Venus MQTT Document

S/N	Version	Instructions	Confirmed by	Verified by
1	V1.0	Venus MQTT Document		Wuyi

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1 MQTT Core Concepts

1.1 Introduction

MQTT (Message Queue Telemetry Transport) is the most commonly used lightweight messaging protocol for the IoT (Internet of Things). The protocol is based on a publish/subscribe (pub/sub) pattern for message communication. It allows devices and applications to exchange data in real-time using a simple and efficient message format, which minimizes network overhead and reduces power consumption.

1.2 Publish/Subscribe Pattern

The protocol is event-driven and connects devices using the pub/sub pattern. Different from the traditional client/server pattern, it is a messaging pattern in which senders (publishers) do not send messages directly to specific receivers (subscribers). Instead, publishers categorize messages into topics, and subscribers subscribe to specific topics that they are interested in. When a publisher sends a message to a topic, the MQTT broker routes and filters all incoming messages, and then delivers the message to all the subscribers that have expressed interest in that topic.

The publisher and subscriber are decoupled from each other and do not need to know each other's existence. Their sole connection is based on a

predetermined agreement regarding the message. The Pub/Sub pattern enables flexible message communication, as subscribers and publishers can be dynamically added or removed as needed. It also makes the implementation of message broadcasting, multicasting, and unicasting easier.

1.3 MQTT Server

The MQTT server acts as a broker between the publishing clients and subscribing clients, forwarding all received messages to the matching subscribing clients. Therefore, sometimes the server is directly referred to as the MQTT Broker.

1.4 MQTT Client

The clients refer to devices or applications that can connect to an MQTT server using the MQTT protocol. They can act as both publishers and subscribers or in either of those roles separately.

1.5 Topic

Topics are used to identify and differentiate between different messages, forming the basis of MQTT message routing. Publishers can specify the topic

of a message when publishing, while subscribers can choose to subscribe to topics of interest to receive relevant messages.

2 Subscribe to your device

Before sending/receiving messages in MQTT, you must subscribe to your device using the following command:

`hame_energy/{type}/device/{uid or mac}/ctrl`

The parameters that need to be filled in the command include your device type, device ID or MAC.

Venus currently has the following type：HMG-x，like HMG-1.

3 Read device information

3.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

`cd=01`

3.2 Receive

You will receive a message, such as:

tot_i=44785,tot_o=36889,ele_d=489,ele_m=3931,grd_d=395,grd_m=2833,inc_d=0,inc_m=-111,grd_f=0,grd_o=807,grd_t=3,gct_s=1,cel_s=3,cel_p=138,cel_c=27,err_t=0,err_a=0,dev_n=140,grd_y=0,wor_m=1,tim_0=14|0|17|0|127|800|1,tim_1=17|1|20|0|127|-800|1,tim_2=20|1|23|0|127|800|1,tim_3=23|1|23|59|127|-800|1,tim_4=0|1|3|0|127|800|1,tim_5=3|1|6|0|127|-800|1,tim_6=6|1|9|0|127|800|1,tim_7=9|1|12|1|127|-800|1,tim_8=9|10|12|0|127|-2500|0,tim_9=0|0|0|0|0|0|0,cts_m=0,bac_u=1,tra_a=41,tra_i=40000,tra_o=600000,htt_p=0,prc_c=4620,prc_d=4620,wif_s=35,inc_a=-152,set_v=1,mcp_w=2500,mdp_w=800,ct_t=1,phase_t=0,dchrg_t=255,bms_v=109,fc_v=202407221950,wifi_n=Hame

Description of the above parameters:

Key	Description
tot_i	Total cumulative charging capacity (0.01kw.h)
tot_o	Total cumulative discharge capacity (0.01kw.h)
ele_d	Daily cumulative charging capacity (0.01kw.h)
ele_m	Monthly cumulative charging capacity (0.01kw.h)
grd_d	Daily cumulative discharge capacity (0.01kw.h)
grd_m	Monthly cumulative discharge capacity (0.01kw.h)
inc_d	Daily cumulative income (Unit: 0.001 euros)
inc_m	Monthly cumulative income (Unit: 0.001 euros)
grd_f	Off grid power (VA)
grd_o	Combined power (-: Charging +: Discharging, Unit: W)
grd_t	Working status (0x0: sleep mode;

	0x1: standby; 0x2: charging; 0x3: discharging; 0x4: backup mode; 0x5: OTA upgrade; 0x6: bypass status)
gct_s	CT status (0: Not connected; 1: has been connected; 2: Weak signal)
cel_s	Battery working status (0: Not working; 1: Charging; 2: Discharge)
cel_p	Battery energy (0.01kWh)
cel_c	SOC
err_t	Error code (fault code)
err_a	Error code (warning code)
dev_n	Device version number
grd_y	Grid type (0: Adaptive (220-240) (50-60hz) AUTO; 1: EN50549 EN50549; 2: Netherlands; 3: Germany; 4: Austria; 5: United Kingdom; 6: Spain; 7: Poland; 8: Italy; 9: China)
wor_m	Working mode (0: Automatic; 1: Manual operation; 2: Trading)
tim_0	Start time (hour | minute) | End time (hour | minute) | Cycle | Power | Enable
tim_1	ditto
tim_2	ditto
tim_3	ditto
tim_4	ditto
tim_5	ditto
tim_6	ditto
tim_7	ditto

tim_8	ditto
tim_9	ditto
cts_m	Automatically switch the working mode switch based on CT signals (0: Off; 1: On)
bac_u	Enable status of back up function (0: Close; 1: Open)
tra_a	Transaction mode - region code
tra_i	Transaction mode - electricity price during charging (0: EU; 1: China; 2: North America)
tra_o	Transaction mode - electricity price during discharge
htt_p	HTTP Server Type
prc_c	Obtain regional charging prices
prc_d	Obtain regional discharge prices
wif_s	WIFI signal strength (Less than 50: Good signal; 50-70: The signal is average; 70-80: Poor signal; Greater than 80: The signal is very weak)
inc_a	Total cumulative income (Unit: 0.001 euros)
set_v	Version set (0: 2500W version; 1: 800W version)
mcp_w	Maximum charging power (Not exceeding 2500W)
mdp_w	Maximum discharge power (Not exceeding 2500W)
ct_t	CT type (0: No meter detected; 1: CT1; 2: CT2; 3: CT3; 4: Shelly pro; 5: p1 meter)
phase_t	The phase where the device is located (0:

	Unknown; 1: Phase A; 2: Phase B; 3: Phase C; 4: Not detected)
dchrg_t	Recharge mode (0: Single phase power supply; 1: Three phase power supply)
bms_v	BMS version number
fc_v	Communication module version number
wifi_n	WIFI Name

4 Set working status

4.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

1. `cd=2,md=0` - Automatic mode
2. `cd=2,md=1` - Manual mode
3. `cd=2,md=2` - Trading mode

5 Set automatic discharge time period

5.1 Public

Topic:

hame_energy/{type}/App/{uid or mac}/ctrl

Payload:

cd=3,md=1,nm=xx,bt=8:30,et=20:30,wk=1,vv=123,as=0

Description of the above parameters:

Key	Description
cd	Instruction identification
md	Working mode (0: Automatic; 1: Manual operation; 2: Trading)
nm	[0-9]
bt	Start Time
et	End Time
wk	Week[0-6]
vv	Power
as	Enable (0: disable; 1: enable)

6 Set transaction mode content

6.1 Public

Topic:

hame_energy/{type}/App/{uid or mac}/ctrl

Payload:

cd=3,md=2,id=xx,in=xx,on=xx

Description of the above parameters:

Key	Description
cd	Instruction identification
md	Working mode (0: Automatic; 1: Manual operation; 2: Trading)
id	Region code
in	Electricity price during charging
on	Electricity price during discharge

7 Set device time

7.1 Public

Topic:

hame_energy/{type}/App/{uid or mac}/ctrl

Payload:

cd=4,yy=123,mm=1,rr=2,hh=23,mn=56

Description of the above parameters:

Key	Description
cd	Instruction identification
yy	Year
mm	Month [0,11] (0 represents January)
rr	Day [1,31]
hh	Hour [0,23]
mn	Minute [0,59]

8 Restore factory settings

8.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

1. `cd=5,rs=1` - Restore factory settings and clear accumulated data
2. `cd=5,rs=2` - Restore factory settings without clearing accumulated data

9 Upgrade FC41D firmware version

9.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

1. `cd=9,ot=0` - OTA via URL interface
2. `cd=9,ot=1` - OTA via LAN setup

10 Enable EPS function

10.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

1. `cd=11,bc=0` - Disable the back up function
2. `cd=11,bc=1` - Enable the back up function

10.2 Receive

You will receive a message with a ret value:

1. `ret=0` - Setting failed
2. `ret=1` - Setting successful

11 Set version

11.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

1. `cd=15,vs=800` - Set up 800W version
2. `cd=15,vs=2500` - Set up 2500W version

11.2 Receive

You will receive a message with a ret value:

1. `ret=0` - Setting failed
2. `ret=1` - Setting successful

12 Set maximum charging power

12.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

`cd=16,cp=[300,2500]`

12.2 Receive

You will receive a message with a ret value:

1. `ret=0` - Setting failed
2. `ret=1` - Setting successful

13 Set maximum discharge power

13.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

1. cd=15,vs=800 - Set up 800W version
2. cd=15,vs=2500 - Set up 2500W version

13.2 Receive

You will receive a message with a ret value:

1. ret=0 - Setting failed
2. ret=1 - Setting successful

14 Set the meter type and supplementary power type

14.1 Public

Topic:

hame_energy/{type}/App/{uid or mac}/ctrl

Payload:

1. cd=15,meter=0 - ct
2. cd=15,meter=1 - shelly pro
1. cd=15,meter=2 - p1 meter
2. cd=15,dchrg=0- single-phase
1. cd=15,dchrg=1- three-hase

15 Obtain CT power

15.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

`cd=19`

15.2 Receive

You will receive a message:

`get_power=%d|%d|%d|%d|%d` (A-phase power | B-phase power | C-phase power | three-phase total power | output power) Unit: W

16 Upgrade the firmware of the FC4 module

16.1 Public

Topic:

`hame_energy/{type}/App/{uid or mac}/ctrl`

Payload:

`cd=20,le=%d,url=%s`

Description of the above parameters:

Key	Description
cd	Instruction identification

le	URL length
url	Download path

16.2 Receive

If the device receives the message correctly, it will return ret=1. If it does not receive the message, there will be no return.