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AHM3/AHM3-RC / AHM3-RC-SMTP

Analizador de red multifunción

Manual de usuario

VERSIÓN: V18A

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1 Precauciones de seguridad

El fabricante no se hace responsable por el incumplimiento de las instrucciones de este manual.

El equipo debe ser instalado y reparado sólo por personal cualificado.

Nunca trabaje solo.

Antes de cualquier trabajo con o en el equipo, aislar las entradas de tensión y fuentes de alimentación auxiliares, corta el secundario de todos los CT (transformadores de corriente), pero nunca cortes el secundario de los PT.

Utilice siempre un dispositivo apropiado de detección de tensión para confirmar que todo esté apagado.

Riesgo de dañar dispositivo

- ◆ La tensión de la fuente de alimentación auxiliar está fuera del rango nominal.
- ◆ La frecuencia del sistema de distribución de energía está fuera del rango nominal.
- ◆ La polaridad de entrada de la tensión o la corriente están conectadas inadecuadamente.

2 Descripción

General

El AHM3 está diseñado para el cálculo y la medida de las variables eléctricas de una red tales como tensión, corriente, frecuencia, potencia, factor de potencia, energía, componentes armónicos etc. en la distribución energética de baja tensión. Está capacitado para la medida monofásica, bifásica o trifásica, y puede ser usado en sistemas de dos, tres y cuatro hilos y sistemas TN, TT y IT.

Módulos

Hay cuatro interfaces en el equipo para módulos que se utilizan para ampliar sus funciones. Por favor, preste atención a los siguientes puntos al instalar estos módulos.

- a) Sólo uno de los módulos de comunicación (DM10 a DM13) se puede instalar en el dispositivo (DM1); Cada módulo DM11, DM12 o DM13 ocupa dos interfaces (el DM10 sólo una);
- b) Sólo un módulo de memoria se puede instalar en el equipo (y es el DM1);
- c) Hasta cuatro módulos se pueden instalar siendo el ancho total de todos los módulos 4. Módulos iguales o de diferente tipo se pueden instalar en el medidor siempre y cuando se cumplan los requisitos a), b) y c).

Ejemplo 1: Cuatro DM2;

Ejemplo 2: Dos DM2 + una DM7 + un DM10

Ejemplo 3: Una DM6 + un DM8 + un DM11

Tipo	Descripción	Tipo	Descripción
DM1	Memoria: 8MB,incluye RTC	DM8	2 relés de salida
DM2	2 entradas analógicas: mA	DM9	1 entrada digital C.A.
DM3	2 entradas analógicas: PT100	DM10	Profibus-DP V0
DM4	2 entradas analógicas: J, K , E o N	DM11	Ethernet :Modbus/TCP, Web Server
DM5	2 salidas analógicas: mA	DM12	WIFI :Modbus/TCP
DM6	2 entradas digitales y 2 salidas digitales	DM13	GPRS :Modbus/TCP, SMS
DM7	4 entradas digitales		

Medida

- Tensión
- Corriente
- Porcentaje de carga
- Potencia
- Factor de potencia
- Frecuencia
- Demanda
- Energía
- Distorsión armónica total
- Desequilibrio
- Hasta 230 / 400V se puede conectar tensiones usando transformadores de tensión.
- Se pueden usar transformadores de corriente $\times / 1A$ o $\times / 5A$

La siguiente lista muestra las variables que se pueden medir incluyendo variables relativas calculadas a partir de los parámetros eléctricos básicos.

Variable de medida	Instant	Max	Min	Demand	sum	Unidad
V1/V2/V3	√	√	√			[V,kV]
V12/V23/V31	√	√	√			[V,kV]
I1/I2/I3	√	√	√	√		[A,kA]
F	√	√	√			[Hz]
P/P1/P2/P3	√	√	√	√		[kW,MW,GW]
Q/Q1/Q2/Q3	√	√	√	√		[kvar,Mvar,Gvar]
S/S1/S2/S3	√	√	√	√		[kVA,MVA,GVA]
PF/PF1/PF2/PF3	√					-
EP+/EP-					√	[kWh,MWh, GWh]
EQ1/EQ2/EQ3/EQ4					√	[kvarh,Mvarh, Gvarh]
Energía de reserva					√	
THDV1/THDV2/THDV3	√					[%]

THDI1/THDI2/THDI3	√					[%]
Armónicos RMS-U (1~63th)	√					[%]
Armónicos RMS-I (1~63th)	√					[%]
Desequilibrio-U	√					[%]
Desequilibrio -I	√					[%]
Cuenta horas						h:min

Ejemplo de visualización de las variables de medida

La imagen de la izquierda muestra los valores de tensión instantánea en las tres fases y la frecuencia. Presiona o para cambiar a otra interfaz. Presiona para volver al menú principal y para visualizar la interfaz de gráficas de barras correspondiente.

La imagen de la izquierda muestra las gráficas de barras de las tres tensiones. Pulsa o para cambiar a otras interfaces. Pulsa para volver al menú principal. Pulsa para visualizar las variables de medida correspondientes.

Energía

El equipo soporta excelentes funciones de medición de energía como las siguientes:

- Medición bidireccional de energía
- Cuatro cuadrantes de medida de la energía reactiva
- Medición de la energía de tarifa (CDU)
- Medición de la energía alternativa/de reserva

Todos los valores de la energía se calculan sobre la base del valor secundario, cuya resolución mínima es 1Wh o 1varh. Siempre que el PT o CT externo esté conectado, el valor de energía primaria aumenta o disminuye a razón de 1Wh(1varh).

El valor máximo de energía secundaria guardada es 2147483647 Wh y el valor máximo de la energía primaria mostrada es 99999999999 kWh (99.9 mil millones de kilowatios). Los usuarios pueden restablecer manualmente los datos de energía según las necesidades específicas.

Energía alternativa/ de reserva

Señal proveniente de un generador. Cuando la línea principal se corta y un generador da la energía a la instalación. Los equipos pueden medir y mostrar las 6 energías alternativas y 2 cuenta horas.

Energía para tarifa

El equipo soporta la medición de energía de tarifa de dieciséis zonas temporales como máximo. La partida de una zona horaria es medida por el equipo según el estado de la entrada digital.

<div>Total Import/Export 2.1</div> <div> +07521.369kWh -00000.000kWh +03647.200kvarh -00000.000kvarh </div> <div> ▲ ▼ MENU </div>	Energía Bi-direccional EP+= 7521.369 kWh EP- = 0 kWh EQ+ = 3647.2 kvarh EQ- = 0 kvarh
<div>Reactive Quadrant 2.2</div> <div> Q1 00567.500kvarh Q2 00000.000kvarh Q3 00000.000kvarh Q4 01785.600kvarh </div> <div> ▲ ▼ MENU </div>	4-cuadrantes de energía reactiva 1 st cuadrante: Q1 = 567.5kvarh 2 nd cuadrante: Q2 =0kvarh 3 rd cuadrante: Q3 =0kvarh 4 th cuadrante: Q4 = 1785.6kvarh
<div>Import Energy 2.5</div> <div> T 07521.369kWh T1 00500.000kWh T2 00300.000kWh T3 00000.000kWh T4 00000.000kWh </div> <div> ▲ ▼ MENU </div>	Energía de tarifa importada Energía total (T) 7521.7kWh Tarifa #1 Energía(T1) 500kWh Tarifa #2 Energía (T2) 300kWh Tarifa #3 Energía (T3) 0kWh Tarifa #4 Energía) 0kWh
<div>Hour Counters 2.13</div> <div> EP+: 000027 h 16 min EP-: 000000 h 10 min </div> <div> ▲ ▼ MENU </div>	Cuenta horas Tiempo importando energía (EP+): 27h16m Tiempo exportando energía (EP-): 10m

Armónicos

El equipo soporta los armónicos de la red. Las funciones detalladas son las siguientes:

- Armónicos RMS (2-63th)
- Fundamental
- Gráfico de barras

Total Harmonic 3.1			THD _{V1} =9.5%
	THDU%	THDI%	THD _{V2} =6.5%
1	009.5	010.5	THD _{V3} =3.5%
2	006.5	015.5	THDI ₁ =10.5%
3	003.5	008.5	THDI ₂ =15.5%
			THDI ₃ =8.5%
▲ ▼ MENU			

Fundamental 3.2			La imagen de la izquierda muestra la tensión fundamental.
V1F	221.5	V	
V2F	222.7	V	
V3F	223.7	V	
▲ ▼ MENU			

Fundamental 3.3			La imagen de la izquierda muestra la corriente fundamental.
I1F	105.5	A	
I2F	100.7	A	
I3F	110.7	A	
▲ ▼ MENU			

Harmonic Ratio					3.4
	02	03	04	05	
V1	03.9	05.5	01.5	07.5	
V2	00.0	06.0	00.0	00.0	
V3	00.0	00.0	00.0	03.0	
I1	06.7	03.5	00.0	03.5	
I2	00.0	05.0	00.0	00.0	
I3	00.0	00.0	00.0	02.0	
▲					▼
MENU					

La imagen de la izquierda muestra la distorsión armónica de tensión trifásica y corriente

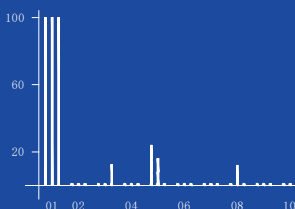
Harmonic Spectrum(U) 3.20				
				
▲				
▼				
MENU				

Gráfico de barras de los armónicos de tensión trifásica. Gráfico de barras de cada muestra armónicas V1, V2 y V3 de izquierda a derecha.

3th THD_{V3}: 12%

5th THD_{V1}: 24%

5th THD_{V2}: 16%

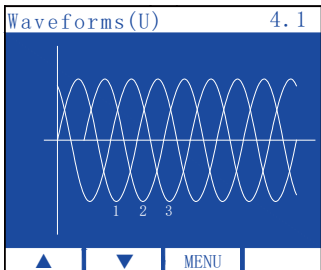
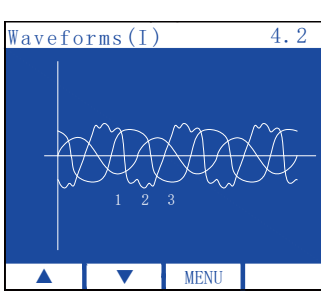
8th THD_{V2}: 11%

Calidad de la red

El equipo soporta el seguimiento y análisis de calidad de energía de la red. Los parámetros medidos son los siguientes:

1) Forma de onda

Visualización de forma de onda en tiempo real de tensión y corriente trifásica. La forma de onda, la secuencia de fase y la distorsión pueden ser medidos directamente.

	<p>La imagen de la izquierda muestra la forma de onda en tiempo real de tensión trifásica. "1,2,3" corresponden a "V1, V2, V3".</p>
	<p>La imagen de la izquierda muestra la forma de onda en tiempo real de las corrientes trifásicas. "1,2,3" corresponden a "I1, I2, I3".</p>

2) Ángulo de fase de tensión y corriente

Se muestra el ángulo de fase de tensión y corriente de cada fase. El ángulo de fase del tensión de fase A está predeterminado como 0°(referencia). Los ángulos del resto de señales se muestran en relación con este (unidad: °).

Phase Angle		4.3
	ϕU	ϕI
1	000.0	059.4
2	119.9	179.3
3	240.0	229.5
▲	▼	MENU

Ángulo de fase de tensión trifásica y corriente trifásica.

Desequilibrio

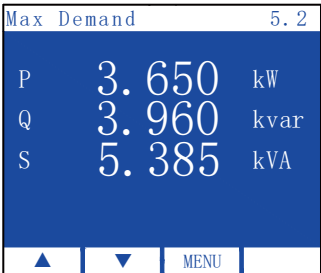
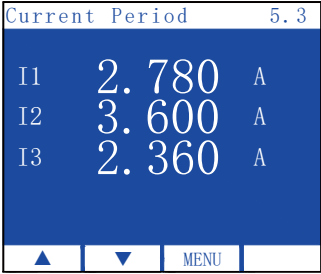
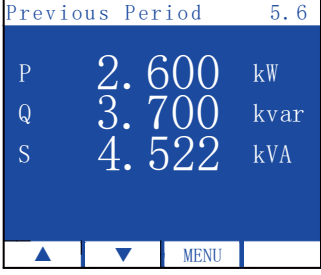
Los parámetros eléctricos del sistema trifásico se dividen en tres componentes simétricos: Componentes de secuencia positiva, componente de secuencia negativa y componente de secuencia cero, según el método de componentes simétricos. La relación entre los valores RMS de la componente de secuencia negativa y secuencia positiva se define como el desequilibrio trifásico, con la condición de que el sistema esté en modo de funcionamiento normal.

Unbalance (U)		4. 4
Pos. Seq	218. 8	V
Neg. Seq	000. 4	V
Uo	000. 2	V
Uunb	0. 001	%
▲	▼	MENU

Unbalance (I)		4. 5
Pos. Seq.	3. 999	A
Neg. Seq.	0. 005	A
Io	0. 002	A
Iunb	0. 001	%
▲	▼	MENU

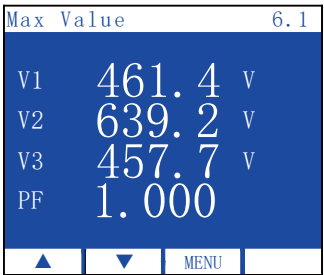
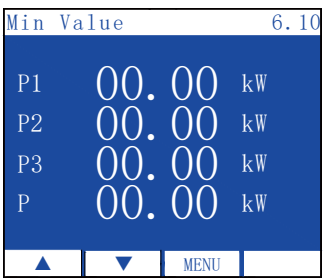
Demanda

El equipo soporta seis canales de registro de la demanda independientes que pueden medir el valor máximo de la demanda, el valor presente y el valor de la demanda previa de corriente trifásica, la potencia activa total, la potencia reactiva total y la potencia aparente total.

 <p>Max Demand 5.2</p> <p>P 3.650 kW</p> <p>Q 3.960 kvar</p> <p>S 5.385 kVA</p> <p>▲ ▼ MENU</p>	<p>La imagen de la izquierda muestra el valor de demanda máxima de potencia activa, reactiva y aparente total trifásica.</p>
 <p>Current Period 5.3</p> <p>I1 2.780 A</p> <p>I2 3.600 A</p> <p>I3 2.360 A</p> <p>▲ ▼ MENU</p>	<p>La imagen de la izquierda muestra el valor de la demanda actual de corriente trifásica.</p>
 <p>Previous Period 5.6</p> <p>P 2.600 kW</p> <p>Q 3.700 kvar</p> <p>S 4.522 kVA</p> <p>▲ ▼ MENU</p>	<p>La imagen de la izquierda muestra el valor de la demanda previa de potencia activa, reactiva y aparente total de tres fases.</p>

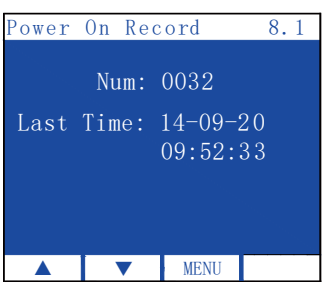
Max/Min

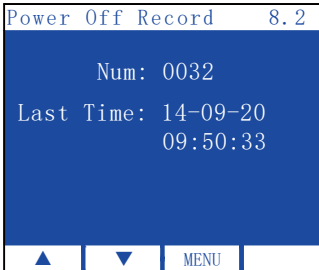
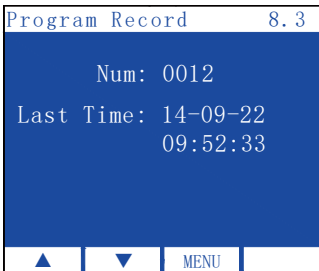
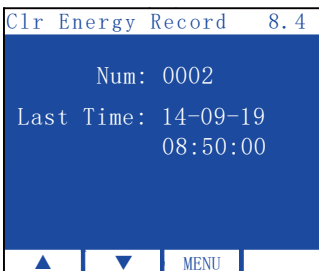
Cuando el valor medido en un determinado momento es el máximo o el mínimo, el equipo registrará ese valor en la memoria no volátil. Estos valores máximos o mínimos incluyen tensión trifásica, tensión de línea, frecuencia, corriente trifásica, potencia activa total y trifásica, potencia reactiva total y trifásica, potencia aparente total y el factor de potencia total.

 <p>Max Value 6.1</p> <p>V1 461.4 V</p> <p>V2 639.2 V</p> <p>V3 457.7 V</p> <p>PF 1.000</p> <p>▲ ▼ MENU</p>	<p>La imagen de la izquierda muestra el valor máximo de tensión trifásica y factor de potencia total</p>
 <p>Min Value 6.10</p> <p>P1 00.00 kW</p> <p>P2 00.00 kW</p> <p>P3 00.00 kW</p> <p>P 00.00 kW</p> <p>▲ ▼ MENU</p>	<p>La imagen de la izquierda muestra el valor mínimo de potencia activa de las tres fases y de la potencia activa total</p>

Eventos

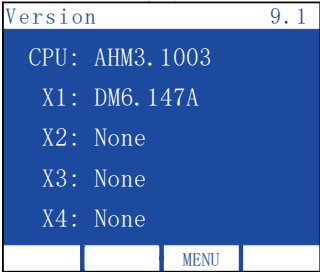
Cuando está equipado con el módulo DM1 (Módulo de memoria). El equipo soporta el registro de información de la última vez conectado, apagado, la programación y registro de reset de energía. Cada tipo de registro incluye un total y la última vez que ocurrió el evento. Estos datos se comprueban a través de la interfaz de pantalla o leídas mediante comunicación.

 <p>Power On Record 8.1</p> <p>Num: 0032</p> <p>Last Time: 14-09-20 09:52:33</p> <p>▲ ▼ MENU</p>	<p>La imagen de la izquierda muestra "Registro de conectado" que incluye 32 registros de tiempos de energía conectada y su última vez efectuado.</p>
---	--

	<p>La imagen de la izquierda muestra “Registro de apagado” que incluye 32 registros de tiempo apagado y la última vez efectuado.</p>
	<p>La imagen de la izquierda muestra “Registro programa” incluyendo 12 registros de tiempo y la ultima vez efectuado</p>
	<p>La imagen de la izquierda muestra “Registro reset energía” incluyendo 2 registro de tiempos de borrado de energía y su última vez efectuado.</p>

Información del dispositivo

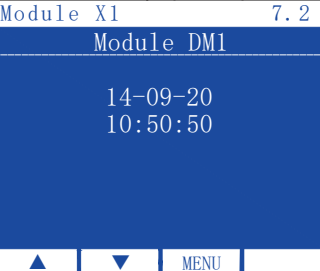
Esta interfaz muestra la versión de software del equipo y la conexión de módulos.

	La imagen de la izquierda muestra la versión de software del medidor y el módulo. “None” o “Libre” (en español) indica que no hay ninguna conexión o la conexión incorrecta de la interfaz.
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Módulos

El equipo soporta cuatro interfaces para la conexión de módulos adicionales.

Módulo de memoria (DM1)

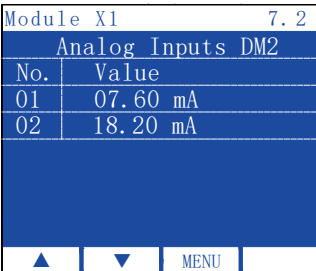
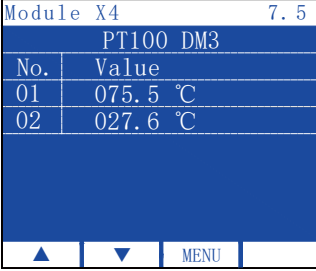
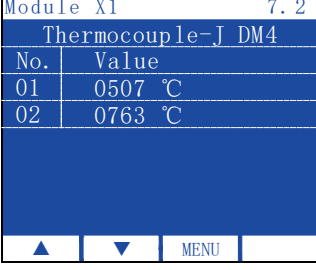
	<p>Este módulo proporciona información del día y soporta la función de almacenamiento de datos.</p> <p>La imagen de la izquierda muestra la información de día, mes, año y hora actual.</p>
--	---

Módulos de entradas analógicas (DM2, DM3, DM4)

El módulo DM2 se utiliza para medir la señal de corriente 4 ~ 20mA. DM3 y DM4 son para medida de temperatura, donde DM3 se utiliza para medir la señal PT100 y el módulo DM4 se utiliza para medir la señal J, K o E

del termopar.

Se muestran a continuación valores medidos en las interfaces mencionadas:

	<p>La imagen de la izquierda muestra el valor medido de la entrada analógica.</p> <p>La primera entrada analógica es de 7.6mA;</p> <p>La segunda entrada analógica es de 18.2mA</p>
	<p>La imagen de la izquierda muestra los valores de la PT100.</p> <p>El primer valor mostrado es de 75.5 °C;</p> <p>El segundo valor de 27.6 °C.</p>
	<p>En la imagen de la izquierda se aprecia la lectura de 2 valores del termopar J.</p> <p>El primer valor de temperatura marca 507 °C.</p> <p>El segundo valor es de 763 °C.</p>

Módulo de Salida Analógica (DM5)

Las medidas instantáneas pueden ser convertidas en salidas analógicas de corriente continua mediante este módulo MD5. El valor actual mostrado en la interfaz es el valor teórico actual.

Los elementos de salida analógicas y el rango se programan a través del equipo.

<div>Module X1 7.2</div> <div>Analog Outputs-DM5</div> <table> <tr> <th>No.</th><th>Value</th></tr> <tr> <td>01</td><td>04.00 mA</td></tr> <tr> <td>02</td><td>08.20 mA</td></tr> </table> <div>▲ ▼ MENU</div>	No.	Value	01	04.00 mA	02	08.20 mA	<p>La pantalla de la izquierda muestra los valores de 2 salidas analógicas.</p> <p>No.1: 4.00 mA; No.2: 8.20 mA.</p>
No.	Value						
01	04.00 mA						
02	08.20 mA						

Módulos de entrada digital (DM6, DM7, DM9)

La entrada digital adopta el modo de contacto seco. Hay fuente de alimentación interna para la entrada digital, por lo que no hay necesidad de fuente de alimentación externa.

Hay cuatro modos de trabajo:






1) Modo de seguimiento del estado: Se utiliza para monitorizar el estado de interruptor, la posición de los carros de mano, etc. El estado de las entradas digitales se puede indicar de forma local o remota a través de comunicación.

2) Modo de contador de pulsos: El equipo cuenta los números de pulsos desde la entrada del terminal. El contador de pulsos suma uno cuando el equipo recibe un pulso.

3) Sincronización de la energía alternativa: Los terminales se utiliza como señal de sincronización. La medida de la energía alternativa se inicia después de que el equipo reciba la señal. Esta función es efectiva con el módulo DM9.

4) Modo de configuración de energía de Tarifa: Esta función es válida con el módulo DM7. La entrada digital se utiliza para la fijación de tarifas, hay dieciséis tipos de tarifas. El equipo acumula la energía del período actual

correspondiente al período tarifario.

Module X1 7.2		
Digital Inputs-DM7		
No.	Mode	Status
01	Tariffs	
02	Pulse	00000056
03	State	
04	State	
  MENU		

La imagen de la izquierda muestra los modos de trabajo de 4 entradas digitales.

Entrada digital 1 está en modo de tarifa.

Entrada digital 2 está en el modo de contador de pulsos.

Entrada digital 3 está en modo de energía alternativa.

Entrada digital 4 está en estado de chequeo y hay señal de entrada.

Módulo de relés de salida (DM8)

El equipo soporta 2 relés de salida. Se pueden añadir más relés de salida añadiendo el módulo DM8 al equipo.

La salida de relé del equipo tiene tres modos de funcionamiento: De pulsos de energía, de control remoto y modo de alarma.

El módulo de salida de relé (DM8) tiene dos modos de funcionamiento: control remoto y modo de alarma.

Parámetros como el modo de trabajo, variable de alarma, valor límite, retardo y la histéresis se deben configurar. El valor límite de datos es el entero del secundario.

1) Modo de salida de pulsos de energía





El equipo soporta la salida de pulsos de energía activa y reactiva bidireccional a través de la salida de relé. La frecuencia de impulsos es menor de 1 Hz.

2) Modo de salida del control remoto

Recepción de comando PC o PLC a través de la comunicación, el relé que soporta el nivel eléctrico o pulso puede estar en funcionamiento o liberado.

3) Modo alarma





El valor alto de alarma indica que el relé actúa en caso de que la medición sea superior al valor de la alarma, mientras que valor bajo de alarma indica que el relé actúa en caso de que el valor medido sea inferior a ese valor de alarma.

Relay Outputs			7.1
Relay Outputs			
No.	Mode	Status	
01	E Pulse		
02	Alarm		
		MENU	FREE

La imagen de la izquierda muestra los modos de funcionamiento de las salidas de relé del equipo.

Salida de relé 1 en modo de pulso de energía;

Salida de relé 2 en modo de alarma.

Module X1			7.2
Relay Outputs-DM8			
No.	Mode	Status	
01	Alarm		
02	Remote		
		MENU	FREE

La imagen de la izquierda muestra el modo de funcionamiento de las salidas de relé del módulo DM8.

Salida de relé 1 en modo de alarma;

Salida de relé 2 en modo de control remoto.

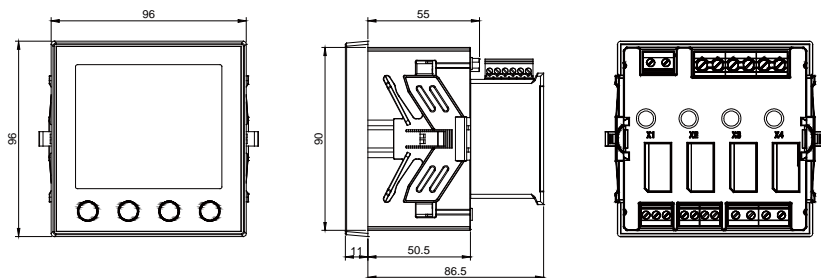
Módulos de comunicación (DM10-13)

Este equipo ofrece un puerto serie esclavo RS-485 y adopta el protocolo Modbus-RTU. Todos los dispositivos están conectados en una línea de bus por conductor trenzado y cable blindado. Hasta 32 estaciones pueden conectarse entre sí en un segmento. En el inicio y el final de un segmento el cable termina con resistencias.

Otros tipos de comunicaciones se puede llevar a cabo mediante la conexión de módulos adicionales. Para más información consulte el manual de usuario del DM10, DM11, DM12 y DM13.

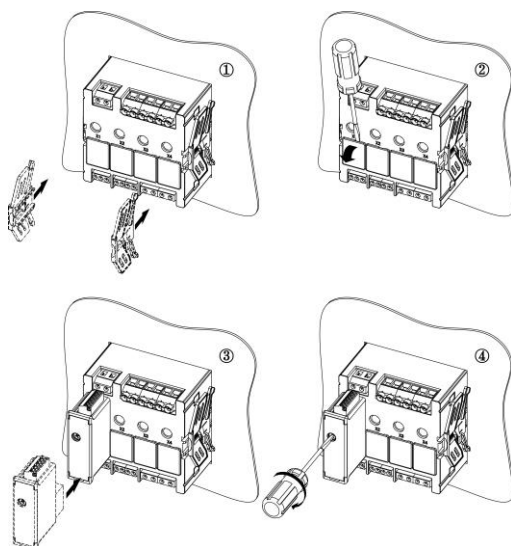
3 Instalación

Dimensiones



Montaje

- 1) Corte un agujero en el panel de 91 x 91 mm².
- 2) Saque el medidor y afloje los clips.
- 3) Inserte el medidor en el hueco desde fuera.
- 4) Inserte los clips y fije el medidor.



Conexión

Diagrama típico de conexión para AHM3 y AHM3-SMTP:

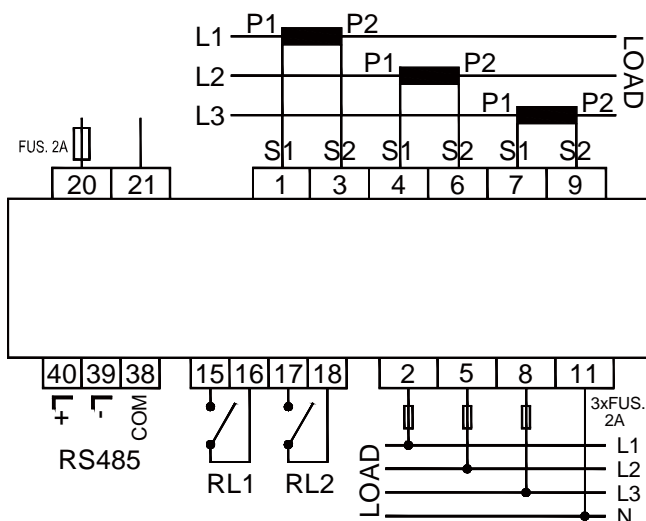
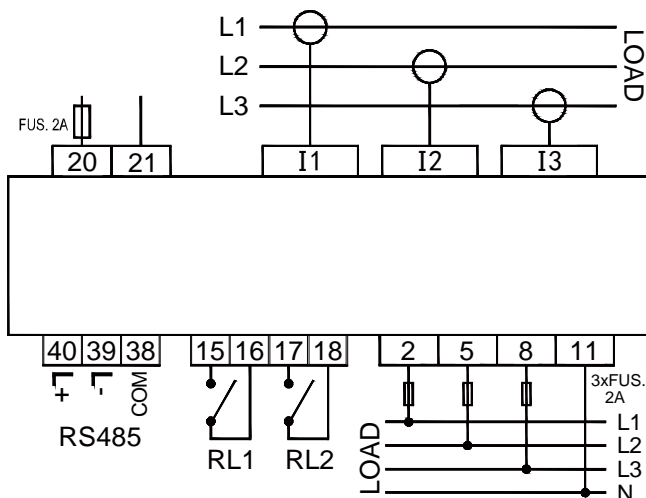


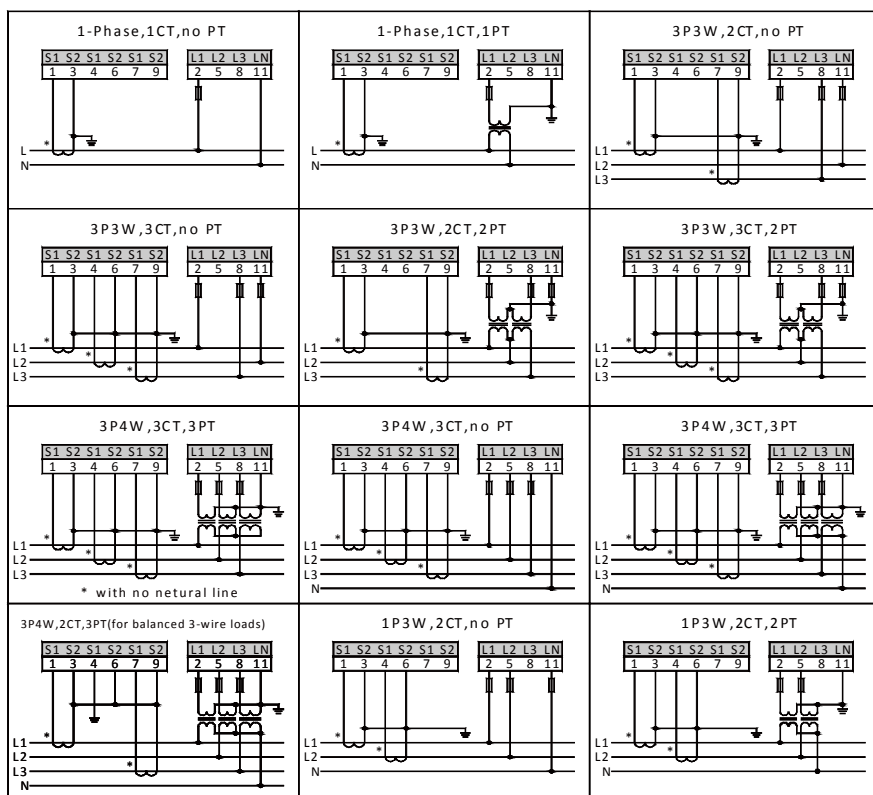
Diagrama de conexión para bobinas Rogowski AHM3-RC y AHM3-SMTP-RC:



Nota:

1. Fuente de alimentación auxiliar: C.A. / C.C. (80 ~ 270) V
2. Corriente nominal del fusible: 0.5A

Diagrama de conexiones



Nota:

(a) El modo de cableado externo debe ser el mismo que el modo de cableado interno del medidor. De lo contrario, la información medida por el equipo no será correcta (Consulte 5.5 para el método de ajuste detallado).

(b) El equipo mide señales de tensión y de corriente alterna (AC). Por favor, no conecte señales de CC a los terminales de entrada del equipo.

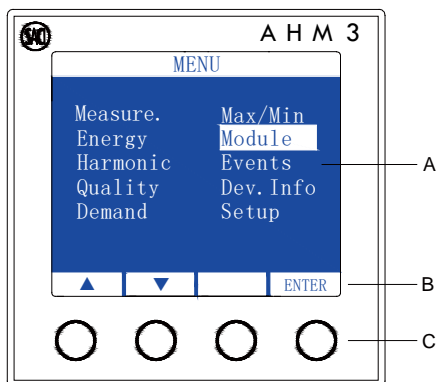
(c) Entrada de tensión: El PT externo debe aplicarse cuando el voltaje de entrada excede el valor nominal. La precisión del PT externo debe ser igual o mejor que la precisión del equipo. Para facilitar el mantenimiento, se sugiere utilizar regleta de bornes;

(d) Entrada de corriente: El CT externo se debe aplicar cuando la corriente de entrada excede el valor nominal. La precisión del CT externo debe ser igual o mejor que la precisión del equipo. Si hay otros equipos conectados a un mismo CT, por favor conectarlos en serie. Antes de retirar los cables de entrada de corriente, el bucle del circuito primario del CT debe ser cortado, o el bucle del circuito secundario debe estar cortocircuitado. Para facilitar el mantenimiento, se sugiere utilizar regleta de bornes;

(e) Asegúrese de que la secuencia de fases y la dirección de las tensiones y corrientes trifásicas son coherentes entre sí. De lo contrario, los valores y signos serán incorrectos.

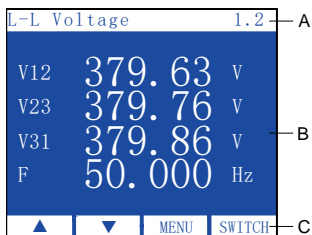
4 Operación

Panel



A: Display B: Indicación de las teclas de función C: Tecla tátil

Display



A: Información del parámetro medido;

- ◆ La parte de arriba a la izquierda muestra la información del parámetro medido

- ◆ Arriba a la derecha se muestra el número de la página

B: Visualización de los diferentes datos o gráficos;











- ◆ Los datos de la ventana muestra la información medida;

C: Función del teclado



- ◆ La parte de abajo del display muestra la función de las teclas táctiles.

Configuración

Los parámetros del equipo son configurados a través del teclado por el usuario




Símbolo	Funcionamiento
	Mover hacia arriba; Cambia a la página anterior; Cambia los parámetros; Incrementa los números seleccionados.
	Mover hacia abajo; Cambia a la página siguiente; Cambia los parámetros.
	Mover hacia la izquierda para modificar o mostrar los datos en orden cíclico
	Cambia entre datos y gráfico de barras
	Vuelve al menú principal directamente
	Regresa al nivel superior del menú; cancela modificaciones.
	Entra en el ítem seleccionado
	Modifica el ítem seleccionado
	Confirma modificaciones
	No efectivo

Método del cambio de los números

Presione  para seleccionar un bit y presione  para incrementar el número del bit seleccionado en orden cíclico (después del 9 vuelve al 0).

Entrar y salir de la programación

- Entrar en la programación.

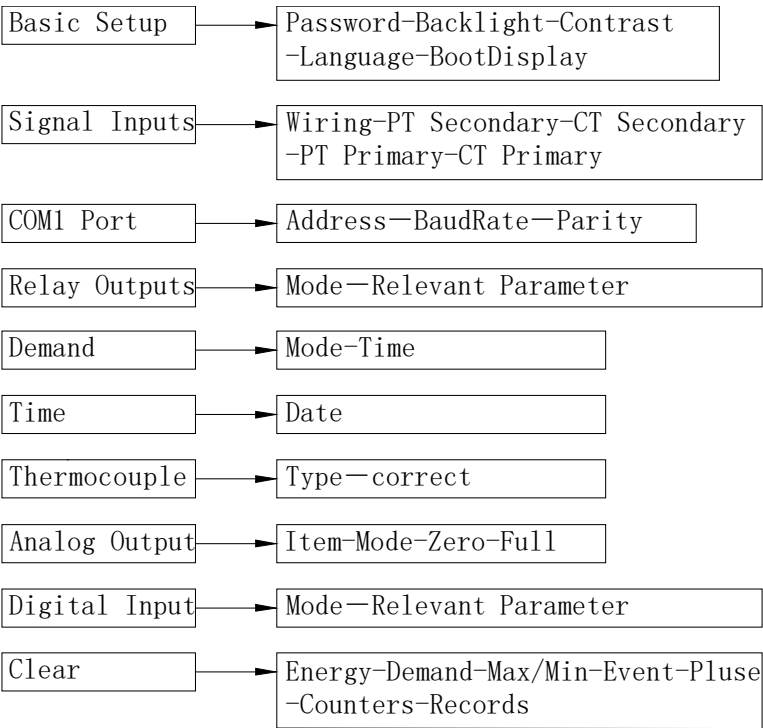
Primero presiona  o  para seleccionar Configuración "SETUP"; a continuación, presiona  para entrar a la interfaz de programación; tercero, seleccione la configuración del usuario e introduce la contraseña correcta para comenzar a programar la configuración deseada. (La contraseña por defecto es 0001. Puede ser cambiada por el usuario)

- Salir de la programación.

Primero, vuelve al menú principal; Segundo pulse para ver un mensaje de si quiere guardar los parámetros. Selecciona "Si" si quiere guardar los parámetros modificados y volver al menú principal o selecciona "No", si desea cancelar las modificaciones y volver al menú principal.

Menú de configuración general

Menú de Programación del equipo adopta la estructura jerárquica de la siguiente manera.



Se describen a continuación.

Configuración básica (Basic Setup)

	Contraseña (Password)	0001-9999(por defecto es 0001)
	Retroiluminación (Backlight)	000s-999s (000s-Iluminación constante on)
	Contraste	0-7
	Lenguaje	Inglés y español
	Página de inicio (BootDisp.)	Selecciona la interfaz que desea visualizar nada más encender el equipo. Puedes elegir entre U, I, P, E, THD, Forma de onda, Demanda y Max/Min

Basic Setup			
Password	0001		
Backlight	000 s Hold		
Contrast	3		
Language	English		
BootDisp.	U		
▲	▼	ESC	EDIT

Configuración de entradas

Signal Inputs		Sistema	1P2W,3P3W,3P4W
Wiring	3P4W	Secundario V	0-690V
PT Secondary	380 V	Secundario I	0-6A
CT Secondary	5 A	Primario V	0-999999V
PT Primary	000380 V	Primario I	0-999999A
CT Primary	000005 A		
▲	▼	ESC	EDIT

Configuración Puerto COM1

Dirección	1~247
Velocidad	1200~38400bps
Paridad	E81,O81,N81,N82

Configuración de relés de salida

Relay Outputs		Hay tres modos de funcionamiento de los relés de salida que son: pulsos de energía, control remoto y alarma. El modo de trabajo de pulsos de energía sólo es efectivo para el equipo (no para el módulo DM8).	
No.	Mode		
01	E Pulse		
02	Remote		
▲	▼	ESC	EDIT

No. 01 E Pulse		Modo salida de pulsos de energía	
Pulse	0001*100ms	Pulso	(Ancho del pulso) (0~9999)×100ms
Item	EP+	Item	EP+: kwh+ EP-: kwh- EQ+: kvarh+ EQ-: kvarh-
Value	2000 Wh	Valor	Valor de la energía secundaria correspondiente a un pulso de energía
▲	▼	ESC	EDIT

<div> <div>No.01 Alarm</div> <div> <div>Pulse</div> <div>0005*100ms</div> </div> <div> <div>Item</div> <div>V1 ></div> </div> <div> <div>Value</div> <div>400.0 kV</div> </div> <div> <div>Hys</div> <div>020.0 V</div> </div> <div> <div>Delay</div> <div>0020*100ms</div> </div> <div> <div>Lock</div> <div>OFF</div> </div> <div> <div>▲</div> <div>▼</div> <div>ESC</div> <div>EDIT</div> </div> </div>	Modo salida de alarma	
	Pulso	Ancho de pulso: (0~9999)×100ms
	Item	(Ver lista más abajo)
	Valor	Valor límite (Primario)
	Hys	Valor de histéresis (Primary)
	retardo	Tiempo de retardo: (0~9999)×100ms
	Bloqueo	: ON/OFF
<div> <div>No.02 Remote</div> <div> <div>Pulse</div> <div>0001*100ms</div> </div> <div></div> <div> <div>▲</div> <div>▼</div> <div>ESC</div> <div>EDIT</div> </div> </div>	Modo de salida control remoto	
	Pulso	Ancho de pulso: 0~ ms

Items de alarma se muestran a continuación:

Item	Formato	Instrucción
OFF		Off
DI	0-5	Acoplamiento de entrada digital del canal seleccionado, la salida de relé copia el estado de la entrada digital
THDi <	xx.xx%	Tasa de distorsión armónica de corriente, alarma de baja
THDi >		Tasa de distorsión armónica de corriente, alarma de alta
THDv <		Tasa de distorsión armónica de tensión, alarma de baja

THDv >		Tasa de distorsión armónica de tensión, alarma de alta
Iunb <	xxx.x %	Desequilibrio de corriente, alarma de baja
Iunb >		Desequilibrio de corriente, alarma de alta
Vunb <		Desequilibrio de tensión, alarma de baja
Vunb >		Desequilibrio de tensión, alarma de alta
F <	xx.xx Hz	Frecuencia de red, alarma de baja
F >		Frecuencia de red, alarma de alta
PF <	x.xxx	Factor de potencia total, alarma de baja
PF >		Factor de potencia total, alarma de alta
S <	xxxx _VA	Potencia aparente total, alarma de baja
S >		Potencia aparente total, alarma de alta
Q <	xxxx _var	Potencia reactiva total, alarma de baja
Q >		Potencia reactiva total, alarma de alta
P <	xxxx _W	Potencia activa total, alarma de baja
P >		Potencia activa total, alarma de alta
Io <	x.xxx _A	Corriente de secuencia cero, alarma de baja
Io >		Corriente de secuencia cero, alarma de alta
Iavg <		Valor medio de corriente, alarma de baja
Iavg >		Valor medio de corriente, alarma de alta
I <		1 de las 3 corrientes de fase, alarma de baja
I >		1 de las 3 corrientes de fase, alarma de alta
I3 <		Corriente I3, alarma de baja
I3 >		Corriente I3, alarma de alta
I2 <		Corriente I2, alarma de baja
I2 >		Corriente I2, alarma de alta
I1 <		Corriente I1, alarma de baja
I1 >		Corriente I1, alarma de alta
Vllavg <	xxx.x _V	Valor medio de tensión LL, alarma de baja

Vllavg >		Valor medio de tensión LL, alarma de alta
Vlnavg <		Valor medio de tensión fase, alarma de baja
Vlnavg >		Valor medio de tensión fase, alarma de alta
Vll <		1 de las 3 tensiones de línea, alarma de baja
Vll >		1 de las 3 tensiones de línea, alarma de alta
V31 <		Tensión V31, alarma de baja
V31 >		Tensión V31, alarma de alta
V23 <		Tensión V23, alarma de baja
V23 >		Tensión V23, alarma de alta
V12 <		Tensión V12, alarma de baja
V12 >		Tensión V12, alarma de alta
Vln <		1 de las 3 tensiones de fase, alarma de baja
Vln >		1 de las 3 tensiones de fase, alarma de alta
V3 <		Tensión V3, alarma de baja
V3 >		Tensión V3, alarma de alta
V2 <		Tensión V2, alarma de baja
V2 >		Tensión V2, alarma de alta
V1 <		Tensión V1, alarma de baja
V1 >		Tensión V1, alarma de alta

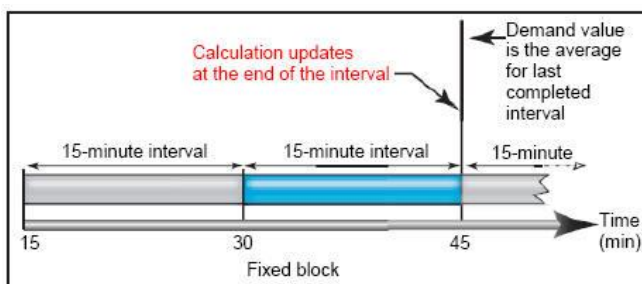
Configuración demanda

La demanda de energía se calcula utilizando la integración aritmética de los valores de potencia durante un período de tiempo dividido por la longitud del período. El resultado es equivalente a la energía acumulada durante el periodo de tiempo dividido por la longitud del período.

La demanda actual se calcula utilizando la integración aritmética de la corriente eficaz valores durante un periodo de tiempo, dividido por la longitud del período.

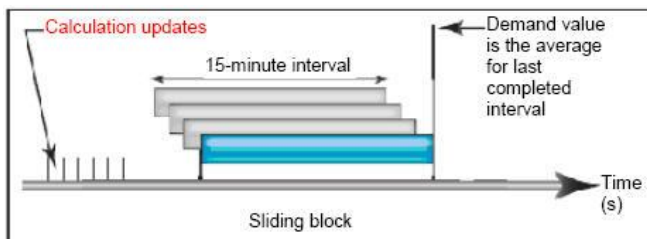
El equipo se encarga de la duración de los intervalos para calcular la demanda. Se puede poner en práctica varios métodos:

Intervalo de bloque fijo: los intervalos son consecutivos, el medidor de potencia calcula y actualiza la demanda al final de cada intervalo.



Nota: 15min es solo un ejemplo.

Intervalo de bloque deslizante: los intervalos se deslizan. El equipo calcula y actualiza la demanda a la velocidad de deslizamiento.



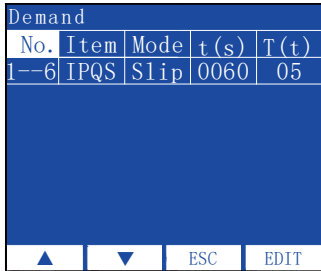
Nota: 15min es solo un ejemplo.

Parámetros de tiempo relativos se configuran como t (deslizamiento tiempo, unidad: minutos) y T (intervalo de bloque deslizante, unidad: minuto)

-Modo de intervalo fijo significa que el valor promedio de demanda en T minutos se calcula para cada bloque T, y luego el valor es grabado. La demanda de un mes, se graba de forma automática a una hora fija.

-Modo de intervalo deslizante significa que el valor promedio de demanda de los últimos T minutos se calcula, y luego el valor es grabado. La demanda de un mes, se graba de forma automática a una hora fija.

-Modo síncrono significa que la medición de la demanda es controlada por señales externas que provienen de las entradas digitales de DM6 y DM7. Cuando el módulo de entrada digital se encuentra en estado síncrono y una de sus entradas digitales actúa, se inicia la medición de la demanda; cuando todas las entradas digitales se detienen, la medición de la demanda también se detiene.

	No.	1-6
	Item	I1,I2,I3,P,Q,S
	Modo	Slip/Fixed/Syn
	t	
	T	$T=n*t$, n:

Restablecer datos (Reset Data)

<table><tr><td colspan="2">Reset Data</td></tr><tr><td>Clear Energy</td><td><input type="checkbox"/></td></tr><tr><td>Clear Demand</td><td><input type="checkbox"/></td></tr><tr><td>Clear MaxMin</td><td><input type="checkbox"/></td></tr><tr><td>Clear Event</td><td><input type="checkbox"/></td></tr><tr><td>Clear Pulses</td><td><input type="checkbox"/></td></tr><tr><td>Clear Counters</td><td><input type="checkbox"/></td></tr><tr><td>Clear Records</td><td><input type="checkbox"/></td></tr><tr><td colspan="2"></td></tr><tr><td>▲</td><td>▼</td></tr><tr><td colspan="2">ESC</td></tr><tr><td colspan="2">EDIT</td></tr></table>	Reset Data		Clear Energy	<input type="checkbox"/>	Clear Demand	<input type="checkbox"/>	Clear MaxMin	<input type="checkbox"/>	Clear Event	<input type="checkbox"/>	Clear Pulses	<input type="checkbox"/>	Clear Counters	<input type="checkbox"/>	Clear Records	<input type="checkbox"/>			▲	▼	ESC		EDIT		<p>Parámetros de la energía, demanda, Max. / Min. valor y eventos están habilitados en esta interfaz.</p> <p>Si los parámetros son borrados, el valor relativo será cero y no se restablecerán;</p> <p>Si la energía se borrase se haría registro de limpieza de energía, SOE.</p>
Reset Data																									
Clear Energy	<input type="checkbox"/>																								
Clear Demand	<input type="checkbox"/>																								
Clear MaxMin	<input type="checkbox"/>																								
Clear Event	<input type="checkbox"/>																								
Clear Pulses	<input type="checkbox"/>																								
Clear Counters	<input type="checkbox"/>																								
Clear Records	<input type="checkbox"/>																								
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Configuración del módulo de memoria

<div>Module X1-DM1</div> <div>Interval 01 min</div> <div>Time 14-09-28</div> <div>11:20:00</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> 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Configuración del módulo de termopar

Module X1-DM4		Tipo	J,K,E,N
Thermocouple		CJC	Unión fría Compensación: ON / OFF
Type	J		
CJC	ON		
</			

Configuración de salida analógica

02 Analog Output		Item	Ver lista siguiente
Item	P	Modo	4-12-20mA
Mode	4-12-20mA	Zero	Principio de escala (Primario)
Zero	-0150 kW	Mid.	Mitad de escala (Primario)
Mid.	0000 W	Full	Final de escala (Primario)
Full	0150 kW		
▲	▼	ESC	OK

Elementos de salida analógica se muestran en la siguiente lista:

El valor límite inferior y el valor límite superior de la salida analógica son valores primarios. El valor límite superior no debería ser mayor que dos veces el valor nominal. El modo de salida analógica 4-12-20mA sólo es válido para la potencia activa, reactiva, aparente y factor de potencia.

Item	Formato	Instrucción
OFF		Off
V1	xxx.x __V	Tensión
V2		
V3		
V12		
V23		
V31		
I1	x.xxx __A	Corriente
I2		
I3		
In		
P1	x.xxx __W	Potencia activa

P2		
P3		
P		
Q1	x.xxx __var	Potencia reactiva
Q2		
Q3		
Q		
S1	x.xxx __VA	Potencia aparente
S2		
S3		
S		
PF1	x.xxx	Factor de potencia
PF2		
PF3		
PF		
F	xx.xx Hz	Frecuencia

Configuración de entrada digital

<div> <div>Module X1-DM7</div> <div>Digital Inputs</div> <table> <tr><td>No.</td><td>Mode</td></tr> <tr><td>01</td><td>Tariffs</td></tr> <tr><td>02</td><td>Pulse</td></tr> <tr><td>03</td><td>Sapre En</td></tr> <tr><td>04</td><td>State</td></tr> </table> <div></div> <div> <div>▲</div> <div>▼</div> <div>ESC</div> <div>EDIT</div> </div> </div>	No.	Mode	01	Tariffs	02	Pulse	03	Sapre En	04	State	<p>Hay 4 modos de trabajo de las entradas digitales</p> <ol style="list-style-type: none"> 1) Energía facturada (efectiva en el modulo DM7) 2) Pulsos de energía 3) Energía de reserva/alternativa (efectiva en el módulo DM9) 4) Monitorización de estado
No.	Mode										
01	Tariffs										
02	Pulse										
03	Sapre En										
04	State										
<div> <div>Module X1-DM7</div> <div>Digital Inputs</div> <table> <tr><td>No.</td><td>Mode</td></tr> <tr><td>01</td><td>Tou En</td></tr> <tr><td>02</td><td>Tou En</td></tr> <tr><td>03</td><td>Tou En</td></tr> <tr><td>04</td><td>State</td></tr> </table> <div></div> <div> <div>▲</div> <div>▼</div> <div>ESC</div> <div>EDIT</div> </div> </div>	No.	Mode	01	Tou En	02	Tou En	03	Tou En	04	State	<p>El módulo DM7 se utiliza para configurar las tarifas desde su primera entrada digital. Hay cuatro entradas digitales disponibles. El estado 0000 corresponde a T1, y el estado 1111 corresponde a T16. Vea la siguiente lista para obtener información detallada</p>
No.	Mode										
01	Tou En										
02	Tou En										
03	Tou En										
04	State										

La relación se detalla en la siguiente lista la relación correspondiente. "0" indica que la entrada digital está abierta, y "1" indica que la entrada digital está cerrada.

DI4	DI3	DI2	DI1	Tarifa
0	0	0	0	T1
0	0	0	1	T2
0	0	1	0	T3
0	0	1	1	T4
0	1	0	0	T5
0	1	0	1	T6
0	1	1	0	T7
0	1	1	1	T8

1	0	0	0	T9
1	0	0	1	T10
1	0	1	0	T11
1	0	1	1	T12
1	1	0	0	T13
1	1	0	1	T14
1	1	1	0	T15
1	1	1	1	T16

Ejemplo de configuración

Por ejemplo. Seleccione modo de cableado trifásico de tres hilos, ajustar el valor primario del PT como 6 kV, y ajustar el valor secundario del PT como 100V.



5 Comunicación

El equipo está equipado por defecto con interfaz de comunicación RS-485 adoptando el protocolo Modbus-RTU. Otros modos de comunicación como Profibus-DP, GPRS, Ethernet y WiFi pueden ser incorporados conectando los módulos correspondientes de SACI. Para más información por favor consultar el manual de usuario de los módulos DM10, DM11, DM12 y DM13.

6 Mantenimiento y solución de problemas

Comunicación

En primer lugar, garantizar que los ajustes de comunicación del equipo, tales como, la dirección del esclavo, velocidad de transmisión, modo de comprobación, etc.; están en cumplimiento con el de los equipos host. En caso de que más de un equipo no devuelva los datos, compruebe si la conexión del bus de comunicación es la correcta, y si el convertidor RS485 está funcionando con regularidad.

Los datos de pantalla no son los esperados

Verifique que llegan la tensión y la corriente adecuada al equipo, puede utilizar un multímetro para medir la señal de tensión. Además, cuando sea necesario, se puede utilizar para medir la señal de corriente una pinza amperimétrica.

Verificar que la conexión de cableado es apropiada, por ejemplo, los extremos homónimos de la señal de corriente y secuencia de fase de cada fase deben ser los correctos. El equipo puede mostrar el valor de potencia activa, señal que es negativa en el caso de que la energía sea generada, mientras que en situación regular es positiva. Sin embargo, la conexión incorrecta de los cables de entrada o salidas, o una conexión incorrecta de secuencia de fase pueden llevar a una lectura errónea del valor de la energía.

Este equipo permite modificar la dirección de extremos homónimos de corriente, y puedes configurar corriente inversa en “configuración” (Setup). La cantidad eléctrica mostrada por el medidor es valor primario de la red, y será incorrecto si la tasa múltiple de PT o CT en el medidor es diferente de la de la utilizada realmente. Además, el rango de medición de tensión y corriente dentro del equipo y la red deben ajustarse para mantener la correcta visualización de los parámetros.

La energía es inexacta

La energía se acumula en base a la medición de la potencia. En primer lugar observar si el valor de potencia del equipo está en conformidad con la carga práctica. El equipo soporta la BI-dirección de energía. En caso de que el conexionado sea incorrecto, y la potencia activa total sea negativa, la energía activa inversa (no la energía activa normal) se acumulará.

El problema que ocurre con más frecuencia es que los cables de entrada o salida están conectados a la inversa, lo que hará que la potencia activa de fase sea negativa. Además, la secuencia de fases incorrecta también dará lugar a la visualización incorrecta de la energía eléctrica.

La pantalla está en blanco

Asegúrese de que fuente de alimentación auxiliar es la apropiada para el equipo. La fuente de alimentación auxiliar con tensión más elevada del rango estipulado puede dañar al equipo completamente. La tensión de alimentación auxiliar puede medirse por el multímetro. Si resulta ser correcta, y el equipo no muestra nada, por favor trate de conectar el equipo otra vez.

7 Especificaciones técnicas

Características eléctricas			
Precisión	Tensión y corriente		0.2%
	Energía y factor de potencia		0.5%
	Frecuencia		±0.01Hz
	Energía activa		IEC62053-22, clase 0.5S
	Energía reactiva		IEC62053-23, clase 2
Velocidad de actualización de datos			1s
Entrada	Tipo de red		1P2W、3P3W、3P4W
	Tensión	Valor nominal	400 VAC L-N (690 VAC L-L)
		Sobrecarga	1.2VIn
		Impedancia	>1MΩ
	Corriente	Valor nominal	1A or 5A
		Sobrecarga	Continua: 1.2In
			Instantánea: 10In/5s
		Consumo	<0.1VA
		Impedancia	<20mΩ
Frecuencia de la red		(45~65)Hz	
Tensión auxiliar	Rango de trabajo		c.a./c.c (80~270) V
	Consumo		≤ 10VA
Salida de pulsos de energía			2 salida de fotoacoplador, ancho de pulso (80 ± 20%) ms
Entrada digital			Entradas de contacto seco aislados de 2000V C.A
Relé de salida	Contacto nominal de 250V/5A C.A. o 30V/5A C.C.		
	Aislamiento: 2500V C.A.		

Comunicación	
Puerto RS485	Modbus-RTU , 2-hilos, hasta 38400bps
Características mecánicas	
Protección IP	IP65 (panel frontal) and IP20 (cuerpo del equipo)
Dimensiones	96x96x55mm
Características medioambientales	
Temperatura de trabajo	(-10~60) °C
Temperatura de almacenamiento	(-25~70) °C
Humedad relativa	(5~95)% (sin gel)
Aislamiento	IEC 61010-1
Compatibilidad electromagnética	
Inmunidad a las descargas electrostáticas.	IEC 61000-4-2-Level III
Inmunidad a campo de radiofrecuencia.	IEC 61000-4-3- Level III
Inmunidad a los transitorios rápidos eléctricos en ráfagas.	IEC 61000-4-4- Level IV
Inmunidad a ondas de impulso.	IEC 61000-4-5- Level IV
Inmunidad a las perturbaciones conducidas.	IEC 61000-4-6- Level III
Inmunidad a los campos magnéticos de frecuencia industrial.	IEC 61000-4-8- Level III
Inmunidad a los huecos de tensión e interrupciones breves.	IEC 61000-4-11- Level III



AHM3 / AHM3-RC

Multifunction Power Meter

Modbus-RTU

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1. Overview

This user manual is the operation instruction for AHM3 multifunction power meter with Modbus-RTU protocol, which is used to help thirty party to operate and develop this meter.

2. Communication

2.1 Physical layer

Communication interface should be connected by shielded twisted-pair. Thirty-two meters are supposed to be connected to a same busbar at most. Terminal resistance should be connected to both ends of busbar. Communication speed is 1200~38400bps which can be set. Defaulted communication speed is 9600bps. Byte transmission format is composed of one start bit, eight data bits, no check bit or one odd bit or one even check bit, one or two stop bits.

2.2 Communication protocol

Message format

Address field	Function code field	Data field	Check field
one byte	one byte	N bytes	two bytes

◆ Address code

Address code is slave address with range of 1-247. Other addresses are reserved.

◆ Function code field

Function code field indicates the executive function of addressed terminal. Meaning and function of function codes supported by meter is shown in the following list.

Code	Meaning
0x01	Read coils
0x02	Read input discrete
0x03/0x04	Read data register value
0x05	Write Single Coil
0x06	Write Single Register
0x0F	Write Multiple Coils
0x10	Write Multiple Registers
0x14	Read File record
0x0E	Reset Data

◆ Data code

Data code includes the data which is needed by a terminal device when it performs a function or the data collected from a terminal device when it responds to an inquiry. These data may be numbers, referenced address or setting value. For example, when the function code tells a terminal device to read a register, the data field should indicate the terminal device that which register it should begin from and how much data it should read. The data code sent back from a terminal device includes data length and corresponding data. Data adopts BIG END mode which means low byte is after high byte.

◆ Check code

Cyclical Redundancy Check (CRC16) field occupies two bytes including a 16-bit binary value. CRC value will be calculated by transmission equipment and be added to a data frame. When the receiving equipment receives the data, it will calculate CRC value again, and then it compares the two CRC values. If the two values are not equal to each other, an error will be detected.

2.3 Modbus-RTU communication protocol format

2.3.1 Read coils (FC 0x01)

Request					
Frame structure	Address code	Function code	data code		CRC
			Start address	Number of relay	
Byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
Data range	1~247	0x01	0x0000 (fixed)	0x0001~0x0002	CRC
Message example	<u>0x01</u>	<u>0x01</u>	<u>0x00 0x00</u>	<u>0x00 0x02</u>	<u>0xBD</u> <u>0xCB</u>
Response					
frame structure	address code	function code	data code		CRC
			byte of register	register value	
Byte	1 byte	1 byte	1 byte	1 byte	2 bytes
Message example	<u>0x01</u>	<u>0x01</u>	<u>0x01</u>	<u>0x03</u>	<u>0x11 0x89</u>

Remark: The register value in the slave response indicates the status of the relay. Beginning from the lowest bit of the byte, each number corresponds to the status of a relay output. “1” indicates the relay is closed, while “0” indicates the relay is cut off. In the upper list, the register value “0x03” corresponds to “0000 0011” in binary system which means the first and second relays are closed.

2.3.2 Read input discrete (FC 0x02)

Request					
Frame structure	address	function code	data		CRC
			start address	number	
Byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
Data range	1~247	0x02	0x0000 (fixed)	0x0001~0x000C	CRC16
Message example	<u>0x01</u>	<u>0x02</u>	<u>0x00 0x00</u>	<u>0x00 0x01</u>	<u>0x79</u> <u>0xC9</u>
Response					
Data structure	address data	function code	data		CRC
			byte of register	register value	
Byte	1 byte	1 byte	1 byte	1 byte	2 bytes
Message example	<u>0x01</u>	<u>0x02</u>	<u>0x01</u>	<u>0x01</u>	<u>0x20 0x49</u>

Remark: The register value in the slave response indicates the status of digital input. Beginning from the lowest bit of the byte, each number corresponds to the status of a digital input. “1” indicates the switch is closed, while “0” indicates the switch is open. In the upper list the register value “0x01” is “0000 0001” in binary system which means first loop of digital input is closed.

2.3.3 Read data register value (FC 0x03/0x04)

Request					
Frame structure	address code	function code	data		CRC
			Start address	number of register	
Byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
data range	1~247	0x03/ 0x04		Max. 100	CRC16
message example	<u>0x01</u>	<u>0x03</u>	<u>0x00 0x06</u>	<u>0x00 0x06</u>	<u>0Xe4 0x36</u>
Response					
frame structure	address code	function code	data		CRC
			byte of register	register value	
byte	1 byte	1 byte	1 byte	12 bytes	2 bytes
message example	<u>0x01</u>	<u>0x03</u>	<u>0x0C</u>	<u>12-byte data</u>	<u>CRC16</u>

Remark: The initial register address in host inquiry is the initial address of the data collected from primary or secondary power grid. The number of register indicates the length of the data. In the upper list the register address “0x00 0x00” indicates the initial address of phase voltage float data of three phases, and the number of register “0x00 0x06” indicates the length of the data is 6 (three float data occupies six registers).

2.3.4 Write Single Coil (FC 0x05)

Request					
frame structure	address code	function code	data code		CRC
			Start address	relay action value	
byte	1byte	1byte	2 bytes	2 bytes	2 bytes
data range	1~247	0x05	0x0000~0x0003	0xFF00/0x0000	CRC16
message example	<u>0x01</u>	<u>0x05</u>	<u>0x00 0x00</u>	<u>0xFF 0x00</u>	<u>0x8C 0x3A</u>
Response					
frame structure	address code	function code	data code		CRC
			initial relay address	relay action value	
byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
message example	<u>0x01</u>	<u>0x05</u>	<u>0x00 0x00</u>	<u>0xFF 0x00</u>	<u>0x8C 0x3A</u>

Remark: In host request, the relay action value “0xFF00” indicates the relay is closed, while “0x0000” indicates the relay is open. If user wants to perform remotely control operation, please make sure the relay is working in “remotely control” mode.

2.3.5 Write Single Register (FC 0x06)

Request					
frame structure	address code	function code	data code		CRC
			Register Address	preset data	
byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
data range	1~247	0x06	0x0000~0xFFFF	0x0000~0xFFFF	CRC16
message example	<u>0x01</u>	<u>0x06</u>	<u>0x00 0x00</u>	<u>0xAA 0x55</u>	<u>0x37 0x55</u>
Response					
frame structure	address code	function code	data code		CRC
			Register Address	preset data	
byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
message example	<u>0x01</u>	<u>0x06</u>	<u>0x00 0x00</u>	<u>0xAA 0x55</u>	<u>0x37 0x55</u>

Remark: Not all registers can be modified. As for specific information, please refer to communication address list.

2.3.6 Write Multiple Coils (FC 0x0F)

Request							
frame structure	address code	function code	data code				CRC
			initial relay address	number of relay	number of data byte	relay action value	
byte	1 byte	1 byte	2 bytes	2 bytes	1 byte	1 byte	2 bytes
data range	1~247	0x0F	0x0000 (fixed)	0x0001~ 0x0004	0x01		CRC16
message example	<u>0x01</u>	<u>0x0F</u>	<u>0x00 0x00</u>	<u>0x00 0x02</u>	<u>0x01</u>	<u>0x03</u>	<u>0x9E</u> <u>0x96</u>
Response							
frame structure	address code	function code	data code			CRC check code	
			initial relay address		number of relay		
byte	1 byte	1byte	2bytes		2bytes	2 bytes	
message example	<u>0x01</u>	<u>0x0F</u>	<u>0x00 0x00</u>		<u>0x00 0x02</u>	<u>0Xd4</u> <u>0x0A</u>	

Remark: In the host inquiry, beginning from the lowest bit of relay action value, each bit corresponds to a relay output. “1” indicates the relay is closed, while “0” indicates the relay is open. In the upper list, relay action value “0x03”is “0000 0111”in binary system, which means the first and second relays are closed.

2.3.7 Write Multiple Registers (FC 0x10)

Request							
frame structure	address code	function code	data code				CRC
			initial relay address	relay length	relay byte	written value	
byte	1 byte	1 byte	2 bytes	2 bytes	1 byte	2N bytes	2 byte
data range	1~247	0x10	0x080A	0x0001	N		CRC16
message example	<u>0x01</u>	<u>0x10</u>	<u>0x08 0x0A</u>	<u>0x00 0x01</u>	<u>0x02</u>	<u>0x0064</u>	<u>0x2ED1</u>

Request					
frame structure	address code	function code	data code		CRC
			initial relay address	relay length	
byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
message example	<u>0x01</u>	<u>0x10</u>	<u>0x08 0x0A</u>	<u>0x00 0x01</u>	<u>0x2ED1</u>

Remark: Please strictly follow the Meter setting information address list in appendix when writing setting register. Do not change the reserved data. Written data should not exceed set range. Wrong operation may cause meter damaged.

2.3.8 Read File record (FC 0x14)

Request

Function	1 byte	0x14
Byte counting	1 byte	0x07
Sub-request x, parameter type	1 byte	0x06
Sub-request x, file number	2 bytes	0x0000-0x0007
Sub-request x, event log number	2 bytes	0x0000-0xFDE7
Sub-request x, event log length	2 bytes	N

Response

Function code	1 byte	0x14
Response data length	1 byte	0x07~0xF5
Sub-request x, file length	1 byte	0x07~0xF5
Sub-request x, parameter type	1 byte	6
Sub-request x, event log data	Nx2 bytes	...

Send sub-request file number, event log number and event log length description of message

Event log	File number	Event log number	Event log length
Data log	0x0004	0x0000~0x000F: 0: latest piece of data log 1: second piece of data log from the latest piece of data log ... 32000: 32001th piece of data log from the latest piece of data log	1~32

Example for reading file

Request								
frame structure	address code	function code	data code					CRC
			byte counting	parameter type	file number	event log number	event log length	
byte	1 byte	1 byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes	2 bytes
data range	1~247	0x14	0x07	0x06	0x0004	0~65000	1~32	CRC
message	<u>0x01</u>	<u>0x14</u>	0x07	<u>0x06</u>	<u>0x0004</u>	<u>0x0000</u>	<u>0x0020</u> <u>0</u>	<u>0x093C</u>
Response								
frame structure	address code	function code	data code				CRC	
			response data length	response file length	parameter type	log data		
byte	1 byte	1 byte	1 byte	1 byte	1 byte	64 bytes	2 bytes	
message	<u>0x01</u>	<u>0x14</u>	<u>0x42</u>	<u>0x41</u>	<u>0x06</u>	log data	CRC	

Read electric data log format

Meter supports 32000 pieces of data log at most. Each data log contains eight electric parameter data. The interval of data log is set by pressing buttons on meter or through communication. Please refer to communication address list. Historical data frame contains thirty-two words. First three words are time data. The other twenty-nine words are electric parameter data. Electric parameter data is secondary value. Description of data frame is shown in following list.

Parameter	Format	Unit
Recording time	Int	High byte:year low byte:month

Recording time	Int	High byte: day low byte: hour
Recording time	Int	High byte: minute low byte: second
V1	Int	0.1V
V2	Int	0.1V
V3	Int	0.1V
V12	Int	0.1V
V23	Int	0.1V
V31	Int	0.1V
I1	Int	0.001A
I2	Int	0.001A
I3	Int	0.001A
P	Int	1W
Q	Int	1var
S	Int	1VA
F	Int	0.01Hz
THDv1	Int	0.01%
THDv2	Int	0.01%
THDv3	Int	0.01%
THDI1	Int	0.01%
THDI2	Int	0.01%
THDI3	Int	0.01%
kWh+	Long	1Wh
kWh-	Long	1Wh
kvarh+	Long	1varh
kvarh-	Long	1varh
kVAh	Long	1VAh
User set1	Int	
User set2	Int	
User set3	Int	

User set4	Int	
User set5	Int	
User set6	Int	

Take reading the latest piece of log as example. Data type is hexadecimal.

Host request: 01 14 07 06 00 04 00 00 00 20 09 3C

Slave response: 01 14 42 41 06

<u>0E 0A</u>	<u>17 0D</u>	<u>04 09</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>
y:m	d:h	m:s	V1	V2	V3	V12	V23
<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>
V31	I1	I2	I3	P	Q	S	F
<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00</u>	<u>00 00 0F 20</u>	
THDv1	THDv2	THDv3	THDI1	THDI2	THDI3	kWh+	
<u>00 00 00 00</u>	<u>00 00 1A 28</u>	<u>00 00 00 00</u>	<u>00 00 1E 37</u>	<u>74 89</u>			
kWh-	kvarh+	kvarh-	kVAh	CRC			

2.3.9 Reset data (FC 0x0E)

Request							
frame structure	address code	function code	data code				CRC
			initial relay address	Password	ID Reset	ID value	
byte	1 byte	1 byte	2 bytes	2 bytes	1 byte	1 bytes	2 byte
data range	1~247	0x0E	0xAACC	0x0001	N	0xFF	CRC16
message example	<u>0x01</u>	<u>0x0E</u>	<u>0xAA0xCC</u>	<u>0x00 x01</u>	<u>0x01</u>	<u>0xFF</u>	<u>0x760D</u>
Request							

frame structure	address code	function code	data code				CRC
			initial relay address	Password	ID Reset	ID value	
byte	1 byte	1 byte	2 bytes	2 bytes	1 byte	1 bytes	2 byte
data range	1~247	0x0E	0xAACC	0x0001	N	0xFF	CRC16
message example	<u>0x01</u>	<u>0x0E</u>	<u>0xAACC</u>	<u>0x00 x01</u>	<u>0x01</u>	<u>0xFF</u>	<u>0x760D</u>

Remark: This code can reset date of energy, Demand, MaxMin, Event, Pulses, and so on.

Password: This value should equal User's Password;

Id Reset:

0x01: Clear Energy 0x02: Clear Demand 0x03: Clear MaxMin
 0x04: Clear Event 0x05: Clear Pulses 0x06: Clear Counters
 0x07: Clear Record

Id value:

The value must be 0xff.

2.4 Data format

2.4.1 32-bit float format

32-bit float type data follows IEEE-754 format. Byte sequence of data adopts big-end mode which means low byte is after high byte.

Float type data of three phase voltages are shown in the following list.

Address(Hex)	Data(Hex)	Description
0006-0007	435C-8000	V1 = 0x435C8000 = 220.5V
0008-0009	4360-4CCD	V2 = 0x43604CCD = 224.3V
000A-000B	435E-B333	V3 = 0x435EB333 = 222.7V

2.4.2 16-bit integer format

16-bit integer type data adopts two's complement storage mode. Byte sequence of data adopts big-endian mode which means low byte is after high byte.

Int data of three phase voltages harmonic are shown in the following list.

Address(Hex)	Data(Hex)	Description
0210	0230	THDv1 = 0x0230 = 5.6%
0211	0172	THDv2 = 0x0172 = 3.7%
0212	0096	THDv3 = 0x0096 = 1.5%

2.4.3 32-bit long integer format

32-bit integer type data adopts two's complement storage mode. Byte sequence of data adopts big-end mode which means low byte is after high byte.

Long data of energy accumulation time are shown in the following list.

Address(Hex)	Data(Hex)	Description
0054-0055	0020-152A	Hour meter-EP+ = 2102570s
0056-0057	0000-37CD	Hour meter-EP- = 14285s

3. Communication address information list

3.1 Basic parameters

Address	Format	Description	Unit	R/W
0000-0005	----	----	----	----
0006-0007	Float	V1	V	R
0008-0009	Float	V2	V	R
000A-000B	Float	V3	V	R
000C-000D	Float	V12	V	R
000E-000F	Float	V23	V	R
0010-0011	Float	V31	V	R
0012-0013	Float	I1	A	R
0014-0015	Float	I2	A	R
0016-0017	Float	I3	A	R
0018-0019	Float	I _n	A	R
001A-001B	Float	P1	kW	R
001C-001D	Float	P2	kW	R
001E-001F	Float	P3	kW	R
0020-0021	Float	P	kW	R
0022-0023	Float	Q1	kvar	R
0024-0025	Float	Q2	kvar	R
0026-0027	Float	Q3	kvar	R
0028-0029	Float	Q	kvar	R
002A-002B	Float	S1	kVA	R
002C-002D	Float	S2	kVA	R
002E-002F	Float	S3	kVA	R
0030-0031	Float	S	kVA	R
0032-0033	Float	PF1		R
0034-0035	Float	PF2		R
0036-0037	Float	PF3		R

0038-0039	Float	PF		R
003A-003B	Float	F	Hz	R
003C-003D	Float	Average value of Vph-n	V	R
003E-003F	Float	Average value of Vph-ph	V	R
0040-0041	Float	Average current	A	R
0042-0043	Float	Import Active Energy	kWh	R
0044-0045	Float	Export Active Energy	kWh	R
0046-0047	Float	Import Reactive Energy	kvarh	R
0048-0049	Float	Export Reactive Energy	kvarh	R
004A-004B	Float	Apparent Energy	kVAh	R
004C-004D	Float	1 st Quadrant Reactive Energy - EQL+	kvarh	R
004E-004F	Float	2 nd Quadrant Reactive Energy - EQC+	kvarh	R
0050-0051	Float	3 rd Quadrant Reactive Energy - EQL-	kvarh	R
0052-0053	Float	4 th Quadrant Reactive Energy - EQC-	kvarh	R
0054-0055	Long	Hour meter-EP+	s	R
0056-0057	Long	Hour meter-EP-	s	R
0058-0059	Float	Spare Import Active Energy	kWh	R
005A-005B	Float	Spare Export Active Energy	kWh	R
005C-005D	Float	Spare Import Reactive Energy	kvarh	R
005E-005F	Float	Spare Export Reactive Energy	kvarh	R
0060-0061	Float	Spare Apparent Energy	kVAh	R
0062-0063	Float	Spare Energy - EQL+	kvarh	R
0064-0065	Float	Spare Energy - EQC+	kvarh	R
0066-0067	Float	Spare Energy - EQL-	kvarh	R
0068-0069	Float	Spare Energy - EQC-	kvarh	R
006A-006B	Float	Hour meter - Spare EP+	s	R
006C-006D	Float	Hour meter - Spare EP-	s	R
006E-006F	Float	Total tariff import energy	kWh	R
0070-0071	Float	Tariff #1 import energy	kWh	R

0072-0073	Float	Tariff #2 import energy	kWh	R
0074-0075	Float	Tariff #3 import energy	kWh	R
0076-0077	Float	Tariff #4 import energy	kWh	R
0078-0079	Float	Tariff #5 import energy	kWh	R
007A-007B	Float	Tariff #6 import energy	kWh	R
007C-007D	Float	Tariff #7 import energy	kWh	R
007E-007F	Float	Tariff #8 import energy	kWh	R
0080-0081	Float	Tariff #9 import energy	kWh	R
0082-0083	Float	Tariff #10 import energy	kWh	R
0084-0085	Float	Tariff #11 import energy	kWh	R
0086-0087	Float	Tariff #12 import energy	kWh	R
0088-0089	Float	Tariff #13 import energy	kWh	R
008A-008B	Float	Tariff #14 import energy	kWh	R
008C-008D	Float	Tariff #15 import energy	kWh	R
008E-008F	Float	Tariff #16 import energy	kWh	R
0090-0091	Float	Total tariff export energy	kWh	R
0092-0093	Float	Tariff #1 export energy	kWh	R
0094-0095	Float	Tariff #2 export energy	kWh	R
0096-0097	Float	Tariff #3 export energy	kWh	R
0098-0099	Float	Tariff #4 export energy	kWh	R
009A-009B	Float	Tariff #5 export energy	kWh	R
009C-009D	Float	Tariff #6 export energy	kWh	R
009E-009F	Float	Tariff #7 export energy	kWh	R
00A0-00A1	Float	Tariff #8 export energy	kWh	R
00A2-00A3	Float	Tariff #9 export energy	kWh	R
00A4-00A5	Float	Tariff #10 export energy	kWh	R
00A6-00A7	Float	Tariff #11 export energy	kWh	R
00A8-00A9	Float	Tariff #12 export energy	kWh	R
00AA-00AB	Float	Tariff #13 export energy	kWh	R

00AC-00AD	Float	Tariff #14 export energy	kWh	R
00AE-00AF	Float	Tariff #15 export energy	kWh	R
00B0-00B1	Float	Tariff #16 export energy	kWh	R
00B2-00B3	Float	Max. value-V1	V	R
00B4-00B5	Float	Max. value-V2	V	R
00B6-00B7	Float	Max. value-V3	V	R
00B8-00B9	Float	Max. value-V12	V	R
00BA-00BB	Float	Max. value-V23	V	R
00BC-00BD	Float	Max. value-V31	V	R
00BE-00BF	Float	Max. value-I1	A	R
00C0-00C1	Float	Max. value-I2	A	R
00C2-00C3	Float	Max. value-I3	A	R
00C4-00C5	Float	Max. value-In	A	R
00C6-00C7	Float	Max. value-P1	kW	R
00C8-00C9	Float	Max. value-P2	kW	R
00CA-00CB	Float	Max. value-P3	kW	R
00CC-00CD	Float	Max. value-P	kW	R
00CE-00CF	Float	Max. value-Q1	kvar	R
00D0-00D1	Float	Max. value-Q2	kvar	R
00D2-00D3	Float	Max. value-Q3	kvar	R
00D4-00D5	Float	Max. value-Q	kvar	R
00D6-00D7	Float	Max. value-S1	kVA	R
00D8-00D9	Float	Max. value-S2	kVA	R
00DA-00DB	Float	Max. value-S3	kVA	R
00DC-00DD	Float	Max. value-S	kVA	R
00DE-00DF	Float	Max. value-PF		R
00E0-00E1	Float	Max. value-F	Hz	R
00E2-00E3	Float	Max. value-Average Vph-n	V	R
00E4-00E5	Float	Max. value-Average Vph-ph	V	R

00E6-00E7	Float	Max. value-Average I	A	R
00E8-00E9	Float	Min. value-V1	A	R
00EA-00EB	Float	Min. value-V2	A	R
00EC-00ED	Float	Min. value-V3	A	R
00EE-00EF	Float	Min. value-V12	V	R
00F0-00F1	Float	Min. value-V23	V	R
00F2-00F3	Float	Min. value-V31	V	R
00F4-00F5	Float	Min. value-I1	A	R
00F6-00F7	Float	Min. value-I2	A	R
00F8-00F9	Float	Min. value-I3	A	R
00FA-00FB	Float	Min. value-In	A	R
00FC-00FD	Float	Min. value-P1	kW	R
00FE-00FF	Float	Min. value-P2	kW	R
0100-0101	Float	Min. value-P3	kW	R
0102-0103	Float	Min. value-P	kW	R
0104-0105	Float	Min. value-Q1	kvar	R
0106-0107	Float	Min. value-Q2	kvar	R
0108-0109	Float	Min. value-Q3	kvar	R
010A-010B	Float	Min. value-Q	kvar	R
010C-010D	Float	Min. value-S1	kVA	R
010E-010F	Float	Min. value-S2	kVA	R
0110-0111	Float	Min. value-S3	kVA	R
0112-0113	Float	Min. value-S	kVA	R
0114-0115	Float	Min. value-PF		R
0116-0117	Float	Min. value-F	Hz	R
0118-0119	Float	Min. value-Average Vph-n	V	R
011A-011B	Float	Min. value-Average Vph-ph	V	R
011C-011D	Float	Min. value-Average I	A	R
011E-011F	Float	Max. demand value -I1	A	R

0120-0121	Float	Max. demand value -I2	A	R
0122-0123	Float	Max. demand value -I3	A	R
0124-0125	Float	Max. demand value -P	W	R
0126-0127	Float	Max. demand value -Q	var	R
0128-0129	Float	Max. demand value -S	VA	R
012A-012D	--			
012E-012F	Float	Present demand value -I1	A	R
0130-0131	Float	Present demand value -I2	A	R
0132-0133	Float	Present demand value -I3	A	R
0134-0135	Float	Present demand value -P	kW	R
0136-0137	Float	Present demand value -Q	kvar	R
0138-0139	Float	Present demand value -S	kVA	R
013A-013D	--			
013E-013F	Float	Previous demand value -I1	A	R
0140-0141	Float	Previous demand value -I2	A	R
0142-0143	Float	Previous demand value -I3	A	R
0144-0145	Float	Previous demand value -P	kW	R
0146-0147	Float	Previous demand value -Q	kvar	R
0148-0149	Float	Previous demand value -S	kVA	R
014A-014F	--			
0150-0151	Float	Total cost of import energy	\$	R
0152-0153	Float	Cost of Tariff #1 import energy	\$	R
0154-0155	Float	Cost of Tariff #2 import energy	\$	R
0156-0157	Float	Cost of Tariff #3 import energy	\$	R
0158-0159	Float	Cost of Tariff #4 import energy	\$	R
015A-015B	Float	Cost of Tariff #5 import energy	\$	R
015C-015D	Float	Cost of Tariff #6 import energy	\$	R
015E-015F	Float	Cost of Tariff #7 import energy	\$	R
0160-0161	Float	Cost of Tariff #8 import energy	\$	R

0162-0163	Float	Cost of Tariff #9 import energy	\$	R
0164-0165	Float	Cost of Tariff #10 import energy	\$	R
0166-0167	Float	Cost of Tariff #11 import energy	\$	R
0168-0169	Float	Cost of Tariff #12 import energy	\$	R
016A-016B	Float	Cost of Tariff #13 import energy	\$	R
016C-016D	Float	Cost of Tariff #14 import energy	\$	R
016E-016F	Float	Cost of Tariff #15 import energy	\$	R
0170-0171	Float	Cost of Tariff #16 import energy	\$	R
0172-0173	Float	Total cost of export energy	\$	R
0174-0175	Float	Cost of Tariff #1 export energy	\$	R
0176-0177	Float	Cost of Tariff #2 export energy	\$	R
0178-0179	Float	Cost of Tariff #3 export energy	\$	R
017A-017B	Float	Cost of Tariff #4 export energy	\$	R
017C-017D	Float	Cost of Tariff #5 export energy	\$	R
017E-017F	Float	Cost of Tariff #6 export energy	\$	R
0180-0181	Float	Cost of Tariff #7 export energy	\$	R
0182-0183	Float	Cost of Tariff #8 export energy	\$	R
0184-0185	Float	Cost of Tariff #9 export energy	\$	R
0186-0187	Float	Cost of Tariff #10 export energy	\$	R
0188-0189	Float	Cost of Tariff #11 export energy	\$	R
018A-018B	Float	Cost of Tariff #12 export energy	\$	R
018C-018D	Float	Cost of Tariff #13 export energy	\$	R
018E-018F	Float	Cost of Tariff #14 export energy	\$	R
0190-0191	Float	Cost of Tariff #15 export energy	\$	R
0192-0193	Float	Cost of Tariff #16 export energy	\$	R
0194-0195	Float	CO2 Emissions of import energy	kg	R
0196-0197	Float	CO2 Emissions of Tariff #1 import energy	kg	R
0198-0199	Float	CO2 Emissions of Tariff #2 import energy	kg	R
019A-019B	Float	CO2 Emissions of Tariff #3 import energy	kg	R

019C-019D	Float	CO2 Emissions of Tariff #4 import energy	kg	R
019E-019F	Float	CO2 Emissions of Tariff #5 import energy	kg	R
01A0-01A1	Float	CO2 Emissions of Tariff #6 import energy	kg	R
01A2-01A3	Float	CO2 Emissions of Tariff #7 import energy	kg	R
01A4-01A5	Float	CO2 Emissions of Tariff #8 import energy	kg	R
01A6-01A7	Float	CO2 Emissions of Tariff #9 import energy	kg	R
01A8-01A9	Float	CO2 Emissions of Tariff #10 import energy	kg	R
01AA-01AB	Float	CO2 Emissions of Tariff #11 import energy	kg	R
01AC-01AD	Float	CO2 Emissions of Tariff #12 import energy	kg	R
01AE-01AF	Float	CO2 Emissions of Tariff #13 import energy	kg	R
01B0-01B1	Float	CO2 Emissions of Tariff #14 import energy	kg	R
01B2-01B3	Float	CO2 Emissions of Tariff #15 import energy	kg	R
01B4-01B5	Float	CO2 Emissions of Tariff #16 import energy	kg	R
01B6-01B7	Float	CO2 Emissions of export energy	kg	R
01B8-01B9	Float	CO2 Emissions of Tariff #1 export energy	kg	R
01BA-01BB	Float	CO2 Emissions of Tariff #2 export energy	kg	R
01BC-01BD	Float	CO2 Emissions of Tariff #3 export energy	kg	R
01BE-01BF	Float	CO2 Emissions of Tariff #4 export energy	kg	R
01C0-01C1	Float	CO2 Emissions of Tariff #5 export energy	kg	R
01C2-01C3	Float	CO2 Emissions of Tariff #6 export energy	kg	R
01C4-01C5	Float	CO2 Emissions of Tariff #7 export energy	kg	R
01C6-01C7	Float	CO2 Emissions of Tariff #8 export energy	kg	R
01C8-01C9	Float	CO2 Emissions of Tariff #9 export energy	kg	R
01CA-01CB	Float	CO2 Emissions of Tariff #10 export energy	kg	R
01CC-01CD	Float	CO2 Emissions of Tariff #11 export energy	kg	R
01CE-01CF	Float	CO2 Emissions of Tariff #12 export energy	kg	R
01D0-01D1	Float	CO2 Emissions of Tariff #13 export energy	kg	R
01D2-01D3	Float	CO2 Emissions of Tariff #14 export energy	kg	R
01D4-01D5	Float	CO2 Emissions of Tariff #15 export energy	kg	R

01D6-01D7	Float	CO2 Emissions of Tariff #16 export energy	kg	R
01D8-01D9	Float	Load percentage	%	R
01DA-01EF	--			
01F0	Int	High byte-year,Low byte-month		R
01F1	Int	High byte-day,Low byte-hour		R
01F2	Int	High byte-minute,Low byte-second		R
01F3	Int	High byte-week		R
01F4-01F5	Long	Meter Status bit31-7: Reserved Bit6: active power import/export Bit5: current overload Bit4: voltage overload Bit3: X4 module status Bit2: X3 module status Bit1: X2 module status Bit0: X1 module status		R

3.2 Harmonic data

Address	Format	Description	Unit	R/W
0200	Int	Phase angle of V1(default 0°)	0.1°	R
0201	Int	Phase angle of V2	0.1°	R
0202	Int	Phase angle of V3	0.1°	R
0203	Int	Phase angle of I1	0.1°	R
0204	Int	Phase angle of I2	0.1°	R
0205	Int	Phase angle of I3	0.1°	R
0206	Int	Positive-sequence component of voltage	V	R
0207	Int	Negative-sequence component of voltage	V	R
0208	Int	Zero-sequence component of voltage	V	R
0209	Int	Unbalance factor of voltage	%	R
020A	--			
020B	Int	Positive-sequence component of current	A	R
020C	Int	Negative-sequence component of current	A	R
020D	Int	Zero-sequence component of current	A	R
020E	Int	Unbalance factor of current		R
020F	--			
0210	Int	THD-V1	0.01%	R
0211	Int	THD-V2	0.01%	R
0212	Int	THD-V3	0.01%	R
0213	Int	THD-I1	0.01%	R
0214	Int	THD-I2	0.01%	R
0215	Int	THD-I3	0.01%	R
0216	Int	Fundamental value -V1	0.1V	R
0217	Int	Fundamental value -V2	0.1V	R
0218	Int	Fundamental value -V3	0.1V	R
0219	Int	Fundamental value -I1	0.001A	R
021A	Int	Fundamental value -I2	0.001A	R

021B	Int	Fundamental value -I3	0.001A	R
021C	Int	Harmonic content -V1	0.1V	R
021D	Int	Harmonic content -V2	0.1V	R
021E	Int	Harmonic content -V3	0.1V	R
021F	Int	Harmonic content -I1	0.001A	R
0220	Int	Harmonic content -I2	0.001A	R
0221	Int	Harmonic content -I3	0.001A	R
0222	Int	2 ND harmonic ratio-V1	0.01%	R
0223	Int	3 rd harmonic ratio-V1	0.01%	R
0224	Int	4 th harmonic ratio-V1	0.01%	R
0225	Int	5 th harmonic ratio-V1	0.01%	R
0226	Int	6 th harmonic ratio-V1	0.01%	R
0227	Int	7 th harmonic ratio-V1	0.01%	R
0228	Int	8 th harmonic ratio-V1	0.01%	R
0229	Int	9 th harmonic ratio-V1	0.01%	R
022A	Int	10 th harmonic ratio-V1	0.01%	R
022B	Int	11 th harmonic ratio-V1	0.01%	R
022C	Int	12 th harmonic ratio-V1	0.01%	R
022D	Int	13 th harmonic ratio-V1	0.01%	R
022E	Int	14 th harmonic ratio-V1	0.01%	R
022F	Int	15 th harmonic ratio-V1	0.01%	R
0230	Int	16 th harmonic ratio-V1	0.01%	R
0231	Int	17 th harmonic ratio-V1	0.01%	R
0232	Int	18 th harmonic ratio-V1	0.01%	R
0233	Int	19 th harmonic ratio-V1	0.01%	R
0234	Int	20 th harmonic ratio-V1	0.01%	R
0235	Int	21 th harmonic ratio-V1	0.01%	R
0236	Int	22 th harmonic ratio-V1	0.01%	R
0237	Int	23 th harmonic ratio-V1	0.01%	R

0238	Int	24 th harmonic ratio-V1	0.01%	R
0239	Int	25 th harmonic ratio-V1	0.01%	R
023A	Int	26 th harmonic ratio-V1	0.01%	R
023B	Int	27 th harmonic ratio-V1	0.01%	R
023C	Int	28 th harmonic ratio-V1	0.01%	R
023D	Int	29 th harmonic ratio-V1	0.01%	R
023E	Int	30 th harmonic ratio-V1	0.01%	R
023F	Int	31 th harmonic ratio-V1	0.01%	R
0240	Int	32 th harmonic ratio-V1	0.01%	R
0241	Int	33 th harmonic ratio-V1	0.01%	R
0242	Int	34 th harmonic ratio-V1	0.01%	R
0243	Int	35 th harmonic ratio-V1	0.01%	R
0244	Int	36 th harmonic ratio-V1	0.01%	R
0245	Int	37 th harmonic ratio-V1	0.01%	R
0246	Int	38 th harmonic ratio-V1	0.01%	R
0247	Int	39 th harmonic ratio-V1	0.01%	R
0248	Int	40 th harmonic ratio-V1	0.01%	R
0249	Int	41 th harmonic ratio-V1	0.01%	R
024A	Int	42 th harmonic ratio-V1	0.01%	R
024B	Int	43 th harmonic ratio-V1	0.01%	R
024C	Int	44 th harmonic ratio-V1	0.01%	R
024D	Int	45 th harmonic ratio-V1	0.01%	R
024E	Int	46 th harmonic ratio-V1	0.01%	R
024F	Int	47 th harmonic ratio-V1	0.01%	R
0250	Int	48 th harmonic ratio-V1	0.01%	R
0251	Int	49 th harmonic ratio-V1	0.01%	R
0252	Int	50 th harmonic ratio-V1	0.01%	R
0253	Int	51 th harmonic ratio-V1	0.01%	R
0254	Int	52 th harmonic ratio-V1	0.01%	R

0255	Int	53 th harmonic ratio-V1	0.01%	R
0256	Int	54 th harmonic ratio-V1	0.01%	R
0257	Int	55 th harmonic ratio-V1	0.01%	R
0258	Int	56 th harmonic ratio-V1	0.01%	R
0259	Int	57 th harmonic ratio-V1	0.01%	R
025A	Int	58 th harmonic ratio-V1	0.01%	R
025B	Int	59 th harmonic ratio-V1	0.01%	R
025C	Int	60 th harmonic ratio-V1	0.01%	R
025D	Int	61 th harmonic ratio-V1	0.01%	R
025E	Int	62 th harmonic ratio-V1	0.01%	R
025F	Int	63 th harmonic ratio-V1	0.01%	R
0260	Int	2 nd harmonic ratio-V2	0.01%	R
0261	Int	3 rd harmonic ratio-V2	0.01%	R
0262	Int	4 th harmonic ratio-V2	0.01%	R
0263	Int	5 th harmonic ratio-V2	0.01%	R
0264	Int	6 th harmonic ratio-V2	0.01%	R
0265	Int	7 th harmonic ratio-V2	0.01%	R
0266	Int	8 th harmonic ratio-V2	0.01%	R
0267	Int	9 th harmonic ratio-V2	0.01%	R
0268	Int	10 th harmonic ratio-V2	0.01%	R
0269	Int	11 th harmonic ratio-V2	0.01%	R
026A	Int	12 th harmonic ratio-V2	0.01%	R
026B	Int	13 th harmonic ratio-V2	0.01%	R
026C	Int	14 th harmonic ratio-V2	0.01%	R
026D	Int	15 th harmonic ratio-V2	0.01%	R
026E	Int	16 th harmonic ratio-V2	0.01%	R
026F	Int	17 th harmonic ratio-V2	0.01%	R
0270	Int	18 th harmonic ratio-V2	0.01%	R
0271	Int	19 th harmonic ratio-V2	0.01%	R

0272	Int	20 th harmonic ratio-V2	0.01%	R
0273	Int	21 th harmonic ratio-V2	0.01%	R
0274	Int	22 th harmonic ratio-V2	0.01%	R
0275	Int	23 th harmonic ratio-V2	0.01%	R
0276	Int	24 th harmonic ratio-V2	0.01%	R
0277	Int	25 th harmonic ratio-V2	0.01%	R
0278	Int	26 th harmonic ratio-V2	0.01%	R
0279	Int	27 th harmonic ratio-V2	0.01%	R
027A	Int	28 th harmonic ratio-V2	0.01%	R
027B	Int	29 th harmonic ratio-V2	0.01%	R
027C	Int	30 th harmonic ratio-V2	0.01%	R
027D	Int	31 th harmonic ratio-V2	0.01%	R
027E	Int	32 th harmonic ratio-V2	0.01%	R
027F	Int	33 th harmonic ratio-V2	0.01%	R
0280	Int	34 th harmonic ratio-V2	0.01%	R
0281	Int	35 th harmonic ratio-V2	0.01%	R
0282	Int	36 th harmonic ratio-V2	0.01%	R
0283	Int	37 th harmonic ratio-V2	0.01%	R
0284	Int	38 th harmonic ratio-V2	0.01%	R
0285	Int	39 th harmonic ratio-V2	0.01%	R
0286	Int	40 th harmonic ratio-V2	0.01%	R
0287	Int	41 th harmonic ratio-V2	0.01%	R
0288	Int	42 th harmonic ratio-V2	0.01%	R
0289	Int	43 th harmonic ratio-V2	0.01%	R
028A	Int	44 th harmonic ratio-V2	0.01%	R
028B	Int	45 th harmonic ratio-V2	0.01%	R
028C	Int	46 th harmonic ratio-V2	0.01%	R
028D	Int	47 th harmonic ratio-V2	0.01%	R
028E	Int	48 th harmonic ratio-V2	0.01%	R

028F	Int	49 th harmonic ratio-V2	0.01%	R
0290	Int	50 th harmonic ratio-V2	0.01%	R
0291	Int	51 th harmonic ratio-V2	0.01%	R
0292	Int	52 th harmonic ratio-V2	0.01%	R
0293	Int	53 th harmonic ratio-V2	0.01%	R
0294	Int	54 th harmonic ratio-V2	0.01%	R
0295	Int	55 th harmonic ratio-V2	0.01%	R
0296	Int	56 th harmonic ratio-V2	0.01%	R
0297	Int	57 th harmonic ratio-V2	0.01%	R
0298	Int	58 th harmonic ratio-V2	0.01%	R
0299	Int	59 th harmonic ratio-V2	0.01%	R
029A	Int	60 th harmonic ratio-V2	0.01%	R
029B	Int	61 th harmonic ratio-V2	0.01%	R
029C	Int	62 th harmonic ratio-V2	0.01%	R
029D	Int	63 th harmonic ratio-V2	0.01%	R
029E	Int	2 nd harmonic ratio-V3	0.01%	R
029F	Int	3 rd harmonic ratio-V3	0.01%	R
02A0	Int	4 th harmonic ratio-V3	0.01%	R
02A1	Int	5 th harmonic ratio-V3	0.01%	R
02A2	Int	6 th harmonic ratio-V3	0.01%	R
02A3	Int	7 th harmonic ratio-V3	0.01%	R
02A4	Int	8 th harmonic ratio-V3	0.01%	R
02A5	Int	9 th harmonic ratio-V3	0.01%	R
02A6	Int	10 th harmonic ratio-V3	0.01%	R
02A7	Int	11 th harmonic ratio-V3	0.01%	R
02A8	Int	12 th harmonic ratio-V3	0.01%	R
02A9	Int	13 th harmonic ratio-V3	0.01%	R
02AA	Int	14 th harmonic ratio-V3	0.01%	R
02AB	Int	15 th harmonic ratio-V3	0.01%	R

02AC	Int	16 th harmonic ratio-V3	0.01%	R
02AD	Int	17 th harmonic ratio-V3	0.01%	R
02AE	Int	18 th harmonic ratio-V3	0.01%	R
02AF	Int	19 th harmonic ratio-V3	0.01%	R
02B0	Int	20 th harmonic ratio-V3	0.01%	R
02B1	Int	21 th harmonic ratio-V3	0.01%	R
02B2	Int	22 th harmonic ratio-V3	0.01%	R
02B3	Int	23 th harmonic ratio-V3	0.01%	R
02B4	Int	24 th harmonic ratio-V3	0.01%	R
02B5	Int	25 th harmonic ratio-V3	0.01%	R
02B6	Int	26 th harmonic ratio-V3	0.01%	R
02B7	Int	27 th harmonic ratio-V3	0.01%	R
02B8	Int	28 th harmonic ratio-V3	0.01%	R
02B9	Int	29 th harmonic ratio-V3	0.01%	R
02BA	Int	30 th harmonic ratio-V3	0.01%	R
02BB	Int	31 th harmonic ratio-V3	0.01%	R
02BC	Int	32 th harmonic ratio-V3	0.01%	R
02BD	Int	33 th harmonic ratio-V3	0.01%	R
02BE	Int	34 th harmonic ratio-V3	0.01%	R
02BF	Int	35 th harmonic ratio-V3	0.01%	R
02C0	Int	36 th harmonic ratio-V3	0.01%	R
02C1	Int	37 th harmonic ratio-V3	0.01%	R
02C2	Int	38 th harmonic ratio-V3	0.01%	R
02C3	Int	39 th harmonic ratio-V3	0.01%	R
02C4	Int	40 th harmonic ratio-V3	0.01%	R
02C5	Int	41 th harmonic ratio-V3	0.01%	R
02C6	Int	42 th harmonic ratio-V3	0.01%	R
02C7	Int	43 th harmonic ratio-V3	0.01%	R
02C8	Int	44 th harmonic ratio-V3	0.01%	R

02C9	Int	45 th harmonic ratio-V3	0.01%	R
02CA	Int	46 th harmonic ratio-V3	0.01%	R
02CB	Int	47 th harmonic ratio-V3	0.01%	R
02CC	Int	48 th harmonic ratio-V3	0.01%	R
02CD	Int	49 th harmonic ratio-V3	0.01%	R
02CE	Int	50 th harmonic ratio-V3	0.01%	R
02CF	Int	51 th harmonic ratio-V3	0.01%	R
02D0	Int	52 th harmonic ratio-V3	0.01%	R
02D1	Int	53 th harmonic ratio-V3	0.01%	R
02D2	Int	54 th harmonic ratio-V3	0.01%	R
02D3	Int	55 th harmonic ratio-V3	0.01%	R
02D4	Int	56 th harmonic ratio-V3	0.01%	R
02D5	Int	57 th harmonic ratio-V3	0.01%	R
02D6	Int	58 th harmonic ratio-V3	0.01%	R
02D7	Int	59 th harmonic ratio-V3	0.01%	R
02D8	Int	60 th harmonic ratio-V3	0.01%	R
02D9	Int	61 th harmonic ratio-V3	0.01%	R
02DA	Int	62 th harmonic ratio-V3	0.01%	R
02DB	Int	63 th harmonic ratio-V3	0.01%	R
02DC	Int	2 nd harmonic ratio-I1	0.01%	R
02DD	Int	3 rd harmonic ratio-I1	0.01%	R
02DE	Int	4 th harmonic ratio-I1	0.01%	R
02DF	Int	5 th harmonic ratio-I1	0.01%	R
02E0	Int	6 th harmonic ratio-I1	0.01%	R
02E1	Int	7 th harmonic ratio-I1	0.01%	R
02E2	Int	8 th harmonic ratio-I1	0.01%	R
02E3	Int	9 th harmonic ratio-I1	0.01%	R
02E4	Int	10 th harmonic ratio-I1	0.01%	R
02E5	Int	11 th harmonic ratio-I1	0.01%	R

02E6	Int	12 th harmonic ratio-I1	0.01%	R
02E7	Int	13 th harmonic ratio-I1	0.01%	R
02E8	Int	14 th harmonic ratio-I1	0.01%	R
02E9	Int	15 th harmonic ratio-I1	0.01%	R
02EA	Int	16 th harmonic ratio-I1	0.01%	R
02EB	Int	17 th harmonic ratio-I1	0.01%	R
02EC	Int	18 th harmonic ratio-I1	0.01%	R
02ED	Int	19 th harmonic ratio-I1	0.01%	R
02EE	Int	20 th harmonic ratio-I1	0.01%	R
02EF	Int	21 th harmonic ratio-I1	0.01%	R
02F0	Int	22 th harmonic ratio-I1	0.01%	R
02F1	Int	23 th harmonic ratio-I1	0.01%	R
02F2	Int	24 th harmonic ratio-I1	0.01%	R
02F3	Int	25 th harmonic ratio-I1	0.01%	R
02F4	Int	26 th harmonic ratio-I1	0.01%	R
02F5	Int	27 th harmonic ratio-I1	0.01%	R
02F6	Int	28 th harmonic ratio-I1	0.01%	R
02F7	Int	29 th harmonic ratio-I1	0.01%	R
02F8	Int	30 th harmonic ratio-I1	0.01%	R
02F9	Int	31 th harmonic ratio-I1	0.01%	R
02FA	Int	32 th harmonic ratio-I1	0.01%	R
02FB	Int	33 th harmonic ratio-I1	0.01%	R
02FC	Int	34 th harmonic ratio-I1	0.01%	R
02FD	Int	35 th harmonic ratio-I1	0.01%	R
02FE	Int	36 th harmonic ratio-I1	0.01%	R
02FF	Int	37 th harmonic ratio-I1	0.01%	R
0300	Int	38 th harmonic ratio-I1	0.01%	R
0301	Int	39 th harmonic ratio-I1	0.01%	R
0302	Int	40 th harmonic ratio-I1	0.01%	R

0303	Int	41 th harmonic ratio-I1	0.01%	R
0304	Int	42 th harmonic ratio-I1	0.01%	R
0305	Int	43 th harmonic ratio-I1	0.01%	R
0306	Int	44 th harmonic ratio-I1	0.01%	R
0307	Int	45 th harmonic ratio-I1	0.01%	R
0308	Int	46 th harmonic ratio-I1	0.01%	R
0309	Int	47 th harmonic ratio-I1	0.01%	R
030A	Int	48 th harmonic ratio-I1	0.01%	R
030B	Int	49 th harmonic ratio-I1	0.01%	R
030C	Int	50 th harmonic ratio-I1	0.01%	R
030D	Int	51 th harmonic ratio-I1	0.01%	R
030E	Int	52 th harmonic ratio-I1	0.01%	R
030F	Int	53 th harmonic ratio-I1	0.01%	R
0310	Int	54 th harmonic ratio-I1	0.01%	R
0311	Int	55 th harmonic ratio-I1	0.01%	R
0312	Int	56 th harmonic ratio-I1	0.01%	R
0313	Int	57 th harmonic ratio-I1	0.01%	R
0314	Int	58 th harmonic ratio-I1	0.01%	R
0315	Int	59 th harmonic ratio-I1	0.01%	R
0316	Int	60 th harmonic ratio-I1	0.01%	R
0317	Int	61 th harmonic ratio-I1	0.01%	R
0318	Int	62 th harmonic ratio-I1	0.01%	R
0319	Int	63 th harmonic ratio-I1	0.01%	R
031A	Int	2 nd harmonic ratio-I2	0.01%	R
031B	Int	3 rd harmonic ratio-I2	0.01%	R
031C	Int	4 th harmonic ratio-I2	0.01%	R
031D	Int	5 th harmonic ratio-I2	0.01%	R
031E	Int	6 th harmonic ratio-I2	0.01%	R
031F	Int	7 th harmonic ratio-I2	0.01%	R

0320	Int	8 th harmonic ratio-I2	0.01%	R
0321	Int	9 th harmonic ratio-I2	0.01%	R
0322	Int	10 th harmonic ratio-I2	0.01%	R
0323	Int	11 th harmonic ratio-I2	0.01%	R
0324	Int	12 th harmonic ratio-I2	0.01%	R
0325	Int	13 th harmonic ratio-I2	0.01%	R
0326	Int	14 th harmonic ratio-I2	0.01%	R
0327	Int	15 th harmonic ratio-I2	0.01%	R
0328	Int	16 th harmonic ratio-I2	0.01%	R
0329	Int	17 th harmonic ratio-I2	0.01%	R
032A	Int	18 th harmonic ratio-I2	0.01%	R
032B	Int	19 th harmonic ratio-I2	0.01%	R
032C	Int	20 th harmonic ratio-I2	0.01%	R
032D	Int	21 th harmonic ratio-I2	0.01%	R
032E	Int	22 th harmonic ratio-I2	0.01%	R
032F	Int	23 th harmonic ratio-I2	0.01%	R
0330	Int	24 th harmonic ratio-I2	0.01%	R
0331	Int	25 th harmonic ratio-I2	0.01%	R
0332	Int	26 th harmonic ratio-I2	0.01%	R
0333	Int	27 th harmonic ratio-I2	0.01%	R
0334	Int	28 th harmonic ratio-I2	0.01%	R
0335	Int	29 th harmonic ratio-I2	0.01%	R
0336	Int	30 th harmonic ratio-I2	0.01%	R
0337	Int	31 th harmonic ratio-I2	0.01%	R
0338	Int	32 th harmonic ratio-I2	0.01%	R
0339	Int	33 th harmonic ratio-I2	0.01%	R
033A	Int	34 th harmonic ratio-I2	0.01%	R
033B	Int	35 th harmonic ratio-I2	0.01%	R
033C	Int	36 th harmonic ratio-I2	0.01%	R

033D	Int	37 th harmonic ratio-I2	0.01%	R
033E	Int	38 th harmonic ratio-I2	0.01%	R
033F	Int	39 th harmonic ratio-I2	0.01%	R
0340	Int	40 th harmonic ratio-I2	0.01%	R
0341	Int	41 th harmonic ratio-I2	0.01%	R
0342	Int	42 th harmonic ratio-I2	0.01%	R
0343	Int	43 th harmonic ratio-I2	0.01%	R
0344	Int	44 th harmonic ratio-I2	0.01%	R
0345	Int	45 th harmonic ratio-I2	0.01%	R
0346	Int	46 th harmonic ratio-I2	0.01%	R
0347	Int	47 th harmonic ratio-I2	0.01%	R
0348	Int	48 th harmonic ratio-I2	0.01%	R
0349	Int	49 th harmonic ratio-I2	0.01%	R
034A	Int	50 th harmonic ratio-I2	0.01%	R
034B	Int	51 th harmonic ratio-I2	0.01%	R
034C	Int	52 th harmonic ratio-I2	0.01%	R
034D	Int	53 th harmonic ratio-I2	0.01%	R
034E	Int	54 th harmonic ratio-I2	0.01%	R
034F	Int	55 th harmonic ratio-I2	0.01%	R
0350	Int	56 th harmonic ratio-I2	0.01%	R
0351	Int	57 th harmonic ratio-I2	0.01%	R
0352	Int	58 th harmonic ratio-I2	0.01%	R
0353	Int	59 th harmonic ratio-I2	0.01%	R
0354	Int	60 th harmonic ratio-I2	0.01%	R
0355	Int	61 th harmonic ratio-I2	0.01%	R
0356	Int	62 th harmonic ratio-I2	0.01%	R
0357	Int	63 th harmonic ratio-I2	0.01%	R
0358	Int	2 nd harmonic ratio-I3	0.01%	R
0359	Int	3 rd harmonic ratio-I3	0.01%	R

035A	Int	4 th harmonic ratio-I3	0.01%	R
035B	Int	5 th harmonic ratio-I3	0.01%	R
035C	Int	6 th harmonic ratio-I3	0.01%	R
035D	Int	7 th harmonic ratio-I3	0.01%	R
035E	Int	8 th harmonic ratio-I3	0.01%	R
035F	Int	9 th harmonic ratio-I3	0.01%	R
0360	Int	10 th harmonic ratio-I3	0.01%	R
0361	Int	11 th harmonic ratio-I3	0.01%	R
0362	Int	12 th harmonic ratio-I3	0.01%	R
0363	Int	13 th harmonic ratio-I3	0.01%	R
0364	Int	14 th harmonic ratio-I3	0.01%	R
0365	Int	15 th harmonic ratio-I3	0.01%	R
0366	Int	16 th harmonic ratio-I3	0.01%	R
0367	Int	17 th harmonic ratio-I3	0.01%	R
0368	Int	18 th harmonic ratio-I3	0.01%	R
0369	Int	19 th harmonic ratio-I3	0.01%	R
036A	Int	20 th harmonic ratio-I3	0.01%	R
036B	Int	21 th harmonic ratio-I3	0.01%	R
036C	Int	22 th harmonic ratio-I3	0.01%	R
036D	Int	23 th harmonic ratio-I3	0.01%	R
036E	Int	24 th harmonic ratio-I3	0.01%	R
036F	Int	25 th harmonic ratio-I3	0.01%	R
0370	Int	26 th harmonic ratio-I3	0.01%	R
0371	Int	27 th harmonic ratio-I3	0.01%	R
0372	Int	28 th harmonic ratio-I3	0.01%	R
0373	Int	29 th harmonic ratio-I3	0.01%	R
0374	Int	30 th harmonic ratio-I3	0.01%	R
0375	Int	31 th harmonic ratio-I3	0.01%	R
0376	Int	32 th harmonic ratio-I3	0.01%	R

0377	Int	33 th harmonic ratio-I3	0.01%	R
0378	Int	34 th harmonic ratio-I3	0.01%	R
0379	Int	35 th harmonic ratio-I3	0.01%	R
037A	Int	36 th harmonic ratio-I3	0.01%	R
037B	Int	37 th harmonic ratio-I3	0.01%	R
037C	Int	38 th harmonic ratio-I3	0.01%	R
037D	Int	39 th harmonic ratio-I3	0.01%	R
037E	Int	40 th harmonic ratio-I3	0.01%	R
037F	Int	41 th harmonic ratio-I3	0.01%	R
0380	Int	42 th harmonic ratio-I3	0.01%	R
0381	Int	43 th harmonic ratio-I3	0.01%	R
0382	Int	44 th harmonic ratio-I3	0.01%	R
0383	Int	45 th harmonic ratio-I3	0.01%	R
0384	Int	46 th harmonic ratio-I3	0.01%	R
0385	Int	47 th harmonic ratio-I3	0.01%	R
0386	Int	48 th harmonic ratio-I3	0.01%	R
0387	Int	49 th harmonic ratio-I3	0.01%	R
0388	Int	50 th harmonic ratio-I3	0.01%	R
0389	Int	51 th harmonic ratio-I3	0.01%	R
038A	Int	52 th harmonic ratio-I3	0.01%	R
038B	Int	53 th harmonic ratio-I3	0.01%	R
038C	Int	54 th harmonic ratio-I3	0.01%	R
038D	Int	55 th harmonic ratio-I3	0.01%	R
038E	Int	56 th harmonic ratio-I3	0.01%	R
038F	Int	57 th harmonic ratio-I3	0.01%	R
0390	Int	58 th harmonic ratio-I3	0.01%	R
0391	Int	59 th harmonic ratio-I3	0.01%	R
0392	Int	60 th harmonic ratio-I3	0.01%	R
0393	Int	61 th harmonic ratio-I3	0.01%	R

0394	Int	62 th harmonic ratio-I3	0.01%	R
0395	Int	63 th harmonic ratio-I3	0.01%	R

3.3 Module data

Address	Format	Description	Unit	R/W
0506	Int	State of digital input,0:off,1:on Bit0:X1-DI1 Bit1:X1-DI2 Bit2:X1-DI3 Bit3:X1-DI4 Bit4:X2-DI1 Bit5:X2-DI2 Bit6:X2-DI3 Bit7:X2-DI4 Bit8:X3-DI1 Bit9:X3-DI2 Bit10:X3-DI3 Bit11:X3-DI4 Bit12:X4-DI1 Bit13:X4-DI2 Bit14:X4-DI3 Bit15:X4-DI4		R
0507	Int	State of relay output,0:off,1:on Bit0:main body-DO1 Bit1:main body-DO2 Bit2:X1-DO1 Bit3:X1-DO2 Bit4:X2-DO1 Bit5:X2-DO2 Bit6:X3-DO1 Bit7:X3-DO2 Bit8:X4-DO1 Bit9:X4-DO2		R

0508	Int	Analogue output value: X1-AO1	0.001mA	R
0509	Int	Analogue output value: X1-AO2	0.001mA	R
050A	Int	Analogue output value: X2-AO1	0.001mA	R
050B	Int	Analogue output value: X2-AO2	0.001mA	R
050C	Int	Analogue output value: X3-AO1	0.001mA	R
050D	Int	Analogue output value: X3-AO2	0.001mA	R
050E	Int	Analogue output value: X4-AO1	0.001mA	R
050F	Int	Analogue output value: X4-AO2	0.001mA	R
0510	Int	Analogue input value: X1-AI1(4-20mA)	0.001mA	R
0511	Int	Analogue input value: X1-AI2(4-20mA)	0.001mA	R
0512	Int	Analogue input value: X2-AI1(4-20mA)	0.001mA	R
0513	Int	Analogue input value: X2-AI2(4-20mA)	0.001mA	R
0514	Int	Analogue input value: X3-AI1(4-20mA)	0.001mA	R
0515	Int	Analogue input value: X3-AI2(4-20mA)	0.001mA	R
0516	Int	Analogue input value: X4-AI1(4-20mA)	0.001mA	R
0517	Int	Analogue input value: X4-AI2(4-20mA)	0.001mA	R
0518	Int	Analogue input value: X1-AI1(PT100)	0.1 °C	R
0519	Int	Analogue input value: X1-AI2(PT100)	0.1 °C	R
051A	Int	Analogue input value: X2-AI1(PT100)	0.1 °C	R
051B	Int	Analogue input value: X2-AI2(PT100)	0.1 °C	R
051C	Int	Analogue input value: X3-AI1(PT100)	0.1 °C	R
051D	Int	Analogue input value: X3-AI2(PT100)	0.1 °C	R
051E	Int	Analogue input value: X4-AI1(PT100)	0.1 °C	R
051F	Int	Analogue input value: X4-AI2(PT100)	0.1 °C	R
0520	Int	Analogue input value: X1-AI1(TC)	1 °C	R
0521	Int	Analogue input value: X1-AI2(TC)	1 °C	R
0523	Int	Analogue input value: X2-AI1(TC)	1 °C	R
0524	Int	Analogue input value: X2-AI2(TC)	1 °C	R
0525	Int	Analogue input value: X3-AI1(TC)	1 °C	R

0526	Int	Analogue input value: X3-AI2(TC)	1 °C	R
0527	Int	Analogue input value: X4-AI1(TC)	1 °C	R
0528	Int	Analogue input value: X4-AI2(TC)	1 °C	R
0528-0529	Long	Pulse counter: X1-1		R
052A-052B	Long	Pulse counter: X1-2		R
052C-052D	Long	Pulse counter: X1-3		R
052E-052F	Long	Pulse counter: X1-4		R
0530-0531	Long	Pulse counter: X2-1		R
0532-0533	Long	Pulse counter: X2-2		R
0534-0535	Long	Pulse counter: X2-3		R
0536-0537	Long	Pulse counter: X2-4		R
0538-0539	Long	Pulse counter: X3-1		R
053A-053B	Long	Pulse counter: X3-2		R
053C-053D	Long	Pulse counter: X3-3		R
053E-053F	Long	Pulse counter: X3-4		R
0540-0541	Long	Pulse counter: X4-1		R
0542-0543	Long	Pulse counter: X4-2		R
0544-0545	Long	Pulse counter: X4-3		R
0546-0547	Long	Pulse counter: X4-4		R

3.4 Module data

Address	Format	Description	Unit	R/W
0760-0767	char	MCU revision. Example: AHM3.1008		R
0768-076F	char	X1 revision		R
0770-0777	char	X2 revision		R
0778-077F	char	X3 revision		R
0780-0787	char	X4 revision		R

3.5 Setup Parameters

Address	Format	Description1	Description2	R/W
0800	Int	High byte	X1 0:no module 1:DM1 module 2:DM2 module 3:DM3 module 13:DM13 module	R
		Low byte	X2 0:no module 1:DM1 module 2:DM2 module 3:DM3 module 13:DM13 module	
0801	Int	High byte	X3 0:no module 1:DM1 module 2:DM2 module 3:DM3 module 13:DM13 module	R
		Low byte	X4 0:no module 1:DM1 module 2:DM2 module 3:DM3 module 13:DM13 module	

0802	Int	Password	0-9999	R
0803	Int	High byte	Default Display interface 0: U 1: I 2: P 3: Energy 4: THD 5: Waveform 6: Demand 7: Max/Min	R/W
0804	Int	High byte	Langue 0:English	R/W
		Low byte	Contrast:0-5	R/W
0805	Int	High byte	Back light delay time:1-255s 0:usually ON	R/W
		Low byte	Data recording interval 1-255min	R/W
0806	Int	High byte	Address: 1-247	R/W
		Low byte	Baud rate 0: 1200bps 1: 2400bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps	
0807	Int	High byte	Parity 0: N,8,1 1: O,8,1 2: E,8,1 3: N,8,2	R/W

0808-0809	Int	--	--	R/W
080A	Int	High byte	Wiring 0: 3P4W 1: 3P3W 2: 1P2W 3:1P3W	R/W
080B	--			
080C-080D	Long	PT primary	1~999999V	R/W
080E-080F	Long	CT primary	1~999999A	R/W
0810	Int	PT secondary	1~999V	R/W
0811	Int	CT secondary	1~6A	R/W
0812	Int	Item of Record 1#	0: V1 1: V2 2: V3 3: V12 4: V23 5: V31 6: I1 7: I2 8: I3 9: In 10: P1 11: P2 12: P3 13: P 14: Q1 15: Q2 16: Q3 17: Q 18: S1	

		19: S2 20: S3 21: S 22: PF1 23: PF2 24: PF3 25: PF 26: F 27: Unavg 28: Ulavg 29: Iavg 30: Phase angle of V1 31: Phase angle of V2 32: Phase angle of V3 33: Phase angle of I1 34: Phase angle of I2 35: Phase angle of I3 36: Positive-sequence component of voltage 37: Negative-sequence component of voltage 38: Zero-sequence component of voltage 39: Unbalance factor of voltage 40: Reserved 41: Positive-sequence component of current 42: Negative-sequence component of current 43: Zero-sequence component of	
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			current 44: Unbalance factor of current 45: Reserved 46: THD-V1 47: THD-V2 48: THD-V3 49: THD-I1 50: THD-I1 51: THD-I1 52: Fundamental value -V1 53: Fundamental value -V2 54: Fundamental value -V3 55: Fundamental value -I1 56: Fundamental value -I2 57: Fundamental value -I3	
0813	Int	Item of Record 2#	the same as above	R
0814	Int	Item of Record 3#	the same as above	R
0815	Int	Item of Record 4#	the same as above	R
0816	Int	Item of Record 5#	the same as above	R
0817	Int	Item of Record 6#	the same as above	R
0818-081F	--			
0820	Int	Unit price of Tariff #1 import energy	0.01\$/kWh	
0821	Int	Unit price of Tariff #2 import energy	0.01\$/kWh	

0822	Int	Unit price of Tariff #3 import energy	0.01\$/kWh	
0823	Int	Unit price of Tariff #4 import energy	0.01\$/kWh	
0824	Int	Unit price of Tariff #5 import energy	0.01\$/kWh	
0825	Int	Unit price of Tariff #6 import energy	0.01\$/kWh	
0826	Int	Unit price of Tariff #7 import energy	0.01\$/kWh	
0827	Int	Unit price of Tariff #8 import energy	0.01\$/kWh	
0828	Int	Unit price of Tariff #9 import energy	0.01\$/kWh	
0829	Int	Unit price of Tariff #10 import energy	0.01\$/kWh	
082A	Int	Unit price of Tariff #11 import energy	0.01\$/kWh	
082B	Int	Unit price of Tariff #12 import energy	0.01\$/kWh	
082C	Int	Unit price of Tariff #13 import energy	0.01\$/kWh	
082D	Int	Unit price of Tariff #14 import energy	0.01\$/kWh	
082E	Int	Unit price of Tariff #15 import energy	0.01\$/kWh	
082F	Int	Unit price of Tariff #16 import energy	0.01\$/kWh	
0830	Int	Unit price of Tariff #1 export energy	0.01\$/kWh	

0831	Int	Unit price of Tariff #2 export energy	0.01\$/kWh	
0832	Int	Unit price of Tariff #3 export energy	0.01\$/kWh	
0833	Int	Unit price of Tariff #4 export energy	0.01\$/kWh	
0834	Int	Unit price of Tariff #5 export energy	0.01\$/kWh	
0835	Int	Unit price of Tariff #6 export energy	0.01\$/kWh	
0836	Int	Unit price of Tariff #7 export energy	0.01\$/kWh	
0837	Int	Unit price of Tariff #8 export energy	0.01\$/kWh	
0838	Int	Unit price of Tariff #9 export energy	0.01\$/kWh	
0839	Int	Unit price of Tariff #10 export energy	0.01\$/kWh	
083A	Int	Unit price of Tariff #11 export energy	0.01\$/kWh	
083B	Int	Unit price of Tariff #12 export energy	0.01\$/kWh	
083C	Int	Unit price of Tariff #13 export energy	0.01\$/kWh	
083D	Int	Unit price of Tariff #14 export energy	0.01\$/kWh	
083E	Int	Unit price of Tariff #15 export energy	0.01\$/kWh	
083F	Int	Unit price of Tariff #16 export energy	0.01\$/kWh	

0840	Int	CO2 Emissions of Tariff #1 import energy	0.01kg/kWh	
0841	Int	CO2 Emissions of Tariff #2 import energy	0.01kg/kWh	
0842	Int	CO2 Emissions of Tariff #3 import energy	0.01kg/kWh	
0843	Int	CO2 Emissions of Tariff #4 import energy	0.01kg/kWh	
0844	Int	CO2 Emissions of Tariff #5 import energy	0.01kg/kWh	
0845	Int	CO2 Emissions of Tariff #6 import energy	0.01kg/kWh	
0846	Int	CO2 Emissions of Tariff #7 import energy	0.01kg/kWh	
0847	Int	CO2 Emissions of Tariff #8 import energy	0.01kg/kWh	
0848	Int	CO2 Emissions of Tariff #9 import energy	0.01kg/kWh	
0849	Int	CO2 Emissions of Tariff #10 import energy	0.01kg/kWh	

084A	Int	CO2 Emissions of Tariff #11 import energy	0.01kg/kWh	
084B	Int	CO2 Emissions of Tariff #12 import energy	0.01kg/kWh	
084C	Int	CO2 Emissions of Tariff #13 import energy	0.01kg/kWh	
084D	Int	CO2 Emissions of Tariff #14 import energy	0.01kg/kWh	
084E	Int	CO2 Emissions of Tariff #15 import energy	0.01kg/kWh	
084F	Int	CO2 Emissions of Tariff #16 import energy	0.01kg/kWh	
0850	Int	CO2 Emissions of Tariff #1 export energy	0.01kg/kWh	
0851	Int	CO2 Emissions of Tariff #2 export energy	0.01kg/kWh	
0852	Int	CO2 Emissions of Tariff #3 export energy	0.01kg/kWh	
0853	Int	CO2 Emissions of Tariff #4 export energy	0.01kg/kWh	

0854	Int	CO2 Emissions of Tariff #5 export energy	0.01kg/kWh	
0855	Int	CO2 Emissions of Tariff #6 export energy	0.01kg/kWh	
0856	Int	CO2 Emissions of Tariff #7 export energy	0.01kg/kWh	
0857	Int	CO2 Emissions of Tariff #8 export energy	0.01kg/kWh	
0858	Int	CO2 Emissions of Tariff #9 export energy	0.01kg/kWh	
0859	Int	CO2 Emissions of Tariff #10 export energy	0.01kg/kWh	
085A	Int	CO2 Emissions of Tariff #11 export energy	0.01kg/kWh	
085B	Int	CO2 Emissions of Tariff #12 export energy	0.01kg/kWh	
085C	Int	CO2 Emissions of Tariff #13 export energy	0.01kg/kWh	
085D	Int	CO2 Emissions of Tariff #14 export energy	0.01kg/kWh	

085E	Int	CO2 Emissions of Tariff #15 export energy	0.01kg/kWh	
085F	Int	CO2 Emissions of Tariff #16 export energy	0.01kg/kWh	
0860	Int	Item	analogue output: X1-AO1 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	R/W
0861	Int	mode	Analogue output: X1-AO1 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
0862-0863	Long	Down scale	Analogue output: X1-AO1 primary grid data $0-9999 \times 10^n$ (n=0,3,6) ratio: voltage: 0.1V	R/W

			current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	
0864-0865	Long	Middle scale	the same as above	R/W
0866-0867	Long	Full scale	the same as above	R/W
0868	Int	Item	analogue output: X1-AO2 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	R/W
0869	Int	mode	Analogue output: X1-AO2 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
086A-086B	Long	Down scale	Analogue output: X1-AO2 primary grid data	R/W

			$0-9999 \times 10^n$ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	
086C-086D	Long	Middle scale	the same as above	
086E-086F	Long	Full scale	the same as above	R/W
0870	Int	Item	analogue output: X2-AO1 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	R/W
0871	Int	mode	Analogue output: X2-AO1 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W

0872-0873	Long	Down scale	Analogue output: X1-AO1 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
0874-0875	Long	Middle scale	the same as above	
0876-0877	Long	Full scale	the same as above	R/W
0878	Int	Item	analogue output: X2-AO2 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	R/W
0879	Int	mode	Analogue output: X2-AO2 0: 4~20 mA	R/W

			1: 0~20 mA 2: 4~12~20 mA	
087A-087B	Long	Down scale	Analogue output: X1-AO2 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
087C-087D	Long	Middle scale	the same as above	
087E-087F	Long	Full scale	the same as above	R/W
0880	Int	Item	analogue output: X3-AO1 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	R/W

0881	Int	mode	Analogue output: X3-AO1 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
0882-0883	Long	Down scale	Analogue output: X3-AO1 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
0884-0885	Long	Middle scale	the same as above	
0886-0887	Long	Full scale	the same as above	R/W
0888	Int	Item	analogue output: X3-AO2 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2	R/W

			25: PF3 26: PF 27: F	
0889	Int	mode	Analogue output: X3-AO2 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
088A-088B	Long	Down scale	Analogue output: X3-AO2 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
088C-088D	Long	Middle scale	the same as above	
088E-088F	Long	Full scale	the same as above	R/W
0890	Int	Item	analogue output: X4-AO1 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2	R/W

			21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	
0891	Int	mode	Analogue output: X4-AO1 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
0892-0893	Long	Down scale	Analogue output: X4-AO1 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
0894-0895	Long	Middle scale	the same as above	
0896-0897	Long	Full scale	the same as above	R/W
0898	Int	Item	analogue output: X4-AO2 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2	R/W

			17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	
0899	Int	mode	Analogue output: X4-AO2 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
089A-089B	Long	Down scale	Analogue output: X4-AO2 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
089C-089D	Long	Middle scale	the same as above	
089E-089F	Long	Full scale	the same as above	R/W
08A0-08AF	--			
08B0	Int	Demand item of first to sixth channels	0:IPQS (fixed) Include six electric parameters which are I1 I2,I3,P,Q,S	R/W
08B1	Int	Mode of demand	0: slip block mode 1: fixed block mode 2: 4:synchronous mode	R/W
08B2	Int	Slip time(t)	1-9999s	R/W

08B3	Int	Demand period(T)	1-30t	R/W
0894-089B	--			
08BC	Int	High byte: X1-DI1 mode Low byte: X1-DI2 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08BD	Int	High byte: X1-DI3 mode Low byte: X1-DI4 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08BE	Int	High byte: X2-DI1 mode Low byte: X2-DI2 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08BF	Int	High byte: X2-DI3 mode Low byte: X2-DI4 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08C0	Int	High byte: X3-DI1 mode Low byte: X3-DI2 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08C1	Int	High byte: X3-DI3 mode Low byte: X3-DI4 mode	0:state monitor 1:pulse counter	R/W

			2:Spare energy 3:tariff energy 4:synchronous demand	
08C2	Int	High byte: X4-DI1 mode Low byte: X4-DI2 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08C3	Int	High byte: X4-DI3 mode Low byte: X4-DI4 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08C4-08C7	--			
08C8	Int	High byte:X1-TC Thermocouple type	0:K 1:J 2:E 3:N	R/W
		Low byte:X1-code junction compensation	0:OFF 1:ON(default)	R/W
08C9	Int	High byte:X2-TC Thermocouple type	0:K 1:J 2:E 3:N	R/W
		Low byte:X2-code junction compensation	0:OFF 1:ON(default)	R/W
08CA	Int	High byte:X3-TC Thermocouple type	0:K 1:J 2:E 3:N	R/W

		Low byte:X3-code junction compensation	0:OFF 1:ON(default)	R/W
08CB		High byte:X4-TC Thermocouple type	0:K 1:J 2:E 3:N	R/W
		Low byte:X4-code junction compensation	0:OFF 1:ON(default)	R/W
08CC	Int	Relay output Main body-DO1 mode	0: OFF 1: remote control 2: alarm 3: energy pulse	R/W
08CD	Int	Relay output Main body-DO1 Pulse width	0.1~99.9ms 0.0: no pulse	R/W
08CE	Int	Relay output Main body-DO1 Alarm item select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 <	R/W

			14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In< 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb <	
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			44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
			Energy pulse select: 0: kWh+ 1: kWh- 2: kvarh+ 3: kvarh-	
08CF-08D0	Long	Relay output Main body -DO1 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value corresponds to the No. of digital input. 0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4	R/W

			4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4	
			Energy pulse constant: 0~9999, secondary grid data. (Wh/imp)/(varh/imp)	
08D1-08D2	Long	Relay output Main body-DO1 hysteresis	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
08D3	Int	Relay output Main body-DO1 Alarm delay time	0~99.99s	R/W
08D4	Int	Relay output	0:OFF	R/W

		Main body-DO1 Alarm interlock	1:ON	
08D5	Int	Relay output Main body-DO2 mode	0: OFF 1: remote control 2: alarm 3: energy pulse	R/W
08D6	Int	Relay output Main body-DO2 Pulse width	0.1~99.9ms 0.0: no pulse	R/W
08D7		Relay output Main body-DO2 Alarm item select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 >	R/W

			21: I1 <	
			22: I2 >	
			23: I2 <	
			24: I3 >	
			25: I3 <	
			26: I >	
			27: I <	
			24: Iavg >	
			29: Iavg <	
			30: In >	
			31: In <	
			32: P >	
			33: P <	
			34: Q >	
			35: Q <	
			26: S >	
			37: S <	
			38: PF>	
			39: PF<	
			40: F >	
			41: F <	
			42: Uunb >	
			43: Uunb <	
			44: Iunb >	
			45: Iunb <	
			46: THDu >	
			47: THDu <	
			48: THDi >	
			49: THDi <	
			50: DIx	

			<p>Energy pulse select:</p> <p>0: kWh+</p> <p>1: kWh-</p> <p>2: kvarh+</p> <p>3: kvarh-</p>	
08D8-08D9		<p>Relay output</p> <p>Main body -DO2 limit value</p>	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p> <p>current: 0.001A</p> <p>power: 1W/var/VA,</p> <p>PF: 0.001</p> <p>F: 0.01Hz</p> <p>Uunb /Iunb /THDu /THDi : 0.01%</p> <p>Setting parameter value should be smaller than two times of rated value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1</p> <p>1:X1-DI2</p> <p>2:X1-DI3</p> <p>3:X1-DI4</p> <p>4:X2-DI1</p> <p>5:X2-DI2</p> <p>6:X2-DI3</p> <p>7:X2-DI4</p> <p>8:X3-DI1</p> <p>9:X3-DI2</p> <p>10:X3-DI3</p>	R/W

			11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4	
			Energy pulse constant: 0~9999 (Wh/imp)/(varh/imp)	
08DA-08DB		Relay output Main body-DO2 hysteresis	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
08DC	Int	Relay output Main body-DO2 Alarm delay time	0~99.99s	R/W
08DD	Int	Relay output Main body-DO2 Alarm interlock	0:OFF 1:ON	R/W
08DE	Int	Relay output	0: OFF	R/W

		X1-DO1 mode	1: remote control 2: alarm	
08DF	Int	Relay output X1-DO1 pulse width	0.0: no pulse 0.1~99.9ms	R/W
08E0	Int	Relay output X1-DO1 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16: Uavg> 17: Uavg< 18: Vavg> 19: Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 <	R/W

			26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
08E1-08E2	Long	Relay output X1-DO1 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA,	R/W

			<p>PF: 0.001</p> <p>F: 0.01Hz</p> <p>Uunb /Iunb /THDu /THDi : 0.01%</p> <p>Setting parameter value should be smaller than two times of rated value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1</p> <p>1:X1-DI2</p> <p>2:X1-DI3</p> <p>3:X1-DI4</p> <p>4:X2-DI1</p> <p>5:X2-DI2</p> <p>6:X2-DI3</p> <p>7:X2-DI4</p> <p>8:X3-DI1</p> <p>9:X3-DI2</p> <p>10:X3-DI3</p> <p>11:X3-DI4</p> <p>12:X4-DI1</p> <p>13:X4-DI2</p> <p>14:X4-DI3</p> <p>15:X4-DI4</p>	
08E3-08E4	Long	Relay output X1-DO1 hysteresis value	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p> <p>current: 0.001A</p> <p>power: 1W/var/VA,</p>	R/W

			PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	
08E5	Int	Relay output X1-DO1 delay time	0~99.99s	R/W
08E6	Int	Relay output X1-DO1 interlock	0:OFF 1:ON	R/W
08E7	Int	Relay output X1-DO2 mode	0:OFF 1:remote control 2:alarm	R/W
08E8	Int	Relay output X1-DO2 pulse width	0.0: no pulse 0.1~99.9ms	R/W
08E9	Int	Relay output X1-DO2 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI >	R/W

			15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb >	
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			45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
08EA-08EB	Long	Relay output X1-DO2 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value corresponds to the No. of digital input. 0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4 4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2	R/W

			10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4	
08EC-08ED	Long	Relay output X1-DO2 hysteresis value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
08EE	Int	Relay output X1-DO2 delay time	0~99.99s	R/W
08EF	Int	Relay output X1-DO2 interlock	0:OFF 1:ON	R/W
08F0	Int	Relay output X2-DO1 mode	0:OFF 1:remote control 2:alarm	R/W
08F1	Int	Relay output X2-DO1 pulse width	0.0: no pulse 0.1~99.9ms	R/W
08F2	Int	Relay output X2-DO1 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 <	R/W

			4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P <	
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			34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
08F3-08F4	Long	Relay output X2-DO1 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value corresponds to the No. of digital	R/W

			input. 0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4 4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4	
08F5-08F6	Long	Relay output X2-DO1 hysteresis value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
08F7	Int	Relay output X2-DO1 delay time	0-99.99s	R/W

08F8	Int	Relay output X2-DO1 interlock	0:OFF 1:ON	R/W
08F9	Int	Relay output X2-DO2 mode	0:OFF 1:remote control 2:alarm	R/W
08FA	Int	Relay output X2-DO2 pulse width	0.0: no pulse 0.1~99.9ms	R/W
08FB	Int	Relay output X2-DO2 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 > 21: I1 < 22: I2 >	R/W

			23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
08FC-08FD	Long	Relay output X2-DO2 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6)	R/W

			ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value corresponds to the No. of digital input. 0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4 4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4	
08FE-08FF	Long	Relay output X2-DO2 hysteresis value	primary grid data 0-9999*10 ⁿ (n=0,3,6)	R/W

			ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	
0900	Int	Relay output X2-DO2 delay time	0~99.99s	R/W
0901	Int	Relay output X2-DO2 interlock	0:OFF 1:ON	R/W
0902	Int	Relay output X3-DO1 mode	0:OFF 1:remote control 2:alarm	R/W
0903	Int	Relay output X3-DO1 pulse width	0.0: no pulse 0.1~99.9ms	R/W
0904	Int	Relay output X3-DO1 alarm select		R/W
0905-0906	Long	Relay output X3-DO1 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated	R/W

			<p>value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1</p> <p>1:X1-DI2</p> <p>2:X1-DI3</p> <p>3:X1-DI4</p> <p>4:X2-DI1</p> <p>5:X2-DI2</p> <p>6:X2-DI3</p> <p>7:X2-DI4</p> <p>8:X3-DI1</p> <p>9:X3-DI2</p> <p>10:X3-DI3</p> <p>11:X3-DI4</p> <p>12:X4-DI1</p> <p>13:X4-DI2</p> <p>14:X4-DI3</p> <p>15:X4-DI4</p>	
0907-0908	Long	<p>Relay output</p> <p>X3-DO1 hysteresis value</p>	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p> <p>current: 0.001A</p> <p>power: 1W/var/VA,</p> <p>PF: 0.001</p> <p>F: 0.01Hz</p> <p>Uunb /Iunb /THDu /THDi : 0.01%</p> <p>Setting parameter value should be smaller than two times of rated</p>	R/W

			value.	
0909	Int	Relay output X3-DO1 delay time	0~99.99s	R/W
090A	Int	Relay output X3-DO1 interlock	0:OFF 1:ON	R/W
090B	Int	Relay output X3-DO2 mode	0:OFF 1:remote control 2:alarm	R/W
090C	Int	Relay output X3-DO2 pulse width	0.0: no pulse 0.1~99.9ms	R/W
090D	Int	Relay output X3-DO2 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg<	R/W

			20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi <	
--	--	--	--	--

			50: DIx	
090E-090F	Long	Relay output X3-DO2 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value corresponds to the No. of digital input. 0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4 4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3	R/W

			15:X4-DI4	
0910-0911	Long	Relay output X3-DO2 hysteresis value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
0912	Int	Relay output X3-DO2 delay time	0~99.99s	R/W
0913	Int	Relay output X3-DO2 interlock	0:OFF 1:ON	R/W
0914	Int	Relay output X4-DO1 mode	0:OFF 1:remote control 2:alarm	R/W
0915	Int	Relay output X4-DO1 pulse width	0.0: no pulse 0.1~99.9ms	R/W
0916	Int	Relay output X4-DO1 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 >	R/W

			9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF>	
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			39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
0917-0918	Long	Relay output X4-DO1 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value corresponds to the No. of digital input. 0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4	R/W

			4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4	
0919-091A	Long	Relay output X4-DO1 hysteresis value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
091B	Int	Relay output X4-DO1 delay time	0-99.99s	R/W
091C	Int	Relay output X4-DO1 interlock	0:OFF 1:ON	R/W
091D	Int	Relay output X4-DO2 mode	0:OFF 1:remote control 2:alarm	R/W

091E	Int	Relay output X4-DO2 pulse width	0.0: no pulse 0.1~99.9ms	R/W
091F	Int	Relay output X4-DO2 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16: Uavg> 17: Uavg< 18: Vavg> 19: Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I <	R/W

			24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
0920-0921	Long	Relay output X4-DO2 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz	R/W

			<p>Uunb /lunb /THDu /THDi : 0.01%</p> <p>Setting parameter value should be smaller than two times of rated value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1</p> <p>1:X1-DI2</p> <p>2:X1-DI3</p> <p>3:X1-DI4</p> <p>4:X2-DI1</p> <p>5:X2-DI2</p> <p>6:X2-DI3</p> <p>7:X2-DI4</p> <p>8:X3-DI1</p> <p>9:X3-DI2</p> <p>10:X3-DI3</p> <p>11:X3-DI4</p> <p>12:X4-DI1</p> <p>13:X4-DI2</p> <p>14:X4-DI3</p> <p>15:X4-DI4</p>	
0922-0923	Long	<p>Relay output</p> <p>X4-DO2 hysteresis value</p>	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p> <p>current: 0.001A</p> <p>power: 1W/var/VA,</p> <p>PF: 0.001</p> <p>F: 0.01Hz</p>	R/W

		WI-FI Module Set	Char[4][16] [0][16] Local IP [1][16] Remote IP [2][16] subnet mask [3][16] gateway address	
0955-0957	Int		MAC Address: Char[6]	R
0958	Int		High byte: WIFI Mode 1: Station (default) 2: SoftAP 3: Station+SoftAP Low byte: Encryption 0: WEP; 1: WPA/WPA2 Psk; 2: NONE	R/W
0959-0968	Int		WIFI Network Name: Char[32]	R/W
0969	Int		High byte: WEPpassword length 0: unlimited 1: ACSII 2: 13 ACSII Low byte: IO1 0: None 1: FC Mode 2:HDC Mode	R/W
096A-0971	Int		Char[16]: WEP password	R/W
0972-0981	Int		Char[32]: WAP/WAP2 password	R/W
0982-0987	Int		Char[12]: HEX format E.g. 0x30 0x32 0x30 0x36 0x30 0x33 0x30 0x32 0x2E 0x30 0x32 0x30 Firmware version: 02060302.020	R/W
0988	Int	GPRS Module Set	High byte: DHCP 0: invalid 1: dynamic allocation ip address Low byte: Connect Mode	R/W

		0:Server; 1: Client	
0989	Int		Port number
098A-0999	Int		GPRS: Address Char[2][16] [0][16] Local IP [1][16] Remote IP
099A-099B	Int		Char[4] GPRS Mode Set: Char[0] : GPRS Switch 0: OFF 1:ON Char[1] : GPRS Mode 0: SMS 1:SMS+GPRS Char[2] : GPRS connection Mode 0: IP 1:DOMAIN NAME Char[3] : reserved
099C-09A7	Int		Char[24]: DN E.g. www.jcsepi.com
09A8-09AF	Int		Char[16]: SMS center number E.g. +34 xxx xxx xxx
09B0-9B7	Int		Char[16]: Administrator number E.g. +34 xxx xxx xxx
09B8-09CF	Int	0:Server; 1: Client	Char[3][16]: User number E.g. Char[0][16]: +34 xxx xxx xxx Char[1][16]: +34 xxx xxx xxx Char[2][16]: +34 xxx xxx xxx
09D0-09D7	Int		Char[16]: Company name E.g. SACI
09D8-09DB	Int		Char[8]: User ID
09DC-09ED	Int		Char[36]: APN[36]
09EE-09F9	Int		Char[24]: APN_UserName
09FA-0A03	Int		Char[20]: APN_UserCode

0A04-0A05	Int		Char[4]: Heartbeat time	R/W
0A06-0A09	Int		Char[8]: Set password	R/W
0A0A-0AFF	--			

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Specifications subject to change without any notice.

AHM3-SMTP/AHM3RC-SMTP

Multifunction Power Meter

-Modbus-RTU

Rev 1.1

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1. Overview

This user manual is the operation instruction for AHM3 multifunction power meter with Modbus-RTU protocol, which is used to help thirty party to operate and develop this meter.

2. Communication

2.1 Physical layer

Communication interface should be connected by shielded twisted-pair. Thirty two meters are supposed to be connected to a same busbar at most. Terminal resistance should be connected to both ends of busbar. Communication speed is 1200~38400bps which can be set. Defaulted communication speed is 9600bps. Byte transmission format is composed of one start bit, eight data bits, no check bit or one odd bit or one even check bit, one or two stop bits.

2.2 Communication protocol

Message format

Address field	Function code field	Data field	Check field
one byte	one byte	N bytes	two bytes

◆ Address code

Address code is slave address with range of 1-247. Other addresses are reserved.

◆ Function code field

Function code field indicates the executive function of addressed terminal. Meaning and function of function codes supported by meter is shown in the following list.

Code	Meaning
0x01	Read coils
0x02	Read input discrete
0x03/0x04	Read data register value
0x05	Write Single Coil
0x06	Write Single Register
0x0F	Write Multiple Coils
0x10	Write Multiple Registers
0x14	Read File record
0x0E	Reset Data

◆ Data code

Data code includes the data which is needed by a terminal device when it performs a function or the data collected from a terminal device when it responses to an inquiry. These data may be numbers, referenced address or setting value. For example, when the function code tells a terminal device to read a register, the data field should indicate the terminal device that which register it should begin from and how much data it should read. The data code sent back from a terminal device includes data length and corresponding data. Data adopts BIG END mode which means low byte is after high byte.

◆ Check code

Cyclical Redundancy Check (CRC16) field occupies two bytes including a 16-bit binary value. CRC value will be calculated by transmission equipment and be added to a data frame. When the receiving equipment receives the data, it will calculate CRC value again, and then it compares the two CRC values. If the two values are not equal to each other, an error will be detected.

2.3 Modbus-RTU communication protocol format

2.3.1 Read coils (FC 0x01)

Request					
Frame structure	Address code	Function code	data code		CRC
			Start address	Number of relay	
Byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
Data range	1~247	0x01	0x0000 (fixed)	0x0001~0x0002	CRC
Message example	<u>0x01</u>	<u>0x01</u>	<u>0x00 0x00</u>	<u>0x00 0x02</u>	<u>0xBD</u> <u>0xCB</u>
Response					
frame structure	address code	function code	data code		CRC
			byte of register	register value	
Byte	1 byte	1 byte	1 byte	1 byte	2 bytes
Message example	<u>0x01</u>	<u>0x01</u>	<u>0x01</u>	<u>0x03</u>	<u>0x11 0x89</u>

Remark: The register value in the slave response indicates the status of the relay. Beginning from the lowest bit of the byte, each number corresponds to the status of a relay output. “1” indicates the relay is closed, while “0” indicates the relay is cut off. In the upper list, the register value “0x03” corresponds to “0000 0011” in binary system which means the first and second relays are closed.

2.3.2 Read input discretes (FC 0x02)

Request					
Frame structure	address	function code	data		CRC
			start address	number	
Byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
Data range	1~247	0x02	0x0000 (fixed)	0x0001~ 0x000C	CRC16
Message example	<u>0x01</u>	<u>0x02</u>	<u>0x00 0x00</u>	<u>0x00 0x01</u>	<u>0x79</u> <u>0xC9</u>
Response					
Data structure	address data	function code	data		CRC
			byte of register	register value	
Byte	1 byte	1 byte	1 byte	1 byte	2 bytes
Message example	<u>0x01</u>	<u>0x02</u>	<u>0x01</u>	<u>0x01</u>	<u>0x20 0x49</u>

Remark: The register value in the slave response indicates the status of digital input. Beginning from the lowest bit of the byte, each number corresponds to the status of a digital input. “1” indicates the switch is closed, while “0” indicates the switch is open. In the upper list the register value “0x01” is “0000 0001” in binary system which means first loop of digital input is closed.

2.3.3 Read data register value (FC 0x03/0x04)

Request					
Frame structure	address code	function code	data		CRC
			Start address	number of register	
Byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
data range	1~247	0x03/ 0x04		Max. 100	CRC16
message example	<u>0x01</u>	<u>0x03</u>	<u>0x00 0x06</u>	<u>0x00 0x06</u>	<u>0Xe4 0x36</u>
Response					
frame structure	address code	function code	data		CRC
			byte of register	register value	
byte	1 byte	1 byte	1 byte	12 bytes	2 bytes
message example	<u>0x01</u>	<u>0x03</u>	<u>0x0C</u>	<u>12-byte data</u>	<u>CRC16</u>

Remark: The initial register address in host inquiry is the initial address of the data collected from primary or secondary power grid. The number of register indicates the length of the data. In the upper list the register address “0x00 0x00” indicates the initial address of phase voltage float data of three phases, and the number of register “0x00 0x06” indicates the length of the data is 6 (three float data occupies six registers).

2.3.4 Write Single Coil (FC 0x05)

Request					
frame structure	address code	function code	data code		CRC
			Start address	relay action value	
byte	1byte	1byte	2 bytes	2 bytes	2 bytes
data range	1~247	0x05	0x0000~ 0x0003	0xFF00/0x0000	CRC16
message example	<u>0x01</u>	<u>0x05</u>	<u>0x00 0x00</u>	<u>0xFF 0x00</u>	<u>0x8C 0x3A</u>
Response					
frame structure	address code	function code	data code		CRC
			initial relay address	relay action value	
byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
message example	<u>0x01</u>	<u>0x05</u>	<u>0x00 0x00</u>	<u>0xFF 0x00</u>	<u>0x8C 0x3A</u>

Remark: In host request, the relay action value “0xFF00” indicates the relay is closed, while “0x0000” indicates the relay is open. If user wants to perform remotely control operation, please make sure the relay is working in “remotely control” mode.

2.3.5 Write Single Register (FC 0x06)

Request					
frame structure	address code	function code	data code		CRC
			Register Address	preset data	
byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
data range	1 ~ 247	0x06	0x0000 ~ 0xFFFF	0x0000 ~ 0xFFFF	CRC16
message example	<u>0x01</u>	<u>0x06</u>	<u>0x00 0x00</u>	<u>0xAA 0x55</u>	<u>0x37 0x55</u>
Response					
frame structure	address code	function code	data code		CRC
			Register Address	preset data	
byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
message example	<u>0x01</u>	<u>0x06</u>	<u>0x00 0x00</u>	<u>0xAA 0x55</u>	<u>0x37 0x55</u>

Remark: Not all registers can be modified. As for specific information, please refer to communication address list.

2.3.6 Write Multiple Coils (FC 0x0F)

Request							
frame structure	address code	function code	data code				CRC
			initial relay address	number of relay	number of data byte	relay action value	
byte	1 byte	1 byte	2 bytes	2 bytes	1 byte	1 byte	2 bytes
data range	1 ~ 247	0x0F	0x0000 (fixed)	0x0001 ~ 0x0004	0x01		CRC16
message example	<u>0x01</u>	<u>0x0F</u>	<u>0x00 0x00</u>	<u>0x00 0x02</u>	<u>0x01</u>	<u>0x03</u>	<u>0x9E</u> <u>0x96</u>
Response							
frame structure	address code	function code	data code			CRC check code	
			initial relay address		number of relay		
byte	1 byte	1byte	2bytes		2bytes	2 bytes	
message example	<u>0x01</u>	<u>0x0F</u>	<u>0x00 0x00</u>		<u>0x00 0x02</u>	<u>0Xd4</u> <u>0x0A</u>	

Remark: In the host inquiry, beginning from the lowest bit of relay action value, each bit corresponds to a relay output. “1” indicates the relay is closed, while “0” indicates the relay is open. In the upper list, relay action value “0x03”is “0000 0111”in binary system, which means the first and second relays are closed.

2.3.7 Write Multiple Registers (FC 0x10)

Request							
frame structure	address code	function code	data code				CRC
			initial relay address	relay length	relay byte	written value	
byte	1 byte	1 byte	2 bytes	2 bytes	1 byte	2N bytes	2 byte
data range	1~247	0x10	0x080A	0x0001	N		CRC16
message example	<u>0x01</u>	<u>0x10</u>	<u>0x08 0x0A</u>	<u>0x00 0x01</u>	<u>0x02</u>	<u>0x0064</u>	<u>0x2ED1</u>

Request					
frame structure	address code	function code	data code		CRC
			initial relay address	relay length	
byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes
message example	<u>0x01</u>	<u>0x10</u>	<u>0x08 0x0A</u>	<u>0x00 0x01</u>	<u>0x2ED1</u>

Remark: Please strictly follow the Meter setting information address list in appendix when writing setting register. Do not change the reserved data. Written data should not exceed set range. Wrong operation may cause meter damaged.

2.3.8 Read File record (FC 0x14)

Request

Function	1 byte	0x14
Byte counting	1 byte	0x07
Sub-request x, parameter type	1 byte	0x06
Sub-request x, file number	2 bytes	0x0000-0x0007
Sub-request x, event log number	2 bytes	0x0000-0xFDE7
Sub-request x, event log length	2 bytes	N

Response

Function code	1 byte	0x14
Response data length	1 byte	0x07~0xF5
Sub-request x, file length	1 byte	0x07~0xF5
Sub-request x, parameter type	1 byte	6
Sub-request x, event log data	Nx2 bytes	...

Send sub-request file number, event log number and event log length description of message

Event log	File number	Event log number	Event log length
SOE event	0x0000	0x0000~0x00BF 0x0000: latest piece of SOE event 0x0001: second piece of SOE event from the latest piece of SOE event ... 0x001F: 191 st piece of SOE event from the	7

		latest piece of SOE event	
Data log	0x0004	0x0000~0x000F: 0: latest piece of data log 1: second piece of data log from the latest piece of data log ... 32000: 32001th piece of data log from the latest piece of data log	32
Over-voltage	0x0008	0x0000-0x00BF: 0x0000: latest piece of over-voltage data record 0x0001: second piece of over-voltage data record from the latest piece ... 0x00BF: 191 st piece of over-voltage data record from the latest piece	9
Under-voltage	0x0009	0x0000-0x00BF: 0x0000: latest piece of under-voltage data record 0x0001: second piece	9

		<p>of under-voltage data record from the latest piece</p> <p>...</p> <p>0x00BF: 191st piece of under-voltage data record from the latest piece</p>	
Over-current	0x000A	<p>0x0000-0x00BF:</p> <p>0x0000: latest piece of over-current data record</p> <p>0x0001: second piece of over-current data record from the latest piece</p> <p>...</p> <p>0x00BF: 191st piece of over-current data record from the latest piece</p>	9
Under-current	0x000B	<p>0x0000-0x00BF:</p> <p>0x0000: latest piece of under-current data record</p> <p>0x0001: second piece of under-current data record from the latest piece</p> <p>...</p>	9

		0x00BF: 191 st piece of under-current data record from the latest piece	
Over-power	0x000C	0x0000-0x00BF: 0x0000: latest piece of over-power data record 0x0001:second piece of over-power data record from the latest piece ... 0x00BF: 191 st piece of over-power data record from the latest piece	9
Under-power	0x000D	0x0000-0x00BF: 0x0000:latest piece of under-power data record 0x0001:second piece of under-power data record from the latest piece ... 0x00BF: 191 st piece of under-power data record from the latest piece	9

Example for reading file

Read SOE event recording:

Request								
Frame structure	Address code	Function code	Data code					Check code
			Byte counting	Parameter type	File No.	Recording No.	Record length	
Byte	1 byte	1 byte	1 byte	1 byte	2 byte	2 byte	2 byte	2v
Data range	1~247	0x14	0x07	0x06	0x0000	0~191	7	CRC16
Message example	01	0x14	0x07	0x06	0x0000	0x0000	0x0007	0xB8E6
response								
Frame structure	Address code	Function code	Data code				Check code	
			Response data length	File response length	Parameters type	Data record		
Byte	1 byte	1 byte	1 byte	1 byte	1 byte	14 byte	2 byte	
Message example	0x01	0x14	0x1A	0x19	0x06	SOE data record	CRC16	

The meter has 192 pieces of SOE event record, recording the digital input, time and status of relay output action. The resolution is 1ms.

Format description of SOE event data record:

Year, month, day, hour, minute, second(6byte) + DI change status(2byte) + DI present status (2byte) + DO change status (2byte) + DO present status (2byte).

Year, month, day, hour, minute, second: time when SOE event occurs.

DI change status: status bit which is changed corresponding to each channel of digital input starting from the lowest bit of the byte. 1 means action and 0 means no action.

DI present status: status value corresponding to each channel of digital input starting from the lowest bit of the byte. 1 means action status and 0 means reset status.

DO change status: status bit which is changed corresponding to each channel of

relay output starting from the lowest bit of the byte. 1 means action and 0 means no action.

DO present status: status value corresponding to each channel of relay output starting from the lowest bit of the byte. 1 means action status and 0 means reset status.

Example:

Host request: 01 14 07 06 00 00 00 00 00 07 B8 E6

Slave response: 01 14 1A 19 06

0E 03 05 08 14 01 00 02 00 03 00 02 00 00

①

②

③

xx xx

CRC

①: 0E 03 05 08 14 01

Year month day hour minute second

Indicate that the time of DI status change: 5th March, 2014, 08:20:01

②: 00 02 00 03

“00 02” indicates the DI status change. Convert 0x0002 to binary: 0000 0000 0000 0010, bit0 corresponds to the first digital input, and bit1 corresponds to the second digital input. The 2nd digital input status changes, while the other channel's status is unchanged.

“00 03” indicates the present DI status. Convert 0x0003 to binary: 0000 0000 0000 0011, bit0 corresponds to the first DI, and bit1 corresponds to the second DI. The present first and second DI are in the state of 1, and are in the action state. With the status change (00 02), it indicates that the present 1st channel status has not changed, the status is still 1; the 2nd DI status becomes 1, that is, the status changes from 0 to 1; the other DI are in reset status.

③: 00 02 00 00

“00 02” indicates relay output status change. Convert 0x0002 to binary: 0000 0000 0000 0010, bit0 corresponds to the first relay output, and bit1 corresponds to the second relay output. The output status of the 2nd relay is

changed, and the status of other channels is unchanged.

“00 00” indicates the present relay output status. Convert 0x0000 to binary: 0000 0000 0000 0000 , bit0 corresponds to the first relay output, and bit1 corresponds to the second relay output. The present relay is in the reset state. With the status change (00 02), it indicates that the current 1st status has not changed, the status is still 0; the 2nd relay output state becomes 0, that is, the status changes from 1 to 0; the other relays are in the reset status.

Request								
frame structure	address code	function code	data code					CRC
			byte counting	parameter type	file number	event log number	event log length	
byte	1 byte	1 byte	1 byte	1 byte	2 bytes	2 bytes	2 bytes	2 bytes
data range	1~247	0x14	0x07	0x06	0x0004	0~65000	1~32	CRC
message	<u>0x01</u>	<u>0x14</u>	0x07	<u>0x06</u>	<u>0x0004</u>	<u>0x0000</u>	<u>0x002</u> 0	<u>0x093C</u>
Response								
frame structure	address code	function code	data code				CRC	
			response data length	response file length	parameter type	log data		
byte	1 byte	1 byte	1 byte	1 byte	1 byte	64 bytes	2 bytes	
message	<u>0x01</u>	<u>0x14</u>	<u>0x42</u>	<u>0x41</u>	<u>0x06</u>	log data	CRC	

Read electric data log format

Meter supports 32000 pieces of data log at most. Each data log contains eight electric parameter data. The interval of data log is set by pressing buttons on meter or through communication. Please refer to communication address list.

Historical data frame contains thirty two words. First three words are time data. The other twenty nine words are electric parameter data. Electric parameter data is secondary value. Description of data frame is shown in following list.

Parameter	Format	Unit
Recording time	Int	High byte:year low byte:month
Recording time	Int	High byte:day low byte:hour
Recording time	Int	High byte:minute low byte:second
V1	Int	0.1V
V2	Int	0.1V
V3	Int	0.1V
V12	Int	0.1V
V23	Int	0.1V
V31	Int	0.1V
I1	Int	0.001A
I2	Int	0.001A
I3	Int	0.001A
P	Int	1W
Q	Int	1var
S	Int	1VA
F	Int	0.01Hz
THDv1	Int	0.01%
THDv2	Int	0.01%
THDv3	Int	0.01%
THDI1	Int	0.01%
THDI2	Int	0.01%
THDI3	Int	0.01%
kWh+	Long	1Wh
kWh-	Long	1Wh
kvarh+	Long	1varh

kvarh-	Long	1varh
kVAh	Long	1VAh
User set1	Int	
User set2	Int	
User set3	Int	
User set4	Int	
User set5	Int	
User set6	Int	

Take reading the latest piece of log as example. Data type is hexadecimal.

Host request: 01 14 07 06 00 04 00 00 00 20 09 3C

Slave response: 01 14 42 41 06

0E 0A 17 0D 04 09 00 00 00 00 00 00 00 00 00 00

y:m d:h m:s V1 V2 V3 V12 V23

00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

V31 I1 I2 I3 P Q S F

00 00 00 00 00 00 00 00 00 00 00 00 00 00 0F 20

THDv1 THDv2 THDv3 THDI1 THDI2 THDI3 Wh+

00 00 00 00 00 00 1A 28 00 00 00 00 00 00 1E 37 74 89

Wh- varh+ varh- VAh CRC

AHM3-SMTP electric data format:

pt = PT1/PT2 voltage ratio

ct = Ct1/CT2 current ratio

Voltage = V1 * pt/10 (V)

Current = I1 * ct/1000 (A)

Power = P1 * pt * ct/1000 (kW)

Frequency = F/100 (Hz)

Energy = (kWh+) * pt * ct /1000 (kWh)

PT: CT:

AHM3RC-SMTP electric data format:

pt = PT1/PT2 voltage ratio

ct = Ct1/100 current ratio

VOLTAGE unit 0.1V

CURRENT unit 0.01A

POWER unit 0.01kW

ENERGY unit 0.01kWh

Voltage = $V1 * pt/10$ (V)

Current = $I1 * ct/100$ (A)

Power = $P * pt * ct/100$ (kW)

Frequency = $F/100$ (Hz)

Energy = $(kWh+) * pt * ct/100$ (kWh)

Read over-voltage event record:

request								
Frame structure	Address code	Function code	Data code					Check code
			Byte counting	Parameter type	File No.	Record No.	Record length	
Byte	1 byte	1 byte	1 byte	1 byte	2 byte	2 byte	2 byte	2 byte
Data range	1~247	0x14	0x07	0x06	0x0008	0~BF	1~9	CRC16
Message example	0x01	0x14	0x07	0x06	0x0003	0x0000	0x0009	0x7D22
Response								
Frame structure	Address code	Function code	Data code				Check code	
			Response data length	File response length	Parameter type	Data record		

AHM3-SMTP primary side value=the primary value*PT ratio/10 unit V,

AHM3RC-SMTP primary side value=the primary value* PT ratio/10 unit V

Example for over-current:

Host request: 01 14 07 06 00 0A 00 00 00 09 A1 23

Slave response: 01 14 14 13 06

0E 03 05 08 15 18 0E 03 05 08 15 21 15 E0 13 88 13 87 CD 7A

①

②

③

④

⑤

CRC

①over-current start time 0E 03 05 08 15 18

Year month day hour minute second

Start time: 5th, March, 2014. 08:21:24

②over-current end time 0E 03 05 08 15 21

Year month day hour minute second

End time: 5th, March, 2014. 08:21:33

③ ④ ⑤: current maximum during over-current

③ 15 E0: current extreme value 5.600 A;

④ 13 88: current extreme value 5.000 A;

⑤ 13 87: current extreme value 4.999 A;

AHM3-SMTP primary side value=the primary value*CT ratio/1000 unit A,

AHM3RC-SMTP primary side value=the primary value* current rated value/1000 unit A

Example for over-power:

Host request: 01 14 07 06 00 0C 00 00 00 09 29 23

Slave response: 01 14 14 13 06

0E 03 05 08 15 30 0E 03 05 08 15 32 17 E0 00 00 17 E0 49 F5

①

②

③

④

⑤

CRC

①over-power start time 0E 03 05 08 15 30

Year month day hour minute second

start time: 5th, March, 2014. 08:21:48

②over-power end time 0E 03 05 08 15 32

Year month day hour minute second

end time: 5th, March, 2014. 08:21:50

③ ④ ⑤: total active power, reactive power, apparent power maximum during over-power

③ 17 E0: total active power extreme value 6112 W;

④ 00 00: total reactive power extreme value 0000 var;

⑤ 17 E0: total apparent power extreme value 6112 VA;

AHM3-STMP primary side value=the primary value*PT ratio*CT ratio/1000 unit kW

AHM3RC-STMPprimary side value=the primary value*PT ratio*current rated value/10000 unit kW

2.3.9 Reset data (FC 0x0E)

Request							
frame structure	address code	function code	data code				CRC
			initial relay address	Password	ID Reset	ID value	
byte	1 byte	1 byte	2 bytes	2 bytes	1 byte	1 bytes	2 byte
data range	1~247	0x0E	0xAACC	0x0001	N	0xFF	CRC16
message example	<u>0x01</u>	<u>0x0E</u>	<u>0xAA0xCC</u>	<u>0x00 x01</u>	<u>0x01</u>	<u>0xFF</u>	<u>0x760D</u>
Request							
frame	address	function	data code				CRC

structure	code	code	initial relay address	Password	ID Reset	ID value	
byte	1 byte	1 byte	2 bytes	2 bytes	1 byte	1 bytes	2 byte
data range	1~247	0x0E	0xAACC	0x0001	N	0xFF	CRC16
message example	<u>0x01</u>	<u>0x0E</u>	<u>0xAACC</u>	<u>0x00 x01</u>	<u>0x01</u>	<u>0xFF</u>	<u>0x760D</u>

Remark: This code can reset date of energy,Demand,MaxMin,Event , Pulses, and so on.

Password: This value should equal User's Password;

Id Reset:

0x01: Clear Energy 0x02: Clear Demand 0x03: Clear MaxMin
0x04: Clear Event 0x05: Clear Pulses 0x06: Clear Counters
0x07: Clear SOE 0x08: Clear Alarm 0x09: Clear Record

Id value:

The value must be 0xff.

2.4 Data format

2.4.1 32-bit float format

32-bit float type data follows IEEE-754 format. Byte sequence of data adopts big-end mode which means low byte is after high byte.

Float type data of three phase voltages are shown in the following list.

Address(Hex)	Data(Hex)	Description
0006-0007	435C-8000	V1 = 0x435C8000 = 220.5V
0008-0009	4360-4CCD	V2 = 0x43604CCD = 224.3V
000A-000B	435E-B333	V3 = 0x435EB333 = 222.7V

2.4.2 16-bit integer format

16-bit integer type data adopts two's complement storage mode. Byte sequence of data adopts big-endian mode which means low byte is after high byte.

Int data of three phase voltages harmonic are shown in the following list.

Address(Hex)	Data(Hex)	Description
0210	0230	THDv1 = 0x0230 = 5.6%
0211	0172	THDv2 = 0x0172 = 3.7%
0212	0096	THDv3 = 0x0096 = 1.5%

2.4.3 32-bit long integer format

32-bit integer type data adopts two's complement storage mode. Byte sequence of data adopts big-end mode which means low byte is after high byte.

Long data of energy accumulation time are shown in the following list.

Address(Hex)	Data(Hex)	Description
0054-0055	0020-152A	Hour meter-EP+ = 2102570s
0056-0057	0000-37CD	Hour meter-EP- = 14285s

3. Communication address information list

3.1 Basic parameters

Address	Format	Description	Unit	R/W
0000-0005	----	----	----	----
0006-0007	Float	V1	V	R
0008-0009	Float	V2	V	R
000A-000B	Float	V3	V	R
000C-000D	Float	V12	V	R
000E-000F	Float	V23	V	R
0010-0011	Float	V31	V	R
0012-0013	Float	I1	A	R
0014-0015	Float	I2	A	R
0016-0017	Float	I3	A	R
0018-0019	Float	I _n	A	R
001A-001B	Float	P1	kW	R
001C-001D	Float	P2	kW	R
001E-001F	Float	P3	kW	R
0020-0021	Float	P	kW	R
0022-0023	Float	Q1	kvar	R
0024-0025	Float	Q2	kvar	R
0026-0027	Float	Q3	kvar	R
0028-0029	Float	Q	kvar	R
002A-002B	Float	S1	kVA	R
002C-002D	Float	S2	kVA	R
002E-002F	Float	S3	kVA	R
0030-0031	Float	S	kVA	R
0032-0033	Float	PF1		R
0034-0035	Float	PF2		R
0036-0037	Float	PF3		R

0038-0039	Float	PF		R
003A-003B	Float	F	Hz	R
003C-003D	Float	Average value of Vph-n	V	R
003E-003F	Float	Average value of Vph-ph	V	R
0040-0041	Float	Average current	A	R
0042-0043	Float	Import Active Energy	kWh	R
0044-0045	Float	Export Active Energy	kWh	R
0046-0047	Float	Import Reactive Energy	kvarh	R
0048-0049	Float	Export Reactive Energy	kvarh	R
004A-004B	Float	Apparent Energy	kVAh	R
004C-004D	Float	1 st Quadrant Reactive Energy - EQL+	kvarh	R
004E-004F	Float	2 nd Quadrant Reactive Energy - EQC+	kvarh	R
0050-0051	Float	3 rd Quadrant Reactive Energy - EQL-	kvarh	R
0052-0053	Float	4 th Quadrant Reactive Energy - EQC-	kvarh	R
0054-0055	Long	Hour meter-EP+	s	R
0056-0057	Long	Hour meter-EP-	s	R
0058-0059	Float	Spare Import Active Energy	kWh	R
005A-005B	Float	Spare Export Active Energy	kWh	R
005C-005D	Float	Spare Import Reactive Energy	kvarh	R
005E-005F	Float	Spare Export Reactive Energy	kvarh	R
0060-0061	Float	Spare Apparent Energy	kVAh	R
0062-0063	Float	Spare Energy - EQL+	kvarh	R
0064-0065	Float	Spare Energy - EQC+	kvarh	R
0066-0067	Float	Spare Energy - EQL-	kvarh	R
0068-0069	Float	Spare Energy - EQC-	kvarh	R
006A-006B	Float	Hour meter - Spare EP+	s	R
006C-006D	Float	Hour meter - Spare EP-	s	R
006E-006F	Float	Total tariff import energy	kWh	R
0070-0071	Float	Tariff #1 import energy	kWh	R

0072-0073	Float	Tariff #2 import energy	kWh	R
0074-0075	Float	Tariff #3 import energy	kWh	R
0076-0077	Float	Tariff #4 import energy	kWh	R
0078-0079	Float	Tariff #5 import energy	kWh	R
007A-007B	Float	Tariff #6 import energy	kWh	R
007C-007D	Float	Tariff #7 import energy	kWh	R
007E-007F	Float	Tariff #8 import energy	kWh	R
0080-0081	Float	Tariff #9 import energy	kWh	R
0082-0083	Float	Tariff #10 import energy	kWh	R
0084-0085	Float	Tariff #11 import energy	kWh	R
0086-0087	Float	Tariff #12 import energy	kWh	R
0088-0089	Float	Tariff #13 import energy	kWh	R
008A-008B	Float	Tariff #14 import energy	kWh	R
008C-008D	Float	Tariff #15 import energy	kWh	R
008E-008F	Float	Tariff #16 import energy	kWh	R
0090-0091	Float	Total tariff export energy	kWh	R
0092-0093	Float	Tariff #1 export energy	kWh	R
0094-0095	Float	Tariff #2 export energy	kWh	R
0096-0097	Float	Tariff #3 export energy	kWh	R
0098-0099	Float	Tariff #4 export energy	kWh	R
009A-009B	Float	Tariff #5 export energy	kWh	R
009C-009D	Float	Tariff #6 export energy	kWh	R
009E-009F	Float	Tariff #7 export energy	kWh	R
00A0-00A1	Float	Tariff #8 export energy	kWh	R
00A2-00A3	Float	Tariff #9 export energy	kWh	R
00A4-00A5	Float	Tariff #10 export energy	kWh	R
00A6-00A7	Float	Tariff #11 export energy	kWh	R
00A8-00A9	Float	Tariff #12 export energy	kWh	R
00AA-00AB	Float	Tariff #13 export energy	kWh	R

00AC-00AD	Float	Tariff #14 export energy	kWh	R
00AE-00AF	Float	Tariff #15 export energy	kWh	R
00B0-00B1	Float	Tariff #16 export energy	kWh	R
00B2-00B3	Float	Max. value-V1	V	R
00B4-00B5	Float	Max. value-V2	V	R
00B6-00B7	Float	Max. value-V3	V	R
00B8-00B9	Float	Max. value-V12	V	R
00BA-00BB	Float	Max. value-V23	V	R
00BC-00BD	Float	Max. value-V31	V	R
00BE-00BF	Float	Max. value-I1	A	R
00C0-00C1	Float	Max. value-I2	A	R
00C2-00C3	Float	Max. value-I3	A	R
00C4-00C5	Float	Max. value-In	A	R
00C6-00C7	Float	Max. value-P1	kW	R
00C8-00C9	Float	Max. value-P2	kW	R
00CA-00CB	Float	Max. value-P3	kW	R
00CC-00CD	Float	Max. value-P	kW	R
00CE-00CF	Float	Max. value-Q1	kvar	R
00D0-00D1	Float	Max. value-Q2	kvar	R
00D2-00D3	Float	Max. value-Q3	kvar	R
00D4-00D5	Float	Max. value-Q	kvar	R
00D6-00D7	Float	Max. value-S1	kVA	R
00D8-00D9	Float	Max. value-S2	kVA	R
00DA-00DB	Float	Max. value-S3	kVA	R
00DC-00DD	Float	Max. value-S	kVA	R
00DE-00DF	Float	Max. value-PF		R
00E0-00E1	Float	Max. value-F	Hz	R
00E2-00E3	Float	Max. value-Average Vph-n	V	R
00E4-00E5	Float	Max. value-Average Vph-ph	V	R

00E6-00E7	Float	Max. value-Average I	A	R
00E8-00E9	Float	Min. value-V1	A	R
00EA-00EB	Float	Min. value-V2	A	R
00EC-00ED	Float	Min. value-V3	A	R
00EE-00EF	Float	Min. value-V12	V	R
00F0-00F1	Float	Min. value-V23	V	R
00F2-00F3	Float	Min. value-V31	V	R
00F4-00F5	Float	Min. value-I1	A	R
00F6-00F7	Float	Min. value-I2	A	R
00F8-00F9	Float	Min. value-I3	A	R
00FA-00FB	Float	Min. value-In	A	R
00FC-00FD	Float	Min. value-P1	kW	R
00FE-00FF	Float	Min. value-P2	kW	R
0100-0101	Float	Min. value-P3	kW	R
0102-0103	Float	Min. value-P	kW	R
0104-0105	Float	Min. value-Q1	kvar	R
0106-0107	Float	Min. value-Q2	kvar	R
0108-0109	Float	Min. value-Q3	kvar	R
010A-010B	Float	Min. value-Q	kvar	R
010C-010D	Float	Min. value-S1	kVA	R
010E-010F	Float	Min. value-S2	kVA	R
0110-0111	Float	Min. value-S3	kVA	R
0112-0113	Float	Min. value-S	kVA	R
0114-0115	Float	Min. value-PF		R
0116-0117	Float	Min. value-F	Hz	R
0118-0119	Float	Min. value-Average Vph-n	V	R
011A-011B	Float	Min. value-Average Vph-ph	V	R
011C-011D	Float	Min. value-Average I	A	R
011E-011F	Float	Max. demand value -I1	A	R

0120-0121	Float	Max. demand value -I2	A	R
0122-0123	Float	Max. demand value -I3	A	R
0124-0125	Float	Max. demand value -P	W	R
0126-0127	Float	Max. demand value -Q	var	R
0128-0129	Float	Max. demand value -S	VA	R
012A-012D	--			
012E-012F	Float	Present demand value -I1	A	R
0130-0131	Float	Present demand value -I2	A	R
0132-0133	Float	Present demand value -I3	A	R
0134-0135	Float	Present demand value -P	kW	R
0136-0137	Float	Present demand value -Q	kvar	R
0138-0139	Float	Present demand value -S	kVA	R
013A-013D	--			
013E-013F	Float	Previous demand value -I1	A	R
0140-0141	Float	Previous demand value -I2	A	R
0142-0143	Float	Previous demand value -I3	A	R
0144-0145	Float	Previous demand value -P	kW	R
0146-0147	Float	Previous demand value -Q	kvar	R
0148-0149	Float	Previous demand value -S	kVA	R
014A-014F	--			
0150-0151	Float	Total cost of import energy	\$	R
0152-0153	Float	Cost of Tariff #1 import energy	\$	R
0154-0155	Float	Cost of Tariff #2 import energy	\$	R
0156-0157	Float	Cost of Tariff #3 import energy	\$	R
0158-0159	Float	Cost of Tariff #4 import energy	\$	R
015A-015B	Float	Cost of Tariff #5 import energy	\$	R
015C-015D	Float	Cost of Tariff #6 import energy	\$	R
015E-015F	Float	Cost of Tariff #7 import energy	\$	R
0160-0161	Float	Cost of Tariff #8 import energy	\$	R

0162-0163	Float	Cost of Tariff #9 import energy	\$	R
0164-0165	Float	Cost of Tariff #10 import energy	\$	R
0166-0167	Float	Cost of Tariff #11 import energy	\$	R
0168-0169	Float	Cost of Tariff #12 import energy	\$	R
016A-016B	Float	Cost of Tariff #13 import energy	\$	R
016C-016D	Float	Cost of Tariff #14 import energy	\$	R
016E-016F	Float	Cost of Tariff #15 import energy	\$	R
0170-0171	Float	Cost of Tariff #16 import energy	\$	R
0172-0173	Float	Total cost of export energy	\$	R
0174-0175	Float	Cost of Tariff #1 export energy	\$	R
0176-0177	Float	Cost of Tariff #2 export energy	\$	R
0178-0179	Float	Cost of Tariff #3 export energy	\$	R
017A-017B	Float	Cost of Tariff #4 export energy	\$	R
017C-017D	Float	Cost of Tariff #5 export energy	\$	R
017E-017F	Float	Cost of Tariff #6 export energy	\$	R
0180-0181	Float	Cost of Tariff #7 export energy	\$	R
0182-0183	Float	Cost of Tariff #8 export energy	\$	R
0184-0185	Float	Cost of Tariff #9 export energy	\$	R
0186-0187	Float	Cost of Tariff #10 export energy	\$	R
0188-0189	Float	Cost of Tariff #11 export energy	\$	R
018A-018B	Float	Cost of Tariff #12 export energy	\$	R
018C-018D	Float	Cost of Tariff #13 export energy	\$	R
018E-018F	Float	Cost of Tariff #14 export energy	\$	R
0190-0191	Float	Cost of Tariff #15 export energy	\$	R
0192-0193	Float	Cost of Tariff #16 export energy	\$	R
0194-0195	Float	CO2 Emissions of import energy	kg	R
0196-0197	Float	CO2 Emissions of Tariff #1 import energy	kg	R
0198-0199	Float	CO2 Emissions of Tariff #2 import energy	kg	R
019A-019B	Float	CO2 Emissions of Tariff #3 import energy	kg	R

019C-019D	Float	CO2 Emissions of Tariff #4 import energy	kg	R
019E-019F	Float	CO2 Emissions of Tariff #5 import energy	kg	R
01A0-01A1	Float	CO2 Emissions of Tariff #6 import energy	kg	R
01A2-01A3	Float	CO2 Emissions of Tariff #7 import energy	kg	R
01A4-01A5	Float	CO2 Emissions of Tariff #8 import energy	kg	R
01A6-01A7	Float	CO2 Emissions of Tariff #9 import energy	kg	R
01A8-01A9	Float	CO2 Emissions of Tariff #10 import energy	kg	R
01AA-01AB	Float	CO2 Emissions of Tariff #11 import energy	kg	R
01AC-01AD	Float	CO2 Emissions of Tariff #12 import energy	kg	R
01AE-01AF	Float	CO2 Emissions of Tariff #13 import energy	kg	R
01B0-01B1	Float	CO2 Emissions of Tariff #14 import energy	kg	R
01B2-01B3	Float	CO2 Emissions of Tariff #15 import energy	kg	R
01B4-01B5	Float	CO2 Emissions of Tariff #16 import energy	kg	R
01B6-01B7	Float	CO2 Emissions of export energy	kg	R
01B8-01B9	Float	CO2 Emissions of Tariff #1 export energy	kg	R
01BA-01BB	Float	CO2 Emissions of Tariff #2 export energy	kg	R
01BC-01BD	Float	CO2 Emissions of Tariff #3 export energy	kg	R
01BE-01BF	Float	CO2 Emissions of Tariff #4 export energy	kg	R
01C0-01C1	Float	CO2 Emissions of Tariff #5 export energy	kg	R
01C2-01C3	Float	CO2 Emissions of Tariff #6 export energy	kg	R
01C4-01C5	Float	CO2 Emissions of Tariff #7 export energy	kg	R
01C6-01C7	Float	CO2 Emissions of Tariff #8 export energy	kg	R
01C8-01C9	Float	CO2 Emissions of Tariff #9 export energy	kg	R
01CA-01CB	Float	CO2 Emissions of Tariff #10 export energy	kg	R
01CC-01CD	Float	CO2 Emissions of Tariff #11 export energy	kg	R
01CE-01CF	Float	CO2 Emissions of Tariff #12 export energy	kg	R
01D0-01D1	Float	CO2 Emissions of Tariff #13 export energy	kg	R
01D2-01D3	Float	CO2 Emissions of Tariff #14 export energy	kg	R
01D4-01D5	Float	CO2 Emissions of Tariff #15 export energy	kg	R

01D6-01D7	Float	CO2 Emissions of Tariff #16 export energy	kg	R
01D8-01D9	Float	Load percentage	%	R
01DA-01E1	--			
01E2	Int	Pieces of SOE event record		
01E3	Int	Pieces of over-voltage record		
01E4	Int	Pieces of under-voltage record		
01E5	Int	Pieces of over-current record		
01E6	Int	Pieces of under-current record		
01E7	Int	Pieces of overload record		
01E8	Int	Pieces of underload record		
01E9	Int	Added pieces of SOE event record		
01EA	Int	Added pieces of alarm record		
01EB-01EF				
01F0	Int	High byte-year,Low byte-month		R
01F1	Int	High byte-day,Low byte-hour		R
01F2	Int	High byte-minute,Low byte-second		R
01F3	Int	High byte-week		R
01F4-01F5	Long	Meter Status bit31-7: Reserved Bit6: active power import/export Bit5: current overload Bit4: voltage overlaod Bit3: X4 module status Bit2: X3 module status Bit1: X2 module status Bit0: X1 module status		R

3.2 Harmonic data

Address	Format	Description	Unit	R/W
0200	Int	Phase angle of V1(default 0°)	0.1°	R
0201	Int	Phase angle of V2	0.1°	R
0202	Int	Phase angle of V3	0.1°	R
0203	Int	Phase angle of I1	0.1°	R
0204	Int	Phase angle of I2	0.1°	R
0205	Int	Phase angle of I3	0.1°	R
0206	Int	Positive-sequence component of voltage	V	R
0207	Int	Negative-sequence component of voltage	V	R
0208	Int	Zero-sequence component of voltage	V	R
0209	Int	Unbalance factor of voltage	%	R
020A	--			
020B	Int	Positive-sequence component of current	A	R
020C	Int	Negative-sequence component of current	A	R
020D	Int	Zero-sequence component of current	A	R
020E	Int	Unbalance factor of current		R
020F	--			
0210	Int	THD-V1	0.01%	R
0211	Int	THD-V2	0.01%	R
0212	Int	THD-V3	0.01%	R
0213	Int	THD-I1	0.01%	R
0214	Int	THD-I2	0.01%	R
0215	Int	THD-I3	0.01%	R
0216	Int	Fundamental value -V1	0.1V	R
0217	Int	Fundamental value -V2	0.1V	R
0218	Int	Fundamental value -V3	0.1V	R
0219	Int	Fundamental value -I1	0.001A	R
021A	Int	Fundamental value -I2	0.001A	R

021B	Int	Fundamental value -I3	0.001A	R
021C	Int	Harmonic content -V1	0.1V	R
021D	Int	Harmonic content -V2	0.1V	R
021E	Int	Harmonic content -V3	0.1V	R
021F	Int	Harmonic content -I1	0.001A	R
0220	Int	Harmonic content -I2	0.001A	R
0221	Int	Harmonic content -I3	0.001A	R
0222	Int	2 ND harmonic ratio-V1	0.01%	R
0223	Int	3 rd harmonic ratio-V1	0.01%	R
0224	Int	4 th harmonic ratio-V1	0.01%	R
0225	Int	5 th harmonic ratio-V1	0.01%	R
0226	Int	6 th harmonic ratio-V1	0.01%	R
0227	Int	7 th harmonic ratio-V1	0.01%	R
0228	Int	8 th harmonic ratio-V1	0.01%	R
0229	Int	9 th harmonic ratio-V1	0.01%	R
022A	Int	10 th harmonic ratio-V1	0.01%	R
022B	Int	11 th harmonic ratio-V1	0.01%	R
022C	Int	12 th harmonic ratio-V1	0.01%	R
022D	Int	13 th harmonic ratio-V1	0.01%	R
022E	Int	14 th harmonic ratio-V1	0.01%	R
022F	Int	15 th harmonic ratio-V1	0.01%	R
0230	Int	16 th harmonic ratio-V1	0.01%	R
0231	Int	17 th harmonic ratio-V1	0.01%	R
0232	Int	18 th harmonic ratio-V1	0.01%	R
0233	Int	19 th harmonic ratio-V1	0.01%	R
0234	Int	20 th harmonic ratio-V1	0.01%	R
0235	Int	21 th harmonic ratio-V1	0.01%	R
0236	Int	22 th harmonic ratio-V1	0.01%	R
0237	Int	23 th harmonic ratio-V1	0.01%	R

0238	Int	24 th harmonic ratio-V1	0.01%	R
0239	Int	25 th harmonic ratio-V1	0.01%	R
023A	Int	26 th harmonic ratio-V1	0.01%	R
023B	Int	27 th harmonic ratio-V1	0.01%	R
023C	Int	28 th harmonic ratio-V1	0.01%	R
023D	Int	29 th harmonic ratio-V1	0.01%	R
023E	Int	30 th harmonic ratio-V1	0.01%	R
023F	Int	31 th harmonic ratio-V1	0.01%	R
0240	Int	32 th harmonic ratio-V1	0.01%	R
0241	Int	33 th harmonic ratio-V1	0.01%	R
0242	Int	34 th harmonic ratio-V1	0.01%	R
0243	Int	35 th harmonic ratio-V1	0.01%	R
0244	Int	36 th harmonic ratio-V1	0.01%	R
0245	Int	37 th harmonic ratio-V1	0.01%	R
0246	Int	38 th harmonic ratio-V1	0.01%	R
0247	Int	39 th harmonic ratio-V1	0.01%	R
0248	Int	40 th harmonic ratio-V1	0.01%	R
0249	Int	41 th harmonic ratio-V1	0.01%	R
024A	Int	42 th harmonic ratio-V1	0.01%	R
024B	Int	43 th harmonic ratio-V1	0.01%	R
024C	Int	44 th harmonic ratio-V1	0.01%	R
024D	Int	45 th harmonic ratio-V1	0.01%	R
024E	Int	46 th harmonic ratio-V1	0.01%	R
024F	Int	47 th harmonic ratio-V1	0.01%	R
0250	Int	48 th harmonic ratio-V1	0.01%	R
0251	Int	49 th harmonic ratio-V1	0.01%	R
0252	Int	50 th harmonic ratio-V1	0.01%	R
0253	Int	51 th harmonic ratio-V1	0.01%	R
0254	Int	52 th harmonic ratio-V1	0.01%	R

0255	Int	53 th harmonic ratio-V1	0.01%	R
0256	Int	54 th harmonic ratio-V1	0.01%	R
0257	Int	55 th harmonic ratio-V1	0.01%	R
0258	Int	56 th harmonic ratio-V1	0.01%	R
0259	Int	57 th harmonic ratio-V1	0.01%	R
025A	Int	58 th harmonic ratio-V1	0.01%	R
025B	Int	59 th harmonic ratio-V1	0.01%	R
025C	Int	60 th harmonic ratio-V1	0.01%	R
025D	Int	61 th harmonic ratio-V1	0.01%	R
025E	Int	62 th harmonic ratio-V1	0.01%	R
025F	Int	63 th harmonic ratio-V1	0.01%	R
0260	Int	2 nd harmonic ratio-V2	0.01%	R
0261	Int	3 rd harmonic ratio-V2	0.01%	R
0262	Int	4 th harmonic ratio-V2	0.01%	R
0263	Int	5 th harmonic ratio-V2	0.01%	R
0264	Int	6 th harmonic ratio-V2	0.01%	R
0265	Int	7 th harmonic ratio-V2	0.01%	R
0266	Int	8 th harmonic ratio-V2	0.01%	R
0267	Int	9 th harmonic ratio-V2	0.01%	R
0268	Int	10 th harmonic ratio-V2	0.01%	R
0269	Int	11 th harmonic ratio-V2	0.01%	R
026A	Int	12 th harmonic ratio-V2	0.01%	R
026B	Int	13 th harmonic ratio-V2	0.01%	R
026C	Int	14 th harmonic ratio-V2	0.01%	R
026D	Int	15 th harmonic ratio-V2	0.01%	R
026E	Int	16 th harmonic ratio-V2	0.01%	R
026F	Int	17 th harmonic ratio-V2	0.01%	R
0270	Int	18 th harmonic ratio-V2	0.01%	R
0271	Int	19 th harmonic ratio-V2	0.01%	R

0272	Int	20 th harmonic ratio-V2	0.01%	R
0273	Int	21 th harmonic ratio-V2	0.01%	R
0274	Int	22 th harmonic ratio-V2	0.01%	R
0275	Int	23 th harmonic ratio-V2	0.01%	R
0276	Int	24 th harmonic ratio-V2	0.01%	R
0277	Int	25 th harmonic ratio-V2	0.01%	R
0278	Int	26 th harmonic ratio-V2	0.01%	R
0279	Int	27 th harmonic ratio-V2	0.01%	R
027A	Int	28 th harmonic ratio-V2	0.01%	R
027B	Int	29 th harmonic ratio-V2	0.01%	R
027C	Int	30 th harmonic ratio-V2	0.01%	R
027D	Int	31 th harmonic ratio-V2	0.01%	R
027E	Int	32 th harmonic ratio-V2	0.01%	R
027F	Int	33 th harmonic ratio-V2	0.01%	R
0280	Int	34 th harmonic ratio-V2	0.01%	R
0281	Int	35 th harmonic ratio-V2	0.01%	R
0282	Int	36 th harmonic ratio-V2	0.01%	R
0283	Int	37 th harmonic ratio-V2	0.01%	R
0284	Int	38 th harmonic ratio-V2	0.01%	R
0285	Int	39 th harmonic ratio-V2	0.01%	R
0286	Int	40 th harmonic ratio-V2	0.01%	R
0287	Int	41 th harmonic ratio-V2	0.01%	R
0288	Int	42 th harmonic ratio-V2	0.01%	R
0289	Int	43 th harmonic ratio-V2	0.01%	R
028A	Int	44 th harmonic ratio-V2	0.01%	R
028B	Int	45 th harmonic ratio-V2	0.01%	R
028C	Int	46 th harmonic ratio-V2	0.01%	R
028D	Int	47 th harmonic ratio-V2	0.01%	R
028E	Int	48 th harmonic ratio-V2	0.01%	R

028F	Int	49 th harmonic ratio-V2	0.01%	R
0290	Int	50 th harmonic ratio-V2	0.01%	R
0291	Int	51 th harmonic ratio-V2	0.01%	R
0292	Int	52 th harmonic ratio-V2	0.01%	R
0293	Int	53 th harmonic ratio-V2	0.01%	R
0294	Int	54 th harmonic ratio-V2	0.01%	R
0295	Int	55 th harmonic ratio-V2	0.01%	R
0296	Int	56 th harmonic ratio-V2	0.01%	R
0297	Int	57 th harmonic ratio-V2	0.01%	R
0298	Int	58 th harmonic ratio-V2	0.01%	R
0299	Int	59 th harmonic ratio-V2	0.01%	R
029A	Int	60 th harmonic ratio-V2	0.01%	R
029B	Int	61 th harmonic ratio-V2	0.01%	R
029C	Int	62 th harmonic ratio-V2	0.01%	R
029D	Int	63 th harmonic ratio-V2	0.01%	R
029E	Int	2 nd harmonic ratio-V3	0.01%	R
029F	Int	3 rd harmonic ratio-V3	0.01%	R
02A0	Int	4 th harmonic ratio-V3	0.01%	R
02A1	Int	5 th harmonic ratio-V3	0.01%	R
02A2	Int	6 th harmonic ratio-V3	0.01%	R
02A3	Int	7 th harmonic ratio-V3	0.01%	R
02A4	Int	8 th harmonic ratio-V3	0.01%	R
02A5	Int	9 th harmonic ratio-V3	0.01%	R
02A6	Int	10 th harmonic ratio-V3	0.01%	R
02A7	Int	11 th harmonic ratio-V3	0.01%	R
02A8	Int	12 th harmonic ratio-V3	0.01%	R
02A9	Int	13 th harmonic ratio-V3	0.01%	R
02AA	Int	14 th harmonic ratio-V3	0.01%	R
02AB	Int	15 th harmonic ratio-V3	0.01%	R

02AC	Int	16 th harmonic ratio-V3	0.01%	R
02AD	Int	17 th harmonic ratio-V3	0.01%	R
02AE	Int	18 th harmonic ratio-V3	0.01%	R
02AF	Int	19 th harmonic ratio-V3	0.01%	R
02B0	Int	20 th harmonic ratio-V3	0.01%	R
02B1	Int	21 th harmonic ratio-V3	0.01%	R
02B2	Int	22 th harmonic ratio-V3	0.01%	R
02B3	Int	23 th harmonic ratio-V3	0.01%	R
02B4	Int	24 th harmonic ratio-V3	0.01%	R
02B5	Int	25 th harmonic ratio-V3	0.01%	R
02B6	Int	26 th harmonic ratio-V3	0.01%	R
02B7	Int	27 th harmonic ratio-V3	0.01%	R
02B8	Int	28 th harmonic ratio-V3	0.01%	R
02B9	Int	29 th harmonic ratio-V3	0.01%	R
02BA	Int	30 th harmonic ratio-V3	0.01%	R
02BB	Int	31 th harmonic ratio-V3	0.01%	R
02BC	Int	32 th harmonic ratio-V3	0.01%	R
02BD	Int	33 th harmonic ratio-V3	0.01%	R
02BE	Int	34 th harmonic ratio-V3	0.01%	R
02BF	Int	35 th harmonic ratio-V3	0.01%	R
02C0	Int	36 th harmonic ratio-V3	0.01%	R
02C1	Int	37 th harmonic ratio-V3	0.01%	R
02C2	Int	38 th harmonic ratio-V3	0.01%	R
02C3	Int	39 th harmonic ratio-V3	0.01%	R
02C4	Int	40 th harmonic ratio-V3	0.01%	R
02C5	Int	41 th harmonic ratio-V3	0.01%	R
02C6	Int	42 th harmonic ratio-V3	0.01%	R
02C7	Int	43 th harmonic ratio-V3	0.01%	R
02C8	Int	44 th harmonic ratio-V3	0.01%	R

02C9	Int	45 th harmonic ratio-V3	0.01%	R
02CA	Int	46 th harmonic ratio-V3	0.01%	R
02CB	Int	47 th harmonic ratio-V3	0.01%	R
02CC	Int	48 th harmonic ratio-V3	0.01%	R
02CD	Int	49 th harmonic ratio-V3	0.01%	R
02CE	Int	50 th harmonic ratio-V3	0.01%	R
02CF	Int	51 th harmonic ratio-V3	0.01%	R
02D0	Int	52 th harmonic ratio-V3	0.01%	R
02D1	Int	53 th harmonic ratio-V3	0.01%	R
02D2	Int	54 th harmonic ratio-V3	0.01%	R
02D3	Int	55 th harmonic ratio-V3	0.01%	R
02D4	Int	56 th harmonic ratio-V3	0.01%	R
02D5	Int	57 th harmonic ratio-V3	0.01%	R
02D6	Int	58 th harmonic ratio-V3	0.01%	R
02D7	Int	59 th harmonic ratio-V3	0.01%	R
02D8	Int	60 th harmonic ratio-V3	0.01%	R
02D9	Int	61 th harmonic ratio-V3	0.01%	R
02DA	Int	62 th harmonic ratio-V3	0.01%	R
02DB	Int	63 th harmonic ratio-V3	0.01%	R
02DC	Int	2 nd harmonic ratio-I1	0.01%	R
02DD	Int	3 rd harmonic ratio-I1	0.01%	R
02DE	Int	4 th harmonic ratio-I1	0.01%	R
02DF	Int	5 th harmonic ratio-I1	0.01%	R
02E0	Int	6 th harmonic ratio-I1	0.01%	R
02E1	Int	7 th harmonic ratio-I1	0.01%	R
02E2	Int	8 th harmonic ratio-I1	0.01%	R
02E3	Int	9 th harmonic ratio-I1	0.01%	R
02E4	Int	10 th harmonic ratio-I1	0.01%	R
02E5	Int	11 th harmonic ratio-I1	0.01%	R

02E6	Int	12 th harmonic ratio-I1	0.01%	R
02E7	Int	13 th harmonic ratio-I1	0.01%	R
02E8	Int	14 th harmonic ratio-I1	0.01%	R
02E9	Int	15 th harmonic ratio-I1	0.01%	R
02EA	Int	16 th harmonic ratio-I1	0.01%	R
02EB	Int	17 th harmonic ratio-I1	0.01%	R
02EC	Int	18 th harmonic ratio-I1	0.01%	R
02ED	Int	19 th harmonic ratio-I1	0.01%	R
02EE	Int	20 th harmonic ratio-I1	0.01%	R
02EF	Int	21 th harmonic ratio-I1	0.01%	R
02F0	Int	22 th harmonic ratio-I1	0.01%	R
02F1	Int	23 th harmonic ratio-I1	0.01%	R
02F2	Int	24 th harmonic ratio-I1	0.01%	R
02F3	Int	25 th harmonic ratio-I1	0.01%	R
02F4	Int	26 th harmonic ratio-I1	0.01%	R
02F5	Int	27 th harmonic ratio-I1	0.01%	R
02F6	Int	28 th harmonic ratio-I1	0.01%	R
02F7	Int	29 th harmonic ratio-I1	0.01%	R
02F8	Int	30 th harmonic ratio-I1	0.01%	R
02F9	Int	31 th harmonic ratio-I1	0.01%	R
02FA	Int	32 th harmonic ratio-I1	0.01%	R
02FB	Int	33 th harmonic ratio-I1	0.01%	R
02FC	Int	34 th harmonic ratio-I1	0.01%	R
02FD	Int	35 th harmonic ratio-I1	0.01%	R
02FE	Int	36 th harmonic ratio-I1	0.01%	R
02FF	Int	37 th harmonic ratio-I1	0.01%	R
0300	Int	38 th harmonic ratio-I1	0.01%	R
0301	Int	39 th harmonic ratio-I1	0.01%	R
0302	Int	40 th harmonic ratio-I1	0.01%	R

0303	Int	41 th harmonic ratio-I1	0.01%	R
0304	Int	42 th harmonic ratio-I1	0.01%	R
0305	Int	43 th harmonic ratio-I1	0.01%	R
0306	Int	44 th harmonic ratio-I1	0.01%	R
0307	Int	45 th harmonic ratio-I1	0.01%	R
0308	Int	46 th harmonic ratio-I1	0.01%	R
0309	Int	47 th harmonic ratio-I1	0.01%	R
030A	Int	48 th harmonic ratio-I1	0.01%	R
030B	Int	49 th harmonic ratio-I1	0.01%	R
030C	Int	50 th harmonic ratio-I1	0.01%	R
030D	Int	51 th harmonic ratio-I1	0.01%	R
030E	Int	52 th harmonic ratio-I1	0.01%	R
030F	Int	53 th harmonic ratio-I1	0.01%	R
0310	Int	54 th harmonic ratio-I1	0.01%	R
0311	Int	55 th harmonic ratio-I1	0.01%	R
0312	Int	56 th harmonic ratio-I1	0.01%	R
0313	Int	57 th harmonic ratio-I1	0.01%	R
0314	Int	58 th harmonic ratio-I1	0.01%	R
0315	Int	59 th harmonic ratio-I1	0.01%	R
0316	Int	60 th harmonic ratio-I1	0.01%	R
0317	Int	61 th harmonic ratio-I1	0.01%	R
0318	Int	62 th harmonic ratio-I1	0.01%	R
0319	Int	63 th harmonic ratio-I1	0.01%	R
031A	Int	2 nd harmonic ratio-I2	0.01%	R
031B	Int	3 rd harmonic ratio-I2	0.01%	R
031C	Int	4 th harmonic ratio-I2	0.01%	R
031D	Int	5 th harmonic ratio-I2	0.01%	R
031E	Int	6 th harmonic ratio-I2	0.01%	R
031F	Int	7 th harmonic ratio-I2	0.01%	R

0320	Int	8 th harmonic ratio-I2	0.01%	R
0321	Int	9 th harmonic ratio-I2	0.01%	R
0322	Int	10 th harmonic ratio-I2	0.01%	R
0323	Int	11 th harmonic ratio-I2	0.01%	R
0324	Int	12 th harmonic ratio-I2	0.01%	R
0325	Int	13 th harmonic ratio-I2	0.01%	R
0326	Int	14 th harmonic ratio-I2	0.01%	R
0327	Int	15 th harmonic ratio-I2	0.01%	R
0328	Int	16 th harmonic ratio-I2	0.01%	R
0329	Int	17 th harmonic ratio-I2	0.01%	R
032A	Int	18 th harmonic ratio-I2	0.01%	R
032B	Int	19 th harmonic ratio-I2	0.01%	R
032C	Int	20 th harmonic ratio-I2	0.01%	R
032D	Int	21 th harmonic ratio-I2	0.01%	R
032E	Int	22 th harmonic ratio-I2	0.01%	R
032F	Int	23 th harmonic ratio-I2	0.01%	R
0330	Int	24 th harmonic ratio-I2	0.01%	R
0331	Int	25 th harmonic ratio-I2	0.01%	R
0332	Int	26 th harmonic ratio-I2	0.01%	R
0333	Int	27 th harmonic ratio-I2	0.01%	R
0334	Int	28 th harmonic ratio-I2	0.01%	R
0335	Int	29 th harmonic ratio-I2	0.01%	R
0336	Int	30 th harmonic ratio-I2	0.01%	R
0337	Int	31 th harmonic ratio-I2	0.01%	R
0338	Int	32 th harmonic ratio-I2	0.01%	R
0339	Int	33 th harmonic ratio-I2	0.01%	R
033A	Int	34 th harmonic ratio-I2	0.01%	R
033B	Int	35 th harmonic ratio-I2	0.01%	R
033C	Int	36 th harmonic ratio-I2	0.01%	R

033D	Int	37 th harmonic ratio-I2	0.01%	R
033E	Int	38 th harmonic ratio-I2	0.01%	R
033F	Int	39 th harmonic ratio-I2	0.01%	R
0340	Int	40 th harmonic ratio-I2	0.01%	R
0341	Int	41 th harmonic ratio-I2	0.01%	R
0342	Int	42 th harmonic ratio-I2	0.01%	R
0343	Int	43 th harmonic ratio-I2	0.01%	R
0344	Int	44 th harmonic ratio-I2	0.01%	R
0345	Int	45 th harmonic ratio-I2	0.01%	R
0346	Int	46 th harmonic ratio-I2	0.01%	R
0347	Int	47 th harmonic ratio-I2	0.01%	R
0348	Int	48 th harmonic ratio-I2	0.01%	R
0349	Int	49 th harmonic ratio-I2	0.01%	R
034A	Int	50 th harmonic ratio-I2	0.01%	R
034B	Int	51 th harmonic ratio-I2	0.01%	R
034C	Int	52 th harmonic ratio-I2	0.01%	R
034D	Int	53 th harmonic ratio-I2	0.01%	R
034E	Int	54 th harmonic ratio-I2	0.01%	R
034F	Int	55 th harmonic ratio-I2	0.01%	R
0350	Int	56 th harmonic ratio-I2	0.01%	R
0351	Int	57 th harmonic ratio-I2	0.01%	R
0352	Int	58 th harmonic ratio-I2	0.01%	R
0353	Int	59 th harmonic ratio-I2	0.01%	R
0354	Int	60 th harmonic ratio-I2	0.01%	R
0355	Int	61 th harmonic ratio-I2	0.01%	R
0356	Int	62 th harmonic ratio-I2	0.01%	R
0357	Int	63 th harmonic ratio-I2	0.01%	R
0358	Int	2 nd harmonic ratio-I3	0.01%	R
0359	Int	3 rd harmonic ratio-I3	0.01%	R

035A	Int	4 th harmonic ratio-I3	0.01%	R
035B	Int	5 th harmonic ratio-I3	0.01%	R
035C	Int	6 th harmonic ratio-I3	0.01%	R
035D	Int	7 th harmonic ratio-I3	0.01%	R
035E	Int	8 th harmonic ratio-I3	0.01%	R
035F	Int	9 th harmonic ratio-I3	0.01%	R
0360	Int	10 th harmonic ratio-I3	0.01%	R
0361	Int	11 th harmonic ratio-I3	0.01%	R
0362	Int	12 th harmonic ratio-I3	0.01%	R
0363	Int	13 th harmonic ratio-I3	0.01%	R
0364	Int	14 th harmonic ratio-I3	0.01%	R
0365	Int	15 th harmonic ratio-I3	0.01%	R
0366	Int	16 th harmonic ratio-I3	0.01%	R
0367	Int	17 th harmonic ratio-I3	0.01%	R
0368	Int	18 th harmonic ratio-I3	0.01%	R
0369	Int	19 th harmonic ratio-I3	0.01%	R
036A	Int	20 th harmonic ratio-I3	0.01%	R
036B	Int	21 th harmonic ratio-I3	0.01%	R
036C	Int	22 th harmonic ratio-I3	0.01%	R
036D	Int	23 th harmonic ratio-I3	0.01%	R
036E	Int	24 th harmonic ratio-I3	0.01%	R
036F	Int	25 th harmonic ratio-I3	0.01%	R
0370	Int	26 th harmonic ratio-I3	0.01%	R
0371	Int	27 th harmonic ratio-I3	0.01%	R
0372	Int	28 th harmonic ratio-I3	0.01%	R
0373	Int	29 th harmonic ratio-I3	0.01%	R
0374	Int	30 th harmonic ratio-I3	0.01%	R
0375	Int	31 th harmonic ratio-I3	0.01%	R
0376	Int	32 th harmonic ratio-I3	0.01%	R

0377	Int	33 th harmonic ratio-I3	0.01%	R
0378	Int	34 th harmonic ratio-I3	0.01%	R
0379	Int	35 th harmonic ratio-I3	0.01%	R
037A	Int	36 th harmonic ratio-I3	0.01%	R
037B	Int	37 th harmonic ratio-I3	0.01%	R
037C	Int	38 th harmonic ratio-I3	0.01%	R
037D	Int	39 th harmonic ratio-I3	0.01%	R
037E	Int	40 th harmonic ratio-I3	0.01%	R
037F	Int	41 th harmonic ratio-I3	0.01%	R
0380	Int	42 th harmonic ratio-I3	0.01%	R
0381	Int	43 th harmonic ratio-I3	0.01%	R
0382	Int	44 th harmonic ratio-I3	0.01%	R
0383	Int	45 th harmonic ratio-I3	0.01%	R
0384	Int	46 th harmonic ratio-I3	0.01%	R
0385	Int	47 th harmonic ratio-I3	0.01%	R
0386	Int	48 th harmonic ratio-I3	0.01%	R
0387	Int	49 th harmonic ratio-I3	0.01%	R
0388	Int	50 th harmonic ratio-I3	0.01%	R
0389	Int	51 th harmonic ratio-I3	0.01%	R
038A	Int	52 th harmonic ratio-I3	0.01%	R
038B	Int	53 th harmonic ratio-I3	0.01%	R
038C	Int	54 th harmonic ratio-I3	0.01%	R
038D	Int	55 th harmonic ratio-I3	0.01%	R
038E	Int	56 th harmonic ratio-I3	0.01%	R
038F	Int	57 th harmonic ratio-I3	0.01%	R
0390	Int	58 th harmonic ratio-I3	0.01%	R
0391	Int	59 th harmonic ratio-I3	0.01%	R
0392	Int	60 th harmonic ratio-I3	0.01%	R
0393	Int	61 th harmonic ratio-I3	0.01%	R

0394	Int	62 th harmonic ratio-I3	0.01%	R
0395	Int	63 th harmonic ratio-I3	0.01%	R

3.3 Module data

Address	Format	Description	Unit	R/W
0506	Int	State of digital input,0:off,1:on Bit0:X1-DI1 Bit1:X1-DI2 Bit2:X1-DI3 Bit3:X1-DI4 Bit4:X2-DI1 Bit5:X2-DI2 Bit6:X2-DI3 Bit7:X2-DI4 Bit8:X3-DI1 Bit9:X3-DI2 Bit10:X3-DI3 Bit11:X3-DI4 Bit12:X4-DI1 Bit13:X4-DI2 Bit14:X4-DI3 Bit15:X4-DI4		R
0507	Int	State of relay output,0:off,1:on Bit0:main body-DO1 Bit1:main body-DO2 Bit2:X1-DO1 Bit3:X1-DO2 Bit4:X2-DO1 Bit5:X2-DO2 Bit6:X3-DO1 Bit7:X3-DO2 Bit8:X4-DO1 Bit9:X4-DO2		R

0508	Int	Analogue output value: X1-AO1	0.001mA	R
0509	Int	Analogue output value: X1-AO2	0.001mA	R
050A	Int	Analogue output value: X2-AO1	0.001mA	R
050B	Int	Analogue output value: X2-AO2	0.001mA	R
050C	Int	Analogue output value: X3-AO1	0.001mA	R
050D	Int	Analogue output value: X3-AO2	0.001mA	R
050E	Int	Analogue output value: X4-AO1	0.001mA	R
050F	Int	Analogue output value: X4-AO2	0.001mA	R
0510	Int	Analogue input value: X1-AI1(4-20mA)	0.001mA	R
0511	Int	Analogue input value: X1-AI2(4-20mA)	0.001mA	R
0512	Int	Analogue input value: X2-AI1(4-20mA)	0.001mA	R
0513	Int	Analogue input value: X2-AI2(4-20mA)	0.001mA	R
0514	Int	Analogue input value: X3-AI1(4-20mA)	0.001mA	R
0515	Int	Analogue input value: X3-AI2(4-20mA)	0.001mA	R
0516	Int	Analogue input value: X4-AI1(4-20mA)	0.001mA	R
0517	Int	Analogue input value: X4-AI2(4-20mA)	0.001mA	R
0518	Int	Analogue input value: X1-AI1(PT100)	0.1℃	R
0519	Int	Analogue input value: X1-AI2(PT100)	0.1℃	R
051A	Int	Analogue input value: X2-AI1(PT100)	0.1℃	R
051B	Int	Analogue input value: X2-AI2(PT100)	0.1℃	R
051C	Int	Analogue input value: X3-AI1(PT100)	0.1℃	R
051D	Int	Analogue input value: X3-AI2(PT100)	0.1℃	R
051E	Int	Analogue input value: X4-AI1(PT100)	0.1℃	R
051F	Int	Analogue input value: X4-AI2(PT100)	0.1℃	R
0520	Int	Analogue input value: X1-AI1(TC)	1℃	R
0521	Int	Analogue input value: X1-AI2(TC)	1℃	R
0523	Int	Analogue input value: X2-AI1(TC)	1℃	R
0524	Int	Analogue input value: X2-AI2(TC)	1℃	R
0525	Int	Analogue input value: X3-AI1(TC)	1℃	R

0526	Int	Analogue input value: X3-AI2(TC)	1 °C	R
0527	Int	Analogue input value: X4-AI1(TC)	1 °C	R
0528	Int	Analogue input value: X4-AI2(TC)	1 °C	R
0528-0529	Long	Pulse counter: X1-1		R
052A-052B	Long	Pulse counter: X1-2		R
052C-052D	Long	Pulse counter: X1-3		R
052E-052F	Long	Pulse counter: X1-4		R
0530-0531	Long	Pulse counter: X2-1		R
0532-0533	Long	Pulse counter: X2-2		R
0534-0535	Long	Pulse counter: X2-3		R
0536-0537	Long	Pulse counter: X2-4		R
0538-0539	Long	Pulse counter: X3-1		R
053A-053B	Long	Pulse counter: X3-2		R
053C-053D	Long	Pulse counter: X3-3		R
053E-053F	Long	Pulse counter: X3-4		R
0540-0541	Long	Pulse counter: X4-1		R
0542-0543	Long	Pulse counter: X4-2		R
0544-0545	Long	Pulse counter: X4-3		R
0546-0547	Long	Pulse counter: X4-4		R

3.4 Module data

Address	Format	Description	Unit	R/W
0760-0767	char	MCU revision 。 Example: AHM3.1008		R
0768-076F	char	X1 revision		R
0770-0777	char	X2 revision		R
0778-077F	char	X3 revision		R
0780-0787	char	X4 revision		R

3.5 Setup Parameters

Address	Format	Description1	Description2	R/W
0800	Int	High byte	X1 0:no module 1:DM1 module 2:DM2 module 3:DM3 module 13:DM13 module	R
		Low byte	X2 0:no module 1:DM1 module 2:DM2 module 3:DM3 module 13:DM13 module	
0801	Int	High byte	X3 0:no module 1:DM1 module 2:DM2 module 3:DM3 module 13:DM13 module	R
		Low byte	X4 0:no module 1:DM1 module 2:DM2 module 3:DM3 module 13:DM13 module	

0802	Int	Password	0-9999	R
0803	Int	High byte	Default Display interface 0: U 1: I 2: P 3: Energy 4: THD 5: Waveform 6: Demand 7: Max/Min	R/W
0804	Int	High byte	Langue 0:English	R/W
		Low byte	Contrast:0-5	R/W
0805	Int	High byte	Back light delay time:1-255s 0:usually ON	R/W
		Low byte	Data recording interval 1-255min	R/W
0806	Int	High byte	Address: 1-247	R/W
		Low byte	Baud rate 0: 1200bps 1: 2400bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps	
0807	Int	High byte	Parity 0: N,8,1 1: O,8,1 2: E,8,1 3: N,8,2	R/W

0808-0809	--	--	--	--
080A	Int	High byte	Wiring 0: 3P4W 1: 3P3W 2: 1P2W	R/W
080B	--			
080C-080D	Long	PT primary	1~999999V	R/W
080E-080F	Long	CT primary	1~999999A	R/W
0810	Int	PT secondary	1~999V	R/W
0811	Int	CT secondary	1~6A	R/W
0812	Int	Item of Record 1#	0: V1 1: V2 2: V3 3: V12 4: V23 5: V31 6: I1 7: I2 8: I3 9: In 10: P1 11: P2 12: P3 13: P 14: Q1 15: Q2 16: Q3 17: Q 18: S1 19: S2	

			20: S3 21: S 22: PF1 23: PF2 24: PF3 25: PF 26: F 27: Unavg 28: Ulavg 29: Iavg 30: Phase angle of V1 31: Phase angle of V2 32: Phase angle of V3 33: Phase angle of I1 34: Phase angle of I2 35: Phase angle of I3 36: Positive-sequence component of voltage 37: Negative-sequence component of voltage 38: Zero-sequence component of voltage 39: Unbalance factor of voltage 40: Reserved 41: Positive-sequence component of current 42: Negative-sequence component of current 43: Zero-sequence component of current	
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			44: Unbalance factor of current 45: Reserved 46: THD-V1 47: THD-V2 48: THD-V3 49: THD-I1 50: THD-I1 51: THD-I1 52: Fundamental value -V1 53: Fundamental value -V2 54: Fundamental value -V3 55: Fundamental value -I1 56: Fundamental value -I2 57: Fundamental value -I3	
0813	Int	Item of Record 2#	the same as above	R
0814	Int	Item of Record 3#	the same as above	R
0815	Int	Item of Record 4#	the same as above	R
0816	Int	Item of Record 5#	the same as above	R
0817	Int	Item of Record 6#	the same as above	R
0818	Int	DIV_U	0: 1 1:10 All the voltages values send by communications must to be affected by DIV_V. The values must to be divided by DIV_V	R/W
0819	Int	DIV_P	0: 1, 1: 1000, 2:100000	R/W

			All the powers values send by communications, active powers, reactive powers and apparent powers, must to be affected by DIV_P.	
081A-081F	--			
0820	Int	Unit price of Tariff #1 import energy	0.01\$/kWh	
0821	Int	Unit price of Tariff #2 import energy	0.01\$/kWh	
0822	Int	Unit price of Tariff #3 import energy	0.01\$/kWh	
0823	Int	Unit price of Tariff #4 import energy	0.01\$/kWh	
0824	Int	Unit price of Tariff #5 import energy	0.01\$/kWh	
0825	Int	Unit price of Tariff #6 import energy	0.01\$/kWh	
0826	Int	Unit price of Tariff #7 import energy	0.01\$/kWh	
0827	Int	Unit price of Tariff #8 import energy	0.01\$/kWh	
0828	Int	Unit price of Tariff #9 import energy	0.01\$/kWh	
0829	Int	Unit price of Tariff #10 import energy	0.01\$/kWh	
082A	Int	Unit price of Tariff #11 import energy	0.01\$/kWh	
082B	Int	Unit price of Tariff #12 import energy	0.01\$/kWh	
082C	Int	Unit price of Tariff	0.01\$/kWh	

		#13 import energy		
082D	Int	Unit price of Tariff #14 import energy	0.01\$/kWh	
082E	Int	Unit price of Tariff #15 import energy	0.01\$/kWh	
082F	Int	Unit price of Tariff #16 import energy	0.01\$/kWh	
0830	Int	Unit price of Tariff #1 export energy	0.01\$/kWh	
0831	Int	Unit price of Tariff #2 export energy	0.01\$/kWh	
0832	Int	Unit price of Tariff #3 export energy	0.01\$/kWh	
0833	Int	Unit price of Tariff #4 export energy	0.01\$/kWh	
0834	Int	Unit price of Tariff #5 export energy	0.01\$/kWh	
0835	Int	Unit price of Tariff #6 export energy	0.01\$/kWh	
0836	Int	Unit price of Tariff #7 export energy	0.01\$/kWh	
0837	Int	Unit price of Tariff #8 export energy	0.01\$/kWh	
0838	Int	Unit price of Tariff #9 export energy	0.01\$/kWh	
0839	Int	Unit price of Tariff #10 export energy	0.01\$/kWh	
083A	Int	Unit price of Tariff #11 export energy	0.01\$/kWh	

083B	Int	Unit price of Tariff #12 export energy	0.01\$/kWh	
083C	Int	Unit price of Tariff #13 export energy	0.01\$/kWh	
083D	Int	Unit price of Tariff #14 export energy	0.01\$/kWh	
083E	Int	Unit price of Tariff #15 export energy	0.01\$/kWh	
083F	Int	Unit price of Tariff #16 export energy	0.01\$/kWh	
0840	Int	CO2 Emissions of Tariff #1 import energy	0.01kg/kWh	
0841	Int	CO2 Emissions of Tariff #2 import energy	0.01kg/kWh	
0842	Int	CO2 Emissions of Tariff #3 import energy	0.01kg/kWh	
0843	Int	CO2 Emissions of Tariff #4 import energy	0.01kg/kWh	
0844	Int	CO2 Emissions of Tariff #5 import energy	0.01kg/kWh	
0845	Int	CO2 Emissions of Tariff #6 import energy	0.01kg/kWh	
0846	Int	CO2 Emissions of Tariff #7 import	0.01kg/kWh	

		energy		
0847	Int	CO2 Emissions of Tariff #8 import energy	0.01kg/kWh	
0848	Int	CO2 Emissions of Tariff #9 import energy	0.01kg/kWh	
0849	Int	CO2 Emissions of Tariff #10 import energy	0.01kg/kWh	
084A	Int	CO2 Emissions of Tariff #11 import energy	0.01kg/kWh	
084B	Int	CO2 Emissions of Tariff #12 import energy	0.01kg/kWh	
084C	Int	CO2 Emissions of Tariff #13 import energy	0.01kg/kWh	
084D	Int	CO2 Emissions of Tariff #14 import energy	0.01kg/kWh	
084E	Int	CO2 Emissions of Tariff #15 import energy	0.01kg/kWh	
084F	Int	CO2 Emissions of Tariff #16 import energy	0.01kg/kWh	
0850	Int	CO2 Emissions of Tariff #1 export	0.01kg/kWh	

		energy		
0851	Int	CO2 Emissions of Tariff #2 export energy	0.01kg/kWh	
0852	Int	CO2 Emissions of Tariff #3 export energy	0.01kg/kWh	
0853	Int	CO2 Emissions of Tariff #4 export energy	0.01kg/kWh	
0854	Int	CO2 Emissions of Tariff #5 export energy	0.01kg/kWh	
0855	Int	CO2 Emissions of Tariff #6 export energy	0.01kg/kWh	
0856	Int	CO2 Emissions of Tariff #7 export energy	0.01kg/kWh	
0857	Int	CO2 Emissions of Tariff #8 export energy	0.01kg/kWh	
0858	Int	CO2 Emissions of Tariff #9 export energy	0.01kg/kWh	
0859	Int	CO2 Emissions of Tariff #10 export energy	0.01kg/kWh	
085A	Int	CO2 Emissions of Tariff #11 export	0.01kg/kWh	

		energy		
085B	Int	CO2 Emissions of Tariff #12 export energy	0.01kg/kWh	
085C	Int	CO2 Emissions of Tariff #13 export energy	0.01kg/kWh	
085D	Int	CO2 Emissions of Tariff #14 export energy	0.01kg/kWh	
085E	Int	CO2 Emissions of Tariff #15 export energy	0.01kg/kWh	
085F	Int	CO2 Emissions of Tariff #16 export energy	0.01kg/kWh	
0860	Int	Item	analogue output: X1-AO1 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2	R/W

			25: PF3 26: PF 27: F	
0861	Int	mode	Analogue output: X1-AO1 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
0862-0863	Long	Down scale	Analogue output: X1-AO1 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
0864-0865	Long	Middle scale	the same as above	R/W
0866-0867	Long	Full scale	the same as above	R/W
0868	Int	Item	analogue output: X1-AO2 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2	R/W

			21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	
0869	Int	mode	Analogue output: X1-AO2 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
086A-086B	Long	Down scale	Analogue output: X1-AO2 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
086C-086D	Long	Middle scale	the same as above	
086E-086F	Long	Full scale	the same as above	R/W
0870	Int	Item	analogue output: X2-AO1 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: I _n 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2	R/W

			17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	
0871	Int	mode	Analogue output: X2-AO1 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
0872-0873	Long	Down scale	Analogue output: X1-AO1 primary grid data $0-9999 \times 10^n$ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
0874-0875	Long	Middle scale	the same as above	
0876-0877	Long	Full scale	the same as above	R/W
0878	Int	Item	analogue output: X2-AO2 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb	R/W

			13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	
0879	Int	mode	Analogue output: X2-AO2 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
087A-087B	Long	Down scale	Analogue output: X1-AO2 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
087C-087D	Long	Middle scale	the same as above	
087E-087F	Long	Full scale	the same as above	R/W
0880	Int	Item	analogue output: X3-AO1 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2	R/W

			9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	
0881	Int	mode	Analogue output: X3-AO1 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
0882-0883	Long	Down scale	Analogue output: X3-AO1 primary grid data $0-9999 \times 10^n$ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
0884-0885	Long	Middle scale	the same as above	
0886-0887	Long	Full scale	the same as above	R/W
0888	Int	Item	analogue output: X3-AO2 0: OFF 1: V1 2: V2 3: V3 4: V12	R/W

			5: V23 6: V31 7: I1 8: I2 9: I3 10: I _n 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	
0889	Int	mode	Analogue output: X3-AO2 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
088A-088B	Long	Down scale	Analogue output: X3-AO2 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
088C-088D	Long	Middle scale	the same as above	
088E-088F	Long	Full scale	the same as above	R/W
0890	Int	Item	analogue output: X4-AO1 0: OFF	R/W

			1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: I _n 11: P _a 12: P _b 13: P _c 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	
0891	Int	mode	Analogue output: X4-AO1 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
0892-0893	Long	Down scale	Analogue output: X4-AO1 primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W
0894-0895	Long	Middle scale	the same as above	
0896-0897	Long	Full scale	the same as above	R/W

0898	Int	Item	analogue output: X4-AO2 0: OFF 1: V1 2: V2 3: V3 4: V12 5: V23 6: V31 7: I1 8: I2 9: I3 10: In 11: Pa 12: Pb 13: Pc 14: P 15: Q1 16: Q2 17: Q3 18: Q 19: S1 20: S2 21: S3 22: S 23: PF1 24: PF2 25: PF3 26: PF 27: F	R/W
0899	Int	mode	Analogue output: X4-AO2 0: 4~20 mA 1: 0~20 mA 2: 4~12~20 mA	R/W
089A-089B	Long	Down scale	Analogue output: X4-AO2 primary grid data $0-9999 \times 10^n$ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Setting parameter value should be smaller than two times of rated value.	R/W

089C-089D	Long	Middle scale	the same as above	
089E-089F	Long	Full scale	the same as above	R/W
08A0-08AF	--			
08B0	Int	Demand item of first to sixth channels	0:IPQS (fixed) Include six electric parameters which are I1 I2,I3,P,Q,S	R/W
08B1	Int	Mode of demand	0: slip block mode 1: fixed block mode 2: 4:synchronous mode	R/W
08B2	Int	Slip time(t)	1-9999s	R/W
08B3	Int	Demand period(T)	1-30t	R/W
0894-089B	--			
08BC	Int	High byte: X1-DI1 mode Low byte: X1-DI2 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08BD	Int	High byte: X1-DI3 mode Low byte: X1-DI4 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08BE	Int	High byte: X2-DI1 mode Low byte: X2-DI2 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08BF	Int	High byte: X2-DI3 mode Low byte: X2-DI4 mode	0:state monitor 1:pulse counter	R/W

			2:Spare energy 3:tariff energy 4:synchronous demand	
08C0	Int	High byte: X3-DI1 mode Low byte: X3-DI2 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08C1	Int	High byte: X3-DI3 mode Low byte: X3-DI4 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08C2	Int	High byte: X4-DI1 mode Low byte: X4-DI2 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08C3	Int	High byte: X4-DI3 mode Low byte: X4-DI4 mode	0:state monitor 1:pulse counter 2:Spare energy 3:tariff energy 4:synchronous demand	R/W
08C4-08C7				
08C8	Int	High byte:X1-TC Thermocouple type	0:K 1:J 2:E 3:N	R/W
		Low byte:X1-code junction compensation	0:OFF 1:ON(default)	R/W

08C9	Int	High byte:X2-TC Thermocouple type	0:K 1:J 2:E 3:N	R/W
		Low byte:X2-code junction compensation	0:OFF 1:ON(default)	R/W
08CA	Int	High byte:X3-TC Thermocouple type	0:K 1:J 2:E 3:N	R/W
		Low byte:X3-code junction compensation	0:OFF 1:ON(default)	R/W
08CB		High byte:X4-TC Thermocouple type	0:K 1:J 2:E 3:N	R/W
		Low byte:X4-code junction compensation	0:OFF 1:ON(default)	R/W
08CC	Int	Relay output Main body-DO1 mode	0: OFF 1: remote control 2: alarm 3: energy pulses 4: logic alarm	R/W
08CD	Int	Relay output Main body-DO1 Pulse width	0.1~99.9s 0.0: no pulse	R/W
08CE	Int	Main body-DO1 Mode is alarm mode.	0: V1 > 1: V1 < 2: V2 > 3: V2 <	

			4: $V_3 >$ 5: $V_3 <$ 6: $V_n >$ 7: $V_n <$ 8: $V_{12} >$ 9: $V_{12} <$ 10: $V_{23} >$ 11: $V_{23} <$ 12: $V_{31} >$ 13: $V_{31} <$ 14: $V_I >$ 15: $V_I <$ 16: $U_{avg} >$ 17: $U_{avg} <$ 18: $V_{avg} >$ 19: $V_{avg} <$ 20: $I_1 >$ 21: $I_1 <$ 22: $I_2 >$ 23: $I_2 <$ 24: $I_3 >$ 25: $I_3 <$ 26: $I >$ 27: $I <$ 28: $I_{avg} >$ 29: $I_{avg} <$ 30: $I_n >$ 31: $I_n <$ 32: $P >$ 33: $P <$	
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			34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
		Main body-DO1 Mode is logic alarm mode: Relay output Main body-DO1 Low Alarm delay time	0~99.99s	
08CF-08D0	Long	Main body-DO1 Mode is alarm mode.	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01%	R/W

			<p>Setting parameter value should be smaller than two times of rated value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4 4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4</p>	
		<p>Main body-DO1 Mode is logic alarm mode.</p> <p>Main body -DO1 High limit value(V1 V2 V3)</p>	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p>	R/W
08D1-08D2	Long	<p>Main body-DO1 Mode is alarm mode.</p> <p>Relay output</p> <p>DO1 hysteresis value</p>	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p> <p>current: 0.001A</p>	R/W

			power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	
		Main body-DO1 Mode is logic alarm mode. Main body -DO1 Low limit value(V1 V2 V3)	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V	
08D3	Int	Main body-DO1 Mode is alarm mode: Main body-DO1 delay time	0~99.99s	R/W
		Main body-DO1 Mode is logic alarm mode: Relay output Main body-DO1 High Alarm delay time	0~99.99s	
08D4	Int	Relay output Main body-DO1 Alarm interlock	0:OFF 1:ON	R/W
08D5	Int	Relay output Main body-DO2 mode	0: OFF 1: remote control 2: alarm 3: energy pulse 4: logic alarm	R/W
08D6	Int	Relay output Main body-DO2 Pulse	0.1~99.9s 0.0: no pulse	R/W

		width		
08D7	Int	Main body-DO2 Mode is alarm mode.	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg >	

			29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
		Main body-DO2 Mode is logic alarm mode: Relay output Main body-DO2 Low Alarm delay time	0~99.99s	
08D8-08D9	Long	Main body-DO2 Mode is alarm mode.	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V	R/W

			<p>current: 0.001A</p> <p>power: 1W/var/VA,</p> <p>PF: 0.001</p> <p>F: 0.01Hz</p> <p>Uunb /Iunb /THDu /THDi : 0.01%</p> <p>Setting parameter value should be smaller than two times of rated value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1</p> <p>1:X1-DI2</p> <p>2:X1-DI3</p> <p>3:X1-DI4</p> <p>4:X2-DI1</p> <p>5:X2-DI2</p> <p>6:X2-DI3</p> <p>7:X2-DI4</p> <p>8:X3-DI1</p> <p>9:X3-DI2</p> <p>10:X3-DI3</p> <p>11:X3-DI4</p> <p>12:X4-DI1</p> <p>13:X4-DI2</p> <p>14:X4-DI3</p> <p>15:X4-DI4</p>	
		<p>Main body-DO2 Mode is logic alarm mode.</p> <p>Main body –DO2 High</p>	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p>	R/W

		limit value(V1 V2 V3)		
08DA-08DB	Long	Main body-DO2 Mode is alarm mode. Relay output DO2 hysteresis value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
		Main body-DO2 Mode is logic alarm mode. Main body –DO2 Low limit value(V1 V2 V3)	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V	
08DC	Int	Main body-DO2 Mode is alarm mode: Main body-DO2 delay time	0~99.99s	R/W
		Main body-DO2 Mode is logic alarm mode: Relay output Main body-DO2 High Alarm delay time	0~99.99s	
08DD	Int	Relay output Main body-DO1 Alarm interlock	0:OFF 1:ON	R/W

08DE	Int	Relay output X1-DO1 mode	0: OFF 1: remote control 2: alarm	R/W
08DF	Int	Relay output X1-DO1 pulse width	0.0: no pulse 0.1~99.9ms	R/W
08E0	Int	Relay output X1-DO1 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16: Uavg> 17: Uavg< 18: Vavg> 19: Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 >	R/W

			25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
08E1-08E2	Long	Relay output X1-DO1 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A	R/W

			<p>power: 1W/var/VA, PF: 0.001 F: 0.01Hz</p> <p>Uunb /Iunb /THDu /THDi : 0.01%</p> <p>Setting parameter value should be smaller than two times of rated value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4 4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4</p>	
08E3-08E4	Long	Relay output X1-DO1 hysteresis value	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V current: 0.001A</p>	R/W

			power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	
08E5	Int	Relay output X1-DO1 delay time	0~99.99s	R/W
08E6	Int	Relay output X1-DO1 interlock	0:OFF 1:ON	R/W
08E7	Int	Relay output X1-DO2 mode	0:OFF 1:remote control 2:alarm	R/W
08E8	Int	Relay output X1-DO2 pulse width	0.0: no pulse 0.1~99.9ms	R/W
08E9	Int	Relay output X1-DO2 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 <	R/W

			14: VI > 15: VI < 16: Uavg> 17: Uavg< 18: Vavg> 19: Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb <	
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			44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
08EA-08EB	Long	Relay output X1-DO2 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value corresponds to the No. of digital input. 0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4 4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1	R/W

			9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4	
08EC-08ED	Long	Relay output X1-DO2 hysteresis value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
08EE	Int	Relay output X1-DO2 delay time	0~99.99s	R/W
08EF	Int	Relay output X1-DO2 interlock	0:OFF 1:ON	R/W
08F0	Int	Relay output X2-DO1 mode	0:OFF 1:remote control 2:alarm	R/W
08F1	Int	Relay output X2-DO1 pulse width	0.0: no pulse 0.1~99.9ms	R/W
08F2	Int	Relay output X2-DO1 alarm select	0: V1 > 1: V1 < 2: V2 >	R/W

			3: $V_2 <$ 4: $V_3 >$ 5: $V_3 <$ 6: $V_n >$ 7: $V_n <$ 8: $V_{12} >$ 9: $V_{12} <$ 10: $V_{23} >$ 11: $V_{23} <$ 12: $V_{31} >$ 13: $V_{31} <$ 14: $V_I >$ 15: $V_I <$ 16: $U_{avg} >$ 17: $U_{avg} <$ 18: $V_{avg} >$ 19: $V_{avg} <$ 20: $I_1 >$ 21: $I_1 <$ 22: $I_2 >$ 23: $I_2 <$ 24: $I_3 >$ 25: $I_3 <$ 26: $I >$ 27: $I <$ 24: $I_{avg} >$ 29: $I_{avg} <$ 30: $I_n >$ 31: $I_n <$ 32: $P >$	
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			33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
08F3-08F4	Long	Relay output X2-DO1 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value	R/W

			<p>corresponds to the No. of digital input.</p> <p>0:X1-D1</p> <p>1:X1-DI2</p> <p>2:X1-DI3</p> <p>3:X1-DI4</p> <p>4:X2-DI1</p> <p>5:X2-DI2</p> <p>6:X2-DI3</p> <p>7:X2-DI4</p> <p>8:X3-DI1</p> <p>9:X3-DI2</p> <p>10:X3-DI3</p> <p>11:X3-DI4</p> <p>12:X4-DI1</p> <p>13:X4-DI2</p> <p>14:X4-DI3</p> <p>15:X4-DI4</p>	
08F5-08F6	Long	Relay output X2-DO1 hysteresis value	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p> <p>current: 0.001A</p> <p>power: 1W/var/VA,</p> <p>PF: 0.001</p> <p>F: 0.01Hz</p> <p>Uunb /Iunb /THDu /THDi : 0.01%</p> <p>Setting parameter value should be smaller than two times of rated value.</p>	R/W
08F7	Int	Relay output	0~99.99s	R/W

		X2-DO1 delay time		
08F8	Int	Relay output X2-DO1 interlock	0:OFF 1:ON	R/W
08F9	Int	Relay output X2-DO2 mode	0:OFF 1:remote control 2:alarm	R/W
08FA	Int	Relay output X2-DO2 pulse width	0.0: no pulse 0.1~99.9ms	R/W
08FB	Int	Relay output X2-DO2 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 > 21: I1 <	R/W

			22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
08FC-08FD	Long	Relay output	primary grid data	R/W

		X2-DO2 limit value	<p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p> <p>current: 0.001A</p> <p>power: 1W/var/VA,</p> <p>PF: 0.001</p> <p>F: 0.01Hz</p> <p>Uunb /Iunb /THDu /THDi : 0.01%</p> <p>Setting parameter value should be smaller than two times of rated value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1</p> <p>1:X1-DI2</p> <p>2:X1-DI3</p> <p>3:X1-DI4</p> <p>4:X2-DI1</p> <p>5:X2-DI2</p> <p>6:X2-DI3</p> <p>7:X2-DI4</p> <p>8:X3-DI1</p> <p>9:X3-DI2</p> <p>10:X3-DI3</p> <p>11:X3-DI4</p> <p>12:X4-DI1</p> <p>13:X4-DI2</p> <p>14:X4-DI3</p> <p>15:X4-DI4</p>	
08FE-08FF	Long	Relay output	primary grid data	R/W

		X2-DO2 hysteresis value	$0-9999 \times 10^n$ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	
0900	Int	Relay output X2-DO2 delay time	0~99.99s	R/W
0901	Int	Relay output X2-DO2 interlock	0:OFF 1:ON	R/W
0902	Int	Relay output X3-DO1 mode	0:OFF 1:remote control 2:alarm	R/W
0903	Int	Relay output X3-DO1 pulse width	0.0: no pulse 0.1~99.9ms	R/W
0904	Int	Relay output X3-DO1 alarm select		R/W
0905-0906	Long	Relay output X3-DO1 limit value	primary grid data $0-9999 \times 10^n$ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should	R/W

			<p>be smaller than two times of rated value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1</p> <p>1:X1-DI2</p> <p>2:X1-DI3</p> <p>3:X1-DI4</p> <p>4:X2-DI1</p> <p>5:X2-DI2</p> <p>6:X2-DI3</p> <p>7:X2-DI4</p> <p>8:X3-DI1</p> <p>9:X3-DI2</p> <p>10:X3-DI3</p> <p>11:X3-DI4</p> <p>12:X4-DI1</p> <p>13:X4-DI2</p> <p>14:X4-DI3</p> <p>15:X4-DI4</p>	
0907-0908	Long	<p>Relay output</p> <p>X3-DO1 hysteresis value</p>	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p> <p>current: 0.001A</p> <p>power: 1W/var/VA,</p> <p>PF: 0.001</p> <p>F: 0.01Hz</p> <p>U_{unb} /I_{unb} /THDu /THDi : 0.01%</p> <p>Setting parameter value should</p>	R/W

			be smaller than two times of rated value.	
0909	Int	Relay output X3-DO1 delay time	0~99.99s	R/W
090A	Int	Relay output X3-DO1 interlock	0:OFF 1:ON	R/W
090B	Int	Relay output X3-DO2 mode	0:OFF 1:remote control 2:alarm	R/W
090C	Int	Relay output X3-DO2 pulse width	0.0: no pulse 0.1~99.9ms	R/W
090D	Int	Relay output X3-DO2 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg>	R/W

			19: Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi >	
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			49: THDi < 50: DIx	
090E-090F	Long	Relay output X3-DO2 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value corresponds to the No. of digital input. 0:X1-D1 1:X1-DI2 2:X1-DI3 3:X1-DI4 4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2	R/W

			14:X4-DI3 15:X4-DI4	
0910-0911	Long	Relay output X3-DO2 hysteresis value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz U _{unb} /I _{unb} /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
0912	Int	Relay output X3-DO2 delay time	0~99.99s	R/W
0913	Int	Relay output X3-DO2 interlock	0:OFF 1:ON	R/W
0914	Int	Relay output X4-DO1 mode	0:OFF 1:remote control 2:alarm	R/W
0915	Int	Relay output X4-DO1 pulse width	0.0: no pulse 0.1~99.9ms	R/W
0916	Int	Relay output X4-DO1 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn <	R/W

		8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I > 27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S <	
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			38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
0917-0918	Long	Relay output X4-DO1 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value. If it is switch linkage, this value corresponds to the No. of digital input. 0:X1-D1 1:X1-DI2 2:X1-DI3	R/W

			3:X1-DI4 4:X2-DI1 5:X2-DI2 6:X2-DI3 7:X2-DI4 8:X3-DI1 9:X3-DI2 10:X3-DI3 11:X3-DI4 12:X4-DI1 13:X4-DI2 14:X4-DI3 15:X4-DI4	
0919-091A	Long	Relay output X4-DO1 hysteresis value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001 F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	R/W
091B	Int	Relay output X4-DO1 delay time	0~99.99s	R/W
091C	Int	Relay output X4-DO1 interlock	0:OFF 1:ON	R/W
091D	Int	Relay output X4-DO2 mode	0:OFF 1:remote control	R/W

			2:alarm	
091E	Int	Relay output X4-DO2 pulse width	0.0: no pulse 0.1~99.9ms	R/W
091F	Int	Relay output X4-DO2 alarm select	0: V1 > 1: V1 < 2: V2 > 3: V2 < 4: V3 > 5: V3 < 6: Vn > 7: Vn < 8: V12 > 9: V12 < 10: V23 > 11: V23 < 12: V31 > 13: V31 < 14: VI > 15: VI < 16:Uavg> 17:Uavg< 18:Vavg> 19:Vavg< 20: I1 > 21: I1 < 22: I2 > 23: I2 < 24: I3 > 25: I3 < 26: I >	R/W

			27: I < 24: Iavg > 29: Iavg < 30: In > 31: In < 32: P > 33: P < 34: Q > 35: Q < 26: S > 37: S < 38: PF> 39: PF< 40: F > 41: F < 42: Uunb > 43: Uunb < 44: Iunb > 45: Iunb < 46: THDu > 47: THDu < 48: THDi > 49: THDi < 50: DIx	
0920-0921	Long	Relay output X4-DO2 limit value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V current: 0.001A power: 1W/var/VA, PF: 0.001	R/W

			<p>F: 0.01Hz</p> <p>Uunb /Iunb /THDu /THDi : 0.01%</p> <p>Setting parameter value should be smaller than two times of rated value.</p> <p>If it is switch linkage, this value corresponds to the No. of digital input.</p> <p>0:X1-D1</p> <p>1:X1-DI2</p> <p>2:X1-DI3</p> <p>3:X1-DI4</p> <p>4:X2-DI1</p> <p>5:X2-DI2</p> <p>6:X2-DI3</p> <p>7:X2-DI4</p> <p>8:X3-DI1</p> <p>9:X3-DI2</p> <p>10:X3-DI3</p> <p>11:X3-DI4</p> <p>12:X4-DI1</p> <p>13:X4-DI2</p> <p>14:X4-DI3</p> <p>15:X4-DI4</p>	
0922-0923	Long	<p>Relay output</p> <p>X4-DO2 hysteresis value</p>	<p>primary grid data</p> <p>0-9999*10ⁿ (n=0,3,6)</p> <p>ratio: voltage: 0.1V</p> <p>current: 0.001A</p> <p>power: 1W/var/VA,</p> <p>PF: 0.001</p>	R/W

			F: 0.01Hz Uunb /Iunb /THDu /THDi : 0.01% Setting parameter value should be smaller than two times of rated value.	
0924	Int	Relay output X4-DO2 delay time	0~99.99s	R/W
0925	Int	Relay output X4-DO2 interlock	0:OFF 1:ON	R/W
0926	Int	Ethernet Module Set	High byte: DHCP 0: invalid 1: dynamic allocation ip address Low byte: Connect Mode 0:Server; 1: Client	R/W
0927	Int		Port number	R/W
0928-092F	RJ45 : char[4][]		Char[4][4] [0][4] Local IP [1][4] Remote IP [2][4] subnet mask [3][4] gateway address	R/W
0930-0932	RJ45 : char[6]		MAC Address	R
0933	Int		High byte: DHCP 0: invalid 1: dynamic allocation ip address Low byte: Connect Mode 0:Server; 1: Client	R/W
0934	Int		Port number	R/W

0935-0954	Int	WI-FI Module Set	WI-FI: Char[4][16] [0][16] Local IP [1][16] Remote IP [2][16] subnet mask [3][16] gateway address	R/W
0955-0957	Int		MAC Address: Char[6]	R
0958	Int		High byte: WIFI Mode 1: Station (default) 2: SoftAP 3: Station+SoftAP Low byte: Encryption 0: WEP; 1: WPA/WPA2 Psk; 2: NONE	R/W
0959-0968	Int		WIFI Network Name: Char[32]	R/W
0969	Int		High byte: WEPpassword length 0: unlimited 1: ACSII 2: 13 ACSII Low byte: IO1 0: None 1: FC Mode 2:HDC Mode	R/W
096A-0971	Int		Char[16]: WEP password	R/W
0972-0981	Int		Char[32]: WAP/WAP2 password	R/W
0982-0987	Int	GPRS Module Set	Char[12]: HEX format E.g. 0x30 0x32 0x30 0x36 0x30 0x33 0x30 0x32 0x2E 0x30 0x32 0x30 Firmware version: 02060302.020	R/W
0988	Int		High byte: DHCP 0: invalid 1: dynamic allocation ip address	R/W

			Low byte: Connect Mode 0:Server; 1: Client	
0989	Int		Port number	R/W
098A-0999	Int		GPRS: Address Char[2][16] [0][16] Local IP [1][16] Remote IP	R/W
099A-099B	Int		Char[4] GPRS Mode Set: Char[0] : GPRS Switch 0: OFF 1:ON Char[1] : GPRS Mode 0: SMS 1:SMS+GPRS Char[2] : GPRS connection Mode 0: IP 1:DOMAIN NAME Char[3] : reserved	R/W
099C-09A7	Int		Char[24]: DN E.g. www.jcsepi.com	R/W
09A8-09AF	Int		Char[16]: SMS center number E.g. +34 xxx xxx xxx	R/W
09B0-9B7	Int		Char[16]: Administrator number E.g. +34 xxx xxx xxx	R/W
09B8-09CF	Int		Char[3][16]: User number E.g. Char[0][16]: +34 xxx xxx xxx Char[1][16]: +34 xxx xxx xxx Char[2][16]: +34 xxx xxx xxx	R/W
09D0-09D7	Int		Char[16]: Company name E.g. SACI	R/W
09D8-09DB	Int		Char[8]: User ID	R/W
09DC-09ED	Int		Char[36]: APN[36]	R/W
09EE-09F9	Int		Char[24]: APN_UserName	R/W

09FA-0A03	Int		Char[20]: APN_UserCode	R/W
0A04-0A05	Int		Char[4]: Heartbeat time	R/W
0A06-0A09	Int		Char[8]: Set password	R/W
0A0A-0A0B	Long	Over-voltage alarm value(3P3W is line voltage while 3P4W is phase voltage)	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V	R/W
0A0C-0A0D	Long	Over-voltage alarm value hysteresis	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V	R/W
0A0E-0A0F	Long	Under-voltage alarm value(3P3W is line voltage while 3P4W is phase voltage)	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V	R/W
0A10-0A11	Long	Under-voltage alarm value hysteresis	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: voltage: 0.1V	R/W
0A12-0A13	Long	Over-current alarm value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: current: 0.001A	R/W
0A14-0A15	Long	Over-current alarm value hysteresis	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: current: 0.001A	R/W
0A16-0A17	Long	Under-current alarm value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: current: 0.001A	R/W
0A18-0A19	Long	Under-current alarm value hysteresis	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: current: 0.001A	R/W

0A1A-0A1B	Long	Overload alarm value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: power: 1W	R/W
0A1C-0A1D	Long	Overload alarm value hysteresis	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: power: 1W	R/W
0A1E-0A1F	Long	Underload alarm value	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: power: 1W	R/W
0A20-0A21	Long	Underload alarm value hysteresis	primary grid data 0-9999*10 ⁿ (n=0,3,6) ratio: power: 1W	R/W
0A22-0A2F				
0A30	Int	http port number	Port number(For web-server)	R/W
0A31	Int	SMTP port number(reserve)	Port number(For SMTP)	R/W
0A32-0A33	Int	Device ID	Device ID char[4]	R/W
0A34-0A39	Int	Reserve		
0A3A-0A3B	Int	Email sending total enable	Char[0] : email sending alarm total allowed Char[1] : recipient 1 effective (compulsory) Char[2] : recipient 2 effective Char[3] : recipient 3 effective	R/W
0A3C-0A3D	Int	Public DNS server IP address	DNS Server IP char[4]	R/W
0A3E-0A3F	Int	STMP client server IP	STMP Server IP char[4]	R/W

0A40	Int	STMP client server domain	STMP Server domain char[32]	R/W
0A50	Int	Sender email address	From address char[32]	R/W
0A60	Int	Sender email password (authorized)	From Password char[32]	R/W
0A70	Int	recipient 1 email address	To1 address char[32]	R/W
0A80	Int	recipient 2 email address	To2 address char[32]	R/W
0A90	Int	recipient 3 email address	To3 address char[32]	R/W

3.6 Read added event record

Address	Format	Description	Unit	R/W
0B00-0B04	Int	The latest piece of SOE record: 0B00: 1: DI 2: DO 0B01-0B03: Char[6] action time 0B04: high byte: which channel; low byte: current status		R
0B05-0B09	Int	The 1 st piece of SOE record before the current piece		R
0B0A-0B0E	Int	The 2 nd piece of SOE record before the current piece		R
...
0B9B-0B9F	Int	The 31 st piece of SOE record before the current piece		R
0BA0-0BA9	Int	The latest piece of alarm record: 0BA0: Alarm type: 01: over-voltage alarm; 02: under-voltage alarm; 03: over-current alarm; 04: under-current alarm; 05: overload alarm; 06: underload alarm;		R

		0BA1-0BA3: Char[6] alarm start time 0BA4-0BA6: Char[6] alarm end time 0BA7-0BA9: alarm extreme value Over-voltage, over current, overload correspond to the maximum; Under-voltage, under-current, underload correspond to the minimum; Unit: 0.1V /0.001A/1W		
0BAA-0BB3	Int	The 1 st piece of alarm record before the current piece		R
...
0CD6-0CDF	Int	The 31 st piece of alarm record before the current piece		R