Measuring class parameter [Floating point format data]

Input Register Parameter [Function code : 04H]				Register Address [Hex]	
Description	**Length (bytes)**	**Data Format**	**Units**	**High Byte**	**Low Byte**
Phase 1 line to neutral volts.	4	Float	V	00	00
Phase 2 line to neutral volts.	4	Float	V	00	02
Phase 3 line to neutral volts.	4	Float	V	00	04
Phase 1 current.	4	Float	A	00	06
Phase 2 current.	4	Float	A	00	08
Phase 3 current.	4	Float	A	00	0A
Phase 1 active power.	4	Float	W	00	0C
Phase 2 active power.	4	Float	W	00	0E
Phase 3 active power.	4	Float	W	00	10
Phase 1 apparent power.	4	Float	VA	00	12
Phase 2 apparent power.	4	Float	VA	00	14
Phase 3 apparent power.	4	Float	VA	00	16
Phase 1 reactive power.	4	Float	var	00	18
Phase 2 reactive power.	4	Float	var	00	1A
Phase 3 reactive power.	4	Float	var	00	1C
Phase 1 power factor (1).	4	Float	None	00	1E
Phase 2 power factor (1).	4	Float	None	00	20
Phase 3 power factor (1).	4	Float	None	00	22
Phase 1 phase angle.	4	Float	Degrees	00	24
Phase 2 phase angle.	4	Float	Degrees	00	26
Phase 3 phase angle.	4	Float	Degrees	00	28
Average line to neutral volts.	4	Float	V	00	2A
Average line current.	4	Float	A	00	2E
Sum of line currents.	4	Float	A	00	30
Total system active power.	4	Float	W	00	34
Total system apparent power.	4	Float	VA	00	38
Total system reactive power.	4	Float	var	00	3C
Total system power factor (1).	4	Float	None	00	3E
Total system phase angle.	4	Float	Degrees	00	42
Frequency of supply voltages.	4	Float	Hz	00	46
Import active energy.	4	Float	kWh	00	48
Export active energy.	4	Float	kWh	00	4A
Import reactive energy.	4	Float	kvarh	00	4C
Export reactive energy.	4	Float	kvarh	00	4E
Total apparent energy.	4	Float	kVAh	00	50
Ah of the system current.	4	Float	Ah	00	52
Total system active power demand (3).	4	Float	W	00	54
Maximum total system active power demand (3).	4	Float	W	00	56
Import active power demand	4	Float	W	00	58

Maximum import active power demand	4	Float	W	00	5A
Export active power demand	4	Float	W	00	5C
Maximum export active power demand	4	Float	W	00	5E
Total system apparent power demand.	4	Float	VA	00	64
Maximum total system apparent power demand.	4	Float	VA	00	66
Neutral current demand.	4	Float	A	00	68
Maximum neutral current demand.	4	Float	A	00	6A
Total system reactive power demand (3).	4	Float	var	00	6C
Maximum total system reactive power demand (3).	4	Float	var	00	6E
Nature of L1 load (Resistive=1, inductive=2, capacitive =3, Non Load=4)	4	Float	None	00	C0
Nature of L2 load (Resistive=1, inductive=2, capacitive =3, Non Load=4)	4	Float	None	00	C2
Nature of L3 load (Resistive=1, inductive=2, capacitive =3, Non Load=4)	4	Float	None	00	C4
Nature of the system load(Resistive=1, inductive=2, capacitive =3, Non Load=4)	4	Float	None	00	C6
Line 1 to Line 2 volts.	4	Float	V	00	C8
Line 2 to Line 3 volts.	4	Float	V	00	CA
Line 3 to Line 1 volts.	4	Float	V	00	CC
Average line to line volts.	4	Float	V	00	CE
Neutral current.	4	Float	A	00	E0
Phase 1 L-N voltage THD (2).	4	Float	%	00	EA
Phase 2 L-N voltage THD (2).	4	Float	%	00	EC
Phase 3 L-N voltage THD (2).	4	Float	%	00	EE
Phase 1 current THD	4	Float	%	00	F0
Phase 2 current THD	4	Float	%	00	F2
Phase 3 current THD	4	Float	%	00	F4
Average L-N voltage THD (2).	4	Float	%	00	F8
Average line current THD.	4	Float	%	00	FA
Total system power factor (1).	4	Float	None	00	FE
Phase 1 current demand.	4	Float	A	01	02
Phase 2 current demand.	4	Float	A	01	04
Phase 3 current demand.	4	Float	A	01	06
Maximum phase 1 current demand.	4	Float	A	01	08
Maximum phase 2 current demand.	4	Float	A	01	0A
Maximum phase 3 current demand.	4	Float	A	01	0C
Line1 to line2 voltage THD (2).	4	Float	%	01	4E
Line2 to line3 voltage THD (2).	4	Float	%	01	50
Line3 to line1 voltage THD (2).	4	Float	%	01	52
Average Line to line voltage THD (2).	4	Float	%	01	54
Total active Energy.	4	Float	kWh	01	56
Total reactive Energy.	4	Float	kvarh	01	58
L1 import active Energy	4	Float	kWh	01	5A

L2 import active Energy	4	Float	kWh	01	5C
L3 import active Energy	4	Float	kWh	01	5E
L1 export active Energy	4	Float	kWh	01	60
L2 export active Energy	4	Float	kWh	01	62
L3 export active Energy	4	Float	kWh	01	64
L1 total active Energy	4	Float	kWh	01	66
L2 total active Energy	4	Float	kWh	01	68
L3 total active Energy	4	Float	kWh	01	6A
L1 import reactive energy	4	Float	kvarh	01	6C
L2 import reactive energy	4	Float	kvarh	01	6E
L3 import reactive energy	4	Float	kvarh	01	70
L1 export reactive energy	4	Float	kvarh	01	72
L2 export reactive energy	4	Float	kvarh	01	74
L3 export reactive energy	4	Float	kvarh	01	76
L1 total reactive energy	4	Float	kvarh	01	78
L2 total reactive energy	4	Float	kvarh	01	7A
L3 total reactive energy	4	Float	kvarh	01	7C

Notes:

1. The power factor has its sign adjusted to indicate the direction of the current. Positive refers to forward current, negative refers to reverse current.
2. In 3P3W mode, the voltage harmonic of L-N is equal to 0. In 3P4W, 1P2W, 1P3W and other modes, the voltage harmonic of line to line is equal to 0.
3. The power sum demand calculation is for import – export.

Set class parameters

Holding Register Parameter [Read : Function code : 03H ; Write : Function code : 10H]				**Register Address [Hex]**		
Parameter	**Description**	**Length (bytes)**	**Data Format**	**High Byte**	**Low Byte**	**Mode**
Demand Time	Read minutes into first demand calculation. When the Demand Time reaches the Demand Period then the demand values are valid.	4	Float	00	00	**R**
Demand Period	Write demand period: 0~60 minutes, Default 60. Range: 0~60, 0 means function update every second.	4	Float	00	02	**R/W**
Slide time	Default 1, min. Range：1 ~ (Demand Period -1).	4	Float	00	04	**R/W**
System Type	Write system type: 1 = 1P2W; 2 = 3P3W; 3 = 3P4W,(default); 4 = 2P3W; **(KPPA is asked)**	4	Float	00	0A	**R/W**
Pulse 1 Width	Write pulse on period in milliseconds: 60, 100 or 200, default 100.	4	Float	00	0C	**R/W**
Key Parameter Programming Authorization (KPPA)	Read: to get the status of the KPPA 0 = not authorized；1 = authorized Write the correct password to get KPPA, enable to program key parameters.	4	Float	00	0E	**R/W**
Parity and stop bit	Write the network port parity/stop bits for MODBUS Protocol, where: 0 = One stop bit and no parity, default. 1 = One stop bit and even parity. 2 = One stop bit and odd parity. 3 = Two stop bits and no parity.	4	Float	00	12	**R/W**
Modbus address	Write the modbus address Range: 1 to 247 for MODBUS Protocol, default 1.	4	Float	00	14	**R/W**
Pulse 1 constant	Write pulse constant index: n = 0 to 3 0 : 400 imp/kWh(kvarh), default 1 : 100 imp/kWh(kvarh) 2 : 10 imp/kWh(kvarh) 3 : 1 imp/kWh(kvarh) Note: When the pulse constant is equal to	4	Float	00	16	**R/W**

	400 imp/kWh(kvarh), the pulse width time cannot be set to 200ms.					
Password	Read: to get the password of the meter Write: to program the new password of the meter Default : 0000 **(KPPA is asked)**	4	Float	00	18	**R/W**
Network Baud Rate	Write the network port baud rate for MODBUS Protocol, where: 0 = 2400 baud. 1 = 4800 baud. 2 = 9600 baud, default. 3 = 19200 baud. 4 = 38400 baud.	4	Float	00	1C	**R/W**
Serial number	The serial number of the meter	4	ULONG	00	2A	**R**
Automatic Scroll Display Time	Automatic scroll display time, unit : second Range 0~60，default : 0 Note: 0 mean stop automatic scroll display	4	Float	00	3A	**R/W**
Backlit time	Backlit time, unit : minute. Default 60. Range 0~120 or 255，0 means backlit always on，255 means backlit always off.	4	Float	00	3C	**R/W**
Pulse 1 Energy Type	Write MODBUS Protocol input parameter for pulse output 1： 1: import active energy 2: total active energy 4: export active energy, default 5: import reactive energy 6: total reactive energy 8: export reactive energy	4	Float	00	56	**R/W**
Meter code	The code of the meter	2	HEX	56	01	**R**
Software version number	Software version number : XX.YY Data definition : The first byte represents XX, and the second byte represents YY	2	HEX	56	04	**R**
Hardware version number	Hardware version number : XX.YY Data definition : The first byte represents XX, and the second byte represents YY	2	HEX	56	05	**R**
version number of displayed	version number of displayed : XX.YY Data definition : The first byte represents XX, and the second byte represents YY	2	HEX	56	06	**R**
Reset historical data	0 = reset max. demand **(KPPA is asked)**	2	UINT	F0	10	**W**

Running time （Data in units of minutes）	Running time. Unit : minute. **Write 0 to reset the running time with load. No response if write other value. Note: The meter starts timing when it's powered on**	4	Float	F9	30	**R/W**
Running time with load （Data in units of minutes）	Running time with load. Unit : minute. **Write 0 to reset the running time with load. No response if write other value. Note: The meter starts timing when power greater than 0 detected**	4	Float	F9	32	**R/W**
Serial number	The serial number of the meter	4	ULONG	FC	00	**R**

Example:

1, Read Input Registers

Example: Read “Phase 1 line to neutral volts”

Request: 01 04 00 00 00 02 71 CB

Where, 01 = Meter address

04 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

00 = High byte of registers number

02 = Low byte of registers number

71 = CRC Low

CB = CRC High

Response: 01 04 04 43 66 33 34 1B 38

Where, 01 = Meter address

04 = Function code

04= Byte count

43 = Data, (High Word, High Byte)

66 = Data, (High Word, Low Byte)

33 = Data, (Low Word, High Byte)

34 = Data, (Low Word, Low Byte)

1B = CRC Low

38 = CRC High

Note: 43 66 33 34(Hex) = 230.2 (Floating point)

2, Read Holding Registers

Example: Read “Slide time”

Request: 01 03 00 04 00 02 85 CA

Where, 01 = Meter address

03 = Function code

00 = High byte of registers starting address

04 = Low byte of registers starting address

00 = High byte of registers number

02 = Low byte of registers number

85 = CRC Low

CA = CRC High

Response: 01 03 04 40 A0 00 00 EF D1

Where, 01 = Meter address

03 = Function code

04= Byte Count

40 = Data, (High Word, High Byte)

A0 = Data, (High Word, Low Byte)

00 = Data, (Low Word, High Byte)

00 = Data, (Low Word, Low Byte)

EF = CRC Low

D1 = CRC High

Note: 40 A0 00 00(Hex) = 5 (Floating point)

3, Write Holding Registers

Example: Write “Demand Period” = 30

Request: 01 10 00 02 00 02 04 41 F0 00 00 66 79

Where, 01 = Meter address

10 = Function code

00 = High byte of registers starting address

02 = Low byte of registers starting address

00 = High byte of registers number

02 = Low byte of registers number

04 = Byte Count

41 = Data, (High Word, High Byte)

F0 = Data, (High Word, Low Byte)

00 = Data, (Low Word, High Byte)

00 = Data, (Low Word, Low Byte)

66 = CRC Low

79 = CRC High

Note: 41 F0 00 00(Hex) = 30 (Floating point)

Response: 01 10 00 02 00 02 E0 08

Where, 01 = Meter address

10 = Function code

00 = High byte of registers starting address

02 = Low byte of registers starting address

00 = High byte of registers number

02 = Low byte of registers number

E0 = CRC Low

08 = CRC High