MCM243T
Multi-Channel Energy Meter

User Manual

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Read me

When you use MCM243T Multi-channel 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 MCM243T Multi-channel energy meter, and help to solve various problems at the scene.

1. Before the meter turn on the power supply, be sure that the power supply within the provisions of the instrument;

2. When installation, the current input terminal must be non-open, voltage input terminals must be Non-short circuit;

3. Communication terminal (RS232/RS485 or Ethernet) is strictly prohibited to impose on high pressure;

4. Be sure the instrument wiring is consistent with the internal system settings;

5. When communicating with the PC, instrument communication parameters must be consistent with the PC.

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

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Directory

1.- SUMMARIZE

The MCM243T Multi-Channel Energy Meter is a high-performance metering solution integrating multi-circuit measurement, energy monitoring, and power quality analysis. A single device supports real-time monitoring of 4 branch circuits, helping reduce installation space and metering cost per point in commercial, industrial, and multi-user power distribution systems.

The MCM243T comes standard with RS485/ Modbus RTU communication, 1 pulse output (PO), and 1 SPDT relay output (DO). It also integrates advanced functions including Time-of-Use (TOU), demand measurement, harmonic analysis up to the 31st order, SOE event recording, RTC, and current/voltage unbalance monitoring, providing comprehensive data for energy management, load analysis, and power quality assessment.

FEATURE

- Real time metering for 4 branch circuits;
- Time of Use (TOU) and demand measurement;
- Harmonic analysis up to the 31st order;
- Current and voltage unbalance monitoring;
- Max 50 lists SOE event recording;
- Standard RS485, 1 PO and 1 SPDT DO;
- Compact design for cost-effective multi-circuit metering;

APPLICATION

- Manufacturing plants, industrial parks and processing workshops;
- Office buildings, commercial centers and shopping malls;
- Residential communities, apartment buildings;
- Schools, hospitals and government buildings;
- Transportation infrastructure, airports, train stations and subway stations;
- Data centers such as server rooms, network operation centers;

2.- FEATURES

2.1.- ELECTRICITY METERING

MCM243T delivers the following parameters listed by RS485 ports, have high-definition screen to show various parameters and status of meter on each page jump, work with 4 buttons can do configuration of device. For more details, please refer to the subsequent chapter.

Function overall

Function		Parameter	
Real-time Parameter	Voltage	Ua, Ub, Uc / Uab, Ubc, Uca	●
	Current	Per channel / Per phase	●
	Power	Per channel / Per phase	●
	Active/ Reactive Power	Per channel / Per phase	●
	Apparent Power	Per channel / Per phase	●
	Power Factor	Per channel / Per phase	●
	Frequency	Per channel / Per phase	●
Energy	Active Energy +	Per channel	●
	Reactive Energy +	Per channel	●
	Active Energy -	Per channel	●
	Reactive Energy -	Per channel	●
	TOU	4 Tariffs, 12 Segment	●
Power Quality	THD	UTHD, UTOHD, UTEHD, UTHFF, UCF ITHD, ITOHD, ITEHD, IKF	●
	Individual Harmonic	2nd-31st	●
	Voltage Unbalance	/	●
	Current Unbalance	/	●
	Power Demand	Last three month demand record	●
	Voltage Deviation	/	○
Alarming	Virtual alarm	5 Alarm trig	●
I/O	1PO	Default 5000imp/kWh VCC<48V, Iz<50mA	●
	1DO	5A@250Vac / 5A@30Vdc	●
	DI	Ri<500Ω open, Ri>100kΩ Closed	○
Communication	RS485	RS485, Modbus-RTU	●

Notes: "●" for Standard functions; "○" for optional functions;

2.2.- Measurement functions details

-. Real-time electrical parameter measurement

Voltage: Line-to-line voltage (L-L); phase voltage (L-N)
Current: Current per channel (A)
Power and Power Factor: Total active power (kW), reactive power (kvar), apparent power (kVA), and power factor
Frequency: System frequency (Hz)

-. Energy function

Energy (kWh) measurement meeting international standards, accuracy is Class 0.5s.
Integrated Time-of-Use (TOU) function supports 4 tariffs and 12 time segments, with up to 3 months of TOU energy records for each channel.
Demand measurement is also supported for monitoring load demand and maximum demand.

-. Power quality analysis

Provides comprehensive power quality analysis, including voltage and current THD, total odd and even harmonic distortion, 2nd–31st order voltage and current harmonics, current K-factor (KF), crest factor (CF), telephone harmonic form factor (THFF), and voltage and current unbalance.

-. Over/Under limit alarming

Users can select parameters and set thresholds. An alarm will be triggered when the threshold reached.

At the same time, sound and light signals could be sent out via relay output. The time and reason of an alarm event will be recorded.

-. I/O module option

Standard 1 channels output ports provide energy (kWh) pulse output and time pulse output;
Standard 1 channels relay outputs (DO) react upon alarming conditions.
I/O modules can be combined matching.

-. Communication protocol

Standard RS485 / Modbus RTU communication is provided for remote data reading, parameter configuration, and system integration.

Note:

Not all MCM243T have the complete measurement parameters, Without the parameter, the corresponding part of the menu is not valid.

3.- SPECIFICATIONS

-. Working power

AC/DC 85-265V, 50/60Hz
Maximum power consumption <5W

-. Input

Current	Rated ../100mA (can customized 333mV/ 1A/5A)
Voltage	Rated 20~380V (need confirm before order)
Frequency	50/60Hz
Current overload	1.2 times rated continuous; 5 seconds for 10 times of the rated
Voltage overload	30 seconds for 2 times of the rated

-. Accuracy standard

Parameter	Accuracy	A phase	B phase	C phase	All
Voltage	0.5s	V1	V2	V3	
Current	0.5s	A1	A2	A3	
Active power	0.5s	W1	W2	W3	W
Reactive power	1.0	var1	var2	var3	var
Power factor	0.5	PF1	PF2	PF3	PF
Active energy	0.5s				Wh
Reactive energy	1.0				varh
Frequency	0.1				Hz

-. EMC test

Parameter	Standard	Test voltage
Electrostatic discharge immunity test	IEC61000-4-2 level 4	8kV
Surge (Shock) immunity test	IEC61000-4-5 level 3	Common test voltage 2kV
Electrical fast transient burst immunity test	IEC61000-4-4 level 3	Input 1kV; Power supply 2kV

-. Reference standard

Basic electricity	IEC 61557-12: 2018
Active energy	IEC 62053-22: 2020
Reactive energy	IEC 62053-24: 2020

-. Dielectric strength

IEC/EN 61010-1:2010/A1:2019
2kV AC RMS 1 minute, between input / output / case / power supply

-. Work environment

Temperature: -20°C ~ +60°C
Humidity: RH 20%~95% (No condensation)

-. Storage environment

Temperature: -25°C ~+70°C
Humidity: RH 20%~95% (No condensation)

4.- INSTALLATION AND START-UP

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

If the instrument is not used as manufacturer's specifications, the protection of the instrument will 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.

4.1.- Installation

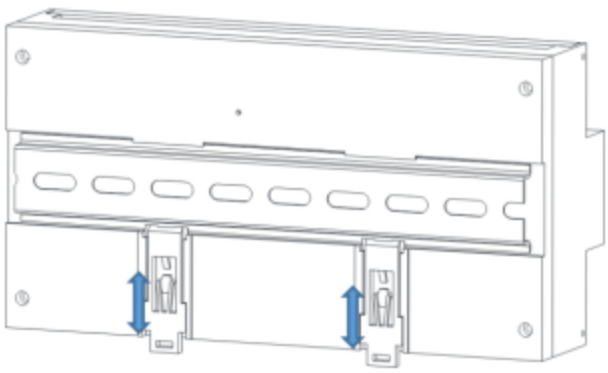
Mounting

MCM243T is to be mounted on 35mm Din-rail.

Step-1 Fasten a section of 35 mm DIN rail (at least 8 inches long) to the mounting surface with appropriate hardware.

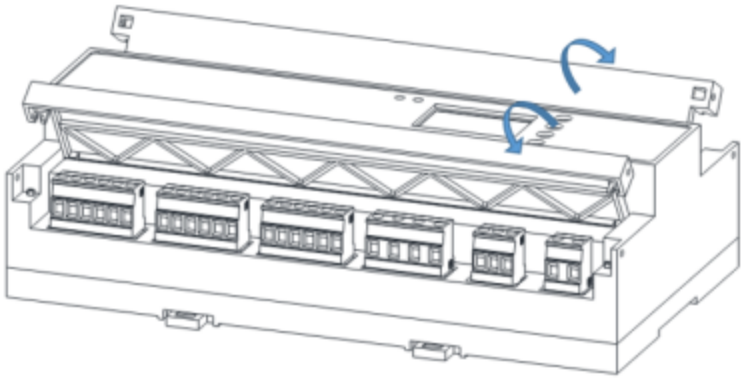
Step-2 Use the white plastic clips on the back of the MCM243T meter to clip the meter onto the rail.

Step-3 Verify that the meter is securely fastened to the wall.

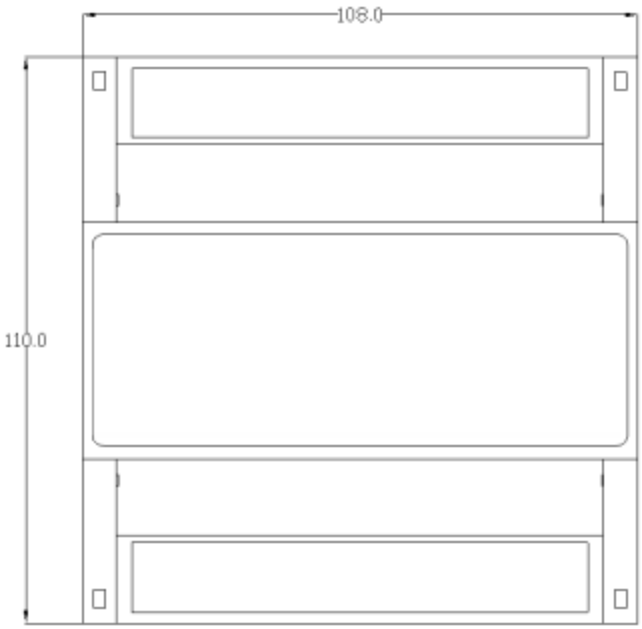


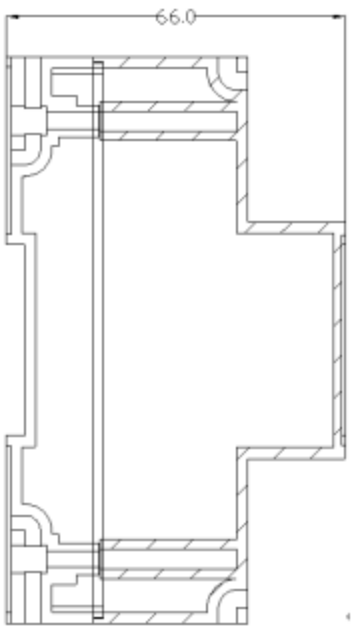
There have two flaps cover, can sealed by lead wire to protect unauthorized access terminal block, to achieve physical anti-theft function. Also capable of completely shielding the terminal head to prevent accident electrical shock.

Warning 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 or operation key button until this is completely installed and closed the cover.



Dimension: 108*110*66mm (W*H*D)





Notes:

Input signal: MCM243T using a separate acquisition calculate for each measurement channel, to ensure consistent in use, for different load forms, it's a variety of connection mode. Access wire shall be met 2.5 square mm.

A. Voltage input

Input voltage should not exceed the rated input voltage products 480V, please add protective circuit breaker or other overvoltage protection device
Otherwise, you should use external VT. Suggest 1A fuse be installed in the voltage input side.

B. Current Input

Standard input current is 5A or 1A, if greater than 5A/1A should use external CT.
When the CT is connected with other meters, make sure wiring methods be used in series.

Warning: Forbid to install a CT on the live feeder wire with open secondary leads. This can be extremely dangerous!!

Before remove the current input connection, must be sure to disconnect the primary circuit or shorted secondary circuit of CT.

C. Sequence of wire

Warning: Please make sure that the input voltage and current corresponding to the same phase, sequence, and the same direction; Otherwise, the Values and symbols will be wrong! (Power and Energy)

Always observe the physical orientation of CT (P1 - P2) when installing on the feeder wire.
Always pay attention to wiring polarity and phasing when terminating the CT leads to the MCM243T. S1 connect to Ix*, S2 connect to Ix.

The input network configuration of instrument depends on the CT number of the system:

in the condition of 2 CT, select the three-phase, three-lines two components;
in the condition of 3 CT, select the three-phase, four-lines three component mode.

Instrument connection mode, set of the instrument (programming input network NET) should be the same load wiring as measured wiring. Otherwise, the measurement instrument will lead to incorrect voltage or power.

In three-phase 3 wire mode, measurement and shows the line voltage;

In three-phase 4 wire mode, measurement and shows the phase voltage and line voltage both.

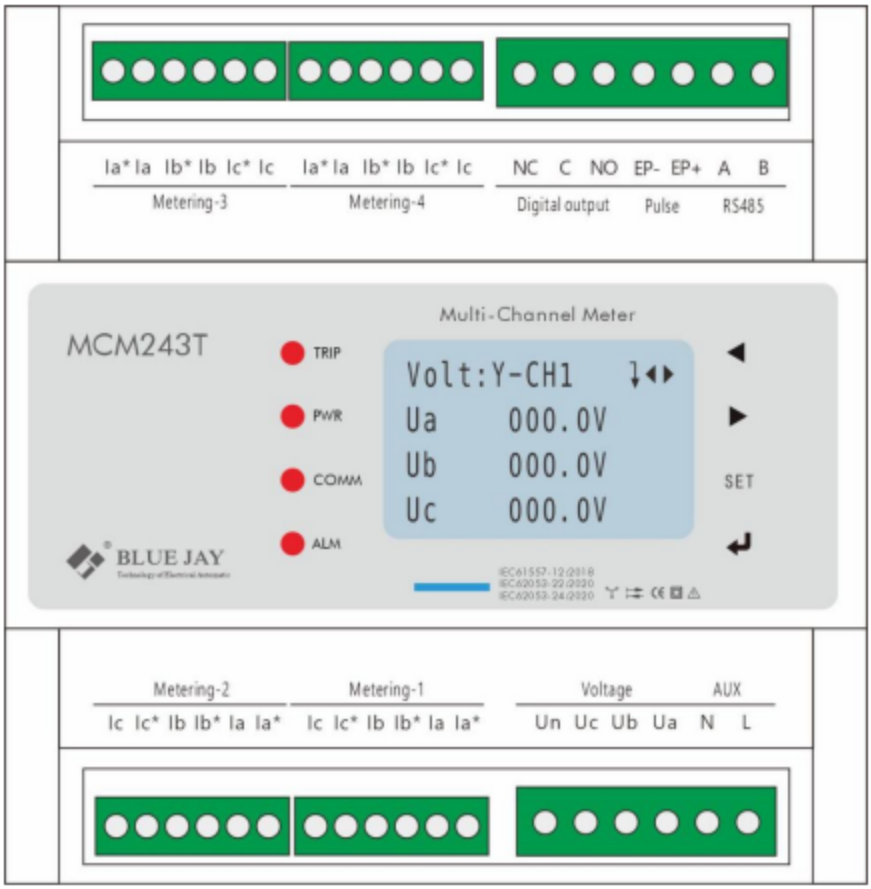
D. Auxiliary power

MCM243T with universal (AC / DC) power input, if not for a special statement, we provide the 85-265VAC/DC power interface for standard products, please ensure that the auxiliary power can match with meter to prevent unexpected damage.

A. Suggest install 1A fuse in the fire line side.

B. For the areas with poor power quality, suggest install lightning surge suppressor and rapid burst suppressor to prevent lightning strikes.

4.2.- Terminal Definition



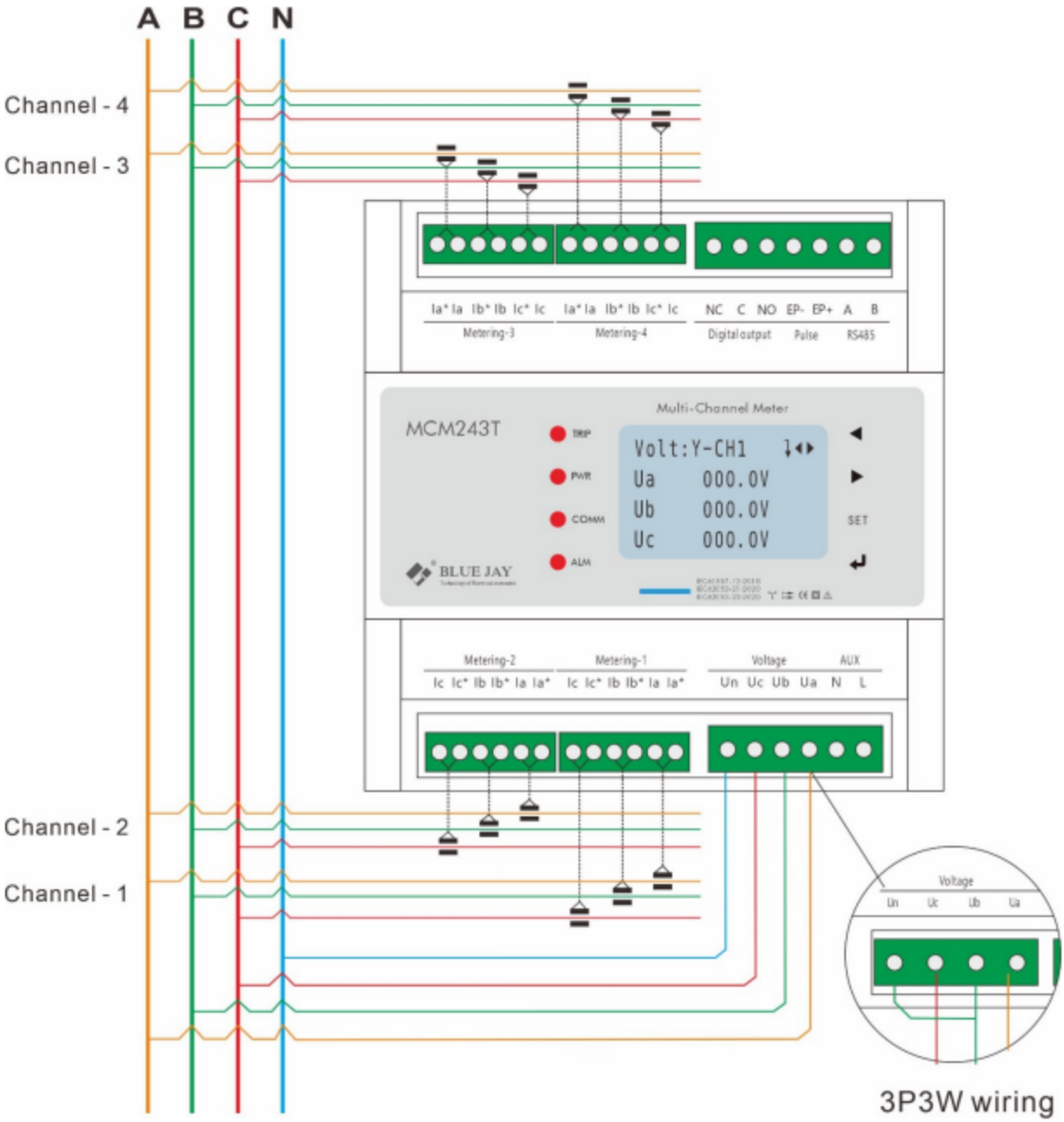
Marked	Notes
L/ N	AUX input 85-265Vac/dc
Ua/ Ub/ Uc/ Un	Phase A B C and Neutral voltage input
Metering 1-4	4 channel current input
Digital output	C: common terminal NO: normally open NC: normally close
Ep+/ Ep-	Active energy pulse output+ Active energy pulse output-
A B	RS485 communication interface

Note:

-. The terminal pin definition may change depends on customer order; please refer to the label on the meter!

4.3.- Typical wiring

3P3W/3P4W (max 4 channels)



Notes:

1. AUX can connect from feeder Busbar.
2. In 3P3W wiring, Ub and Un need external short as drawing, or the display voltage will wrong.

WARNINGS!

If power = -0.01 is shown for any of the phases and voltage and current are not zero for this phase, check out following points:

- Assure that A, B and C phases coincide in voltage and current.
- Correct polarity? Reverse the current transformer placed at this phase.

5.- OPERATION MODE

When the MCM243T and display unit are powered up, the entire symbol will be on, and the meter starts to self- test. After some seconds, the meter is ready for operation and shows one of the available screens.

Button	In monitor screen	In config sub-menu	In parameter setup
◀	**Short press:** view present channel previous/ next parameters	Move cursor up and down to select function	Move setting cursor to left
▶	**Press and hold:** switch to the corresponding menu of other channels		Scroll selection number 0 ~ 9
SET	**In main menu:** call up the password screen **In submenu:** return to the up level menu	Exit & roll back to up level menu.	
↵	Enter the submenu of the present parameter	Confirm values & Entry or jump to down level menu	

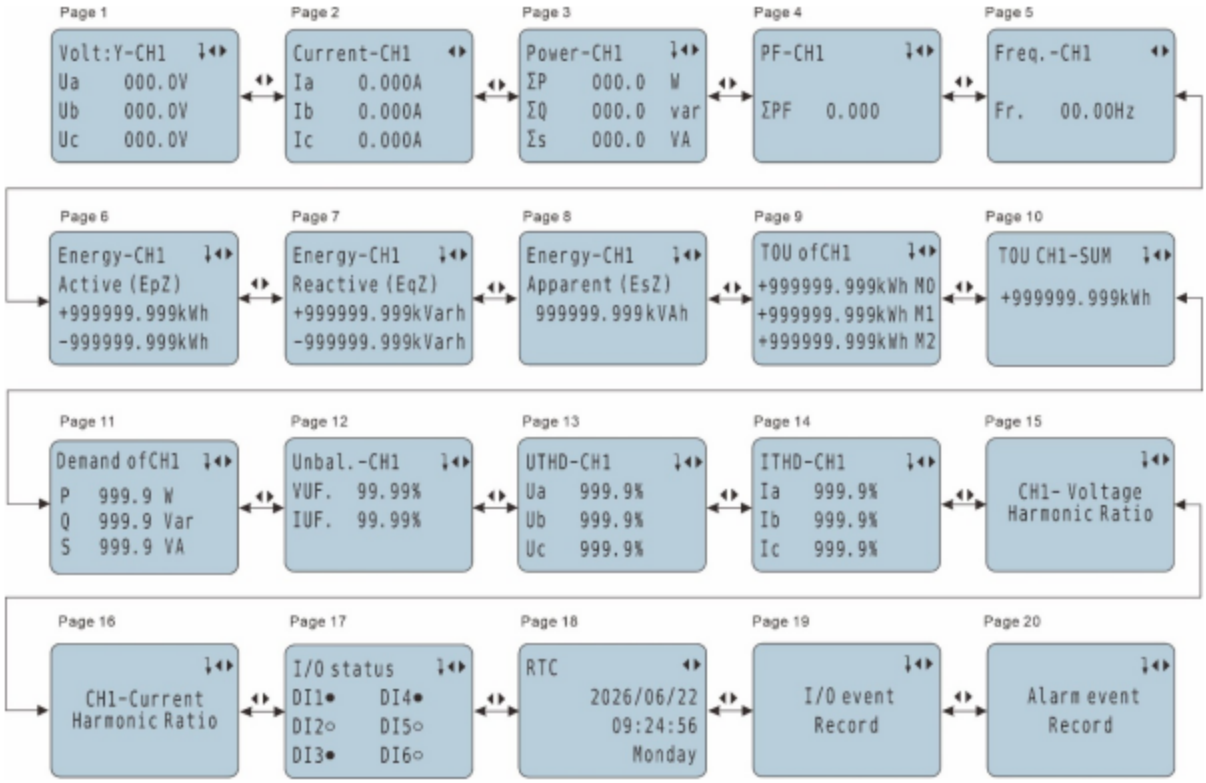
Note: In Setup menu, if change the setting value, press SET for exit menu, device will call out confirm screen ask "SAVE".

Then press SET *exit without saving.*

press ↵ *save and exit.*

6.- SCREEN DISPLAY

6.1.- Overall screen



Page No.	Description	Page No.	Description
Page 1	System voltage	Page 11	Demands record
Page 2	Primary current	Page 12	Current and voltage unbalance
Page 3	Total active/ reactive/ apparent power	Page 13	Voltage total harmonic distortion
Page 4	Total power factor	Page 14	Current total harmonic distortion
Page 5	System frequency	Page 15	Voltage harmonic ratio 2-31st
Page 6	Total active energy record	Page 16	Current harmonic ratio 2-31st
Page 7	Total reactive energy record	Page 17	DI/DO status
Page 8	Total apparent energy record	Page 18	Real time clock
Page 9	TOU of monthly energy record (M0–M2)	Page 19	DI/DO event record
Page 10	TOU of total cumulative energy	Page 20	Alarm event record

Notes:

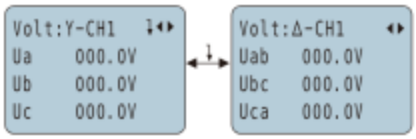
-. Pages above take channel 1 as an example. In any measurement page, press and hold ◀ and ▶ to view other channels parameter.

-. Pages marked with indicate that this page has a sub-menu, details refer to next chapter.

-. The above picture displays all function information. If this meter does not have the certain function, it can be ignored.

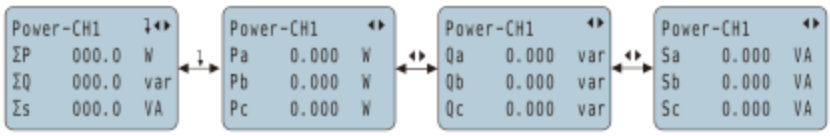
6.2.- Sub-menu details

6.2.1.- The detail information of basic electrical parameters



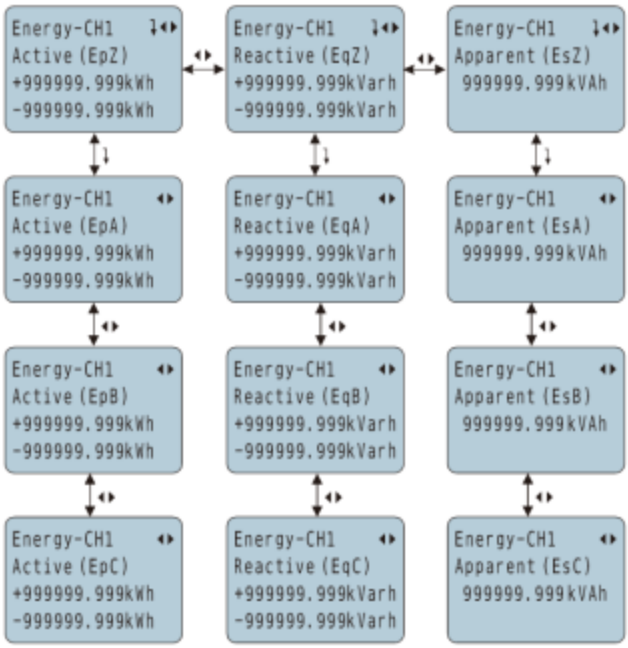
System voltage

Phase to line voltage
Phase to phase voltage



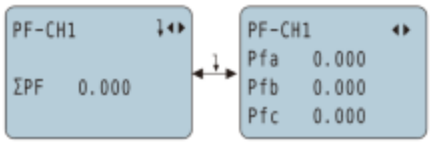
Power record

Total and A B C split-phase active, reactive, apparent power



Energy record

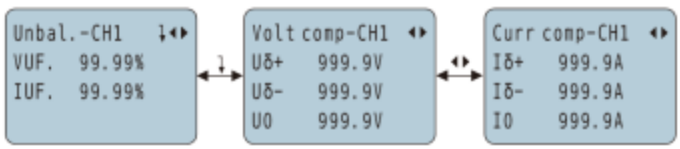
Total and A B C split-phase active, reactive, apparent energy



Power factor

Total and A B C split-phase active, reactive, apparent power factor

Voltage & current unbalance



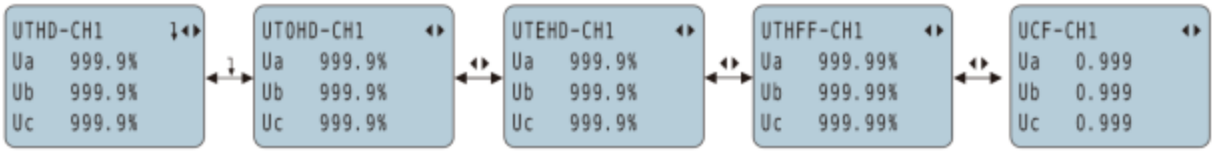
Voltage/ current unbalance

Positive/ negative/ zero sequence voltage in primary side

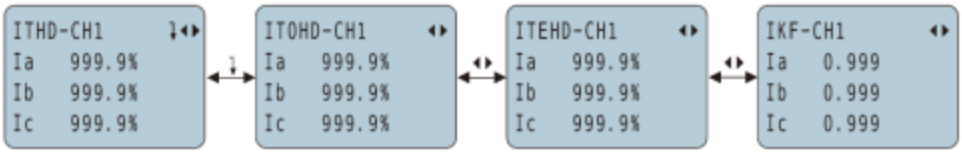
Positive/ negative/ zero sequence current in primary side

6.2.2.- The detail information of THD and individual harmonic

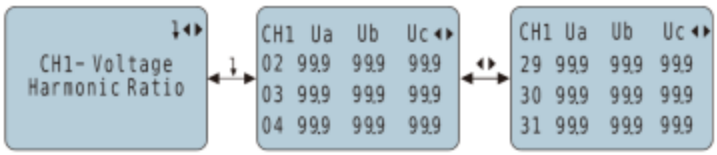
Voltage total harmonic distortion
Voltage total odd harmonic distortion
Voltage total even harmonic distortion
Voltage telephone harmonic form factor
Voltage crest factor



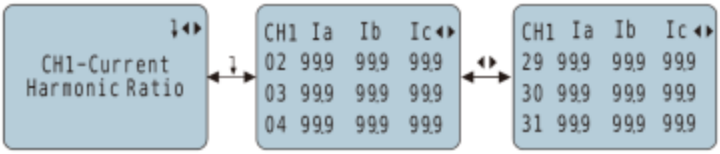
Current total harmonic distortion
Current total odd harmonic distortion
Current total even harmonic distortion
Current K- factor



Voltage harmonic ratio: 2-31st



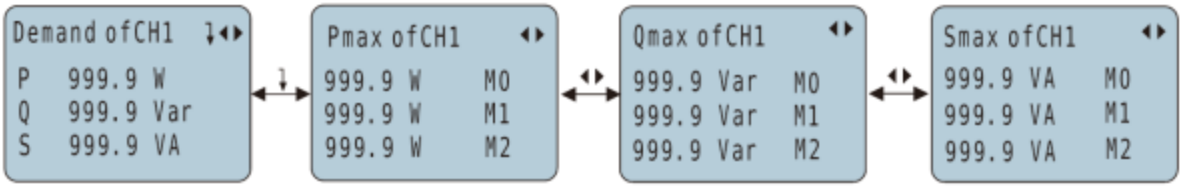
Current harmonic ratio: 2-31st



6.2.3.- The detail information of demands record

Page 1: Present active/reactive/apparent demand
Page 2-4: Maximum active/reactive/apparent demand of M0–M2

M0: Present month **M1:** Last month **M2:** Month before last month



Note: To further clarify, take an example:

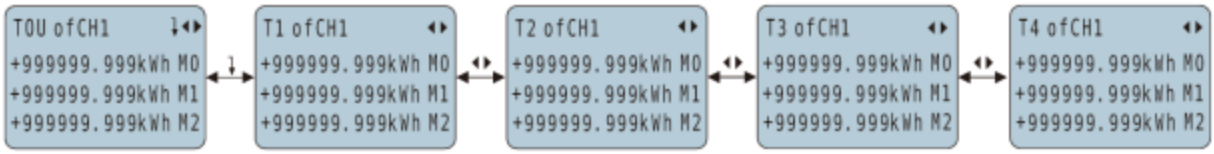
Assuming this month is March 2025,

M0 means present month: refers to March 2025.
M1 means last month: refers to February 2025.
M2 means the month before last month: refers to data from January 2025.

6.2.4.- The detail information of time of use (Multi-tariff)

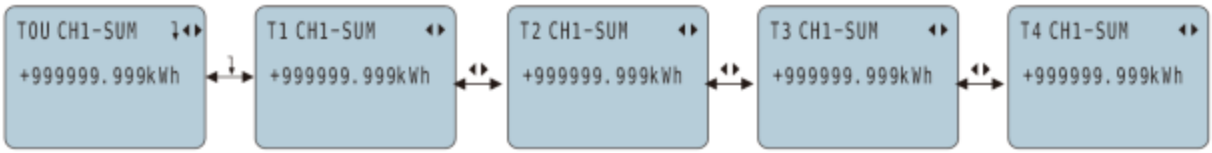
Page 1: Total monthly energy of M0-M2

Page 2-5: TOU monthly energy of T1-T4



Page 1: Total accumulated energy of T1+T2+T3+T4

Page 2-5: Total accumulated energy of T1-T4



Note:

Sum: Total cumulative energy

M0: Present month

M1: Last month

M2: Month before last month

T1: TOU mode-1

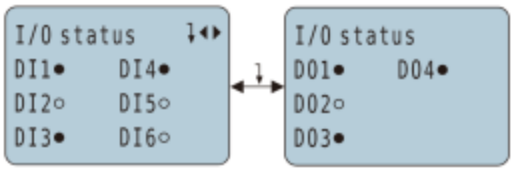
T2: TOU mode-2

T3: TOU mode-3

T4: TOU mode-4

6.2.5.- The detail information of I/O status

○: opened
●: closed



Note: This diagram shows the full I/O layout for reference only. The MCMC243T present only has 1* DO relay output.

6.2.6.- The detail information of I/O or alarm event record

Sequence of event record of DI/DO action status, Max 10 lists, ○ stand for relay opened, ● stand for relay closed.

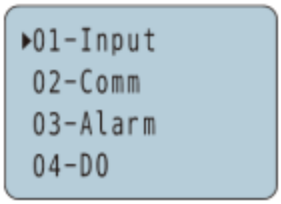
Sequence of event record of alarm events: alarm time, alarm status (release/ capture), alarm parameters and value.

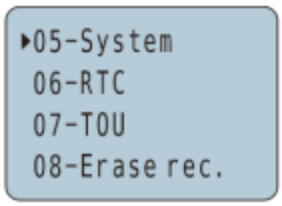
7.- SETUP PROCEDURE

The SETUP procedure of the MCM243T is performed through several setup options. A password (default: 0001) is required to prevent unauthorized access to the Setup menu.

Press the SET from any monitoring screen to open the password entry page. Enter the default password **0001** to access the configuration menu. Once in the Setup menu, use the keypad to select the desired option and enter the required parameters.

There are 8 sub-menus for meter configuration:



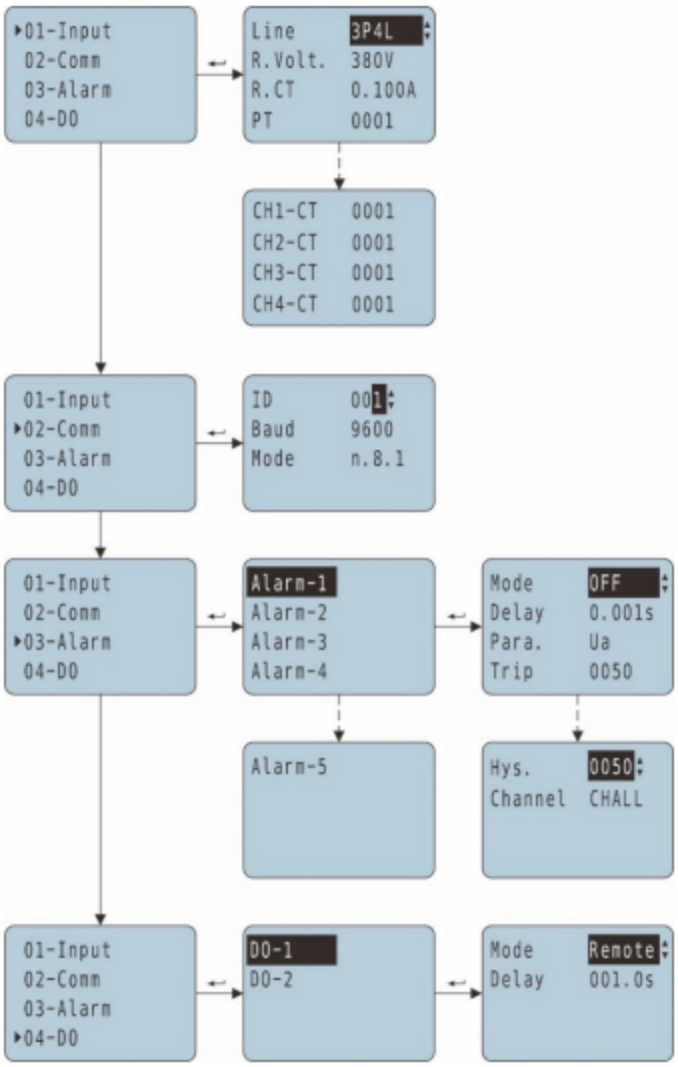


Input	Basic settings of signal access	**System**	System settings
Comm	Communication port setting	**RTC**	Real-time clock setting
Alarm	Alarm trig threshold setting	**TOU**	Time of use record setting
DO	Digital relay output port setting	**Erase rec.**	Erase record setting

Note:

If the meter does not have the certain function, it can be ignored.

7.1.- The detail of meter configuration



Input signal setup

Power grid mode: default **3P4L** (1) *
Secondary current
Current Type: **A/ mV**
Voltage transformer ratio (2) *
Current transformer ratio

Communication setup

Modbus address: **1-247**
Comm. baud ratio
Comm. data format

Alarm trig threshold setting

Alarm mode
Delay timer of the trig
Parameter be trigged
Trip value
Hysteresis value: default 0050
Alarm channel selection

Digital output setup

DO working mode: remote, auto trig, turned off
Delay timer of the trig

Notes:

1. Wiring Method: The default wiring method is 3P4W, with 3P3W-3CT and 3P3W-2CT available as options.

2. When the current signal is lower than 333mV, the CT value defaults to the primary side parameter.
The pulse output value defaults to 5000/kWh.

3. Blue Jay calibrates meter under 380V range, and high-quality linearity performance ensures that the meter can accurately measure in the lower voltage range. That can be compatible with 120V, 220V, 230V, 240V, 277V system.

If need to use in different voltage scale or different types CT, please contact our sales team for more details.

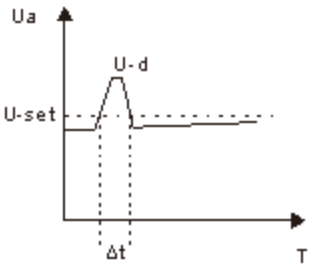
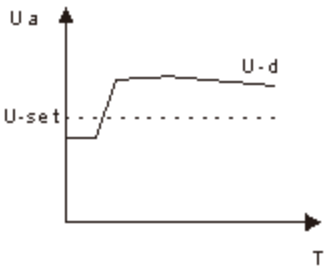
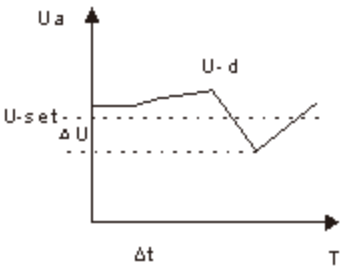
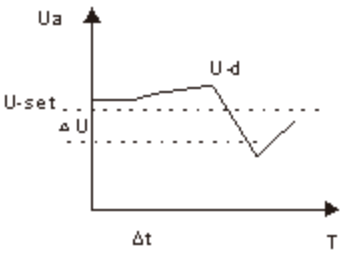
7.1.1.-Alarm setting description

Sub-setting	Settings value	Definition
Mode	[OFF] / [Rising] / [Falling]	[OFF] - Alarm disabled. [Rising] - Triggers when the value rises to the threshold. [Falling] –Triggers when the value falls to the threshold. **Default OFF**
Delay	0.0~999.9s	000.0 - Level type signal, contact coil will close when trigged. 000.1~999.9 - Pulse type signal, value for width. Contact coil will close in the pulse width time, then release. **Note:** In [Alarm-X] the value setting is valid **Default 0.1s**
Parameter	Ua ,Ub,Uc,Uab,Ubc,Uac,UX-x Ia,Ib,Ic,Pa,Pb,Pc,PΣ Qa,Qb,Qc,QΣ Sa,Sb,Sc,SΣ DI1,DI2,DI3,DI4,DI5,DI6L	Parameter be trigged. **Notes:** Uabc, Iabc mean any value in phase Ps, Qs, Ss mean total value in three phase Not all value above in screen, depends on sub-mode of MCM263T
Trip	0~9999	Trig threshold, value related to secondary side, units. Voltage - 0.1V Current - 0.001A Active power - 0.1W Reactive power - 0.1VAR Power factor - 0.001 Frequency- 0.01HZ **Default is 5500**
Hysteresis*	0~9999	When the measurement parameter falls back lower / over this exceed value, the alarm will be released. **Default is 0050**

Delay & Hysteresis operation logic

An example in upper limit alarm of A phase voltage:

U-d means detected Ua
U-set mean Alarm value of A phase

Alarm will not be tripped		If Δt < Delay setting value, The Alarm will not be trip, that can avoid influence of the transient electrical parameters
Alarm tripped		When U-d is over U-set, and after delay setting time to cool down, the value is still over U-set, and the alarm is be tripped
Alarm will not released		If ΔU < Hysteresis value The Alarm will not be released, that can avoid influence of parameter unexpected fluctuations
Alarm released		When U-d is lower than (U-set -Hysteresis) The Alarmwill be released.

7.2.2.- DO setting description

MCM263T optional physical DO port, if not choose this port, this chapter is invalid.

The physical DO relay standard is 5A@250VAC / 5A@30VDC.

Sub-setting	Settings value	Definition
Mode	Remote* / [Alarm-X] [OFF] / [ON]	**[Remote]** - DO is acted by RS-485 control command **[Alarm-X]** - DO acts when Alarm-X is tripped **[OFF]** – DO is always closed, cannot control **[ON]** – DO is always opened, cannot control **Default Remote**
Delay	0.0~999.9s	000.0 - Level type signal, contact coil will be closed when it is tripped 000.1~999.9 - Pulse type signal, value for width. Contact coil will be closed in the pulse width time, then release **Note**: In [Alarm-X] the value setting is valid **Default 0.1s**

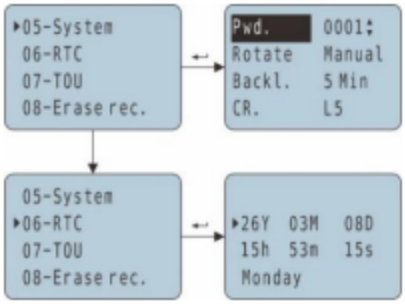
In [Remote] mode, user can use function code 05 to trig single relay, device RS-485 port follow MODBUS-RTU protocol, command as following:

Host inquiry:

01	05	00 01	FF 00	DD FA
Address	Code	No.1 Relay register	Relay value (FF00:close; 0000: open)	CRC

Slave response:

01	05	00 01	FF 00	DD FA
Address	Code	No.1 Relay register	Relay value (FF00:close; 0000: open)	CRC

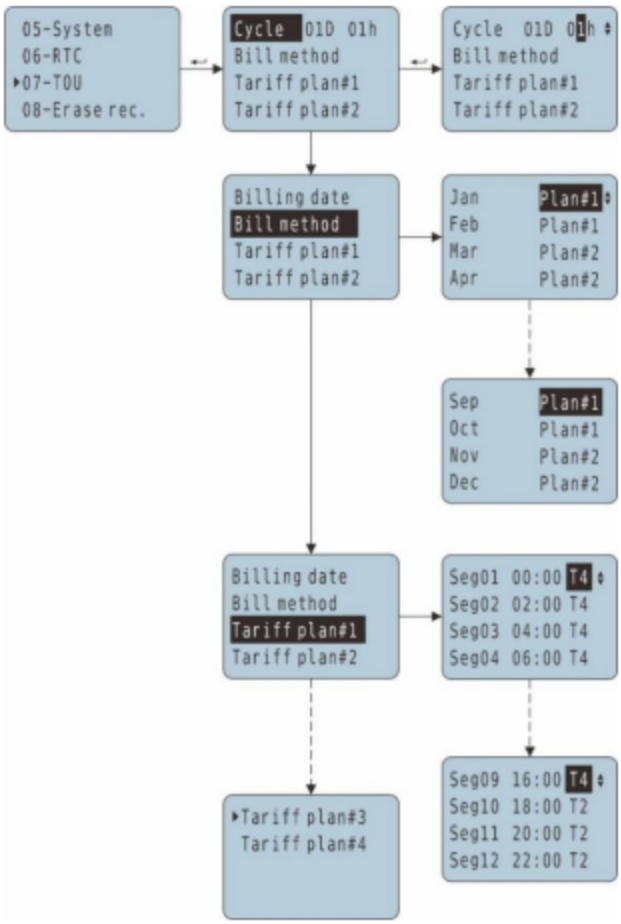


System parameter setup

Password
Screen scroll interval
Duration of LCD backlight
Color contrast

Real-time clock setup

Users can set: Year / Month / Date / Hour / Minute / Second And week



TOU billing mode settings

4 Tariff plans, 12 segments

Billing date: default 01D 01h, can select date 1-28 for every month and hour clock 00-22.

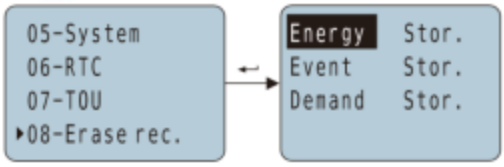
Billing method: set every month billing method, there are 4 types of TOU ratio can be selected.

Tariff plan: set TOU mode-1 to mode-4 tariff.

Notes:

1.- Meter default automatic billing time meter reading time at 0:00 on the 1st of each month. Electrical energy of this month will be freeze to last month value, and the electrical energy of last month will be frozen to the month before last month. Electrical data of this month will clear and re-start record. If re-set billing time miss the last billing time, the meter will immediately record billing; If power off during the billing time, the meter will immediately record billing after power recover.

2.- Billing period is designed for automatic closed loop, when Segment-X time-point equal segment-1 time-point, the remained segment setting will be ignoring by meter.



Erase record setting

Erase energy records
Erase event records
Erase demand records

(Note: optional storage or erase, need to save after setting.)

8.- PULSE OUTPUT

MCM243T has 1* pulse output for 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 ≤ 48V, Iz ≤ 50mA.

2). Pulse: 5000 imp / kWh, pulse width up to 80ms.
This means: When the device detects 1 kWh, the port will generate 5000 pulse

Note:
1 kWh energy is for *secondary side energy data*, if there have PT and CT accessed; primary side energy data is "1 kWh ×PT ratio× CT ratio".

Voltage (V)	Current (A)	Pulse constant (imp / kWh)
380 or 220	5	5000
	1	20000
100	5	20000
	1	80000

Example: In measure time "T", the received total pulse is "N",
Primary side input of voltage is 10Kv
Primary side input of current is 400A.
Secondary side measurement range is 100V and 5A.

In the time "T", energy accumulated is: N / 20000 × 100 × 80

9.- COMMUNICATION INTERFACE

9.1.- Connection for the RS485 BUS

The composition of the RS-485 cabling must be carried out with a meshed screen cable (minimum 3 wire), diameter of not less than 0.5mm^2, with a maximum distance of 1,200 meters between the MCM243T and the master unit. This Bus may connect a maximum of 247 MCM243T.

9.2.- MODBUS © protocol

Modbus RTU Frame Format:

Address code	**1 BYTE**	*Slave device address **1-247***
Function code	**1 BYTE**	*Indicates the function codes like read coils / inputs*
Data code	**4 BYTE**	*Starting address, high byte* *Starting address, low byte* *Number of registers, high byte* *Number of registers, low byte*
Error Check code	**2 BYTE**	*Cyclical Redundancy Check (**CRC**)*

MODBUS FUNCTIONS

Code	Meaning	Description
FUNCTION 03	Reading of n Words	*This function permits to read all the electrical parameters of the BJ…series.*
FUNCTION 06	Write of Registers	*Write value in to the relevant register*

Notes:

Blue Jay default disable the write function, if want change configuration via RS485, please contact Blue Jay Sales Team before your order.

9.3.- Register address table

9.3.1.- Basic power data-primary side - read only (Funx03)

Address	Data	Byte mode		Instruction
0x00	CH1_Ua	float	2	Channel_1 Phase to Line Voltage, Unit: V
0x02	CH1_Ub	float	2	
0x04	CH1_Uc	float	2	
0x06	CH1_Uab	float	2	Channel_1 Phase to Phase Voltage, Unit: V
0x08	CH1_Ubc	float	2	
0x0a	CH1_Uca	float	2	
0x0c	CH1_Ia	float	2	Channel_1 Three phase Current, Unit: A
0x0e	CH1_Ib	float	2	
0x10	CH1_Ic	float	2	
0x12	CH1_Pa	float	2	Channel_1 Individual phase active power, Unit: kW
0x14	CH1_Pb	float	2	
0x16	CH1_Pc	float	2	
0x18	CH1_P∑	float	2	Channel_1 Total active power, Unit: kW
0x1a	CH1_Qa	float	2	Channel_1 Individual phase reactive power, Unit: kVar
0x1c	CH1_Qb	float	2	
0x1e	CH1_Qc	float	2	
0x20	CH1_Q∑	float	2	Channel_1 Total reactive power, Unit: kVar
0x22	CH1_Sa	float	2	Channel_1 Individual apparent power, Unit: kVA
0x24	CH1_Sb	float	2	
0x26	CH1_Sc	float	2	
0x28	CH1_S∑	float	2	Channel_1 Total apparent power, Unit: kVA
0x2a	CH1_PFa	float	2	Channel_1 Individual power factor, 0~1.000
0x2c	CH1_PFb	float	2	
0x2e	CH1_PFc	float	2	
0x30	CH1_PF∑	float	2	Channel_1 Total power factor, 0~1.000

0x32	CH1_FR	float	2	Channel_1 Frequency, Unit:0.01Hz
0x34	CH1_EpZ+	float	2	Channel_1 Positive active energy, Unit: kWh
0x36	CH1_EpZ-	float	2	Channel_1 Negative active energy, Unit: kWh
0x38	CH1_EqZ+	float	2	Channel_1 Positive reactive power, Unit: kVarh
0x3a	CH1_EqZ-	float	2	Channel_1 Negative reactive power, Unit: kVarh
0x3c	CH1_EsZ	float	2	Total apparent energy, unit: VAh
0x3e	CH1_EpA+	float	2	Channel_1 A phase positive active energy, Unit: kWh
0x40	CH1_EpA-	float	2	Channel_1 A phase negative active energy, Unit: kVarh
0x42	CH1_EqA+	float	2	Channel_1 A phase positive reactive energy, Unit: kVarh
0x44	CH1_EqA-	float	2	Channel_1 A phase negative reactive energy, Unit: kWh
0x46	CH1_EsA	float	2	Channel_1 A phase apparent energy, unit: VAh
0x48	CH1_EpB+	float	2	Channel_1 B phase positive active energy, Unit: kWh
0x4a	CH1_EpB-	float	2	Channel_1 B phase negative active energy, Unit: kVarh
0x4c	CH1_EqB+	float	2	Channel_1 B phase positive reactive energy, Unit: kVarh
0x4e	CH1_EqB-	float	2	Channel_1 B phase negative reactive energy, Unit: kWh
0x50	CH1_EsB	float	2	Channel_1 B phase apparent energy, unit: VAh
0x52	CH1_EpC+	float	2	Channel_1 C phase positive active energy, Unit: kWh
0x54	CH1_EpC-	float	2	Channel_1 C phase negative active energy, Unit: kVarh
0x56	CH1_EqC+	float	2	Channel_1 C phase positive reactive energy, Unit: kVarh
0x58	CH1_EqC-	float	2	Channel_1 C phase negative reactive energy, Unit: kWh
0x5a	CH1_EsC	float	2	Channel_1 C phase apparent energy, unit: VAh
0x64~0xbe	/	float	2	Channel_2 Electrical data
0xc8~0x122	/	float	2	Channel_3 Electrical data
0x12c~0x186	/	float	2	Channel_4 Electrical data

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

9.3.2.- Basic power data - secondary side - read only (Funx03)

Address	Data	Byte mode		Instruction
0x258	CH1_Ua	float	2	Channel_1 Phase to Line Voltage, Unit: V
0x259	CH1_Ub	float	2	
0x25a	CH1_Uc	float	2	
0x25b	CH1_Uab	float	2	Channel_1 Phase to Phase Voltage, Unit: V
0x25c	CH1_Ubc	float	2	
0x25d	CH1_Uca	float	2	
0x25e	CH1_Ia	float	2	Channel_1 Three phase Current, Unit: A
0x25f	CH1_Ib	float	2	
0x260	CH1_Ic	float	2	
0x261	CH1_Pa	float	2	Channel_1 Individual phase active power, Unit: kW
0x262	CH1_Pb	float	2	
0x263	CH1_Pc	float	2	
0x264	CH1_PΣ	float	2	Channel_1 Total active power, Unit: kW
0x265	CH1_Qa	float	2	Channel_1 Individual phase reactive power, Unit: kVar
0x266	CH1_Qb	float	2	
0x267	CH1_Qc	float	2	
0x268	CH1_QΣ	float	2	Channel_1 Total reactive power, Unit: kVar
0x269	CH1_Sa	float	2	Channel_1 Individual apparent power, Unit: kVA
0x26a	CH1_Sb	float	2	
0x26b	CH1_Sc	float	2	
0x26c	CH1_SΣ	float	2	Channel_1 Total apparent power, Unit: kVA
0x26d	CH1_PFa	float	2	Channel_1 Individual power factor, 0~1.000
0x26e	CH1_PFb	float	2	
0x26f	CH1_PFc	float	2	
0x270	CH1_PFΣ	float	2	Channel_1 Total power factor, 0~1.000
0x271	CH1_FR	float	2	Channel_1 Frequency, Unit:0.01Hz

0x272	CH1_EpZ+	float	2	Channel_1 Positive active energy, Unit: kWh
0x274	CH1_EpZ-	float	2	Channel_1 Negative active energy, Unit: kWh
0x276	CH1_EqZ+	float	2	Channel_1 Positive reactive power, Unit: kVarh
0x278	CH1_EqZ-	float	2	Channel_1 Negative reactive power, Unit: kVarh
0x27a	CH1_EsZ	float	2	Total apparent energy, unit: VAh
0x27c	CH1_EpA+	float	2	Channel_1 A phase positive active energy, Unit: kWh
0x27e	CH1_EpA-	float	2	Channel_1 A phase negative active energy, Unit: kVarh
0x280	CH1_EqA+	float	2	Channel_1 A phase positive reactive energy, Unit: kVarh
0x282	CH1_EqA-	float	2	Channel_1 A phase negative reactive energy, Unit: kWh
0x284	CH1_EsA	float	2	Channel_1 A phase apparent energy, unit: VAh
0x286	CH1_EpB+	float	2	Channel_1 B phase positive active energy, Unit: kWh
0x288	CH1_EpB-	float	2	Channel_1 B phase negative active energy, Unit: kVarh
0x28a	CH1_EqB+	float	2	Channel_1 B phase positive reactive energy, Unit: kVarh
0x28c	CH1_EqB-	float	2	Channel_1 B phase negative reactive energy, Unit: kWh
0x28e	CH1_EsB	float	2	Channel_1 B phase apparent energy, unit: VAh
0x290	CH1_EpC+	float	2	Channel_1 C phase positive active energy, Unit: kWh
0x292	CH1_EpC-	float	2	Channel_1 C phase negative active energy, Unit: kVarh
0x294	CH1_EqC+	float	2	Channel_1 C phase positive reactive energy, Unit: kVarh
0x296	CH1_EqC-	float	2	Channel_1 C phase negative reactive energy, Unit: kWh
0x298	CH1_EsC	float	2	Channel_1 C phase apparent energy, unit: VAh
0x2bc~0x2fc	/	float	2	Channel_2 Electrical data
0x320 ~0x360	/	float	2	Channel_3 Electrical data
0x384~ 0x3c4	/	float	2	Channel_4 Electrical data

9.3.3.- Sequence components & unbalance - read only (Funx03)

Register	Data	Byte mode		Instruction
0xA8C	$V_{\delta}+$	float	2	Channel_1 Positive sequence voltage in primary side
0xA8E	$V_{\delta}-$	float	2	Channel_1 Negative sequence voltage in primary side
0xA90	V_0	float	2	Channel_1 Zero sequence voltage in primary side
0xA92	$I_{\delta}+$	float	2	Channel_1 Positive sequence current in primary side
0xA94	$I_{\delta}-$	float	2	Channel_1 Negative sequence current in primary side
0xA96	I_0	float	2	Channel_1 Zero sequence current in primary side
0xA98	eU	float	2	Channel_1 Voltage unbalance, eU = ($V_{\delta}-$ / $V_{\delta}+$)%
0xA9A	eI	float	2	Channel_1 Current unbalance, eI = ($I_{\delta}-$ / $I_{\delta}+$)%
0xA9C ~ 0xAAB				Channel_2 data
0xAAC ~ 0xABB				Channel_3data
0xABC ~ 0xACB				Channel_4 data

9.3.4.- THD and individual harmonic (Max 31st times) - read only (Funx03)

Register	Data	Byte mode		Instruction
0x514	THDUa	int	1	Channel_1 A-phase Voltage THD, unit 0.1%
0x515	THDUb	int	1	Channel_1 B-phase Voltage THD
0x516	THDUc	int	1	Channel_1 C-phase Voltage THD
0x517	TOHDUa	int	1	Channel_1 A-phase Voltage odd harmonic total distortion, unit 0.1%
0x518	TOHDUb	int	1	Channel_1 B-phase Voltage odd harmonic total distortion
0x519	TOHDUc	int	1	Channel_1 C-phase Voltage odd harmonic total distortion
0x51A	TEHDUa	int	1	Channel_1 A-phase Voltage even harmonic total distortion, unit 0.1%
0x51B	TEHDUb	int	1	Channel_1 B-phase Voltage even harmonic total distortion
0x51C	TEHDUc	int	1	Channel_1 C-phase Voltage even harmonic total distortion
0x51D	THFFUa	int	1	Channel_1 A-phase voltage telephone harmonic form factor, unit 0.1%
0x51E	THFFUb	int	1	Channel_1 B-phase voltage telephone harmonic form factor, unit 0.1%
0x51F	THFFUc	int	1	Channel_1 C-phase voltage telephone harmonic form factor, unit 0.1%
0x520	CFUa	int	1	Channel_1 A-phase voltage crest factor, unit 0.001
0x521	CFUb	int	1	Channel_1 B-phase voltage crest factor, unit 0.001
0x522	CFUc	int	1	Channel_1 C-phase voltage crest factor, unit 0.001
0x528 ~ 0x545	HUa	int	1	Channel_1 A-phase voltage individual harmonic 2 to 31st
0x546 ~ 0x563	HUb	int	1	Channel_1 B-phase voltage individual harmonic 2 to 31st
0x564 ~ 0x581	HUc	int	1	Channel_1 C-phase voltage individual harmonic 2 to 31st

Register	Data	Byte mode		Instruction
0x5DC	THDIa1	int	1	Channel_1 A-phase current THD, unit 0.1%
0x5DD	THDIb1	int	1	Channel_1 B-phase current THD
0x5DE	THDIc1	int	1	Channel_1 C-phase current THD
0x5DF	TOHDIa1	int	1	Channel_1 A-phase current odd harmonic total distortion, unit 0.1%
0x5E0	TOHDIb1	int	1	Channel_1 B-phase current odd harmonic total distortion
0x5E1	TOHDIc1	int	1	Channel_1 C-phase current odd harmonic total distortion
0x5E2	TEHDIa1	int	1	Channel_1 A-phase current even harmonic total distortion, unit 0.1%
0x5E3	TEHDIb1	int	1	Channel_1 B-phase current even harmonic total distortion
0x5E4	TEHDIc1	int	1	Channel_1 C-phase current even harmonic total distortion
0x5E5	KFIa	int	1	Channel_1 A-phase current K factor, unit 0.01
0x5E6	KFIb	int	1	Channel_1 B-phase current K factor, unit 0.01
0x5E7	KFIc	int	1	Channel_1 C-phase current K factor, unit 0.01
0x5F0 ~ 0x60D	HIa1	int	1	Channel_1 A-phase current individual harmonic 2 to 31st
0x60E ~ 0x62B	HIb1	int	1	Channel_1 B-phase current individual harmonic 2 to 31st
0x62C ~ 0x649	Hic1	int	1	Channel_1 C-phase current individual harmonic 2 to 31st
0x6A4 ~ 0x711	/	int	1	Channel_2 data
0x76C ~ 0x7D9	/	int	1	Channel_3 data
0x834 ~ 0x8A1	/	int	1	Channel_4 data

9.3.5.- Power demand data - secondary side - read only (Funx03)

Register	Data	Byte mode		Instruction
0x1388	Pde	long	2	Channel_1 A-phase present active power demand, Unit: W
0x138A		long	2	Channel_1 B-phase present active power demand, Unit: W
0x138C		long	2	Channel_1 C-phase present active power demand, Unit: W
0x138E		long	2	Channel_1 A B C phase total active Power Demand (0.1 W)
0x1390	Qde	long	2	Channel_1 A-phase present reactive power demand, Unit: W
0x1392		long	2	Channel_1 B-phase present reactive power demand, Unit: W
0x1394		long	2	Channel_1 C-phase present reactive power demand, Unit: W
0x1396		long	2	Channel_1 A B C phase total reactive Power Demand (0.1 W)
0x1398	Sde	long	2	Channel_1 A-phase present apparent power demand, Unit: W
0x139A		long	2	Channel_1 B-phase present apparent power demand, Unit: W
0x139C		long	2	Channel_1 C-phase present apparent power demand, Unit: W
0x139E		long	2	Channel_1 A B C phase total apparent Power Demand (0.1 W)
0x13A0 ~ 0x13B7	/			Channel_2 data
0x13B8 ~ 0x13CF	/			Channel_3 data
0x13D0 ~ 0x13E7	/			Channel_4 data
0x1418 ~ 0x14A7	Pde/Qde/Sde_M0			Maximum active/ reactive/ apparent power demand in present month
0x14A8 ~ 0x1537	Pde/Qde/Sde_M1			Maximum active/ reactive/ apparent power demand in last month
0x1538 ~ 0x15C7	Pde/Qde/Sde_M2			Maximum active/ reactive/ apparent power demand in month before last month

9.3.6.- TOU/ Multi- tariffs ratio data - secondary side - read only (Funx03)

Register	Data	Byte mode		Instruction
0xFA0	/	long	2	Channel_1 A-phase cumulative energy
0xFA2	/	long	2	Channel_1 A-phase T1 cumulative energy record
0xFA4	/	long	2	Channel_1 A-phase T2 cumulative energy record
0xFA6	/	long	2	Channel_1 A-phase T3 cumulative energy record
0xFA8	/	long	2	Channel_1 A-phase T4 cumulative energy record
0xFAA	/	long	2	Channel_1 B-phase cumulative energy
0xFAC	/	long	2	Channel_1 B-phase T1 cumulative energy record
0xFAE	/	long	2	Channel_1 B-phase T2 cumulative energy record
0xFB0	/	long	2	Channel_1 B-phase T3 cumulative energy record
0xFB2	/	long	2	Channel_1 B-phase T4 cumulative energy record
0xFB4	/	long	2	Channel_1 C-phase cumulative energy
0xFB6	/	long	2	Channel_1 C-phase T1 cumulative energy record
0xFB8	/	long	2	Channel_1 C-phase T2 cumulative energy record
0xFBA	/	long	2	Channel_1 C-phase T3 cumulative energy record
0xFBC	/	long	2	Channel_1 C-phase T4 cumulative energy record
0xFBE	/	long	2	Channel_1 A B C phase total cumulative energy
0xFC0	/	long	2	Channel_1 A B C phase total T1 cumulative energy record
0xFC2	/	long	2	Channel_1 A B C phase total T2 cumulative energy record
0xFC4	/	long	2	Channel_1 A B C phase total T3 cumulative energy record
0xFC6	/	long	2	Channel_1 A B C phase total T4 cumulative energy record
0xFC8 ~ 0xFEF	/			Channel_2 data
0xFF0 ~ 0x1017	/			Channel_3 data
0x1018 ~ 0x103F	/			Channel_4 data
0x1090 ~ 0x117F	/			TOU Energy in present month
0x1180 ~ 0x126F	/			TOU Energy in last month
0x1270 ~ 0x135F	/			TOU Energy in month before last month

9.3.7.- TOU/ Multi- tariffs ratio data - secondary side - read (Funx03) and write (Funx06)

Register	Data	Byte mode		Instruction
0x2710	Monthly billing time	Int	1	Bits 7–0: billing hour (0-23); Bits 15–8: billing day (1-28)
0x2711	TOU mode for segment 1 of tariff plan 1	Int	1	0 = T1, 1 = T2, 2 = T3, 3 = T4
0x2712	TOU mode for Segment 2 of tariff plan 1	Int	1	
0x2713-0x271C	Segment 3-12	Int	1	
0x271D	Start time of Segment 1 of tariff plan 1	Int	1	Bits 7–0: Minutes (0–59); Bits 15–8: Hours (0–23)
0x271E	Start time of Segment 2 of tariff plan 1	Int	1	
0x271F-0x2728	Segment 3-12	Int	1	
0x2729-0x2740	Tariff plan 2 setting			The same as above tariff plan 1
0x2741-0x2758	Tariff plan 3 setting			
0x2759-0x2770	Tariff plan 4 setting			
0x2771-0x277c	Monthly Tariff Selection (January–December)			0 = Tariff plan 1, 1 = Tariff plan 2; 2 = Tariff plan 3, 3 = Tariff plan 4

9.3.8.- Meter status data - read only (Funx03)

Register	Data	Byte mode		Instruction
0x4b0	DO	int	1	Digital output: Bit 0~1 show channel 1and channel 2 status 0 for open, 1 for closed
0x4b1	DI	int	1	Digital input Bit 0~5 show channel 1 to channel 6status 0 for open, 1 for closed
0x4b2	DZ	int	1	Alarm status Bit 0~4 show channel 1- channel 5 alarm status
0x4b3	RTC. year	int	1	Internal RTC real time clock: Year - Month - Date - Hour - Minutes - Second-Week
0x4b4	RTC. month	int	1	
0x4b5	RTC. date	int	1	
0x4b6	RTC. hour	int	1	
0x4b7	RTC. minute	int	1	
0x4b8	RTC. second	int	1	
0x4b9	RTC. week	int	1	

9.3.9.- SOE record read only - read only (Funx03)

Register	Data	Byte mode		Instruction
0xBB8 ~ 0xBE9	I/O event 10 lists	int	5	Byte 0: Fault type Byte 1: Fault event Byte 2,3: Fault value Byte 4: Fault time: Year Byte 5: Fault time: Month Byte 6: Fault Time: Date Byte 7: Fault time: Time Byte 8: Fault time: Minute Byte 9: Fault time: Seconds
0xBEA ~ 0xCD9	Alarm event 40 lists			

Byte 0	Byte 1	
1:DI1 Closed 2:DI2 Closed 3:DI3 Closed 4:DI4 Closed 21:DI1 Opened 22:DI2 Opened 23:DI3 Opened 24:DI4 Opened 51: Alarm_1 tripped 52: Alarm_2 tripped 53: Alarm_3 tripped 54: Alarm_4 tripped 55: Alarm_5 tripped 61: Alarm_1 released 62: Alarm_2 released 63: Alarm_3 released 64: Alarm_4 released 65: Alarm_5 released 101:DO1 Closed 102:DO2 Closed 121:DO1 Opened 122:DO2 Opened	0: Remote control 1: DZ Alarm_1 2: DZ Alarm_2 3: DZ Alarm_3 4: DZ Alarm_4 5: DZ Alarm_5 6: Manually close DO 7: Manually open DO 100: Manually turn off DZ when tripped 101:UA upper alarm 102:UB upper alarm 103:UC upper alarm 104:UAB upper alarm 105:UBC upper alarm 106:UCA upper alarm 107:UA/UB/UC upper alarm 108:IA upper alarm 109:IB upper alarm 110:IC upper alarm 111:IA/IB/IC3 upper alarm 112:PA upper alarm 113:PB upper alarm 114:PC upper alarm 115:total active power upper alarm 116:QA upper alarm 117:QB upper alarm 118:QC upper alarm 119:total reactive power upper alarm 120:SA upper alarm 121:SB upper alarm 122:SC upper alarm 123:total apparent power upper alarm 124:total power factor upper alarm 125:frequency upper alarm 126:DI1 close alarm 127:DI2 close alarm 128:DI3 close alarm 129:DI4 close alarm 130:DI5 close alarm 131:DI6 close alarm	132:UA lower alarm 133:UB lower alarm 134:UC lower alarm 135:UAB lower alarm 136:UBC lower alarm 137:UCA lower alarm 138:UA/UB/UC lower alarm 139:IA lower alarm 140:IB lower alarm 141:IC lower alarm 142:IA/IB/IC3 lower alarm 143:PA lower alarm 144:PB lower alarm 145:PC lower alarm 146:total active power lower alarm 147:QA lower alarm 148:QB lower alarm 149:QC lower alarm 150:total reactive power lower alarm 151:SA lower alarm 152:SB lower alarm 153:SC lower alarm 154:total apparent power lower alarm 155:total power factor lower alarm 156:frequency lower alarm 157:DI1 open alarm 158:DI2 open alarm 159:DI3 open alarm 160:DI4 open alarm 161:DI5 open alarm 162:DI6 open alarm

9.3.10.- Read (Funx03) and write (Funx06) parameters

Note:
If the present communication settings are unknown, please shot the "RESET" pin and hole 5sec for recover the communication to default setting.

Default setting: Address: 1; Baud ratio: 9600; Data format: n.8.1

Address	Item	Byte mode		Description
0x4ba	Port_1 COMM Address	Int	1	Range: 1-247
0x4bb	Port_1 Baud Ratio	Int	1	0: 2400 1: 4800 2: 9600 3: 19200
0x4bc	Port_1 Data Format	Int	1	0: n.8.1 1: o.8.1 2: e.8.1 3: n.8.2
0x4bd	Port_2 COMM Address (for DISPLAY unit)	Int	1	Disallowed configuration when work with DISPLAY unit! or will may display error; If done some change, please shot the "RESET" for recover the fault setting
0x4be	Port_2 Baud Ratio (for DISPLAY unit)	Int	1	
0x4bf	Port_2 Data format (for DISPLAY unit)	Int	1	
0x4c0~ 0x4d7	/	Int	1	Reserved
0x4d8	Input Net Mode	Int	1	0: 3P4W 1: 3P3W 2CT 2: 3P3W 3CT
0x4d9	Voltage measure range	Int	1	0: 100V 1: 380V
0x4da	Current measure range	Int	1	0-9999,unit:mA
0x4db	Voltage transformation ratio	Int	1	1-9999
0x4dc	Channel_1 CT ratio	Int	1	1-9999
0x4dd	Channel_2 CT ratio	Int	1	1-9999
0x4de	Channel_3 CT ratio	Int	1	1-9999
0x4df	Channel_4 CT ratio	Int	1	1-9999
0xbb8	Clear energy counter	Int	1	Send code: 0x0A0A,

Notes:

1. Not all of the data above can be read by RS485, the reading address will be unsuccessful.

2. The data can be read out depends on your multi-function meter model, please refer to the corresponding product manual before build your software.

3. Some software has different definitions of register address, there will be offset, please add 1 for the right address. To get more info, please contact technical support **tech@cqbluejay.com**

9.4.- Example

Host inquiry slave device

Addr.	Func.	Data Address (high)	Data Address (low)	Data Number (high)	Data number (low)	CRC16 (low)	CRC16 (high)
0CH	03H	00H	00H	00H	06H	CRC	CRC

PC user ask upload Ua, Ub, Uc, Uab, Ubc, Uca

Slave device answer

Addr.	Func.	Byte count	Data1-6				CRC16 (low)	CRC16 (high)
0CH	03H	18H	19H	9AH	43H	5CH	CRC	CRC
			33H	33H	43H	5CH		
			E6H	66H	43H	5BH		
			EFH	9EH	40H	9FH		
			00H	00H	40H	A0H		
			10H	62H	40H	A0H		

Show the data:

Float data follow the IEEE754 format, with the low word first and high word second (CD AB).

UA = 199A435C → 435C199A →220.1V.
UB= 3333435C→ 435C3333 →220.2V.
UC= E666435B→ 435BE666 →219.9V.
... ...

Notes:

1. Blue Jay disable the 06 function in default setting, if Activated the write command, please check the host device program to avoid the meaningless write operation, that may reduce the reduce the register working life.
2. When the write is unsuccessful, no return data from the slave device. In this addition, please re-send write inquiry again.

10.- SAFETY CONSIDERATIONS

All installation specification 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 touching and cover opening actions or elements removal may allow accessing dangerous parts. This instrument is factory-shipped at proper operation condition.

11.- MAINTENANCE

The MCM243T does not require any special maintenance. No adjustment, maintenance or repairing action should be done when the instrument is open and powered on, should those actions are essential, high-qualified operators must perform them.

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

When any protection failure 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 failure.

For any inquiry about the instrument performance or any failure,
contact to Blue Jay's technical service.

Blue Jay - After-sales service

E-mail: tech@cqbluejay.com