Input Registers，Function code 04

Address (Register)	Input Register Parameter				Modbus Protocol Start Address Hex	
	Description	Length (bytes)	Data Format	Units	Hi Byte	Lo Byte
30001	Phase 1 line to neutral volts.	4	Float	V	00	00
30003	Phase 2 line to neutral volts.	4	Float	V	00	02
30005	Phase 3 line to neutral volts.	4	Float	V	00	04
30007	Phase 1 current.	4	Float	A	00	06
30009	Phase 2 current.	4	Float	A	00	08
30011	Phase 3 current.	4	Float	A	00	0A
30013	Phase 1 active power.	4	Float	W	00	0C
30015	Phase 2 active power.	4	Float	W	00	0E
30017	Phase 3 active power.	4	Float	W	00	10
30019	Phase 1 apparent power.	4	Float	VA	00	12
30021	Phase 2 apparent power.	4	Float	VA	00	14
30023	Phase 3 apparent power.	4	Float	VA	00	16
30025	Phase 1 reactive power.	4	Float	VAr	00	18
30027	Phase 2 reactive power.	4	Float	VAr	00	1A
30029	Phase 3 reactive power.	4	Float	VAr	00	1C
30031	Phase 1 power factor (1).	4	Float	None	00	1E
30033	Phase 2 power factor (1).	4	Float	None	00	20
30035	Phase 3 power factor (1).	4	Float	None	00	22
30037	Phase 1 phase angle.	4	Float	Degrees	00	24
30039	Phase 2 phase angle.	4	Float	Degrees	00	26
30041	Phase 3 phase angle.	4	Float	Degrees	00	28
30043	Average line to neutral volts.	4	Float	V	00	2A
30047	Average line current.	4	Float	A	00	2E
30049	Sum of line currents.	4	Float	A	00	30
30053	Total system power.	4	Float	W	00	34
30057	Total system volt amps.	4	Float	VA	00	38
30061	Total system VAr.	4	Float	VAr	00	3C
30063	Total system power factor (1).	4	Float	None	00	3E
30067	Total system phase angle.	4	Float	Degrees	00	42
30071	Frequency of supply voltages.	4	Float	Hz	00	46
30073	Total import active energy .	4	Float	kWh	00	48
30075	Total export active energy .	4	Float	kWH	00	4A
30077	Total import reactive energy .	4	Float	kVArh	00	4C
30079	Total export reactive energy .	4	Float	kVArh	00	4E
30081	Total apparent energy.	4	Float	kVAh	00	50

30083	Ah.	4	Float	Ah	00	52
30085	Total system power demand (2) .	4	Float	W	00	54
30087	Maximum total system power demand (2).	4	Float	W	00	56
30089	Import active power demand	4	Float	W	00	58
30091	Import active power max. demand	4	Float	W	00	5A
30093	Export active power demand	4	Float	W	00	5C
30095	Export active power max. demand	4	Float	W	00	5E
30101	Total system VA demand.	4	Float	VA	00	64
30103	Maximum total system VA demand.	4	Float	VA	00	66
30105	Neutral current demand.	4	Float	Amps	00	68
30107	Maximum neutral current demand.	4	Float	Amps	00	6A
30109	Total system reactive power demand. (2)	4	Float	VAr	00	6C
30111	Maximum total system reactive power demand(2)	4	Float	VAr	00	6E
30113	Phase 1 Displacement Power Factor	4	Float	None	00	70
30115	Phase 2 Displacement Power Factor	4	Float	None	00	72
30117	Phase 3 Displacement Power Factor	4	Float	None	00	74
30119	Total Displacement Power Factor	4	Float	None	00	76
30161	Voltage phase sequence （normal=1、reverse=2、phase missing =3）	4	Float	None	00	A0
30163	Current phase sequence （normal=1、reverse=2、phase missing =3）	4	Float	None	00	A2
30165	L1 Voltage Crest Factor	4	Float	None	00	A4
30167	L2 Voltage Crest Factor	4	Float	None	00	A6
30169	L3 Voltage Crest Factor	4	Float	None	00	A8
30183	L1 Current K Factor	4	Float	None	00	B6
30185	L2 Current K Factor	4	Float	None	00	B8
30187	L3 Current K Factor	4	Float	None	00	BA
30193	Nature of the load（Resistive =1、inductive =2、capacitive =3）	4	Float	None	00	C0
30195	Nature of L1 load（Resistive=1、inductive=2、capacitive =3）	4	Float	None	00	C2
30197	Nature of L2 load（Resistive =1、inductive=2、capacitive =3）	4	Float	None	00	C4
30199	Nature of L3 load（Resistive =1、inductive=2、capacitive =3）	4	Float	None	00	C6
30201	Line 1 to Line 2 volts.	4	Float	V	00	C8
30203	Line 2 to Line 3 volts.	4	Float	V	00	CA
30205	Line 3 to Line 1 volts.	4	Float	V	00	CC
30207	Average line to line volts.	4	Float	V	00	CE
30225	Neutral current.	4	Float	A	00	E0
30235	Phase 1 L/N volts THD	4	Float	%	00	EA
30237	Phase 2 L/N volts THD	4	Float	%	00	EC
30239	Phase 3 L/N volts THD	4	Float	%	00	EE

30241	Phase 1 Current THD	4	Float	%	00	F0
30243	Phase 2 Current THD	4	Float	%	00	F2
30245	Phase 3 Current THD	4	Float	%	00	F4
30249	Average line to neutral volts THD.	4	Float	%	00	F8
30251	Average line current THD.	4	Float	%	00	FA
30255	Total system power factor (1).	4	Float	Degrees	00	FE
30259	Phase 1 current demand.	4	Float	A	01	02
30261	Phase 2 current demand.	4	Float	A	01	04
30263	Phase 3 current demand.	4	Float	A	01	06
30265	Maximum phase 1 current demand.	4	Float	A	01	08
30267	Maximum phase 2 current demand.	4	Float	A	01	0A
30269	Maximum phase 3 current demand.	4	Float	A	01	0C
30335	Line 1 to line 2 volts THD.	4	Float	%	01	4E
30337	Line 2 to line 3 volts THD.	4	Float	%	01	50
30339	Line 3 to line 1 volts THD.	4	Float	%	01	52
30341	Average line to line volts THD.	4	Float	%	01	54
30343	Total active Energy (3)	4	Float	kWh	01	56
30345	Total reactive Energy (3)	4	Float	kVArh	01	58
30347	L1 import active Energy	4	Float	kWh	01	5A
30349	L2 import active Energy	4	Float	kWh	01	5C
30351	L3 import active Energy	4	Float	kWh	01	5E
30353	L1 export active Energy	4	Float	kWh	01	60
30355	L2 export active Energy	4	Float	kWh	01	62
30357	L3 export active Energy	4	Float	kWh	01	64
30359	L1 total active Energy	4	Float	kWh	01	66
30361	L2 total active Energy	4	Float	kWh	01	68
30363	L3 total active Energy	4	Float	kWh	01	6A
30365	L1 import reactive energy	4	Float	kVArh	01	6C
30367	L2 import reactive energy	4	Float	kVArh	01	6E
30369	L3 import reactive energy	4	Float	kVArh	01	70
30371	L1 export reactive energy	4	Float	kVArh	01	72
30373	L2 export reactive energy	4	Float	kVArh	01	74
30375	L3 export reactive energy	4	Float	kVArh	01	76
30377	L1 total reactive energy	4	Float	kVArh	01	78
30379	L2 total reactive energy	4	Float	kVArh	01	7A
30381	L3 total reactive energy	4	Float	kVArh	01	7C
30403	Voltage 2st~63st Harmonic L1	248	Float	%	01	92
30527	Voltage 2st~63st Harmonic L2	248	Float	%	02	0E
30651	Voltage 2st~63st Harmonic L3	248	Float	%	02	8A
30775	Current 2st~63st Harmonic L1	248	Float	%	03	06
30899	Current 2st~63st Harmonic L2	248	Float	%	03	82
31023	Current 2st~63st Harmonic L3	248	Float	%	03	FE

31147	Voltage Total Harmonic L1	4	Float	%	04	7A
31149	Voltage Total Harmonic L2	4	Float	%	04	7C
31151	Voltage Total Harmonic L3	4	Float	%	04	7E
31153	Current Total Harmonic L1	4	Float	%	04	80
31155	Current Total Harmonic L2	4	Float	%	04	82
31157	Current Total Harmonic L3	4	Float	%	04	84
32649	Maximum value of total active power	4	Float	W	0A	58
32651	Maximum value of total reactive power	4	Float	VAr	0A	5A
32653	Maximum value of total apparent power	4	Float	VA	0A	5C
32655	Maximum value of phase 1 active power	4	Float	W	0A	5E
32657	Maximum value of phase 2 active power	4	Float	W	0A	60
32659	Maximum value of phase 3 active power	4	Float	W	0A	62
32661	Maximum value of phase 1 reactive power	4	Float	VAr	0A	64
32663	Maximum value of phase 2 reactive power	4	Float	VAr	0A	66
32665	Maximum value of phase 3 reactive power	4	Float	VAr	0A	68
32667	Maximum value of phase 1 apparent power	4	Float	VA	0A	6A
32669	Maximum value of phase 2 apparent power	4	Float	VA	0A	6C
32671	Maximum value of phase 3 apparent power	4	Float	VA	0A	6E
32673	Maximum value of phase 1 current	4	Float	A	0A	70
32675	Maximum value of phase 2 current	4	Float	A	0A	72
32677	Maximum value of phase 3 current	4	Float	A	0A	74
32679	Maximum value of neutral current	4	Float	A	0A	76
32681	Maximum value of total currents	4	Float	A	0A	78
32683	Maximum value of phase 1 line to neutral voltage	4	Float	V	0A	7A
32685	Maximum value of phase 2 line to neutral voltage	4	Float	V	0A	7C
32687	Maximum value of phase 3 line to neutral voltage	4	Float	V	0A	7E
32689	Maximum value of line 1 to line 2 voltage	4	Float	V	0A	80
32691	Maximum value of line 2 to line3 voltage	4	Float	V	0A	82
32693	Maximum value of line 3 to line 1 voltage	4	Float	V	0A	84
32695	Minimum value of total active power	4	Float	W	0A	86
32697	Minimum value of total reactive power	4	Float	VAr	0A	88
32699	Minimum value of total apparent power	4	Float	VA	0A	8A
32701	Minimum value of phase 1 active power	4	Float	W	0A	8C
32703	Minimum value of phase 2 active power	4	Float	W	0A	8E
32705	Minimum value of phase 3 active power	4	Float	W	0A	90
32707	Minimum value of phase 1 reactive power	4	Float	VAr	0A	92
32709	Minimum value of phase 2 reactive power	4	Float	VAr	0A	94
32711	Minimum value of phase 3 reactive power	4	Float	VAr	0A	96
32713	Minimum value of phase 1 apparent power	4	Float	VA	0A	98
32715	Minimum value of phase 2 apparent power	4	Float	VA	0A	9A
32717	Minimum value of phase 3 apparent power	4	Float	VA	0A	9C
32719	Minimum value of phase 1 current	4	Float	A	0A	9E

32721	Minimum value of phase 2 current	4	Float	A	0A	A0
32723	Minimum value of phase 3 current	4	Float	A	0A	A2
32725	Minimum value of neutral current	4	Float	A	0A	A4
32727	Minimum value of total currents	4	Float	A	0A	A6
32729	Minimum value of phase 1 line to neutral voltage	4	Float	V	0A	A8
32731	Minimum value of phase 2 line to neutral voltage	4	Float	V	0A	AA
32733	Minimum value of phase 3 line to neutral voltage	4	Float	V	0A	AC
32735	Minimum value of line 1 to line 2 voltage	4	Float	V	0A	AE
32737	Minimum value of line 2 to line3 voltage	4	Float	V	0A	B0
32739	Minimum value of line 3 to line 1 voltage	4	Float	V	0A	B2
32763	Maximum value of total power factor	4	Float	None	0A	CA
32765	Maximum value of L1 power factor	4	Float	None	0A	CC
32767	Maximum value of L2 power factor	4	Float	None	0A	CE
32769	Maximum value of L3 power factor	4	Float	None	0A	D0
32771	Maximum value of L1 voltage THD	4	Float	%	0A	D2
32773	Maximum value of L2 voltage THD	4	Float	%	0A	D4
32775	Maximum value of L3 voltage THD	4	Float	%	0A	D6
32777	Maximum value of L1 current THD	4	Float	%	0A	D8
32779	Maximum value of L2 current THD	4	Float	%	0A	DA
32781	Maximum value of L3 current THD	4	Float	%	0A	DC
32783	Minimum value of total power factor	4	Float	None	0A	DE
32785	Minimum value of L1 power factor	4	Float	None	0A	E0
32787	Minimum value of L2 power factor	4	Float	None	0A	E2
32789	Minimum value of L3 power factor	4	Float	None	0A	E4
32791	Minimum value of L1 voltage THD	4	Float	%	0A	E6
32793	Minimum value of L2 voltage THD	4	Float	%	0A	E8
32795	Minimum value of L3 voltage THD	4	Float	%	0A	EA
32797	Minimum value of L1 current THD	4	Float	%	0A	EC
32799	Minimum value of L2 current THD	4	Float	%	0A	EE
32801	Minimum value of L3 current THD	4	Float	%	0A	F0
34877	Total active energy Rate 1	4	Float	kWh	13	0C
34879	Total active energy Rate 2	4	Float	kWh	13	0E
34881	Total active energy Rate 3	4	Float	kWh	13	10
34883	Total active energy Rate 4	4	Float	kWh	13	12
34885	Import active energy Rate 1	4	Float	kWh	13	14
34887	Import active energy Rate 2	4	Float	kWh	13	16
34889	Import active energy Rate 3	4	Float	kWh	13	18
34891	Import active energy Rate 4	4	Float	kWh	13	1A
34893	Export active energy Rate 1	4	Float	kWh	13	1C
34895	Export active energy Rate 2	4	Float	kWh	13	1E
34897	Export active energy Rate 3	4	Float	kWh	13	20
34899	Export active energy Rate 4	4	Float	kWh	13	22

34901	Total reactive energy Rate 1	4	Float	kVArh	13	24
34903	Total reactive energy Rate 2	4	Float	kVArh	13	26
34905	Total reactive energy Rate 3	4	Float	kVArh	13	28
34907	Total reactive energy Rate 4	4	Float	kVArh	13	2A
34909	Import reactive energy Rate 1	4	Float	kVArh	13	2C
34911	Import reactive energy Rate 2	4	Float	kVArh	13	2E
34913	Import reactive energy Rate 3	4	Float	kVArh	13	30
34915	Import reactive energy Rate 4	4	Float	kVArh	13	32
34917	Export reactive energy Rate 1	4	Float	kVArh	13	34
34919	Export reactive energy Rate 2	4	Float	kVArh	13	36
34921	Export reactive energy Rate 3	4	Float	kVArh	13	38
34923	Export reactive energy Rate 4	4	Float	kVArh	13	3A

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. The power sum demand calculation is for import – export.
3. Total active energy / reactive energy equals to Import + export.

Holding Register，Function code 03 / 10

Address Register	Parameter	Modbus Protocol Start Address Hex		Valid range	Mode
		High Byte	Low Byte		
40001	Demand Time	00	00	Read minutes into first demand calculation. When the Demand Time reaches the Demand Period then the demand values are valid. **Length : 4 byte** **Data Format : Float**	ro
40003	Demand Period	00	02	Write demand period: 0~60 minutes, Default 60. Range: 0~60, 0 means function closed **Length : 4 byte** **Data Format : Float**	r/w
40005	Slide time	00	04	Default 1, min. Range ： 1 ~ (Demand Period -1). **Length : 4 byte** **Data Format : Float**	r/w
40007	Demand calculation	00	06	Default 0， 0 = sliding block	r/w

	method			1 = fixed block **Length : 4 byte** **Data Format : Float**	
40011	System Type	00	0A	Write system type: 1 = 1P2W; 2 = 3P3W; 3 = 3P4W,(default); 4 = 1P3W; 5 = 3P3W Balance load; 6 = 3P4W Balance load; **Length : 4 byte** **Data Format : Float** (KPPA is asked)	r/w
40015	Key Parameter Programming Authorization (KPPA)	00	0E	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. **Length : 4 byte** **Data Format : Float**	r/w
40019	Parity and stop bit	00	12	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. **Length : 4 byte** **Data Format : Float**	r/w
40021	Modbus address	00	14	Write the network port node Address: 1 to 247 for MODBUS Protocol, default 1. **Length : 4 byte** **Data Format : Float**	r/w
40025	Password	00	18	Read: to get the password of the meter Write: to program the new password of the meter Default 1000 **Length : 4 byte** **Data Format : Float**	r/w
40029	Network Baud Rate	00	1C	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 **Length : 4 byte** **Data Format : Float**	r/w
40047	PT1	00	2E	PT1 Range 100- 500000V, Default 230 **Length : 4 byte** **Data Format : Float** (KPPA is asked)	r/w

40049	PT2	00	30	PT2 Range 100- 480V, Default 230 **Length : 4 byte** **Data Format : Float** (KPPA is asked)	r/w
40051	CT1	00	32	CT1 Range 1-9999A，Default 5， **Length : 4 byte** **Data Format : Float** (KPPA is asked)	r/w
40053	CT2	00	34	CT2 Range: 1A or 5A , Default 5A **Length : 4 byte** **Data Format : Float** (KPPA is asked)	r/w
40057	Current Direction correction （when the external CT is connected reversely）	00	38	0 = L1 Frd，L2 Frd，L3 Frd 1 = L1 Rev，L2 Frd，L3 Frd 2 = L1 Frd，L2 Rev，L3 Frd 3 = L1 Rev，L2 Rev，L3 Frd 4 = L1 Frd，L2 Frd，L3 Rev 5 = L1 Rev，L2 Frd，L3 Rev 6 = L1 Frd，L2 Rev，L3 Rev 7 = L1 Rev，L2 Rev，L3 Rev Default 0 **Length : 4 byte** **Data Format :Float** (KPPA is asked)	r/w
40059	Automatic Scroll Display Time	00	3A	Default 5，second Range 1~255 **Length : 4 byte** **Data Format : Float**	r/w
40061	Backlit time	00	3C	Default 60, min Range 0~121，0 means backlit always on ，121 means backlit always off **Length : 4byte** **Data Format : Float**	r/w
40513	DO-1 mode	02	00	DO-1 output mode 00 00 = level; 00 01 = pulse **Length : 2byte** **Data Format : Hex**	r/w
40514	DO-2 mode	02	01	DO-2 output mode 00 00 = level; 00 01 = pulse **Length : 2byte** **Data Format : Hex**	r/w
40521	DO-1 pulse duration	02	08	DO-1 pulse duration (1000ms: 50 ~ 3000) **Length : 2 byte** **Data Format : unsigned int16**	r/w

40522	DO-2 pulse duration	02	09	DO-2 pulse duration (1000ms: 50 ~ 3000) **Length : 2 byte** **Data Format : unsigned int16**	r/w
40769	DI filter time	03	00	DI filter time (0ms: 0~255) , Default 100ms **Length : 2 byte** **Data Format : unsigned int16**	r/w
40770	DI-1 count	03	01	DI-1 count **Length : 4 byte** **Data Format : unsigned int32** **Write 0 to reset the count. No response if write other value.**	r/w
40772	DI-2 count	03	03	DI-2 count **Length : 4 byte** **Data Format : unsigned int32** **Write 0 to reset the count. No response if write other value**	r/w
40774	DI-3 count	03	05	DI-3 count **Length : 4 byte** **Data Format : unsigned int32** **Write 0 to reset the count. No response if write other value**	r/w
40776	DI-4 count	03	07	DI-4 count **Length : 4 byte** **Data Format : unsigned int32** **Write 0 to reset the count. No response if write other value**	r/w
41025	DO-1 Alarm Parameter (1)	04	00	DO-1 Alarm parameter Range: 0~29，and 255； Default: 255 = null **Length : 2 byte** **Data Format : unsigned int16**	r/w
41026	DO-1 Action delay time	04	01	DO-1 Action delay time，unit: ms Range:0~9999；default: 200ms **Length : 2 byte** **Data Format : unsigned int16**	r/w
41027	DO-1 HC Value (2)	04	02	DO-1 High value to close **Length : 4 byte** **Data Format : Float**	r/w
41029	DO-1 HO value (2)	04	04	DO-1 High value to open **Length : 4 byte** **Data Format : Float**	r/w
41031	DO-1 LO value (2)	04	06	DO-1 Low value to open **Length : 4 byte** **Data Format : Float**	r/w
41033	DO-1 LC value (2)	04	08	DO-1 Low value to close **Length : 4 byte**	r/w

				Data Format : Float	
41035	DO-2 Alarm Parameter (1)	04	0A	DO-2 Alarm parameter Range: 0~29，and 255； Default: 255 = null **Length : 2 byte** **Data Format : unsigned int16**	r/w
41036	DO-2 Action delay time	04	0B	DO-2 Action delay time，unit: ms Range:0~9999；default: 200ms **Length : 2 byte** **Data Format : unsigned int16**	r/w
41037	DO-2 HC Value (2)	04	0C	DO-2 High value to close **Length : 4 byte** **Data Format : Float**	r/w
41039	DO-2 HO value (2)	04	0E	DO-2 High value to open **Length : 4 byte** **Data Format : Float**	r/w
41041	DO-2 LO value (2)	04	10	DO-2 Low value to open **Length : 4 byte** **Data Format : Float**	r/w
41043	DO-2 LC value (2)	04	12	DO-2 Low value to close **Length : 4 byte** **Data Format : Float**	r/w
41105	DO-1 Status	04	50	DO-1 Status 0 = Open (HO or LO) 1 = HC 2 = LC **Length : 2 byte** **Data Format : unsigned int16**	ro
41106	DO-2 Status	04	51	DO-2 Status 0 = Open 1 = HC 2 = LC **Length : 2 byte** **Data Format : unsigned int16**	ro
41281	SOE-01 (3)	05	00	SOE-01 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41285	SOE-02 (3)	05	04	SOE-02 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41289	SOE-03 (3)	05	08	SOE-03 information; the format is:	ro

				type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	
41293	SOE-04 (3)	05	0C	SOE-04 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41297	SOE-05 (3)	05	10	SOE-05 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41301	SOE-06(3)	05	14	SOE-06 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41305	SOE-07 (3)	05	18	SOE-07 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41309	SOE-08 (3)	05	1C	SOE-08 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41313	SOE-09 (3)	05	20	SOE-09 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41317	SOE-10 (3)	05	24	SOE-10 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41321	SOE-11 (3)	05	28	SOE-11 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41325	SOE-12 (3)	05	2C	SOE-12 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41329	SOE-13 (3)	05	30	SOE-13 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro

41333	SOE-14 (3)	05	34	SOE-14 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41337	SOE-15 (3)	05	38	SOE-15 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41341	SOE-16 (3)	05	3C	SOE-16 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41345	SOE-17 (3)	05	40	SOE-17 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41349	SOE-18 (3)	05	44	SOE-18 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41353	SOE-19 (3)	05	48	SOE-19 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41357	SOE-20 (3)	05	4C	SOE-20 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41361	SOE-21 (3)	05	50	SOE-21 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41365	SOE-22 (3)	05	54	SOE-22 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41369	SOE-23 (3)	05	58	SOE-23 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41373	SOE-24 (3)	05	5C	SOE-24 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte**	ro

				Data Format : BCD	
41377	SOE-25 (3)	05	60	SOE-25 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41381	SOE-26 (3)	05	64	SOE-26 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41385	SOE-27 (3)	05	68	SOE-27 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41389	SOE-28 (3)	05	6C	SOE-28 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41393	SOE-29 (3)	05	70	SOE-29 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
41397	SOE-30 (3)	05	74	SOE-30 information; the format is: type- event cause -year-month-date -hour-min-second **Length : 8 byte** **Data Format : BCD**	ro
461441	Time	F0	00	s-min-hour-week-Date-Month-Year-20 **Length : 8 byte** **Data Format : BCD**	r/w
461445	Running time	F0	04	Day-hour-minute, day = 2byte;hour = 1byte; minute=1byte **Length : 4 byte** **Data Format : BCD** **For example:** **04 23 21 57 refer to** **Running time=423 day + 21 hour + 57 min** **Write 00 00 00 00 to reset the running hour**	r/w
461447	Ethernet communication Parameter	F0	06	Ethernet communication parameter includes: IP address (4byte)， subnet mask (4byte)，default gateway (4byte)，IP port(2 byte) Data format：IP Address-Subnet mask-default gateway- IP port， High byte first. Default：IP Address = 192-168-1-200 Subnet mask = 255-255-255-0 Gate way = 192-168-1-1	r/w

				IP Port = 502 **Length : 14byte** **Data Format: Hex**	
461454	Ethernet TCP/IP working mode	F0	0D	Ethernet TCP/IP working mode 00 00 = slave mode (the Ethernet port is only used for TCP/IP communication for this meter); 00 01 = master mode (the meter can be worked as an RS485-TCP/IP gateway. Via the Ethernet port, it can read the devices connected to its RS485 port on the same Bus line.) **Length : 2byte** **Data Format: Hex** (KPPA is asked)	r/w
461457	Reset historical data	F0	10	**00 00 = reset demand info** **00 03 = reset energy info** **00 04 = reset max. and min. data** **00 05 = reset SOE info** **00 06 = reset DI counts** **Length : 2 byte** **Data Format: Hex**	wo
461697	Meter Info	F1	00	Meter information：model and software version **Length : 16 byte** **Data Format : AscII（Character ASCII）**	ro
463233	Tariff	F7	00	Tariff number-Min-Hour Tariff number：01，02，03，04 Min：00-59 Hour：00-23 **Length : 24 byte** **Data Format : BCD**	r/w
463793	Running time	F9	30	Continuous working period--hour **Length : 4 byte** **Data Format : Float**	r/w
464513	Serial number	FC	00	Serial number **Length : 4 byte** **Data Format : unsigned int32** **Note: Only read**	ro

Note:

(1) Table-1 Alarm Parameter

Number	Alarm parameter	Number	Alarm parameter	Number	Alarm parameter
0	Phase 1 line to neutral volts.	10	Phase 3 current.	20	Total system VAr.
1	Phase 2 line to neutral volts.	11	Average line current.	21	Phase 1 apparent power.
2	Phase 3 line to neutral volts.	12	Neutral current.	22	Phase 2 apparent power.
3	Average line to neutral volts.	13	Phase 1 active power.	23	Phase 3 apparent power.
4	Line 1 to Line 2 volts.	14	Phase 2 active power.	24	Total system volt amps.
5	Line 2 to Line 3 volts.	15	Phase 3 active power.	25	Phase 1 power factor.
6	Line 3 to Line 1 volts.	16	Total system power.	26	Phase 2 power factor.
7	Average line to line volts.	17	Phase 1 reactive power.	27	Phase 3 power factor .
8	Phase 1 current.	18	Phase 2 reactive power.	28	Total system power factor.
9	Phase 2 current.	19	Phase 3 reactive power.	29	Frequency of supply voltages.

(2) Please make sure during the setting: HC>HO >LO >LC

(3) SOE information format：type-status-year-month-date-hour-min-second；

Type: 0~67 and 99 (4 table-2)

Event cause: 0 = null; 1 and 2 refer to the cause of event. 1 = HC alarm caused event; 2 = LC alarm caused event

Year: the year when event happened. For example2017，year=17；

Month: the month when event happened.

Date: the date when event happened;

Hour: the hour when event happened;

Min: the Minute when event happened

Second: the second when event happened

(4) Table-2 Event descriptions

Number	Event description	Number	Event description	Number	Event description
0	L1 Voltage alarm	14	L2 active power alarm	28	Total PF alarm
1	L2 Voltage alarm	15	L3 active power alarm	29	Frequency alarm
2	L3 Voltage alarm	16	Total active power alarm	60	Power on
3	L-N Average voltage alarm	17	L1 reactive power alarm	61	Power off
4	L1-2 Voltage alarm	18	L2reactive power alarm	62	CT2 change
5	L2-3 Voltage alarm	19	L3reactive power alarm	63	CT1change
6	L3-1 Voltage alarm	20	Total reactive power alarm	64	PT2change
7	L-L Average voltage alarm	21	L1apparent power alarm	65	PT1change
8	L1 Current alarm	22	L2 apparent power alarm	66	Energy reset
9	L2Current alarm	23	L3 apparent power alarm	67	Demand info reset
10	L3Current alarm	24	Total apparent power alarm	99	Null
11	Average current alarm	25	L1PF alarm		
12	Neutral current alarm	26	L2 PF alarm		
13	L1 active power alarm	27	L3 PF alarm		

Read Input Status, function code 02

Address Register	Parameter Number	Parameter	Modbus Protocol Start Address Hex		Valid range	Mode
			High Byte	Low Byte		
10001	1	DI-1 status	00	00	DI1 status, 1=ON, 0=OFF **Length : 1 bit** **Data Format :Binary**	ro
10002	2	DI-2 status	00	01	DI2 status, 1=ON, 0=OFF **Length : 1 bit** **Data Format :Binary**	ro
10003	3	DI-3 status	00	02	DI3 status, 1=ON, 0=OFF **Length : 1 bit** **Data Format :Binary**	ro
10004	4	DI-4 status	00	03	DI4 status, 1=ON, 0=OFF **Length : 1 bit** **Data Format :Binary**	ro

Read Coil Status, function code 01

Address Register	Parameter Number	Parameter	Modbus Protocol Start Address Hex		Valid range	Mode
			High Byte	Low Byte		
00001	1	DO-1 status	00	00	DO-1 status,1=ON, 0=OFF **Length : 1 bit** **Data Format : Binary**	ro
00002	2	DO-2 status	00	01	DO-2 status,1=ON, 0=OFF **Length : 1 bit** **Data Format : Binary**	ro

Force Single Coil, function code 05

Parameter Number	Parameter	Modbus Protocol Start Address Hex		Valid range	Mode
		High Byte	Low Byte		
1	Control DO-1	00	00	0xFF00=ON, 0x0000=OFF **Length :2 byte**	w

				Data Format :Hex	
2	Control DO-2	00	01	0xFF00=ON, 0x0000=OFF **Length :2 byte** **Data Format :Hex**	w

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 "System Type" = 4

Request: 01 10 00 0A 00 02 04 40 80 00 00 67 F8

Where, 01 = Meter address

10 = Function code

00 = High byte of registers starting address

0A = Low byte of registers starting address

00 = High byte of registers number

02 = Low byte of registers number

04 = Byte Count

40 = Data, (High Word, High Byte)

80 = Data, (High Word, Low Byte)

00 = Data, (Low Word, High Byte)

00 = Data, (Low Word, Low Byte)

67 = CRC Low

F8 = CRC High

Note: 40 80 00 00 (Hex) = 4 (Floating point)

Response: 01 10 00 0A 00 02 61 CA

Where, 01 = Meter address

10 = Function code

00 = High byte of registers starting address

0A = Low byte of registers starting address

00 = High byte of registers number

02 = Low byte of registers number

61 = CRC Low

CA = CRC High

4, Read Input Status

Example: Read DI1~4 status

Request: 01 02 00 00 00 04 79 C9

Where, 01 = Meter address

02 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

00 = High byte of read DI number

04 = Low byte of read DI number

79 = CRC Low

C9 = CRC High

Response: 01 02 01 03 E1 89

Where, 01 = Meter address

02 = Function code

01 = Byte Count

03 =Data,(DI status)

E1 = CRC Low

89 = CRC High

Note: Data=0x03 = 0000 0011 (Binary Value).

Bit 0 refers to the status of DI-1. The value is 1, which means DI-1 is on.

Bit 1 refers to the status of DI-2. The value is 1, which means DI-2 is on

Bit 2 refers to the status of DI-3. The value is 0, which means DI-3 is off

Bit 3 refers to the status of DI-4. The value is 0, which means DI-4 is off

5, Read Coil Status

Example: Read DO1~2 status

Request: 01 01 00 00 00 02 BD CB

Where, 01 = Meter address

01 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

00 = High byte of read DO number

02 = Low byte of read DO number

BD = CRC Low

CB = CRC High

Response: 01 01 01 02 D0 49

Where, 01 = Meter address

01 = Function code

01 = Byte Count

02 =Data,(DO status)

D0 = CRC Low

49 = CRC High

Note: Data=0x02 = 0000 0010 (Binary Value).

Bit 0 refers to DO-1 status. The value is 0, which means DO-1 is open

Bit 1 refers to DO-2 status. The value is 1, which means DO-1 is close

6, Force Single Coil

Example: Control DO1=ON

Request: 01 05 00 00 FF 00 8C 3A

Where, 01 = Meter address

05 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

FF = High byte of DO control data

00 = Low byte of DO control data

8C = CRC Low

3A = CRC High

Response: 01 05 00 00 FF 00 8C 3A

Where, 01 = Meter address

05 = Function code

00 = High byte of registers starting address

00 = Low byte of registers starting address

FF = High byte of DO control data

00 = Low byte of DO control data

8C = CRC Low

3A = CRC High