

# CWT JSON:MQTT Protocol

V1.0

# I. Overview

Choose Json MQTT mode to communication with server

Subscribe topic: client id:JSON

Publish topic: client id:CWTIO-SVR

For example, setup in device as follow

Index	Server address	Port	TCP/UDP	Data protocol	Username	Password	Client ID
0	120.34.23.54	1883	0: TCP	3: JSON MQTT	admin	12345	123456

Subscribe topic: 123456:JSON

Publish topic: 123456:CWTIO-SVR

## 1. description of data flag

flag	description	remark
<a href="#">\$%%CMD\$</a>	Send command	Send from server
<a href="#">AD10</a>	Single channel analog input	
<a href="#">AD22</a>	All channels analog inputs	
<a href="#">DC03</a>	Power (external power/internal battery)	
<a href="#">DI02</a>	Single channel digital input	
<a href="#">DI20</a>	All channels digital inputs	
DO65	Single channel digital output	
<a href="#">DO21</a>	All channels digital outputs	
<a href="#">GM67</a>	Network information	
<a href="#">HT99</a>	heart beat	
<a href="#">CT32</a>	All channels counters	
<a href="#">CT48</a>	Single channel counter	
<a href="#">LB66</a>	LBS information (MCC,MNC, LAC, CID)	
<a href="#">RG80</a>	Single channel modbus register	
<a href="#">RG81</a>	All channels modbus registers	
<a href="#">PW00</a>	Power up data (include: arm/disarm status, power supply, signal, DI, DO)	
<a href="#">RS45</a>	Hardware version: IMEI、SIMID、OPERATOR PVer、FVer、HdVer、DevTp	

## II. Description of Json format

### 1 Power up (PW00/ RP01)

**Format:** {"ID": "dyf00001", "PID": "PW00", "TIME": "2021-07-02 14:58:19"}

Content	Explanation
"ID": "dyf00001"	Client ID (set in device)
"PID": "PW00"	Pw00 is flag of data type, represent power up
"TIME": "2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS

Note: device upload such type data when power up

### 2 Digital input

#### 2.1 Single channel (flag: DI02)

**Format:** {"ID": "dyf00001", "CH": 1, "PID": "DI02", "TIME": "2021-07-02 14:58:59", "DI1": 0}

Content	Explanation
"ID": "dyf00001"	Client ID (set in device)
"CH": 1	Index of channel, 0 represent Di1
"PID": "DI02"	DI02 is flag of data type, represent single channel
"TIME": "2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"DI1": 0	DI1 status (0: normal, 1: alarm)

#### 2.2 All channels digital input (flag: DI20)

**Format:** {"ID": "dyf00001", "PID": "DI20", "CH": 4, "START": 0, "TIME": "2021-07-02 14:58:35", "DI0": 0, "DI1": 0, "DI2": 0, "DI3": 0}

Content	Explanation
"ID": "dyf00001"	Client ID (set in device)
"PID": "DI20"	DI20 is flag of data type, represent all channels
"CH": 4	All 4 channels data
"START": 0	Start from Di0
"TIME": "2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"DI0": 0	DI0 status (0: normal, 1: alarm)

### 3 Analog input

#### 3.1 Single channel (flag: AD10)

Format: {"ID":"dyf00001","CH":0,"PID":"AD10","TIME":"2021-07-02

14:58:59","AIV0":0.000,"AIS0":2}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"CH":0	Index of channel, 0 represent AI0
"PID":"AD10"	AD10 is flag of data type, represent single channel
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"AIV0":0.000	Channel 0 value, AIV0 represent AI0
"AIS0":2	Channel 0 status (0: normal, 1: alarm, 2: disconnect, 3: output measure range)

#### 3.2 All channels analog input (flag: AD22)

Format: {"ID":"dyf00001","PID":"AD22","CH":5,"START":0,"TIME":"2021-07-02

14:58:38","AI0":{"S":2,"V":0.000},"AI1":{"S":2,"V":0.000},"AI2":{"S":2,"V":0.000},"AI3":{"S":2,"V":0.000},"AI4":{"S":0,"V":23.927}}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"PID":"AD22"	AD22 is flag of data type, represent all channels
"CH":5	All 5 channels data
"START":0	Start from Ai0
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"AI0":{"S":2,"V":0.000},	<b>AI0</b> : channel 0 <b>"S":2</b> (status, 0: normal, 1: alarm, 2: disconnect, 3: output measure range) <b>"V":0.000</b> (value)

## 4 Digital output

### 4.1 Single channel (flag: DO22)

Format: {"ID":"dyf00001","CH":1,"PID":"DO22","TIME":"2021-07-02 14:58:59","DO1":0}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"CH":1	Index of channel, 0 represent DO1
"PID":"DO22"	DO22 is flag of data type, represent single channel
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"DO1":1	DO1 status (0: off, 1: on)

### 4.2 All channels digital output (flag: DO21)

Format: {"ID":"dyf00001","PID":"DO21","CH":2,"START":0,"TIME":"2021-07-02 14:58:36","DO0":0,"DO1":0}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"PID":"DO21"	DO21 is flag of data type, represent all channels
"CH":2	All 2 channels data
"START":0	Start from DO0
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"DI0":0	DO1 status (0: off, 1: on)

## 5 Modbus register

### 5.1 single channel (flag: RG80)

Format: {"ID":"dyf00001","CH":0,"PID":"RG80","TIME":"2021-07-02 14:58:59","RGV0":0.000,"RGS0":2}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"CH":0	Index of channel, 0 represent AI0
"PID":"RG80"	RG80 is flag of data type, represent single channel
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"RGV0":0.000	Channel 0 value, RGV0 represent register 0
"RGS0":2	Channel 0 status (0: normal, 1: alarm, 2: disconnect, 3: output measure range)

## 5.2 All channel (flag: RG81)

Format: {"ID":"dyf00001","PID":"RG81","CH":4,"START":0,"TIME":"2021-07-02

14:58:44","RG0":{"S":2,"V":0.000},"RG1":{"S":2,"V":0.000},"RG2":{"S":2,"V":0},"RG3":{"S":2,"V":0}}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"PID":"RG81"	RG81 is flag of data type, represent all channels
"CH":4	All 4 channels data
"START":0	Start from register 0
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"RG0":{"S":2,"V":0.000}	<b>RG0:</b> register 0 <b>"S":2</b> (status, 0: normal, 1: alarm, 2: disconnect, 3: output measure range) <b>"V":0.000</b> (value)

## 6 Counter

### 6.1 All counter (CT32)

Format: {"ID":"dyf00001","PID":"CT32","CH":4,"START":0,"TIME":"2021-07-02

14:58:40","CT0":{"S":0,"V":35.600},"CT1":{"S":2,"V":0.000},"CT2":{"S":2,"V":0.000},"CT3":{"S":2,"V":0.000}}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"PID":"CT32"	CT32 is flag of data type, represent all channels
"CH":4	All 4 channels data
"START":0	Start from Di0
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"CT0":{"S":0,"V":35.600}	<b>CT0:</b> channel 0 <b>"S":0</b> (status, 0: normal, 1: alarm, 3: disconnect) <b>"V":35.6</b> (value)

## 6.2 Single channel (flag: CT48)

Format: {"ID":"dyf00001","CH":0,"PID":"CT48","TIME":"2021-07-02

14:58:59","CTV0":35.600,"CTT0":41,"CTS0":0}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"CH":0	Index of channel, 0 represent channel 0
"PID":"CT48"	CT48 is flag of data type, represent single
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"CTV0":35.600	Channel 0 counting value
"CTT0":41	Channel counting time
"CTS0":0	Channel 0 status (0: normal, 1: alarm, 2: disconnect, 3: output measure range)

## 7 Heartbeat (flag: HT99)

Format: {"ID":"dyf00001","PID":"HT99","TIME":"2021-07-02 14:59:19","HT":""}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"PID":"HT99"	HT99 is flag of data type, represent heart beat
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"HT":""	Heartbeat content can be null or set via config software

## 8 Power supply (flag: DC03)

Format: {"ID":"dyf00001","PID":"DC03","CH":1,"START":0,"TIME":"2021-07-02

14:58:42","Power":0}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"PID":"DC03"	DC03 is flag of data type, represent power supply
"CH":1	Fixed value
"START":0	Fixed value
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"Power":0	Power supply status (0: external power, 1: interior battery)

## 9 Hardware version information (flag: RS45)

Format: {"ID":"dyf00001","PID":"RS45","TIME":"2021-07-02 14:58:29","IMEI":"868142043541268","SIMID":"898600121755771","OPERATOR":"CHINA MOBILE","PVer":"CwtIO 1.413","FVer":"1.56","HdVer":"1.1","DevTp":"STM32","LIVED":"1"}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"PID":"RS45"	RS45 is flag of data type, represent hardware version info
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"IMEI":"868142043541268"	IMEI (International Mobile Equipment Identity)
"SIMID":"898600121755771"	This code is read from simcard
"OPERATOR":"CHINA MOBILE"	Mobile operator
"PVer":"CwtIO 1.413"	CWTIO protocol version
"FVer":"1.56"	Firmware Version
"HdVer":"1.1"	Hardware version
"DevTp":"STM32"	Hardware type
"LIVED":"1"	Hardware online time

Note: device upload such type data when power up

## 10 Network information (Flog: GM67)

Format: {"ID":"dyf00001","PID":"GM67","TIME":"2021-07-02 14:58:25","IMEI":"868142043541268","SIMID":"898600121755771","OPERATOR":"CHINA MOBILE","GPRSIP":"10.89.58.235","MCC":"460","MNC":"0","SIGNAL":"15","GPRSTX":"431","GPRS RX":"48","LIVED":"1"}

Content	Explanation
"ID":"dyf00001"	Client ID (set in device)
"PID":"GM67"	GM67 is flag of data type, represent power supply
"TIME":"2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"IMEI":"868142043541268"	IMEI (International Mobile Equipment Identity)
"SIMID":"898600121755771"	This code is read from simcard
"OPERATOR":"CHINA MOBILE"	Mobile operator
"GPRSIP":"10.89.58.235"	GPRS IP address



"MCC": "460"	Mobile Country Code
"MNC": "0"	Mobile Network Code
"SIGNAL": "15"	Network signal, 0-31
"GPRSTX": "431"	Sending data byte over GPRS
"GPRSRX": "48"	Receiving data byte over GPRS
"LIVED": "1"	Hardware online time

Note: device upload such type data when power up

## 11 LBS information (Location Based Service) (flag: LB66)

Format: {"ID": "dyf00001", "PID": "LB66", "TIME": "2021-07-02 14:58:23", "MCC": "460", "MNC": "0", "LAC": "0219", "CID": "0093BA41"}

Content	Explanation
"ID": "dyf00001"	Client ID (set in device)
"PID": "LB66"	LB66 is flag of data type, represent LBS info
"TIME": "2021-07-02 14:58:59"	Time format: YY-MM-DD HH:MM:SS
"MCC": "460"	Mobile Country Code
"MNC": "0"	Mobile Network Code
"LAC": "0219"	Location Area Code, it's used for tracking location
"CID": "0093BA41"	Customer Identity, it's used for tracking location

## 12 Send command format

\$%%	CMD	\$
head	command (multiple command can be connected by #, such as command1#command2#command3)	end

For example: \$%%IOOH0#IOOH1\$ // turn on output0 and output1