SQLC-11OL
COMMUNICATION SPECIFICATION

(Modbus RTU mode protocol)

〔HARDWARE MODEL G〕

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Content

1. Communication specification

Item	Specification		Default setting
Standard	EIA/TIA-485-A (2003)		——
Protocol (1)	Modbus protocol RTU mode		ver.B
	ver.A (2)	Use function code : 02H, 03H, 04H, 06H, 08H	
	ver.B	Use function code : 03H, 04H, 06H, 08H	
Transmission system	Half-duplex two-wire system		——
Synchronous system	Asynchronous communication method		——
Transmission rate (1)	4800bps / 9600bps / 19200bps / 38400bps		9600bps
Modulation code	NRZ		——
Start bit	1 bit		——
Data length	8 bits		——
Parity (1)	NONE / Even number / Odd number		Even number
Stop bit (1)	1 bit / 2 bit		1 bit
Cable length	1000m (The total extension)		——
Address (1)	1 to 247 (Connection is possible to 31 sets.)		1
Error detection	CRC-16 ($X^{16}+X^{15}+X^{2}+1$)		——
Transmission character	Binary		——

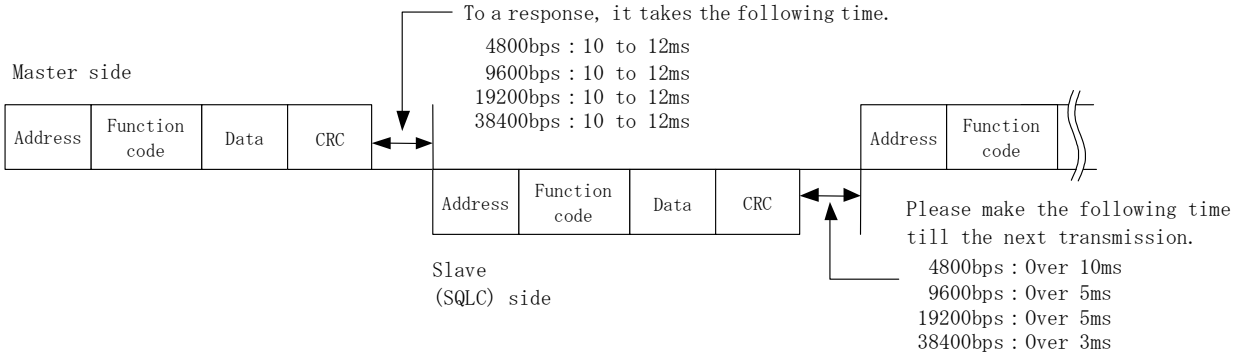
Transmission data are sent out from a bit 0.

Note(1) A setting change is made with a front switch.

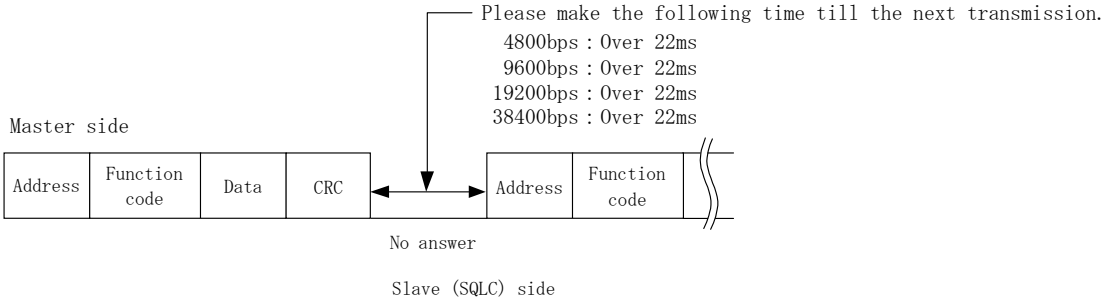
Note(2) In the case of Modbus-IDA standard compliance protocol, please use it by ver.B.
In function codes 02H and 04H, ver.A is different from a Modbus-IDA standard in part.

2. Transmission and reception protocol

(1) The usual request (Query)

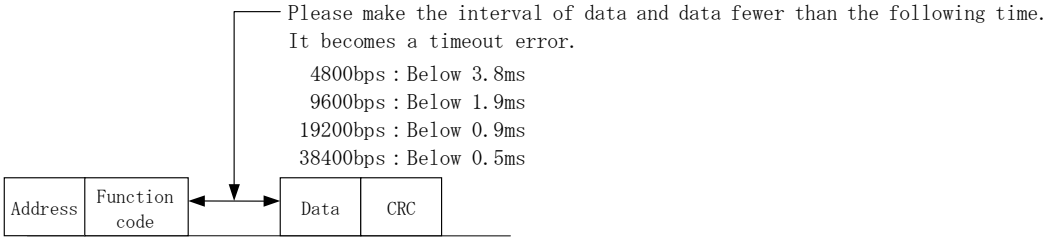


(2) The request of brosdcast (Query)
If specify all stations at the address, it becomes a broadcast request.
At this case, a slave side becomes a no response.



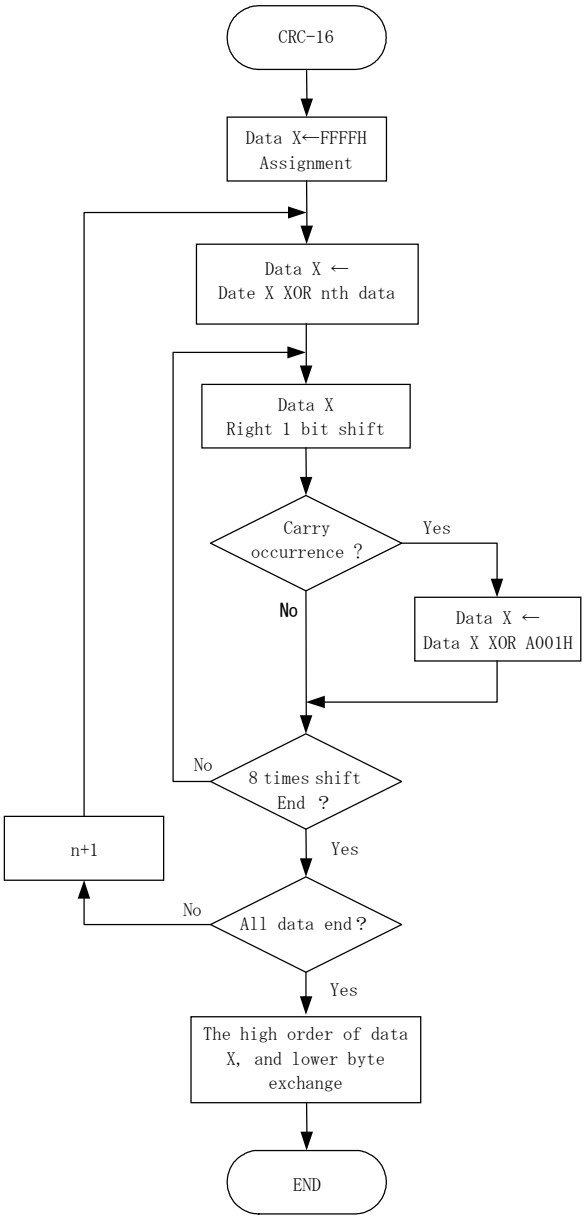
(3) The timeout between data

The interval between data and data must be 1.5 characters or less.



3. Calculation method of CRC-16

CRC-16 is adopted as error checking in Modbus RTU mode. An address, a function code, and data are calculated by the following method.



(1) Arithmetic process

① 2 bytes of data-area X is secured to a CRC calculation.

② FFFFH is substituted for ① as initial value.
③ XOR of data X and the nth data (n= 1) is calculated. Assigns for data X.

④ The 1-bit shift right of the data X is done.
⑤ If carry occurs in operation of ④, data X and XOR of A001H are taken.

⑥ Operation of ④ to ⑤ is repeated until it shifts 8 times.

⑦ XOR of the next data (n+1) and Data X is calculated. Assigns for Data X.

⑧ Operation of ④ to ⑦ is repeated until processing of all data is completed.

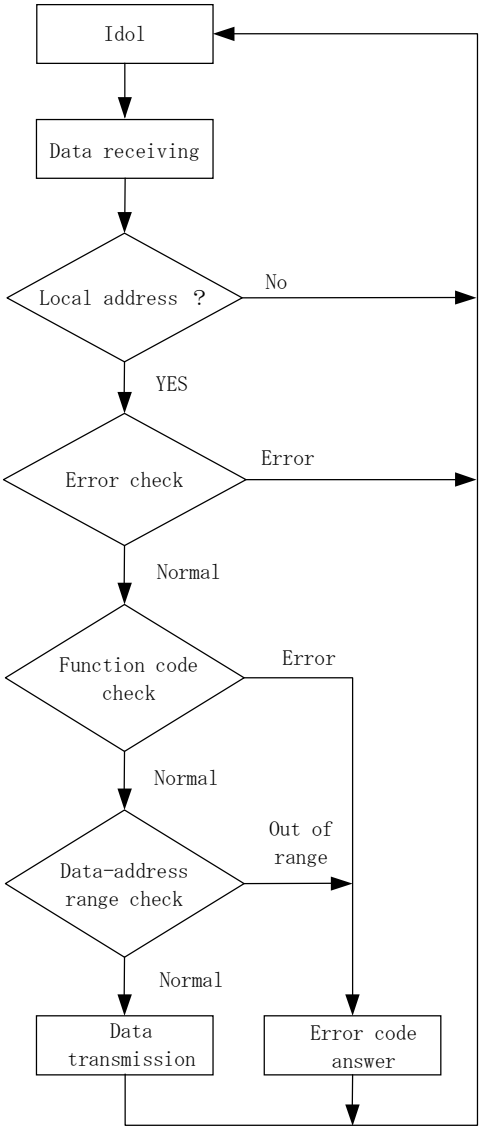
⑨ 1 byte of high rank and 1 byte of low rank of data-area X for a CRC calculation are replaced.

(2) The example of calculation

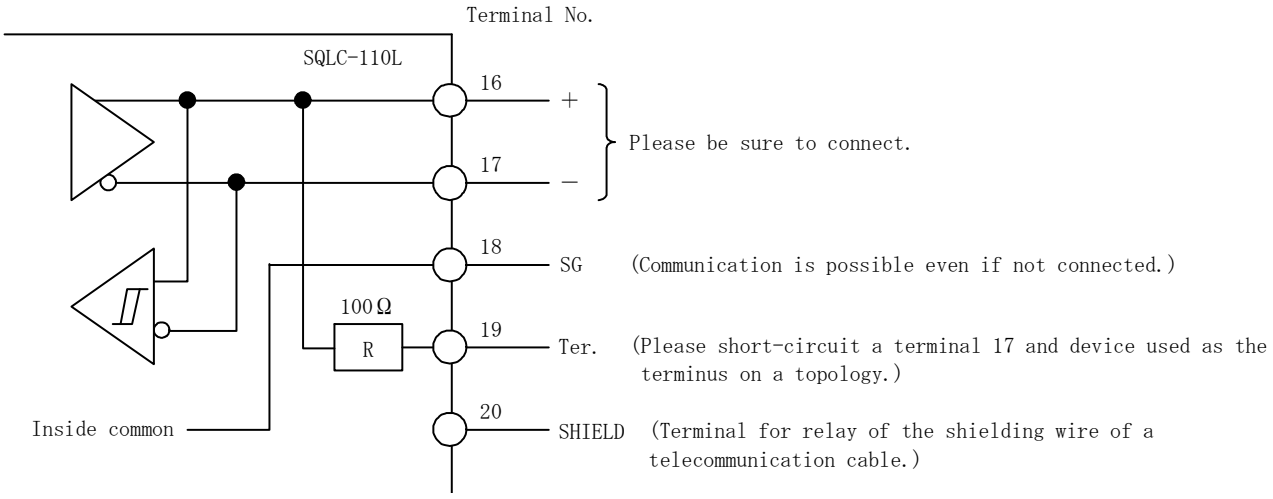
CRC Object range

1 byte	1 byte	2 byte	2 byte	2 byte
Address	Function code	Data address	Number of request data	CRC
01H	04H	00H 00H	00H 19H	31C0H

4. Communication process flow chart



5. SQLC communication specification terminal arrangement



6. Modbus protocol RTU mode ver.A

6.1 Function code

The next function code is supported with this product.

Code	Name	Data address	Contents	Modbus original function
02	Status request	10001 to	The status readout of alarm output.	Input-state readout
03	Measurement range request	40001 to	VT ratio, CT ratio and the readout of multiplying factor.	Holding register readout
	Setting value request	40101 to	The readout of setting value (measurement, alarm).	
	Model information request	40501 to	The readout of model information (type code, phase wire, rated voltage).	
04	Measurement value request	30001 to	The readout of general measurement value (instant value / maximum value / minimum value).	Input-register readout
		30201 to	The readout of harmonic measurement value (voltage).	
		30401 to	The readout of harmonic measurement value (voltage, maximum value).	
		30601 to	The readout of harmonic measurement value (current).	
		30801 to	The readout of harmonic measurement value (current, maximum value).	
06	Maximum, Minimum reset	40301 to	Reset of the maximum value and the minimum value is performed.	Writing of simplex holding register
08	Loopback test	—	The communication test of master and slave is performed.	Diagnosis

6.2 Abnormal response

In case the message transmitted from the master is judged to be abnormal, this product does the next abnormal answer.

(1) In case it becomes a no answer
① : In case a message transmission error occurs. (Overrun, Framing, Parity error, CRC)
② : In case the data interval of a message exceeds a regulation value (1.5 characters).
③ : In case the message frame exceeding 8 bytes is received.

(2) In case as answered in an error code.
In the error that does not correspond to (1), the following abnormal response is returned.
At this case, the code that applied 80H to the code of a demand is returned to a function code.
And, the generated error code is returned as data.

Error code list

Error code	Contents
01H	The function code besides regulation is received.
02H	A data address is out of range.
03H	The data more than the number of answer data are required. Setting out of setting range.

1 byte	1 byte	1 byte	2 byte
Address	Function code (+80H)	Error code	CRC
01H	84H	02H	C2C1H

6.3 Status request

Used for reading the status of this product. There is no brosdcast. A function code designates 02H.

(1) The request of data (Query)

In case it performs a status request, it is necessary to designate the data address of data to acquire.
When a data address is transmitted, please subtract 10001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Number of data		CRC	
01H	02H	0000H		0001H		B9CAH	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
02H	10001	Status of alarm output			

(2) Response

If status request is performed normally, the following response will be returned from this product side.

Example) Data address : 10001, Number of data : 1.

1	2	3	4	5	6	7
Address	Function code	Answer byte count	Alarm-output data		CRC	

● Bit allocation of alarm-output data

B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
—	—	—	—	—	—	—	②	—	—	—	—	—	—	—	①

Bit	Name	OFF (0)	ON (1)
①	Alarm output 1	No detection	Detection
②	Alarm output 2		

6.4 Measurement range request

Used for reading measurement-range information, such as VT and CT ratio for this product.
There is no brosdcast. A function code designates 03H.

(1) The request of data (Query)

In case it performs a range request, it is necessary to designate the start address of data to acquire.
When a data address is transmitted, please subtract 40001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Number of data		CRC	
01H	03H	0000H		0003H		05CBH	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
03H	40001	VT ratio			
	40003	CT ratio			
	40005	Multiplying factor			

(2) Response

If a range request is performed normally, the following response will be returned from this product side.

Example) Data address : 40001, Number of data : 3.

1	2	3	4	5	6	7	8	9	10	11
Address	Function code	Answer byte count	VT ratio		CT ratio		Multiplying factor		CRC	

● VT ratio, CT ratio

VT ratio data ＝ Primary rated value ÷ 110V

CT ratio data ＝ Primary rated value ÷ 5A × 10 (3)

Primary rated (V)	Setting value data
110	0001H (1)
220	0002H (2)
380 (4)	0003H (3)
440	0004H (4)
460 (4)	0005H (5)
480 (4)	0006H (6)
880	0008H (8)
1100	000AH (10)
1650	000FH (15)
2200	0014H (20)
3300	001EH (30)
6600	003CH (60)
11k	0064H (100)
13.2k	0078H (120)
13.8k (4)	007DH (125)
16.5k	0096H (150)
18.4k (4)	00A7H (167)
22k	00C8H (200)
33k	012CH (300)
66k	0258H (600)
77k	02BCH (700)
110k	03E8H (1000)
132k	04B0H (1200)
154k	0578H (1400)
187k	06A4H (1700)
220k	07D0H (2000)
275k	09C4H (2500)
380k (4)	0D7FH (3455)
550k	1388H (5000)

Primary rated (A)	Setting value data
5	000AH (10)
6	000CH (12)
7.5	000FH (15)
8	0010H (16)
10	0014H (20)
12	0018H (24)
15	001EH (30)
20	0028H (40)
25	0032H (50)
30	003CH (60)
40	0050H (80)
50	0064H (100)
60	0078H (120)
75	0096H (150)
80	00A0H (160)
100	00C8H (200)
120	00F0H (240)
150	012CH (300)
200	0190H (400)
250	01F4H (500)
300	0258H (600)
400	0320H (800)
500	03E8H (1000)
600	04B0H (1200)
750	05DCH (1500)
800	0640H (1600)
900	0708H (1800)
1000	07D0H (2000)
1200	0960H (2400)

Primary rated (A)	Setting value data
1500	0BB8H (3000)
1600	0C80H (3200)
1800	0E10H (3600)
2000	0FA0H (4000)
2500	1388H (5000)
3000	1770H (6000)
4000	1F40H (8000)
5000	2710H (10000)
6000	2EE0H (12000)
7500	3A98H (15000)
8000	3E80H (16000)
9000	4650H (18000)
10000	4E20H (20000)
12000	5DC0H (24000)
15000	7530H (30000)
20000	9C40H (40000)
30000	EA60H (60000)

The number of ( ) expresses decimal number data.

Note(3) In case of 1A input specification, they output it as CT ratio data ＝ Primary rated value ÷5A×10.

Note(4) Because broken numbers will occur if it divides by 110V, it becomes intrinsic set-value data.

● Multiplying factor

Multiplying factor	Communication data
×0.01	0005H (5)
×0.1	0006H (6)
×1	0000H (0)
×10	0001H (1)
×100	0002H (2)
×1000	0003H (3)
×10000	0004H (4)

The number of ( ) expresses decimal number data.

6.5 Setting value request

Used for reading set value (measurement, alarm) from this product.
There is no brosdcast. A function code designates 03H.

(1) The request of data (Query)

In case it performs setting value requirements, it is necessary to designate the start address of data to acquire.
When a data address is transmitted, please subtract 40001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Number of data		CRC	
01H	03H	0064H		000EH		85D1H	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
03H	40101	Alarm output 1 Output factor			
	40103	Alarm output 2 Output factor			
	40105	Alarm output Reset method			
	40107	Alarm output 1 Contact delay time			
	40109	Alarm output 2 Contact delay time			
	40111	Demand current Upper limit value			
	40113	Demand current Time interval			
	40115	Demand power Upper limit value			
	40117	Demand power Time interval			
	40119	Demand power Operation method			
	40121	Demand power Power factor operation method			
	40123	Harmonic distortion factor upper limit (current)			
	40125	Harmonic 5th conversion content rate upper limit (current)			
	40127	Harmonic nth content rate factor (current)			
	40129	Harmonic nth content rate upper limit value (current)			
	40131	Harmonic distortion factor upper limit (voltage)			
	40133	Harmonic 5th conversion content rate upper limit (voltage)			
	40135	Harmonic nth content rate factor (voltage)			
	40137	Harmonic nth content rate upper limit value (voltage)			
	40139	Harmonic 5th conversion detection characteristics			
	40141	Harmonic average value time interval			
	40143	Instantaneous detection Voltage upper limit value			
	40145	Instantaneous detection Voltage lower limit value			
	40147	Leakage detection Rated sensitivity current value			0000H (Fixation)
	40149	Leakage detection Factor switching			0000H (Fixation)
	40151	Leakage detection Circuit switching			0000H (Fixation)
	40153	Leakage detection Use ZCT selection			0000H (Fixation)
	40155	Tidal current measurement			

(2) Response

If a setting value request is performed normally, the following response will be returned from this product side.

Example) Data address : 40101, Number of data : 14. (General measurement value).

1	2	3	4 5	6 7	8 9	10 11	12 13
Address	Function code	Answer byte count	Alarm output 1 output factor	Alarm output 2 output factor	Alarm output reset method	Alarm output 1 Contact delay time	Alarm output 2 Contact delay time

14 15	16 17	18 19	20 21	22 23	24 25
Demand current upper limit value	Demand current time interval	Demand power upper limit value	Demand power time interval	Demand power operation method	Demand power Power factor operation method

26 27	28 29	30 31	32 33
Harmonic distortion factor upper limit (current)	Harmonic 5th conversion content rate upper limit (current)	Harmonic nth content rate factor (current)	CRC

● Setting value data

(1) Alarm output 1,2 output factor

Communication data	Contents of output
0000H	Alarm OFF
0001H	Demand current
0002H	Demand power
0003H	Current leakage
0004H	Distortion factor (current)
0005H	Harmonic 5th conversion content rate (current)
0006H	Harmonic nth content rate (current)
0007H	Distortion factor (voltage)
0008H	Harmonic 5th conversion content rate (voltage)
0009H	Harmonic nth content rate (voltage)
000AH	Voltage

Those without an alarm output, "0000H" is returned.

(2) Alarm output reset method

B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
—	—	—	—	—	—	—	②	—	—	—	—	—	—	—	①

No.	Reset factor
①	Alarm 1
②	Alarm 2

0 : Auto reset
1 : Manual reset

Those without an alarm output, "0000H" is returned.

(3) Alarm output 1,2 contact delay time

Contact delay time (s) = Communication data

Contact delay time	Communication data
0 to 300s (1s step)	0000H to 012CH (0 to 300)

Those without an alarm output, "0000H" is returned.

(4) Demand current upper limit value

Demand current upper limit value = Communication data

Upper limit value	Communication data
5 to 100% (1% step), OFF	0005H to 0064H (5 to 100), OFF : 0065H(101)

(5) Demand current time interval

Demand current time interval ＝ Communication data

Time interval	Communication data	Time interval	Communication data	Time interval	Communication data
0 second	0000H (0)	1 minute	003CH (60)	8 minutes	01E0H (480)
5 seconds	0005H (5)	2 minutes	0078H (120)	9 minutes	021CH (540)
10 seconds	000AH (10)	3 minutes	00B4H (180)	10 minutes	0258H (600)
20 seconds	0014H (20)	4 minutes	00F0H (240)	15 minutes	0384H (900)
30 seconds	001EH (30)	5 minutes	012CH (300)	20 minutes	04B0H (1200)
40 seconds	0028H (40)	6 minutes	0168H (360)	25 minutes	05DCH (1500)
50 seconds	0032H (50)	7 minutes	01A4H (420)	30 minutes	0708H (1800)

(6) Demand power upper limit value

Demand power upper limit value ＝ Communication data

Upper limit value	Communication data
5 to 100% (1% step), OFF	0005H to 0064H(5 to 100), OFF：0065H(101)

(7) Demand power time interval

Demand power time interval ＝ Communication data

Time interval	Communication data	Time interval	Communication data	Time interval	Communication data
0 second	0000H (0)	1 minute	003CH (60)	8 minutes	01E0H (480)
5 seconds	0005H (5)	2 minutes	0078H (120)	9 minutes	021CH (540)
10 seconds	000AH (10)	3 minutes	00B4H (180)	10 minutes	0258H (600)
20 seconds	0014H (20)	4 minutes	00F0H (240)	15 minutes	0384H (900)
30 seconds	001EH (30)	5 minutes	012CH (300)	20 minutes	04B0H (1200)
40 seconds	0028H (40)	6 minutes	0168H (360)	25 minutes	05DCH (1500)
50 seconds	0032H (50)	7 minutes	01A4H (420)	30 minutes	0708H (1800)

(8) Demand power operation method

Operation method	Communication data
The operation method tailored to the bimetallic type	0001H
The averaging operator in a demand time interval	0002H

(9) Demand power, power factor operation method

Power factor operation method	Communication data
Instantaneous measurement	0001H
The averaging operator in a demand time interval	0002H

(10) Harmonic distortion factor upper limit (Current)

Distortion factor upper limit (current) ＝ Communication data ÷10

Upper limit value	Communication data
5.0 to 100.0% (1% step), OFF	0032H to 03E8H(50 to 1000), OFF：03F2H(1010)

(11) Harmonic 5th conversion content rate upper limit value (Current)

5th conversion content upper limit value (Current) ＝ Communication data ÷10

Upper limit value	Communication data
5.0 to 100.0% (1% step), OFF	0032H to 03E8H(50 to 1000), OFF：03F2H(1010)

(12) Harmonic nth content rate factor (current)

Factor	Communication data
3th	0003H (3)
4th	0004H (4)
5th	0005H (5)
7th	0007H (7)
9th	0009H (9)
11th	000BH (11)
13th	000DH (13)
15th	000FH (15)

(13) Harmonic nth content rate upper limit value (Current)

nth content rate upper limit value(current) = Communication data ÷10

Upper limit value	Communication data
5.0 to 100.0% (1% step), OFF	0032H to 03E8H(50 to 1000), OFF : 03F2H(1010)

(14) Harmonic distortion factor upper limit value (Voltage)

Distortion factor upper limit value(voltage) = Communication data ÷10

Upper limit value	Communication data
1.0 to 20.0% (0.1% step), OFF	000AH to 00C8H(10 to 200), OFF : 00C9H(201)

(15) Harmonic 5th conversion content rate upper limit value (Voltage)

5th conversion content upper limit value (Voltage) = Communication data ÷10

Upper limit value	Communication data
1.0 to 20.0% (0.1% step), OFF	000AH to 00C8H(10 to 200), OFF : 00C9H(201)

(16) Harmonic nth content rate factor (Voltage)

Factor	Communication data
3th	0003H (3)
4th	0004H (4)
5th	0005H (5)
7th	0007H (7)
9th	0009H (9)
11th	000BH (11)
13th	000DH (13)
15th	000FH (15)

(17) Harmonic nth content rate upper limit value (Voltage)

nth content rate upper limit value (Voltage) = Communication data ÷10

Upper limit value	Communication data
1.0 to 20.0% (0.1% step), OFF	000AH to 00C8H(10 to 200), OFF : 00C9H(201)

(18) Harmonic 5th conversion detection characteristics

Detection characteristics	Communication data
Average-value mode	0001H
Inverse-time-delay mode	0002H

(19) Harmonic average value time interval

Average value time interval ＝ Communication data

Time interval	Communication data
0 minute	0000H (0)
1 minutes	0001H (1)
2 minutes	0002H (2)
5 minutes	0005H (5)
10 minutes	000AH (10)
15 minutes	000FH (15)
30 minutes	001EH (30)

(20) Instantaneous detection voltage upper limit value

Voltage upper limit value ＝ Communication data

Upper limit value	Communication data
30 to 150% (1% step), OFF	001EH to 0096H(30 to 150), OFF：0097H(151)

(21) Voltaeg lower limit value

Voltaeg lower limit value ＝ Communication data

Lower limit value	Communication data
30 to 150% (1% step), OFF	001EH to 0096H(30 to 150), OFF：001DH(29)

(22) Leakage detection rated sensitivity current value

Rated sensitivity current value ＝ Communication data ×100

Rated sensitivity current value	Communication data
0.03A	0003H (3)
0.05A	0005H (5)
0.1A	000AH (10)
0.2A	0014H (20)
0.4A	0028H (40)
0.8A	0050H (80)

3-phase 4-wire specification and 3-phase 3-wire 2VT3CT specification. The product without leakage measurement returns "0000H".

(23) Leakage detection factor switching

Factor	Communication data
Io	0001H
Igr	0002H

3-phase 4-wire specification and 3-phase 3-wire 2VT3CT specification. The product without leakage measurement returns "0000H".

(24) Leakage detection circuit switching

Circuit	Communication data
1-phase grounding	0001H
1-phase grounding (Negative phase sequence)	0002H
Non-grounding	0003H

3-phase 4-wire specification and 3-phase 3-wire 2VT3CT specification. The product without leakage measurement returns "0000H".

(25) Leakage detection use ZCT

Use ZCT	Communication data
TYPE 0 (Recommendation products)	0001H
TYPE 1 (Except recommendation products)	0002H

3-phase 4-wire specification and those without leakage measurement return "0000H".

(26) Tidal current measurement

Measurement	Communication data
General measurement	0001H
Tidal current measurement	0002H

6.6 Model information request

Used for reading model information, rated voltage, and the rated current from this product.
There is no brosdcast. A function code designates 03H.

(1) The request of data (Query)

When a model information demand is performed, it is necessary to designate the start address of data to acquire.
When a data address is transmitted, please subtract 40001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Number of data		CRC	
01H	03H	01F4H		0003H		45C5H	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
03H	40501	Model information, Type code			
	40503	Model information, Phase wire			
	40505	Model information, Rated voltage			

(2) Response

If a model information request is performed normally, the following response will be returned from this product side.

Example) Data address : 40501, Number of data : 3.

1	2	3	4	5	6	7	8	9	10	11
Address	Function code	Answer byte count	Type code		Phase wire		Rated voltage		CRC	

● Model information. Type code

Type	Communication data
SQLC	0010H

● Model information. Phase wire

Type	Communication data
Three-phase three-wire	0001H
Single-phase three-wire (L1-N-L3)	0002H
Single-phase three-wire (L1-N-L2)	0003H
Single-phase three-wire (L2-N-L3)	0004H
Single-phase	0005H
Three-phase four-wire	0006H
Three-phase three-wire 2VT3CT	0007H

● Model information. Rated voltage.

Rated voltage	Communication data
AC110V or 110/$\sqrt{3}$V	0001H
AC220V or 220/$\sqrt{3}$V	0002H
AC440/$\sqrt{3}$V	0003H

6.7 Measurement value request

Used for reading the measurement value in this product. There is no broadcast.
A function code designates 04H.

(1) The request of data (Query)

In case it performs setting value request, it is necessary to designate the start address of data to acquire.
If a data address is transmitted, please subtract 30001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

< Caution > Electric energy (Wh, varh) is treated as one-line data by 4 bytes. And, the point (data 0000H fixation) where a measurement value does not exist depending on a phase wire is also treated as one data.

< Caution > As for a general measurement value and harmonic measurement value (current / voltage) and harmonic measurement value (current / voltage, maximum value), addresses are different. Therefore, it cannot read by data request once. Please perform a data request individually.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Number of data		CRC	
01H	04H	0000H		0019H		31C0H	

Data-address list (1)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30001	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Voltage (L1N)
04	30003	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Voltage (L2N)
04	30005	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Voltage (L3N)
04	30007	Voltage (L1L2)	Voltage (L1N)	Voltage	Voltage (L1L2)
04	30009	Voltage (L2L3)	Voltage (L3N)	0000H (Fixation)	Voltage (L2L3)
04	30011	Voltage (L3L1)	Voltage (L1L3)	0000H (Fixation)	Voltage (L3L1)
04	30013	Current (L1)	Current (L1)	Current	Current (L1)
04	30015	Current (L2)	Current (N)	0000H (Fixation)	Current (L2)
04	30017	Current (L3)	Current (L3)	0000H (Fixation)	Current (L3)
04	30019	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Current (N)
04	30021	Demand current (L1)	Demand current (L1)	Demand current	Demand current (L1)
04	30023	Demand current (L2)	Demand current (N)	0000H (Fixation)	Demand current (L2)
04	30025	Demand current (L3)	Demand current (L3)	0000H (Fixation)	Demand current (L3)
04	30027	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Demand current (N)
04	30029	Active power	Active power	Active power	Active power
04	30031	Demand power	Demand power	Demand power	Demand power
04	30033	Watt-hour (Power receiving) (2 bytes×2)	Watt-hour (Power receiving) (2 bytes×2)	Watt-hour (Power receiving) (2 bytes×2)	Watt-hour (Power receiving) (2 bytes×2)
04	30035				
04	30037	Watt-hour (Power transmission) (2 bytes×2)	Watt-hour (Power transmission) (2 bytes×2)	Watt-hour (Power transmission) (2 bytes×2)	Watt-hour (Power transmission) (2 bytes×2)
04	30039				
04	30041	Reactive power	Reactive power	Reactive power	Reactive power
04	30043	var-hour (Power receiving LAG) (2 bytes×2)	var-hour (Power receiving LAG) (2 bytes×2)	var-hour (Power receiving LAG) (2 bytes×2)	var-hour (Power receiving LAG) (2 bytes×2)
04	30045				
04	30047	var-hour (Power receiving LEAD) (2 bytes×2)	var-hour (Power receiving LEAD) (2 bytes×2)	var-hour (Power receiving LEAD) (2 bytes×2)	var-hour (Power receiving LEAD) (2 bytes×2)
04	30049				
04	30051	var-hour (Power transmission LAG) (2 bytes×2)	var-hour (Power transmission LAG) (2 bytes×2)	var-hour (Power transmission LAG) (2 bytes×2)	var-hour (Power transmission LAG) (2 bytes×2)
04	30053				
04	30055	var-hour (Power transmission LEAD) (2 bytes×2)	var-hour (Power transmission LEAD) (2 bytes×2)	var-hour (Power transmission LEAD) (2 bytes×2)	var-hour (Power transmission LEAD) (2 bytes×2)
04	30057				

Data-address list (2)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30059	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Apparent power
04	30061	Power factor	Power factor	Power factor	Power factor
04	30063	Frequency	Frequency	Frequency	Frequency
04	30065	Current leakage	Current leakage	Current leakage	0000H (Fixation)
04	30067	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum voltage (L1N)
04	30069	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum voltage (L2N)
04	30071	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum voltage (L3N)
04	30073	Maximum voltage (L1L2)	Maximum voltage (L1N)	Maximum voltage	Maximum voltage (L1L2)
04	30075	Maximum voltage (L2L3)	Maximum voltage (L3N)	0000H (Fixation)	Maximum voltage (L2L3)
04	30077	Maximum voltage (L3L1)	Maximum voltage (L1L3)	0000H (Fixation)	Maximum voltage (L3L1)
04	30079	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum voltage (L1N)
04	30081	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum voltage (L2N)
04	30083	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum voltage (L3N)
04	30085	Minimum voltage (L1L2)	Minimum voltage (L1N)	Minimum voltage	Minimum voltage (L1L2)
04	30087	Minimum voltage (L2L3)	Minimum voltage (L3N)	0000H (Fixation)	Minimum voltage (L2L3)
04	30089	Minimum voltage (L3L1)	Minimum voltage (L1L3)	0000H (Fixation)	Minimum voltage (L3L1)
04	30091	Maximum current (L1)	Maximum current (L1)	Maximum current	Maximum current (L1)
04	30093	Maximum current (L2)	Maximum current (N)	0000H (Fixation)	Maximum current (L2)
04	30095	Maximum current (L3)	Maximum current (L3)	0000H (Fixation)	Maximum current (L3)
04	30097	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum current (N)
04	30099	Minimum current (L1)	Minimum current (L1)	Minimum current	Minimum current (L1)
04	30101	Minimum current (L2)	Minimum current (N)	0000H (Fixation)	Minimum current (L2)
04	30103	Minimum current (L3)	Minimum current (L3)	0000H (Fixation)	Minimum current (L3)
04	30105	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum current (N)
04	30107	Maximum demand current (L1)	Maximum demand current (L1)	Maximum demand current	Maximum demand current (L1)
04	30109	Maximum demand current (L2)	Maximum demand current (N)	0000H (Fixation)	Maximum demand current (L2)
04	30111	Maximum demand current (L3)	Maximum demand current (L3)	0000H (Fixation)	Maximum demand current (L3)
04	30113	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum demand current (N)
04	30115	Minimum demand current (L1)	Minimum demand current (L1)	Minimum demand current	Minimum demand current (L1)
04	30117	Minimum demand current (L2)	Minimum demand current (N)	0000H (Fixation)	Minimum demand current (L2)
04	30119	Minimum demand current (L3)	Minimum demand current (L3)	0000H (Fixation)	Minimum demand current (L3)
04	30121	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum demand current (N)
04	30123	Maximum power	Maximum power	Maximum power	Maximum power
04	30125	Minimum power	Minimum power	Minimum power	Minimum power
04	30127	Maximum demand power	Maximum demand power	Maximum demand power	Maximum demand power
04	30129	Minimum demand power	Minimum demand power	Minimum demand power	Minimum demand power
04	30131	Maximum reactive power	Maximum reactive power	Maximum reactive power	Maximum reactive power
04	30133	Minimum reactive power	Minimum reactive power	Minimum reactive power	Minimum reactive power
04	30135	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum apparent power
04	30137	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum apparent power
04	30139	Maximum power factor	Maximum power factor	Maximum power factor	Maximum power factor
04	30141	Minimum power factor	Minimum power factor	Minimum power factor	Minimum power factor
04	30143	Maximum frequency	Maximum frequency	Maximum frequency	Maximum frequency
04	30145	Minimum frequency	Minimum frequency	Minimum frequency	Minimum frequency
04	30147	Maximum current leakage	Maximum current leakage	Maximum current leakage	0000H (Fixation)

Data-address list (3)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30201	Fundamental-wave effective value Voltage L1L2	Fundamental-wave effective value Voltage L1N	Fundamental-wave effective value Voltage	Fundamental-wave effective value Voltage L1N
04	30203	Fundamental-wave effective value Voltage L2L3	Fundamental-wave effective value Voltage L3N	0000H (Fixation)	Fundamental-wave effective value Voltage L2N
04	30205	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Fundamental-wave effective value Voltage L3N
04	30207	Distortion factor Voltage L1L2	Distortion factor Voltage L1N	Distortion factor Voltage	Distortion factor Voltage L1N
04	30209	Distortion factor Voltage L2L3	Distortion factor Voltage L3N	0000H (Fixation)	Distortion factor Voltage L2N
04	30211	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Distortion factor Voltage L3N
04	30213	Harmonic 5th conversion effective value Voltage L1L2	Harmonic 5th conversion effective value Voltage L1N	Harmonic 5th conversion effective value Voltage	Harmonic 5th conversion effective value Voltage L1N
04	30215	Harmonic 5th conversion effective value Voltage L2L3	Harmonic 5th conversion effective value Voltage L3N	0000H (Fixation)	Harmonic 5th conversion effective value Voltage L2N
04	30217	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion effective value Voltage L3N
04	30219	Harmonic 5th conversion content rate Voltage L1L2	Harmonic 5th conversion content rate Voltage L1N	Harmonic 5th conversion content rate Voltage	Harmonic 5th conversion content rate Voltage L1N
04	30221	Harmonic 5th conversion content rate Voltage L2L3	Harmonic 5th conversion content rate Voltage L3N	0000H (Fixation)	Harmonic 5th conversion content rate Voltage L2N
04	30223	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion content rate Voltage L3N
04	30225	Harmonic 3th effective value Voltage L1L2	Harmonic 3th effective value Voltage L1N	Harmonic 3th effective value Voltage	Harmonic 3th effective value Voltage L1N
04	30227	Harmonic 3th effective value Voltage L2L3	Harmonic 3th effective value Voltage L3N	0000H (Fixation)	Harmonic 3th effective value Voltage L2N
04	30229	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th effective value Voltage L3N
04	30231	Harmonic 4th effective value Voltage L1L2	Harmonic 4th effective value Voltage L1N	Harmonic 4th effective value Voltage	Harmonic 4th effective value Voltage L1N
04	30233	Harmonic 4th effective value Voltage L2L3	Harmonic 4th effective value Voltage L3N	0000H (Fixation)	Harmonic 4th effective value Voltage L2N
04	30235	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th effective value Voltage L3N
04	30237	Harmonic 5th effective value Voltage L1L2	Harmonic 5th effective value Voltage L1N	Harmonic 5th effective value Voltage	Harmonic 5th effective value Voltage L1N
04	30239	Harmonic 5th effective value Voltage L2L3	Harmonic 5th effective value Voltage L3N	0000H (Fixation)	Harmonic 5th effective value Voltage L2N
04	30241	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th effective value Voltage L3N
04	30243	Harmonic 7th effective value Voltage L1L2	Harmonic 7th effective value Voltage L1N	Harmonic 7th effective value Voltage	Harmonic 7th effective value Voltage L1N
04	30245	Harmonic 7th effective value Voltage L2L3	Harmonic 7th effective value Voltage L3N	0000H (Fixation)	Harmonic 7th effective value Voltage L2N
04	30247	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th effective value Voltage L3N
04	30249	Harmonic 9th effective value Voltage L1L2	Harmonic 9th effective value Voltage L1N	Harmonic 9th effective value Voltage	Harmonic 9th effective value Voltage L1N
04	30251	Harmonic 9th effective value Voltage L2L3	Harmonic 9th effective value Voltage L3N	0000H (Fixation)	Harmonic 9th effective value Voltage L2N
04	30253	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th effective value Voltage L3N

Data-address list (4)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30255	Harmonic 11th effective value Voltage L1L2	Harmonic 11th effective value Voltage L1N	Harmonic 11th effective value Voltage	Harmonic 11th effective value Voltage L1N
04	30257	Harmonic 11th effective value Voltage L2L3	Harmonic 11th effective value Voltage L3N	0000H (Fixation)	Harmonic 11th effective value Voltage L2N
04	30259	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th effective value Voltage L3N
04	30261	Harmonic 13th effective value Voltage L1L2	Harmonic 13th effective value Voltage L1N	Harmonic 13th effective value Voltage	Harmonic 13th effective value Voltage L1N
04	30263	Harmonic 13th effective value Voltage L2L3	Harmonic 13th effective value Voltage L3N	0000H (Fixation)	Harmonic 13th effective value Voltage L2N
04	30265	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th effective value Voltage L3N
04	30267	Harmonic 15th effective value Voltage L1L2	Harmonic 15th effective value Voltage L1N	Harmonic 15th effective value Voltage	Harmonic 15th effective value Voltage L1N
04	30269	Harmonic 15th effective value Voltage L2L3	Harmonic 15th effective value Voltage L3N	0000H (Fixation)	Harmonic 15th effective value Voltage L2N
04	30271	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th effective value Voltage L3N
04	30273	Harmonic 3th content rate Voltage L1L2	Harmonic 3th content rate Voltage L1N	Harmonic 3th content rate Voltage	Harmonic 3th content rate Voltage L1N
04	30275	Harmonic 3th content rate Voltage L2L3	Harmonic 3th content rate Voltage L3N	0000H (Fixation)	Harmonic 3th content rate Voltage L2N
04	30277	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th content rate Voltage L3N
04	30279	Harmonic 4th content rate Voltage L1L2	Harmonic 4th content rate Voltage L1N	Harmonic 4th content rate Voltage	Harmonic 4th content rate Voltage L1N
04	30281	Harmonic 4th content rate Voltage L2L3	Harmonic 4th content rate Voltage L3N	0000H (Fixation)	Harmonic 4th content rate Voltage L2N
04	30283	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th content rate Voltage L3N
04	30285	Harmonic 5th content rate Voltage L1L2	Harmonic 5th content rate Voltage L1N	Harmonic 5th content rate Voltage	Harmonic 5th content rate Voltage L1N
04	30287	Harmonic 5th content rate Voltage L2L3	Harmonic 5th content rate Voltage L3N	0000H (Fixation)	Harmonic 5th content rate Voltage L2N
04	30289	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th content rate Voltage L3N
04	30291	Harmonic 7th content rate Voltage L1L2	Harmonic 7th content rate Voltage L1N	Harmonic 7th content rate Voltage	Harmonic 7th content rate Voltage L1N
04	30293	Harmonic 7th content rate Voltage L2L3	Harmonic 7th content rate Voltage L3N	0000H (Fixation)	Harmonic 7th content rate Voltage L2N
04	30295	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th content rate Voltage L3N
04	30297	Harmonic 9th content rate Voltage L1L2	Harmonic 9th content rate Voltage L1N	Harmonic 9th content rate Voltage	Harmonic 9th content rate Voltage L1N
04	30299	Harmonic 9th content rate Voltage L2L3	Harmonic 9th content rate Voltage L3N	0000H (Fixation)	Harmonic 9th content rate Voltage L2N
04	30301	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th content rate Voltage L3N
04	30303	Harmonic 11th content rate Voltage L1L2	Harmonic 11th content rate Voltage L1N	Harmonic 11th content rate Voltage	Harmonic 11th content rate Voltage L1N
04	30305	Harmonic 11th content rate Voltage L2L3	Harmonic 11th content rate Voltage L3N	0000H (Fixation)	Harmonic 11th content rate Voltage L2N
04	30307	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th content rate Voltage L3N
04	30309	Harmonic 13th content rate Voltage L1L2	Harmonic 13th content rate Voltage L1N	Harmonic 13th content rate Voltage	Harmonic 13th content rate Voltage L1N
04	30311	Harmonic 13th content rate Voltage L2L3	Harmonic 13th content rate Voltage L3N	0000H (Fixation)	Harmonic 13th content rate Voltage L2N
04	30313	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th content rate Voltage L3N

Data-address list (5)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30315	Harmonic 15th content rate Voltage L1L2	Harmonic 15th content rate Voltage L1N	Harmonic 15th content rate Voltage	Harmonic 15th content rate Voltage L1N
04	30317	Harmonic 15th content rate Voltage L2L3	Harmonic 15th content rate Voltage L3N	0000H (Fixation)	Harmonic 15th content rate Voltage L2N
04	30319	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th content rate Voltage L3N
04	30401	Maximum fundamental-wave effective value Voltage L1L2	Maximum fundamental-wave effective value Voltage L1N	Maximum fundamental-wave effective value Voltage	Maximum fundamental-wave effective value Voltage L1N
04	30403	Maximum fundamental-wave effective value Voltage L2L3	Maximum fundamental-wave effective value Voltage L3N	0000H (Fixation)	Maximum fundamental-wave effective value Voltage L2N
04	30405	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum fundamental-wave effective value Voltage L3N
04	30407	Maximum distortion factor Voltage L1L2	Maximum distortion factor Voltage L1N	Maximum distortion factor Voltage	Maximum distortion factor Voltage L1N
04	30409	Maximum distortion factor Voltage L2L3	Maximum distortion factor Voltage L3N	0000H (Fixation)	Maximum distortion factor Voltage L2N
04	30411	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum distortion factor Voltage L3N
04	30413	Harmonic 5th conversion effective value Maximum voltage L1L2	Harmonic 5th conversion effective value Maximum voltage L1N	Harmonic 5th conversion effective value Maximum voltage	Harmonic 5th conversion effective value Maximum voltage L1N
04	30415	Harmonic 5th conversion effective value Maximum voltage L2L3	Harmonic 5th conversion effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 5th conversion effective value Maximum voltage L2N
04	30417	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion effective value Maximum voltage L3N
04	30419	Harmonic 5th conversion content rate Maximum voltage L1L2	Harmonic 5th conversion content rate Maximum voltage L1N	Harmonic 5th conversion content rate Maximum voltage	Harmonic 5th conversion content rate Maximum voltage L1N
04	30421	Harmonic 5th conversion content rate Maximum voltage L2L3	Harmonic 5th conversion content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 5th conversion content rate Maximum voltage L2N
04	30423	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion content rate Maximum voltage L3N
04	30425	Harmonic 3th effective value Maximum voltage L1L2	Harmonic 3th effective value Maximum voltage L1N	Harmonic 3th effective value Maximum voltage	Harmonic 3th effective value Maximum voltage L1N
04	30427	Harmonic 3th effective value Maximum voltage L2L3	Harmonic 3th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 3th effective value Maximum voltage L2N
04	30429	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th effective value Maximum voltage L3N
04	30431	Harmonic 4th effective value Maximum voltage L1L2	Harmonic 4th effective value Maximum voltage L1N	Harmonic 4th effective value Maximum voltage	Harmonic 4th effective value Maximum voltage L1N
04	30433	Harmonic 4th effective value Maximum voltage L2L3	Harmonic 4th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 4th effective value Maximum voltage L2N
04	30435	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th effective value Maximum voltage L3N

Data-address list (6)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30437	Harmonic 5th effective value Maximum voltage L1L2	Harmonic 5th effective value Maximum voltage L1N	Harmonic 5th effective value Maximum voltage	Harmonic 5th effective value Maximum voltage L1N
04	30439	Harmonic 5th effective value Maximum voltage L2L3	Harmonic 5th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 5th effective value Maximum voltage L2N
04	30441	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th effective value Maximum voltage L3N
04	30443	Harmonic 7th effective value Maximum voltage L1L2	Harmonic 7th effective value Maximum voltage L1N	Harmonic 7th effective value Maximum voltage	Harmonic 7th effective value Maximum voltage L1N
04	30445	Harmonic 7th effective value Maximum voltage L2L3	Harmonic 7th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 7th effective value Maximum voltage L2N
04	30447	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th effective value Maximum voltage L3N
04	30449	Harmonic 9th effective value Maximum voltage L1L2	Harmonic 9th effective value Maximum voltage L1N	Harmonic 9th effective value Maximum voltage	Harmonic 9th effective value Maximum voltage L1N
04	30451	Harmonic 9th effective value Maximum voltage L2L3	Harmonic 9th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 9th effective value Maximum voltage L2N
04	30453	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th effective value Maximum voltage L3N
04	30455	Harmonic 11th effective value Maximum voltage L1L2	Harmonic 11th effective value Maximum voltage L1N	Harmonic 11th effective value Maximum voltage	Harmonic 11th effective value Maximum voltage L1N
04	30457	Harmonic 11th effective value Maximum voltage L2L3	Harmonic 11th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 11th effective value Maximum voltage L2N
04	30459	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th effective value Maximum voltage L3N
04	30461	Harmonic 13th effective value Maximum voltage L1L2	Harmonic 13th effective value Maximum voltage L1N	Harmonic 13th effective value Maximum voltage	Harmonic 13th effective value Maximum voltage L1N
04	30463	Harmonic 13th effective value Maximum voltage L2L3	Harmonic 13th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 13th effective value Maximum voltage L2N
04	30465	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th effective value Maximum voltage L3N
04	30467	Harmonic 15th effective value Maximum voltage L1L2	Harmonic 15th effective value Maximum voltage L1N	Harmonic 15th effective value Maximum voltage	Harmonic 15th effective value Maximum voltage L1N
04	30469	Harmonic 15th effective value Maximum voltage L2L3	Harmonic 15th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 15th effective value Maximum voltage L2N
04	30471	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th effective value Maximum voltage L3N

Data-address list (7)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30473	Harmonic 3th content rate Maximum voltage L1L2	Harmonic 3th content rate Maximum voltage L1N	Harmonic 3th content rate Maximum voltage	Harmonic 3th content rate Maximum voltage L1N
04	30475	Harmonic 3th content rate Maximum voltage L2L3	Harmonic 3th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 3th content rate Maximum voltage L2N
04	30477	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th content rate Maximum voltage L3N
04	30479	Harmonic 4th content rate Maximum voltage L1L2	Harmonic 4th content rate Maximum voltage L1N	Harmonic 4th content rate Maximum voltage	Harmonic 4th content rate Maximum voltage L1N
04	30481	Harmonic 4th content rate Maximum voltage L2L3	Harmonic 4th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 4th content rate Maximum voltage L2N
04	30483	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th content rate Maximum voltage L3N
04	30485	Harmonic 5th content rate Maximum voltage L1L2	Harmonic 5th content rate Maximum voltage L1N	Harmonic 5th content rate Maximum voltage	Harmonic 5th content rate Maximum voltage L1N
04	30487	Harmonic 5th content rate Maximum voltage L2L3	Harmonic 5th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 5th content rate Maximum voltage L2N
04	30489	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th content rate Maximum voltage L3N
04	30491	Harmonic 7th content rate Maximum voltage L1L2	Harmonic 7th content rate Maximum voltage L1N	Harmonic 7th content rate Maximum voltage	Harmonic 7th content rate Maximum voltage L1N
04	30493	Harmonic 7th content rate Maximum voltage L2L3	Harmonic 7th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 7th content rate Maximum voltage L2N
04	30495	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th content rate Maximum voltage L3N
04	30497	Harmonic 9th content rate Maximum voltage L1L2	Harmonic 9th content rate Maximum voltage L1N	Harmonic 9th content rate Maximum voltage	Harmonic 9th content rate Maximum voltage L1N
04	30499	Harmonic 9th content rate Maximum voltage L2L3	Harmonic 9th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 9th content rate Maximum voltage L2N
04	30501	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th content rate Maximum voltage L3N
04	30503	Harmonic 11th content rate Maximum voltage L1L2	Harmonic 11th content rate Maximum voltage L1N	Harmonic 11th content rate Maximum voltage	Harmonic 11th content rate Maximum voltage L1N
04	30505	Harmonic 11th content rate Maximum voltage L2L3	Harmonic 11th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 11th content rate Maximum voltage L2N
04	30507	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th content rate Maximum voltage L3N
04	30509	Harmonic 13th content rate Maximum voltage L1L2	Harmonic 13th content rate Maximum voltage L1N	Harmonic 13th content rate Maximum voltage	Harmonic 13th content rate Maximum voltage L1N
04	30511	Harmonic 13th content rate Maximum voltage L2L3	Harmonic 13th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 13th content rate Maximum voltage L2N
04	30513	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th content rate Maximum voltage L3N
04	30515	Harmonic 15th content rate Maximum voltage L1L2	Harmonic 15th content rate Maximum voltage L1N	Harmonic 15th content rate Maximum voltage	Harmonic 15th content rate Maximum voltage L1N
04	30517	Harmonic 15th content rate Maximum voltage L2L3	Harmonic 15th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 15th content rate Maximum voltage L2N
04	30519	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th content rate Maximum voltage L3N

Data-address list (8)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire 3-phase 3-wire (2VT·3CT)
04	30601	Fundamental-wave effective value Current L1	Fundamental-wave effective value Current L1	Fundamental-wave effective value Current	Fundamental-wave effective value Current L1
04	30603	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Fundamental-wave effective value Current L2
04	30605	Fundamental-wave effective value Current L3	Fundamental-wave effective value Current L3	0000H (Fixation)	Fundamental-wave effective value Current L3
04	30607	Distortion factor Current L1	Distortion factor Current L1	Distortion factor Current	Distortion factor Current L1
04	30609	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Distortion factor Current L2
04	30611	Distortion factor Current L3	Distortion factor Current L3	0000H (Fixation)	Distortion factor Current L3
04	30613	Harmonic 5th conversion effective value Current L1	Harmonic 5th conversion effective value Current L1	Harmonic 5th conversion effective value Current	Harmonic 5th conversion effective value Current L1
04	30615	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion effective value Current L2
04	30617	Harmonic 5th conversion effective value Current L3	Harmonic 5th conversion effective value Current L3	0000H (Fixation)	Harmonic 5th conversion effective value Current L3
04	30619	Harmonic 5th conversion content rate Current L1	Harmonic 5th conversion content rate Current L1	Harmonic 5th conversion content rate Current	Harmonic 5th conversion content rate Current L1
04	30621	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion content rate Current L2
04	30623	Harmonic 5th conversion content rate Current L3	Harmonic 5th conversion content rate Current L3	0000H (Fixation)	Harmonic 5th conversion content rate Current L3
04	30625	Harmonic 3th effective value Current L1	Harmonic 3th effective value Current L1	Harmonic 3th effective value Current	Harmonic 3th effective value Current L1
04	30627	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th effective value Current L2
04	30629	Harmonic 3th effective value Current L3	Harmonic 3th effective value Current L3	0000H (Fixation)	Harmonic 3th effective value Current L3
04	30631	Harmonic 4th effective value Current L1	Harmonic 4th effective value Current L1	Harmonic 4th effective value Current	Harmonic 4th effective value Current L1
04	30633	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th effective value Current L2
04	30635	Harmonic 4th effective value Current L3	Harmonic 4th effective value Current L3	0000H (Fixation)	Harmonic 4th effective value Current L3
04	30637	Harmonic 5th effective value Current L1	Harmonic 5th effective value Current L1	Harmonic 5th effective value Current	Harmonic 5th effective value Current L1
04	30639	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th effective value Current L2
04	30641	Harmonic 5th effective value Current L3	Harmonic 5th effective value Current L3	0000H (Fixation)	Harmonic 5th effective value Current L3
04	30643	Harmonic 7th effective value Current L1	Harmonic 7th effective value Current L1	Harmonic 7th effective value Current	Harmonic 7th effective value Current L1
04	30645	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th effective value Current L2
04	30647	Harmonic 7th effective value Current L3	Harmonic 7th effective value Current L3	0000H (Fixation)	Harmonic 7th effective value Current L3
04	30649	Harmonic 9th effective value Current L1	Harmonic 9th effective value Current L1	Harmonic 9th effective value Current	Harmonic 9th effective value Current L1
04	30651	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th effective value Current L2
04	30653	Harmonic 9th effective value Current L3	Harmonic 9th effective value Current L3	0000H (Fixation)	Harmonic 9th effective value Current L3

Data-address list (9)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire 3-phase 3-wire (2VT·3CT)
04	30655	Harmonic 11th effective value Current L1	Harmonic 11th effective value Current L1	Harmonic 11th effective value Current	Harmonic 11th effective value Current L1
04	30657	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th effective value Current L2
04	30659	Harmonic 11th effective value Current L3	Harmonic 11th effective value Current L3	0000H (Fixation)	Harmonic 11th effective value Current L3
04	30661	Harmonic 13th effective value Current L1	Harmonic 13th effective value Current L1	Harmonic 13th effective value Current	Harmonic 13th effective value Current L1
04	30663	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th effective value Current L2
04	30665	Harmonic 13th effective value Current L3	Harmonic 13th effective value Current L3	0000H (Fixation)	Harmonic 13th effective value Current L3
04	30667	Harmonic 15th effective value Current L1	Harmonic 15th effective value Current L1	Harmonic 15th effective value Current	Harmonic 15th effective value Current L1
04	30669	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th effective value Current L2
04	30671	Harmonic 15th effective value Current L3	Harmonic 15th effective value Current L3	0000H (Fixation)	Harmonic 15th effective value Current L3
04	30673	Harmonic 3th content rate Current L1	Harmonic 3th content rate Current L1	Harmonic 3th content rate Current	Harmonic 3th content rate Current L1
04	30675	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th content rate Current L2
04	30677	Harmonic 3th content rate Current L3	Harmonic 3th content rate Current L3	0000H (Fixation)	Harmonic 3th content rate Current L3
04	30679	Harmonic 4th content rate Current L1	Harmonic 4th content rate Current L1	Harmonic 4th content rate Current	Harmonic 4th content rate Current L1
04	30681	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th content rate Current L2
04	30683	Harmonic 4th content rate Current L3	Harmonic 4th content rate Current L3	0000H (Fixation)	Harmonic 4th content rate Current L3
04	30685	Harmonic 5th content rate Current L1	Harmonic 5th content rate Current L1	Harmonic 5th content rate Current	Harmonic 5th content rate Current L1
04	30687	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th content rate Current L2
04	30689	Harmonic 5th content rate Current L3	Harmonic 5th content rate Current L3	0000H (Fixation)	Harmonic 5th content rate Current L3
04	30691	Harmonic 7th content rate Current L1	Harmonic 7th content rate Current L1	Harmonic 7th content rate Current	Harmonic 7th content rate Current L1
04	30693	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th content rate Current L2
04	30695	Harmonic 7th content rate Current L3	Harmonic 7th content rate Current L3	0000H (Fixation)	Harmonic 7th content rate Current L3
04	30697	Harmonic 9th content rate Current L1	Harmonic 9th content rate Current L1	Harmonic 9th content rate Current	Harmonic 9th content rate Current L1
04	30699	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th content rate Current L2
04	30701	Harmonic 9th content rate Current L3	Harmonic 9th content rate Current L3	0000H (Fixation)	Harmonic 9th content rate Current L3
04	30703	Harmonic 11th content rate Current L1	Harmonic 11th content rate Current L1	Harmonic 11th content rate Current	Harmonic 11th content rate Current L1
04	30705	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th content rate Current L2
04	30707	Harmonic 11th content rate Current L3	Harmonic 11th content rate Current L3	0000H (Fixation)	Harmonic 11th content rate Current L3
04	30709	Harmonic 13th content rate Current L1	Harmonic 13th content rate Current L1	Harmonic 13th content rate Current	Harmonic 13th content rate Current L1
04	30711	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th content rate Current L2
04	30713	Harmonic 13th content rate Current L3	Harmonic 13th content rate Current L3	0000H (Fixation)	Harmonic 13th content rate Current L3

Data-address list (10)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire 3-phase 3-wire (2VT·3CT)
04	30715	Harmonic 15th content rate Current L1	Harmonic 15th content rate Current L1	Harmonic 15th content rate Current	Harmonic 15th content rate Current L1
04	30717	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th content rate Current L2
04	30719	Harmonic 15th content rate Current L3	Harmonic 15th content rate Current L3	0000H (Fixation)	Harmonic 15th content rate Current L3
04	30801	Maximum fundamental-wave effective value Current L1	Maximum fundamental-wave effective value Current L1	Maximum fundamental-wave effective value Current	Maximum fundamental-wave effective value Current L1
04	30803	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum fundamental-wave effective value Current L2
04	30805	Maximum fundamental-wave effective value Current L3	Maximum fundamental-wave effective value Current L3	0000H (Fixation)	Maximum fundamental-wave effective value Current L3
04	30807	Maximum distortion factor Current L1	Maximum distortion factor Current L1	Maximum distortion factor Current	Maximum distortion factor Current L1
04	30809	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum distortion factor Current L2
04	30811	Maximum distortion factor Current L3	Maximum distortion factor Current L3	0000H (Fixation)	Maximum distortion factor Current L3
04	30813	Harmonic 5th conversion effective value Maximum current L1	Harmonic 5th conversion effective value Maximum current L1	Harmonic 5th conversion effective value Maximum current	Harmonic 5th conversion effective value Maximum current L1
04	30815	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion effective value Maximum current L2
04	30817	Harmonic 5th conversion effective value Maximum current L3	Harmonic 5th conversion effective value Maximum current L3	0000H (Fixation)	Harmonic 5th conversion effective value Maximum current L3
04	30819	Harmonic 5th conversion content rate Maximum current L1	Harmonic 5th conversion content rate Maximum current L1	Harmonic 5th conversion content rate Maximum current	Harmonic 5th conversion content rate Maximum current L1
04	30821	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion content rate Maximum current L2
04	30823	Harmonic 5th conversion content rate Maximum current L3	Harmonic 5th conversion content rate Maximum current L3	0000H (Fixation)	Harmonic 5th conversion content rate Maximum current L3
04	30825	Harmonic 3th effective value Maximum current L1	Harmonic 3th effective value Maximum current L1	Harmonic 3th effective value Maximum current	Harmonic 3th effective value Maximum current L1
04	30827	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th effective value Maximum current L2
04	30829	Harmonic 3th effective value Maximum current L3	Harmonic 3th effective value Maximum current L3	0000H (Fixation)	Harmonic 3th effective value Maximum current L3
04	30831	Harmonic 4th effective value Maximum current L1	Harmonic 4th effective value Maximum current L1	Harmonic 4th effective value Maximum current	Harmonic 4th effective value Maximum current L1
04	30833	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th effective value Maximum current L2
04	30835	Harmonic 4th effective value Maximum current L3	Harmonic 4th effective value Maximum current L3	0000H (Fixation)	Harmonic 4th effective value Maximum current L3

Data-address list (11)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire 3-phase 3-wire (2VT･3CT)
04	30837	Harmonic 5th effective value Maximum current L1	Harmonic 5th effective value Maximum current L1	Harmonic 5th effective value Maximum current	Harmonic 5th effective value Maximum current L1
04	30839	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th effective value Maximum current L2
04	30841	Harmonic 5th effective value Maximum current L3	Harmonic 5th effective value Maximum current L3	0000H (Fixation)	Harmonic 5th effective value Maximum current L3
04	30843	Harmonic 7th effective value Maximum current L1	Harmonic 7th effective value Maximum current L1	Harmonic 7th effective value Maximum current	Harmonic 7th effective value Maximum current L1
04	30845	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th effective value Maximum current L2
04	30847	Harmonic 7th effective value Maximum current L3	Harmonic 7th effective value Maximum current L3	0000H (Fixation)	Harmonic 7th effective value Maximum current L3
04	30849	Harmonic 9th effective value Maximum current L1	Harmonic 9th effective value Maximum current L1	Harmonic 9th effective value Maximum current	Harmonic 9th effective value Maximum current L1
04	30851	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th effective value Maximum current L2
04	30853	Harmonic 9th effective value Maximum current L3	Harmonic 9th effective value Maximum current L3	0000H (Fixation)	Harmonic 9th effective value Maximum current L3
04	30855	Harmonic 11th effective value Maximum current L1	Harmonic 11th effective value Maximum current L1	Harmonic 11th effective value Maximum current	Harmonic 11th effective value Maximum current L1
04	30857	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th effective value Maximum current L2
04	30859	Harmonic 11th effective value Maximum current L3	Harmonic 11th effective value Maximum current L3	0000H (Fixation)	Harmonic 11th effective value Maximum current L3
04	30861	Harmonic 13th effective value Maximum current L1	Harmonic 13th effective value Maximum current L1	Harmonic 13th effective value Maximum current	Harmonic 13th effective value Maximum current L1
04	30863	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th effective value Maximum current L2
04	30865	Harmonic 13th effective value Maximum current L3	Harmonic 13th effective value Maximum current L3	0000H (Fixation)	Harmonic 13th effective value Maximum current L3
04	30867	Harmonic 15th effective value Maximum current L1	Harmonic 15th effective value Maximum current L1	Harmonic 15th effective value Maximum current	Harmonic 15th effective value Maximum current L1
04	30869	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th effective value Maximum current L2
04	30871	Harmonic 15th effective value Maximum current L3	Harmonic 15th effective value Maximum current L3	0000H (Fixation)	Harmonic 15th effective value Maximum current L3

Data-address list (12)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire 3-phase 3-wire (2VT･3CT)
04	30873	Harmonic 3th content rate Maximum current L1	Harmonic 3th content rate Maximum current L1	Harmonic 3th content rate Maximum current	Harmonic 3th content rate Maximum current L1
04	30875	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th content rate Maximum current L2
04	30877	Harmonic 3th content rate Maximum current L3	Harmonic 3th content rate Maximum current L3	0000H (Fixation)	Harmonic 3th content rate Maximum current L3
04	30879	Harmonic 4th content rate Maximum current L1	Harmonic 4th content rate Maximum current L1	Harmonic 4th content rate Maximum current	Harmonic 4th content rate Maximum current L1
04	30881	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th content rate Maximum current L2
04	30883	Harmonic 4th content rate Maximum current L3	Harmonic 4th content rate Maximum current L3	0000H (Fixation)	Harmonic 4th content rate Maximum current L3
04	30885	Harmonic 5th content rate Maximum current L1	Harmonic 5th content rate Maximum current L1	Harmonic 5th content rate Maximum current	Harmonic 5th content rate Maximum current L1
04	30887	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th content rate Maximum current L2
04	30889	Harmonic 5th content rate Maximum current L3	Harmonic 5th content rate Maximum current L3	0000H (Fixation)	Harmonic 5th content rate Maximum current L3
04	30891	Harmonic 7th content rate Maximum current L1	Harmonic 7th content rate Maximum current L1	Harmonic 7th content rate Maximum current	Harmonic 7th content rate Maximum current L1
04	30893	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th content rate Maximum current L2
04	30895	Harmonic 7th content rate Maximum current L3	Harmonic 7th content rate Maximum current L3	0000H (Fixation)	Harmonic 7th content rate Maximum current L3
04	30897	Harmonic 9th content rate Maximum current L1	Harmonic 9th content rate Maximum current L1	Harmonic 9th content rate Maximum current	Harmonic 9th content rate Maximum current L1
04	30899	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th content rate Maximum current L2
04	30901	Harmonic 9th content rate Maximum current L3	Harmonic 9th content rate Maximum current L3	0000H (Fixation)	Harmonic 9th content rate Maximum current L3
04	30903	Harmonic 11th content rate Maximum current L1	Harmonic 11th content rate Maximum current L1	Harmonic 11th content rate Maximum current	Harmonic 11th content rate Maximum current L1
04	30905	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th content rate Maximum current L2
04	30907	Harmonic 11th content rate Maximum current L3	Harmonic 11th content rate Maximum current L3	0000H (Fixation)	Harmonic 11th content rate Maximum current L3
04	30909	Harmonic 13th content rate Maximum current L1	Harmonic 13th content rate Maximum current L1	Harmonic 13th content rate Maximum current	Harmonic 13th content rate Maximum current L1
04	30911	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th content rate Maximum current L2
04	30913	Harmonic 13th content rate Maximum current L3	Harmonic 13th content rate Maximum current L3	0000H (Fixation)	Harmonic 13th content rate Maximum current L3
04	30915	Harmonic 15th content rate Maximum current L1	Harmonic 15th content rate Maximum current L1	Harmonic 15th content rate Maximum current	Harmonic 15th content rate Maximum current L1
04	30917	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th content rate Maximum current L2
04	30919	Harmonic 15th content rate Maximum current L3	Harmonic 15th content rate Maximum current L3	0000H (Fixation)	Harmonic 15th content rate Maximum current L3

(2) Response

If measurement value requirements are performed normally, the following response will be returned from this product side.

Example) Data address : 30001, Number of data : 23 (3-phase 3-wire)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Address	Function code	Answer byte count	00	00	00	00	00	00	L1L2 line voltage V(L1L2)		L2L3 line voltage V(L2L3)		L3L1 line voltage V(L3L1)	

16	17	18	19	20	21	22	23	24	25	26	27	28	29
L1 phase Current A(L1)		L2 phase Current A(L2)		L3 phase Current A(L3)		00	00	L1 phase demand current DA(L1)		L2 phase demand current DA(L2)		L3 phase demand current DA(L3)	

30	31	32	33	34	35	36	37	38	39	40	41	42	43
00	00	Active power W		Demand power DW		Watt-hour (Power receiving) Wh				Watt-hour (Power transmission) -Wh			

44	45	46	47	48	49	50	51	52	53	54	55	56	57
Reactive power var		Reactive power (Power receiving, LAG) varh (LAG)				Reactive power (Power receiving, LEAD) varh (LEAD)				Reactive power (Power transmission, LAG) -varh (LAG)			

58	59	60	61	62	63
Reactive power (Power transmission, LEAD) -varh (LEAD)				CRC	

Transmission scaling

Item		Input			Communication data (5)	Intrinsic error
Voltage, Minimum voltage, Maximum voltage	3φ3W 1φ2W 3φ4W	AC0 - 150V, AC0 - 300V, AC0 - 600V (Line)			0000H to 2710H (0 to 10000)	±0.5%
		AC0 - 150/√3V, AC0 - 300/√3V, AC0 - 600/√3V (Phase)			0000H to 168EH (0 to 5774)	
	1φ3W (6)	AC0 - 300V (Line)			0000H to 2710H (0 to 10000)	
		AC0 - 150V (Phase)	Phase-voltage full-scale 150V		0000H to 2710H (0 to 10000)	
			Phase-voltage full-scale 300V		0000H to 1388H (0 to 5000)	
Current, Minimum current, Maximum current, Minimum demand current, Maximum demand current, Demand current		Rating 5A	AC0 - 5A		0000H to 2710H (0 to 10000)	±0.5%
		Rating 1A	AC0 - 1A			
Active power, Minimum active power, Maximum active power, Maximum demand power, Minimum demand power, Demand power	3φ3W 1φ3W 3φ4W	Rating 5A	110V	-1kW - 0 - +1kW	D8F0H to 0000H to 2710H (-10000 to 0 to +10000)	±0.5%
			220V	-2kW - 0 - +2kW		
			440V	-4kW - 0 - +4kW		
		Rating 1A	110V	-200W - 0 - +200W		
			220V	-400W - 0 - +400W		
			440V	-800W - 0 - +800W		
	1φ2W	Rating 5A	110V	-500W - 0 - +500W	EC78H to 0000H to 1388H (-5000 to 0 to +5000)	±0.5%
			220V	-1kW - 0 - +1kW		
		Rating 1A	110V	-100W - 0 - +100W		
			220V	-200W - 0 - +200W		
Reactive power, Minimum reactive power, Maximum reactive power	3φ3W 1φ3W 3φ4W	Rating 5A	110V	LEAD 1kvar - 0 - LAG 1kvar	D8F0H to 0000H to 2710H (-10000 to 0 to +10000)	±0.5%
			220V	LEAD 2kvar - 0 - LAG 2kvar		
			440V	LEAD 4kvar - 0 - LAG 4kvar		
		Rating 1A	110V	LEAD 200var - 0 - LAG 200var		
			220V	LEAD 400var - 0 - LAG 400var		
			440V	LEAD 800var - 0 - LAG 800var		
	1φ2W	Rating 5A	110V	LEAD 500var - 0 - LAG 500var	EC78H to 0000H to 1388H (-5000 to 0 to +5000)	±0.5%
			220V	LEAD 1kvar - 0 - LAG 1kvar		
		Rating 1A	110V	LEAD 100var - 0 - LAG 100var		
			220V	LEAD 200var - 0 - LAG 200var		
Apparent power, Minimum apparent power, Maximum apparent power		Rating 5A	110V	0 - 1kVA	0000H to 2710H (0 to 10000)	±0.5%
			220V	0 - 2kVA		
			440V	0 - 4kVA		
		Rating 1A	110V	0 - 200VA		
			220V	0 - 400VA		
			440V	0 - 800VA		
Power factor, Minimum power factor, Maximum power factor		LEAD 0 - 1 - LAG 0			0000H to 1388H to 2710H (0 to 5000 to 10000)	±2.0%
		LEAD 0.5 - 1 - LAG 0.5			09C4H to 1388H to 1D4CH (2500 to 5000 to 7500)	
Frequency, Minimum frequency, Maximum frequency		45 - 55Hz			1194H to 157CH (4500 to 5500)	±0.5%
		55 - 65Hz			157CH to 1964H (5500 to 6500)	
		45 - 65Hz			1194H to 1964H (4500 to 6500)	
Current leakage, Maximum current leakage		AC0 - AC0.8A			0000H to 2710H (0 to 10000)	±10%
Distortion factor, Maximum distortion factor		Voltage	0.0 - 20.0%		0000H to 00C8H (0 to 200)	±2.5%
		Current	0.0 - 100.0%		0000H to 03E8H (0 to 1000)	±2.5%
Harmonic content rate (Fundamental wave, nth), Harmonic maximum content (Fundamental wave, nth), Harmonic 5th conversion content rate, Harmonic 5th conversion maximum content rate		voltage	0.0 - 20.0%		0000H to 00C8H (0 to 200)	±2.5%
		Current	0.0 - 100.0%		0000H to 03E8H (0 to 1000)	±2.5%

<table>
<tr><th>Item</th><th colspan="4">Input</th><th>Communication data (5)</th><th>Intrinsic error</th></tr>
<tr><td rowspan="5">Harmonic effective value (Fundamental wave, nth), Harmonic maximum effective value (Fundamental wave, nth), Harmonic 5th conversion effective value, Harmonic 5th conversion maximum effective value</td><td rowspan="4">Voltage</td><td>3φ3W
1φ2W</td><td colspan="2">AC0 - 150V, AC0 - 300V</td><td>0000H to 2710H (0 to 10000)</td><td rowspan="4">±1.5%</td></tr>
<tr><td>3φ4W</td><td colspan="2">AC0 - 150/√3V, AC0 - 300/√3V, AC0 - 600/√3V (Phase)</td><td>0000H to 168EH (0 to 5774)</td></tr>
<tr><td rowspan="2">1φ3W (6)</td><td rowspan="2">AC0 - 150V (Phase)</td><td>Phase-voltage full-scale 150V</td><td>0000H to 2710H (0 to 10000)</td></tr>
<tr><td>Phase-voltage full-scale 300V</td><td>0000H to 1388H (0 to 5000)</td></tr>
<tr><td>Current</td><td colspan="2">Rating 5A</td><td>AC0 - 5A</td><td rowspan="2">0000H to 2710H (0 to 10000)</td><td>±1.5%</td></tr>
<tr><td colspan="2">Rating 1A</td><td>AC0 - 1A</td><td>±1.5%</td></tr>
<tr><td>Watt-hour (Power receiving / Power transmission)</td><td colspan="4">0 - 99999.9</td><td>00000000H to 000F423FH (0 to 999999) (7)</td><td>±2.0%</td></tr>
<tr><td>var-hour (Power receiving / Power transmission, LAG/LEAD)</td><td colspan="4">0 - 99999.9</td><td>00000000H to 000F423FH (0 to 999999) (7)</td><td>±2.5%</td></tr>
</table>

Note(5) The range of communication data, Data at the case of low input.

- Current : 120% full-scale, Less than 0.5% of secondary rated current is "0000H" (0).
- Voltage : 101% full-scale, Less than 0.5% of secondary rated voltage is "0000H" (0).
- Active power, Reactive power : 120% full-scale, Less than 0.5% of secondary rated power and secondary reactive power is "0000H" (0).
- Power factor : Less than 20% of voltage range and less than 2% of current range are "1388H" (5000).
- Frequency : ±1% of measuring range. 45 - 55Hz : 44.9 to 55.1Hz "118AH to 1586H" (4490 to 5510)
  55 - 65Hz : 54.9 to 65.1Hz "1572H to 196EH" (5490 to 6510)
  45 - 65Hz : 44.8 to 65.2Hz "1180H to 1978H" (4480 to 6520)
  Less than 20% of voltage range is "0000H".
- Active power, Reactive power : Minus data expresses with two's complement.
  (-10000 - 0 - 10000 : D8F0H to 0000H to 2710H)
- Current leakage : 120% (12000) full-scale, Out of range : "FFFFH" (-1)

Note(6) The default setting of phase-voltage full-scale setting is 300V.

Note(7) Set to kWh (kvarh) by hanging multiplying factor data on watt-hour data.
Example) Watt-hour(kWh) = Watt-hour date × Multiplying factor data = 123.4×100 = 12340kWh

6.8 Maximum, minimum reset request

Used for performing the maximum minimum reset to this product. It will be broadcast if 00H are designated as an address. A function code designates 06H.

(1) The maximum minimum reset request (Query)

In case it performs the maximum minimum reset request, it is necessary to transmit the write-in data containing a data address and the factor to reset. If a data address is transmitted, please subtract 40001 from the address of a data-address list.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Write data		CRC	
01H	06H	012CH		001FH		0837H	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
06H	40301	Maximum, minimum reset			

● Maximum minimum reset, Bit allocation of write data ([8])

B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
—	—	—	—	⑫	⑪	⑩	⑨	⑧	⑦	⑥	⑤	④	③	②	①

No.	Contents of output	No.	Contents of output
①	Voltage (Maximum, Minimum)	⑦	Frequency (Maximum, Minimum)
②	Current (Maximum, Minimum)	⑧	Current leakage (Maximum) ([10])
③	Active power (Maximum, Minimum)	⑨	Demand current (Maximum, Minimum)
④	Reactive power (Maximum, Minimum)	⑩	Demand power (Maximum, Minimum)
⑤	Apparent power (Maximum, Minimum) ([9])	⑪	Harmonic data (Maximum) (Voltage) ([11])
⑥	Power factor (Maximum, Minimum)	⑫	Harmonic data (Maximum) (Current) ([11])

Note([8]) Except an applicable bit and the measurement factor that doesn't exist by the model, data is not reset as for ON (1).

Note([9]) Only with 3-phase 4-wire specification.

Note([10]) Only with leakage measurement option

Note([11]) Harmonic data : Fundamental-wave effective value, Distortion factor, Harmonic nth effective value, Harmonic nth content rate, Harmonic 5th conversion effective value, Harmonic 5th conversion content rate

(2) Response

If maximum minimum reset request is performed normally, the following response will be returned from this product side. In case broadcast (address 00H) is designated, a response does not occur.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Change data		CRC	

The same data as the write data of the maximum and the minimum reset factor is returned to change data.

6.9 Loopback test

Loopback test is the function that tests communication of a master and a slave (SQLC).
Arbitrary data is answered as it is. There is no broadcast. A function code designates 08H.

(1) The request of loopback (Query)

In case it performs a loopback test, it is necessary to transmit the data used for a diagnostic code and diagnosis. A diagnostic code should designate 0000H. A diagnostic data designates the selected value to 0000H to FFFFH.

1	2	3	4	5	6	7	8
Address	Function code	Diagnostic code		Diagnostic data		CRC	
01H	08H	0000H		04D2H		6296H	

(2) Response

If loopback request is performed normally, the following response will be returned from this product side.

1	2	3	4	5	6	7	8
Address	Function code	Diagnostic code		Diagnostic data		CRC	

The same data as the master transmitted by (1) is returned to diagnostic code and diagnostic data.

7. Modbus protocol RTU mode ver.B

7.1 Function code

The next function code is supported with this product.

Code	Name	Data address	Contents	Modbus original function
03	Measurement range request	40001 to	VT ratio, CT ratio and the readout of multiplying factor.	Holding register readout
	Setting value request	40101 to	The readout of setting value (measurement, alarm).	
	Status request	40201 to	The status readout of alarm output.	
	Model information request	40501 to	The readout of model information (type code, phase wire, rated voltage).	
04	Measurement value request	30001 to	The readout of general measurement value (instant value / maximum value / minimum value).	Input-register readout
		30101 to	The readout of harmonic measurement value (voltage).	
		30201 to	The readout of harmonic measurement value (voltage, maximum value).	
		30301 to	The readout of harmonic measurement value (current).	
		30401 to	The readout of harmonic measurement value (current, maximum value).	
06	Maximum, Minimum reset	40301 to	Reset of the maximum value and the minimum value is performed.	Writing of simplex holding register
08	Loopback test	—	The communication test of master and slave is performed.	Diagnosis

7.2 Abnormal response

In case the message transmitted from the master is judged to be abnormal, this product does the next abnormal answer.

(1) In case it becomes a no answer
① : In case a message transmission error occurs. (Overrun, Framing, Parity error, CRC)
② : In case the data interval of a message exceeds a regulation value (1.5 characters).
③ : In case the message frame exceeding 8 bytes is received.

(2) In case as answered in an error code.
In the error that does not correspond to (1), the following abnormal response is returned.
At this case, the code that applied 80H to the code of a demand is returned to a function code.
And, the generated error code is returned as data.

Error code list

Error code	Contents
01H	The function code besides regulation is received.
02H	A data address is out of range.
03H	The data more than the number of answer data are required. Setting out of setting range.

1 byte	1 byte	1 byte	2 byte
Address	Function code (+80H)	Error code	CRC
01H	84H	02H	C2C1H

7.3 Measurement range request

Used for reading measurement-range information, such as VT and CT ratio for this product.
There is no brosdcast. A function code designates 03H.

(1) The request of data (Query)

In case it performs a range request, it is necessary to designate the start address of data to acquire.
When a data address is transmitted, please subtract 40001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Number of data		CRC	
01H	03H	0000H		0003H		05CBH	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
03H	40001	VT ratio			
	40002	CT ratio			
	40003	Multiplying factor			

(2) Response

If a range request is performed normally, the following response will be returned from this product side.

Example) Data address : 40001, Number of data : 3.

1	2	3	4	5	6	7	8	9	10	11
Address	Function code	Answer byte count	VT ratio		CT ratio		Multiplying factor		CRC	

● VT ratio, CT ratio

VT ratio data = Primary rated value ÷ 110V

CT ratio data = Primary rated value ÷ 5A × 10 (12)

Primary rated (V)	Setting value data
110	0001H (1)
220	0002H (2)
380 (13)	0003H (3)
440	0004H (4)
460 (13)	0005H (5)
480 (13)	0006H (6)
880	0008H (8)
1100	000AH (10)
1650	000FH (15)
2200	0014H (20)
3300	001EH (30)
6600	003CH (60)
11k	0064H (100)
13.2k	0078H (120)
13.8k (13)	007DH (125)
16.5k	0096H (150)
18.4k (13)	00A7H (167)
22k	00C8H (200)
33k	012CH (300)
66k	0258H (600)
77k	02BCH (700)
110k	03E8H (1000)
132k	04B0H (1200)
154k	0578H (1400)
187k	06A4H (1700)
220k	07D0H (2000)
275k	09C4H (2500)
380k (13)	0D7FH (3455)
550k	1388H (5000)

Primary rated (A)	Setting value data
5	000AH (10)
6	000CH (12)
7.5	000FH (15)
8	0010H (16)
10	0014H (20)
12	0018H (24)
15	001EH (30)
20	0028H (40)
25	0032H (50)
30	003CH (60)
40	0050H (80)
50	0064H (100)
60	0078H (120)
75	0096H (150)
80	00A0H (160)
100	00C8H (200)
120	00F0H (240)
150	012CH (300)
200	0190H (400)
250	01F4H (500)
300	0258H (600)
400	0320H (800)
500	03E8H (1000)
600	04B0H (1200)
750	05DCH (1500)
800	0640H (1600)
900	0708H (1800)
1000	07D0H (2000)
1200	0960H (2400)

Primary rated (A)	Setting value data
1500	0BB8H (3000)
1600	0C80H (3200)
1800	0E10H (3600)
2000	0FA0H (4000)
2500	1388H (5000)
3000	1770H (6000)
4000	1F40H (8000)
5000	2710H (10000)
6000	2EE0H (12000)
7500	3A98H (15000)
8000	3E80H (16000)
9000	4650H (18000)
10000	4E20H (20000)
12000	5DC0H (24000)
15000	7530H (30000)
20000	9C40H (40000)
30000	EA60H (60000)

The number of ( ) expresses decimal number data.

Note(12) In case of 1A input specification, output as CT ratio data = Primary rated value ÷5A×10.

Note(13) Because broken numbers will occur if it divides by 110V, it becomes intrinsic set-value data.

● Multiplying factor

Multiplying factor	Communication data
×0.01	0005H (5)
×0.1	0006H (6)
×1	0000H (0)
×10	0001H (1)
×100	0002H (2)
×1000	0003H (3)
×10000	0004H (4)

The number of ( ) expresses decimal number data.

7.4 Setting value request

Used for reading set value (measurement, alarm) from this product.
There is no brosdcast. A function code designates 03H.

(1) The request of data (Query)

In case it performs setting value requirements, it is necessary to designate the start address of data to acquire. When a data address is transmitted, please subtract 40001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Number of data		CRC	
01H	03H	0064H		000EH		85D1H	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
03H	40101	Alarm output 1 Output factor			
	40102	Alarm output 2 Output factor			
	40103	Alarm output Reset method			
	40104	Alarm output 1 Contact delay time			
	40105	Alarm output 2 Contact delay time			
	40106	Demand current Upper limit value			
	40107	Demand current Time interval			
	40108	Demand power Upper limit value			
	40109	Demand power Time interval			
	40110	Demand power Operation method			
	40111	Demand power Power factor operation method			
	40112	Harmonic distortion factor upper limit (current)			
	40113	Harmonic 5th conversion content rate upper limit (current)			
	40114	Harmonic nth content rate factor (current)			
	40115	Harmonic nth content rate upper limit value (current)			
	40116	Harmonic distortion factor upper limit (voltage)			
	40117	Harmonic 5th conversion content rate upper limit (voltage)			
	40118	Harmonic nth content rate factor (voltage)			
	40119	Harmonic nth content rate upper limit value (voltage)			
	40120	Harmonic 5th conversion detection characteristics			
	40121	Harmonic average value time interval			
	40122	Instantaneous detection Voltage upper limit value			
	40123	Instantaneous detection Voltage lower limit value			
	40124	Leakage detection Rated sensitivity current value			0000H (Fixation)
	40125	Leakage detection Factor switching			0000H (Fixation)
	40126	Leakage detection Circuit switching			0000H (Fixation)
	40127	Leakage detection Use ZCT selection			0000H (Fixation)
	40128	Tidal current measurement			

(2) Response

If a setting value request is performed normally, the following response will be returned from this product side.

Example) Data address : 40101, Number of data : 14. (General measurement value).

1	2	3	4	5	6	7	8	9	10	11	12	13
Address	Function code	Answer byte count	Alarm output 1 output factor		Alarm output 2 output factor		Alarm output reset method		Alarm output 1 Contact delay time		Alarm output 2 Contact delay time	

14	15	16	17	18	19	20	21	22	23	24	25
Demand current upper limit value		Demand current time interval		Demand power upper limit value		Demand power time interval		Demand power operation method		Demand power Power factor operation method	

26	27	28	29	30	31	32	33
Harmonic distortion factor upper limit (current)		Harmonic 5th conversion content rate upper limit (current)		Harmonic nth content rate factor (current)		CRC	

● Setting value data

(1) Alarm output 1,2 output factor

Communication data	Contents of output
0000H	Alarm OFF
0001H	Demand current
0002H	Demand power
0003H	Current leakage
0004H	Distortion factor (current)
0005H	Harmonic 5th conversion content rate (current)
0006H	Harmonic nth content rate (current)
0007H	Distortion factor (voltage)
0008H	Harmonic 5th conversion content rate (voltage)
0009H	Harmonic nth content rate (voltage)
000AH	Voltage

Those without an alarm output, "0000H" is returned.

(2) Alarm output reset method

B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
−	−	−	−	−	−	−	②	−	−	−	−	−	−	−	①

No.	Reset factor
①	Alarm 1
②	Alarm 2

0 : Auto reset
1 : Manual reset

Those without an alarm output, "0000H" is returned.

(3) Alarm output 1,2 contact delay time

Contact delay time (L2) = Communication data

Contact delay time	Communication data
0 to 300s (1s step)	0000H to 012CH (0 to 300)

Those without an alarm output, "0000H" is returned.

(4) Demand current upper limit value

Demand current upper limit value = Communication data

Upper limit value	Communication data
5 to 100% (1% step), OFF	0005H to 0064H (5 to 100), OFF : 0065H(101)

(5) Demand current time interval

Demand current time interval ＝ Communication data

Time interval	Communication data	Time interval	Communication data	Time interval	Communication data
0 second	0000H (0)	1 minute	003CH (60)	8 minutes	01E0H (480)
5 seconds	0005H (5)	2 minutes	0078H (120)	9 minutes	021CH (540)
10 seconds	000AH (10)	3 minutes	00B4H (180)	10 minutes	0258H (600)
20 seconds	0014H (20)	4 minutes	00F0H (240)	15 minutes	0384H (900)
30 seconds	001EH (30)	5 minutes	012CH (300)	20 minutes	04B0H (1200)
40 seconds	0028H (40)	6 minutes	0168H (360)	25 minutes	05DCH (1500)
50 seconds	0032H (50)	7 minutes	01A4H (420)	30 minutes	0708H (1800)

(6) Demand power upper limit value

Demand power upper limit value ＝ Communication data

Upper limit value	Communication data
5 to 100% (1% step), OFF	0005H to 0064H(5 to 100), OFF：0065H(101)

(7) Demand power time interval

Demand power time interval ＝ Communication data

Time interval	Communication data	Time interval	Communication data	Time interval	Communication data
0 second	0000H (0)	1 minute	003CH (60)	8 minutes	01E0H (480)
5 seconds	0005H (5)	2 minutes	0078H (120)	9 minutes	021CH (540)
10 seconds	000AH (10)	3 minutes	00B4H (180)	10 minutes	0258H (600)
20 seconds	0014H (20)	4 minutes	00F0H (240)	15 minutes	0384H (900)
30 seconds	001EH (30)	5 minutes	012CH (300)	20 minutes	04B0H (1200)
40 seconds	0028H (40)	6 minutes	0168H (360)	25 minutes	05DCH (1500)
50 seconds	0032H (50)	7 minutes	01A4H (420)	30 minutes	0708H (1800)

(8) Demand power operation method

Operation method	Communication data
The operation method tailored to the bimetallic type	0001H
The averaging operator in a demand time interval	0002H

(9) Demand power, power factor operation method

Power factor operation method	Communication data
Instantaneous measurement	0001H
The averaging operator in a demand time interval	0002H

(10) Harmonic distortion factor upper limit (Current)

Distortion factor upper limit (current) ＝ Communication data ÷10

Upper limit value	Communication data
5.0 to 100.0% (1% step), OFF	0032H to 03E8H(50 to 1000), OFF：03F2H(1010)

(11) Harmonic 5th conversion content rate upper limit value (Current)

5th conversion content upper limit value (Current) ＝ Communication data ÷10

Upper limit value	Communication data
5.0 to 100.0% (1% step), OFF	0032H to 03E8H(50 to 1000), OFF：03F2H(1010)

(12) Harmonic nth content rate factor (current)

Factor	Communication data
3th	0003H (3)
4th	0004H (4)
5th	0005H (5)
7th	0007H (7)
9th	0009H (9)
11th	000BH (11)
13th	000DH (13)
15th	000FH (15)

(13) Harmonic nth content rate upper limit value (Current)

nth content rate upper limit value(current) = Communication data ÷10

Upper limit value	Communication data
5.0 to 100.0% (1% step), OFF	0032H to 03E8H(50 to 1000), OFF : 03F2H(1010)

(14) Harmonic distortion factor upper limit value (Voltage)

Distortion factor upper limit value(voltage) = Communication data ÷10

Upper limit value	Communication data
1.0 to 20.0% (0.1% step), OFF	000AH to 00C8H(10 to 200), OFF : 00C9H(201)

(15) Harmonic 5th conversion content rate upper limit value (Voltage)

5th conversion content upper limit value (Voltage) = Communication data ÷10

Upper limit value	Communication data
1.0 to 20.0% (0.1% step), OFF	000AH to 00C8H(10 to 200), OFF : 00C9H(201)

(16) Harmonic nth content rate factor (Voltage)

Factor	Communication data
3th	0003H (3)
4th	0004H (4)
5th	0005H (5)
7th	0007H (7)
9th	0009H (9)
11th	000BH (11)
13th	000DH (13)
15th	000FH (15)

(17) Harmonic nth content rate upper limit value (Voltage)

nth content rate upper limit value (Voltage) = Communication data ÷10

Upper limit value	Communication data
1.0 to 20.0% (0.1% step), OFF	000AH to 00C8H(10 to 200), OFF : 00C9H(201)

(18) Harmonic 5th conversion detection characteristics

Detection characteristics	Communication data
Average-value mode	0001H
Inverse-time-delay mode	0002H

(19) Harmonic average value time interval

Average value time interval ＝ Communication data

Time interval	Communication data
0 minute	0000H (0)
1 minutes	0001H (1)
2 minutes	0002H (2)
5 minutes	0005H (5)
10 minutes	000AH (10)
15 minutes	000FH (15)
30 minutes	001EH (30)

(20) Instantaneous detection voltage upper limit value

Voltage upper limit value ＝ Communication data

upper limit value	Communication data
30 to 150% (1% step), OFF	001EH to 0096H(30 to 150), OFF：0097H(151)

(21) Voltaeg lower limit value

Voltaeg lower limit value ＝ Communication data

Lower limit value	Communication data
30 to 150%(1% step), OFF	001EH to 0096H(30 to 150), OFF：001DH(29)

(22) Leakage detection rated sensitivity current value

Rated sensitivity current value ＝ Communication data ×100

Rated sensitivity current value	Communication data
0.03A	0003H (3)
0.05A	0005H (5)
0.1A	000AH (10)
0.2A	0014H (20)
0.4A	0028H (40)
0.8A	0050H (80)

3-phase 4-wire specification and 3-phase 3-wire 2VT3CT specification. The product without leakage measurement returns "0000H".

(23) Leakage detection factor switching

Factor	Communication data
Io	0001H
Igr	0002H

3-phase 4-wire specification and 3-phase 3-wire 2VT3CT specification. The product without leakage measurement returns "0000H".

(24) Leakage detection circuit switching

Circuit	Communication data
1-phase grounding	0001H
1-phase grounding (Negative phase sequence)	0002H
Non-grounding	0003H

3-phase 4-wire specification and 3-phase 3-wire 2VT3CT specification. The product without leakage measurement returns "0000H".

(25) Leakage detection use ZCT

Use ZCT	Communication data
TYPE 0 (Recommendation products)	0001H
TYPE 1 (Except recommendation products)	0002H

3-phase 4-wire specification and those without leakage measurement return "0000H".

(26) Tidal current measurement

Measurement	Communication data
General measurement	0001H
Tidal current measurement	0002H

7.5 Status request

Used for reading the status of this product. There is no brosdcast. A function code designates 03H.

(1) The request of data (Query)

In case it performs a status request, it is necessary to designate the data address of data to acquire.
When a data address is transmitted, please subtract 40001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Number of data		CRC	
01H	03H	00C8H		0001H		05F4H	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
03H	40201	Status of alarm output			

(2) Response

If status request is performed normally, the following response will be returned from this product side.

Example) Data address : 40201, Number of data : 1.

1	2	3	4	5	6	7
Address	Function code	Answer byte count	Alarm-output data		CRC	

● Bit allocation of alarm-output data

B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
−	−	−	−	−	−	−	②	−	−	−	−	−	−	−	①

Bit	Name	OFF (0)	ON (1)
①	Alarm output 1	No detection	Detection
②	Alarm output 2		

7.6 Model information request

Used for reading model information, rated voltage, and the rated current from this product.
There is no brosdcast. A function code designates 03H.

(1) The request of data (Query)

When a model information demand is performed, it is necessary to designate the start address of data to acquire.
When a data address is transmitted, please subtract 40001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Number of data		CRC	
01H	03H	01F4H		0003H		45C5H	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
03H	40501	Model information, Type code			
	40502	Model information, Phase wire			
	40503	Model information, Rated voltage			

(2) Response

If a model information request is performed normally, the following response will be returned from this product side.

Example) Data address : 40501, Number of data : 3.

1	2	3	4	5	6	7	8	9	10	11
Address	Function code	Answer byte count	Type code		Phase wire		Rated voltage		CRC	

● Model information. Type code

Type	Communication data
SQLC	0010H

● Model information. Phase wire

Type	Communication data
Three-phase three-wire	0001H
Single-phase three-wire (L1-N-L3)	0002H
Single-phase three-wire (L1-N-L2)	0003H
Single-phase three-wire (L2-N-L3)	0004H
Single-phase	0005H
Three-phase four-wire	0006H
Three-phase three-wire 2VT3CT	0007H

● Model information. Rated voltage.

Rated voltage	Communication data
AC110V or 110/$\sqrt{3}$V	0001H
AC220V or 220/$\sqrt{3}$V	0002H
AC440/$\sqrt{3}$V	0003H

7.7 Measurement value request

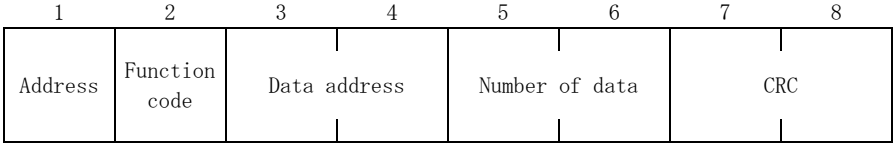
Used for reading the measurement value in this product. There is no broadcast.
A function code designates 04H.

(1) The request of data (Query)

In case it performs setting value request, it is necessary to designate the start address of data to acquire.
If a data address is transmitted, please subtract 30001 from the address of a data-address list.
The number of data should designate the tale of the data to request.

< Caution > Electric energy (Wh, varh) serves as 2 words (4 bytes) composition.
Please give the number of data as 2. And, the point (data 0000H fixation) where a measurement value does not exist depending on a phase wire is also treated as one data.

< Caution > As for a general measurement value and harmonic measurement value (current / voltage) and harmonic measurement value (current / voltage, maximum value), addresses are different.
Therefore, it cannot read by data request once. Please perform a data request individually.



Data-address list (1)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30001	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Voltage (L1N)
04	30002	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Voltage (L2N)
04	30003	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Voltage (L3N)
04	30004	Voltage (L1L2)	Voltage (L1N)	Voltage	Voltage (L1L2)
04	30005	Voltage (L2L3)	Voltage (L3N)	0000H (Fixation)	Voltage (L2L3)
04	30006	Voltage (L3L1)	Voltage (L1L3)	0000H (Fixation)	Voltage (L3L1)
04	30007	Current (L1)	Current (L1)	Current	Current (L1)
04	30008	Current (L2)	Current (N)	0000H (Fixation)	Current (L2)
04	30009	Current (L3)	Current (L3)	0000H (Fixation)	Current (L3)
04	30010	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Current (N)
04	30011	Demand current (L1)	Demand current (L1)	Demand current	Demand current (L1)
04	30012	Demand current (L2)	Demand current (N)	0000H (Fixation)	Demand current (L2)
04	30013	Demand current (L3)	Demand current (L3)	0000H (Fixation)	Demand current (L3)
04	30014	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Demand current (N)
04	30015	Active power	Active power	Active power	Active power
04	30016	Demand power	Demand power	Demand power	Demand power
04	30017	Watt-hour (Power receiving) High	Watt-hour (Power receiving) High	Watt-hour (Power receiving) High	Watt-hour (Power receiving) High
04	30018	Watt-hour (Power receiving) Low	Watt-hour (Power receiving) Low	Watt-hour (Power receiving) Low	Watt-hour (Power receiving) Low
04	30019	Watt-hour (Power transmission) High	Watt-hour (Power transmission) High	Watt-hour (Power transmission) High	Watt-hour (Power transmission) High
04	30020	Watt-hour (Power transmission) Low	Watt-hour (Power transmission) Low	Watt-hour (Power transmission) Low	Watt-hour (Power transmission) Low
04	30021	Reactive power	Reactive power	Reactive power	Reactive power
04	30022	var-hour (Power receiving LAG) High	var-hour (Power receiving LAG) High	var-hour (Power receiving LAG) High	var-hour (Power receiving LAG) High
04	30023	var-hour (Power receiving LAG) Low	var-hour (Power receiving LAG) Low	var-hour (Power receiving LAG) Low	var-hour (Power receiving LAG) Low
04	30024	var-hour (Power receiving LEAD) High	var-hour (Power receiving LEAD) High	var-hour (Power receiving LEAD) High	var-hour (Power receiving LEAD) High
04	30025	var-hour (Power receiving LEAD) Low	var-hour (Power receiving LEAD) Low	var-hour (Power receiving LEAD) Low	var-hour (Power receiving LEAD) Low

Data-address list (2)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30026	var-hour (Power transmission LAG) High	var-hour (Power transmission LAG) High	var-hour (Power transmission LAG) High	var-hour (Power transmission LAG) High
04	30027	var-hour (Power transmission LAG) Low	var-hour (Power transmission LAG) Low	var-hour (Power transmission LAG) Low	var-hour (Power transmission LAG) Low
04	30028	var-hour (Power transmission LEAD) High	var-hour (Power transmission LEAD) High	var-hour (Power transmission LEAD) High	var-hour (Power transmission LEAD) High
04	30029	var-hour (Power transmission LEAD) Low	var-hour (Power transmission LEAD) Low	var-hour (Power transmission LEAD) Low	var-hour (Power transmission LEAD) Low
04	30030	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Apparent power
04	30031	Power factor	Power factor	Power factor	Power factor
04	30032	Frequency	Frequency	Frequency	Frequency
04	30033	Current leakage	Current leakage	Current leakage	0000H (Fixation)
04	30034	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum voltage (L1N)
04	30035	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum voltage (L2N)
04	30036	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum voltage (L3N)
04	30037	Maximum voltage (L1L2)	Maximum voltage (L1N)	Maximum voltage	Maximum voltage (L1L2)
04	30038	Maximum voltage (L2L3)	Maximum voltage (L3N)	0000H (Fixation)	Maximum voltage (L2L3)
04	30039	Maximum voltage (L3L1)	Maximum voltage (L1L3)	0000H (Fixation)	Maximum voltage (L3L1)
04	30040	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum voltage (L1N)
04	30041	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum voltage (L2N)
04	30042	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum voltage (L3N)
04	30043	Minimum voltage (L1L2)	Minimum voltage (L1N)	Minimum voltage	Minimum voltage (L1L2)
04	30044	Minimum voltage (L2L3)	Minimum voltage (L3N)	0000H (Fixation)	Minimum voltage (L2L3)
04	30045	Minimum voltage (L3L1)	Minimum voltage (L1L3)	0000H (Fixation)	Minimum voltage (L3L1)
04	30046	Maximum current (L1)	Maximum current (L1)	Maximum current	Maximum current (L1)
04	30047	Maximum current (L2)	Maximum current (N)	0000H (Fixation)	Maximum current (L2)
04	30048	Maximum current (L3)	Maximum current (L3)	0000H (Fixation)	Maximum current (L3)
04	30049	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum current (N)
04	30050	Minimum current (L1)	Minimum current (L1)	Minimum current	Minimum current (L1)
04	30051	Minimum current (L2)	Minimum current (N)	0000H (Fixation)	Minimum current (L2)
04	30052	Minimum current (L3)	Minimum current (L3)	0000H (Fixation)	Minimum current (L3)
04	30053	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum current (N)
04	30054	Maximum demand current (L1)	Maximum demand current (L1)	Maximum demand current	Maximum demand current (L1)
04	30055	Maximum demand current (L2)	Maximum demand current (N)	0000H (Fixation)	Maximum demand current (L2)
04	30056	Maximum demand current (L3)	Maximum demand current (L3)	0000H (Fixation)	Maximum demand current (L3)
04	30057	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum demand current (N)
04	30058	Minimum demand current (L1)	Minimum demand current (L1)	Minimum demand current	Minimum demand current (L1)
04	30059	Minimum demand current (L2)	Minimum demand current (N)	0000H (Fixation)	Minimum demand current (L2)
04	30060	Minimum demand current (L3)	Minimum demand current (L3)	0000H (Fixation)	Minimum demand current (L3)
04	30061	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum demand current (N)
04	30062	Maximum power	Maximum power	Maximum power	Maximum power
04	30063	Minimum power	Minimum power	Minimum power	Minimum power
04	30064	Maximum demand power	Maximum demand power	Maximum demand power	Maximum demand power
04	30065	Minimum demand power	Minimum demand power	Minimum demand power	Minimum demand power
04	30066	Maximum reactive power	Maximum reactive power	Maximum reactive power	Maximum reactive power
04	30067	Minimum reactive power	Minimum reactive power	Minimum reactive power	Minimum reactive power
04	30068	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum apparent power
04	30069	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Minimum apparent power
04	30070	Maximum power factor	Maximum power factor	Maximum power factor	Maximum power factor
04	30071	Minimum power factor	Minimum power factor	Minimum power factor	Minimum power factor
04	30072	Maximum frequency	Maximum frequency	Maximum frequency	Maximum frequency
04	30073	Minimum frequency	Minimum frequency	Minimum frequency	Minimum frequency
04	30074	Maximum current leakage	Maximum current leakage	Maximum current leakage	0000H (Fixation)

Data-address list (3)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30101	Fundamental-wave effective value Voltage L1L2	Fundamental-wave effective value Voltage L1N	Fundamental-wave effective value Voltage	Fundamental-wave effective value Voltage L1N
04	30102	Fundamental-wave effective value Voltage L2L3	Fundamental-wave effective value Voltage L3N	0000H (Fixation)	Fundamental-wave effective value Voltage L2N
04	30103	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Fundamental-wave effective value Voltage L3N
04	30104	Distortion factor Voltage L1L2	Distortion factor Voltage L1N	Distortion factor Voltage	Distortion factor Voltage L1N
04	30105	Distortion factor Voltage L2L3	Distortion factor Voltage L3N	0000H (Fixation)	Distortion factor Voltage L2N
04	30106	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Distortion factor Voltage L3N
04	30107	Harmonic 5th conversion effective value Voltage L1L2	Harmonic 5th conversion effective value Voltage L1N	Harmonic 5th conversion effective value Voltage	Harmonic 5th conversion effective value Voltage L1N
04	30108	Harmonic 5th conversion effective value Voltage L2L3	Harmonic 5th conversion effective value Voltage L3N	0000H (Fixation)	Harmonic 5th conversion effective value Voltage L2N
04	30109	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion effective value Voltage L3N
04	30110	Harmonic 5th conversion content rate Voltage L1L2	Harmonic 5th conversion content rate Voltage L1N	Harmonic 5th conversion content rate Voltage	Harmonic 5th conversion content rate Voltage L1N
04	30111	Harmonic 5th conversion content rate Voltage L2L3	Harmonic 5th conversion content rate Voltage L3N	0000H (Fixation)	Harmonic 5th conversion content rate Voltage L2N
04	30112	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion content rate Voltage L3N
04	30113	Harmonic 3th effective value Voltage L1L2	Harmonic 3th effective value Voltage L1N	Harmonic 3th effective value Voltage	Harmonic 3th effective value Voltage L1N
04	30114	Harmonic 3th effective value Voltage L2L3	Harmonic 3th effective value Voltage L3N	0000H (Fixation)	Harmonic 3th effective value Voltage L2N
04	30115	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th effective value Voltage L3N
04	30116	Harmonic 4th effective value Voltage L1L2	Harmonic 4th effective value Voltage L1N	Harmonic 4th effective value Voltage	Harmonic 4th effective value Voltage L1N
04	30117	Harmonic 4th effective value Voltage L2L3	Harmonic 4th effective value Voltage L3N	0000H (Fixation)	Harmonic 4th effective value Voltage L2N
04	30118	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th effective value Voltage L3N
04	30119	Harmonic 5th effective value Voltage L1L2	Harmonic 5th effective value Voltage L1N	Harmonic 5th effective value Voltage	Harmonic 5th effective value Voltage L1N
04	30120	Harmonic 5th effective value Voltage L2L3	Harmonic 5th effective value Voltage L3N	0000H (Fixation)	Harmonic 5th effective value Voltage L2N
04	30121	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th effective value Voltage L3N
04	30122	Harmonic 7th effective value Voltage L1L2	Harmonic 7th effective value Voltage L1N	Harmonic 7th effective value Voltage	Harmonic 7th effective value Voltage L1N
04	30123	Harmonic 7th effective value Voltage L2L3	Harmonic 7th effective value Voltage L3N	0000H (Fixation)	Harmonic 7th effective value Voltage L2N
04	30124	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th effective value Voltage L3N
04	30125	Harmonic 9th effective value Voltage L1L2	Harmonic 9th effective value Voltage L1N	Harmonic 9th effective value Voltage	Harmonic 9th effective value Voltage L1N
04	30126	Harmonic 9th effective value Voltage L2L3	Harmonic 9th effective value Voltage L3N	0000H (Fixation)	Harmonic 9th effective value Voltage L2N
04	30127	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th effective value Voltage L3N

Data-address list (4)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30128	Harmonic 11th effective value Voltage L1L2	Harmonic 11th effective value Voltage L1N	Harmonic 11th effective value Voltage	Harmonic 11th effective value Voltage L1N
04	30129	Harmonic 11th effective value Voltage L2L3	Harmonic 11th effective value Voltage L3N	0000H (Fixation)	Harmonic 11th effective value Voltage L2N
04	30130	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th effective value Voltage L3N
04	30131	Harmonic 13th effective value Voltage L1L2	Harmonic 13th effective value Voltage L1N	Harmonic 13th effective value Voltage	Harmonic 13th effective value Voltage L1N
04	30132	Harmonic 13th effective value Voltage L2L3	Harmonic 13th effective value Voltage L3N	0000H (Fixation)	Harmonic 13th effective value Voltage L2N
04	30133	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th effective value Voltage L3N
04	30134	Harmonic 15th effective value Voltage L1L2	Harmonic 15th effective value Voltage L1N	Harmonic 15th effective value Voltage	Harmonic 15th effective value Voltage L1N
04	30135	Harmonic 15th effective value Voltage L2L3	Harmonic 15th effective value Voltage L3N	0000H (Fixation)	Harmonic 15th effective value Voltage L2N
04	30136	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th effective value Voltage L3N
04	30137	Harmonic 3th content rate Voltage L1L2	Harmonic 3th content rate Voltage L1N	Harmonic 3th content rate Voltage	Harmonic 3th content rate Voltage L1N
04	30138	Harmonic 3th content rate Voltage L2L3	Harmonic 3th content rate Voltage L3N	0000H (Fixation)	Harmonic 3th content rate Voltage L2N
04	30139	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th content rate Voltage L3N
04	30140	Harmonic 4th content rate Voltage L1L2	Harmonic 4th content rate Voltage L1N	Harmonic 4th content rate Voltage	Harmonic 4th content rate Voltage L1N
04	30141	Harmonic 4th content rate Voltage L2L3	Harmonic 4th content rate Voltage L3N	0000H (Fixation)	Harmonic 4th content rate Voltage L2N
04	30142	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th content rate Voltage L3N
04	30143	Harmonic 5th content rate Voltage L1L2	Harmonic 5th content rate Voltage L1N	Harmonic 5th content rate Voltage	Harmonic 5th content rate Voltage L1N
04	30144	Harmonic 5th content rate Voltage L2L3	Harmonic 5th content rate Voltage L3N	0000H (Fixation)	Harmonic 5th content rate Voltage L2N
04	30145	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th content rate Voltage L3N
04	30146	Harmonic 7th content rate Voltage L1L2	Harmonic 7th content rate Voltage L1N	Harmonic 7th content rate Voltage	Harmonic 7th content rate Voltage L1N
04	30147	Harmonic 7th content rate Voltage L2L3	Harmonic 7th content rate Voltage L3N	0000H (Fixation)	Harmonic 7th content rate Voltage L2N
04	30148	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th content rate Voltage L3N
04	30149	Harmonic 9th content rate Voltage L1L2	Harmonic 9th content rate Voltage L1N	Harmonic 9th content rate Voltage	Harmonic 9th content rate Voltage L1N
04	30150	Harmonic 9th content rate Voltage L2L3	Harmonic 9th content rate Voltage L3N	0000H (Fixation)	Harmonic 9th content rate Voltage L2N
04	30151	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th content rate Voltage L3N
04	30152	Harmonic 11th content rate Voltage L1L2	Harmonic 11th content rate Voltage L1N	Harmonic 11th content rate Voltage	Harmonic 11th content rate Voltage L1N
04	30153	Harmonic 11th content rate Voltage L2L3	Harmonic 11th content rate Voltage L3N	0000H (Fixation)	Harmonic 11th content rate Voltage L2N
04	30154	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th content rate Voltage L3N
04	30155	Harmonic 13th content rate Voltage L1L2	Harmonic 13th content rate Voltage L1N	Harmonic 13th content rate Voltage	Harmonic 13th content rate Voltage L1N
04	30156	Harmonic 13th content rate Voltage L2L3	Harmonic 13th content rate Voltage L3N	0000H (Fixation)	Harmonic 13th content rate Voltage L2N
04	30157	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th content rate Voltage L3N

Data-address list (5)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30158	Harmonic 15th content rate Voltage L1L2	Harmonic 15th content rate Voltage L1N	Harmonic 15th content rate Voltage	Harmonic 15th content rate Voltage L1N
04	30159	Harmonic 15th content rate Voltage L2L3	Harmonic 15th content rate Voltage L3N	0000H (Fixation)	Harmonic 15th content rate Voltage L2N
04	30160	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th content rate Voltage L3N
04	30201	Maximum fundamental-wave effective value Voltage L1L2	Maximum fundamental-wave effective value Voltage L1N	Maximum fundamental-wave effective value Voltage	Maximum fundamental-wave effective value Voltage L1N
04	30202	Maximum fundamental-wave effective value Voltage L2L3	Maximum fundamental-wave effective value Voltage L3N	0000H (Fixation)	Maximum fundamental-wave effective value Voltage L2N
04	30203	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum fundamental-wave effective value Voltage L3N
04	30204	Maximum distortion factor Voltage L1L2	Maximum distortion factor Voltage L1N	Maximum distortion factor Voltage	Maximum distortion factor Voltage L1N
04	30205	Maximum distortion factor Voltage L2L3	Maximum distortion factor Voltage L3N	0000H (Fixation)	Maximum distortion factor Voltage L2N
04	30206	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum distortion factor Voltage L3N
04	30207	Harmonic 5th conversion effective value Maximum voltage L1L2	Harmonic 5th conversion effective value Maximum voltage L1N	Harmonic 5th conversion effective value Maximum voltage	Harmonic 5th conversion effective value Maximum voltage L1N
04	30208	Harmonic 5th conversion effective value Maximum voltage L2L3	Harmonic 5th conversion effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 5th conversion effective value Maximum voltage L2N
04	30209	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion effective value Maximum voltage L3N
04	30210	Harmonic 5th conversion content rate Maximum voltage L1L2	Harmonic 5th conversion content rate Maximum voltage L1N	Harmonic 5th conversion content rate Maximum voltage	Harmonic 5th conversion content rate Maximum voltage L1N
04	30211	Harmonic 5th conversion content rate Maximum voltage L2L3	Harmonic 5th conversion content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 5th conversion content rate Maximum voltage L2N
04	30212	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion content rate Maximum voltage L3N
04	30213	Harmonic 3th effective value Maximum voltage L1L2	Harmonic 3th effective value Maximum voltage L1N	Harmonic 3th effective value Maximum voltage	Harmonic 3th effective value Maximum voltage L1N
04	30214	Harmonic 3th effective value Maximum voltage L2L3	Harmonic 3th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 3th effective value Maximum voltage L2N
04	30215	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th effective value Maximum voltage L3N
04	30216	Harmonic 4th effective value Maximum voltage L1L2	Harmonic 4th effective value Maximum voltage L1N	Harmonic 4th effective value Maximum voltage	Harmonic 4th effective value Maximum voltage L1N
04	30217	Harmonic 4th effective value Maximum voltage L2L3	Harmonic 4th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 4th effective value Maximum voltage L2N
04	30218	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th effective value Maximum voltage L3N

Data-address list (6)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30219	Harmonic 5th effective value Maximum voltage L1L2	Harmonic 5th effective value Maximum voltage L1N	Harmonic 5th effective value Maximum voltage	Harmonic 5th effective value Maximum voltage L1N
04	30220	Harmonic 5th effective value Maximum voltage L2L3	Harmonic 5th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 5th effective value Maximum voltage L2N
04	30221	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th effective value Maximum voltage L3N
04	30222	Harmonic 7th effective value Maximum voltage L1L2	Harmonic 7th effective value Maximum voltage L1N	Harmonic 7th effective value Maximum voltage	Harmonic 7th effective value Maximum voltage L1N
04	30223	Harmonic 7th effective value Maximum voltage L2L3	Harmonic 7th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 7th effective value Maximum voltage L2N
04	30224	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th effective value Maximum voltage L3N
04	30225	Harmonic 9th effective value Maximum voltage L1L2	Harmonic 9th effective value Maximum voltage L1N	Harmonic 9th effective value Maximum voltage	Harmonic 9th effective value Maximum voltage L1N
04	30226	Harmonic 9th effective value Maximum voltage L2L3	Harmonic 9th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 9th effective value Maximum voltage L2N
04	30227	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th effective value Maximum voltage L3N
04	30228	Harmonic 11th effective value Maximum voltage L1L2	Harmonic 11th effective value Maximum voltage L1N	Harmonic 11th effective value Maximum voltage	Harmonic 11th effective value Maximum voltage L1N
04	30229	Harmonic 11th effective value Maximum voltage L2L3	Harmonic 11th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 11th effective value Maximum voltage L2N
04	30230	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th effective value Maximum voltage L3N
04	30231	Harmonic 13th effective value Maximum voltage L1L2	Harmonic 13th effective value Maximum voltage L1N	Harmonic 13th effective value Maximum voltage	Harmonic 13th effective value Maximum voltage L1N
04	30232	Harmonic 13th effective value Maximum voltage L2L3	Harmonic 13th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 13th effective value Maximum voltage L2N
04	30233	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th effective value Maximum voltage L3N
04	30234	Harmonic 15th effective value Maximum voltage L1L2	Harmonic 15th effective value Maximum voltage L1N	Harmonic 15th effective value Maximum voltage	Harmonic 15th effective value Maximum voltage L1N
04	30235	Harmonic 15th effective value Maximum voltage L2L3	Harmonic 15th effective value Maximum voltage L3N	0000H (Fixation)	Harmonic 15th effective value Maximum voltage L2N
04	30236	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th effective value Maximum voltage L3N
04	30237	Harmonic 3th content rate Maximum voltage L1L2	Harmonic 3th content rate Maximum voltage L1N	Harmonic 3th content rate Maximum voltage	Harmonic 3th content rate Maximum voltage L1N
04	30238	Harmonic 3th content rate Maximum voltage L2L3	Harmonic 3th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 3th content rate Maximum voltage L2N
04	30239	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th content rate Maximum voltage L3N

Data-address list (7)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30240	Harmonic 4th content rate Maximum voltage L1L2	Harmonic 4th content rate Maximum voltage L1N	Harmonic 4th content rate Maximum voltage	Harmonic 4th content rate Maximum voltage L1N
04	30241	Harmonic 4th content rate Maximum voltage L2L3	Harmonic 4th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 4th content rate Maximum voltage L2N
04	30242	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th content rate Maximum voltage L3N
04	30243	Harmonic 5th content rate Maximum voltage L1L2	Harmonic 5th content rate Maximum voltage L1N	Harmonic 5th content rate Maximum voltage	Harmonic 5th content rate Maximum voltage L1N
04	30244	Harmonic 5th content rate Maximum voltage L2L3	Harmonic 5th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 5th content rate Maximum voltage L2N
04	30245	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th content rate Maximum voltage L3N
04	30246	Harmonic 7th content rate Maximum voltage L1L2	Harmonic 7th content rate Maximum voltage L1N	Harmonic 7th content rate Maximum voltage	Harmonic 7th content rate Maximum voltage L1N
04	30247	Harmonic 7th content rate Maximum voltage L2L3	Harmonic 7th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 7th content rate Maximum voltage L2N
04	30248	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th content rate Maximum voltage L3N
04	30249	Harmonic 9th content rate Maximum voltage L1L2	Harmonic 9th content rate Maximum voltage L1N	Harmonic 9th content rate Maximum voltage	Harmonic 9th content rate Maximum voltage L1N
04	30250	Harmonic 9th content rate Maximum voltage L2L3	Harmonic 9th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 9th content rate Maximum voltage L2N
04	30251	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th content rate Maximum voltage L3N
04	30252	Harmonic 11th content rate Maximum voltage L1L2	Harmonic 11th content rate Maximum voltage L1N	Harmonic 11th content rate Maximum voltage	Harmonic 11th content rate Maximum voltage L1N
04	30253	Harmonic 11th content rate Maximum voltage L2L3	Harmonic 11th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 11th content rate Maximum voltage L2N
04	30254	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th content rate Maximum voltage L3N
04	30255	Harmonic 13th content rate Maximum voltage L1L2	Harmonic 13th content rate Maximum voltage L1N	Harmonic 13th content rate Maximum voltage	Harmonic 13th content rate Maximum voltage L1N
04	30256	Harmonic 13th content rate Maximum voltage L2L3	Harmonic 13th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 13th content rate Maximum voltage L2N
04	30257	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th content rate Maximum voltage L3N
04	30258	Harmonic 15th content rate Maximum voltage L1L2	Harmonic 15th content rate Maximum voltage L1N	Harmonic 15th content rate Maximum voltage	Harmonic 15th content rate Maximum voltage L1N
04	30259	Harmonic 15th content rate Maximum voltage L2L3	Harmonic 15th content rate Maximum voltage L3N	0000H (Fixation)	Harmonic 15th content rate Maximum voltage L2N
04	30260	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th content rate Maximum voltage L3N

Data-address list (8)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30301	Fundamental-wave effective value Current L1	Fundamental-wave effective value Current L1	Fundamental-wave effective value Current	Fundamental-wave effective value Current L1
04	30302	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Fundamental-wave effective value Current L2
04	30303	Fundamental-wave effective value Current L3	Fundamental-wave effective value Current L3	0000H (Fixation)	Fundamental-wave effective value Current L3
04	30304	Distortion factor Current L1	Distortion factor Current L1	Distortion factor Current	Distortion factor Current L1
04	30305	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Distortion factor Current L2
04	30306	Distortion factor Current L3	Distortion factor Current L3	0000H (Fixation)	Distortion factor Current L3
04	30307	Harmonic 5th conversion effective value Current L1	Harmonic 5th conversion effective value Current L1	Harmonic 5th conversion effective value Current	Harmonic 5th conversion effective value Current L1
04	30308	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion effective value Current L2
04	30309	Harmonic 5th conversion effective value Current L3	Harmonic 5th conversion effective value Current L3	0000H (Fixation)	Harmonic 5th conversion effective value Current L3
04	30310	Harmonic 5th conversion content rate Current L1	Harmonic 5th conversion content rate Current L1	Harmonic 5th conversion content rate Current	Harmonic 5th conversion content rate Current L1
04	30311	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion content rate Current L2
04	30312	Harmonic 5th conversion content rate Current L3	Harmonic 5th conversion content rate Current L3	0000H (Fixation)	Harmonic 5th conversion content rate Current L3
04	30313	Harmonic 3th effective value Current L1	Harmonic 3th effective value Current L1	Harmonic 3th effective value Current	Harmonic 3th effective value Current L1
04	30314	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th effective value Current L2
04	30315	Harmonic 3th effective value Current L3	Harmonic 3th effective value Current L3	0000H (Fixation)	Harmonic 3th effective value Current L3
04	30316	Harmonic 4th effective value Current L1	Harmonic 4th effective value Current L1	Harmonic 4th effective value Current	Harmonic 4th effective value Current L1
04	30317	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th effective value Current L2
04	30318	Harmonic 4th effective value Current L3	Harmonic 4th effective value Current L3	0000H (Fixation)	Harmonic 4th effective value Current L3
04	30319	Harmonic 5th effective value Current L1	Harmonic 5th effective value Current L1	Harmonic 5th effective value Current	Harmonic 5th effective value Current L1
04	30320	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th effective value Current L2
04	30321	Harmonic 5th effective value Current L3	Harmonic 5th effective value Current L3	0000H (Fixation)	Harmonic 5th effective value Current L3
04	30322	Harmonic 7th effective value Current L1	Harmonic 7th effective value Current L1	Harmonic 7th effective value Current	Harmonic 7th effective value Current L1
04	30323	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th effective value Current L2
04	30324	Harmonic 7th effective value Current L3	Harmonic 7th effective value Current L3	0000H (Fixation)	Harmonic 7th effective value Current L3
04	30325	Harmonic 9th effective value Current L1	Harmonic 9th effective value Current L1	Harmonic 9th effective value Current	Harmonic 9th effective value Current L1
04	30326	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th effective value Current L2
04	30327	Harmonic 9th effective value Current L3	Harmonic 9th effective value Current L3	0000H (Fixation)	Harmonic 9th effective value Current L3

Data-address list (9)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire
04	30328	Harmonic 11th effective value Current L1	Harmonic 11th effective value Current L1	Harmonic 11th effective value Current	Harmonic 11th effective value Current L1
04	30329	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th effective value Current L2
04	30330	Harmonic 11th effective value Current L3	Harmonic 11th effective value Current L3	0000H (Fixation)	Harmonic 11th effective value Current L3
04	30331	Harmonic 13th effective value Current L1	Harmonic 13th effective value Current L1	Harmonic 13th effective value Current	Harmonic 13th effective value Current L1
04	30332	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th effective value Current L2
04	30333	Harmonic 13th effective value Current L3	Harmonic 13th effective value Current L3	0000H (Fixation)	Harmonic 13th effective value Current L3
04	30334	Harmonic 15th effective value Current L1	Harmonic 15th effective value Current L1	Harmonic 15th effective value Current	Harmonic 15th effective value Current L1
04	30335	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th effective value Current L2
04	30336	Harmonic 15th effective value Current L3	Harmonic 15th effective value Current L3	0000H (Fixation)	Harmonic 15th effective value Current L3
04	30337	Harmonic 3th content rate Current L1	Harmonic 3th content rate Current L1	Harmonic 3th content rate Current	Harmonic 3th content rate Current L1
04	30338	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th content rate Current L2
04	30339	Harmonic 3th content rate Current L3	Harmonic 3th content rate Current L3	0000H (Fixation)	Harmonic 3th content rate Current L3
04	30340	Harmonic 4th content rate Current L1	Harmonic 4th content rate Current L1	Harmonic 4th content rate Current	Harmonic 4th content rate Current L1
04	30341	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th content rate Current L2
04	30342	Harmonic 4th content rate Current L3	Harmonic 4th content rate Current L3	0000H (Fixation)	Harmonic 4th content rate Current L3
04	30343	Harmonic 5th content rate Current L1	Harmonic 5th content rate Current L1	Harmonic 5th content rate Current	Harmonic 5th content rate Current L1
04	30344	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th content rate Current L2
04	30345	Harmonic 5th content rate Current L3	Harmonic 5th content rate Current L3	0000H (Fixation)	Harmonic 5th content rate Current L3
04	30346	Harmonic 7th content rate Current L1	Harmonic 7th content rate Current L1	Harmonic 7th content rate Current	Harmonic 7th content rate Current L1
04	30347	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th content rate Current L2
04	30348	Harmonic 7th content rate Current L3	Harmonic 7th content rate Current L3	0000H (Fixation)	Harmonic 7th content rate Current L3
04	30349	Harmonic 9th content rate Current L1	Harmonic 9th content rate Current L1	Harmonic 9th content rate Current	Harmonic 9th content rate Current L1
04	30350	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th content rate Current L2
04	30351	Harmonic 9th content rate Current L3	Harmonic 9th content rate Current L3	0000H (Fixation)	Harmonic 9th content rate Current L3
04	30352	Harmonic 11th content rate Current L1	Harmonic 11th content rate Current L1	Harmonic 11th content rate Current	Harmonic 11th content rate Current L1
04	30353	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th content rate Current L2
04	30354	Harmonic 11th content rate Current L3	Harmonic 11th content rate Current L3	0000H (Fixation)	Harmonic 11th content rate Current L3
04	30355	Harmonic 13th content rate Current L1	Harmonic 13th content rate Current L1	Harmonic 13th content rate Current	Harmonic 13th content rate Current L1
04	30356	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th content rate Current L2
04	30357	Harmonic 13th content rate Current L3	Harmonic 13th content rate Current L3	0000H (Fixation)	Harmonic 13th content rate Current L3

Data-address list (10)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire 3-phase 3-wire 2VT3CT
04	30358	Harmonic 15th content rate Current L1	Harmonic 15th content rate Current L1	Harmonic 15th content rate Current	Harmonic 15th content rate Current L1
04	30359	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th content rate Current L2
04	30360	Harmonic 15th content rate Current L3	Harmonic 15th content rate Current L3	0000H (Fixation)	Harmonic 15th content rate Current L3
04	30401	Maximum fundamental-wave effective value Current L1	Maximum fundamental-wave effective value Current L1	Maximum fundamental-wave effective value Current	Maximum fundamental-wave effective value Current L1
04	30402	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum fundamental-wave effective value Current L2
04	30403	Maximum fundamental-wave effective value Current L3	Maximum fundamental-wave effective value Current L3	0000H (Fixation)	Maximum fundamental-wave effective value Current L3
04	30404	Maximum distortion factor Current L1	Maximum distortion factor Current L1	Maximum distortion factor Current	Maximum distortion factor Current L1
04	30405	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Maximum distortion factor Current L2
04	30406	Maximum distortion factor Current L3	Maximum distortion factor Current L3	0000H (Fixation)	Maximum distortion factor Current L3
04	30407	Harmonic 5th conversion effective value Maximum current L1	Harmonic 5th conversion effective value Maximum current L1	Harmonic 5th conversion effective value Maximum current	Harmonic 5th conversion effective value Maximum current L1
04	30408	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion effective value Maximum current L2
04	30409	Harmonic 5th conversion effective value Maximum current L3	Harmonic 5th conversion effective value Maximum current L3	0000H (Fixation)	Harmonic 5th conversion effective value Maximum current L3
04	30410	Harmonic 5th conversion content rate Maximum current L1	Harmonic 5th conversion content rate Maximum current L1	Harmonic 5th conversion content rate Maximum current	Harmonic 5th conversion content rate Maximum current L1
04	30411	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th conversion content rate Maximum current L2
04	30412	Harmonic 5th conversion content rate Maximum current L3	Harmonic 5th conversion content rate Maximum current L3	0000H (Fixation)	Harmonic 5th conversion content rate Maximum current L3
04	30413	Harmonic 3th effective value Maximum current L1	Harmonic 3th effective value Maximum current L1	Harmonic 3th effective value Maximum current	Harmonic 3th effective value Maximum current L1
04	30414	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th effective value Maximum current L2
04	30415	Harmonic 3th effective value Maximum current L3	Harmonic 3th effective value Maximum current L3	0000H (Fixation)	Harmonic 3th effective value Maximum current L3
04	30416	Harmonic 4th effective value Maximum current L1	Harmonic 4th effective value Maximum current L1	Harmonic 4th effective value Maximum current	Harmonic 4th effective value Maximum current L1
04	30417	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th effective value Maximum current L2
04	30418	Harmonic 4th effective value Maximum current L3	Harmonic 4th effective value Maximum current L3	0000H (Fixation)	Harmonic 4th effective value Maximum current L3

Data-address list (11)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire 3-phase 3-wire 2VT3CT
04	30419	Harmonic 5th effective value Maximum current L1	Harmonic 5th effective value Maximum current L1	Harmonic 5th effective value Maximum current	Harmonic 5th effective value Maximum current L1
04	30420	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th effective value Maximum current L2
04	30421	Harmonic 5th effective value Maximum current L3	Harmonic 5th effective value Maximum current L3	0000H (Fixation)	Harmonic 5th effective value Maximum current L3
04	30422	Harmonic 7th effective value Maximum current L1	Harmonic 7th effective value Maximum current L1	Harmonic 7th effective value Maximum current	Harmonic 7th effective value Maximum current L1
04	30423	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th effective value Maximum current L2
04	30424	Harmonic 7th effective value Maximum current L3	Harmonic 7th effective value Maximum current L3	0000H (Fixation)	Harmonic 7th effective value Maximum current L3
04	30425	Harmonic 9th effective value Maximum current L1	Harmonic 9th effective value Maximum current L1	Harmonic 9th effective value Maximum current	Harmonic 9th effective value Maximum current L1
04	30426	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th effective value Maximum current L2
04	30427	Harmonic 9th effective value Maximum current L3	Harmonic 9th effective value Maximum current L3	0000H (Fixation)	Harmonic 9th effective value Maximum current L3
04	30428	Harmonic 11th effective value Maximum current L1	Harmonic 11th effective value Maximum current L1	Harmonic 11th effective value Maximum current	Harmonic 11th effective value Maximum current L1
04	30429	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th effective value Maximum current L2
04	30430	Harmonic 11th effective value Maximum current L3	Harmonic 11th effective value Maximum current L3	0000H (Fixation)	Harmonic 11th effective value Maximum current L3
04	30431	Harmonic 13th effective value Maximum current L1	Harmonic 13th effective value Maximum current L1	Harmonic 13th effective value Maximum current	Harmonic 13th effective value Maximum current L1
04	30432	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th effective value Maximum current L2
04	30433	Harmonic 13th effective value Maximum current L3	Harmonic 13th effective value Maximum current L3	0000H (Fixation)	Harmonic 13th effective value Maximum current L3
04	30434	Harmonic 15th effective value Maximum current L1	Harmonic 15th effective value Maximum current L1	Harmonic 15th effective value Maximum current	Harmonic 15th effective value Maximum current L1
04	30435	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th effective value Maximum current L2
04	30436	Harmonic 15th effective value Maximum current L3	Harmonic 15th effective value Maximum current L3	0000H (Fixation)	Harmonic 15th effective value Maximum current L3
04	30437	Harmonic 3th content rate Maximum current L1	Harmonic 3th content rate Maximum current L1	Harmonic 3th content rate Maximum current	Harmonic 3th content rate Maximum current L1
04	30438	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 3th content rate Maximum current L2
04	30439	Harmonic 3th content rate Maximum current L3	Harmonic 3th content rate Maximum current L3	0000H (Fixation)	Harmonic 3th content rate Maximum current L3

Data-address list (12)

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase	3-phase 4-wire 3-phase 3-wire 2VT3CT
04	30440	Harmonic 4th content rate Maximum current L1	Harmonic 4th content rate Maximum current L1	Harmonic 4th content rate Maximum current	Harmonic 4th content rate Maximum current L1
04	30441	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 4th content rate Maximum current L2
04	30442	Harmonic 4th content rate Maximum current L3	Harmonic 4th content rate Maximum current L3	0000H (Fixation)	Harmonic 4th content rate Maximum current L3
04	30443	Harmonic 5th content rate Maximum current L1	Harmonic 5th content rate Maximum current L1	Harmonic 5th content rate Maximum current	Harmonic 5th content rate Maximum current L1
04	30444	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 5th content rate Maximum current L2
04	30445	Harmonic 5th content rate Maximum current L3	Harmonic 5th content rate Maximum current L3	0000H (Fixation)	Harmonic 5th content rate Maximum current L3
04	30446	Harmonic 7th content rate Maximum current L1	Harmonic 7th content rate Maximum current L1	Harmonic 7th content rate Maximum current	Harmonic 7th content rate Maximum current L1
04	30447	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 7th content rate Maximum current L2
04	30448	Harmonic 7th content rate Maximum current L3	Harmonic 7th content rate Maximum current L3	0000H (Fixation)	Harmonic 7th content rate Maximum current L3
04	30449	Harmonic 9th content rate Maximum current L1	Harmonic 9th content rate Maximum current L1	Harmonic 9th content rate Maximum current	Harmonic 9th content rate Maximum current L1
04	30450	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 9th content rate Maximum current L2
04	30451	Harmonic 9th content rate Maximum current L3	Harmonic 9th content rate Maximum current L3	0000H (Fixation)	Harmonic 9th content rate Maximum current L3
04	30452	Harmonic 11th content rate Maximum current L1	Harmonic 11th content rate Maximum current L1	Harmonic 11th content rate Maximum current	Harmonic 11th content rate Maximum current L1
04	30453	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 11th content rate Maximum current L2
04	30454	Harmonic 11th content rate Maximum current L3	Harmonic 11th content rate Maximum current L3	0000H (Fixation)	Harmonic 11th content rate Maximum current L3
04	30455	Harmonic 13th content rate Maximum current L1	Harmonic 13th content rate Maximum current L1	Harmonic 13th content rate Maximum current	Harmonic 13th content rate Maximum current L1
04	30456	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 13th content rate Maximum current L2
04	30457	Harmonic 13th content rate Maximum current L3	Harmonic 13th content rate Maximum current L3	0000H (Fixation)	Harmonic 13th content rate Maximum current L3
04	30458	Harmonic 15th content rate Maximum current L1	Harmonic 15th content rate Maximum current L1	Harmonic 15th content rate Maximum current	Harmonic 15th content rate Maximum current L1
04	30459	0000H (Fixation)	0000H (Fixation)	0000H (Fixation)	Harmonic 15th content rate Maximum current L2
04	30460	Harmonic 15th content rate Maximum current L3	Harmonic 15th content rate Maximum current L3	0000H (Fixation)	Harmonic 15th content rate Maximum current L3

(2) Response

If measurement value requirements are performed normally, the following response will be returned from this product side.

Example) Data address : 30001, Number of data : 29 (3-phase 3-wire)

1	2	3	4	5	6	7	8	9
Address	Function code	Answer byte count	00	00	00	00	00	00

10	11	12	13	14	15	16	17
L1L2 line voltage V(L1L2)		L2L3 line voltage V(L2L3)		L3L1 line voltage V(L3L1)		L1 phase current A(L1)	

18	19	20	21	22	23	24	25
L2 phase current A(L2)		L3 phase current A(L3)		00	00	L1 phase demand current DA(L1)	

26	27	28	29	30	31	32	33
L2 phase demand current DA(L2)		L3 phase demand current DA(L3)		00	00	Active power W	

34	35	36	37	38	39	40	41
Demand power DW		Watt-hour (Power receiving) Wh High		Watt-hour (Power receiving) Wh Low		Watt-hour (Power transmission) -Wh High	

42	43	44	45	46	47	48	49
Watt-hour (Power transmission) -Wh Low		Reactive power var		Reactive power (Power receiving, LAG) varh (LAG) High		Reactive power (Power receiving, LAG) varh (LAG) Low	

50	51	52	53	54	55	56	57
Reactive power (Power receiving, LEAD) varh (LEAD) high		Reactive power (Power receiving, LEAD) varh (LEAD) Low		Reactive power (Power transmission, LAG) -varh (LAG) High		Reactive power (Power transmission, LAG) -varh (LAG) Low	

58	59	60	61	62	63
Reactive power (Power transmission, LEAD) -varh (LEAD) High		Reactive power (Power transmission, LEAD) -varh (LEAD) Low		CRC	

Transmission scaling

Item		Input			Communication data (14)	Intrinsic error
Voltage, Minimum voltage, Maximum voltage	3φ3W 1φ2W 3φ4W	AC0 - 150V, AC0 - 300V, AC0 - 600V (Line)			0000H to 2710H (0 to 10000)	±0.5%
		AC0 - 150/√3V, AC0 - 300/√3V, AC0 - 600/√3V (Phase)			0000H to 168EH (0 to 5774)	
	1φ3W (15)	AC0 - 300V (Line)			0000H to 2710H (0 to 10000)	
		AC0 - 150V (Phase)	Phase-voltage full-scale 150V		0000H to 2710H (0 to 10000)	
			Phase-voltage full-scale 300V		0000H to 1388H (0 to 5000)	
Current, Minimum current, Maximum current, Minimum demand current, Maximum demand current, Demand current		Rating 5A	AC0 - 5A		0000H to 2710H (0 to 10000)	±0.5%
		Rating 1A	AC0 - 1A			
Active power, Minimum active power, Maximum active power, Maximum demand power, Minimum demand power, Demand power	3φ3W 1φ3W 3φ4W	Rating 5A	110V	-1kW - 0 - +1kW	D8F0H to 0000H to 2710H (-10000 to 0 to +10000)	±0.5%
			220V	-2kW - 0 - +2kW		
			440V	-4kW - 0 - +4kW		
		Rating 1A	110V	-200W - 0 - +200W		
			220V	-400W - 0 - +400W		
			440V	-800W - 0 - +800W		
	1φ2W	Rating 5A	110V	-500W - 0 - +500W	EC78H to 0000H to 1388H (-5000 to 0 to +5000)	±0.5%
			220V	-1kW - 0 - +1kW		
		Rating 1A	110V	-100W - 0 - +100W		
			220V	-200W - 0 - +200W		
Reactive power, Minimum reactive power, Maximum reactive power	3φ3W 1φ3W 3φ4W	Rating 5A	110V	LEAD 1kvar - 0 - LAG 1kvar	D8F0H to 0000H to 2710H (-10000 to 0 to +10000)	±0.5%
			220V	LEAD 2kvar - 0 - LAG 2kvar		
			440V	LEAD 4kvar - 0 - LAG 4kvar		
		Rating 1A	110V	LEAD 200var - 0 - LAG 200var		
			220V	LEAD 400var - 0 - LAG 400var		
			440V	LEAD 800var - 0 - LAG 800var		
	1φ2W	Rating 5A	110V	LEAD 500var - 0 - LAG 500var	EC78H to 0000H to 1388H (-5000 to 0 to +5000)	±0.5%
			220V	LEAD 1kvar - 0 - LAG 1kvar		
		Rating 1A	110V	LEAD 100var - 0 - LAG 100var		
			220V	LEAD 200var - 0 - LAG 200var		
Apparent power, Minimum apparent power, Maximum apparent power		Rating 5A	110V	0 - 1kVA	0000H to 2710H (0 to 10000)	±0.5%
			220V	0 - 2kVA		
			440V	0 - 4kVA		
		Rating 1A	110V	0 - 200VA		
			220V	0 - 400VA		
			440V	0 - 800VA		
Power factor, Minimum power factor, Maximum power factor		LEAD 0 - 1 - LAG 0			0000H to 1388H to 2710H (0 to 5000 to 10000)	±2.0%
		LEAD 0.5 - 1 - LAG 0.5			09C4H to 1388H to 1D4CH (2500 to 5000 to 7500)	
Frequency, Minimum frequency, Maximum frequency		45 - 55Hz			1194H to 157CH (4500 to 5500)	±0.5%
		55 - 65Hz			157CH to 1964H (5500 to 6500)	
		45 - 65Hz			1194H to 1964H (4500 to 6500)	
Current leakage, Maximum current leakage		AC0 - AC0.8A			0000H to 2710H (0 to 10000)	±10%
Distortion factor, Maximum distortion factor		Voltage	0.0 - 20.0%		0000H to 00C8H (0 to 200)	±2.5%
		Current	0.0 - 100.0%		0000H to 03E8H (0 to 1000)	±2.5%
Harmonic content rate (Fundamental wave, nth), Harmonic maximum content (Fundamental wave, nth), Harmonic 5th conversion content rate, Harmonic 5th conversion maximum content rate		Voltage	0.0 - 20.0%		0000H to 00C8H (0 to 200)	±2.5%
		Current	0.0 - 100.0%		0000H to 03E8H (0 to 1000)	±2.5%

Item	Input				Communication data (14)	Intrinsic error
Harmonic effective value (Fundamental wave, nth), Harmonic maximum effective value (Fundamental wave, nth), Harmonic 5th conversion effective value, Harmonic 5th conversion maximum effective value	Voltage	3φ3W 1φ2W	AC0 - 150V, AC0 - 300V		0000H to 2710H (0 to 10000)	±1.5%
		3φ4W	AC0 - 150/√3V, AC0 - 300/√3V, AC0 - 600/√3V (Phase)		0000H to 168EH (0 to 5774)	
		1φ3W (15)	AC0 - 150V (Phase)	Phase-voltage full-scale 150V	0000H to 2710H (0 to 10000)	
				Phase-voltage full-scale 300V	0000H to 1388H (0 to 5000)	
	Current	Rating 5A	AC0 - 5A		0000H to 2710H (0 to 10000)	±1.5%
		Rating 1A	AC0 - 1A			
Watt-hour (Power receiving / Power transmission)	0 - 99999.9				00000000H to 000F423FH (0 to 999999) (16)	±2.0%
var-hour (Power receiving / Power transmission, LAG/LEAD)	0 - 99999.9				00000000H to 000F423FH (0 to 999999) (16)	±2.5%

Note(14) The range of communication data, Data at the case of low input.
- Current : 120% full-scale, Less than 0.5% of secondary rated current is "0000H" (0).
- Voltage : 101% full-scale, Less than 0.5% of secondary rated voltage is "0000H" (0).
- Active power, Reactive power : 120% full-scale, Less than 0.5% of secondary rated power and secondary reactive power is "0000H" (0).
- Power factor : Less than 20% of voltage range and less than 2% of current range are "1388H" (5000).
- Frequency : ±1% of measuring range. 45 - 55Hz : 44.9 to 55.1Hz "118AH to 1586H" (4490 to 5510)
  55 - 65Hz : 54.9 to 65.1Hz "1572H to 196EH" (5490 to 6510)
  45 - 65Hz : 44.8 to 65.2Hz "1180H to 1978H" (4480 to 6520)
  Less than 20% of voltage range is "0000H".
- Active power, Reactive power : Minus data expresses with two's complement.
  (-10000 - 0 - 10000 : D8F0H to 0000H to 2710H)
- Current leakage : 120% (12000) full-scale, Out of range : "FFFFH" (-1)

Note(15) The default setting of phase-voltage full-scale setting is 300V.

Note(16) It is set to kWh (kvarh) by hanging multiplying factor data on watt-hour data.
Example) Watt-hour(kWh) = Watt-hour date × Multiplying factor data = 123.4×100 = 12340kWh

7.8 Maximum, minimum reset request

Used for performing the maximum minimum reset to this product.
It will be broadcast if 00H are designated as an address. A function code designates 06H.

(1) The maximum minimum reset request (Query)

In case it performs the maximum minimum reset request, it is necessary to transmit the write-in data containing a data address and the factor to reset. If a data address is transmitted, please subtract 40001 from the address of a data-address list.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Write data		CRC	
01H	06H	012CH		001FH		0837H	

Data address list

Function code	Data address	Model			
		3-phase 3-wire	Single-phase 3-wire	Single-phase 2-wire	3-phase 4-wire
06H	40301	Maximum, minimum reset			

● Maximum minimum reset, Bit allocation of write data [17]

B15	B14	B13	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
—	—	—	—	⑫	⑪	⑩	⑨	⑧	⑦	⑥	⑤	④	③	②	①

No.	Contents of output	No.	Contents of output
①	Voltage (Maximum, Minimum)	⑦	Frequency (Maximum, Minimum)
②	Current (Maximum, Minimum)	⑧	Current leakage (Maximum) [19]
③	Active power (Maximum, Minimum)	⑨	Demand current (Maximum, Minimum)
④	Reactive power (Maximum, Minimum)	⑩	Demand power (Maximum, Minimum)
⑤	Apparent power (Maximum, Minimum) [18]	⑪	Harmonic data (Maximum) (Voltage) [20]
⑥	Power factor (Maximum, Minimum)	⑫	Harmonic data (Maximum) (Current) [20]

Note[17] Except an applicable bit and the measurement factor that doesn't exist by the model, data is not reset as for ON (1).
Note[18] Only with 3-phase 4-wire specification.
Note[19] Only with leakage measurement option
Note[20] Harmonic data : Fundamental-wave effective value, Distortion factor, Harmonic nth effective value , Harmonic nth content rate, Harmonic 5th conversion effective value, Harmonic 5th conversion content rate

(2) Response

If maximum minimum reset request is performed normally, the following response will be returned from this product side. In case broadcast (address 00H) is designated, a response does not occur.

1	2	3	4	5	6	7	8
Address	Function code	Data address		Change data		CRC	

The same data as the write data of the maximum and the minimum reset factor is returned to change data.

7.9 Loopback test

Loopback test is the function that tests communication of a master and a slave (SQLC).
Arbitrary data is answered as it is. There is no broadcast. A function code designates 08H.

(1) The request of loopback (Query)

In case it performs a loopback test, it is necessary to transmit the data used for a diagnostic code and diagnosis. A diagnostic code should designate 0000H. A diagnostic data designates the selected value to 0000H to FFFFH.

1	2	3	4	5	6	7	8
Address	Function code	Diagnostic code		Diagnostic data		CRC	
01H	08H	0000H		04D2H		6296H	

(2) Response

If loopback request is performed normally, the following response will be returned from this product side.

1	2	3	4	5	6	7	8
Address	Function code	Diagnostic code		Diagnostic data		CRC	

The same data as the master transmitted by (1) is returned to diagnostic code and diagnostic data.

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