topic specification

Topic 构成：Topic composition:

<目标对象>/<厂商标识>/<设备类型>/<协议类型>/<数据类型>/<分组>

<target object>/<vendor ID>/<device type>/<protocol type>/<data type>/<group>

1.1.1 属性规范 attribute specification

- 目标对象：标识厂商的编码，有效字符为数字（十六进制）。

Target object: The code that identifies the manufacturer, the valid characters are numbers (hexadecimal).

设备类型 Equipment type	说明 instruction
platform	平台 platform

- 厂商标识：标识厂商的编码，有效字符为数字（十六进制）。

Manufacturer ID: Code to identify the manufacturer, valid characters are numbers (hexadecimal).

- 设备类型：标识设备的类型，当前支持设备类型：

Device Type: Identifies the type of device, currently supported device types:

设备类型 Equipment type	说明 instruction
meter	表计 meter

- 协议类型：数据协议类型标识

Protocol Type: Data protocol type identifier

协议类型 Protocol Type	说明 instruction
protobuf-v1	protobuf v1协议格式 protobuf-v1 Protocol format

- 数据类型：表示协议包的数据类型

Data Type: Represents the data type of the protocol packet

数据类型 Data Type	说明 instruction
analog	遥测 analog

- 分组：对于大量相同设备的情况，设置不同的分组实现平台的均衡负载，该值由运维分配或设备管理服务分配，对于少量设备(<2000 台)，设置为 0。

Grouping: For a large number of the same devices, set different groups to achieve the balanced load of the platform. This value is allocated by the operation and maintenance allocation or device management service. For a small number of devices (<2000), set to 0.

2.1 连接管理 connection management

2.1.1 登陆请求 login request

连接属性 **connection properties**

属性 property	说明 instruction
Server	支持IP或者网址 Support IP or URL
User name	

Password	
KeepAlive	根据数据周期调整，可设为 1min~5min Adjust according to the data cycle, can be set to 1min~5min
CleanSession	1

4.1 数据上报 data reporting

4.1.1 数据上报请求 data report request

topic	Qos
platform /<厂商标识>/<设备类型>/json-v2/analog/<分组> platform /<vendor ID>/<device type>/json-v2/analog/<group>	1

例如：platform /acrel/meter/json-v2/analog/0000

名称 name	类型 type	描述 description
tp	数值 value	时间戳，单位：毫秒 Timestamp in milliseconds
id	数值 value	数据 ID Data ID
val	字符串 string	真实值 actual value

```
{
    "data": [{
        "tp": 12345678912,
        "point": [{
            "id": 1,
            "val": "123.4"
        }, {
            "id": 2,
            "val": "123.5"
        }]
    }]
}
```

可配置数据项如下：
Configurable data items are as follows:

数据项名称 data item name	类型 Type	单位 Unit	序号 serial number	备注 Note
设备编号 device ID	String		0	设备唯一序列号 Device Unique Serial Number
A相电压	电压	V	1	

A-phase voltage	Voltage			
B相电压 B-phase voltage	电压 Voltage	V	2	
C相电压 C-phase voltage	电压 Voltage	V	3	
AB线电压 A-B voltage	电压 Voltage	V	4	
BC线电压 B-C voltage	电压 Voltage	V	5	
CA线电压 C-A voltage	电压 Voltage	V	6	
A相电流 A phase current	电流 Current	A	7	
B相电流 B phase current	电流 Current	A	8	
C相电流 C phase current	电流 Current	A	9	
A相有功功率 A-phase active power	功率 active power	kW	10	
B相有功功率 B-phase active power	功率 active power	kW	11	
C相有功功率 C-phase active power	功率 active power	kW	12	
总有功功率 total active power	功率 active power	kW	13	
A相无功功率 A-Phase reactive power	功率 reactive power	kvar	14	
B相无功功率 B-Phase reactive power	功率 reactive power	kvar	15	
C相无功功率 C-Phase reactive power	功率 reactive power	kvar	16	
总无功功率 Total reactive power	功率 reactive power	kvar	17	

A相视在功率 A-phase apparent power	功率 apparent power	kVA	18	
B相视在功率 B-phase apparent power	功率 apparent power	kVA	19	
C相视在功率 C-phase apparent power	功率 apparent power	kVA	20	
总视在功率 Total apparent power	功率 apparent power	kVA	21	
A相功率因数 A-phase power factor	功率因数 power factor		22	
B相功率因数 B-phase power factor	功率因数 power factor		23	
C相功率因数 C-phase power factor	功率因数 power factor		24	
总功率因数 Total power factor	功率因数 power factor		25	
频率 frequency	频率 frequency	Hz	26	
信号强度 signal strength	工况 working condition	dBm	27	
正向有功总电能示值 Indication value of total positive active energy	电能示值 Energy indication value	kWh	28	
反向有功总电能示值 Indication value of total reverse active energy	电能示值 Energy indication value	kWh	29	
正向无功总电能示值 Indication value of total positive reactive energy	电能示值 Energy indication value	kvarh	30	

反向无功总电能示值 Indication value of total reverse reactive energy	电能示值 Energy indication value	kvarh	31	
当前有功需量 Current active demand	需量 demand	kW	32	
ICCID	工况 working condition		33	强制开机上送且只上送一次 Force upload and upload only once
PT	电压变比 Voltage ratio		34	
CT	电流		35	
A相温度 A Phase temperature		℃	36	
B相温度 B Phase temperature		℃	37	
C相温度 C Phase temperature		℃	38	
N相温度 N Phase temperature		℃	39	
剩余电流 Leakage current		A	40	
4路DI状态 4 DI status	DI状态 DI status	bit0:DI1 bit1:DI2 bit2:DI3 bit3:DI4	41	
A相正向有功总电能示值 Indication value of total positive active energy in phase A	电能示值 Energy indication value	Kwh	42	Indication value of total positive active energy in phase A
A相反向有功总电能示值 Indication value of total reverse active energy in phase A	电能示值 Energy indication value	Kwh	43	
A相正向无功总电能示值 Indication value of total positive reactive energy in phase A	电能示值 Energy indication value	kvarh	44	

A相反向无功总电能示值 Indication value of total reverse reactive energy in phase A	电能示值 Energy indication value	kvarh	45	
B相正向有功总电能示值 Indication value of total positive active energy in phase B	电能示值 Energy indication value	Kwh	46	
B相反向有功总电能示值 Indication value of total reverse active energy in phase B	电能示值 Energy indication value	Kwh	47	
B相正向无功总电能示值 Indication value of total positive reactive energy in phase B	电能示值 Energy indication value	kvarh	48	
B相反向无功总电能示值 Indication value of total reverse reactive energy in phase B	电能示值 Energy indication value	kvarh	49	
C相正向有功总电能示值 Indication value of total positive active energy in phase C	电能示值 Energy indication value	Kwh	50	
C相反向有功总电能示值 Indication value of total reverse active energy in phase C	电能示值 Energy indication value	Kwh	51	
C相正向无功总电能示值 Indication value of total positive reactive energy in phase B	电能示值 Energy indication value	kvarh	52	
C相反向无功总电能示值 Indication value of total reverse reactive energy in phase C	电能示值 Energy indication value	kvarh	53	
A相谐波电压总畸变率	谐波含量	%	54	

A-phase harmonic voltage total distortion rate	Harmonic content			
B相谐波电压总畸变率 B-phase harmonic voltage total distortion rate	谐波含量 Harmonic content	%	55	
C相谐波电压总畸变率 C-phase harmonic voltage total distortion rate	谐波含量 Harmonic content	%	56	
A相谐波电流总畸变率 A-phase harmonic current total distortion rate	谐波含量 Harmonic content	%	57	
B相谐波电流总畸变率 B-phase harmonic current total distortion rate	谐波含量 Harmonic content	%	58	
C相谐波电流总畸变率 C-phase harmonic current total distortion rate	谐波含量 Harmonic content	%	59	
当前反向有功需量 Current reverse active demand		kw	60	
当前正向无功需量 Current positive reactive power demand		kvar	61	
当前反向无功需量 Current reverse reactive power demand		kvar	62	
电压不平衡度 Voltage unbalance		%	63	
电流不平衡度 Current unbalance		%	64	
尖时段有功总电能		Kwh	65	

Total active energy during spike period				
峰时段有功总电能 Total active energy during peak hours		Kwh	66	
平时段有功总电能 Total active energy in flat period		Kwh	67	
谷时段有功总电能 Total active energy during valley period		Kwh	68	
第一象限无功电能 The first quadrant reactive energy		kvarh	69	
第二象限无功电能 The second quadrant reactive energy		kvarh	70	
第三象限无功电能 The third quadrant reactive energy		kvarh	71	
第四象限无功电能 The forth quadrant reactive energy		kvarh	72	

DATA SAMPLE

{"data":[{"tp":1631839905057,"point":[{"id":0,"val":"20201998111433"},{"id":1,"val":0},{"id":2,"val":0},{"id":3,"val":0},{"id":4,"val":0},{"id":5,"val":0},{"id":6,"val":0},{"id":7,"val":0},{"id":8,"val":0},{"id":9,"val":0},{"id":10,"val":0},{"id":11,"val":0},{"id":12,"val":0},{"id":13,"val":0},{"id":14,"val":0},{"id":15,"val":0},{"id":16,"val":0},{"id":17,"val":0},{"id":18,"val":0},{"id":19,"val":0},{"id":20,"val":0},{"id":21,"val":0},{"id":22,"val":1},{"id":23,"val":1},{"id":24,"val":1},{"id":25,"val":1},{"id":26,"val":0},{"id":27,"val":25},{"id":28,"val":45.3},{"id":29,"val":11.32},{"id":30,"val":6.54},{"id":31,"val":0.99},{"id":32,"val":0},{"id":33,"val":"898604510919C0479914"},{"id":34,"val":1},{"id":35,"val":1}]}]}

{"data":[{"tp":1631839908276,"point":[{"id":0,"val":"20201998111433"},{"id":36,"val":0},{"id":37,"val":0},{"id":38,"val":0},{"id":39,"val":0},{"id":40,"val":0},{"id":41,"val":0},{"id":42,"val":14.93},{"id":43,"val":3.76},{"id":44,"val":2.16},{"id":45,"val":0.63},{"id":46,"val":15.2},{"id":47,"val":3.73},{"id":48,"val":2.15},{"id":49,"val":0.15},{"id":50,"val":15.04},{"id":51,"val":3.77},{"id":52,"val":2.16},{"id":53,"val":0.14},{"id":54,"val":0},{"id":55,"val":0},{"id":56,"val":0},{"id":57,"val":0},{"id":58,"val":0},{"id":59,"val":0},{"id":60,"val":0},{"id":61,"val":0},{"id":62,"val":0},{"id":63,"val":0},{"id":64,"val":0},{"id":65,"val":0},{"id":66,"val":0},{"id":67,"val":0},{"id":68,"val":0},{"id":69,"val":0},{"id":70,"val":6.53},{"id":71,"val":0},{"id":72,"val":0.99}]}]}

name	type	Unit	ID	
device ID	String		0	
Voltage of A phase	Voltage	V	1	
Voltage of B phase	Voltage	V	2	
Voltage of C phase	Voltage	V	3	
Voltage between A-B	Voltage	V	4	
Voltage between C-B	Voltage	V	5	
Voltage between A-C	Voltage	V	6	
Electricity of A phase	Electricity	A	7	
Electricity of B phase	Electricity	A	8	
Electricity of C phase	Electricity	A	9	
Active power of A phase	power	kW	10	
Active power of B phase	power	kW	11	
Active power of C phase	power	kW	12	
Total active power	power	kW	13	
Reactive power of A phase	power	kvar	14	
Reactive power of B phase	power	kvar	15	
Reactive power of C phase	power	kvar	16	
Total reactive power	power	kvar	17	
Apparent power of A phase	power	kVA	18	
Apparent power of b phase	power	kVA	19	
Apparent power of c phase	power	kVA	20	

Total apparent power	power	kVA	21	
Power factor of A phase	Power factor		22	
Power factor of B phase	Power factor		23	
Power factor of C phase	Power factor		24	
Total power factor	Power factor		25	
Frequency of power	Frequency	Hz	26	
Signal		dBm	27	
Forward active energy consumption	energy	kWh	28	
Reversing active energy consumption	energy	kWh	29	
Forward reactive energy consumption	energy	kvarh	30	
Reversing reactive energy consumption	energy	kvarh	31	
Current active demand	Demand	kW	32	
ICCID			33	
PT			34	
CT			35	
Temperature on A phase		℃	36	
Temperature on B phase		℃	37	
Temperature on C phase		℃	38	
Temperature on N phase		℃	39	
Residual current		A	40	
DI Mode	DI	bit0:DI1 bit1:DI2 bit2:DI3 bit3:DI4	41	
Forward active energy consumption on A phase	energy	Kwh	42	
Reversing active energy consumption on A phase	energy	Kwh	43	
Forward reactive energy consumption on A phase	energy	kvarh	44	
Reversing reactive energy consumption on A phase	energy	kvarh	45	
Forward active energy consumption on B phase	energy	Kwh	46	
Reversing active energy consumption on B phase	energy	Kwh	47	
Forward reactive energy consumption on B phase	energy	kvarh	48	
Reversing reactive energy consumption on B phase	energy	kvarh	49	
Forward active energy consumption on C phase	energy	Kwh	50	

Reversing active energy consumption on C phase	energy	Kwh	51	
Forward reactive energy consumption on C phase	energy	kvarh	52	
Reversing reactive energy consumption on C phase	energy	kvarh	53	
A phase voltage distortion rate	distortion rate	%	54	
B phase voltage distortion rate	distortion rate	%	55	
C phase voltage distortion rate	distortion rate	%	56	
Total distortion rate of A phase current	distortion rate	%	57	
Total distortion rate of B phase current	distortion rate	%	58	
Total distortion rate of C phase current	distortion rate	%	59	
Current reversing active demand	demand	kw	60	
Current forward reactive demand	demand	kvar	61	
Current reversing reactive demand	demand	kvar	62	
Voltage imbalance	imbalance	%	63	
Current imbalance	imbalance	%	64	
Current total spike active energy	energy	Kwh	65	
Current total peak active energy	energy	Kwh	66	
Current total flat active energy	energy	Kwh	67	
Current total valley active energy	energy	Kwh	68	
First quadrant reactive energy		kvarh	69	
Second quadrant reactive energy		kvarh	70	
Third quadrant reactive energy		kvarh	71	
Fourth quadrant reactive energy		kvarh	72	