060

AMC16 Series Multi-circuit Monitoring Device for Data Center

Installation and Operation Instruction V1.2

Acrel Co.,Ltd.

Declaration

The company reserves the right to modify the specifications described in this manual without prior notice.Before ordering,please consult your local agent for new specifications.

Content

1. Overview

With the rapid development of data center,the energy consumption problems about the data center have become increasingly serious,and energy management and the design of power supply and distribution have become hot problems;efficient and reliable power distribution system scheme for data center is an effective method to improve the power utilization efficiency of the data center and reduce the energy consumption of equipment. In order to achieve the energy conservation of data center,firstly it is necessary to accurately monitor each electricity load,but there are many loading circuits in the data center,and the traditional measuring instruments are incapable of satisfying the requirements for cost,volume,installation,construction and the like;hence,it is necessary to apply multi-circuit monitoring device applicable to the centralized monitoring requirements of datacenter.

AMC16 series multi-circuit monitoring device of Acrel Company is a measuring device designed specifically for the power supply management of server in the data center. Such device is small and exquisite in design,capable of centralized monitoring on various electric parameters and on-off states of dozens of circuits,including incoming line circuit and outgoing line circuit,and it achieves the highly integration of monitoring circuits in volume.

2. Type description

Type	Functional description	Optional functions
AMC16MA	Busbar voltage for measurement of three-phase total incoming lines + 2-way three-phase incoming line current,active power,reactive power,power factor,active energy,reactive energy + 36-way single-phase outgoing line (12-way three-phase) current,active power,reactive power,power factor,active energy,reactive energy +1-way on-off output +1-way RS485 communication.	2C-duplex communication
AMC16MA H	Increase 2-15 sub-frequency harmonic and total harmonic of incoming line voltage,incoming line current and outgoing line current based on the function of AMC16MA	Dual-power supply may be required AC220V +DC48V
AMC16MD	Outgoing line for measurement of DC busbar voltage +42-way direct current,active energy+1-way on-off output +1-way RS485 communication	
AMC16Z	Busbar voltage for measurement of three-phase total incoming lines + 1-way three-phase incoming line current,active power,reactive power,power factor,active energy,reactive energy + 21-way single-phase outgoing line (7-way three-phase)current,active power,reactive power,power factor,active energy,reactive energy +1-way on-off output +1-way RS485 communication+21-way active on-off input (AC220V) +1-way reactive on-off input	--
AMC16ZH	Increase 2-15 sub-frequency harmonic and total harmonic of incoming line voltage,incoming line current and outgoing line current based on the function of AMC16Z	
AMC16ZH- U	Open measurement of outgoing line circuit voltage based on the function of AMC16ZH.	
AMC16K	38-way active on-off input (AC220V) + 4-way reactive on-off input + 1-way on-off output + 1-way RS485 communication	--

3. Technical parameters:

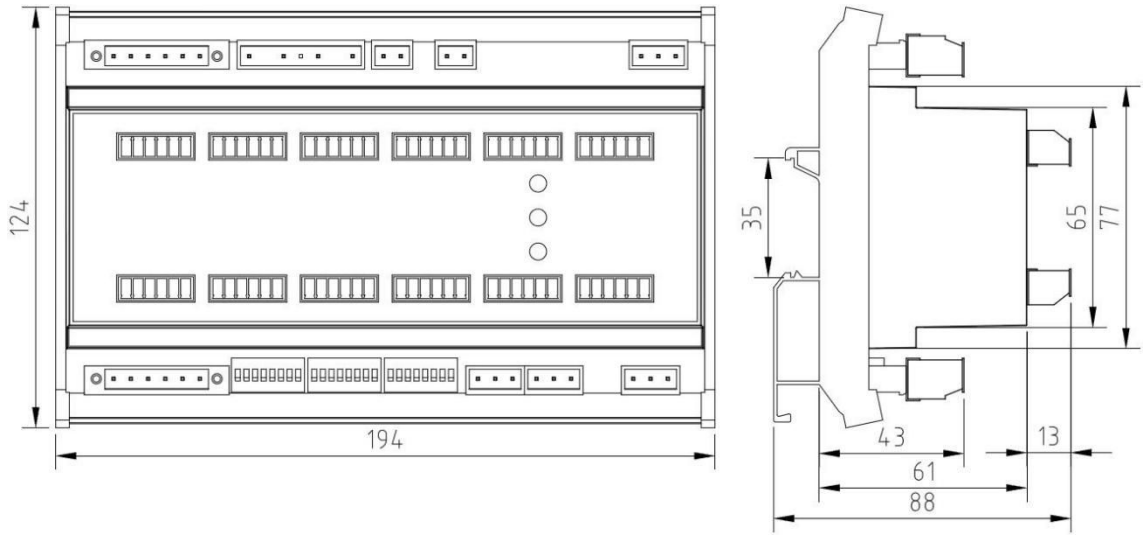
Type			AMC16MA	AMC16Z	AMC16MD	AMC16K
Power distribution system			AC		DC	AC
Measuring parameters			Busbar voltage,current,active power,reactive power,power factor,active energy and reactive energy		Busbar voltage,current,power and energy	-
Busbar voltage	Rated		220V AC		-48V DC/DC240V	
	Measurement range		40-400V AC		±20%/40-400V DC	
	Overload		instantaneous voltage twice/30 seconds			
Current circuit	Incoming line	CT	Secondary 5A		(50-2000)A/50mA (5V)	
		Range	0-10A		0-120%	
	Outgoing line	CT	100A/20mA		(50-2000) A/50mA (5V)	
		Range	0-120%		0-120%	
	Overload		1.2 times for continuous,and 10 times/5 seconds for instantaneous			
Input frequency			45-60Hz		/	
Auxiliary power supply			AC85-265V/DC100V-350V AC85-265V/DC100V-350V		DC48V±20%/ DC100V-350V	AC85-265V/DC100V-350V
Measurement accuracy	Incoming line		1.0		1.0	-
	Outgoing line		2.0		2.0	
Power consumption			5VA		5W	5VA
Insulation resistance			100MΩ			
Power frequency withstand voltage			Power supply/input/output and inter-ports AC 2kV/1min 50Hz			
Environment	Temperature		Working: -15℃-+55℃ Storage: -25℃-+70℃			
	Humidity		Relative humidity ≤93%			
	Altitude		≤2500m			
On-off output			5A 250VAC/5A 30VDC			
On-off input			None	21-way wet nodes 1-way dry nodes	None	38-way wet nodes 4-way dry nodes
Communication			2-Wire Modbus-RTU			
Installation method			DIN35mm guide rail installation			
Protection grade			IP20			
Pollution grade			2			
Electromagnet ic compatibility	Antistatic interference		Level3			
	Resistance to electrical fast transient		Level3			
	Resistance to surge interference		Level3			

	Resistance to radiation of radiofrequency electromagnetic field	Level3

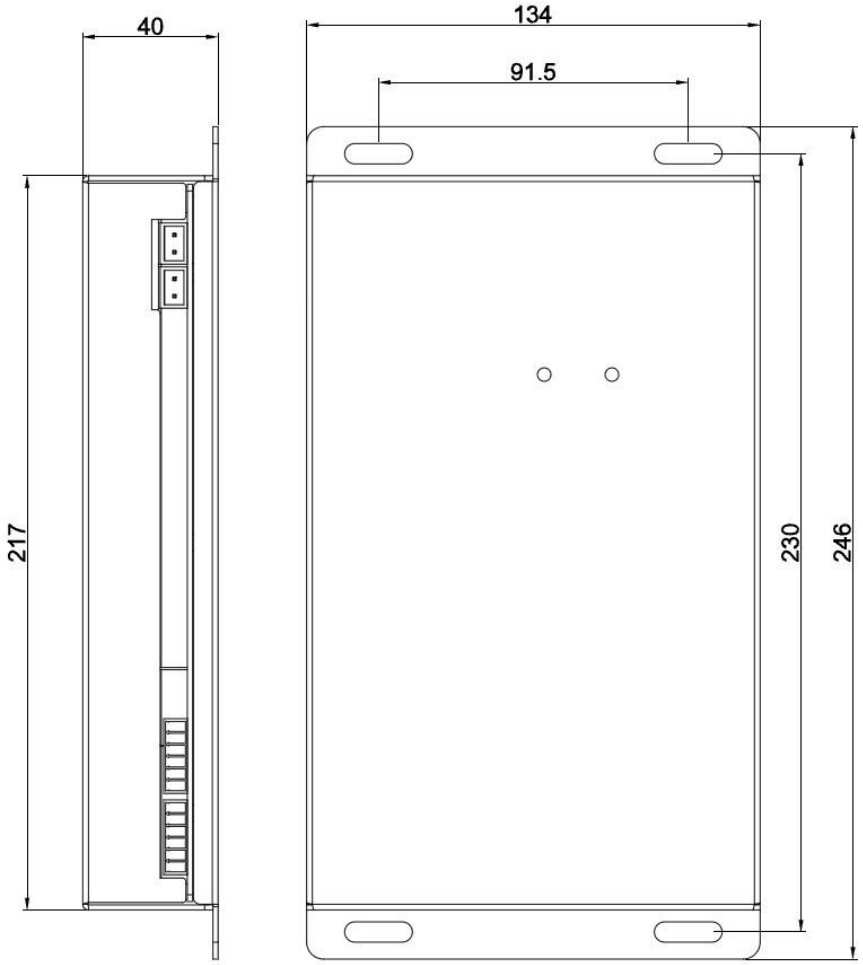
4. Overall dimensions

Unit: mm

4.1 Overall dimensions of AMC16MA and AMC16MD



4.2 AMC16Z、AMC16K



5. Wiring terminals

5.1AMC16M

Terminal No.	Definition	Description	Remark
1	L	AC power supply input	AC220V
2	N		
4	IA1*	Phase-A incoming-line 1 current	
5	IA1		AC direct grounding/DC power supply grounding
6	IB1*	Phase-B Incoming-line 1 current	
7	IB1		AC direct grounding/DC power supply grounding
8	IC1*	Phase-C Incoming-line 1 current	
9	IC1		AC direct grounding/DC power supply grounding
10	UN	Null line of AC voltage	
11	UA	Phase-A AC voltage	
12	UB	Phase-B AC voltage	Splicing with 11 in single-phase or direct current
13	UC	Phase-C AC voltage	Splicing with 11 in single-phase or direct current
14	IA2*	Phase-A incoming-line 2 current	
15	IA2		AC direct grounding/DC power supply grounding
16	IB2*	Phase-B Incoming-line 2 current	
17	IB2		AC direct grounding/DC power supply grounding
18	IC2*	Phase-C Incoming-line 2 current	
19	IC2		AC direct grounding/DC power supply grounding
21	L	DC power supply input	DC48V
22	N		
30	A1	RS485 Communication 1	
31	B1		
40	A2	RS485 Communication 2	
41	B2		
50		On-off output	
51			
I1-I36	+	Outgoing line current	"-" is connected to the negative terminal of mutual inductor in AC signal without grounding; "-" is connected to power ground in DC signal
	-		
Addr1	Address 1	Address setting of Communication 1	Setting method is given in device panel in detail
Addr2	Address 2	Address setting of Communication 2	
		Baud rate setting of	

Baud1	Baud rate 1	Communication 1	
Baud2	Baud rate 2	Baud rate setting of Communication 2	
Clr.e		Energy zero clearing	Setting method is given in 6-Parameter Setting in detail.

5.2 AMC16Z

Terminal No.	Definition	Description	Remark
1	L	AC power supply input	AC220V
2	N		
4	IA*	Phase-A incoming-line current	
5	IA		Direct grounding
6	IB*	Phase-B incoming-line current	
7	IB		Direct grounding
8	IC*	Phase-C Incoming-line current	
9	IC		Direct grounding
10	UN	Null line of AC voltage	Common port of active on-off input
11	UA	Phase-A AC voltage	
12	UB	Phase-B AC voltage	Splicing with 11 in single-phase
13	UC	Phase-C AC voltage	Splicing with 11 in single-phase
30	A1	RS485 Communication 1	
31	B1	RS485 Communication 1	
50		On-off output	
51			
55	On-off input	Dry contact	Reactive node
59			
I1-I7	+	Outgoing line current	"-" is connected to the negative terminal of mutual inductor in AC signal
	-		
61-81	On-off input	Wet node	AC220V input
Addr	Address	Communication address setting	Setting method is given in device panel in detail
Baud	Baud rate	Baud rate setting of communication	
Clr.e		Energy zero clearing	Setting method is given in 6-Parameter Setting in detail.

5.3 AMC16K

Terminal No.	Definition	Description	Remark
1	L	DC power supply input	AC220V
2	N		
30	A	RS485	

31	B	communication	
50		On-off output	
51			
55-58	On-off input	Dry contact	Reactive node
59		Reactive common terminal	
60		Active common terminal	Null line N access
61-98		Wet node	AC220V input
Addr	Address	Communication address setting	Setting method is given in device panel in detail
Baud	Baud rate	Baud rate setting of communication	

6. Parameter setting

The communication addresses,baud rates and such parameters of all types are set by the dial switch and their setting methods are given in the device panel.

Energy zero clearing: in case of energy metering function and the requirement for energy zero clearing,set the bit of 5-8 (AMC16MA and AMC16MD)/4-1 (AMC16Z) of dial switch to Position-1011 and then re-electrify the device. Upon energy zero clearing,have to set the dial switch to Position-0;in case the dial switch is not reset upon zero clearing,conduct zero clearing operation for each time of electrification.

For the incoming line parts of AMC16MA and AMC16Z,the energy read is primary energy due to secondary current input,and thus it is necessary to firstly set CT transformation ratio through communication,or it is impossible to read the energy of the incoming line.

Note: ON-state of the dial switch is 0-state.

7. Application scheme

Incoming line 1 (main)
Incoming line 2 (backup)
Feed-out state detection
Feed-out 1
Public
Reactive on-off status
Relay output
485 bus to IMI
Feed-out state detection
Incoming-line 1 current input
Incoming-line 2 current input
Voltage input
485 bus to IMI
485 bus to system
Relay output
Outgoing line circuit current output
Outgoing line circuit current output
485 bus to module

Working power supply is from independent DC24V power module
Description: 1. This resistance is applicable to power distribution cabinet of two-way connection with ATS switching device. 2. One AMC16MA device may be exchanged for 2-way incoming line and 35-way outgoing line,and repeatedly output as per ABC phases. Each outgoing line circuit phase can be configured. 3. One AMC16K device is capable of monitoring the status of 38 outgoing line switches,and it is directly from the cut-off export,corresponding to the outgoing line of CT module. 4. The working power supply of IMI requires external DC24V switch power supply.

Incoming line
Incoming-line current input
Voltage input
Feed-out state detection
Feed-out 1
Relay output
Outgoing line circuit current output
Reactive on-off status
485 bus to IMI
Working power supply is from independent DC24V power module
Description: 1. This resistance is applicable to power distribution cabinet of one-way incoming line. 2. One AMC16Z device may be exchanged for 1-way incoming line and 21-way outgoing line,and repeatedly output as per ABC phases. Each outgoing line circuit phase can be configured. 3. One AMC16Z device is capable of monitoring the status of 21 outgoing line switches,and it is directly from the cut-off export,corresponding to the outgoing line of CT module. 4. The working power supply of IMI requires external DC24V switch power supply.

Incoming line 2 current input
Voltage signal input
Incoming line 1 current input
Hall sensor
AMC16MD multi-circuit monitoring device DC system application wiring
DO output
Communication 2
Communication 1
Power supply 2
Power supply 1
External switch power supply

Attentions to wiring:

1.The frequency of AMC16MA and AMC16Z is calculated based on V1 voltage,and therefore V1 voltage access must be ensured, or it may result in inaccurate measurement;

2.It is suggested that 11,12 and 13 should be accessed to voltage (voltage access for three-phase type A,B and C and in-parallel voltage access for single-phase type),regardless of single-phase or three-phase AMC16MA and AMC16Z;

3.The current access of outgoing line for AMC16MA and AMC16Z is Phase-A for I1,Phase-B for I2 and Phase-C for I3 by default and so forth;three-phase load shall be accessed based on the order of A,B and C,and phase connected to it needs to be focused for single-phase load circuit,and the phase setting of single-phase circuit should also be conducted based on Method 4 in Note 7.4;or the power,energy and such parameters of the single-phase circuit will be inaccurately measured.

8. Communication protocol

The protocol specifies the physical connection and communication protocol of data exchange by AMC 16 series multi-circuit monitoring device and data terminal equipment,and its protocol mode is similar to Modbus_RTU communication protocol.

8.1 Protocol introduction

The communication protocol used for AMC16 series device specifies the data series definition of address code,function code and the check code which are necessary contents for specific data exchange. Such protocol applies master-slave response connection on one communication line (half-duplex),which means that the signal on signal communication lines is transmitted along two opposite directions. Firstly,the signal of the master computer addresses to one sole terminal equipment (slave),and then the response signal sent by the terminal equipment is transmitted to the master in opposite direction.

The protocol only allows the communication between the master (PC,PLC and the like) and the terminal equipment,but not the data exchange between independent terminal equipment;for this purpose,terminal equipment will not occupy the communication line when it is initialized,but only limited to make s response to the consulting signal arriving at the local computer.

8.2 Transmission mode

The information transmission is in asynchronous mode,expressed in byte;and the communication information transmitted between the master and the slave is 11-bite format,including 1 start bit,8 data bits (minimum significance bit is sent first),odd-even check bit (no check) and 2 stop bits.

8.2.1 Data frame format

Address code	Function code	Data area	CRC check code
1 byte	1 byte	n bytes	2 bytes

8.2.2 Address field

The address field is at the beginning part of the frame,consisting of one byte (8 binary codes) with decimalism of 0-255;in our system,only 1-247 are used and other addresses are retained. These bits show the addresses of terminal equipment designated by users,and such equipment will receive the data from master connected with it. The address of each set of terminal equipment is sole,and only the terminal addressed will respond to consulting including such address. When the terminal sends back a response,the slave address data in the response will tell the master the terminal which it is communicated with.

8.2.3 Function field

The function field code tells the function which the addressed terminal executes. The function codes and their significance

and functions used for such series of device are listed in the following table.

Code	Significance	Behavior
03	Read data register	Obtain current binary value of one or more registers
16	Preset multiple registers	Set binary values into a series of multiple registers

8.2.4 Data field

The data field includes data necessary for terminal to execute specific function or the data collected by the terminal responding to consulting. Those data contents may be numerical value,reference address or set value. For instance: function field code tells the terminal to read a register and the data field needs to indicate which register is used at the beginning and how many data are read;the embedded address and data vary with the different types and master-slave contents.

8.2.5 Error check field

This field allows the error during the inspection and transmission between master and terminal. Sometimes,due to electrical noise and other disturbance,a set of data may change to some extent on the line when it is transmitted from one set of equipment to another,and the error check is capable of ensuring the master or the terminal not to respond to the data changed during transmission,which improves the system safety and efficiency,and 16-bit cyclic redundancy method is used for the error check (CRC16).

8.2.6 Method for error detection

Error check field occupies two bytes,including one 16-bit binary value. CRC value is calculated by transmission equipment and then added to the data frame;the receiving equipment re-calculates CRC value when receiving data and then compares the value in CRC field received;if two values are not the same,error appears.

In CRC operation,firstly preset one 16-bit register as full-1,and then continuously operate 8 bits in each byte of data from and current value of such register,generate CRC from 8 data bits of each byte,and avoid the start bit,stop bit and odd-even bit possibly used affecting CRC. When CRC is generated,conduct xor for b bits in each byte and contents in the register,and then shift the results to lower bit,supplement with "0" for higher bit and shift out the least-significant bit (LSB) and detect;if it is 1,conduct a xor operation with such register and one preset fixed value (0A001H);if the least-significant bit is 0,do not make any treatment.

Repeat said treatment till 8 times of shift operation is finished;when the last bit (eighth bit) is shifted,conduct xor operation for next 8-bit byte and current value of the register;similarly,conduct t xor operation for said another 8-times of shift;when all bytes in the data frame have been treated,the final value generated is CRC value.

Process to generate one CRC includes:

⑴Preset one 16-bit register as 0FFFFH (full-1) which is called CRC register.

Conduct xor operation for 8 bits in the first byte of data frame and the lower byte in CRC register and save the result in CRC register.

Shift one bit of CRC register to the right,fill with 0 at the most significant bit,and then shift out and detect the least significant bit.

If the least significant bit is 0: repeat step 3 (next shift);if the least significant bit is 1: conduct xor operation for CRC register and one preset fixed value (0A001H).

Repeat step 3 and step 4 till the eighth times of shift. Thus,a complete eight bits are treated completely.

⑵ Repeat step 2 to step 5 to treat the next 8 bits till all bytes are treated completely.

The final value of CRC register is CRC value.

In addition,there is also one method by utilizing preset table to calculate CRC,which is mainly characterized by fast

calculation speed;but the table needs larger storage space,and such method is not detailed herein;please refer to related data.

8.3 Introduction to function code

8.3.1 Function Code 02H: reading discrete magnitude input

This function code reads 1-2000 continuous status of discrete magnitude input. Request PDU specifies the start address,namely the first input address and input number designated. The input is addressed from zero. Thus,the addressing input of 1-16 is 0-15. Based on each bit in the data field,the discrete magnitude input in the response message is divided into one input. The indicating status is 1=ON and 0=OFF. LSB (least significant bit) of the first data byte includes input of address in inquiry. Other inputs are analogized in order till it reaches the high-order end of this byte,and the subsequent bytes are in the order from lower bit to higher one. If the returned input quantity is the multiple of eight,zero will be used to fill the rest bit in the final data byte (till the high-order end of the byte). The byte quantity field shows the complete byte quantity of the data.

The following example shows 10 continuous on-off statuses of DI7-DI16 read by No. 01 Slave.

Master sending		Sending information
Address code		01H
Function code		02H
Start address	Higher byte	00H
	Lower byte	06H
Output quantity	Higher byte	00H
	Lower byte	0AH
CRC check code	Lower byte	18H
	Higher byte	0CH

Slave returning		Returning information
Address code		01H
Function code		02H
Number of bytes		02H
Input status 14-7		3FH
Input status 16-15		02H
CRC Check code	Lower byte	29H
	Higher byte	89H

Express the discrete magnitude input status of 14-7 as value of 3F with hexadecimal byte or 0011 1111 of binary system. Input 14 is MSB of this byte and Input 7 is LSB of this byte.

Express the discrete magnitude input status of 16-15 as value of 02 with hexadecimal byte or 0000 0010 of binary system. Input 15 is LSB of this byte zero is used to fill in the rest bit in the final data byte.

8.3.2 Function Code 03H: reading register

This function enables users to obtain the data and system parameters collected and recorded by the equipment. The number of data for the primary request of the master is unlimited,but within the address range defined.

The following example shows the basic data collected by No. 1 Salve reading 3 registers (each address in the data frame occupies 2 bytes),including Uab,Ubc and Uca,of which the address of Uab,Ubc and Uca is respectively 03H,04H and 05H.

Master sending		Sending information
Address code		01H
Function code		03H
Start address	Higher byte	00H
	Lower byte	03H

Number of registers	Higher byte	00H
	Lower byte	03H
CRC check code	Lower byte	F5H
	Higher byte	CBH

Slave returning		Returning information
Address code		01H
Function code		03H
Number of bytes		06H
Register data	Higher byte	0EH
	Lower byte	EEH
Register data	Higher byte	0EH
	Lower byte	E8H
Register data	Higher byte	0EH
	Lower byte	E9H
CRC check code	Lower byte	8FH
	Higher byte	7EH

8.3.3 Function Code 06H: Writing single register

Function Code 06H allows users to change the content of single register,and the system parameters and on-off output status of this instrument may be read in by this function code.

The following example shows the instrument with preset address of 01 and output on-off DO. The on-off output status indicates the register address is 0045H and corresponding DO closing data is 0x01.

Master sending		Sending information
Address code		01H
Function code		06H
Start address	Higher byte	00H
	Lower byte	45H
Data to be read in by 0045H	Higher byte	00H
	Lower byte	01H
CRC check code	Lower byte	59H
	Higher byte	DFH

Slave returning		Returning information
Address code		01H
Function code		06H
Start address	Higher byte	00H
	Lower byte	45H
Read-in data	Higher byte	00H
	Lower byte	01H
CRC check code	Lower byte	59H
	Higher byte	DFH

8.3.4 Function Code 10H: writing multiple registers

Function Code 10H allows users to change the content of multiple registers,and the system parameters and on-off output status of this instrument may be read in by this function code. The master can write 16 (32-byte) pieces of data once at most.

The following example shows the instrument with preset address of 01 and output on-off DO. The on-off output status indicates the register address is 0045H and the first byte is corresponding to DO.

Master sending		Sending information
Address code		01H
Function code		10H
Start address	Higher byte	00H
	Lower byte	45H
Number of registers	Higher byte	00H
	Lower byte	01H
Number of bytes		02H
Data to be read in by 0045H	Higher byte	00H
	Lower byte	01H
CRC check code	Lower byte	69H
	Higher byte	05H

Slave returning		Returning information
Address code		01H
Function code		10H
Start address	Higher byte	00H
	Lower byte	45H
Number of registers	Higher byte	00H
	Lower byte	01H
CRC check code	Lower byte	10H
	Higher byte	1CH

8.4 Table of communication addresses

Address		Parameter	Numerical range	Read-write property	Data type
0	00H	Phase Voltage 1	AC: unsigned xxx.xV DC: signed xx.xV	R	Word
1	01H	Phase Voltage 2			
2	02H	Phase Voltage 3			
3	03H	Line Voltage 1			
4	04H	Line Voltage 2			
5	05H	Line Voltage 3			
6	06H	Frequency	Unsigned 0-99.99Hz	R	Word
7	07H	Incoming-line 1 phase-A (DC1) current	AC: unsigned secondary x.xxxA Multiply by CT transformation ratio to obtain primary current DC: signed primary xx.xA	R	Word
8	08H	Incoming-line 1 phase-B (DC2) current			
9	09H	Incoming-line 1 phase-C (DC3) current			
10	0AH	Incoming-line 1 total active power	Signed secondary xx.xxxkW Multiply by CT transformation ratio to obtain primary value	R	Word

11	0BH	Incoming-line 1 total reactive power	Signed secondary xx.xxx kvar Multiply by CT transformation ratio to obtain primary value	R	Word
12	0CH	Incoming-line 1 total power factor	Signed -1.000-1.000	R	Word
13	0DH	Incoming-line 1 total active energy (high)	Unsigned Primary value xx.xxkWh	R	DWord
14	0EH	Incoming-line 1 total active energy (low)			
15	0FH	Incoming-line 1 total reactive energy (high)	Unsigned Primary value xx.xxkvarh	R	DWord
16	10H	Incoming-line 1 total reactive energy (low)			
17	11H	Incoming-line 1 phase-A (DC1) active power	AC: signed secondary xx.xxxkW Multiply by CT transformation ratio to obtain primary value DC: signed primary xx. xxkW	R	Word
18	12H	Incoming-line 1 phase-B (DC2) active power			
19	13H	Incoming-line 1 phase-C (DC3) active power			
20	14H	Incoming-line 1 phase-A reactive power	Signed secondary xx.xxx kvar Multiply by CT transformation ratio to obtain primary value	R	Word
21	15H	Incoming-line 1 phase-B reactive power			
22	16H	Incoming-line 1 phase-C reactive power			
23	17H	Incoming-line 1 phase-A power factor	Signed -1.000-1.000	R	Word
24	18H	Incoming-line 1 phase-B power factor			
25	19H	Incoming-line 1 phase-C power factor			
26	1AH	Incoming-line 1 phase-A (DC1) active energy (high)	Unsigned Primary value xx.xxkWh	R	DWord
27	1BH	Incoming-line 1 phase-A (DC1)active energy (low)			
28	1CH	Incoming-line 1 phase-B (DC2) active energy (high)			
29	1DH	Incoming-line 1 phase-B (DC2) active energy (low)			
30	1EH	Incoming-line 1 phase-C (DC3) active energy (high)			
31	1FH	Incoming-line 1 phase-C (DC3) active energy (low)			
32	20H	Incoming-line 1 phase-A reactive energy (high)	Unsigned Primary value xx.xxkvarh	R	DWord
33	21H	Incoming-line 1 phase-A reactive energy (low)			
34	22H	Incoming-line 1 phase-B reactive energy (high)			
35	23H	Incoming-line 1 phase-B reactive energy (low)			
36	24H	Incoming-line 1 phase-C reactive energy (high)			
37	25H	Incoming-line 1 phase-C reactive energy (low)			
38	26H	Incoming-line 2 Phase-A (DC4) current	AC: unsigned secondary x.xxxA Multiply by CT transformation ratio to obtain primary current DC: signed primary xx.Xa	R	Word
39	27H	Incoming-line 2 Phase-B (DC5) current			
40	28H	Incoming-line 2 Phase-C (DC6) current			
41	29H	Incoming-line 2 total active power	Signed secondary xx.xxxkW Multiply by CT transformation ratio to obtain primary value	R	Word

42	2AH	Incoming-line 2 total reactive power	Signed secondary xx.xxx kvar Multiply by CT transformation ratio to obtain primary value	R	Word
43	2BH	Incoming-line 2 total power factor	Signed -1.000-1.000	R	Word
44	2CH	Incoming-line 2 total active energy (high)	Unsigned Primary value xx.xxkWh	R	DWord
45	2DH	Incoming-line 2 total active energy (low)			
46	2EH	Incoming-line 2 total reactive energy (high)	Unsigned Primary value xx.xxkvarh	R	DWord
47	2FH	Incoming-line 2 total reactive energy (low)			
48	30H	Incoming-line 2 phase-A (DC4) active power	AC:signed secondary xx.xxxkW Multiply by CT transformation ratio to obtain primary value DC: signed primary xx. xxkW	R	Word
49	31H	Incoming-line 2 phase-B (DC5) active power			
50	32H	Incoming-line 2 phase-C (DC6) active power			
51	33H	Incoming-line 2 phase-A reactive power	Signed secondary xx.xxx kvar Multiply by CT transformation ratio to obtain primary value	R	Word
52	34H	Incoming-line 2 phase-B reactive power			
53	35H	Incoming-line 2 phase-C reactive power			
54	36H	Incoming-line 2 phase-A power factor	Signed -1.000-1.000	R	Word
55	37H	Incoming-line 2 phase-B power factor			
56	38H	Incoming-line 2 phase-C power factor			
57	39H	Incoming-line 2 phase-A (DC4)active energy (high)	Unsigned Primary value xx.xxkWh	R	DWord
58	3AH	Incoming-line 2 phase-A (DC4)active energy (low)			
59	3BH	Incoming-line 2 phase-B (DC5) active energy (high)			
60	3CH	Incoming-line 2 phase-B (DC5) active energy (low)			
61	3DH	Incoming-line 2 phase-C (DC6) active energy (high)			
62	3EH	Incoming-line 2 phase-C (DC6) active energy (low)			
63	3FH	Incoming-line 2 phase-A reactive energy (high)	Unsigned Primary value xx.xxkvarh	R	DWord
64	40H	Incoming-line 2 phase-A reactive energy (low)			
65	41H	Incoming-line 2 phase-B reactive energy (high)			
66	42H	Incoming-line 2 phase-B reactive energy (low)			
67	43H	Incoming-line 2 phase-C reactive energy (high)			
68	44H	Incoming-line 2 phase-C reactive energy (low)			
69	45H	DO status (on-off output)	Bit0	R/W	Word
70	46H	Incoming-line 1 Phase-A CT transformation ratio	1-2000	R/W	Word
71	47H	Incoming-line 1 Phase-B CT transformation ratio			
72	48H	Incoming-line 1 Phase-C CT transformation ratio			
73	49H	Incoming-line 2 Phase-A CT transformation ratio			
74	4AH	Incoming-line 2 Phase-B CT transformation ratio			
75	4BH	Incoming-line 2 Phase-C CT transformation ratio			
76	4CH	Active on-off input status 1-16	bit15-bit0: way -16-1 input	R	

77	4DH	Active on-off input status 17-32	bit15-bit0: way -32-17 input		
78	4EH	Active on-off input status 33-40 Reactive on-off input 1-4	bit1 and bit0: way-38 and way-37 input it11-bit8: way-4-1 input		
79	4FH	Backup			
80	50H	Outgoing line L1A(1)/DC 7 current	AC:unsigned primary side xxx.xxA DC: signed primary side xxx.xA	R	Word
81	51H	Outgoing line L1B(2)/DC 8 current			
82	52H	Outgoing line L1C(3)/DC 9 current			
83	53H	Outgoing line L2A(4) /DC 10 current			
84	54H	Outgoing line L2B(5) /DC 11 current			
85	55H	Outgoing line L2C(6) /DC 12 current			
86	56H	Outgoing line L3A(7) /DC 13 current			
87	57H	Outgoing line L3B(8) /DC 14 current			
88	58H	Outgoing line L3C(9)/DC 15 current			
89	59H	Outgoing line L4A(10)/DC 16 current			
90	5AH	Outgoing line L4B(11)/DC 17 current			
91	5BH	Outgoing line L4C(12)/DC 18 current			
92	5CH	Outgoing line L5A(13)/DC 19 current			
93	5DH	Outgoing line L5B(14)/DC 20 current			
94	5EH	Outgoing line L5C(15) /DC 21 current			
95	5FH	Outgoing line L6A(16) /DC 22 current			
96	60H	Outgoing line L6B(17) /DC 23 current			
97	61H	Outgoing line L6C(18) /DC 24 current			
98	62H	Outgoing line L7A(19) /DC 25 current			
99	63H	Outgoing line L7B(20)/DC 26 current			
100	64H	Outgoing line L7C(21) /DC 27 current			
101	65H	Outgoing line L8A(22)/DC 28 current			
102	66H	Outgoing line L8B(23)/DC 29 current			
103	67H	Outgoing line L8C(24)/DC 30 current			
104	68H	Outgoing line L9A(25)/DC 31 current			
105	69H	Outgoing line L9B(26)/DC 32 current			
106	6AH	Outgoing line L9C(27)/DC 33 current			
107	6BH	Outgoing line L10A(28) /DC 34 current			
108	6CH	Outgoing line L10B(29)/DC 35 current			
109	6DH	Outgoing line L10C(30)/DC 36 current			
110	6EH	Outgoing line L11A(31) /DC 37 current			
111	6FH	Outgoing line L11B(32)/DC 38 current			
112	70H	Outgoing line L11C(33)/DC 39 current			
113	71H	Outgoing line L12A(34)/DC 40 current			
114	72H	Outgoing line L12B(35)/DC 41 current			
115	73H	Outgoing line L12C(36) /DC 42 current			
116	74H	Backup			
117	75H	Backup			
118	76H	Backup			
119	77H	Backup			
120	78H	Outgoing line L1A(1)/DC 7 active power	Signed, primary xx.xxkW	R	Word
121	79H	Outgoing line L1B(2)/DC 8 active power			
122	7AH	Outgoing line L1C(3)/DC 9 active power			
123	7BH	Outgoing line L2A(4) /DC 10 active power			

124	7CH	Outgoing line L2B(5) /DC 11 active power			
125	7DH	Outgoing line L2C(6) /DC 12 active power			
126	7EH	Outgoing line L3A(7) /DC 13 active power			
127	7FH	Outgoing line L3B(8) /DC 14 active power			
128	80H	Outgoing line L3C(9)/DC 15 active power			
129	81H	Outgoing line L4A(10)/DC 16 active power			
130	82H	Outgoing line L4B(11)/DC 17 active power			
131	83H	Outgoing line L4C(12)/DC 18 active power			
132	84H	Outgoing line L5A(13)/DC 19 active power			
133	85H	Outgoing line L5B(14)/DC 20 active power			
134	86H	Outgoing line L5C(15) /DC 21 active power			
135	87H	Outgoing line L6A(16) /DC 22 active power			
136	88H	Outgoing line L6B(17) /DC 23 active power			
137	89H	Outgoing line L6C(18) /DC 24 active power			
138	8AH	Outgoing line L7A(19) /DC 25 active power			
139	8BH	Outgoing line L7B(20)/DC 26 active power			
140	8CH	Outgoing line L7C(21) /DC 27 active power			
141	8DH	Outgoing line L8A(22)/DC 28 active power			
142	8EH	Outgoing line L8B(23)/DC 29 active power			
143	8FH	Outgoing line L8C(24)/DC 30 active power			
144	90H	Outgoing line L9A(25)/DC 31 active power			
145	91H	Outgoing line L9B(26)/DC 32 active power			
146	92H	Outgoing line L9C(27)/DC 33 active power			
147	93H	Outgoing line L10A(28) /DC 34 active power			
148	94H	Outgoing line L10B(29)/DC 35 active power			
149	95H	Outgoing line L10C(30)/DC 36 active power			
150	96H	Outgoing line L11A(31) /DC 37 active power			
151	97H	Outgoing line L11B(32)/DC 38 active power			
152	98H	Outgoing line L11C(33)/DC 39 active power			
153	99H	Outgoing line L12A(34)/DC 40 active power			
154	9AH	Outgoing line L12B(35)/DC 41 active power			
155	9BH	Outgoing line L12C(36) /DC 42 active power			
156	9CH	Backup			
157	9DH	DC1 rated current			
158	9EH	DC2 rated current			
159	9FH	DC3 rated current			
160	A0H	Outgoing line L1A(1)reactive power/DC 4 rated current	AC reactive power: Signed, primary xx.xxkvar AC rated current: unsigned xxxA	R R/W	Word
161	A 1H	Outgoing line L1B(2)reactive power/DC 5 rated current			
162	A2H	Outgoing line L1C(3)reactive power/DC 6 rated current			
163	A3H	Outgoing line L2A(4) reactive power/DC 7 rated current			
164	A4H	Outgoing line L2B(5) reactive power/DC 8 rated current			
165	A5H	Outgoing line L2C(6) reactive power/DC 9 rated current			
166	A6H	Outgoing line L3A(7) reactive power/DC 10 rated current			

167	A7H	Outgoing line L3B(8) reactive power/DC 11 rated current			
168	A8H	Outgoing line L3C(9)reactive power/DC 12 rated current			
169	A9H	Outgoing line L4A(10)reactive power/DC 13 rated current			
170	AAH	Outgoing line L4B(11)reactive power/DC 14 rated current			
171	ABH	Outgoing line L4C(12)reactive power/DC 15 rated current			
172	ACH	Outgoing line L5A(13)reactive power/DC 16 rated current			
173	ADH	Outgoing line L5B(14)reactive power/DC 17 rated current			
174	AEH	Outgoing line L5C(15) reactive power/DC 18 rated current			
175	AFH	Outgoing line L6A(16) reactive power/DC 19 rated current			
176	B0H	Outgoing line L6B(17) reactive power/DC 20 rated current			
177	B1H	Outgoing line L6C(18) reactive power/DC 21 rated current			
178	B2H	Outgoing line L7A(19) reactive power/DC 22 rated current			
179	B3H	Outgoing line L7B(20)reactive power/DC 23 rated current			
180	B4H	Outgoing line L7C(21) reactive power/DC 24 rated current			
181	B5H	Outgoing line L8A(22)reactive power/DC 25 rated current			
182	B6H	Outgoing line L8B(23)reactive power/DC 26 rated current			
183	B7H	Outgoing line L8C(24)reactive power/DC 27 rated current			
184	B8H	Outgoing line L9A(25)reactive power/DC 28 rated current			
185	B9H	Outgoing line L9B(26)reactive power/DC 29 rated current			
186	BAH	Outgoing line L9C(27)reactive power/DC 30 rated current			
187	BBH	Outgoing line L10A(28) reactive power/DC 31 rated current			
188	BCH	Outgoing line L10B(29)reactive power/DC 32 rated current			
189	BDH	Outgoing line L10C(30)reactive power/DC 33 rated current			
190	BEH	Outgoing line L11A(31) reactive power/DC 34 rated current			
191	BFH	Outgoing line L11B(32)reactive power/DC 35 rated current			
192	C0H	Outgoing line L11C(33)reactive power/DC 36 rated current			
193	C1H	Outgoing line L12A(34)reactive power/DC 37 rated current			
194	C2H	Outgoing line L12B(35)reactive power/DC 38 rated current			

195	C3H	Outgoing line L12C(36) reactive power/DC 39 rated current			
196	C4H	DC40 rated current			
197	C5H	DC41 rated current			
198	C6H	DC42 rated current			
199	C7H	Backup			
200	C8H	Outgoing line L1A(1) power factor	-1.000-1.000	R	word
201	C9H	Outgoing line L1B(2) power factor			
202	CAH	Outgoing line L1C(3) power factor			
203	CBH	Outgoing line L2A(4) power factor			
204	CCH	Outgoing line L2B(5) power factor			
205	CDH	Outgoing line L2C(6) power factor			
206	CEH	Outgoing line L3A(7) power factor			
207	CFH	Outgoing line L3B(8) power factor			
208	D0H	Outgoing line L3C(9) power factor			
209	D1H	Outgoing line L4A(10) power factor			
210	D2H	Outgoing line L4B(11) power factor			
211	D3H	Outgoing line L4C(12) power factor			
212	D4H	Outgoing line L5A(13) power factor			
213	D5H	Outgoing line L5B(14) power factor			
214	D6H	Outgoing line L5C(15) power factor			
215	D7H	Outgoing line L6A(16) power factor			
216	D8H	Outgoing line L6B(17) power factor			
217	D9H	Outgoing line L6C(18) power factor			
218	DAH	Outgoing line L7A(19) power factor			
219	DBH	Outgoing line L7B(20) power factor			

220	DCH	Outgoing line L7C(21) power factor			
221	DDH	Outgoing line L8A(22) power factor			
222	DEH	Outgoing line L8B(23) power factor			
223	DFH	Outgoing line L8C(24) power factor			
224	E0H	Outgoing line L9A(25) power factor			
225	E1H	Outgoing line L9B(26) power factor			
226	E2H	Outgoing line L9C(27) power factor			
227	E3H	Outgoing line L10A(28) power factor			
228	E4H	Outgoing line L10B(29) power factor			
229	E5H	Outgoing line L10C(30) power factor			
230	E6H	Outgoing line L11A(31) power factor			
231	E7H	Outgoing line L11B(32) power factor			
232	E8H	Outgoing line L11C(33) power factor			
233	E9H	Outgoing line L12A(34) power factor			
234	EAH	Outgoing line L12B(35) power factor			
235	EBH	Outgoing line L12C(36) power factor			
236	ECH	Backup			
237	EDH	Backup			
238	EEH	Backup			
239	EFH	Backup			
240	F0H	Outgoing line L1A(1) active energy (high)	Unsigned, primary xx.xxkWh	R	DWord
241	F1H	Outgoing line L1A(1) active energy (low)			
242	F2H	Outgoing line L1B(2) active energy (high)			
243	F3H	Outgoing line L1B(2) active energy (low)			
244	F4H	Outgoing line L1C(3) active energy (high)			
245	F5H	Outgoing line L1C(3) active energy (low)			

246	F6H	Outgoing line L2A(4) active energy (high)			
247	F7H	Outgoing line L2A(4) active energy (low)			
248	F8H	Outgoing line L2B(5) active energy (high)			
249	F9H	Outgoing line L2B(5) active energy (low)			
250	FAH	Outgoing line L2C(6) active energy (high)			
251	FBH	Outgoing line L2C(6) active energy (low)			
252	FCH	Outgoing line L3A(7) active energy (high)			
253	FDH	Outgoing line L3A(7) active energy (low)			
254	FEH	Outgoing line L3B(8) active energy (high)			
255	FFH	Outgoing line L3B(8) active energy (low)			
256	100H	Outgoing line L3C(9) active energy (high)			
257	101H	Outgoing line L3C(9) active energy (low)			
258	102H	Outgoing line L4A(10) active energy (high)			
259	103H	Outgoing line L4A(10) active energy (low)			
260	104H	Outgoing line L4B(11) active energy (high)			
261	105H	Outgoing line L4B(11) active energy (low)			
262	106H	Outgoing line L4C(12) active energy (high)			
263	107H	Outgoing line L4C(12) active energy (low)			
264	108H	Outgoing line L5A(13) active energy (high)			
265	109H	Outgoing line L5A(13) active energy (low)			
266	10AH	Outgoing line L5B(14) active energy (high)			
267	10BH	Outgoing line L5B(14) active energy (low)			
268	10CH	Outgoing line L5C(15) active energy (high)			
269	10DH	Outgoing line L5C(15) active energy (low)			
270	10EH	Outgoing line L6A(16) active energy (high)			
271	10FH	Outgoing line L6A(16) active energy (low)			
272	110H	Outgoing line L6B(17) active energy (high)			

273	111H	Outgoing line L6B(17) active energy (low)			
274	112H	Outgoing line L6C(18) active energy (high)			
275	113H	Outgoing line L6C(18) active energy (low)			
276	114H	Outgoing line L7A(19) active energy (high)			
277	115H	Outgoing line L7A(19) active energy (low)			
278	116H	Outgoing line L7B(20) active energy (high)			
279	117H	Outgoing line L7B(20) active energy (low)			
280	118H	Outgoing line L7C(21) active energy (high)			
281	119H	Outgoing line L7C(21) active energy (low)			
282	11AH	Outgoing line L8A(22) active energy (high)			
283	11BH	Outgoing line L8A(22) active energy (low)			
284	11CH	Outgoing line L8B(23) active energy (high)			
285	11DH	Outgoing line L8B(23) active energy (low)			
286	11EH	Outgoing line L8C(24) active energy (high)			
287	11FH	Outgoing line L8C(24) active energy (low)			
288	120H	Outgoing line L9A(25) active energy (high)			
289	121H	Outgoing line L9A(25) active energy (low)			
290	122H	Outgoing line L9B(26) active energy (high)			
291	123H	Outgoing line L9B(26) active energy (low)			
292	124H	Outgoing line L9C(27) active energy (high)			
293	125H	Outgoing line L9C(27) active energy (low)			
294	126H	Outgoing line L10A(28) active energy (high)			
295	127H	Outgoing line L10A(28) active energy (low)			
296	128H	Outgoing line L10B(29) active energy (high)			
297	129H	Outgoing line L10B(29) active energy (low)			
298	12AH	Outgoing line L10C(30) active energy (high)			
299	12BH	Outgoing line L10C(30) active energy (low)			

300	12CH	Outgoing line L11A(31) active energy (high)			
301	12DH	Outgoing line L11A(31) active energy (low)			
302	12EH	Outgoing line L11B(32) active energy (high)			
303	12FH	Outgoing line L11B(32) active energy (low)			
304	130H	Outgoing line L11C(33) active energy (high)			
305	131H	Outgoing line L11C(33) active energy (low)			
306	132H	Outgoing line L12A(34) active energy (high)			
307	133H	Outgoing line L12A(34) active energy (low)			
308	134H	Outgoing line L12B(35) active energy (high)			
309	135H	Outgoing line L12B(35) active energy (low)			
310	136H	Outgoing line L12C(36) active energy (high)			
311	137H	Outgoing line L12C(36) active energy (low)			
312	138H	Backup			
313	139H	Backup			
314	13AH	Backup			
315	13BH	Backup			
316	13CH	Backup			
317	13DH	Backup			
318	13EH	Backup			
319	13FH	Backup			
320	140H	Outgoing line L1A(1) reactive energy (high)	Unsigned, primary xx.xxkvarh	R	DWord
321	141H	Outgoing line L1A(1) reactive energy (low)			
322	142H	Outgoing line L1B(2) reactive energy (high)			
323	143H	Outgoing line L1B(2) reactive energy (low)			
324	144H	Outgoing line L1C(3) reactive energy (high)			
325	145H	Outgoing line L1C(3) reactive energy (low)			
326	146H	Outgoing line L2A(4) reactive energy (high)			

327	147H	Outgoing line L2A(4) reactive energy (low)			
328	148H	Outgoing line L2B(5) reactive energy (high)			
329	149H	Outgoing line L2B(5) reactive energy (low)			
330	14AH	Outgoing line L2C(6) reactive energy (high)			
331	14BH	Outgoing line L2C(6) reactive energy (low)			
332	14CH	Outgoing line L3A(7) reactive energy (high)			
333	14DH	Outgoing line L3A(7) reactive energy (low)			
334	14EH	Outgoing line L3B(8) reactive energy (high)			
335	14FH	Outgoing line L3B(8) reactive energy (low)			
336	150H	Outgoing line L3C(9) reactive energy (high)			
337	151H	Outgoing line L3C(9) reactive energy (low)			
338	152H	Outgoing line L4A(10) reactive energy (high)			
339	153H	Outgoing line L4A(10) reactive energy (low)			
340	154H	Outgoing line L4B(11) reactive energy (high)			
341	155H	Outgoing line L4B(11) reactive energy (low)			
342	156H	Outgoing line L4C(12) reactive energy (high)			
343	157H	Outgoing line L4C(12) reactive energy (low)			
344	158H	Outgoing line L5A(13) reactive energy (high)			
345	159H	Outgoing line L5A(13) reactive energy (low)			
346	15AH	Outgoing line L5B(14) reactive energy (high)			
347	15BH	Outgoing line L5B(14) reactive energy (low)			
348	15CH	Outgoing line L5C(15) reactive energy (high)			
349	15DH	Outgoing line L5C(15) reactive energy (low)			
350	15EH	Outgoing line L6A(16) reactive energy (high)			
351	15FH	Outgoing line L6A(16) reactive energy (low)			
352	160H	Outgoing line L6B(17) reactive energy (high)			
353	161H	Outgoing line L6B(17) reactive energy (low)			

354	162H	Outgoing line L6C(18) reactive energy (high)			
355	163H	Outgoing line L6C(18) reactive energy (low)			
356	164H	Outgoing line L7A(19) reactive energy (high)			
357	165H	Outgoing line L7A(19) reactive energy (low)			
358	166H	Outgoing line L7B(20) reactive energy (high)			
359	167H	Outgoing line L7B(20) reactive energy (low)			
360	168H	Outgoing line L7C(21) reactive energy (high)			
361	169H	Outgoing line L7C(21) reactive energy (low)			
362	16AH	Outgoing line L8A(22) reactive energy (high)			
363	16BH	Outgoing line L8A(22) reactive energy (low)			
364	16CH	Outgoing line L8B(23) reactive energy (high)			
365	16DH	Outgoing line L8B(23) reactive energy (low)			
366	16EH	Outgoing line L8C(24) reactive energy (high)			
367	16FH	Outgoing line L8C(24) reactive energy (low)			
368	170H	Outgoing line L9A(25) reactive energy (high)			
369	171H	Outgoing line L9A(25) reactive energy (low)			
370	172H	Outgoing line L9B(26) reactive energy (high)			
371	173H	Outgoing line L9B(26) reactive energy (low)			
372	174H	Outgoing line L9C(27) reactive energy (high)			
373	175H	Outgoing line L9C(27) reactive energy (low)			
374	176H	Outgoing line L10A(28) reactive energy (high)			
375	177H	Outgoing line L10A(28) reactive energy (low)			
376	178H	Outgoing line L10B(29) reactive energy (high)			
377	179H	Outgoing line L10B(29) reactive energy (low)			
378	17AH	Outgoing line L10C(30) reactive energy (high)			
379	17BH	Outgoing line L10C(30) reactive energy (low)			
380	17CH	Outgoing line L11A(31) reactive energy (high)			

381	17DH	Outgoing line L11A(31) reactive energy (low)			
382	17EH	Outgoing line L11B(32) reactive energy (high)			
383	17FH	Outgoing line L11B(32) reactive energy (low)			
384	180H	Outgoing line L11C(33) reactive energy (high)			
385	181H	Outgoing line L11C(33) reactive energy (low)			
386	182H	Outgoing line L12A(34) reactive energy (high)			
387	183H	Outgoing line L12A(34) reactive energy (low)			
388	184H	Outgoing line L12B(35) reactive energy (high)			
389	185H	Outgoing line L12B(35) reactive energy (low)			
390	186H	Outgoing line L12C(36) reactive energy (high)			
391	187H	Outgoing line L12C(36) reactive energy (low)			
392	188H	Backup			
393	189H	Backup			
394	18AH	Backup			
395	18BH	Backup			
396	18CH	Software version number			
397	18DH	Backup			
398	18EH	Backup			
399	18FH	Backup			
400	190H	Outgoing line L1A(1) and L1B(2) phase	Note: 4) High 8-bit L1B and low 8-bit L1A Default: 0x0201H	R/W	Word
401	191H	Outgoing line L1C(3) and L2A(4) phase	High 8-bit L2A and low 8-bit L1C Default: 0x0103H		
402	192H	Outgoing line L2B(5) and L2C(6) phase	High 8-bit L2C and low 8-bit L2B Default: 0x0302H		
403	193H	Outgoing line L3A(7) and L3B(8) phase	High 8-bit L3B and low 8-bit L3A Default: 0x0201H		
404	194H	Outgoing line L3C(9) and L4A(10) phase	High 8-bit L4A and low 8-bit L3C Default: 0x0103H		
405	195H	Outgoing line L4B(11) and L4C(12) phase	High 8-bit L4C and low 8-bit L4B Default: 0x0302H		
406	196H	Outgoing line L5A(13) and L5B(14) phase	High 8-bit L5B and low 8-bit L5A Default: 0x0201H		

407	197H	Outgoing line L5C(15) and L6A(16) phase	High 8-bit L6A and low 8-bit L5C Default: 0x0103H		
408	198H	Outgoing line L6B(17) and L6C(18) phase	High 8-bit L6C and low 8-bit L6B Default: 0x0302H		
409	199H	Outgoing line L7A(19) and L7B(20) phase	High 8-bit L7B and low 8-bit L7A Default: 0x0201H		
410	19AH	Outgoing line L7C(21) and L8A(22) phase	High 8-bit L8A and low 8-bit L7C Default: 0x0103H		
411	19BH	Outgoing line L8B(23) and L8C(24) phase	High 8-bit L8C and low 8-bit L8B Default: 0x0302H		
412	19CH	Outgoing line L9A(25) and L9B(26) phase	High 8-bit L9B and low 8-bit L9A Default: 0x0201H		
413	19DH	Outgoing line L9C(27) and L10A(28) phase	High 8-bit L10A and low 8-bit L9C Default: 0x0103H		
414	19EH	Outgoing line L10B(29) and L10C(30) phase	High 8-bit L10C and low 8-bit L10B Default: 0x0302H		
415	19FH	Outgoing line L11A(31) and L11B(32) phase	High 8-bit L11B and low 8-bit L11A Default: 0x0201H		
416	1A0H	Outgoing line L11C(33) and L12A(34) phase	High 8-bit L12A and low 8-bit L11C Default: 0x0103H		
417	1A1H	Outgoing line L12B(35) and L12C(36) phase	High 8-bit L12C and low 8-bit L12B Default: 0x0302H		
418	1A2H	Backup			
419	1A3H	Backup			
420	1A4H	Incoming-line 1 phase-A apparent power/DC 1 current zero	AC apparent power: unsigned,primary xx.xxkW DC current zero: signed	R R/W	Word
421	1A5H	Incoming-line 1 phase-B apparent power/DC 2 current zero			
422	1A6H	Incoming-line 1 phase-C apparent power/DC 3 current zero			
423	1A7H	Incoming-line 2 phase-A apparent power/DC 4 current zero			
424	1A8H	Incoming-line 2 phase-B apparent power/DC 5 current zero			
425	1A9H	Incoming-line 2 phase-C apparent power/DC 6 current zero			
426	1AAH	Outgoing line L1A(1) apparent power/DC 7 current zero			
427	1ABH	Outgoing line L1B(2) apparent power/DC 8 current zero			
428	1ACH	Outgoing line L1C(3) apparent power/DC 9 current zero			
429	1ADH	Outgoing line L2A(4) apparent power/DC 10 current zero			
430	1AEH	Outgoing line L2B(5) apparent power/DC 11 current zero			
431	1AFH	Outgoing line L2C(6) apparent power/DC 12 current zero			

432	1B0H	Outgoing line L3A(7) apparent power/DC 13 current zero			
433	1B1H	Outgoing line L3B(8) apparent power/DC 14 current zero			
434	1B2H	Outgoing line L3C(9) apparent power/DC 15 current zero			
435	1B3H	Outgoing line L4A(10) apparent power/DC 16 current zero			
436	1B4H	Outgoing line L4B(11) apparent power/DC 17 current zero			
437	1B5H	Outgoing line L4C(12) apparent power/DC 18 current zero			
438	1B6H	Outgoing line L5A(13) apparent power/DC 19 current zero			
439	1B7H	Outgoing line L5B(14) apparent power/DC 20 current zero			
440	1B8H	Outgoing line L5C(15) apparent power/DC 21 current zero			
441	1B9H	Outgoing line L6A(16) apparent power/DC 22 current zero			
442	1BAH	Outgoing line L6B(17) apparent power/DC 23 current zero			
443	1BBH	Outgoing line L6C(18) apparent power/DC 24 current zero			
444	1BCH	Outgoing line L7A(19) apparent power/DC 25 current zero			
445	1BDH	Outgoing line L7B(20) apparent power/DC 26 current zero			
446	1BEH	Outgoing line L7C(21) apparent power/DC 27 current zero			
447	1BFH	Outgoing line L8A(22) apparent power/DC 28 current zero			
448	1C0H	Outgoing line L8B(23) apparent power/DC 29 current zero			
449	1C1H	Outgoing line L8C(24) apparent power/DC 30 current zero			
450	1C2H	Outgoing line L9A(25) apparent power/DC 31 current zero			
451	1C3H	Outgoing line L9B(26) apparent power/DC 32 current zero			
452	1C4H	Outgoing line L9C(27) apparent power/DC 33 current zero			
453	1C5H	Outgoing line L10A(28) apparent power/DC 34 current zero			
454	1C6H	Outgoing line L10B(29) apparent power/DC 35 current zero			
455	1C7H	Outgoing line L10C(30) apparent power/DC 36 current zero			
456	1C8H	Outgoing line L11A(31) apparent power/DC 37 current zero			
457	1C9H	Outgoing line L11B(32) apparent power/DC 38 current zero			
458	1CAH	Outgoing line L11C(33) apparent power/DC 39 current zero			

459	1CBH	Outgoing line L12A(34) apparent power/DC 40 current zero			
460	1CCH	Outgoing line L12B(35) apparent power/DC 41 current zero			
461	1CDH	Outgoing line L12C(36) apparent power/DC 42 current zero			
462	1CEH	Backup			
463	1CFH	Backup			
464	1D0H	Backup			
465~476	1D1H - 1DCH	Three-phase outgoing line 1-12 total active power	Signed,primary xx.xxkW	R	Word
477	1DDH	Backup			
478	1DEH	Backup			
479	1DFH	Backup			
480~491	1E0H - 1EBH	Three-phase outgoing line 1-12 total reactive power	Signed,primary xx.xxkVar	R	Word
492	1ECH	Backup			
493	1EDH	Backup			
494	1EEH	Three-phase incoming-line 1 total apparent power			
495	1EFH	Three-phase incoming-line 2 total apparent power			
496	1F0H	Backup			
497	1F1H	Backup			
498	1F2H	Backup			
499~510	1F3H - 1FEH	Three-phase outgoing line 1-12 total apparent power	Unsigned,primary xx.xxkW	R	Word
511	1FFH	Backup			
512	200H	Backup			
513	201H	Backup			
514	202H	Three-phase outgoing-line 1 total active energy (high)	Unsigned,primary xx.xxkWh	R	Word
515	203H	Three-phase outgoing-line 1 total active energy (low)			
516	204H	Three-phase outgoing-line 2 total active energy (high)			
517	205H	Three-phase outgoing-line 2 total active energy (low)			

518	206H	Three-phase outgoing-line 3 total active energy (high)			
519	207H	Three-phase outgoing-line 3 total active energy (low)			
520	208H	Three-phase outgoing-line 4 total active energy (high)			
521	209H	Three-phase outgoing-line 4 total active energy (low)			
522	20AH	Three-phase outgoing-line 5 total active energy (high)			
523	20BH	Three-phase outgoing-line 5 total active energy (low)			
524	20CH	Three-phase outgoing-line 6 total active energy (high)			
525	20DH	Three-phase outgoing-line 6 total active energy (low)			
526	20EH	Three-phase outgoing-line 7 total active energy (high)			
527	20FH	Three-phase outgoing-line 7 total active energy (low)			
528	210H	Three-phase outgoing-line 8 total active energy (high)			
529	211H	Three-phase outgoing-line 8 total active energy (low)			
530	212H	Three-phase outgoing-line 9 total active energy (high)			
531	213H	Three-phase outgoing-line 9 total active energy (low)			
532	214H	Three-phase outgoing-line 10 total active energy (high)			
533	215H	Three-phase outgoing-line 10 total active energy (low)			
534	216H	Three-phase outgoing-line 11 total active energy (high)			
535	217H	Three-phase outgoing-line 11 total active energy (low)			
536	218H	Three-phase outgoing-line 12 total active energy (high)			
537	219H	Three-phase outgoing-line 12 total active energy (low)			
538	21AH	Backup			
539	21BH	Backup			
540	21CH	Three-phase outgoing-line 1 total reactive energy (high)			
541	21DH	Three-phase outgoing-line 1 total reactive energy (low)			
542	21EH	Three-phase outgoing-line 2 total reactive energy (high)			
543	21FH	Three-phase outgoing-line 2 total reactive energy (low)			
544	220H	Three-phase outgoing-line 3 total reactive energy (high)			

545	221H	Three-phase outgoing-line 3 total reactive energy (low)	Unsigned,primary xx.xxkVarh	R	Word
546	222H	Three-phase outgoing-line 4 total reactive energy (high)			
547	223H	Three-phase outgoing-line 4 total reactive energy (low)			
548	224H	Three-phase outgoing-line 5 total reactive energy (high)			
549	225H	Three-phase outgoing-line 5 total reactive energy (low)			
550	226H	Three-phase outgoing-line 6 total reactive energy (high)			
551	227H	Three-phase outgoing-line 6 total reactive energy (low)			
552	228H	Three-phase outgoing-line 7 total reactive energy (high)			
553	229H	Three-phase outgoing-line 7 total reactive energy (low)			
554	22AH	Three-phase outgoing-line 8 total reactive energy (high)			
555	22BH	Three-phase outgoing-line 8 total reactive energy (low)			
556	22CH	Three-phase outgoing-line 9 total reactive energy (high)			
557	22DH	Three-phase outgoing-line 9 total reactive energy (low)			
558	22EH	Three-phase outgoing-line 10 total reactive energy (high)			
559	22FH	Three-phase outgoing-line 10 total reactive energy (low)			
560	230H	Three-phase outgoing-line 11 total reactive energy (high)			
561	231H	Three-phase outgoing-line 11 total reactive energy (low)			
562	232H	Three-phase outgoing-line 12 total reactive energy (high)			
563	233H	Three-phase outgoing-line 12 total reactive energy (low)			
564	234H	Backup			
565~576	235H-240H	Three-phase outgoing-line 1-12 total power factor	-1.000-1.000	R	Word
577	241H	Backup			
578	242H	Backup			
579	243H	Backup			
580	244H	Total harmonic content of phase-A voltage	xx%		
581~594	245H-252H	2-15 sub-frequency harmonic content of phase-A voltage			
595	253H	Total harmonic content of phase-B voltage			

596~609	254H-261H	2-15 sub-frequency harmonic content of phase-B voltage			
610	262H	Total harmonic content of phase-C voltage			
611~624	263H-270H	2-15 sub-frequency harmonic content of phase-C voltage			
625	271H	Total harmonic content of incoming-line 1 phase-A current			
626~639	272H-27FH	2-15 sub-frequency harmonic content of incoming-line 1 phase-A current			
640	280H	Total harmonic content of incoming-line 1 phase-B current			
641~654	281H-28EH	2-15 sub-frequency harmonic content of incoming-line 1 phase-B current			
655	28FH	Total harmonic content of incoming-line 1 phase-C current			
656~669	290H-29DH	2-15 sub-frequency harmonic content of incoming-line 1 phase-C current			
670	29EH	Total harmonic content of incoming-line 2 phase-A current			
671~684	29FH-2ACH	2-15 sub-frequency harmonic content of incoming-line 2 phase-A current			
685	2AEH	Total harmonic content of incoming-line 2 phase-B current			
686~699	2AFH-2BBH	2-15 sub-frequency harmonic content of incoming-line 2 phase-B current			
700	2BCH	Total harmonic content of incoming-line 2 phase-C current			
701~714	2BDH-2CAH	2-15 sub-frequency harmonic content of incoming-line 2 phase-C current			
715	2CBH	Total harmonic content of outgoing-line 1 phase-A current			
716~729	2CCH-2D9H	2-15 sub-frequency harmonic content of outgoing-line 1 phase-A current			
730	2DAH	Total harmonic content of outgoing-line 1 phase-B current			
731~744	2DBH-2E8H	2-15 sub-frequency harmonic content of outgoing-line 1 phase-B current			
745	2E9H	Total harmonic content of outgoing-line 1 phase-C current			
746~759	2EAH-2F7H	2-15 sub-frequency harmonic content of outgoing-line 1 phase-C current			
760	2F8H	Total harmonic content of outgoing-line 2 phase-A current			
761~774	2F9H-306H	2-15 sub-frequency harmonic content of outgoing-line 2 phase-A current			
775	307H	Total harmonic content of outgoing-line 2 phase-B current			
776~789	308H-315H	2-15 sub-frequency harmonic content of outgoing-line 2 phase-B current			
790	316H	Total harmonic content of outgoing-line 2 phase-C current			
791~804	317H-324H	2-15 sub-frequency harmonic content of outgoing-line 2 phase-C current			

805	325H	Total harmonic content of outgoing-line 3 phase-A current			
806~819	326H-333H	2-15 sub-frequency harmonic content of outgoing-line 3 phase-A current			
820	334H	Total harmonic content of outgoing-line 3 phase-B current			
821~834	335H-342H	2-15 sub-frequency harmonic content of outgoing-line 3 phase-B current			
835	343H	Total harmonic content of outgoing-line 3 phase-C current			
836~849	345H-351H	2-15 sub-frequency harmonic content of outgoing-line 3 phase-C current			
850	352H	Total harmonic content of outgoing-line 4 phase-A current			
851~864	353H-360H	2-15 sub-frequency harmonic content of outgoing-line 4 phase-A current			
865	361H	Total harmonic content of outgoing-line 4 phase-B current			
866~879	362H~36FH	2-15 sub-frequency harmonic content of outgoing-line 4 phase-B current			
880	370H	Total harmonic content of outgoing-line 4 phase-C current			
881~894	371H-37EH	2-15 sub-frequency harmonic content of outgoing-line 4 phase-C current			
895	37FH	Total harmonic content of outgoing-line 5 phase-A current			
896~909	380H-38DH	2-15 sub-frequency harmonic content of outgoing-line 5 phase-A current			
910	38EH	Total harmonic content of outgoing-line 5 phase-B current			
911~924	38FH-39CH	2-15 sub-frequency harmonic content of outgoing-line 5 phase-B current			
925	39DH	Total harmonic content of outgoing-line 5 phase-C current			
926~939	39EH-3ABH	2-15 sub-frequency harmonic content of outgoing-line 5 phase-C current			
940	3ACH	Total harmonic content of outgoing-line 6 phase-A current			
941~954	3ADH-3BAH	2-15 sub-frequency harmonic content of outgoing-line 6 phase-A current			
955	3BBH	Total harmonic content of outgoing-line 6 phase-B current			
956-969	3BCH-3C9H	2-15 sub-frequency harmonic content of outgoing-line 6 phase-B current			
970	3CAH	Total harmonic content of outgoing-line 6 phase-C current			
971~984	3CBH-3D8H	2-15 sub-frequency harmonic content of outgoing-line 6 phase-C current			
985	3D9H	Total harmonic content of outgoing-line 7 phase-A current			
986-999	3DAH-3E7H	2-15 sub-frequency harmonic content of outgoing-line 7 phase-A current			
1000	3E8H	Total harmonic content of outgoing-line 7 phase-B current			

1001~1014	3E9H-3F6H	2-15 sub-frequency harmonic content of outgoing-line 7 phase-B current			
1015	3F7H	Total harmonic content of outgoing-line 7 phase-C current			
1016~1029	3F8H-405H	2-15 sub-frequency harmonic content of outgoing-line 7 phase-C current			
1030	406H	Total harmonic content of outgoing-line 8 phase-A current/1 branch-circuit voltage of AMC16ZH-U instrument	Unsigned,voltage value including one decimal point (xxx.x) and harmonic value excluding decimal point (xx%)		Word
1031~1044	407H-414H	2-15 sub-frequency harmonic content of outgoing-line 8 phase-A current/2-15 branch-circuit voltage of AMC16ZH-U instrument	Unsigned,voltage value including one decimal point (xxx.x) and harmonic value excluding decimal point (xx%)		Word
1045	415H	Total harmonic content of outgoing-line 8 phase-B current/16 branch-circuit voltage of AMC16ZH-U instrument	Unsigned,voltage value including one decimal point (xxx.x) and harmonic value excluding decimal point (xx%)		Word
1046~1059	416H-423H	2-15 sub-frequency harmonic content of outgoing-line 8 phase-B current/17-21 branch-circuit voltage of AMC16ZH-U instrument	Unsigned,voltage value including one decimal point (xxx.x) and harmonic value excluding decimal point (xx%) (17-21-way voltage values include the values of addresses of 416H. 417H,418H. 419H and 41AH.)		Word
1060	424H	Total harmonic content of outgoing-line 8 phase-C current			
1061~1074	425H-432H	2-15 sub-frequency harmonic content of outgoing-line 8 phase-C current			
1075	433H	Total harmonic content of outgoing-line 9 phase-A current			
1076~1089	434H-441H	2-15 sub-frequency harmonic content of outgoing-line 9 phase-A current			
1090	442H	Total harmonic content of outgoing-line 9 phase-B current			
1091~1104	443H-450H	2-15 sub-frequency harmonic content of outgoing-line 9 phase-B current			
1105	451H	Total harmonic content of outgoing-line 9 phase-C current			
1106~1119	452H-45FH	2-15 sub-frequency harmonic content of outgoing-line 9 phase-C current			
1120	460H	Total harmonic content of outgoing-line 10 phase-A current			
1121~1134	461H-46EH	2-15 sub-frequency harmonic content of outgoing-line 10 phase-A current			
1135	46FH	Total harmonic content of outgoing-line 10 phase-B current			
1136~1149	470H-47DH	2-15 sub-frequency harmonic content of outgoing-line 10 phase-B current			

1150	47EH	Total harmonic content of outgoing-line 10 phase-C current			
1151~1164	47FH~48CH	2-15 sub-frequency harmonic content of outgoing-line 10 phase-C current			
1165	48DH	Total harmonic content of outgoing-line 11 phase-A current			
1166~1179	48EH~49BH	2-15 sub-frequency harmonic content of outgoing-line 11 phase-A current			
1180	49AH	Total harmonic content of outgoing-line 11 phase-B current			
1181~1194	49BH~4AAH	2-15 sub-frequency harmonic content of outgoing-line 11 phase-B current			
1195	4ABH	Total harmonic content of outgoing-line 11 phase-C current			
1196~1209	4ACH~4B9H	2-15 sub-frequency harmonic content of outgoing-line 11 phase-C current			
1210	4BAH	Total harmonic content of outgoing-line 12 phase-A current			
1211~1224	4BBH~4C8H	2-15 sub-frequency harmonic content of outgoing-line 12 phase-A current			
1225	4C9H	Total harmonic content of outgoing-line 12 phase-B current			
1226~1239	4CAH~4D7H	2-15 sub-frequency harmonic content of outgoing-line 12 phase-B current			
1240	4D8H	Total harmonic content of outgoing-line 12 phase-C current			
1241~1254	4D9H~4E6H	2-15 sub-frequency harmonic content of outgoing-line 12 phase-C current			
1280	500H	Total harmonic content of phase-A voltage			
		2-31 sub-frequency harmonic content of phase-A voltage			
		Total harmonic content of phase-B voltage			
		2-15 sub-frequency harmonic content of phase-B voltage			
		Total harmonic content of phase-C voltage			
		2-15 sub-frequency harmonic content of phase-C voltage			
		Total harmonic content of incoming-line 1 phase-A current			
		2-15 sub-frequency harmonic content of incoming-line 1 phase-A current			
		Total harmonic content of incoming-line 1 phase-B current			

		2-15 sub-frequency harmonic content of incoming-line 1 phase-B current			
		Total harmonic content of incoming-line 1 phase-C current			
		2-15 sub-frequency harmonic content of incoming-line 1 phase-C current			
		Total harmonic content of incoming-line 2 phase-A current			
		2-15 sub-frequency harmonic content of incoming-line 2 phase-A current			
		Total harmonic content of incoming-line 2 phase-B current			
		2-15 sub-frequency harmonic content of incoming-line 2 phase-B current			
		Total harmonic content of incoming-line 2 phase-C current			
		2-15 sub-frequency harmonic content of incoming-line 2 phase-C current			
		Total harmonic content of outgoing-line 1 phase-A current			
		2-15 sub-frequency harmonic content of outgoing-line 1 phase-A current			
		Total harmonic content of outgoing-line 1 phase-B current			
		2-15 sub-frequency harmonic content of outgoing-line 1 phase-B current			
		Total harmonic content of outgoing-line 1 phase-C current			
		2-15 sub-frequency harmonic content of outgoing-line 1 phase-C current			
		Total harmonic content of outgoing-line 2 phase-A current			
		2-15 sub-frequency harmonic content of outgoing-line 2 phase-A current			
		Total harmonic content of outgoing-line 2 phase-B current			
		2-15 sub-frequency harmonic content of outgoing-line 2 phase-B current			
		Total harmonic content of outgoing-line 2 phase-C current			
		2-15 sub-frequency harmonic content of outgoing-line 2 phase-C current			
		Total harmonic content of outgoing-line 3 phase-A current			
		2-15 sub-frequency harmonic content of outgoing-line 3 phase-A current			
		Total harmonic content of outgoing-line 3 phase-B current			
		2-15 sub-frequency harmonic content of outgoing-line 3 phase-B current			
		Total harmonic content of outgoing-line 3 phase-C current			
		2-15 sub-frequency harmonic content of outgoing-line 3 phase-C current			

		Total harmonic content of outgoing-line 4 phase-A current			
		2-15 sub-frequency harmonic content of outgoing-line 4 phase-A current			
		Total harmonic content of outgoing-line 4 phase-B current			
		2-15 sub-frequency harmonic content of outgoing-line 4 phase-B current			
		Total harmonic content of outgoing-line 4 phase-C current			
		2-15 sub-frequency harmonic content of outgoing-line 4 phase-C current			
		Total harmonic content of outgoing-line 5 phase-A current			
		2-15 sub-frequency harmonic content of outgoing-line 5 phase-A current			
		Total harmonic content of outgoing-line 5 phase-B current			
		2-15 sub-frequency harmonic content of outgoing-line 5 phase-B current			
		Total harmonic content of outgoing-line 5 phase-C current			
		2-15 sub-frequency harmonic content of outgoing-line 5 phase-C current			
		Total harmonic content of outgoing-line 6 phase-A current			
		2-15 sub-frequency harmonic content of outgoing-line 6 phase-A current			
		Total harmonic content of outgoing-line 6 phase-B current			
		2-15 sub-frequency harmonic content of outgoing-line 6 phase-B current			
		Total harmonic content of outgoing-line 6 phase-C current			
		2-15 sub-frequency harmonic content of outgoing-line 6 phase-C current			
		Total harmonic content of outgoing-line 7 phase-A current			
		2-15 sub-frequency harmonic content of outgoing-line 7 phase-A current			
		Total harmonic content of outgoing-line 7 phase-B current			
		2-15 sub-frequency harmonic content of outgoing-line 7 phase-B current			
		Total harmonic content of outgoing-line 7 phase-C current			
		2-15 sub-frequency harmonic content of outgoing-line 7 phase-C current			

Notes: 1. Said address table is applicable to all devices. The harmonic data are applicable to H-type.

2.Electric energy communication data are primary-side data,expressed in 0.01kWh.

For example: address value of read 0x0DH and read and 0x0EH is respectively 0x1234H and 0x5678H and actual primary-side energy value is 0x12345678H (3054198.96kWh).

3.The register address in said address table is expressed by hexadecimal value.

4.The circuit phase of outgoing line needs being set based on actual phase connected to the current,with correspondence A,B and C to 1,2 and 3,which will be default parameters in case of exceeding the range. For example: the current of outgoing line 1 and outgoing line 2 is Phase-A load and Phase-B load respectively;then 0x190H address parameter should be set as 0x0201H,or it is impossible to accurately measure the power and energy of outgoing line 1 outgoing line 2 circuits.

5.In practical use,users need to read corresponding address parameters based on the type of device actually used. When users are reading certain register parameter,they should pay attention to the number of bytes and high-low bit of address when the parameter occupies and the expression method of such value (some values when reading need binary representation,some need decimalism representation and some data are signed numbers).

6.Due to external Hall sensor used for AMC16MD,the null points of different hall sensors may be different;thus,in practical use,upon the wiring of Hall sensor and AMC16MD and power-on of Hall sensor and before the load not input,it is necessary to adjust the null point of AMC16MD (0x1A4H-0x1CDH) till the null points of way 1-42 DC currents become zero.

7.AMC16MD is only allowed for 50mA current signal as the input signal,and the primary-side current value can be set by writing order through communication based on the actual condition.

Device with on-off input function also supports function codes 01H and 02H.

Address		Parameter	Read-write property	Numerical range	Data type
0	00H	DI1	R	0-OFF;1-ON	Bit
1	01H	DI2			
2	02H	DI3			
3	03H	DI4			
4	04H	DI5			
5	05H	DI6			
6	06H	DI7			
7	07H	DI8			
8	08H	DI9			
9	09H	DI10			
10	0AH	DI11			
11	0BH	DI12			
12	0CH	DI13			
13	0DH	DI14			
14	0EH	DI15			
15	0FH	DI16			
16	10H	DI17			
17	11H	DI18			
18	12H	DI19			
19	13H	DI20			
20	14H	DI21			
21	15H	DI22			
22	16H	DI23			
23	17H	DI24			

24	18H	DI25			
25	19H	DI26			
26	1AH	DI27			
27	1BH	DI28			
28	1CH	DI29			
29	1DH	DI30			
30	1EH	DI31			
31	1FH	DI32			
32	20H	DI33			
33	21H	DI34			
34	22H	DI35			
35	23H	DI36			
36	24H	DI37			
37	25H	DI38			
38	26H	DI39			
39	27H	DI40			
40	28H	DI41			
41	29H	DI42			

9.Attentions

9.1 Before device communication,it is necessary to set the value of dial switch to make the communication address and Baud rate of the device satisfactory.

9.2 The device shall be installed in dry and clean place far away from the heat and strong electromagnetic field.

9.3 In device wiring,attention shall be paid the phase sequence and the polarity of the AC voltage and current,or it will lead to inaccurate measurement.

9.4 CT shall be used for current input and the CT transformation ratio of incoming line requires being set through communication.

9.5 CT accuracy has an impact on the measurement accuracy of the device. The angular difference of CT will have an impact on the measurement accuracy of the power of energy of the device.

9.6 It shall be provided with 2A fuse when it is applied to direct access system with PT.

9.7 CT grounding terminals of current input on the device should be separately led to the grounding terminals,and it is not allowed to firstly connect the grounding terminal of the current input in parallel on the device and then lead to the grounding terminal.

9.8 Communication cable should be shielded twisted pair.

9.9 Each current phase of outgoing line circuit needs being adjusted as per actual access,and the adjustment method is by reference to Note 4 in 7.4.

10.Common faults and reason analysis

10.1 Inaccurate measurement of device

*Check the correctness of voltage and current wiring and the correctness of incoming and outgoing line of current input;

*Check whether CT setting of device is corresponding to CT actually used externally;

10.2 Correct voltage and current measurement but inaccurate power measurement

*Check the correctness of current input direction;

*Check the correctness of phase corresponding to each current circuit;adjust the outgoing line circuit based on the actual access;

10.3 Abnormal communication

*Check the normal connection of communication connecting line;

*Check the interlacing of Terminal A and Terminal B of communication;

*Check the correctness of device address setting and the correctness of setting of communication Baud rate;

* In case of abnormal communication of multiple devices,firstly test the abnormality of single-machine communication;

10.4 Incoming line voltage,current and power are available,but the energy is without numerical value

*Check CT transformation ratio setting of incoming line

10.5 There is numerical value in AMC16MD when the load is free of current

*Adjust the null-point value of current of AMC16MD. (Null point of DC Hall sensor is greatly different from it and needs adjustment)

Headquarters: Acrel Co.,LTD.
Address: No.253 Yulv Road Jiading District,Shanghai,China
TEL.: 0086-21-69158338 0086-21-69156052 0086-21-59156392 0086-21-69156971
Fax: 0086-21-69158303
Web-site: www.acrel-electric.com
E-mail: ACREL008@vip.163.com
Postcode: 201801

Manufacturer: Jiangsu Acrel Electrical Manufacturing Co.,LTD.
Address: No.5 Dongmeng Road,Dongmeng industrial Park,Nanzha Street,Jiangyin City,Jiangsu Province,China
TEL./Fax: 0086-510-86179970
Web-site: www.jsacrel.com
Postcode: 214405
E-mail: JY-ACREL001@vip.163.com