



Chengdu Ebyte Electronic Technology Co.,Ltd

Wireless Modem

User Manual

Ebyte Cloud Device Communication Protocol

E870-E0

E870-E1

E870-W1



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1. Device data read and write interface

1.1. Data reading

Platform issued

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	Method field : device.state.get
bizContent	String Array	must	Contents to be read: AI1 , DI1 , AO1, DO1 , location , IMEI, ICCID, FW, CSQ one or more

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.state.get",
  "bizContent": ["DI1", "DO1", "AI1", "location", "IMEI", "ICCID", "FW", "CSQ"]
}
```

Device response

Fields	type	illustrate	
msgId	String	must	Message ID field, which is consistent with the ID of the message being responded to
s	String	must	SN
method	String	must	Method field: device.state.get .resp
respCode	Integer	must	0 Success
respContent	Object Fields	Element type	Data message, composed of one or more sub-objects, key-value pairs
	DI 1 ~DI _n	Integer	0-off 1-on
	DO 1 ~DO _n	Integer	0-off 1-on
	AI 1 ~AI _n	Floating point	AI collection value
	AO 1 -AO _n	Floating point	A0 output value
	location	String	Location Information
	CSQ	Integer	Signal Strength
	SOCKSTA -SOCKSTA _n	0 Integer	Socket connection status, 0 means disconnected, other means connected

```
{
  "msgId": " 202201241610366046 " ,
  "sn": "12345678901234567895",
  "method": "device.state.get.resp",
}
```

```
"respCode":0,  
"respContent":{  
    "IMEI":"869516059823851",  
    "ICCID":"898602B6102080010532",  
    "CSQ":0,  
    "FW":"9024-0-11"}  
}
```

1.2. Active data reporting

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-digit data of the current time plus a 6-digit random number. For example, if the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.state.autoUp
biz Content	Object Element Fields	type		Data message, composed of one or more sub-objects, key-value pairs
	DI 1 ~DIIn	Integer		0-off 1-on
	DO 1 ~DOIn	Integer		0-off 1-on
	AI 1 ~AIIn	Floating point		AI collection value
	AO 1 ~AOIn	Floating point		AO output value
	UART0~UARTn	String		The serial port reports data in the format of ascii hexadecimal. For example, the string 123 reports data of 313233.

```
{
  "msgId": " 202202111411244031 " ,
  "sn":"12345678901234567895",
  "method":"device.state.autoUp",
  " bizContent ":{" CSQ ":23}
}
```

1.3. Data delivery

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-digit data of the current time plus a 6-digit random number. For example, if the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field : device.state.set
biz Content	Object Element Fields	type	must	Data message, composed of one or more sub-objects, key-value pairs
	DO 1 ~DO _n	Integer		0-off 1-on
	AO 1 ~AO _n	Floating point		A0 output value
	UART0~UART _n (not supported yet)	String		The serial port reports data in the format of ascii hexadecimal. For example, the string 123 reports data of 313233.
	Data point name	String		It can contain multiple data point names. The device has the data point and contains writable attributes. All data points legally return 0. The data point value will generally pass through the downward formula. If there is no downward formula, the D0 type register will be output as 0 and non-zero, the register will be held, the floating point number will be converted to an integer, and the integer will be rounded. If it exceeds the limit, an error will be reported directly, and the rest will be output directly.

```
{
  "msgId": " 202201241610366046 ",
  "sn": " 2022022300200010c039 ",
  "method": "device.state.set",
  "bizContent": { "DO 1 ": 1, " DO 2 ": 0, "uart 0 ": " 303132 " }
}
```

Device response

Fields	type	illustrate	
msgId	String	must	Message ID field, which is consistent with the ID of the message being responded to
s	String	must	SN
method	String	must	Method field : device.state.set.resp
respCode	Integer	must	0 Success

```
{
  "msgId": " 202201241610366046 ",
  "sn": "12345678901234567895",
  "method": "device.state.set.resp",
  "respCode": 0
}
```

}

1.4. Registration package submission

The device will send

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field : device.report.register
bizContent	Object sub-element fields	Object	must	Parameter fields
	data	String		Custom data, when reported to the platform, there is no such field
	ICCID	String		ICCID Number
	IMEI	String		IMEI number
	CSQ	String		Signal Strength
	FW	String		Firmware number, for example: FW-9002-1-10

```
{
  "msgId": " 202202111349484414 ",
  "sn": "12345678901234567895",
  "method": "device.report.register",
  "bizContent": {"data": "Regist", "ICCID": "898602B6102080010532", "IMEI": "869516059823851", "CSQ": 19}
}
```

1.5. Heartbeat packet reporting

The device sends periodically, and the sending time will be reset if there is an uplink message on the link

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field : device.report.keepAlive
bizContent	Object sub-element fields	Object	must	Parameter fields
	data	String		Custom data, when reported to the platform, there is no such field
	ICCID	String		ICCID Number
	IMEI	String		IMEI number
	CSQ	String		Signal Strength
	FW	String		Firmware number, for example: FW-9002-1-10
	...	String		...(Different devices have different types, add or delete according to the needs of the device)

```
{
  "msgId": " 202202111351484414 ",
  "sn":"12345678901234567895",
  "method":"device.report.keepAlive",
  "bizContent":{"data":"KeepAlive","ICCID":"898602B6102080010532","IMEI":"869516059823851","CSQ":19}
}
```

2. Device parameter read and write interface

2.1. UART parameter settings

When the device is online or its parameters are changed, this interface is used to send data to the platform . The platform also uses this interface to set the device serial port parameters.

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.config.uart.set
bizContent	Array object fields	Arrays	must	Parameter message, consisting of one or more serial port parameter objects
	index	Integer	must	Serial port number, range: 1-2
	baud	Integer	must	Baud rate: Default is 115200, Baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800 187500(G1),
	parity	String	must	Check digit: NONE, ODD, EVEN
	stop	String	must	Stop bits: 1,2
	dataBits	Array Object	must	Data bits: 8, 7 (the corresponding values may be different for different devices)

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.uart.set",
  "bizContent": [{"index": 0,"baud": 115200,"parity": "NONE","stop": 1,"dataBits": 8}]
}
```

The device answers :

Fields	type	illustrate	
msgId	String	must	Message ID field, which is consistent with the ID of the message being responded to
s	String	must	SN
method	String	must	Method field: device.config.uart.set.resp
respCode	Integer	must	Error code, 0 means success

```
{
  "msgId": " 202201241610366046 ",
  "sn":"12345678901234567895",
  "method":"device.config.uart.set.resp",
  "respCode":0
}
```

2.2. UART parameter acquisition

Platform sends:

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method: device.config.uart.get field
bizContent	Object sub-element fields	Object	Segment Default	Parameter fields
	index	Integer	must	uart number, value range 1,2

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.uart.get",
  "bizContent": {
    "index": 1
  }
}
```

The device responds and returns the parameters of all serial ports. The message is as follows:

Fields		type	illustrate	
msgId		String	must	Message ID field, which is consistent with the ID of the message being responded to
s		String	must	SN
method		String	must	Method field: device.config.uart.get.resp
respCode		Integer	must	Error code, 0 means success
respContent	Object sub-element fields	Array Object	must	Response parameter message array, consisting of one or more serial port parameter objects
	index	Integer		Number of channels, range: 1-2
	baud	Integer		Baud rate: Default is 115200, Baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800 187500(G1),
	parity	String		Check digit: NONE, ODD, EVEN
	stop	String		Stop bits: 1,2
	dataBits	Array Object		Data bits: 8, 7

```
{
  "msgId": "202201241610366046",
```

```
"sn":"12345678901234567895",
"method":"device.config.uart.get.resp",
"respCode":0,
"respContent":
{"index":0,"baud":115200,"parity":"NONE","stop":1,"dataBits":8},
{"index":1,"baud":9600,"parity":"NONE","stop":1,"dataBits":8}
}
```

2.3. SOCKET parameter configuration

When the device is online or its parameters are changed, it uses the interface to send messages to the platform . The platform also uses this interface to configure device parameters. The message is as follows:

Fields			type	illustrate		
msgId			String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323	
s			String	must	SN	
method			String	must	Method field: device.config.socket.set	
bizContent	Object sub-element fields		Object	must	Parameter fields	
	index		Integer	must	Value range 0, 1, 2, 3	
	enable		Integer	must	Link Enable	
	protocol		String	must	Protocol TCP, UDP, HTTP, MQTT	
	desAddr		String	must	Target Address	
	desPort		Integer	must	Destination Port	
	dataReportMode		Integer	must	0-modbus to json, 1-Alibaba cloud modbus to json , 2- Ebit Cloud modbus to json, 3-no report,	
	cache		Integer	Segment Default	0-disable offline cache, 1-enable offline cache (for E870-G1)	
	keepAlive	Object sub-element fields	Sub-objects	Segment Default	Heartbeat Packet	
		period		Integer	must	Heartbeat cycle, in seconds (s), 0 means off
		data		String	must	Custom heartbeat data
		dataMode	Object sub-element fields	Sub-objects	must	Report data enable object. The following data varies from device to device. Please refer to the specific device manual.
			data	Integer	must	Custom data: 1 for on, 0 for off
			ICCID	Integer	must	ICCID: 1 to enable, 0 to disable
			IMEI	Integer	must	IMEI: 1 to enable, 0 to disable
			CSQ	Integer	must	CSQ: 1 to enable, 0 to disable
			FW	Plastic surgery	must	FW: 1 to enable, 0 to disable
			LOC	Plastic surgery	must	LOC: 1 on, 0 off (E870_G1)
			RTC	Plastic surgery	must	RTC: 1 on, 0 off (E870-G1)
	regist	Object sub-element	Sub-objects	Segment	Registration Package	

		fields		jects	t Default	
		enable		Integer	must	Enable: 0 means off, 1 means on
		data		String	must	Custom heartbeat data
		dataM ode	Object sub-ele ment fields	Sub-ob jects	must	Report data enable object. The following data varies from device to device. Please refer to the specific device manual.
			data	Integer	must	Custom data: 1 for on, 0 for off
			ICCID	Integer	must	ICCID: 1 to enable, 0 to disable
			IMEI	Integer	must	IMEI: 1 to enable, 0 to disable
			CSQ	Integer	must	CSQ: 1 to enable, 0 to disable
			FW	Plastic surgery	must	FW: 1 to enable, 0 to disable
			LOC	Plastic surgery	must	LOC: 1 on, 0 off (E870_G1)
			RTC	Plastic surgery	must	RTC: 1 on, 0 off (E870-G1)
mqtt	Object sub-element fields		Sub-ob jects	Segmen t Default	MQTT Fields	
	mqttType		Charac ter	must	0 represents Alibaba Cloud, 1 represents oneNET, 2 represents Baidu Cloud, and 3 represents standard MQTT.	
	clientID		Charac ter	must	MQTT device clientID	
	username		Charac ter	must	MQTT server account	
	password		Charac ter	must	Password for the MQTT server	
	subTopic		Charac ter	must	Subscribe to a topic	
	subQos		Integer	must	Subscription Tiers	
	subSw		Integer		Subscription enable (not supported by E1)	
	pubTopic		Charac ter	must	Publish a topic	
	pubQos		Integer	must	Release level	
	pubSw		Integer		Release enable (not supported by E1)	

```
{
  "msgId": " 202201241610366046 " ,
  "sn": "12345678901234567895",
  "method": "device.config.socket.set",
  "bizContent ": {
    "index": 0,
    "enable": 1,
```

```

"protocol": "TCP",
"desAddr": "112.54.89.224",
"desPort": 8756,
"dataReportMode": 2,
"keepAlive": {
    "period": 120,
    "data": "KeepAlive",
    "dataMode": {"data": 1,"ICCID": 1,"IMEI": 1,"CSQ": 1,"FW": 0}
},
"regist": {
    "enable": 0,
    "data": "Regist",
    "dataMode": {"data": 1,"ICCID": 1,"IMEI": 1,"CSQ": 1,"FW": 0}
}
}
}

```

Device Answer

Fields	type	illustrate	
msgId	String	must	Message ID field, which is consistent with the ID of the message being responded to
s	String	must	SN
method	String	must	Method field: device.config.socket.set.resp

```

{
    "msgId": " 202201241610366046 " ,
    "sn": "12345678901234567895",
    "method": "device.config.uart.set.resp",
    "respCode": 0
}

```

2.4. SOCKET parameter query

Platform sends:

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.config.socket.get,
bizContent	Object sub-element fields	Object	must	Parameter fields
	index	Integer	must	Socket number, value range 0, 1, 2, 3

```
{
  "msgId": " 202201241610366046 " ,
  "sn": "12345678901234567895",
  "method": "device.config.socket.get",
  "bizContent": {"index": 0}
}
```

The device answers:

Fields		type	illustrate	
msgId		String	must	Message ID field, which is consistent with the ID of the message being responded to
s		String	must	SN
method		String	must	Method field: device.config.socket.get.resp,
respCode		Integer	must	Error code, 0 means success
respContent	Object sub-element fields	Object	must	Parameter fields
	index	Integer	must	Value range 0, 1, 2, 3
	enable	Integer	must	Link Enable
	protocol	String	must	Protocol TCP, UDP, HTTP, MQTT
	des Addr	String	must	Target Address
	desPort	Integer	must	Destination Port
	data Report Mode	Integer	must	0-modbus to json, 1-Alibaba cloud modbus to json , 2- Ebit Cloud modbus to json, 3-no report,
	cache	Integer	must	0-disable offline cache, 1-enable offline cache (for E870-G1)
keep Alive	Object sub-element fields	Sub-objects	Segment Default	Heartbeat Packet

		period		Integer	must	Heartbeat cycle, in seconds (s), 0 means off
		data		String	must	Custom heartbeat data
		dataM ode	Object sub-ele ment fields	Sub-objec ts	must	Report data enable object. The following data varies from device to device. Please refer to the specific device manual.
			data	Integer	must	Custom data: 1 for on, 0 for off
			ICCID	Integer	must	ICCID: 1 to enable, 0 to disable
			IMEI	Integer	must	IMEI: 1 to enable, 0 to disable
			CSQ	Integer	must	CSQ: 1 to enable, 0 to disable
			FW	Integer	must	FW: 1 to enable, 0 to disable
			LOC	Plastic surgery	must	LOC: 1 on, 0 off (E870_G1)
			RTC	Plastic surgery	must	RTC: 1 on, 0 off (E870-G1)
	regist	Object sub-element fields		Sub-objec ts	Segment Default	Registration Package
		enable		Integer	must	Enable: 0 means off, 1 means on
		data		String	must	Custom heartbeat data
		dataM ode	Object sub-ele ment fields	Sub-objec ts	must	Report data enable object. The following data varies from device to device. Please refer to the specific device manual.
			data	Integer	must	Custom data: 1 for on, 0 for off
			ICCID	Integer	must	ICCID: 1 to enable, 0 to disable
			IMEI	Integer	must	IMEI: 1 to enable, 0 to disable
			CSQ	Integer	must	CSQ: 1 to enable, 0 to disable
			FW	Plastic surgery	must	FW: 1 to enable, 0 to disable
			LOC	Plastic surgery	must	LOC: 1 on, 0 off (E870_G1)
			RTC	Plastic surgery	must	RTC: 1 on, 0 off (E870-G1)
	mqtt	Object sub-element fields		Sub-objec ts	Segment Default	MQTT Fields
		mqttType		Character	must	0 represents Alibaba Cloud, 1 represents oneNET, 2 represents Baidu Cloud, and 3 represents standard MQTT.
		clientID		Character	must	MQTT device clientID
		username		Character	must	MQTT server account
		password		Character	must	Password for the MQTT server
		subTopic		Character	must	Subscribe to a topic
		subQos		Integer	must	Subscription Tiers
		subSw		Integer	must	Subscription enable (not supported by E1)
		pubTopic		Character	must	Publish a topic
		pubQos		Integer	must	Release level
		pubSw		Integer	must	Release enable (not supported by E1)

```
{
  "msgId": " 202201241610366046 ",
  "sn": "12345678901234567895",
  "method": "device.config.socket.get.resp",
  "respCode": 0,
  "respContent": {
    "index": 0,
    "enable": 1,
    "protocol": "TCP",
    "desAddr": "112.54.89.224",
    "desPort": 8756,
    "dataReportMode": 2,
    "keepAlive": {
      "period": 120,
      "data": "KeepAlive",
      "dataMode": {"data": 1,"ICCID": 1,"IMEI": 1,"CSQ": 1,"FW": 0}
    },
    "regist": {
      "enable": 0,
      "data": "Regist",
      "dataMode": {"data": 1,"ICCID": 1,"IMEI": 1,"CSQ": 1,"FW": 0}
    }
  }
}
```

2.5. Edge computing parameter acquisition

Platform sends:

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	method: device.config.emc.get fields
bizContent	String Array	must	["", "", ""] Maximum 10 groups
Object sub-element fields	Object		Parameter field (both built-in and external data points can be obtained at the same time. Some parameters of built-in data points will be defaulted. For details, refer to IO parameter acquisition)

```
{
  "msgId": " 202201241610366046 ",
  "sn": "2022022300200010c039",
  "method": "device.config.emc.get",
  "bizContent": ["data1"]
}
```

The device answers:

Fields			type	illustrate	
msgId			String	must	Message ID field, which is consistent with the ID of the message being responded to
s			String	must	SN
method			String	must	Method field: device.config.emc.get.resp
respCode			Integer	must	Error code, 0 means success
respContent	Object fields	sub-element	Object	must	Reply message
	table	Object sub-element fields	Array of objects	must	Supports up to 10 groups
		name	String	must	JSON upload unique identifier, keyword , string length is up to 16
		if	Integer		Execution interface: 0-serial port , 1-network
		ifpara	String/Integer		if=1: place network parameters ip:port (string) if=0: place the serial port number 1 or 2 (integer type)
		address	Integer	must	Modbus slave address , range 0-247
		reghead	Integer	must	Register Type: 0-Coil (datatype must be 0) 1-Discrete quantity (datatype must be 0) 2-Holding register (datatype must be > 0) 3-Input register (datatype must be > 0)
		regaddr	Integer	must	Register address (range 0 - 65535)

		datatype	Integer	must	Data Type: 0 means 1 bit 1 means 16-bit signed 2 means 16-bit unsigned 3 means 32-bit signed ABCD 4 means 32-bit signed CDAB 5 means 32-bit unsigned ABCD 6 means 32-bit unsigned CDAB 7 represents 32-bit floating point ABCD 8 represents 32-bit floating point CDAB
		repmode	Integer	must	0- No report 1 - Periodic report 2 - Change report 3 - Change report + periodic report
		period	Integer	must	Reporting time (unit: minutes, default: 1) (range: 0-65535)
		range	floating point	must	Range of variation, acting on the value calculated by the calculation formula (platform side data) 0 - 3.4×10^{38}
		point	Integer	must	Decimal places (0 - 5)
		readtype	Integer	must	Read-write attribute 0-read only 1-read and write 2-write only
		mathup	String	must	Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)
		mathdown	String	must	Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)

```

{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config_emc.get.resp",
  "respCode": 0,
  "respContent": {
  }
}

```

2.6. Edge computing parameter settings

Platform sends:

Fields			type	illustrate	
msgId			String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s			String	must	SN
method			String	must	Method field: device.config.emc.set
bizContent	Object sub-element fields		Object	must	Reply message
	cmd		Integer	must	0 - Add rules 1 - Update rules 2 - Delete rules 3 - Clear rules 4 - Clear and add rules
	table	Object sub-element fields	Array of objects	must	Supports up to 10 groups
		name	String	must	JSON upload unique identifier, keyword , string length is up to 16 (Both built-in and external data points can be obtained at the same time. Some parameters of built-in data points will be defaulted. For the built-in part, please refer to the IO parameter settings)
		if	Integer		Execution interface: 0 - serial port , 1 - network
		ifpara	String/Integer		if=1: place network parameters ip:port (string) if=0: place the serial port number 1 or 2 (integer type)
		address	Integer	must	Modbus slave address , range 1 -247
		reghead	Integer	must	Register Type: 1-Coil (datatype must be 0) 3-Discrete quantity (datatype must be 0) 4-Holding register (datatype must be > 0) 3-Input register (datatype must be > 0)
		regaddr	Integer	must	Register Address
		datatype	Integer	must	Data Type: 0 means 1 bit 1 means 16-bit signed 2 means 16-bit unsigned 3 means 32-bit signed ABCD 4 means 32-bit signed CDAB 5 means 32-bit unsigned ABCD 6 means 32-bit unsigned CDAB 7 represents 32-bit floating point ABCD 8 represents 32-bit floating point CDAB (The data point type and register type must match, otherwise it will not take effect. Coils and discrete quantities support 0, and holding registers and input

					registers support 1-8)
		repmode	Integer	must	0-Not reporting (not checking period and range) 1-Periodic reporting (check period>0, range not checked) 2-2-Change reporting (Check range>0, period is not checked) 3-3-Change reporting + periodic reporting, (range>0, period>0)
		period	Integer	must	Reporting time (unit: minutes, default: 1) (range: 0-65535)
		range	floating point	must	Range of variation, acting on the value calculated by the calculation formula (platform side data) 0 - 3.4*10 ³⁸
		point	Integer	must	Decimal places (0 - 5)
		readtype	Integer	must	Read-write attribute 0-read only 1-read-write 2-write only (When the data point read-write attribute includes readable, it will participate in data point acquisition. If it includes writable, it supports data downlink. Coils and holding registers support reading and writing, and discrete quantities and input registers support.)
		mathup	String	must	Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)
		mathdown	String	must	Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)

```
{
  "msgId": "202201241610366046",
  "sn": "2022022300200010c039",
  "method": "device.config.emc.set",
  "bizContent": {
    "cmd": 0,
    "table": [
      {
        "name": "data0",
        "address": 1,
        "reghead": 0,
        "regaddr": 2,
        "datatype": 0,
        "repmode": 2,
        "period": 0,
        "range": 0,
        "point": 0,
        "readtype": 0,

```

```
"mathup": "0",
    "mathdown": "0"
}
]
```

Device response:

Fields	type	illustrate	
msgId	String	must	Message ID field, which is consistent with the ID of the message being responded to
s	String	must	SN
method	String	must	Method field: device.config . emc.set.resp
respCode	Integer	must	Error code, 0 means success , 1 means the number of rules is full and cannot be added

```
{
    "msgId": "202201241610366046",
    "sn": "12345678901234567895",
    "method": "device.config .emc .set.resp",
    "respCode": 0
}
```

2.7. Linkage parameter settings

Platform sends:

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.config.correlate.set
bizContent	Object sub-element fields	Array Object	must	Parameter array, consisting of one or more objects, up to 10 groups.
	index	Integer	must	Serial number
	enable	String	must	Linkage switch 1 on 0 off
	source	Object sub-element fields	must	Original data object
	s	String	must	Linkage source sn
		Integer	must	0:DI , 1: DO , 2 :AI , 3: AO
		Integer	must	IO Number
		Integer	must	Trigger conditions: 0- off, 1- on, 2-greater than max , 3-less than min , 4-between max and min
		Integer	must	AI/AO threshold max
		Integer	must	AI/AO threshold min
	action	Object sub-element fields	must	Target action data object
		Integer	must	0:DO , 1:AO
		Integer	must	IO Number
		Integer	must	Execution method: 0- off 1- on 2-forward follow 3-reverse follow 4-AO follow

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.correlate.set",
  "bizContent": [{
    "index": 0,
    "enable": 0,
    "source": {
      "sn": "12345678901234567895",
      "type": 0,
      "ioNum": 0,
      "condition": 0,
```

```

        "max": 0,
        "min": 0
    },
    "action": {
        "type": 0,
        "ioNum": 0,
        "method": 0
    }
}
}

```

The device answers :

Fields	type	illustrate	
msgId	String	must	Message ID field, which is consistent with the ID of the message being responded to
s	String	must	SN
method	String	must	Method field: device.config.correlate.set.resp
respCode	Integer	must	Error code, 0 means success

```

{
    "msgId": "202201241610366046",
    "sn": "12345678901234567895",
    "method": "device.config.correlate.set.resp",
    "errCode": 0
}

```

2.8. Linkage parameter acquisition

Platform sends:

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	Method: device.config.correlate.get field

```
{
    "msgId": "202201241610366046",
    "sn": "12345678901234567895",
    "method": " device.config.correlate.get "
}
```

The device answers:

Fields			type	illustrate	
msgId			String	must	Message ID field, which is consistent with the ID of the message being responded to
s			String	must	SN
method			String	must	Method field: device.config.correlate.get.resp
respCode			Integer	must	Error code, 0 means success
respContent	Object sub-element fields		Array Object	must	Parameter array, consisting of one or more objects, up to 10 groups.
	index		Integer	must	Serial number
	enable		String	must	Linkage switch 1 on 0 off
	source	Object sub-element fields	Object	must	Original data object
		s	String	must	Linkage source sn
		type	Integer	must	0:DI , 1: DO , 2 :AI , 3: AO
		ionum	Integer	must	IO Number
		condition	Integer	must	Trigger condition: 0 - Off 1 - On 2 - Greater than max 3 - Less than min 4 - Between max and min
		max	Integer	must	AI/AO threshold max
		min	Integer	must	AI/AO threshold min
	action	Object sub-element fields	Object	must	Target action data object
		type	Integer	must	0:DO , 1:AO
		ionum	Integer	must	IO Number
		method	Integer	must	Execution method: 0- off 1- on 2-forward follow 3-reverse follow 4-AO follow

```
{
    "msgId": "202201241610366046",
```

```
"sn": "12345678901234567895",
"method": "device.config.correlate.set",
"bizContent": [{
  "index": 0,
  "enable": 0,
  "source": {
    "sn": "12345678901234567895",
    "type": 1,
    "ioNum": 0,
    "condition": 1,
    "max": 0,
    "min": 0
  },
  "action": {
    "type": 0,
    "ioNum": 1,
    "method": 1
  }
}]
}
```

2.9. Cloud networking parameter settings

Platform sends:

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.config.m2m.set
bizContent	Object sub-element fields	Array of objects	must	Parameter array, consisting of one or more objects, with a maximum of 50
	index	Integer	must	Serial number
	enable	String	must	Device networking switch 1 on 0 off
	SN	String	must	Target device SN
	PWD	String	must	Target device password

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.m2m.set",
  "bizContent": [{"index": 0,"enable": 0,"sn": "", "PWD": ""}]
}
```

Note: There can be one or more channel fields.

The device answers :

Fields		type	illustrate	
msgId		String	must	Message ID field, which is consistent with the ID of the message being responded to
s		String	must	SN
method		String	must	Method field: device.config.m2m.set.resp
respCode		Integer	must	Error code, 0 means success

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.m2m.set.resp",
  "respCode": 0
}
```

2.10. Obtaining cloud networking parameters

Platform sends:

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	Method: device.config.m2m.get field

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config.m2m. g et "
}
```

The device answers:

Fields		type	illustrate	
msgId		String	must	Message ID field, which is consistent with the ID of the message being responded to
s		String	must	SN
respCode		Integer	must	Error code, 0 means success
method		String	must	Method field: device.config.m2m.get.resp
resp Content	Object sub-element fields	Array Object	must	Parameter array, consisting of one or more objects, with a maximum of 50 groups.
	index	Integer	must	Serial number
	enable	String	must	Device networking switch 1 on 0 off
	SN	String	must	Target device SN
	PWD	String	must	Target device password

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.m2m.get.resp",
  "respCode": 0,
  "respContent": [{
    "index": 0,
    "enable": 0,
    "sn": "",
    "PWD": ""
  }]
}
```

2.11. Python Script Settings

Platform sends:

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.config.python.set
bizContent	Object sub-element fields	Object	must	Parameter fields
	enable	String	must	Enable: 1-enable, 2-disable
	pyData	String	must	Python Script

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.python.set",
  "bizContent": {
    "enable": 0,
    "pyData": ""
  }
}
```

The device answers :

Fields		type	illustrate	
msgId		String	must	Message ID field, which is consistent with the ID of the message being responded to
s		String	must	SN
method		String	must	Method field: device.config.python.set.resp
respCode		Integer	must	Error code, 0 means success

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.python.set.resp",
  "respCode": 0
}
```

2.12. Python script to obtain

Platform sends:

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	Method field: device.config.python.get

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config. python . g et "
}
```

The device answers:

Fields		type	illustrate	
msgId		String	must	Message ID field, which is consistent with the ID of the message being responded to
s		String	must	SN
method		String	must	Method field: device.config.python.g et .resp
respCode		Integer	must	Error code, 0 means success
resp Content	Object sub-element fields	Object	must	Parameter fields
	enable	String	must	Enable: 1-enable, 2-disable
	pyData	String	must	Python Script

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.python.get.resp",
  "respCode": 0,
  "respContent": {
    "enable": 0,
    "pyData": ""
  }
}
```

2.13. IO parameter settings

Platform Send

Fields			type	illustrate	
msgId			String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s			String	must	SN
method			String	must	Method field: device.config. io. set
bizContent	Object sub-element fields		Array of objects	must	Parameter array, consisting of one or more objects
	table	Object sub-element fields	Array of objects	must	
		name	String	must	JSON upload unique identifier, the keyword is fixed to the corresponding built-in IO: AI1~AIX DI1~DIX AO1~AOX DO1~DOX
		repmode	Integer	must	1-Not reporting (not checking period and range) 4-Periodic reporting (check period>0, range not checked) 5-2-Change reporting (Check range>0, period is not checked) 3-Change reporting + periodic reporting, (range>0, period>0)
		period	Integer	must	Reporting time (unit: minutes, default: 1) (range: 0-65535)
		range	floating point	must	Range of variation, acting on the value calculated by the calculation formula (platform side data) 0 - 3.4*10^38
		point	Integer	must	Decimal places (0 - 5)
		readtype	Integer	must	Read-write attribute 0-read only 1-read and write 2-write only
		mathup	String	must	Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)
		mathdown	String	must	Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)

```
{
  "msgId": "202201241610366046",
  "sn": "12345678901234567895",
  "method": "device.config.io.set ",
  "bizContent": [
    {
      "name": "DO1",
      "repmode": 2,
      "period": 1,
      "range": 0,
      "point": 3,
      "readtype": 1,
```

```
"mathup": "sadf",
"mathdown": "4asdf56"
}
]
```

Device response

Fields	type	illustrate	
msgId	String	must	Message ID field, which is consistent with the ID of the message being responded to
s	String	must	SN
method	String	must	Method field : device.config . io.set.resp
respCode	Integer	must	0 Success

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": "device.config.io.set.resp " ,
  "respCode": 0
}
```

2.14. IO parameter acquisition

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	Method field : device.config.io.get

```
{
    "msgId": "202201241610366046" ,
    "sn": "12345678901234567895",
    "method": " device.config.io. g et ",
    " bizContent ": ["DO1","DI1","AI1"]
}
```

Device response

Fields			type	illustrate	
msgId			String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s			String	must	SN
method			String	must	Method field : device.config.io.get.resp
respCode			Integer	must	Error code, 0 means success
respContent	Object sub-element fields		Array of objects	must	Parameter array, consisting of one or more objects
	table	Object sub-element fields	Array of objects	must	
		name	String	must	JSON upload unique identifier, the keyword is fixed to the corresponding built-in IO: AI1~AIX DI1~DIX AO1~AOX DO1~DOX
		repmode	Integer	must	0- periodic report 1- change report 2-change report + periodic report
		period	Integer	must	Reporting time (unit: minutes, default: 1) (range: 0-65535)
		range	floating point	must	Range of variation, acting on the value calculated by the calculation formula (platform side data) 0 - 3.4*10^38
		point	Integer	must	Decimal places (0 - 5)
		readtype	Integer	must	Read-write attribute 0-read only 1-read and write 2-write only
		mathup	String	must	Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)
		mathdown	String	must	Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)

```
{
```

```
"msgId": "202201241610366046" ,
"sn": "12345678901234567895",
"method": "device.config.io.get.resp " ,
"respCode": 0,
"respContent": [
    {"index": 0," repmode ": 0," period ": 1 0 ," range ": 10.5 ," point ": 5 ," readtype ": 1 ," mathup ": *100 ," mathdown ": /
100 },
    {"index": 1," repmode ": 0," period ": 20 ," range ": 32 ," point ": 1 ," readtype ": 1 ," mathup ":
mathdown ": "" }
]
}
```

2.15. Serial port split settings

(Only supported by E870-G1)

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.config.io.set
bizContent	Object sub-element fields	Array of objects	must	Parameter array, consisting of one or more objects
	enable	Object sub-element fields	must	0-off, 1-on
	src	Object sub-element fields	must	0-UART1, 1-UART2

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config.shunt.set " ,
  " bizContent ": {
    "enable":1,
    "src":0
  }
}
```

Device response

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.config.shunt.set. resp
respCode		Integer	must	Error code, 0 means success

```
{
  "msgId": " 202201241610366046 " ,
  "sn":"12345678901234567895",
  "method":" device.config.shunt.set.resp " ,
  "respCode":0
}
```

2.16. Serial port diversion acquisition

(Only supported by E870-G1)

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	Method: device.config.shunt.get

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config.shunt.get "
}
```

Device response

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529916323
s		String	must	SN
method		String	must	Method field: device.config.shunt.get .resp
respCode		Integer	must	Error code, 0 means success
respContent	Object sub-element fields	Array of Segment objects	Default	Parameter array, consisting of one or more objects
	enable	Integer	must	0-off, 1-on
	src	Integer	must	0-UART1, 1-UART2

```
{
  "msgId": "202201241610366046" ,
  "sn": "12345678901234567895",
  "method": " device.config.shunt.get resp",
  "respCode": 0,
  "respContent": {
    "enable": 1,
    "src": 0
  }
}
```

3. Device management interface

3.1. System Restart

Platform sends:

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	Method field: device.command.reboot

```
{  
  "msgId":873916323,  
  "sn":"shjEz9B9fayWgfflfGVG",  
  "method":" device.command.reboot ",  
}
```

3.2. Factory Reset

Platform sends:

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	Method field: device.command.restore

```
{  
  "msgId":873916323,  
  "sn":"shjEz9B9fayWgfflfGVG",  
  "method":" device.command.restore "  
}
```

3.3. Equipment Upgrade

Platform sends:

Fields	type	illustrate	
msgId	String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s	String	must	SN
method	String	must	Method field: device.command.update

```
{
  "msgId":873916323,
  "sn":"shjEz9B9fayWgff1fGVG",
  "method": " device.command.update "
  "bizContent":
  {
    "url":"http://www.baidu.com/file/1.bin"
  }
}
```

4. Platform parameter interface (for internal use)

4.1. Get platform parameters

After the device is turned on, it requests the connection parameters of the management platform from the web server through the HTTP protocol post method.

(<http://cloud.ebyte.com/device/connect>) The request message is as follows:

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.connect
bizContent	Object Element Fields	Object	must	Parameter message field
	ver	String	must	Protocol version number
	mode	Integer	must	Cloud platform: 0 Cloud networking: 1 When mode=0: If the device is registered, the link parameters are returned; if the device is not registered, the link parameters are not returned; When mode=1: link parameters are returned, and if the device is registered, edgetotal and edgesign are returned normally; if the device is not registered, edgetotal is 0 and edgesign is default;

```
{
  "msgId": 20211227130215123456,
  "sn": "shjEz9B9fayWgff1fGVG",
  "method": "device.connect",
  "bizContent": {
    "ver": "1.0",
    "mode": 0
  }
}
```

The web server response message is as follows:

Fields		type	illustrate	
msgId		String	must	Message ID field, which is consistent with the ID of the message being responded to
s		String	must	SN
method		String	must	Method field: device.connect.resp
respCode		Integer	must	Error code, 0 means success, other values mean failure. This error code is different from the "Error Code" section at the end of the article. As long as the device obtains a

				non-zero value, the platform connection process will be stopped.
respContent	Object Element Fields	Object	must	Response parameter message
	type	String	must	baidu
	host	Character	must	MQTT server domain name
	port	Integer	must	The port number of the MQTT server
	clientID	Character	must	MQTT device clientID
	user	Character	must	MQTT server account
	password	Character	must	Password for the MQTT server
	sub	Character	must	Subscribe to a topic by your own "SN"
	pub	Character	must	Publish topic, receive "cloud" by platform
	edgesign	Character	Can be default	Edge configuration check code ()
	edgetotal	Integer	Can be default	Total number of edge configuration nodes

```

{
  "msgId":20211227130215123456,
  "sn": "shjEz9B9fayWgfflfGVG",
  "method": "device.connect.resp",
  "respCode":0,
  "respContent":
  {
    "type":1,
    "host": "https://www.baidu.com",
    "port":1833,
    "user": "fdsafdsafdsa",
    "password": "fdsafdsafdsa",
    "clientId":1234,
    "sub": "subPlatform",
    "pub": "pubPlatform",
    "edgesign": "xxxxxxxxxxxxxxxx",
    "edgetotal":20
  }
}

```

4.2. Get edge configuration

The device obtains the connection parameters of the management platform. If the edge computing verification code sent is inconsistent with the verification code stored locally, the device requests the web server to update the edge configuration parameters (<http://cloud.ebyte.com/device/edgeconfig>) through the HTTP protocol post method. The request message is as follows:

Fields		type	illustrate	
msgId		String	must	The message ID field is calculated using the 14-bit data of the current time plus a 6-bit random number. For example, the current time is 2021/09/18-16/35/29, The message ID is 20210918163529 916323
s		String	must	SN
method		String	must	Method field: device.edgeconfig
bizContent	Object Element Fields	Object	must	Parameter message field
	page	Integer	must	Requested page number
	pagesize	Integer	must	Number of data points per page

```
{
  "msgId": 20211227130215123456,
  "sn": "shjEz9B9fayWgfflfGVG",
  "method": "device.edgeconfig",
  "bizContent": {
    "page ": 2,
    "pagesize ": 10
  }
}
```

The web server response message is as follows:

Fields		Integer	illustrate	
msgId		String	must	Message ID field, which is consistent with the ID of the message being responded to
s		String	must	SN
method		String	must	Method field: device.edgeconfig.resp
respCode		Integer	must	Error code, 0 means success, other values mean failure. This error code is different from the "Error Code Section" at the end of the article. As long as the device obtains a non-zero value, the parameter acquisition process will be stopped.
bizContent	Object sub-element fields	Object	must	Reply message
	edgetotal	Integer	must	Total number of data points
	page	Integer	must	Response page number
	pagesize	Integer	must	Number of data points per page
	edgesign	String	must	Verification Code
	table	Object sub-eleme	Array of objects	must

		nt fields			
		name	String	must	JSON upload unique identifier, keyword , string length is up to 16
		if	Integer	must	Execution interface: 0 - serial port , 1 - network
		ifpara	String/Integer	must	if=1: place network parameters ip:port (string) if=0: place the serial port number 1 or 2 (integer type)
		ad dress	Integer	must	Modbus slave address , range 0-247
		reghead	Integer	must	Register Type: 2-Coil (datatype must be 0) 5-Discrete quantity (datatype must be 0) 6-Holding register (datatype must be > 0) 3-Input register (datatype must be > 0)
		regaddr	Integer	must	Register Address
		datatype	Integer	must	Data Type: 0 means 1 bit 1 means 16-bit signed 2 means 16-bit unsigned 3 means 32-bit signed ABCD 4 means 32-bit signed CDAB 5 means 32-bit unsigned ABCD 6 means 32-bit unsigned CDAB 7 represents 32-bit floating point ABCD 8 represents 32-bit floating point CDAB
		repmode	Integer	must	2-Not reporting (not checking period and range) 6-Periodic reporting (check period>0, range not checked) 7-2-Change reporting (Check range>0, period is not checked) 3-Change reporting + periodic reporting, (range>0, period>0)
		period	Integer	must	Reporting time (unit: minutes, default: 1) (range: 0-65535)
		range	floating point	must	Range of variation, acting on the value calculated by the calculation formula (platform side data) 0 - 3.4×10^{38}
		point	Integer	must	Decimal places (0 - 5)
		readtype	Integer	must	Read-write attribute 0-read only 1-read and write 2-write only
		mathup	String	must	Operation formula uplink (+=*/operation) (range 32 bytes 5-level sequential operation)
		mathdown	String	must	Operation formula downlink (+=*/ operation) (range 32 bytes 5-level sequential operation)

{

```
"msgId":20211227130215123456,
"sn":"shjEz9B9fayWgfflfGVG",
"method":"device.connect.resp",
"respCode":0,
" respContent ":{
" edgetotal ":0,
    " page ":0,
    " pagesize ":0,
    "edgesign":"xxxxxxxxxxxxxxxx",
"table":[
{
"name":"data0",
"address":1,
"reghead":0,
"regaddr":2,
"datatype":0,
"repmode":2,
"period":0,
"range":0,
"point":0,
"readtype":0,
"mathup":"0",
    "mathdown":"0"
} ,
{
"name":"data 1 ",
"address":1,
"reghead":0,
"regaddr":2,
"datatype": 21 ,
"repmode":2,
"period":0,
"range":0,
"point":0,
"readtype":0,
"mathup":"0",
    "mathdown":"0"
}
]
}
}
```

5. Error Code

Error Code	describe
01	SN Error
02	Method Error
03	Parameter range error
04	Wrong parameter type
05	Field missing
06	Unable to parse or other errors (recognized as JSON protocol but unable to obtain valid data or other internal errors)

6. Edge acquisition data point parameter verification rules

6.1 Register, read and write mode data type verification table

- The following parameter register types are main parameters. For example, if it is discrete input or input, it will report an error if it is set to write-only or read-write. Other types of registers will be set according to the set value.
- Coil and discrete input can only be bit (0), holding register supports 1-8 , otherwise an error will be reported
Read and write modes include 0- read only 1- read and write 2- write only

Data types include

Register type (reghead)	Coil	Discrete input	Holding Registers	Input Register
Read and write mode (readtype)	all	Read-only	all	Read-only
Data type (datatype)	Bit (0)	Bit (0)	1-8	1-8

0 means 1 bit

1 means 16 bits signed

2 means 16 -bit unsigned

3 means 32 -bit signed ABCD

4 means 32 -bit signed CDAB

5 means 32 -bit unsigned ABCD

6 represents 32 -bit unsigned CDAB

7 represents 32 -bit floating point ABCD

8 means 32 -bit floating point

6.2 Reporting Mode Period value, range value calibration table

Reporting mode (repmode)	Cycle + Change	cycle	change	Not reporting
period	>0,<=65535	>0,<=6553 5	Any positive integer value	Any positive integer value
range	>0,<= maximum floating point value	Any value	>0 ,<= maximum floating point value	Any positive value

Any value means no verification, the parameter is passed directly, otherwise the parameter can be passed only within the description range, and an error is reported if it exceeds the range

6.3 About polling queue:

When the data point read-write attribute contains the read attribute, the current data point participates in the polling

When the data point reporting mode is periodic, change, or periodic + change, the data point participates in polling

6.4 Other calibration parameters

point	Integer	Decimal places (0 - 5)
mathup	String	Operation formula uplink (+ = * / operation) (range 32 bytes 5- level sequential operation)
mathdown	String	Operation formula downlink (+ = * / operation) (range 32 bytes 5- level sequential operation)

6.5 Interface type verification (supported by E870-G1)

Polling interface type (if)	0 (serial port)	1 (Network)
Polling interface parameters (ifpara)	Serial port number (integer type) is based on the actual serial port number	Place network parameters (string) IP : PORT

7. Revision History

Version	Modified by	Modifications	Modified Date
1.00	Gou Zhongqin	Initial release	2022.2.24
1.01	Fan Yong	1. Modify the modbus to json protocol part to edge computing 2. Unify the IO parameter configuration interface	2022.4.8
1.02	Li Yiheng	Add field necessity description	
1.03	Ye Shuai	Corrected domain name and POST field printing errors	
1.04	Ye Shuai	Corrected the problem that the slave address does not support 0, improved the parameter description and effective conditions	2022.9.8
1.05	Ye Shuai	Corrected msgid to integer type, corrected serial port configuration interface serial number 0-1 to 12	2022.9.16
1.06	Ye Shuai	Modify the socket parameters subEn and pubEn to subSw and pubSw, and change them to integer type	2022.9.19
1.07	Li Yiheng	Unify msgid description into string, add data point parameter verification rules in Chapter 6	2022.09.19
1.08	Ye Shuai	Uart get interface adds index parameter	2022.11.13
1.09	Ye Shuai	Add offline cache switch to socket settings	2023.1.5
1.10	Ye Shuai	Add serial port shunt interface	2023.1.29
1.11	Ye Shuai	Add LOC and RTC fields to the socket registration packet heartbeat packet, and correct the socket registration packet heartbeat FW field to be shaped	2023.2.10

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