DWH4113 Series MODBUS Protocol

V1.16

Content

1 Detail data definition

1.1 Energy

Name	**Hexadecimal Address**	**Data Format (4 bytes, 3 decimal places, the unit: kWh or kvarh)**			**Data Type**
Total active import energy	0x4000	0x00112233	0x00112233 =1122867	1122.867kWh	unsigned
L1 active import energy	0x4020	0x00112233	0x00112233 =1122867	1122.867kWh	unsigned
L2 active import energy	0x4040	0x00112233	0x00112233 =1122867	1122.867kWh	unsigned
L3 active import energy	0x4060	0x00112233	0x00112233 =1122867	1122.867kWh	unsigned
Total active export energy	0x4100	0x00112233	0x00112233 =1122867	1122.867kWh	unsigned
L1 active export energy	0x4120	0x00112233	0x00112233 =1122867	1122.867kWh	unsigned
L2 active export energy	0x4140	0x00112233	0x00112233 =1122867	1122.867kWh	unsigned
L3 active export energy	0x4160	0x00112233	0x00112233 =1122867	1122.867kWh	unsigned
Active net energy	0x5008	0x00112233	0x00112233 =1122867	1122.867kWh	signed
L1 active net energy	0x5478	0x00112233	0x00112233 =1122867	1122.867kWh	signed
L2 active net energy	0x547C	0x00112233	0x00112233 =1122867	1122.867kWh	signed
L3 active net energy	0x5480	0x00112233	0x00112233 =1122867	1122.867kWh	signed
Reactive net energy	0x5014	0x00112233	0x00112233 =1122867	1122.867kvarh	signed
L1 reactive net energy	0x549C	0x00112233	0x00112233 =1122867	1122.867kvarh	signed
L2 reactive net energy	0x54A0	0x00112233	0x00112233 =1122867	1122.867kvarh	signed
L3 reactive net energy	0x54A4	0x00112233	0x00112233 =1122867	1122.867kvarh	signed
Total reactive import energy	0x4080	0x00112233	0x00112233 =1122867	1122.867kvarh	unsigned

L1 reactive import energy	0x40A0	0x00112233	0x00112233 =1122867	1122.867kvarh	unsigned
L2 reactive import energy	0x40C0	0x00112233	0x00112233 =1122867	1122.867kvarh	unsigned
L3 reactive import energy	0x40E0	0x00112233	0x00112233 =1122867	1122.867kvarh	unsigned
Total reactive export energy	0x4180	0x00112233	0x00112233 =1122867	1122.867kvarh	unsigned
L1 reactive export energy	0x41A0	0x00112233	0x00112233 =1122867	1122.867kvarh	unsigned
L2 reactive export energy	0x41C0	0x00112233	0x00112233 =1122867	1122.867kvarh	unsigned
L3 reactive export energy	0x41E0	0x00112233	0x00112233 =1122867	1122.867kvarh	unsigned

1.2 Instantaneous values

1.2.1 Power

Name	**Hexadecimal Address**	**Data Format (4 bytes, 1 decimal places, the unit: W or var)**			**Data Type**
Total active import power	0x0000	0x00002CEC	0x00002CEC =11500	1150.0W	unsigned
Total active export power	0x0002	0x00002CEC	0x00002CEC =11500	1150.0W	unsigned
Total reactive import power	0x001E	0x00002CEC	0x00002CEC =11500	1150.0var	unsigned
Total reactive export power	0x0020	0x00002CEC	0x00002CEC =11500	1150.0var	unsigned

1.2.2 Voltage

Name	**Hexadecimal Address**	**Data Format (4 bytes, 2 decimal places, the unit: V)**			**Data Type**
L1-N	0x0004	0x000059D8	0x000059D8 = 23000	230.00V	unsigned
L2-N	0x0006	0x000059D8	0x000059D8 = 23000	230.00V	unsigned
L3-N	0x0008	0x000059D8	0x000059D8 = 23000	230.00V	unsigned
L1-L2 Instantaneous	0x0022	0x000059D8	0x000059D8	230.00V	unsigned

voltage			= 23000		
L2-L3 Instantaneous voltage	0x0024	0x000059D8	0x000059D8 = 23000	230.00V	unsigned
L3-L1 Instantaneous voltage	0x0026	0x000059D8	0x000059D8 = 23000	230.00V	unsigned

1.2.3 Current

Name	**Hexadecimal Address**	**Data Format (4 bytes, 3 decimal places, the unit: A)**			**Data Type**
L1	0x000A	0x00001388	0x00001388=5000	5.000A	unsigned
L2	0x000C	0x00001388	0x00001388=5000	5.000A	unsigned
L3	0x000E	0x00001388	0x00001388=5000	5.000A	unsigned

1.2.4 Power factor

Name	**Hexadecimal Address**	**Data Format (4 bytes, 3 decimal places, range: 0 ~ +1.000)**			**Data Type**
Total power factor	0x0010	0x000003E6	0x000003E6=998	0.998	unsigned

1.2.5 Frequency

Name	**Hexadecimal Address**	**Data Format (4 bytes, 3 decimal places, the unit: Hz)**			**Data Type**
Frequency	0x0012	0x0000C350	0x0000C350=50000	50.000Hz	unsigned

1.3 Basic parameter

Name	**Hexadecimal Address**	**Data size**	**Data Format**		
Serial number	0x0402	6 Bytes	0x001122334455	“001122334455”	
Meter firmware version	0x8908	16 Bytes	0x4142434445202020202020202020202020	“ABCDE ”	ASCII string (total 16 characters, if not enough fill in spaces.)

Type designation	0x8960	12 Bytes	0x41424344 4546474849 4A4B4C	“ABCDEFGHIJKL”	ASCII string (total 12 characters, if not enough fill in spaces.) RW(Write Only in factory authority)
Communication baud rate	0x040B	2 Bytes	0x0005 0x0006 0x0007	5 – 9600bps 6 – 19200bps 7 – 38400bps	R/W
Rated voltage	0x040C	2 Bytes	0x59D8 = 23000	230.00V, 2 decimal places	R
Rated current	0x040D	2 Bytes	0x1388 =5000	5.000A, 3 decimal places	R
Rated frequency	0x040E	2 Bytes	0xC350 =50000	50.000Hz, 3 decimal places	R
Maximum current	0x040F	2 Bytes	0xFDE8=65000	65.000A, 3 decimal places	R
Active pulse constant	0x0410	2 Bytes	0x03E8=1000	1000imp/kWh	R
Reactive pulse constant	0x0430	2 Bytes	0x03E8=1000	1000imp/kvarh	R
Pulse type switching	0x042A	2 Bytes	0x0001 0x0002	enum 1 –Active pulse 2 –Reactive pulse	R/W
Status word	0x0413	2 Bytes	Bit0-RTC_error Bit1-EE_error Bit8-L1 Failure Bit9-L2 Failure Bit10-L3 Failure Bit11-Reverse phase sequence		R
Error register for internal fatal error	0x0423	2 Bytes	Bit0-Measurement system error		R
Occurred Error	0x0424	2 Bytes	Bit0-Measurement system error		R

register for internal fatal error					
Measure mode	0x0416	2Byte	0x0000 – Nett and Dominant[(+A)+(-A)] 0x0004 –Reverse locking(+A)		R W (Write Only in factory authority)
Check Sum	0x041B	2 Bytes	0xF54A	F54A	R
Backlight control mode	0x041F	2 Bytes	0x0000 – on while using Button 0x0001 – indefinitely on		R/W
Communication parameter	0x0420	2 Bytes	0x0001 0x0002 0x0003	1-8N1 2-8E1 3-8O1	R/W
Communication address	0x0421	2 Bytes	0x0012	0x12 Communication address is 12	R/W
Whether enable the broadcast address	0x0422	2 Bytes	0x0000 0x0001	1-Enable 0-Disable	R/W
Communication address enable	0x0302	2 Bytes	0x0000 0x0001	1-Enable 0-Disable	R/W
Whether enable reactive pulse	0x0305	2 Bytes	0x0000 0x0001	1-Enable 0-Disable	R W (Write Only in factory authority)
Enable factory mode	0x041E	2 Bytes	0x0000 0x0001	1-Enable 0-Disable	RW (Write & Read in factory authority)
Production code	0x0425	10 Bytes	“112233445 5”	ASCII	R(0x2B read) W (Write Only in factory authority)

Manufacturer name	0x043A	10 Bytes	“1122334455”	ASCII	R(0x2B read) W (Write Only in factory authority)
Reset second index	0x0445	4 Bytes	0x00000000	0	W (Write Only in factory authority)
RTC error enable	0x0306	2 Bytes	0x0001 0x0000	1-Enable 0-Disable	R/W
Second index	0x0400	4 Bytes	0x000003E8 =1000	1000s	R
Soft clock date	0x0405	4 Bytes		Definition refer to Date format which below this form	R/W
Soft clock time	0x0407	4 Bytes		Definition refer to Time format which below this form	R/W

Date and time format	Octet	8
Date format	Octet	4
Year	U08	1
Month (1..12)	U08	1
Day (1..31)	U08	1
Day of week (1:Monday, 0:Sunday)	U08	1
Time format	Octet	4
Hour (0..23)	U08	1
Minute (0..59)	U08	1
Second (0..59)	U08	1
Hundredths (0..99)	U08	1

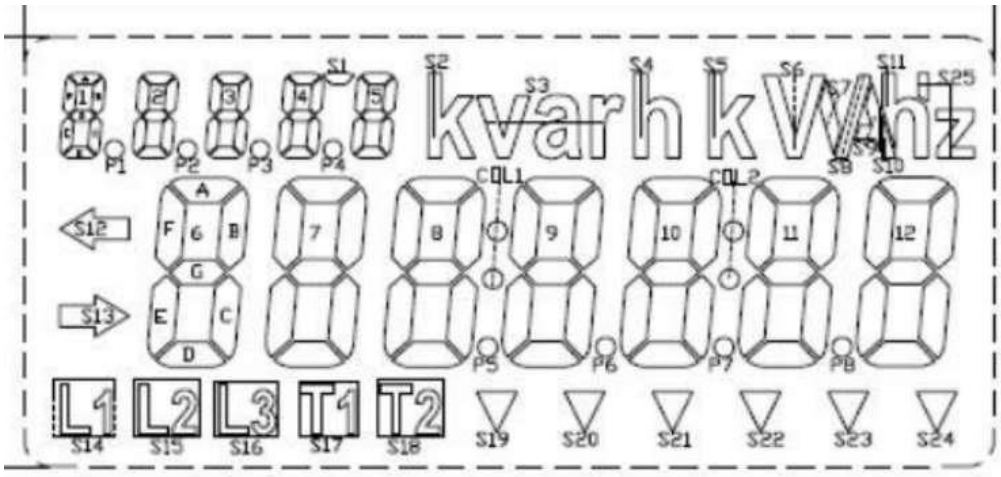
1.4 Display

Name	**Hexadecimal Address**	**Data size**	**Data Format (unsigned)**		
Auto Mode Duration(sec)	0x1000	2 Bytes	0x000A=10	5~600s	R/W

Alt Mode Duration(sec)	0x1001	2 Bytes	0x000A=10	4~20s	R/W
Backlight on time	0x1005	2 Bytes	0x000A=10	5~60s	R/W
Auto Mode Write register (32 Item)	0x1100	64 Bytes	4000 4080 FFFF FFFF ... FFFF (32 Item * 2 =64 Bytes)		R/W
Alt Mode Write register (32 Item)	0x1120	64 Bytes	4000 4100 4080 4180 ... FFFF (32 Item * 2 =64 Bytes)		R/W
Auto Display Item	0x1010	2 Bytes	0x0002=2		R/W
Alt Display Item	0x1011	2 Bytes	0x0004=4		R/W
Is test mode	0x1002	2 Bytes	0x0001 = 1-enter test mode 0x0000 = 0-out of test mode		R/W (Write & Read in factory authority)
Test duration time	0x1003	2 Bytes	0x000A=10	4~20s	R/W (Write & Read in factory authority)
Test Mode Write register (32 Item)	0x1140	64 Bytes	5B00 5B11 FFFF FFFF ... FFFF (32 Item * 2 =64 Bytes)		R/W (Write & Read in factory authority)
Test display Item	0x1012	2 Bytes	0x000A=10		R/W (Write & Read in factory authority)

1.5 LCD Control Mode

(First step is configure LCD Control Mode Display Number)
(Second step is choose which display)
(Third is configure display content)



Name	Hexadecimal Address	Data Format (2 bytes)	Attribute
LCD Control Enable	0x0303	1-Enable 0-Disable	R/W
number	0x1161 0x1162 0x1163 0x1164 ..... 0x116A 0x116B 0x116C	Display 1th~12th number 0x00~0x7F to display the corresponding Segment Line	W
dot	0x116D	0x00~0xFF	W
symbol	0x116E	0x00-~0xFF	W

	REGISTER DATA							
	D7	D6	D5	D4	D3	D2	D1	D0
Corresponding Segment Line		A	B	C	D	E	F	G

	REGISTER DATA							
	D7	D6	D5	D4	D3	D2	D1	D0
dot	P8	P7	P6	P5	P4	P3	P2	P1

	REGISTER DATA							
	D7	D6	D5	D4	D3	D2	D1	D0
symbol	S1	Co L2	Co L1	S18	S17	S16	S15	S14

<table>
<tr><td>Unit1</td><td>0x116F</td><td>0x00-~0xFF<table><tr><td></td><td colspan="8">REGISTER DATA</td></tr><tr><td></td><td>D7</td><td>D6</td><td>D5</td><td>D4</td><td>D3</td><td>D2</td><td>D1</td><td>D0</td></tr><tr><td>Unit1</td><td>S10</td><td>S9</td><td>S8</td><td>S7</td><td>S6</td><td>S5</td><td>S2
S3</td><td>S4</td></tr></table></td><td>W</td></tr>
<tr><td>Symbol-1</td><td>0x1170</td><td>0x00-~0xFF<table><tr><td></td><td colspan="8">REGISTER DATA</td></tr><tr><td></td><td>D7</td><td>D6</td><td>D5</td><td>D4</td><td>D3</td><td>D2</td><td>D1</td><td>D0</td></tr><tr><td></td><td>S23</td><td>S22</td><td>S21</td><td>S20</td><td>S19</td><td>S13</td><td>S12</td><td>S11</td></tr></table></td><td>W</td></tr>
<tr><td>Symbol-2</td><td>0x1171</td><td>0x00-~0xFF<table><tr><td></td><td colspan="8">REGISTER DATA</td></tr><tr><td></td><td>D7</td><td>D6</td><td>D5</td><td>D4</td><td>D3</td><td>D2</td><td>D1</td><td>D0</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>S25</td></tr></table></td><td>W</td></tr>
<tr><td>LCD Control Mode Display Number</td><td>0x1172</td><td>0:quit the LCD control mode
1~50 :LCD Control Mode Display Number
S24 meaning enter control mode</td><td>R/W</td></tr>
<tr><td>Change which Display Content</td><td>0x1173</td><td>According to LCD control mode display number(1~50)</td><td>W</td></tr>
<tr><td>LCD Control Mode Exit Time</td><td>0x1174</td><td>2 bytes(set the exit time before entering in LCD control mode.)
1~1440(min)</td><td>R/W</td></tr>
</table>

2 Definition of other useful data in the meter

2.1 RTU Communicate Address

The two digits lowest value of Meter ID plus 1.

e.g., meter ID：0000000011, the communicate address: 11+1 =12.

2.2 Device Identification

Object ID	Describe	Data Type	Data Length	Notes
0x00	Manufacturer’s name	ASCII String	10 Bytes	
0x01	Product code	ASCII String	10 Bytes	
0x02	Version	ASCII String	5 Bytes	

3 Communication data format e.g.

3.1 Read single register

Send to meter:**12 03 04 0D 00 01 16 5A**

12 –communication address

03 –means read

04 0D—register address, means **Rated Current**

00 01 ---length of register data

16 5A-- CRC

Receive: **12 03 02 13 88 30 D1**

12 –communication address

03 –means read

02—length of data field

13 88 ---data field

30 D1—CRC

3.2 Read multiple registers

Send to meter:**56 03 04 02 00 03 A8 DC**

56 –communication address

03 –means read

04 02—register address, means **Meter ID**

00 03 ---length of register data

A8 DC-- CRC

Receive: **56 03 06 00 11 22 33 44 55 0E 0D**

56 –communication address

03 –means read

06—length of data field

00 11 22 33 44 55 ---data field

0E 0D —CRC

The maximum number of register read is 125, when reading continuously, the useless register in the middle may reply to 0xFF. The data items in the basic parameter chapter can be read continuously, others data items can not be read continuously.

3.3 Write single register

1. ACK

Send to meter: **12 06 04 0B 00 06 7B 99**

12 –communication address

06 –means write

04 0B—register address, means **Communication baud rate**

00 06 --- data

7B 99-- CRC

Receive: **12 06 04 0B 00 06 7B 99**

Receive data consistent with the send data means write successful.

2. NACK

Some commands are writable only in the Factory Mode meter. If not in the factory mode, meter will return the NACK when commands be written.

Send to meter: **12 06 04 FF 00 02 3B A8**

12 –communication address

06 –means write

04 FF—register address, means **Factory production commands**

00 02 --- data, means **Clear the event logs**

3B A8—CRC

Receive: **12 86 04 B2 66**

12 –communication address

86 –means **NACK**

04—abnormal sign of write register

B2 66 --- CRC

3.4 Write multiple registers

Send to meter: **56 10 04 05 00 02 04 16 07 11 00 A3 FC**

56 –communication address

10 –means multiple write

04 05—register address**,** means **Software date**

00 02 --- register number

04 ---data length

16 07 11 00---data

A3 FC-- CRC

Receive: **56 10 04 05 00 02 5D 1E**

56 –communication address

10 –means multiple write

04 05—register address**,** means **Software date**

00 02 --- register number

5D 1E-- CRC

Receive data consistent with the above format means write successful.

The maximum number of register written is 123, when writing continuously. The data items in the basic parameter chapter can be written continuously, others data items can not be written continuously.