

DCEM-4MS Dual-Channel DC Energy Meter

User Manual



Version: 1.12

Revision: 2025.04

Read me

When you use DCEM-4MS Dual-channel DC energy meter, be sure to read this user manual carefully, and be able to fully understand the implications, the correct guidance of operations in accordance with user manual, which will help you make better use of DCEM-4MS Dual-channel DC energy meter and help to solve the various problems at the scene.

1. Before the meter turns on the power supply, be sure that the power supplies are within the provisions of the instrument.
2. When installation, the current input terminal must be non-open; voltage input terminals must non-short circuit.
3. Be sure the instrument wiring consistent with the internal system settings.
4. When communicating with the PC, instrument communication parameters must be consistent with the PC.



- **Please read this user manual carefully**
- **Please save this document**

Directory

1. - SUMMARIZE	- 4 -
2. - SPECIFICATIONS	- 15 -
3. - INSTALLATION AND START-UP	- 16 -
3.1.- INSTALLATION.....	- 16 -
3.2.- DIMENSION.....	- 17 -
3.3.- WIRING METHOD.....	- 18 -
4. - OPERATION MODE	- 22 -
5. - SCREEN DISPLAY	- 23 -
5.1. - ELECTRIC POWER PARAMETER INTERFACE.....	- 23 -
5.2. - MULTI-TARIFF RATE INTERFACE	- 25 -
5.3. - DEMAND INTERFACE	- 27 -
5.4. - MAX OR MIN VALUE INTERFACE	- 30 -
6. - SETUP PROCEDURE	- 32 -
6.1.- MAIN MENU	- 32 -
6.2.- MULTI-TARIFF RATE SETTING.....	- 33 -
6.3.- DO SETTING	- 33 -
6.4.- EXPLANATION OF THE FLOWCHART	- 34 -
7. - PULSE OUTPUT	- 36 -
8. - COMMUNICATION PROTOCOL	- 37 -
8.1. - MODBUS © PROTOCOL.....	- 37 -
8.2. - REGISTER MAP	- 38 -
8.2.1. - BASIC POWER DATA - PRIMARY SIDE.....	- 38 -
8.2.2. - BASIC POWER DATA - SECONDARY SIDE	- 39 -
8.2.3.- METER STATUS DATA.....	- 40 -
8.2.4.- METER TIME DATA.....	- 40 -
8.2.5.- MULTI-TARIFF RATE DATA.....	- 41 -
8.2.6.- DEMAND DATA.....	- 42 -
8.2.7. - SOE RECORD	- 43 -
8.2.8. - PARAMETER SETTING AND CLEAN COMMANDS.....	- 44 -
9. - SAFETY CONSIDERATIONS	- 45 -
10. - MAINTENANCE	- 45 -

1. - SUMMARIZE

DCEM-4MS Dual-channel DC energy meter is a highly integrated product for DC parameter measurement. When used with a shunt or external Hall sensor, it can accurately measure 1-2 channels DC voltages and 1-2 channels DC currents (with direction), power, total electricity, each single-circuit electricity and other electrical parameters, and can be equipped with optional DI modules.

DCEM-4MS has RS485 and supports MODBUS-RTU communication protocol, can upload the collected data and equipment status. DCEM-4MS is widely used in electric power, communications, railways, transportation, environmental protection, steel and other industries to monitor the current and power consumption of DC equipment.

DCEM-4MS can measure the power parameters in power grid:

Current	Shunt: 0-75mV. Hall CT: 5A,20A,50A,100A,200A,300A,400A,500A optional
Voltage	0.0 ~ 1000V
Active power	0.000 ~ 9999KW
Energy	0.00Wh ~ 999999999Wh

FEATURES

- High security and good reliability.
- Various anti-interference measures.
- Convenient and flexible system wiring.
- Easy to install, 35mm standard DIN rail installation.
- Powerful data collection and processing capabilities.
- Large-size LCD screen real time measurement information.

2. - SPECIFICATIONS

- Power supply

AC/DC: 85V~265V

Maximum power consumption: $\leq 4\text{VA}$

- Input

Rated current:	Shunt: 0-75mV, Hall sensor: 5A, 20A, 50A, 100A, 200A, 300A, 400A, 500A, optional. (detail refer to chapter 3.3.3)
Current overload:	Measurement: 1.2 times Instantaneous: 10 times/1s
Current impedance:	$<100\text{m}\Omega$
Rated voltage:	0-1000V
Voltage overload:	Measurement: 1.2 times Instantaneous: 2 times/10s
Voltage impedance:	$>1\text{ k}\Omega/\text{V}$

- Output

Digital interface:	RS-485, MODBUS-RTU protocol (optional 2-Channels RS-458)
Pulse output:	Optional 1 channel active electric energy pulse output, 1 channel second pulse output
DI input (optional):	2 DI, dry contact mode, $R_i < 500\Omega$ turns on, $R_i > 100\text{k}\Omega$ turns off
DI output (optional):	2 DO relay contact capacity: 5A/250V AC; 5A/30V DC

- Display

Display:	Segment LCD display
Accuracy level:	Class 1 or 0.5
Clock (optional):	The daily error is less than 0.5 seconds

- Safety

Withstand voltage:	Input and power supply $>4\text{kV}$; input and output $>4\text{kV}$. power supply and output $>4\text{kV}$.
Insulation:	Power supply to shell $> 5\text{M}\Omega$.

- Environment

Storage environment: $-30\sim 75^\circ\text{C}$

Working environment: -25~55°C Altitude $\leq 2000\text{m}$, 98%RH, no condensation, no corrosive gas.

3. - INSTALLATION AND START-UP



The manual you hold in your hands contains information and warnings that the user should respect to guarantee proper operation of all the instrument functions and keep its safety conditions. The instrument must not be powered and used until its definitive assembly is on the cabinet's door.

Whether the instrument is not used as manufacturer's specifications, the protection of the instrument can be damaged.

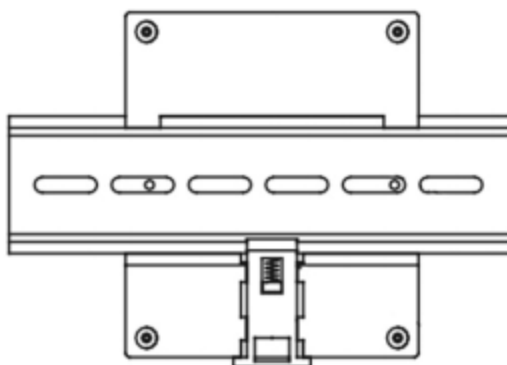
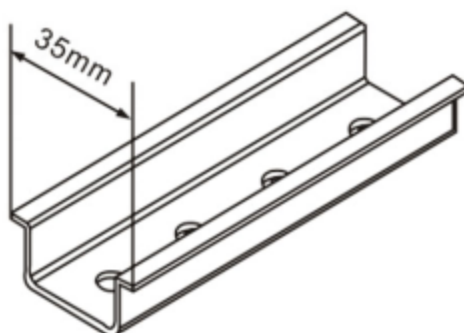
When any protection failure is suspected to exist (for example, it presents external visible damages), the instrument must be immediately powered off. In this case contact a qualified service representative.

3.1.- Installation

Mounting

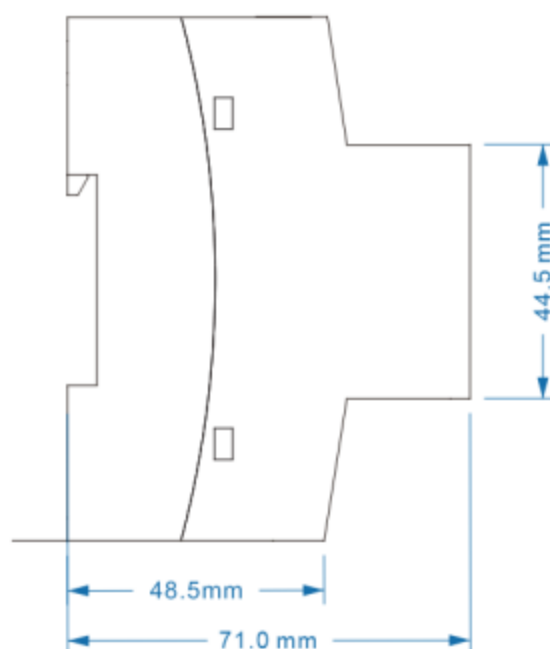
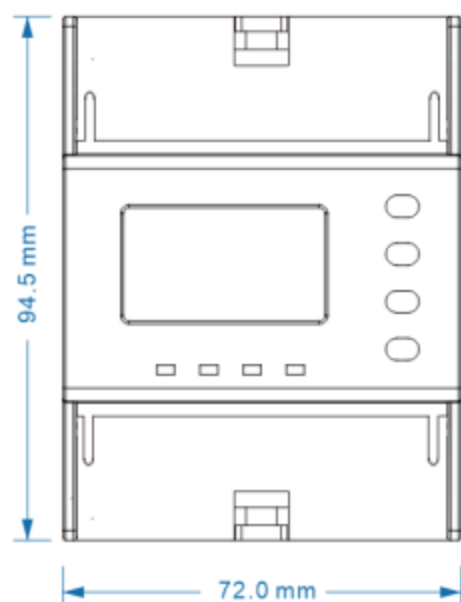
The instrument is to be mounted on the 35mm Din-rail. Keep all connections inside the cabinet.

Note that with the instrument powered on, the terminals could be dangerous to touch. and cover opening actions or elements removal may allow accessing dangerous parts. Therefore, the instrument must not be used until this is completely installed.

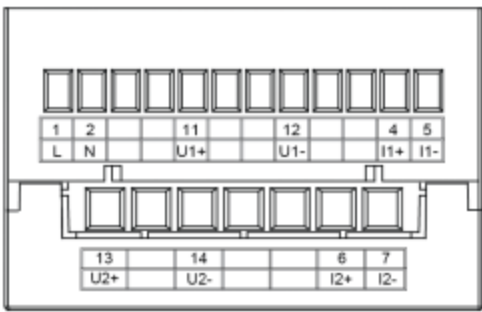
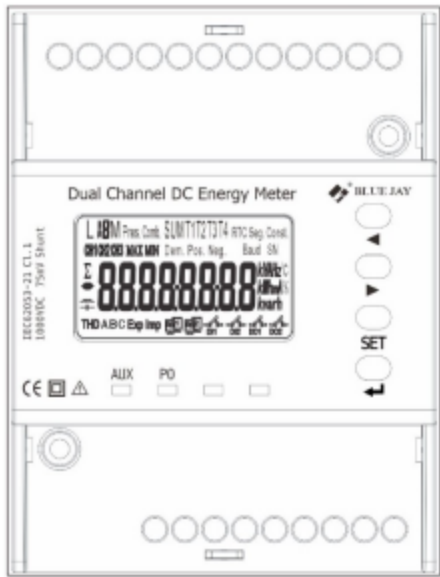
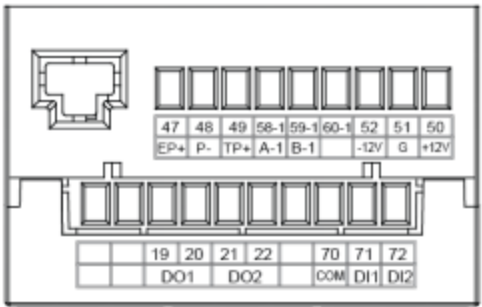
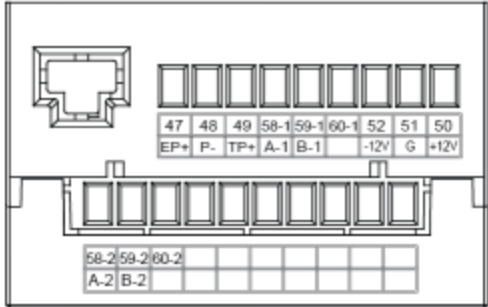


3.2.- Dimension

Unit: mm



3.3.- Wiring method

Upper side terminals	 Note: Only the dual-channel version has terminal 13,14,6,7.
Front view	
Lower side terminals	 2DI 2DO version (optional)  Dual communication version (optional)

3.3.1.- Terminal introduction

Upper side terminals

No.	Marked	Notes
1	L	AUX input 85-265Vac/dc Connect extra 1A, 250V fuse @ L line
2	N	
4	I1+	Channel_1 current input
5	I1-	
11	U1+	Channel_1 voltage input
12	U1-	
6	I2+	Channel_2 current input
7	I2-	
13	U2+	Channel_2 voltage input
14	U2-	

Lower side terminals

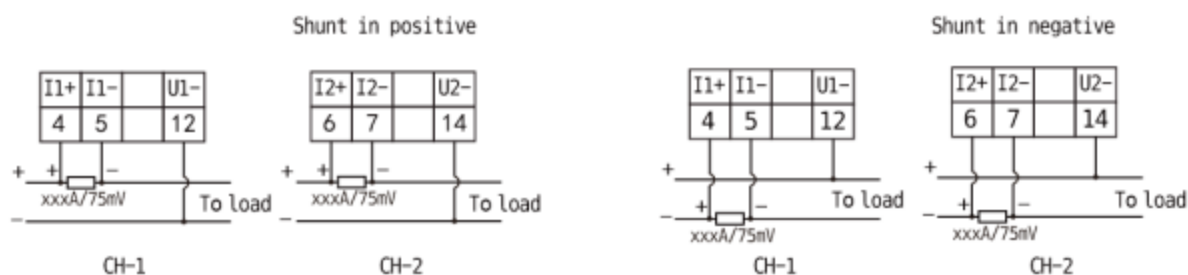
No.	Marked	Notes
47	EP+	Active energy output pin
48	P-	Common pin
49	TP+	Reactive energy output pin
58-1	A-1	Main RS485 port
59-1	B-1	
50	+12V	External AUX for Hall CT, only valid in DCEM-4MH
51	G	
52	-12V	

Lower side terminals optional functions

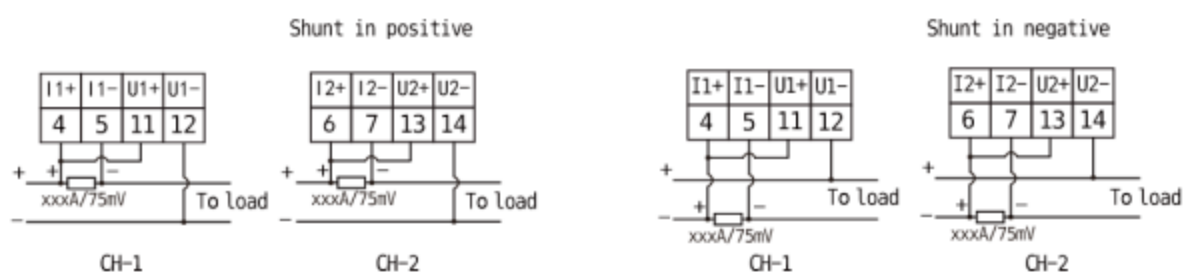
No.	Marked	Notes
70	COM	Common pin, +15Vdc
71	DI1	Digital input 1, negative pole
72	DI2	Digital input 2, negative pole
19	DO-1	Digital output 1
20		Passive node, 3A@250Vac
21	DO-2	Digital output 2
22		Passive node, 3A@250Vac
58-1	A-1	Backup RS485 port
59-1	B-1	

3.3.2.- Typical wiring method

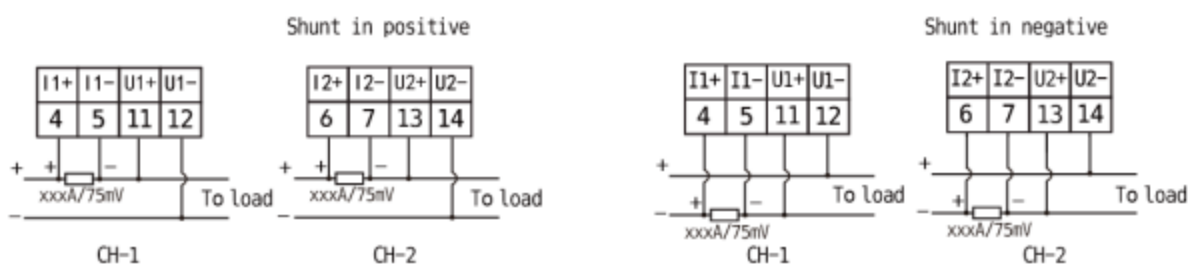
2 wire connection (for 1.0 class shunt):



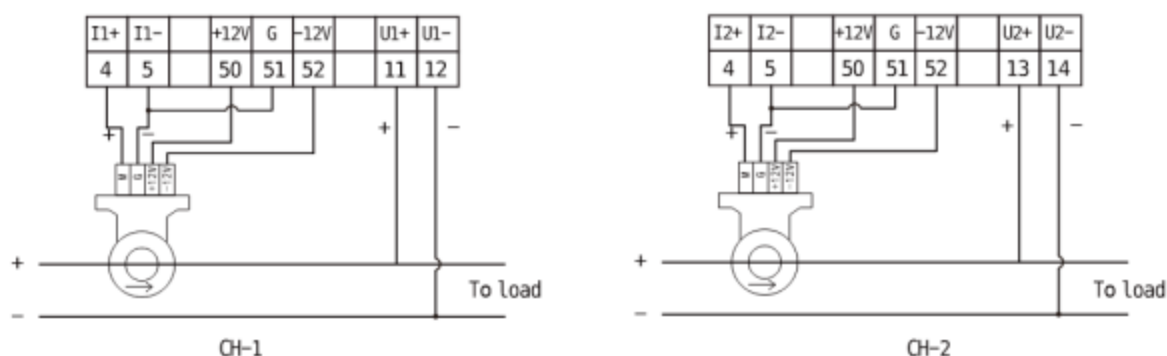
3 wire connection (for 0.5 class shunt):



4 wire connection method:



Hall CT connection method:

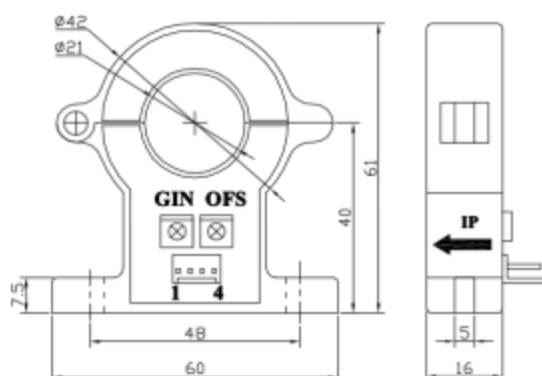
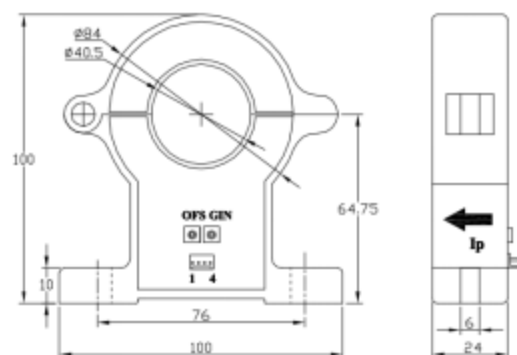
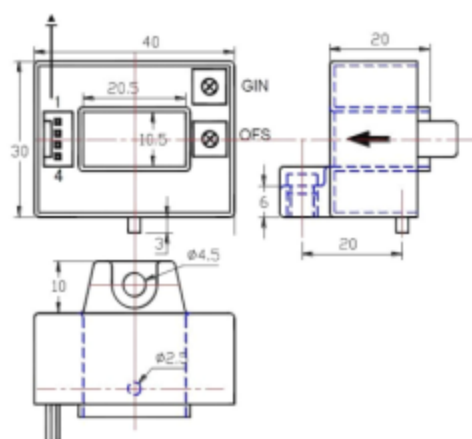


Notes:

- The connection wires' cross-sectional area should be selected according to the measuring range and calculated according to the actual load.
- Communication lines must use shielded twisted pairs, RS485+ and RS485- of the communication line cannot be connected negatively.
- When communication connection adopts linear connection method, line matching resistors of 100 to 120 ohms should be connected between the RS485+ and RS485- terminals located at the starting point and end point of the communication cable.
- When the baud rate is 9600, the cable length is <1200 meters.

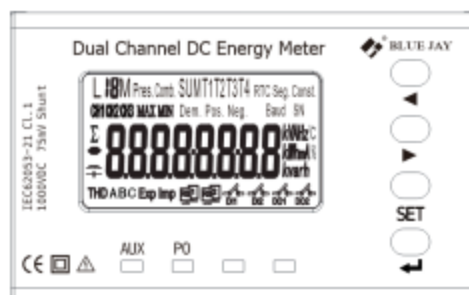
3.3.3. - Hall sensor parameter

DCEM-4MH use +-12V, 0-4V signal Hall CT, Blue Jay offer following three size model, use can purchase any Hall CT from other supplier, but please make sure class 1.0 to get best accuracy performance.

ESHA

ESHB

ESHS


4. - OPERATION MODE

The panel consists of an LCD screen and four keys.



Measurement data display area: displays measurement data current, voltage, power, etc.

Top row small characters: used to display parameters such as time, peaks and valleys.

Prompt symbols 1, 2, and 3: represent phase a, phase b, and phase c respectively, Σ represents the sum, MAX represents the maximum value, MIN represents the minimum value, and "-" represents the negative sign.

Time: T indicates current time.

Units - KVA, %, KVar, KVA, Hz, Wh, KWh, Varh, KVarh: represent the units of measurement data: current A; voltage V; active power W, KW; reactive power Var, KVar,; apparent power VA, KVA, MVA; frequency Hz; percentage %; active power Wh, KWh,; reactive power Varh, KVarh.

Indicator lights: running indicator light, pulse light.

4 Operation keys:

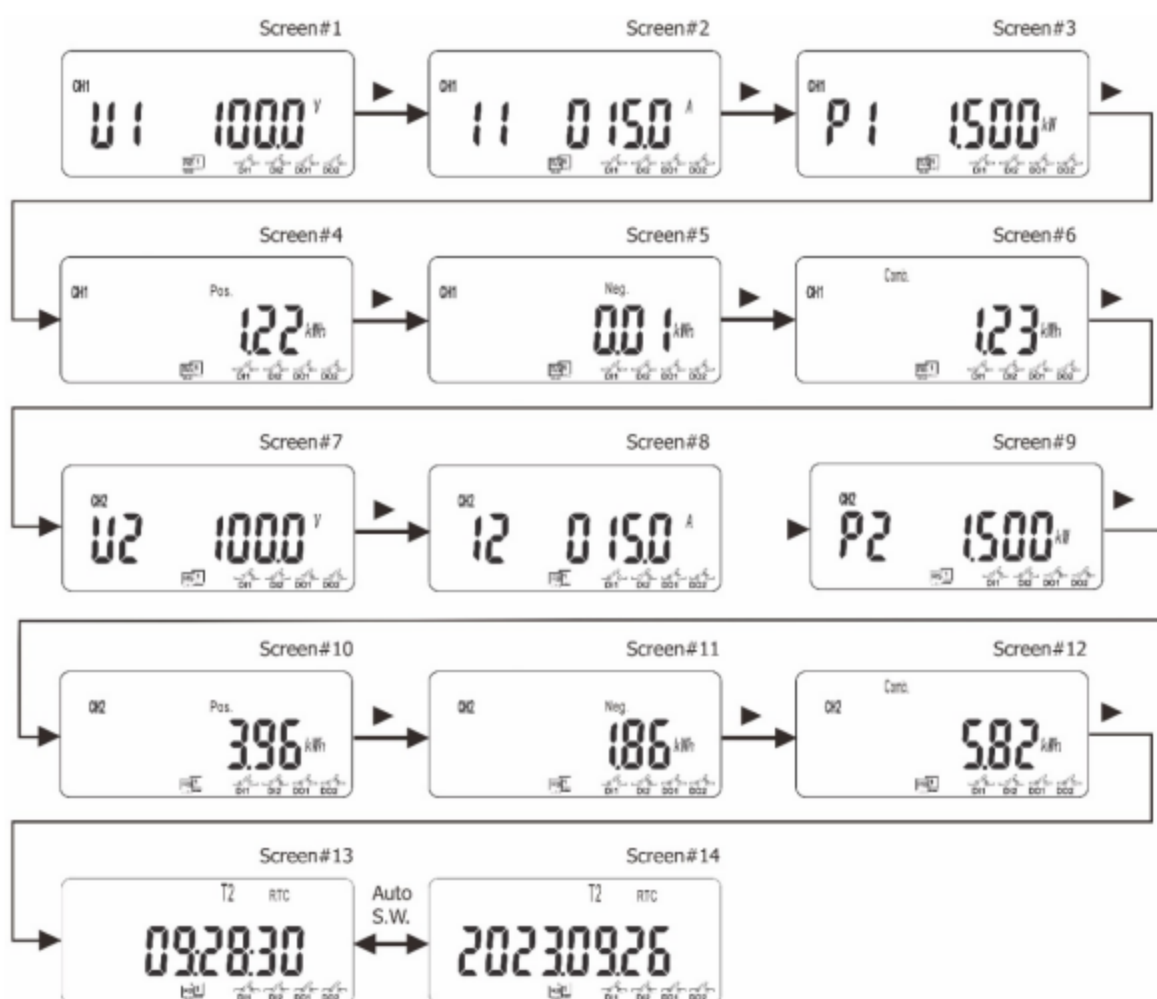
	Change function: display full power, multi-tariff rate, demand, and maximum value record;
	Turn page to display measurement data;
	Enter the programming menu, and also the function key to exit the menu step by step;
	Confirm and save the entered information or displayed settings.

5. - SCREEN DISPLAY

Press the ► on any display interface, the corresponding data will be displayed in the measurement data display area.

Each time you press the ►, it will flip one screen. When you reach the last screen, press the right button to return to the first screen. As shown below:

5.1. - Electric power parameter interface



Note:

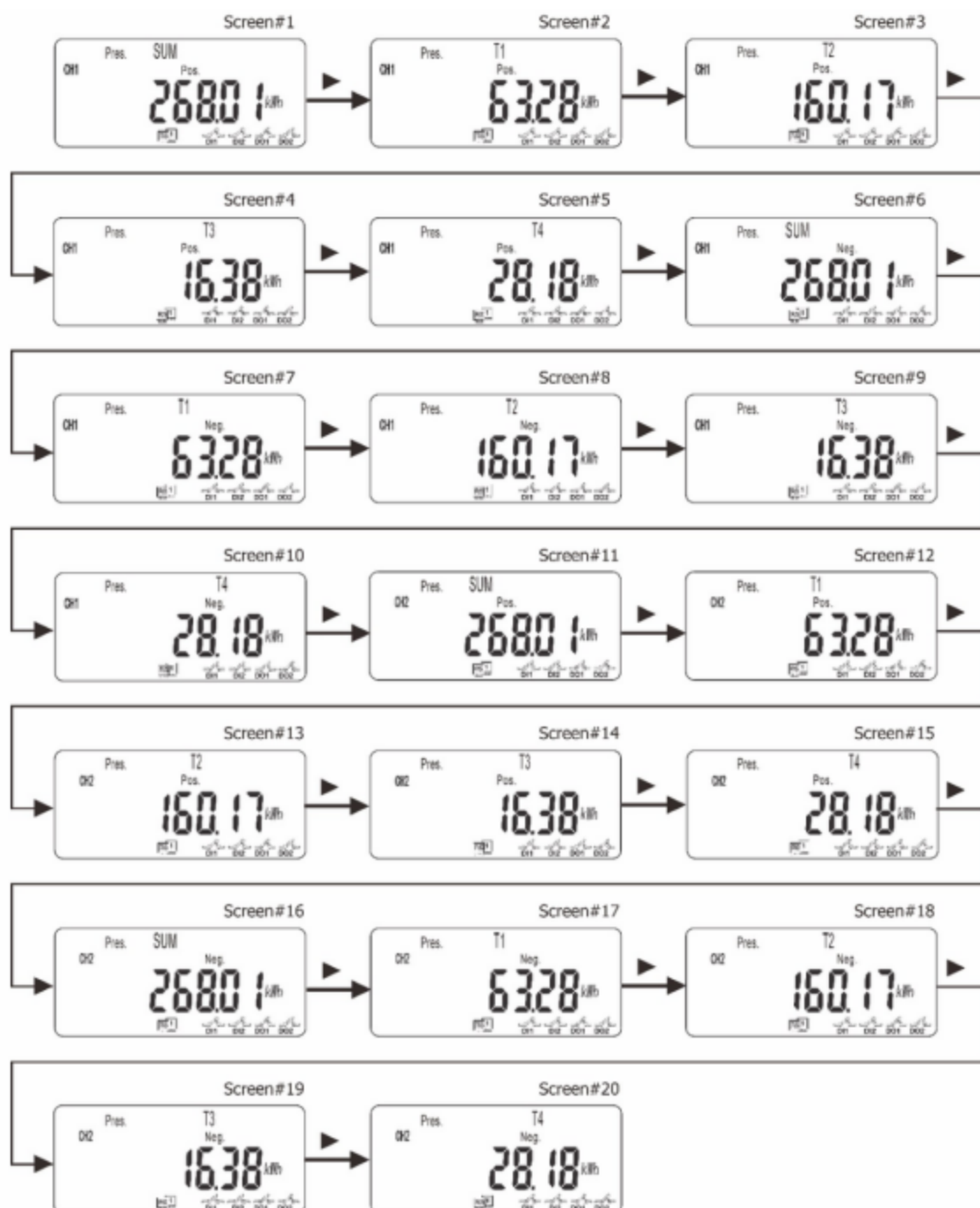
CH1 and CH2 represent the 1st and 2nd DC inputs respectively. When the 2nd DC input is not selected, the CH2 parameter interface will not be displayed.

5.1.1. - Screen detailed instructions

Screen No.	Description	Screen No.	Description
Screen 1	CH-1 voltage	Screen 8	CH-2 current
Screen 2	CH-1 current	Screen 9	CH-2 power
Screen 3	CH-1 power	Screen 10	CH-2 positive active power
Screen 4	CH-1 positive active power	Screen 11	CH-2 negative active electric energy
Screen 5	CH-1 negative active energy	Screen 12	CH-2 combined electric energy
Screen 6	CH-1 combined electric energy	Screen 13	Time (hours, minutes, seconds)
Screen 7	CH-2 voltage	Screen 14	Time (year, month, day)

5.2. - multi-tariff rate interface

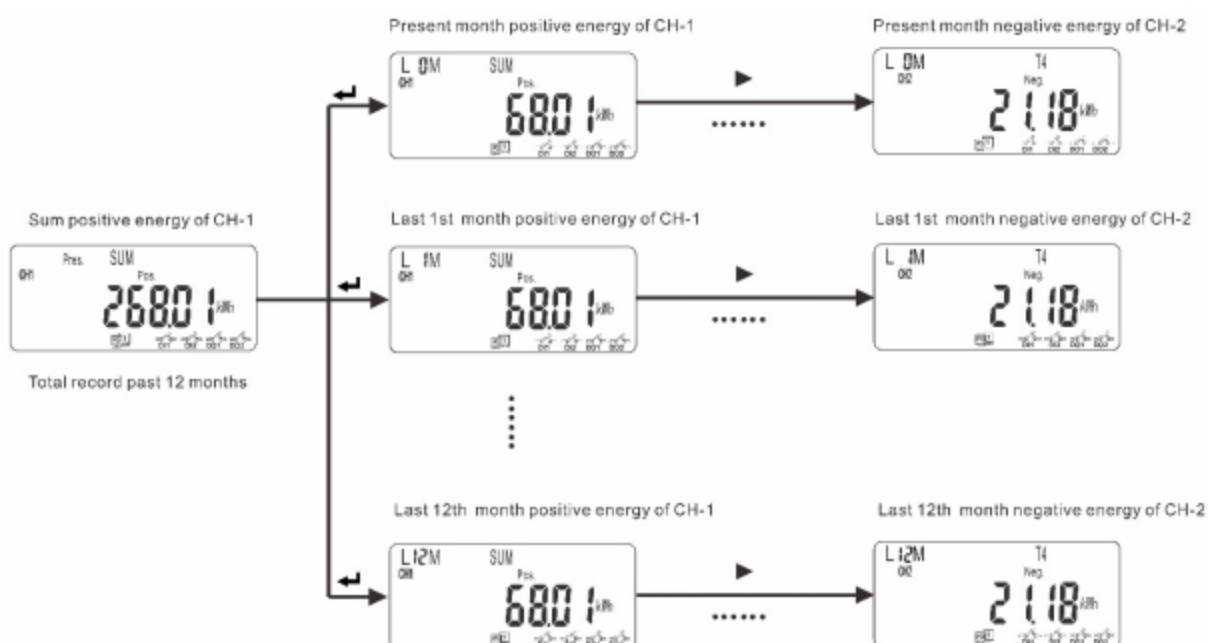
Press the ◀ button on the main interface to change to the compound rate interface.



Press the ▶ on the multi-tariff rate interface to change to the current month, 0 month, last 1st month and the last 12th month multi-tariff rate data. Press the ▶ again to switch to the monthly sharp, peak, flat, valley data.

5.2.1. - Screen detailed instructions

Screen No.	Description	Screen No.	Description
Screen 1	CH-1 positive power-total	Screen 11	CH-2 positive power-total
Screen 2	CH-1 positive power-sharp	Screen 12	CH-2 positive power-sharp
Screen 3	CH-1 positive power-peak	Screen 13	CH-2 positive power-peak
Screen 4	CH-1 positive power - flat	Screen 14	CH-2 positive power - flat
Screen 5	CH-1 positive power-valley	Screen 15	CH-2 positive power-valley
Screen 6	CH-1 negative power - total	Screen 16	CH-2 negative power - total
Screen 7	CH-1 negative power-sharp	Screen 17	CH-2 negative power-sharp
Screen 8	CH-1 negative power-peak	Screen 18	CH-2 negative power-peak
Screen 9	CH-1 negative electric energy - flat	Screen 19	CH-2 negative electric energy - flat
Screen 10	CH-1 negative power-valley	Screen 20	CH-2 negative power-valley



Notes:

Present: means the maximum demand data in all months.

Last 0 month: means the multi-tariff rate data of the present month.

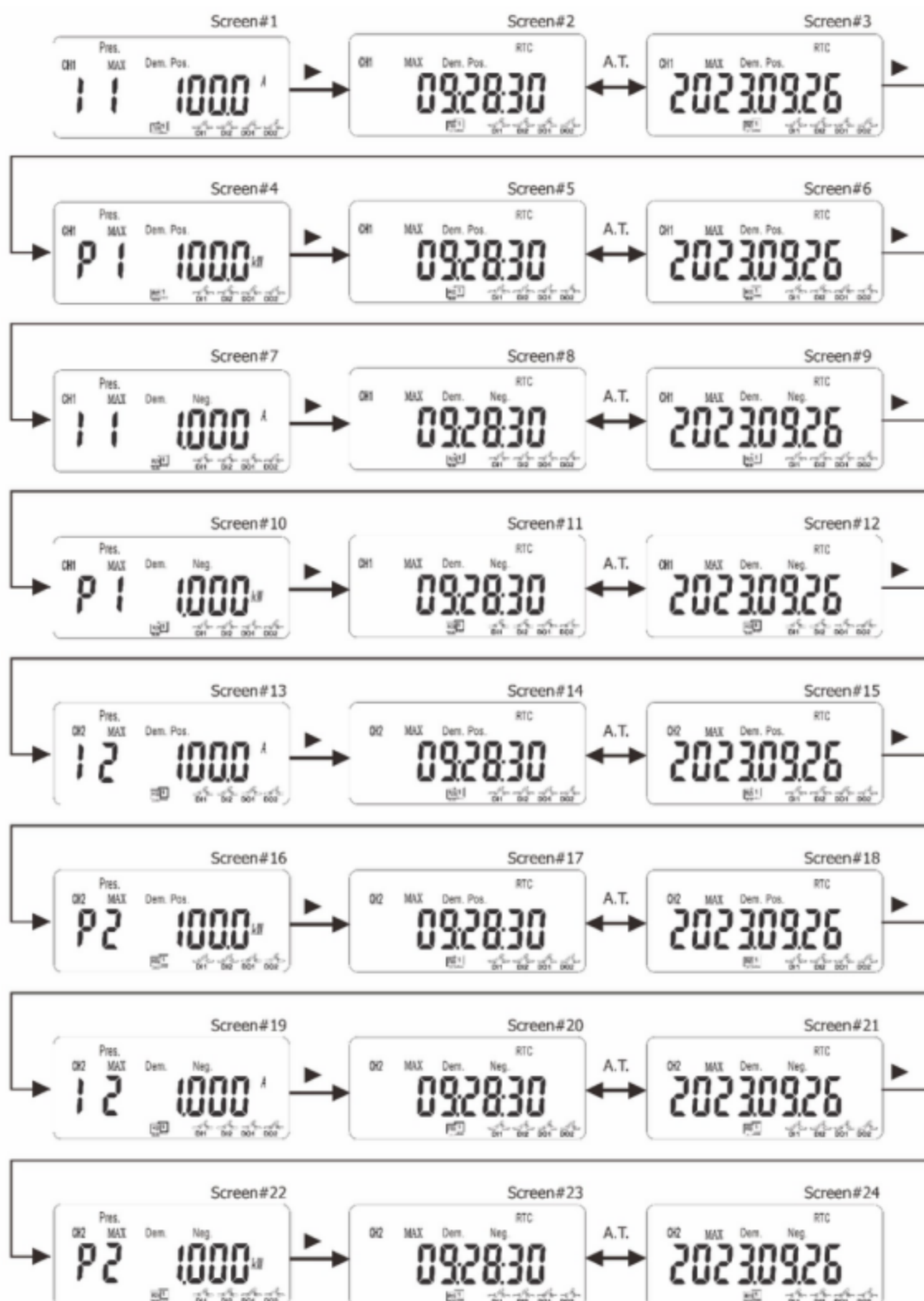
Last 1st month: means the multi-tariff rate data of the last 1st month.

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The last 12th month: means the multi-tariff rate data the last 12th month.

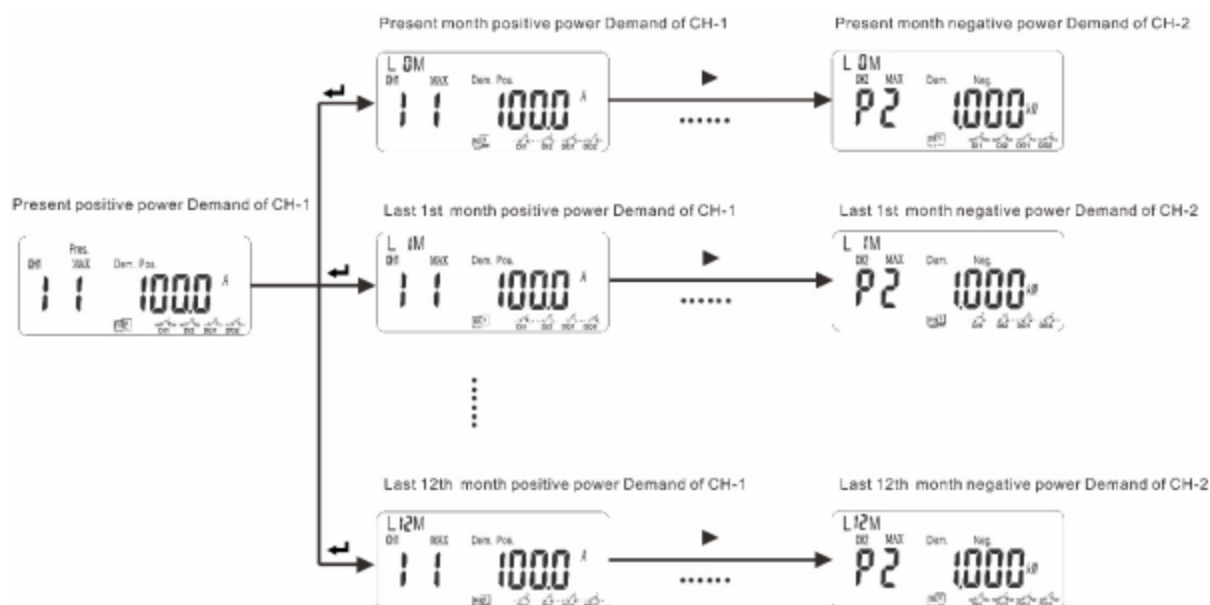
5.3. - Demand interface

Press ◀ on the main interface to change to multi-tariff rate interface, and press ▶ again to change to the demand interface.



5.3.1. - Screen detailed instructions

Screen No.	Description	Screen No.	Description
Screen 1	CH-1 positive maximum positive current demand	Screen 13	CH-2 positive maximum positive current demand
Screen 2	CH-1 positive maximum positive current demand, occur time (hours, minutes, seconds)	Screen 14	CH-2 positive maximum positive current demand, occur time (hours, minutes, seconds)
Screen 3	CH-1 positive maximum positive current demand, occur time (year, month, day)	Screen 15	CH-2 positive maximum positive current demand, occur time (year, month, day)
Screen 4	CH- 1 positive maximum positive power demand	Screen 16	CH-2 positive maximum positive power demand
Screen 5	CH-1 positive maximum positive power demand, occur time (hours, minutes, seconds)	Screen 17	CH-2 positive maximum positive power demand, occur time (hours, minutes, seconds)
Screen 6	CH-1 positive maximum positive power demand, occur time (year, month, day)	Screen 18	CH-2 positive maximum positive power demand, occur time (year, month, day)
Screen 7	CH-1 positive maximum negative current demand	Screen 19	CH-2 positive maximum negative current demand
Screen 8	CH-1 positive maximum negative current demand occur time (hours, minutes, seconds)	Screen 20	CH-2 positive maximum negative current demand occur time (hours, minutes, seconds)
Screen 9	CH-1 positive maximum negative current demand occur time (year, month, day)	Screen 21	CH-2 positive maximum negative current demand occur time (year, month, day)
Screen 10	CH-1 positive maximum negative power demand	Screen 22	CH-2 positive maximum negative power demand
Screen 11	CH-1 positive maximum negative power demand, occur time (hours, minutes, seconds)	Screen 23	CH-2 positive maximum negative power demand, occur time (hours, minutes, seconds)
Screen 12	CH-1 positive maximum negative power demand, occur time (year, month, day)	Screen 24	CH-2 positive maximum negative power demand, occur time (year, month, day)



Notes:

Present: means the maximum demand data in all months.

Last 0 month: means the maximum demand data of the present month.

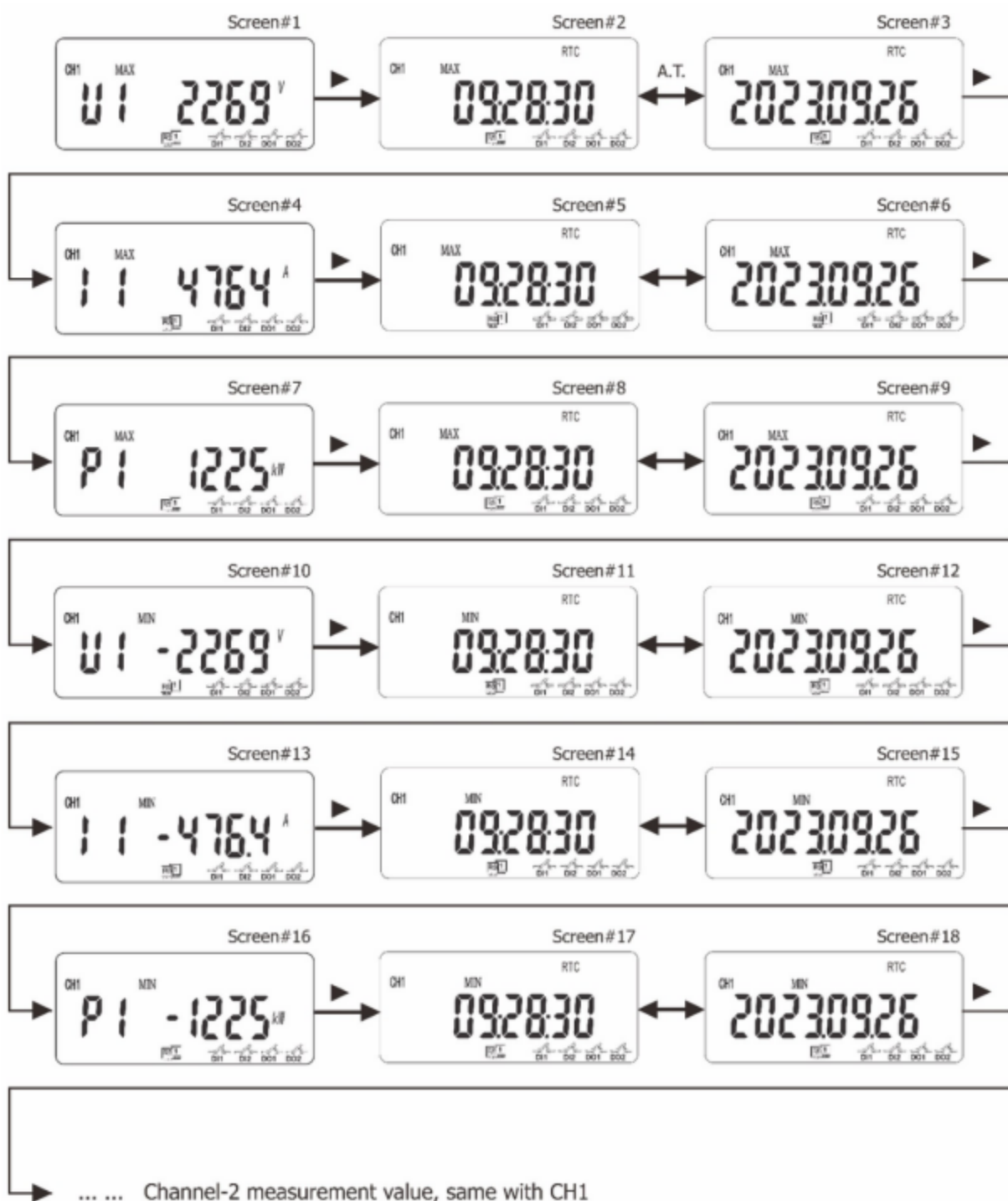
Last 1st month: means the maximum demand data of the last 1st month.

.....

The last 12th month: means the statistics of the last 12th month.

5.4. - Max or min value interface

Press ► on the main interface to change to multi-tariff rate interface, press ► again to change the demand interface, and then press ► again once more to change to the maximum value interface.



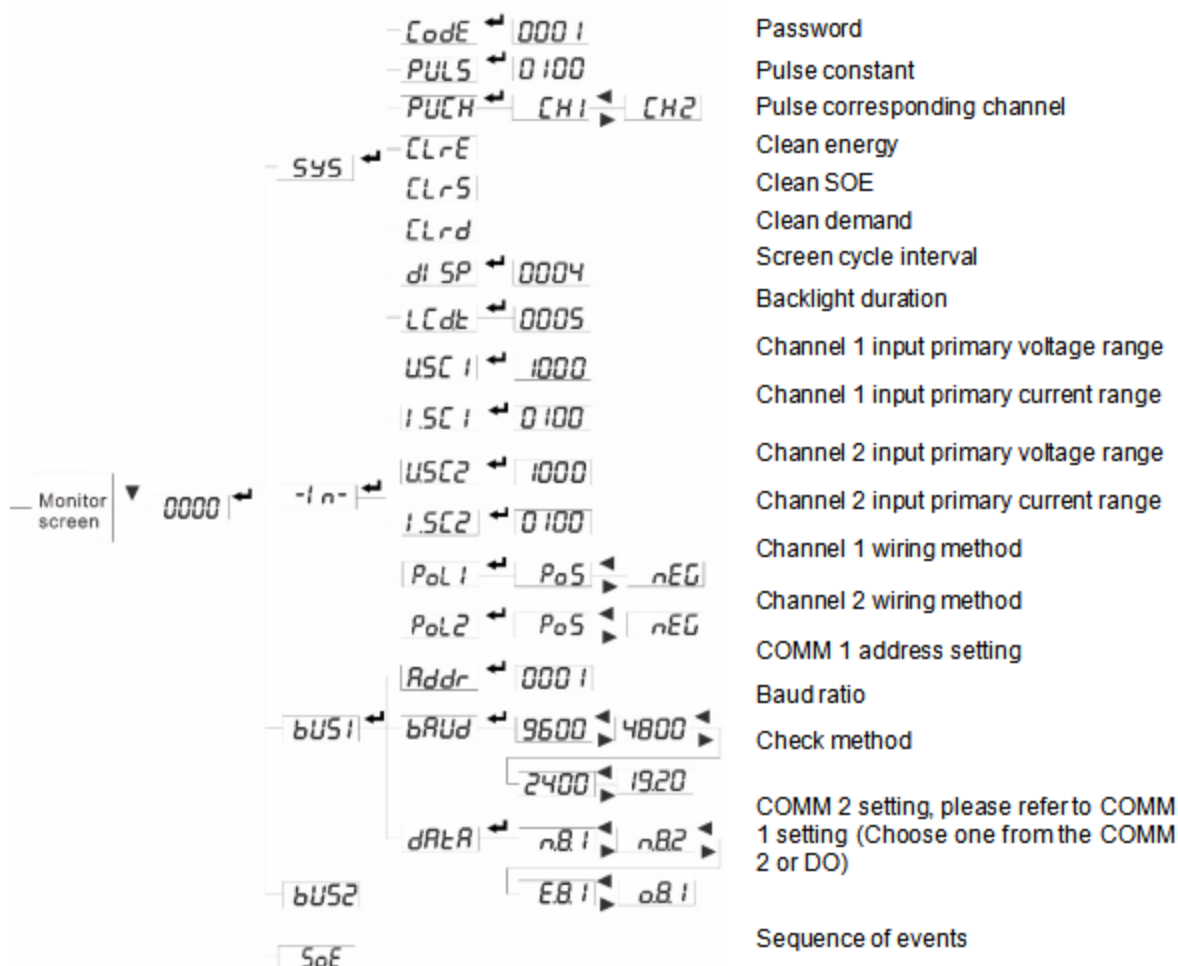
5.4.1. - Screen detailed instructions

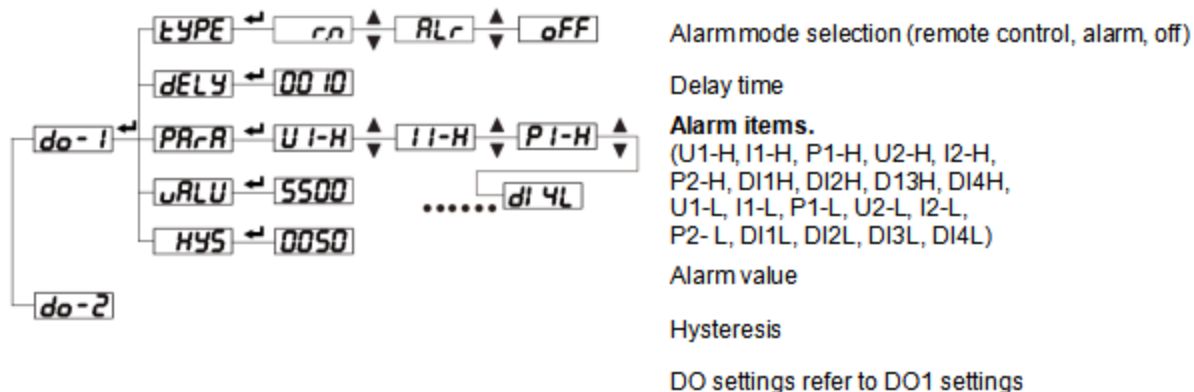
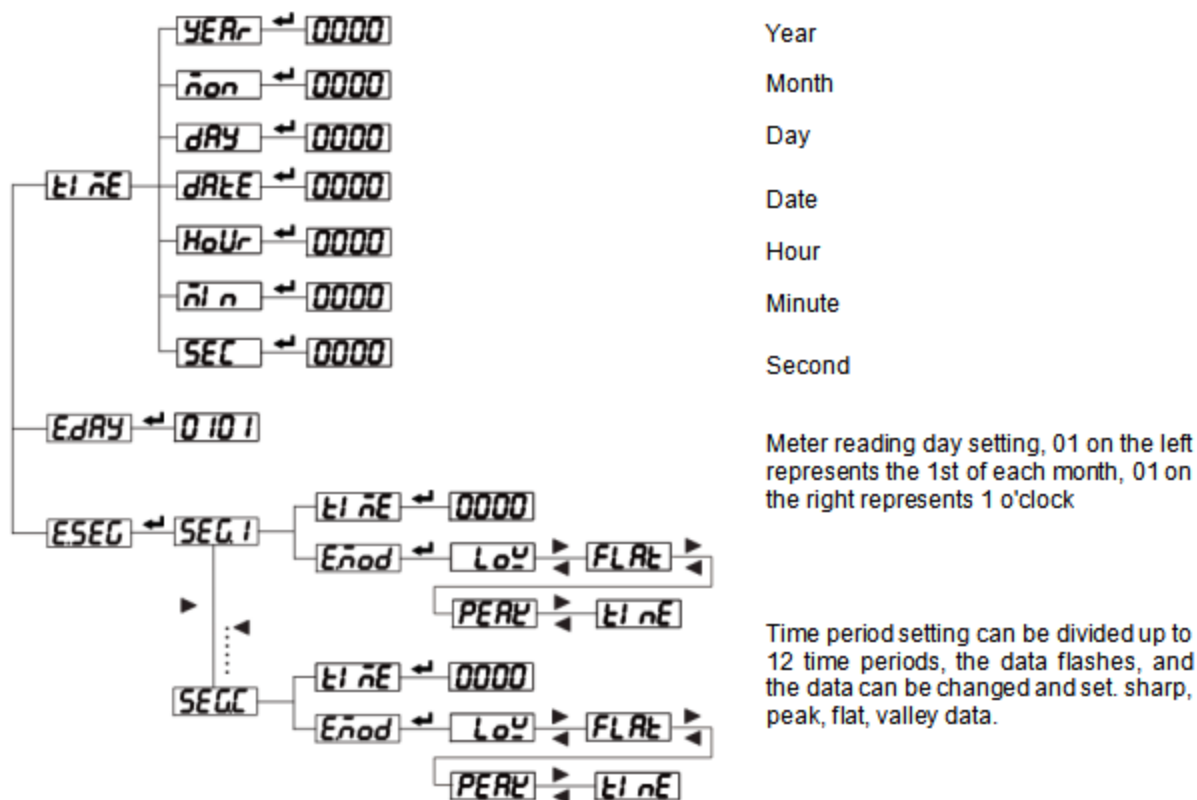
Screen No.	Description	Screen No.	Description
Screen 1	Channel 1 maximum voltage	Screen 10	Channel 1 minimum voltage
Screen 2	Channel 1 maximum voltage, occur time (hours, minutes, seconds)	Screen 11	Channel 1 minimum voltage, occur time (hours, minutes, seconds)
Screen 3	Channel 1 maximum voltage, occur time (year, month, day)	Screen 12	Channel 1 minimum voltage, occur time (year, month, day)
Screen 4	Channel 1 maximum current	Screen 13	Channel 1 minimum current
Screen 5	Channel 1 maximum current, occur time (hours, minutes, seconds)	Screen 14	Channel 1 minimum current, occur time (hours, minutes, seconds)
Screen 6	Channel 1 maximum current, occur time (year, month, day)	Screen 15	Channel 1 minimum current, occur time (year, month, day)
Screen 7	Channel 1 maximum power	Screen 16	Channel 1 minimum power
Screen 8	Channel 1 maximum power, occur time (hours, minutes, seconds)	Screen 17	Channel 1 minimum power, occur time (hours, minutes, seconds)
Screen 9	Channel 1 maximum power, occur time, year, month, day)	Screen 18	Channel 1 minimum power, occur time (year, month, day)

6. - SETUP PROCEDURE

Press the **SET** key in the measurement interface to enter the menu system, then to enter a password (default is **0001**). Press the **←** key to enter the programming menu.

6.1.- Main menu





6.4.- Explanation of the flowchart

Layer 1	Layer 2	Layer 3	Layer 4	Description
SYS	CodE	(Default 0001)		Password
	PULS	(Default 100)		Pulse constant
	PUCH	(Default CH 1)		Pulse corresponding channel
	CLrE			Clean energy
	CLrS			Clean SOE
	CLrd			Clean demand
	DISP	(Default 0004)		Screen cycle interval
	LCD.t	(Default 0005)		Backlight duration
Input	U.SC 1	0-1000V		Channel 1 input primary voltage range
	I.SC 1	0-9999A		Channel 1 input primary current range
	U.SC 2	0-1000V		Channel 2 input primary voltage range
	I.SC 2	0-9999A		Channel 2 input primary current range
	Pol1	POS (positive current access) nEG (negative current access)		Channel 1 wiring method
	Pol2			Channel 2 wiring method
BUS	ADDR	(Default 0001)	1~247	Communication address
	BAUD	2400,4800,9600 (Default 9600)		Communication speed (baud rate)
	DATA	n.8.1, o.8.1, e.8.1 (Default n.8.1)		Communication data format
DO-1	TYPE	r.n , ALr, OFF (Default ALr)		Alarm mode selection r.n, ALr, and OFF are the three working modes of the relay, which are remote control mode, alarm mode, off
	DELY	(Default 0010)		The setting value under the DELY menu is 0000, indicating the level mode. When it is not zero, it is the pulse mode, and the value inside is the pulse width.
	PArA	UA-H,Ub-H...DI4-L		Select the corresponding parameter, there are two forms of XX-H and XX-L, XX-H means high alarm; XX-L means low alarm. For example: I-H indicates that the current measurement value exceeds the alarm point, and the relay operates;
	VALU	(Default 5500)		Set the corresponding alarm value, the alarm value is set according to the actual value, the unit of voltage is V; the unit of current is A; the unit of active power is 0.1kW

	HYS	(Default 0050)		Set the corresponding hysteresis
Time	YEAR	00-99		Set year
	MON	1-12		Set month
	DAY	1-7		Set date
	DATE	1-31		Set day
	HOUR	00-23		Set hour
	MIN	00-59		Set minute
	SEC	00-59		Set second
E.dAy	Meter reading date, (default 101)			Meter reading day setting, 01 on the left represents the 1st of each month, 01 on the right represents 1 o'clock
E.SEG	S.EG1	TIME	(Default 0000)	Set the meter reading time for Period 1
		E.Mod	TInE, PEAK), FLAt, LOW	Set rates
	...			
	S.EGC	TIME	(Default 0000)	Set the meter reading time for Period 12
		E.Mod	TInE, PEAK), FLAt, LOW	Set rates

7. - PULSE OUTPUT

DCEM-4MS provides 1* pulse output for the active energy.

The host / PLC / DI module can cumulative the data of both the active and reactive power energy sent by the pulse from opt coupler relay.

- 1). Electrical specification: voltage $VCC \leq 48V$, $I_z \leq 50mA$.
- 2). Pulse constant: can be set according to customer needs:

Maximum power $\leq$	999.9W	10000	imp/kWh
Maximum power $\leq$	9.999kW	1000	imp/kWh
Maximum power $\leq$	99.99kW	100	imp/kWh
Maximum power $\leq$	999.9kW	10	imp/kWh
Maximum power $\leq$	9999kW	1	imp/kWh

Maximum power = rated voltage * voltage ratio * current ratio * 1.2

8. - COMMUNICATION PROTOCOL

8.1. - MODBUS © Protocol

Modbus RTU Frame Format:

Address code	1 BYTE	Slave device address 1-254
Function code	1 BYTE	Indicates the function codes like read coils / inputs
Data code	4 BYTES	Starting address, high byte Starting address, low byte Number of registers, high byte Number of registers, low byte
Error Check code	2 BYTES	Cyclical Redundancy Check (CRC)

Modbus Functions:

Code	Meaning	Description
FUNCTION 03/04	Read input registers	This function permits to read all the electrical parameters of the device.
FUNCTION 06	Write single register	Writes a value into a single holding register.

8.2. - Register Map

8.2.1. - Basic power data - primary side

Register	Data	Byte mode		Description
0x00	U1	float	2	CH-1 voltage, Unit: V
0x02	I1	float	2	CH-1 current, Unit: A
0x04	P1	float	2	CH-1 active power, Unit: kW
0x06	Ep1+	float	2	CH-1 positive active electric energy, Unit: kWh
0x08	Ep1-	float	2	CH-1 negative active energy
0x0a	Epz1	float	2	CH-1 combined active energy
0x0c	U2	float	2	CH-2 voltage, Unit V
0x0e	I2	float	2	CH-2 current, Unit: A
0x10	P2	float	2	CH-2 active power, Unit: kW
0x12	Ep2+	float	2	CH-2 positive active electric energy, Unit: kWh
0x14	Ep2-	float	2	CH-2 negative active energy
0x16	Epz2	float	2	CH-2 combined active energy

Note: Float data follow IEEE754, float low bit first, high bit next. (CD AB)

8.2.2. - Basic power data - secondary side

Register	Data	Byte mode		Description
0x100	U1	long	2	CH-1 voltage, Unit: 0.001 V
0x102	I1	long	2	CH-1 current, Unit: 0.001 A
0x104	P1	long	2	CH-1 active power, Unit: 0.1 kW
0x106	Ep1+	long	2	CH-1 positive active electric energy, Unit: 0.01 kWh
0x108	Ep1-	long	2	CH-1 negative active energy
0x10a	Epz1	long	2	CH-1 combined active energy
0x10c	U2	long	2	CH-2 voltage, Unit: 0.001 V
0x10e	I2	long	2	CH-2 current, Unit: 0.001 A
0x110	P2	long	2	CH-2 active power, Unit: 0.1 kW
0x112	Ep2+	long	2	CH-2 positive active electric energy, Unit: 0.01 kWh
0x114	Ep2-	long	2	CH-2 negative active energy
0x116	Epz2	long	2	CH-2 combined active energy
0x118-0x127	Reserved	long	2	Reserved
0x128	U1 max	long	2	CH-1 maximum voltage, Unit: 0.001V
0x12a		int	1	CH-1 maximum voltage time, High bit 8: year, Low bit 8: month
0x12b		int	1	CH-1 maximum voltage time, High bit 8: date, Low bit 8: hour
0x12c		int	1	CH-1 maximum voltage time, High bit 8: minute, Low bit 8: second
0x12d	I1 max	long	2	CH-1 maximum current, Unit: 0.001A
0x12f		int	1	CH-1 maximum current time, High bit 8: year, Low bit 8: month
0x130		int	1	CH-1 maximum current time, High bit 8: date, Low bit 8: hour
0x131		int	1	CH-1 maximum current time, High bit 8: minute, Low bit 8: second
0x132	P1 max	long	2	CH-1 maximum power, Unit: 0.001A
0x134		int	1	CH-1 maximum power time, High bit 8: year, Low bit 8: month
0x135		int	1	CH-1 maximum power time, High bit 8: date, Low bit 8: hour
0x136		int	1	CH-1 maximum power time, High bit 8: minute, Low bit 8: second
0x137-0x13b			5	CH-1, voltage minimum value and occur time
0x13c-0x140			5	CH-1, current minimum value and occur time
0x141-0x145			5	CH-1, power minimum value and occur time
0x146-0x163			30	CH-1, maximum and minimum value and occur time

8.2.3.- Meter status data

Register	Data	Byte mode		Description
0x200	DO	int	1	Digital output: Bit 0~1 show channel 1 and channel 2 status 0 for open, 1 for closed
0x201	DI	int	1	Digital input: Bit 0~3 show channel 1 to channel 4 status 0 for open, 1 for closed
0x202				Reserved

8.2.4.- Meter time data

Register	Data	Byte mode		Description
0x20A	TIME.year	int	1	Internal RTC real-time: (Year-Month-Date-Hour-Minute-Second-Day) (integer number, the last char is unused) Can be modified with the 0x06 command
0x20B	TIME.month	int	1	
0x20C	TIME.date	int	1	
0x20D	TIME.hour	int	1	
0x20E	TIME.minute	int	1	
0x20F	TIME.second	int	1	
0x210	TIME.day	int	1	
0x20A	TIME.year	int	1	
0x20B	TIME.month	int	1	
0x20C	TIME.date	int	1	

Notes: Date (1) mean the last day before current time, Date (31) for the oldest record time point, DCEM will automatic cycle record the data, mean the oldest data will loss one by one.

8.2.5.- Multi-tariff rate data

Register	Data	Byte mode		Description
0x280	EPP1_All	long	2	CH-1 positive active energy - total, Unit 0.01kWh
0x282	TineP1_All	long	2	CH-1 positive active energy - total sharp, Unit 0.01kWh
0x284	PeakP1_All	long	2	CH-1 positive active energy - total peak, Unit 0.01kWh
0x286	FlatP1_All	long	2	CH-1 positive active energy - total flat, Unit 0.01kWh
0x288	LowP1_All	long	2	CH-1 positive active energy- total valley, Unit 0.01kWh
0x28a	EPN1_All	long	2	CH-1 negative active energy - total, Unit 0.01kWh
0x28c	TineN1_All	long	2	CH-1 negative active energy - total sharp, Unit 0.01kWh
0x28e	PeakN1_All	long	2	CH-1 negative active energy - total peak, Unit 0.01kWh
0x290	FlatN1_All	long	2	CH-1 negative active energy - total flat, Unit 0.01kWh
0x292	LowN1_All	long	2	CH-1 negative active energy- total valley, Unit 0.01kWh
0x294		long	2	CH-1 present month positive active energy - total, Unit 0.01kWh
0x296		long	2	CH-1 present month positive active energy - total sharp, Unit 0.01kWh
0x298		long	2	CH-1 present month positive active energy - total peak, Unit 0.01kWh
0x29a		long	2	CH-1 present month positive active energy - total flat, Unit 0.01kWh
0x29c		long	2	CH-1 present month positive active energy- total valley, Unit 0.01kWh
0x29e		long	2	CH-1 present month negative active energy - total, Unit 0.01kWh
0x2a0		long	2	CH-1 present month negative active energy - total sharp, Unit 0.01kWh
0x2a2		long	2	CH-1 present month negative active energy - total peak, Unit 0.01kWh
0x2a4		long	2	CH-1 present month negative active energy - total flat, Unit 0.01kWh
0x2a6		long	2	CH-1 present month negative active energy- total valley, Unit 0.01kWh
0x2a8-0x397				CH-1 last January to last December rate energy, format same as above
0x398-0x4af				CH-2 rate energy, format same as above

8.2.6.- Demand data

Register	Byte mode		Description
0x500	long	2	CH-1 present positive current demand, Unit 0.001A.
0x502	long	2	CH-1 present positive current demand time, Bit31-Bit24: Year Bit23-Bit18: Month Bit17-Bit12: Day Bit11-Bit6: Time Bit5-Bit0: Second
0x504	long	2	CH-1 present positive power demand, unit 0.1W.
0x506	long	2	CH-1 present positive power demand time.
0x508	long	2	CH-1 present negative current demand, Unit 0.001A.
0x50a	long	2	CH-1 present negative current demand time.
0x50c	long	2	CH-1 present negative power demand, unit 0.1W.
0x50e	long	2	CH-1 present negative power demand time.
0x510-0x51f			CH-1 present month max demand, format same as above.
0x520-0x5df			CH-1 from last January to last December max demand, format same as above.
0x5e0-0x6bf			CH-2 demand, format same as above.

8.2.7. - SOE record

Register	Data	Byte mode		Description
0x700~0x704	(Latest event) Event record 1	int	1	Byte 0: Fault type Byte 1: Fault event No.1 Byte 2,3: Fault value Byte 4: Fault time: Year Byte 5: Fault time: Month Byte 6: Fault Time: Day Byte 7: Fault time: Time Byte 8: Fault time: Minute Byte 9: Fault time: Seconds
0x705~0x709	Event record 2	int	1	
0x70A~0x70E	Event record 3	int	1	
0x70F~0x713	Event record 4	int	1	
.....		int	1	
0x75F~0x763	Event record 50	int	1	

Byte 0	Byte 1
	100: Remote control
	101: UI upper alarm
1: DI1	102: I1 upper alarm
2: DI2	103: P1 upper alarm
3: DI3	104: U2 upper alarm
4: DI4	105: I2 upper alarm
5: DI5	106: P2 upper alarm
6: DI6	107: DI1 combined alarm
101: DO1	108: DI2 combined alarm
102: DO2	109: DI3 combined alarm
103: DO3	110: DI4 combined alarm
104: DO4	111: U1 lower alarm
	112: I1 lower alarm
	113: P1 lower alarm

8.2.8. - Parameter setting and clean commands

Register	Data	Byte mode		Description
0x900	Line 1	Int	1	CH-1 network selection: 0: positive connection, 1: negative connection
0x901	Voltage 1	Int	1	CH-1 voltage range: 0-9999V
0x902	Current 1	Int	1	CH-1 current range: 0-9999A
0x903	Line 2	Int	1	CH-2 network selection: 0: positive connection, 1: negative connection
0x904	Voltage 2	Int	1	CH-2 voltage range: 0-9999V
0x905	Current 2	Int	1	CH-2 current range: 0-9999A
0x906	Communication address 1	Int	1	Input range: 1-247
0x907	Communication baud rate 1	Int	1	0:2400, 1:4800, 2:9600, 3:19200
0x908	Communication data format 1	Int	1	0: n.8.1, 1:o.8.1, 2: e.8.1, 3: n.8.2
0x909	Communication address 2	Int	1	Input range: 1-247
0x90a	Communication baud rate 2	Int	1	0:2400, 1:4800, 2:9600, 3:19200
0x90b	Communication data format 2	Int	1	0: n.8.1, 1:o.8.1, 2: e.8.1, 3: n.8.2
0x90c	Menu password	Int	1	Input range: 1-9999
0x90d	Pulse constant	Int	1	1-9999
0x90e	Pulse circuit	Int	1	1: circuit 1, 2: circuit 2
0x1000	Clean energy	Int	1	Hexadecimal 0x0A0A, decimal 2570
0x1001	Clean demand	Int	1	Hexadecimal 0x0A0A, decimal 2570
0x1002	Clean SOE	Int	1	Hexadecimal 0x0A0A, decimal 2570

9. - SAFETY CONSIDERATIONS



All installation specifications described at the previous chapters named:
INSTALLATION AND STARTUP, INSTALLATION MODES and SPECIFICATIONS.

Note that with the instrument powered on, the terminals could be dangerous to touch and cover opening actions or elements removal may allow accessing dangerous parts. This instrument is factory-shipped at proper operation conditions.

10. - MAINTENANCE

The DCEM-4MS not require any special maintenance. No adjustment, maintenance or repairing should be done when the instrument is open and powered on, should those actions be essential, high-qualified operators must perform them.

Before any adjustment, replacement, maintenance, or repair operation is carried out; the instrument must be disconnected from any power supply source.

When any protection fault is suspected to exist, the instrument must be immediately put out of service. The instrument's design allows a quick replacement in case of any fault.

For any inquiry about the instrument performance or whether there is any fault happens, contact Blue Jay's technical service.

Blue Jay - After-sales service

E-mail: tech@cqbluejay.com