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AIoT Electric

Smart MCCB

Catalogue

2024-12

AI Electric Solution to Energy and Carbon

Smart Metering MCCB

MCCB is used to provide indirect contact protection and prevent fire hazards caused by ground fault current due to device insulation damage. They can also be used to distribute energy and protect lines and power supply module from overload, undervoltage, short circuit, single-phase grounding and other faults.

Multi-function Protection
Overload, short circuit, undervoltage protection, etc., and action is adjustable.

Stable and Reliable
Large capacity, large rated making/breaking current, large volume, high breaking capability and easy operation.

Integrated Multi-function Meter and MCCB
Smart reclosing MCCB can realize protection, metering, monitoring, control and device management through APP and platform; LED screen displays current, voltage and leakage in real time, supports local data viewing and upload to cloud platform through communication module.

Smart MCCB

MTM5M Smart Metering MCCB
P08–15

MT88M Smart Metering MCCB
P16–27

MTM5EL Smart Reclosing MCCB
P28–39

MTM03 Motor Operator
P40–45

Communication Module

Starline Smart Getway
P46–49

DTU
P46–49

Tuya Communication
P46–49

Model

MT M5 M - 125 M /TH

- Company code
- Serial number:M5
- Main functions: Metering
- Frame current: 125A, 250A, 400A, 630A
- Brenkine canacity : High breaking
- Temperature control protection

MT 88 M - 125 M /TH

- Company code
- Serial number:88
- Main functions: Metering
- Frame current: 125A, 250A, 400A, 630A, 800A
- Breaking capacity: High breaking
- Temperature control protection

Model

MT M5 EL - 125 M

- Company code
- Serial number: M5
- Main functions: Leakage protection
- Frame current: 125A, 250A, 400A, 630A
- Breaking capacity: High breaking

MT M0 3 - □ / □

- Company code
- Motor operator
- Serial number:3
- Frame current of circuit breaker
- Matching circuit breaker code:
  "CM1": CM1 series of MCCB
  "CM3": CM3 series of MCCB
  "ABB": ABB series of MCCB
  "NS/NSX": Schneider NS/NSX series of MCCB

MTM5M

Smart MCCB

It is suitable for low-voltage power grids with AC 50Hz, rated insulation voltage 1000V, rated current 100A~630A, and rated working voltage of 400V and below.

It is used to provide indirect contact protection to prevent fire hazards caused by ground fault current due to device insulation damage. It can also be used to distribute energy and protect line overload and short circuit. It has protection functions for line overvoltage, undervoltage and phase loss.

- Safe and Reliable
- Energy saving
- Smart and efficient
- Real time measurement

Comprehensive Security Protection

Effectively ensure the safe and stable operation of the electrical system.

Over/under-voltage Protection (can self-setup)

When the line phase voltage is higher or lower than the voltage protection setting value, the circuit breaker trips for protection. When the line voltage returns to normal voltage, the circuit breaker can be automatically closed and put into operation. The overvoltage setting value range is 250V-300V; the undervoltage setting value range is 145V~200V.

Over-temperature Protection (ON by default)

Terminal and contact over-temperature protection setting value range: 50 ℃ ~120 ℃ adjustable; high temperature action delay time: 1s~999s adjustable.

Linkage Protection

When local remote control is required (for example, the switch is in a distribution cabinet and a remote button on the cabinet door is required to control the switch), the external terminal of the switch can be used for linkage protection control.

Three-stage Current Protection

When the line phase voltage is higher than the overvoltage protection setting value, the circuit breaker trips for protection. When the line voltage returns to normal voltage, it can be automatically closed and put into operation. The setting value range is 250V-300V, and the protection can be set or closed by yourself.

Phase Loss Protection (can self-setup)

When a phase loss occurs at the power supply end of the line, the circuit breaker trips for protection. When the line returns to normal voltage, it can be automatically closed and put into operation. The setting value range is 10V-50V.

Neutral Loss Protection (OFF by default)

When the neutral line is disconnected at the power supply end of the line, the circuit breaker trips for protection. When the line returns to normal voltage, it can be automatically closed and put into operation. Neutral loss protection requires the circuit breaker outgoing line to be loaded.

Power-off Tripping, Power-on Closing (OFF by default)

When there is a power outage at the power supply end of the line, the circuit breaker will trip for protection; when the line voltage returns to normal range, the circuit breaker will automatically close; the factory default is off for power-off tripping and power-on closing.

Real-time Accurate Measurement

0.05In-1.2In metering: class 1.0; real-time measurement of active power, reactive power, apparent power, power factor and other parameters, and accumulation of three- phase active energy; accuracy class: current and voltage accuracy can reach up to class 0.5s; active and reactive power accuracy can reach up to class 1.

Interface

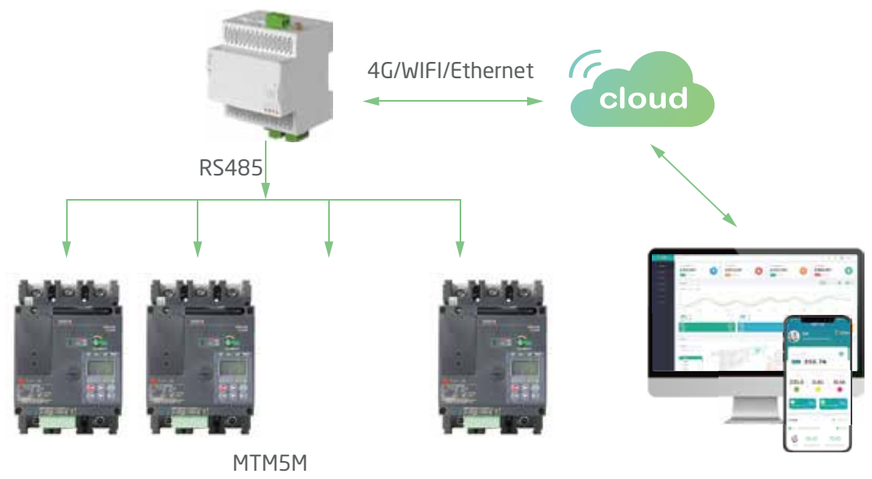
①: LED screen
②: Menu operation button
③: Port (RS485/control/pulse/input)
④: Indicator
⑤: Auto/manual knob
⑥: HPLC module
⑦: Emergency trip button
⑧: Manually operated hexagonal wrench

IO Control

MTM5M smart metering MCCB can be controlled in automatic mode by IO port (wet contact) of PLC or button.

RS485 Control

The MTM5M can be connected to the gateway via RS485 and Modbus protocols, and the gateway can be connected to the internet via different types of communications such as 4G, Wifi, Ethernet, etc. The MTM5M can then be controlled via an app or web software.



Technical Parameters

Models		MTM5M-125M	MTM5M-250M	MTM5M-400M	MTM5M-630M
Frame size rated current (A)		125	250	400	630
Poles		3P (4P optional)			
Rated working voltage Ue(V)		AC400/50HZ			
Rated insulation voltage Ui(V)		1000			
Rated impulse withstand voltage Uimp(V)		8000			
Arcing distance (mm)		≯ 50		≯ 100	
Ultimate short-circuit breaking capacity Icu(kA)		50		70	
Operating short-circuit breaking capacity Ics(kA)		35		50	
Rated short-time withstand current Icw (kA)/s		1.5	3	5	8
Automatic closing time(s)		≤ 2s			
Operation performance(times)	Power-on	1500	1000	1000	1000
	Power-off	8500	7000	4000	4000
	Total times	10000	8000	5000	5000
Overload and short circuit characteristics		Three-stage protection, electronically adjustable, see "Protection Characteristics" for details			
Overvoltage protection value (V)		Setting value (231~330)/ Default value 275V			
Undervoltage protection value (V)		Setting value (88~209)/ Default value 145V			
Phase loss protection value (V)		Setting value (10~130)/ Default value 30V			
Control delay time (ms)		≤ 40ms			
Communication delay time (ms)		≤ 200ms			

Function Description

Automatic reclosing	●	●	●	●
Security padlock	●	●	●	●
6-way temperature monitoring	●	●	●	●

Environmental Characteristics

Storage temperature	-5℃ ~+40℃
Relative humidity	≤ 50% (ambient temperature +40℃)
Highest altitude	2000 m
Installation environment	No conductive dust, no corrosive gas, no flammable and explosive gas, no rain or snow

Metering Parameters

Accuracy	Allowable Error
Current accuracy	0.5%
Voltage accuracy	0.5%
Active power accuracy	1.0%
Reactive power accuracy	1.0%

Overload Long Delay Parameter Setting

Specifications	Setting Value Ir1_A	Factory Setting Value
125A	50A-125A continuously adjustable	630A
250A	100A-250A continuously adjustable	630A
400A	160A-400A continuously adjustable	630A
630A	250A-630A continuously adjustable	630A
Delay time setting value Ir1_T	3s~18s adjustable	12s

Ambient Temperature	Current Name	Setting Current Multiple	Scheduled Time
+40	Conventional non-tripping current	1.05Ir1	≥ 2h
	Conventional tripping current	1.3Ir1	<2h

Short Circuit Short Delay Protection Action Characteristics

Parameter Settings	Setting Range	Factory Setting Value
Short-time delay action current setting value Ir2_N	2~12Ir1 adjustable	6Ir1
Short delay time setting value Ir2_T	0.1s~1.0s adjustable	0.4s

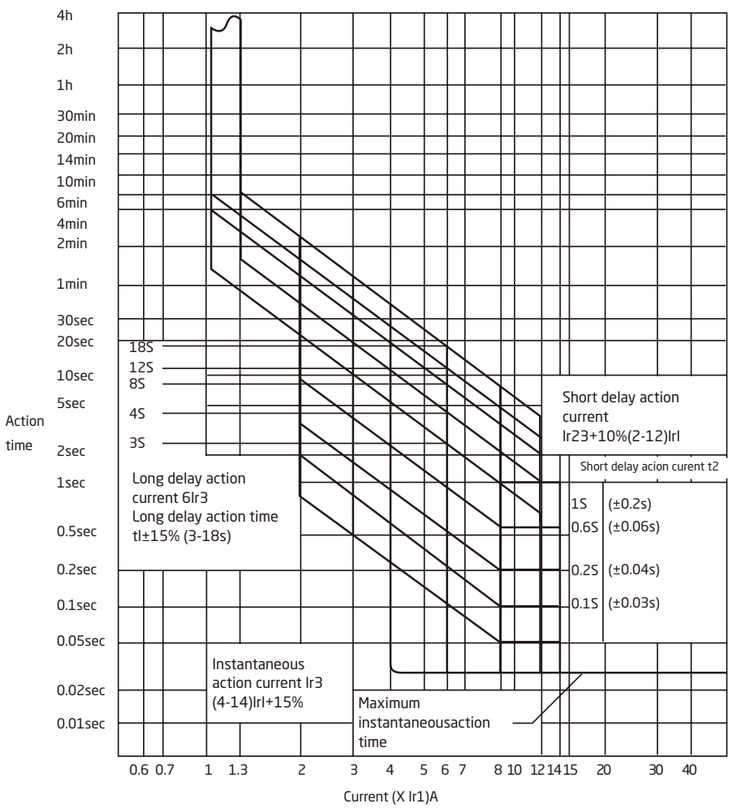
Characteristics	Fault Current Multiple	Trip Characteristics	Delay Error
Non-action characteristics	≤0.85 Ir2	No action	/
Action characteristics	>1.15 Ir2	Delayed action	±40ms

Short Circuit Instantaneous Protection Action Characteristics

Parameter Settings	Setting Range	Factory Setting Value
Short-time delay action current setting value Ir2_N	2~12Ir1 adjustable	6Ir1
Short delay time setting value Ir2_T	0.1s~1.0s adjustable	0.4s

Characteristic	Current Multiple (1/Ii)	Delay Error
Non-action characteristics	≤0.85	/
Action characteristics	>1.15	±40ms

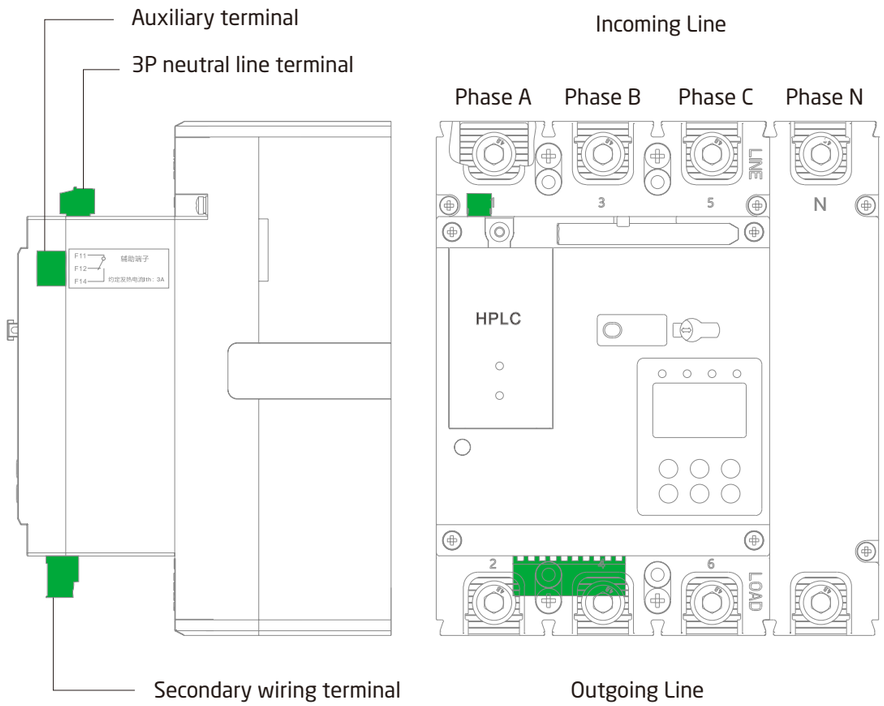
Characteristic Curve



Residual Current Protection Characteristics

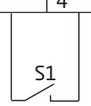
Model	Frame Current (A)	Short Circuit Breaking Capacity Ics(KA)	Poles	Rated Current Adjustable (A	Communication	Accuracy Class	Temperature control protection
MTM5M-125M	125	35	3P	50~125A	Modbus RTU (RS485)	Class 1.0	/
MTM5M-250M	250			100~250A			
MTM5M-400M	400	50		160~400A			
MTM5M-630M	630	70		250~630A			
MTM5M-125M/TH	125	35		50~125A			6-way temperature controlprotection for incoming/outgoing line
MTM5M-250M/TH	250	35		100~250A			
MTM5M-400M/TH	400	50		160~400A			
MTM5M-630M/TH	630	70		250~630A			

Wiring Diagram

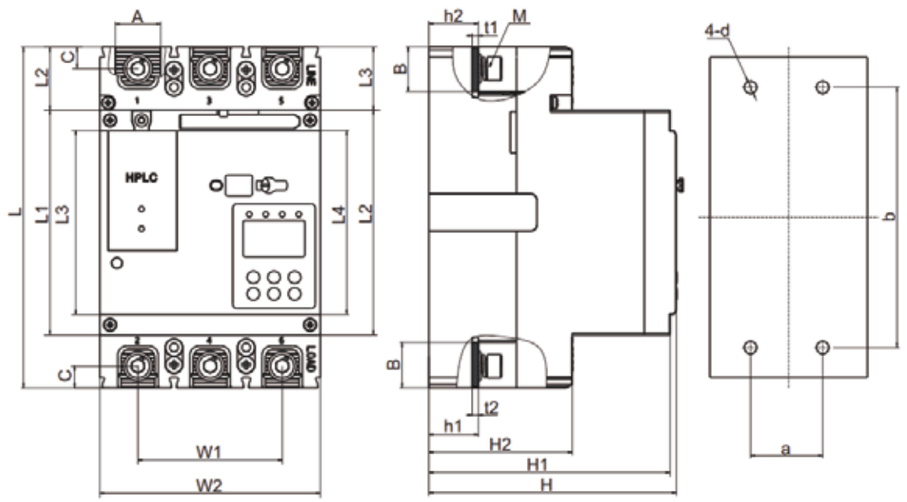


Secondary Wiring Terminal Diagram

Communi cation port		Control port		Pulse output port					
485A	485B	Connect- ON Disconnect-OFF		COM	Active	Reactive	Clock		
1	2	3	4	5	6	7	8	9	10



Dimensions



Model	Overall Dimensions (mm)									Installation Dimensions(mm)		
	L	L1	L2	L3	W1	W2	H	H1	H2	a	b	d
MTM5M-125M	150	108.7	24.7	88.7	60	92	120	117	65.5	30	129	ϕ4.5
MTM5M-250M	165	109	30.5	99	70	107	120	117	69.5	35	126	ϕ4.5
MTM5M-400M	258	177	40.5	148	96	150	160	157	98.5	44	195	ϕ7
MTM5M-630M	270	177	46.5	145.8	116	182	163.5	160.5	102	58	200	ϕ7

Model	Terminal Board Size (mm)							Terminal Screws	Mounting Screws
	A	B	C	t1	t2	h1	h2	M	
MTM5M-125M	18	17	8.5	3	3	23	26	M8x20	M4x45
MTM5M-250M	22	21	10.5	3	3	24	24	M8x20	M4x45
MTM5M-400M	33	28.5	16.5	5	4	36.5	37.5	M10X35	M5X100
MTM5M-630M	44	30.5	17.7	6	6	41.5	43.5	M12x35	M6x65

MT88M

Smart Metering MCCB

MT88M smart metering MCCB is used to provide indirect contact protection; prevent fire hazards caused by ground fault current due to device insulation damage.

It can be used to distribute energy and protect lines from overload and short circuit; it has protection function against overvoltage, undervoltage and phase loss of lines.

- Safe and Reliable
- Energy saving
- Smart and efficient
- Real time measurement
- Leakage protection

Residual Current Safety Protection

Effectively ensure the safe and stable operation of the electrical system.

Automatic Reclosing

When the residual current exceeds the operating current value and trips, it can automatically reclose after 20 ~ 60 seconds, but manual closing is not subject to time limits.

Linkage Protection (can self-setup)

When local remote control is required (for example, the switch is in a distribution cabinet and a remote button on the cabinet door is required to control the switch), the external terminal of the switch can be used for linkage protection control.

Over-voltage Protection (can self-setup)

When the line phase voltage is higher than the overvoltage protection setting value, the circuit breaker trips for protection. When the line voltage returns to normal voltage, the circuit breaker can be automatically closed and put into operation. The setting value range of overvoltage protection is 265V~350V, and the factory setting is 280V.

Under-voltage Protection (can self-setup)

When the neutral line is disconnected at the power supply end of the line, the circuit breaker trips for protection. When the line returns to normal voltage, it can be automatically closed and put into operation. Neutral loss protection requires the circuit breaker outgoing line to be loaded.

Phase Loss Protection (can self-setup)

When a phase loss occurs at the power supply end of the line, the circuit breaker trips for protection. When the line returns to normal voltage, it can be automatically closed and put into operation. The setting value range of the phase loss protection is 10V~100V, and the factory setting is 30V.

Fee Control Protection

This product can be connected to a fee-controlled meter and used as an external circuit breaker for the energy meter. It is compatible with pulse-type and level-type fee- controlled meters. In fee-controlled mode, the linkage protection function automatically exits. When there is no meter fee-controlled signal, the device cannot be closed manually or automatically. The product will automatically disconnect if forced to close.

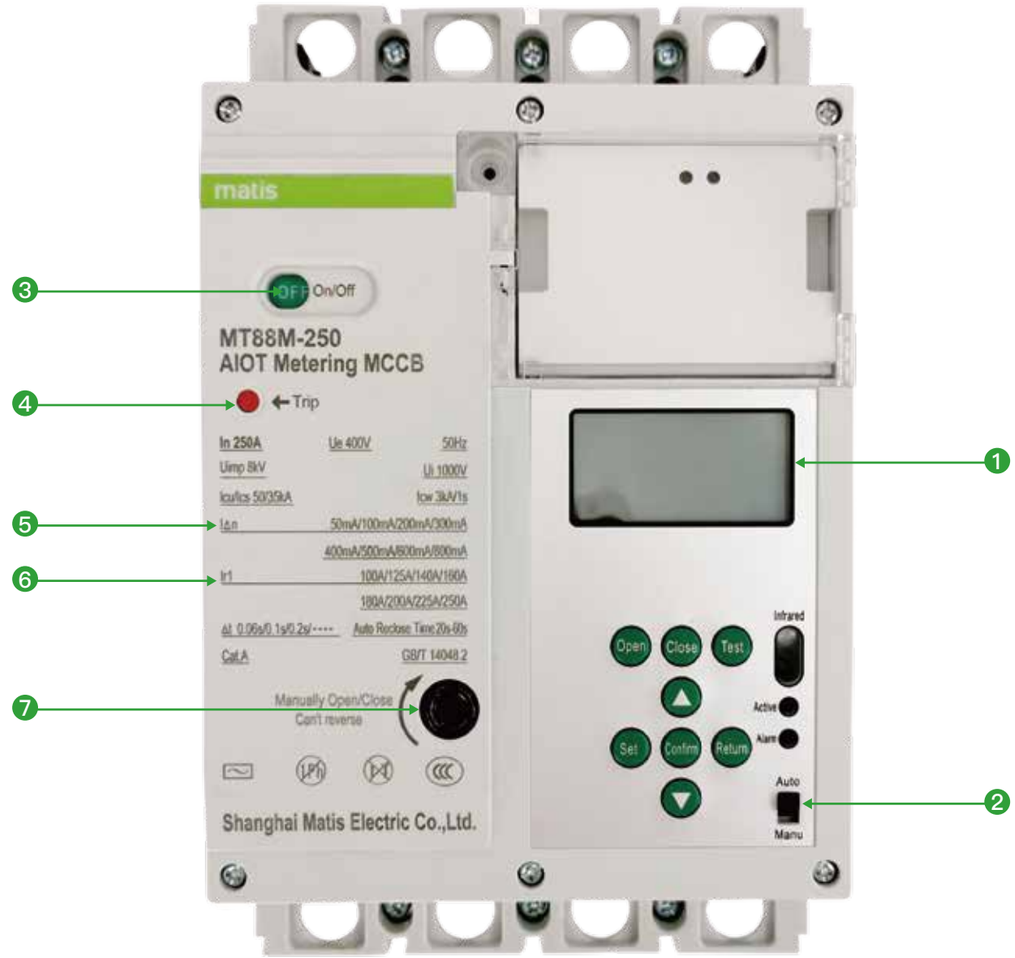
Time Control Protection

This product can be used in situations where time- controlled opening and closing are required, such as smart street lights, school energy management, etc. In time-controlled mode, the start time and end time of the allowed closing can be adjusted. This product can be set to 4 time periods.

Real-time Accurate Metering

0.05In-1.2In metering can reach class 1.0; real-time measurement of active power, reactive power, apparent power, power factor and other parameters, three-phase active power accumulation; accuracy class: current and voltage accuracy can reach up to class 0.5s; active and reactive power accuracy can reach up to class 1, and residual current can reach up to class 2.

Interface



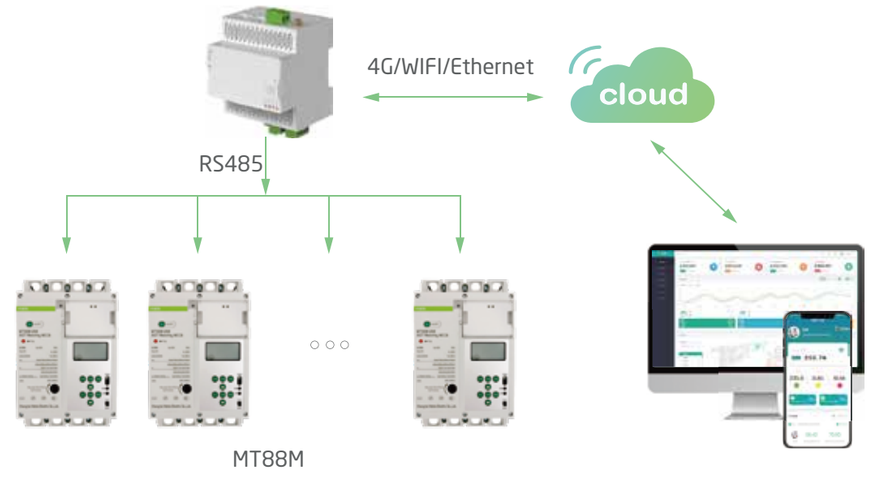
①: LED screen
②: Working mode
③: ON/OFF indicator
④: Trip button
⑤: Residual current
⑥: Rated operating current
⑦: Manual ON/OFF

IO Control

MT88M smart metering MCCB can be controlled in automatic mode by IO port (wet contact) of PLC or button.

RS485 Control

MT88M can be connected to the gateway via RS485 and Modbus protocols, and the gateway can be connected to the Internet via different types of communications such as 4G, Wifi, Ethernet, etc. Then, MT88M can be controlled by the app or web software.



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Technical Parameters

Models		MT88M-125M	MT88M-250M	MT88M-400M	MT88M-630M	MT88M-800M
Frame current (A)		125	250	400	630	800
Poles		3P+N				
Rated working voltage Ue(V)		AC 400/50HZ				
Rated insulation voltage Ui(V)		AC 1000				
Rated impulse withstand voltage Uimp(V)		8000				
Arcing distance (mm)		≯ 50		≯ 100		
Ultimate short-circuit breaking capacity Icu(kA)		50		65		
Operating short-circuit breaking capacity Ics(kA)		35		42		
Rated residual short-circuit making (breaking) capacity I△m(KA)		12.5		16.25		
Residual current operating characteristics		AC type				
Rated residual operating current I△n (mA)		30/50/75/100/200/300/500/800/Auto				
		50/75/100/200/300/500/800/1000/Auto				
Residual action time characteristics		Delay type/non-delay type				
Delay type limit non-driving time (s)		0.06/0.1/0.2 optional: 2I △ n				
Breaking time (s)		I△n ≤ 0.5; 2I△n ≤ 0.2; 5I△n ≤ 0.15				
Automatic closing time(s)		20-60				
Operation performance(times)	Power-on	1000		1000		800
	Power-off	7000		4000		2500
	Total times	8000		5000		3000
Overload and short circuit characteristics		Three-stage protection, electronically adjustable				
Overvoltage protection value (V)		Setting value (265~350V)				
Undervoltage protection value (V)		Setting value (100~200V)				
Phase loss protection value (V)		Setting value (10~100V)				

Function Description

Automatic reclosing	●	●	●	●
Leakage protection	●	●	●	●
Security padlock	●	●	●	●
Leakage value adjustable	●	●	●	●

Environmental Characteristics

Working temperature	-25℃ ~+55℃
Storage temperature	-40℃ ~+70℃
Relative humidity (non-condensing)	5%-95%
Highest altitude	2000 m
Protection grade	IP20

Metering Parameters

Accuracy	Allowable Error
Current accuracy	0.5%
Voltage accuracy	0.5%
Active power accuracy	1.0%
Reactive power accuracy	1.0%

Overload Long Delay Parameter Setting

Models	Setting Value	Factory Setting Value
MT88M-125M	40A, 50A, 63A, 80A, 100A, 125A	125A
MT88M-250M	63A, 80A, 100A, 125A, 140A, 160A, 180A, 200A, 225A, 250A	250A
MT88M-400M	160A, 180A, 200A, 225A, 250A, 315A, 350A, 400A	400A
MT88M-630M	250A, 315A, 350A, 400A, 450A, 500A, 560A, 630A	630A
MT88M-800M	315A, 350A, 400A, 450A, 500A, 560A, 630A, 700A, 800A	800A
Delay time setting value	3s, 4s, 6s, 8s, 10s, 12s, 16s, 18s, OFF	3s

Ambient Temperature	Current Name	Setting Current Multiple	Scheduled Time
+40	Conventional non-tripping current	1.05Ir1	≥ 2h
	Conventional tripping current	1.3Ir1	<2h

Short Circuit Short Delay Protection

Short-time delay action current setting value Ir2	2Ir1, 2.5Ir1, 3Ir1, 4Ir1, 5Ir1, 6Ir1, 7Ir1, 8Ir1, 10Ir1, 12Ir1	6Ir1
Short delay time setting value ts	0.1s, 0.2s, 0.3s, 0.4s, 0.6s, 0.8s, 1.0s, OFF	0.4s

Characteristics	Fault Current Multiple	Trip Characteristics	Delay Error
Non-action characteristics	≤0.85 Ir2	No action	/
Action characteristics	>1.15 Ir2	Delayed action	±40ms

Short Circuit Instantaneous Protection

Parameter Settings	Setting Range	Factory Setting Value
Instantaneous action current setting value Ir3	4 Ir1, 6 Ir1, 7 Ir1, 8 Ir1, 10 Ir1, 11 Ir1, 12 Ir1, 13 Ir1, 14 Ir1, OFF	10 Ir1

Characteristics	Current Multiple (I/Ir3)	Trip Characteristics	Trip time
Non-action characteristics	≤0.85	No action	≥200ms
Action characteristics	>1.15	Delayed action	<200ms

Residual Current Protection Characteristics

Parameter	Setting Value (125, 250)	Setting Value (400, 630, 800)	Factory Setting Value
Residual operating current I△n	30, 50, 75, 100, 200, 300, 500, 600, 800 Auto	50, 100, 200, 300, 400, 500,600, 800, 1000 Auto	500

Parameter	Characteristics			
Rated non-operating current	0.5I△n			
Rated operating current	≥0.8I△n	Breaking time		
Delay characteristics	2I△n limit non-driving time (△t)	I△n	2I△n	5I△n
Non-delay		≤0.3s	≤0.15s	≤0.04s
0.06	≥ 0.06s	≤ 0.5s	≤ 0.2s	≤ 0.15s
0.1	≥ 0.10s	≤ 0.8s	≤ 0.3s	≤ 0.3s
0.2	≥ 0.20s	≤ 1.0s	≤ 0.4s	≤ 0.4s

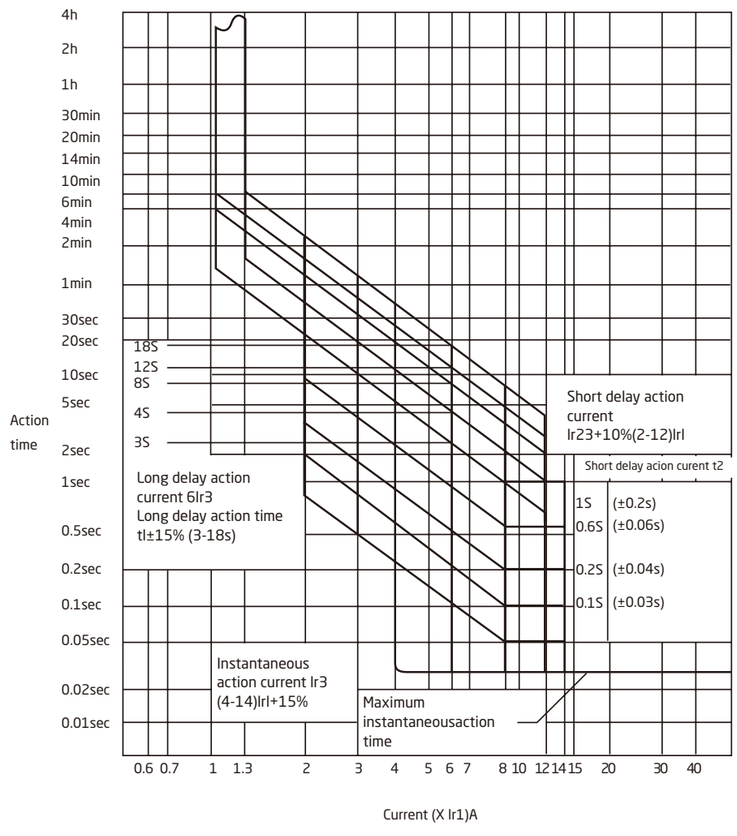
Automatic Shift Mode

In automatic shifting mode, the gear values and floating values are as follows:

Gear value (mA)	Floating value (mA)
30	15
50	25
75	37.5
100	50
200	100
300	150
400	200
500	250
600	300
800	400
1000	/

When the residual current is greater than the floating value but has not reached its action value and has been stable for 60s, the gear will float up one gear, and so on, until the maximum gear; when the residual current is less than the floating value of the next gear and has been stable for 120s, it will float down one gear, and so on, until the minimum gear. Take the "Auto 2" and the initial residual current of the line is 100mA as an example. When the circuit breaker is powered on, it is automatically set to 300mA. When the residual current increases to more than 150mA and stabilizes for 60s, the gear changes to 500mA; when the residual current decreases to less than 150mA and stabilizes for 120s, the gear changes to 200mA.

Characteristic Curve



Product Selection

Model	Rated current (A)	Poles	Short Circuit Breaking Capacity Ics(KA)	Rated Current Adjustable (A	Rated residual operating current adjustable (mA)	Communication	Accuracy Class	Temperature control protection
MT88M-125M	125	3P+N	35	40-125A	30/50/75/100/200/300/500/800	Modbus RTU (RS485)	Class 1.0	/
MT88M-250M	250			63-250A	30/50/75/100/200/300/500/800			
MT88M-400M	400		42	160-400A	50/75/100/200/300/500/800/1000			
MT88M-630M	630			250-630A	50/75/100/200/300/500/800/1000			
MT88M-800M	800			315-800A	50/75/100/200/300/500/800/1000			
MT88M-125M/TH	125		35	40-125A	30/50/75/100/200/300/500/800			8-way temperature control protection for incoming/ outgoing line
MT88M-250M/TH	250			63-250A	30/50/75/100/200/300/500/800			
MT88M-400M/TH	400		42	160-400A	50/75/100/200/300/500/800/1000			
MT88M-630M/TH	630			250-630A	50/75/100/200/300/500/800/1000			
MT88M-800M/TH	800			315-800A	50/75/100/200/300/500/800/1000			

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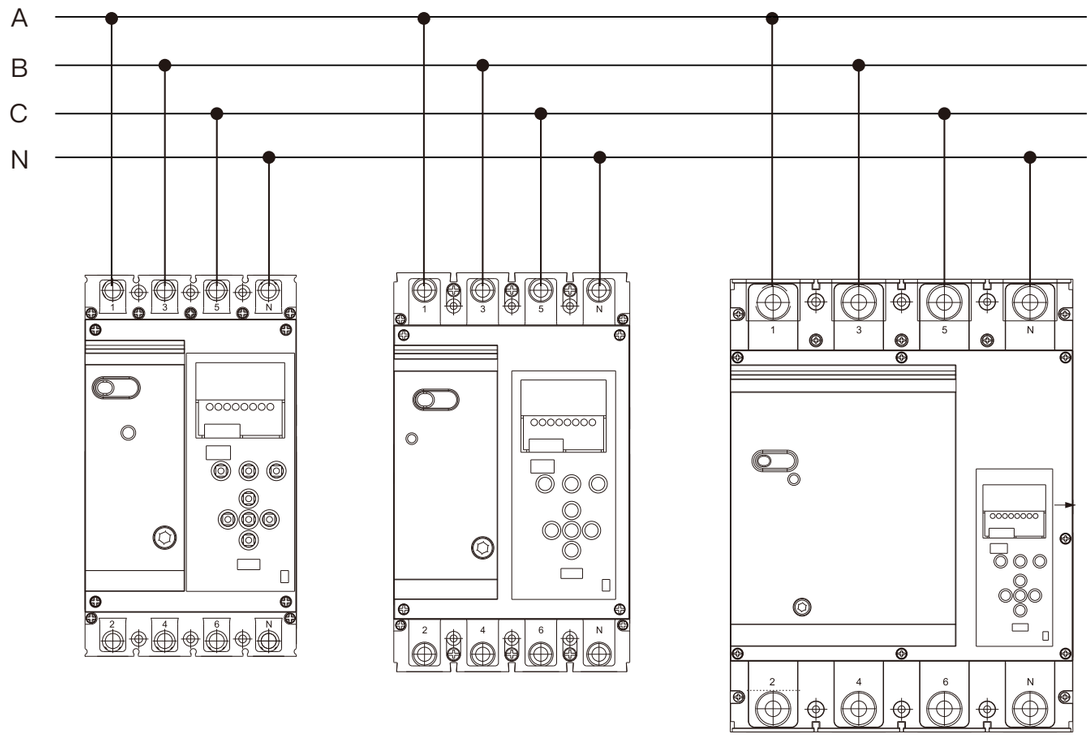
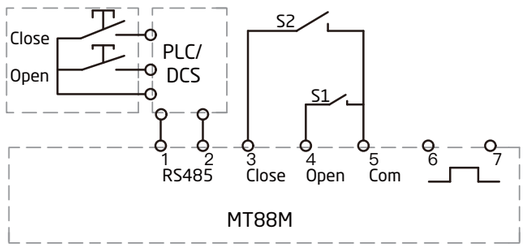
Wiring Diagram

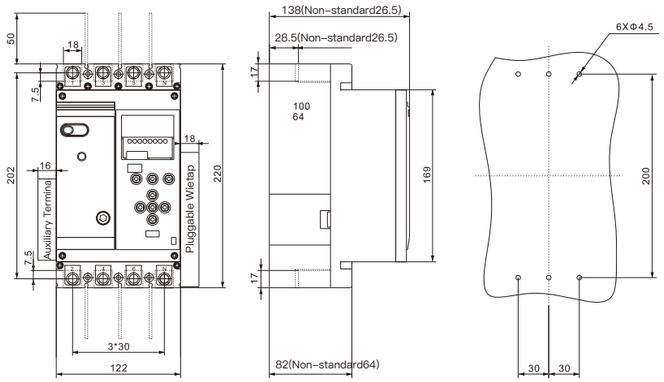


Secondary Wiring Terminal Diagram

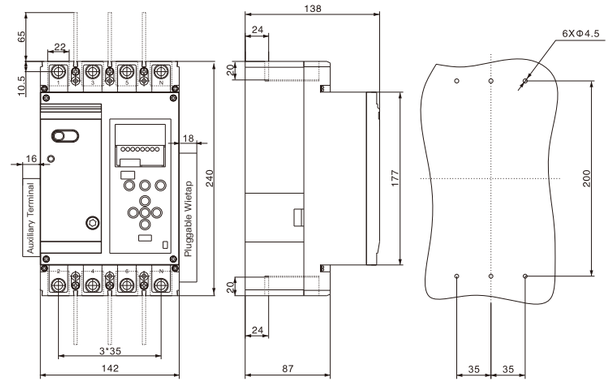


Dimensions

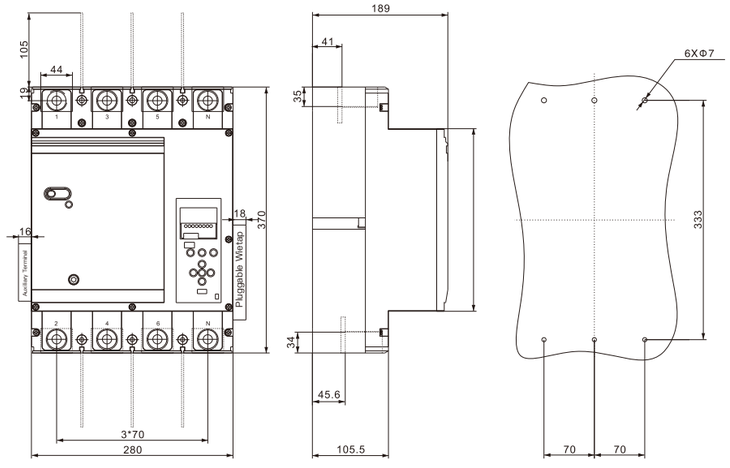
MT88M-125A



MT88M-250A



MT88M-400A



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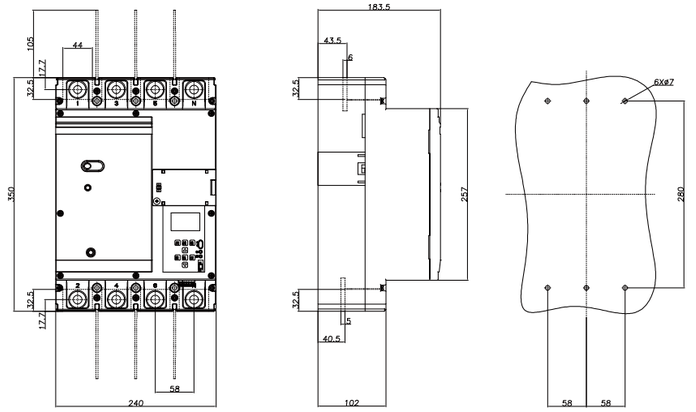
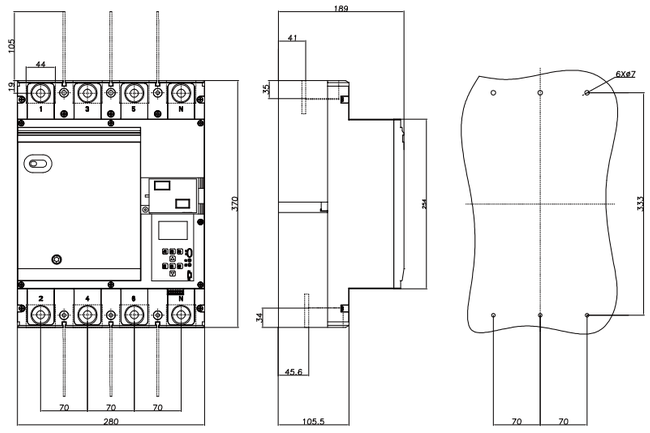
Dimensions

MT88M-630A



MT88M-800A



MTM5EL

Smart Reclosing MCCB

MTM5EL is rated for 400V and 630A three-phase four-wire neutral point directly grounded (TT) distribution network.

It is used to provide indirect contact protection; prevent device insulation damage and fire hazards caused by ground fault current; and can also be used to distribute energy and protect lines and power device from overload, undervoltage, short circuit, single-phase grounding and other faults.

- Safe and Reliable
- Energy saving
- Smart and efficient

Smart MCCB

When an electrical fault occurs, the circuit breaker can be automatically opened and closed.

Automatic Reclosing

When the residual current exceeds the operating current value and trips, it can automatically reclose after 20～60 seconds, but manual closing is not limited by time.

Phase Loss Protection (can self-setup)

When a phase loss occurs at the power supply end of the line, the circuit breaker trips for protection. When the line returns to normal voltage, it can be automatically closed and put into operation.The setting value range of phase loss protection is 10V~100V, and the factory setting is 30V.

Over-voltage Protection (can self-setup)

When the line phase voltage is higher than the overvoltage protection setting value, the circuit breaker trips for protection. When the line voltage returns to normal voltage, the circuit breaker can be automatically closed and put into operation. The setting value range of overvoltage protection is 250V~300V, and the factory setting is 275V.

Under-voltage Protection (can self-setup)

When the line phase voltage is lower than the undervoltage protection setting value, the circuit breaker trips for protection. When the line voltage returns to normal voltage, the circuit breaker can be automatically closed and put into operation. The setting value range of undervoltage protection is 100V~200V, and the factory setting is 170V.

Interface

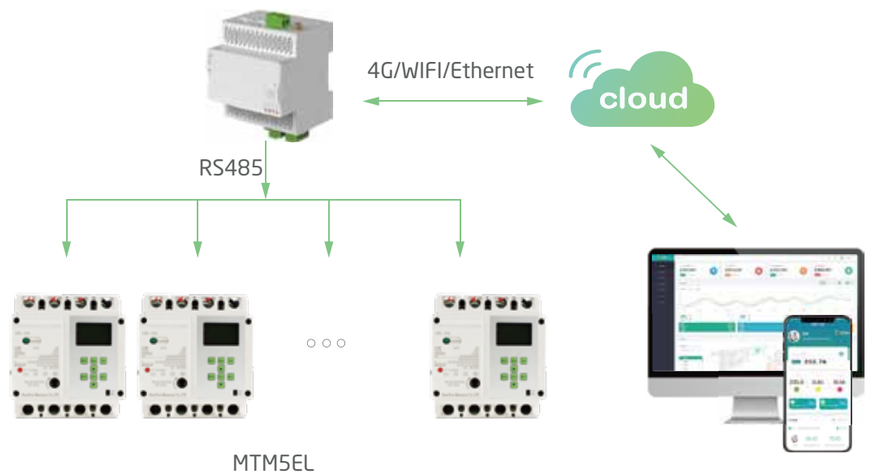
①: LED screen
②: Working mode
③: ON/OFF indicator
④: Trip button
⑤: Residual current
⑥: Rated operating current
⑦: Manual ON/OFF

IO Control

MTM5EL smart metering MCCB can be controlled in automatic mode by IO port (wet contact) of PLC or button.

RS485 Control

The MTM5EL can be connected to the gateway via RS485 and Modbus protocols, and the gateway can be connected to the internet via different types of communications such as 4G, Wifi, Ethernet, etc. The MTM5EL can then be controlled via an app or web software.



Technical Parameters

Models		MTM5EL-125M	MTM5EL-250M	MTM5EL-400M	MTM5EL-630M	MTM5EL-800M
Frame current(A)		125	250	400	630	800
Poles		3P+N				
Rated working voltage Ue(V)		AC 400/50HZ				
Rated insulation voltage Ui(V)		800		1000		
Rated impulse withstand voltage Uimp(V)		8000				
Arcing distance (mm)		≥5 0		≥100		
Ultimate short-circuit breaking capacity Icu(kA)		50		65		
Operating short-circuit breaking capacity Ics(kA)		35		42		
Rated residual short-circuit making (breaking) capacity I△m (kA)		12.5		16.5	21.5	16.5
Residual current operating characteristics		AC type				
Rated residual operating current I△n (mA)		50/100/200/300/400/500/600/800,Auto, OFF			100/200/300/400500/600/800/1000Auto, OFF	
Residual action time characteristics		Delay type / Non-delay type				
Breaking time (s)		I△n≤0.5;2I△n≤0.2;5I△n≤0.15				
Delay type limit non-driving time (s)		2I△n:0.06				
Automatic closing time(s)		20-60				
Operation performance(times)	Power-on	1500	1000	1000		500
	Power-off	8500	7000	4000		2500
	Total times	10000	8000	5000		3000
Overload and short circuit characteristics		Three-stage protection, electronically adjustable, see "Protection Characteristics Description" for details				
Overvoltage protection value (V)		Set value (250~300) + 5%, default OFF				
Undervoltage protection value (V)		Set value (145~200)+5%, default OFF				
Linkage control delay time (ms)		≤40ms				
Communication delay time (ms		≤200ms				

Functions

Automatic reclosing	●	●	●	●	●
Leakage protection	●	●	●	●	●
Security padlock	●	●	●	●	●
Leakage value adjustable	●	●	●	●	●

Environmental Characteristics

Working temperature	-25℃~+55℃
Storage temperature	-40℃~+70℃
Relative humidity (non-condensing)	5%-95%
Highest altitude	2000 m
Protection grade	IP20

Overload Long Delay Protection

Parameter	Frame Current (A)	Setting Value (A)	Factory Setting Value
Action setting value Ir1	125	50A、63A、80A、100A、125A	125A
	250	100A、125A、140A、160A、180A、200A、225A、400A	250A
	400	160A、180A、200A、225A、250A、315A、350A、	400A
	630	250A、315A、350A、400A、500A、630A	630A
Action setting value Ir1	800	630A、700A、800A	800A
Delay time setting value tL	3s,4s,6s,8s,10s,12s,16s,18s,OFF		12s

Ambient Temperature	Current Name	Setting Current Multiple	Scheduled Time
+40℃	Conventional non-tripping current	1.05Ir1	≥2h
	Conventional tripping current	1.3Ir1	<2h

Short Circuit Short Delay Protection

Parameter Settings	Setting Range	Factory Setting Value
Short-time delay action current setting value Ir2	2Ir1,2.5Ir1,3Ir1,4Ir1,5Ir1,6Ir1,7Ir1,8Ir1,10Ir1,12Ir1	6Ir1
Short delay time setting value ts	0.1s,0.2s,0.3s,0.4s,0.6s、0.8s,1.0s ,OFF	0.4s

Characteristics	Fault Current Multiple	Trip Characteristics	Delay Error
Non-action characteristics	≤0.85 Ir2	No action	/
Action characteristics	>1.15 Ir2	Delayed action	±40ms

Short Circuit Instantaneous Protection

Parameter Settings	Setting Range	Factory Setting Value
Instantaneous action current setting value Ir3	4Ir1,6Ir1,7Ir1,8Ir1,10Ir1,11Ir1,12Ir1,13Ir1,14Ir1,OFF	10Ir1

Characteristics	Current Multiple (I/Ir3)	Trip Characteristics	Trip time
Non-action characteristics	≤0.85	No action	≥200ms
Action characteristics	>1.15	Delayed action	<200ms

Residual Current Protection Characteristics

Parameter	Setting Value (125, 250, 400)	Setting Value (630)	Factory Setting Value
Residual operating current I△n	50,100,200,300,400,500, 600,800, Auto	100,200,300,400,500,600, 800,1000, Auto	500

Parameter	Characteristics			
Rated non-operating current	0.5I△n			
Rated operating current	≥0.75 I△n			
Delay characteristics	2I△n limit non-driving time (△t)	Breaking time		
		I△n	2I△n	5I△n
Non-delay		≤0.3s	≤0.15s	≤0.04s
0.06	≥0.06s	≤0.5s	≤0.2s	≤0.15s

Automatic Shift Mode

In automatic shifting mode, the gear values and floating values are as follows:

Gear value (mA)	Floating value (mA)
100	50
200	100
300	150
500	250
600	300
800	400
1000	/

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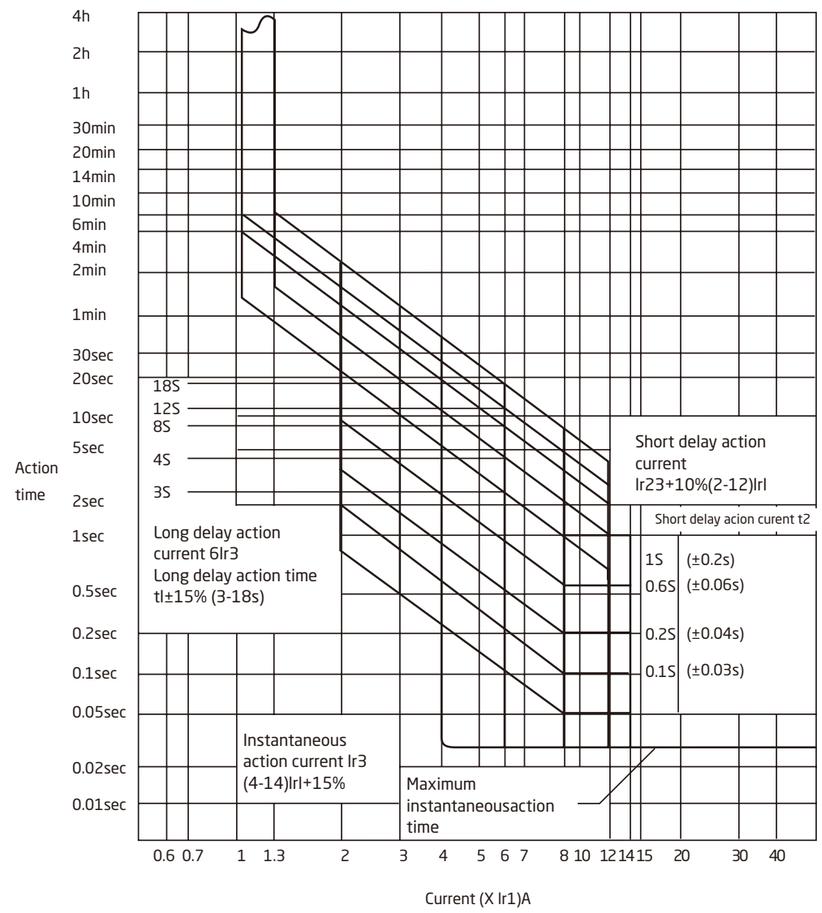
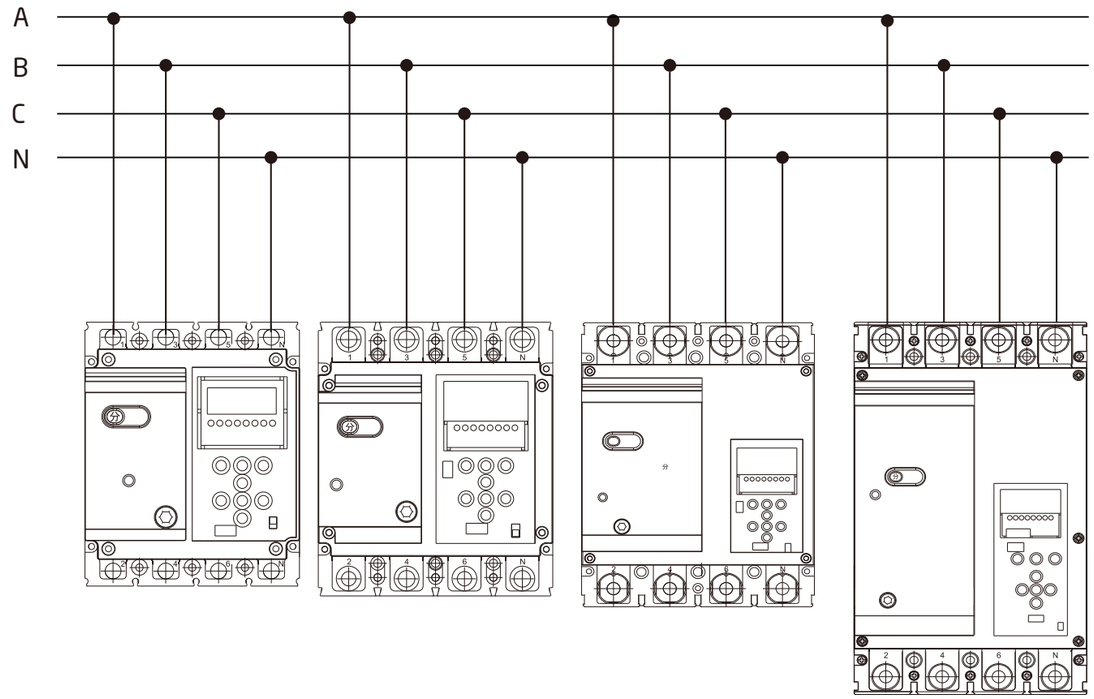
Characteristic Curve



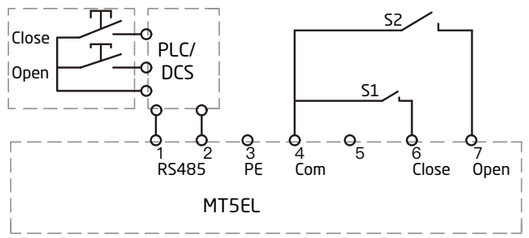
Product Selection

Model	Frame Current (A)	Poles	Short Circuit Breaking Capacity Ics(KA)	Rated Current Adjustable (A)	Rated residual operating current adjustable (mA)	Communic-ation	Accuracy Class
MTM5EL-125M	125	3P+N	35	50-125A	50/100/200/300/400/500/600/800	Modbus RTU (RS485)	Class 1.0
MTM5EL-250M	250	3P+N	35	100-250A			
MTM5EL-400M	400	3P+N	42	160-400A			
MTM5EL-630M	630	3P+N	42	250-630A	100/200/300/400/500/600/800/1000		
MTM5EL-800M	800	3P+N	42	315-800A			

Wiring Diagram

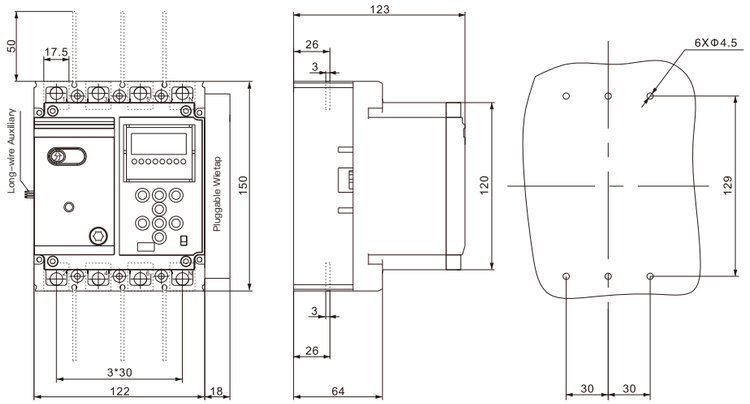


Terminal Wiring Diagram

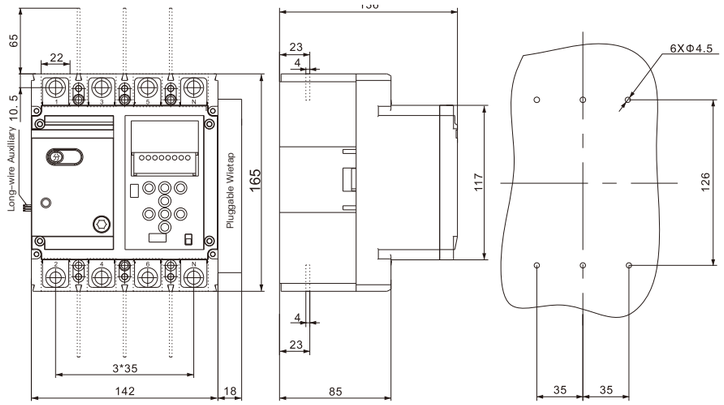


Dimensions

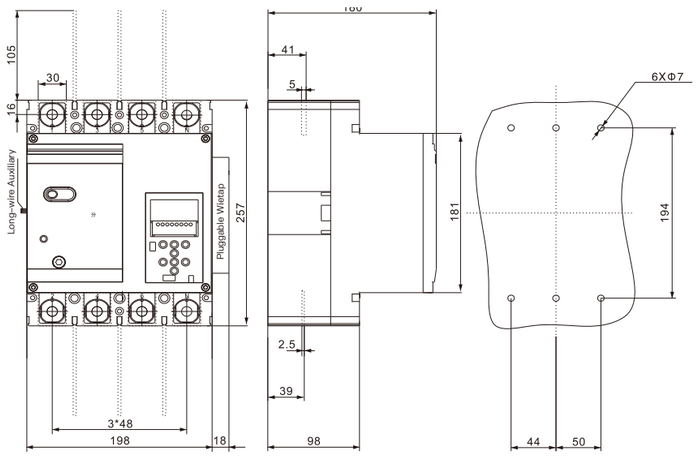
MTM5EL-125A



MTM5EL-250A

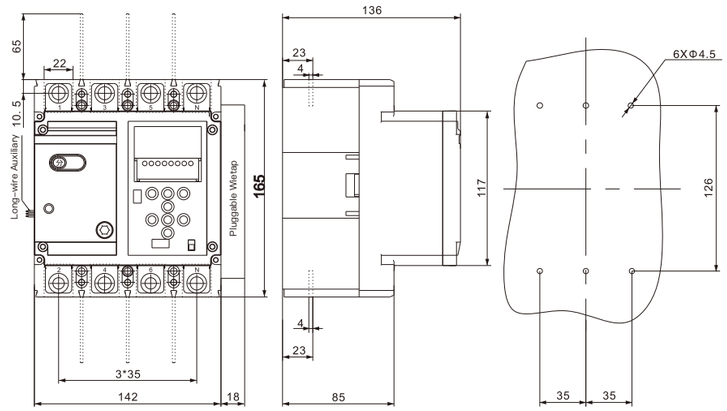


MTM5EL-400A

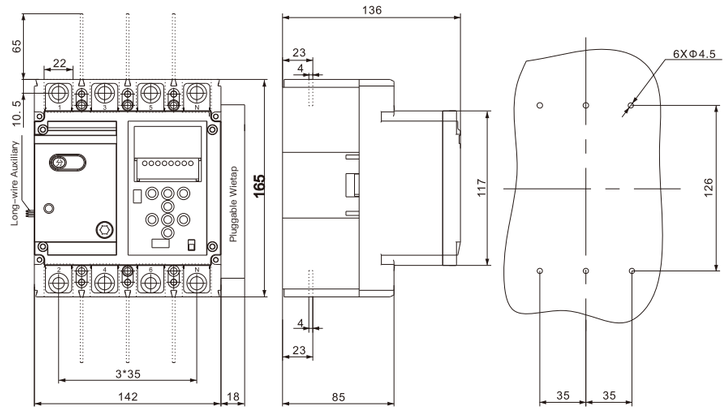


Dimensions

MTM5EL-630A



MTM5EL-800A



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MTM03

Motor Operator

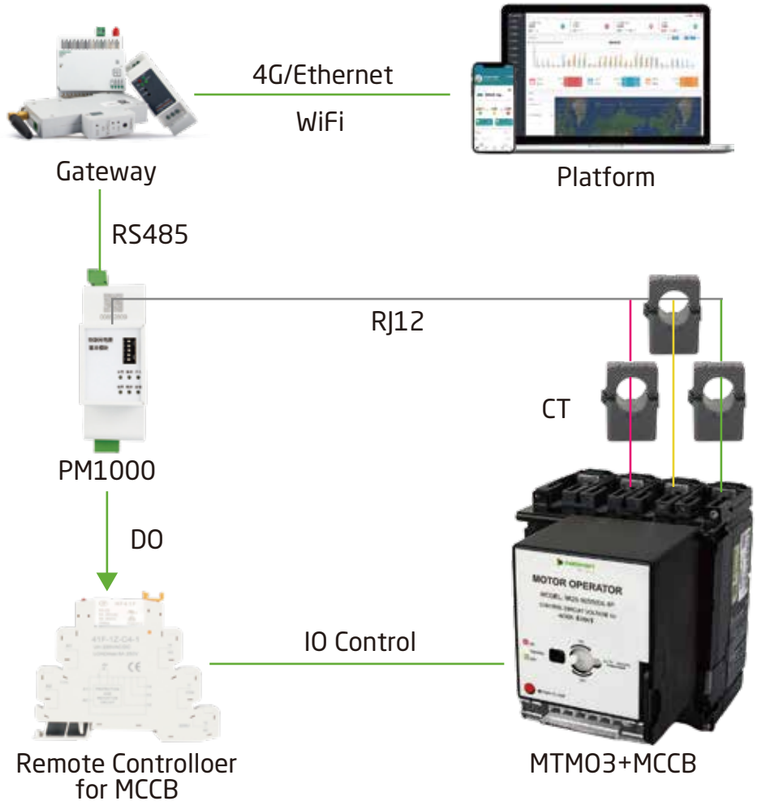
MTM03 motor operator is a special accessory driven by a small permanent magnet DC motor for long-distance electric closing, opening and re-locking operations of 63~1250A MCCBs. The product passed the type test and obtained a national invention patent.

MTM03 motor operator are divided into MTM03-63, MTM03-100~250 and MTM03-400~1250.

- Low power consumption
  Wide voltage range
- Complete voltage specifications
  Universal AC and DC
- Long life and fast response
- Compatible with various MCCBs

IO Control

MTM03 motor operator can be controlled in automatic mode by IO port (wet contact) of PLC or button.



Technical Parameters

Rated operating voltage	3P+N
Rated insulation voltage	AC 400/50HZ
AC voltage frequency	8000
Rated duty	Short-time duty
Action time	0.7~1.5S
Power frequency withstand voltage	1890V, lasting 1min
Impulse withstand voltage	4.5KV
Working temperature	-5~40°C
Heat resistance	50°C, humidity 90%

Product Selection

Model	Matching circuit breaker	MCCB brand	Rated voltage(V)	Action current(A)	Mechanical life (times)	Motor power(W)
MTM03-63/M	CM1-63	CHINT	110~240 AC or 100~220 DC or 24DC	≤5	14000	14
MTM03-125/ABB	HSM1-125 HM3-125 ABB-S1	ABB				
MTM03-160/ABB	HSM1-160 HM3-160 ABB-S2	ABB				
MTM03-100/M	CM1-100	CHINT				
MTM03-225/M	CM1-225				10000	
MTM03-250/ABB	HSM1-250 HM3-250 ABB-S3.S4	ABB				
MTM03-250/NS	NS-100~250	Schneider				
MTMOC3-400/M	CM1-400	CHINT	230AC/220DC or 110AC/110DC or 24DC	≤2	5000	35
MTM03-400/ABB	HSM1-400 HM3-400 ABB-S5	ABB				
MTM03-630/M	CM1-630	CHINT				
MTM03-630/ABB	HSM1-630 HM3-630 ABB-S6	ABB				
MTM03-630/NS	NS-400~630	Schneider				
MTM03-800/M	CM1-800	CHINT				

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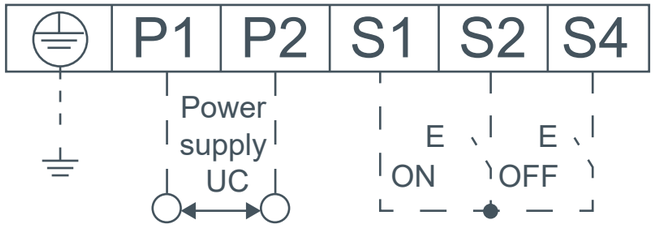
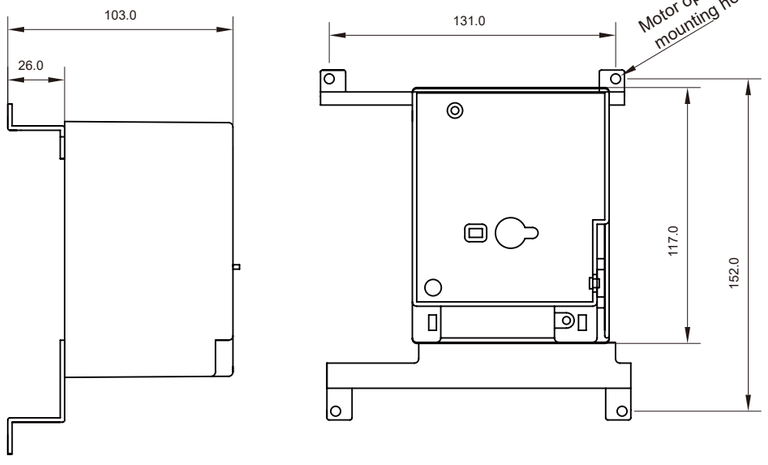
Wiring Diagram & Terminals



1. For manual operation, rotate just 180° clockwise. Rotate counterclockwise may cause malfunction.
2. Dielectric Withstand Voltage is AC 50Hz, 1500V between P1and P2(excluding S1, S2, S4 and the installation screws ofthe motor operator). When rated control voltage is DC24Vshould not be performed dielectric withstand voltage test.
3. For motor operator connection, P1,P2 can't connect S1, S2, S4.

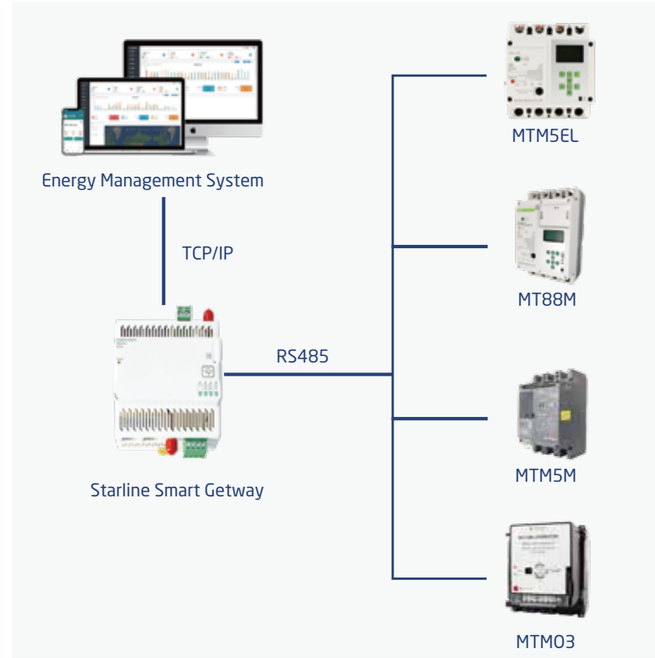
Dimensions



Starline Smart Getway

Highly integrated, data analysis

- Data visualization
- Data storage
- Data report
- Remote control
- Data normalization and aggregation
- Energy- saving diagnosis & fault alarm
- Data acquisition & protocol conversion
- Data analysis, fault monitoring and diagnosis



Starline Smart Getway:

- Collect Modbus data via Ethernet or WiFi, 4G;
- Two-way communication with the platform via the MQTT communication protocol;
- Reporting collected data and sending platform control instructions;
- Data acquisition, processing and analysis. The device management platform can provide reports and displays;
- Device management, fault diagnosis, work order management, and artificial intelligence optimization control, etc..

Advantages

Webserver configuration device	Based on browser access and compatible with all operating systems, users can configure the device more intuitively, with a graphical user interface for easy configuration.
Protocol conversion	The Modbus protocol is converted to the mqtt protocol, encapsulated into json and uploaded, and the platform directly displays the data.
Data conversion	Configurable data types, data format conversion.
Remote control	The platform can control the device and read and write device data.
Offline data storage	For temporary network disconnection data, the gateway

DTU

Data transparent transmission

Data visualization

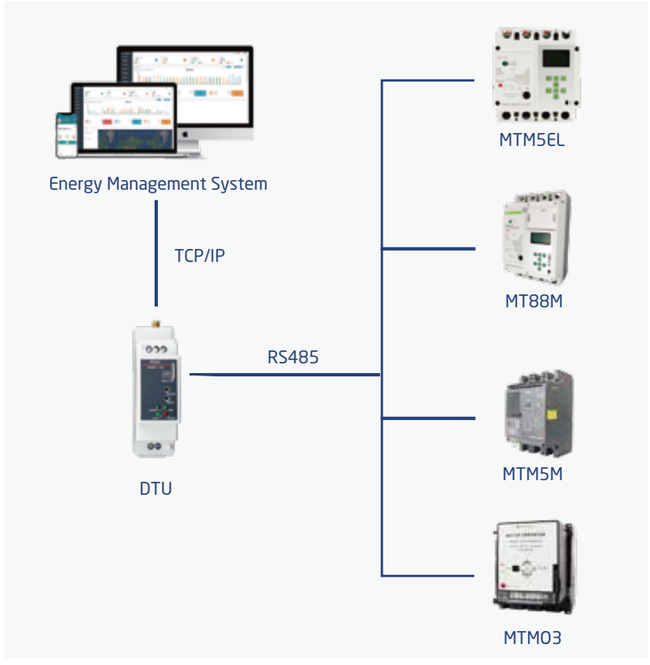
Data storage

Remote control

Data normalization and aggregation

Data report

Energy- saving diagnosis & fault alarm



DTU:

- Connect via Ethernet / Wi-Fi / 4G;
- Enable the platform to remotely access serial slave device information;
- control the device, collect data, and perform other operations;
- Two-way communication with the platform via the MQTT communication protocol;
- The platform can provide reports and displays; it also has functions such as device management and fault diagnosis.

Platform

Tuya Communication

APP online monitoring

Compact structure

Local storage

APP online viewing control

Easy to install

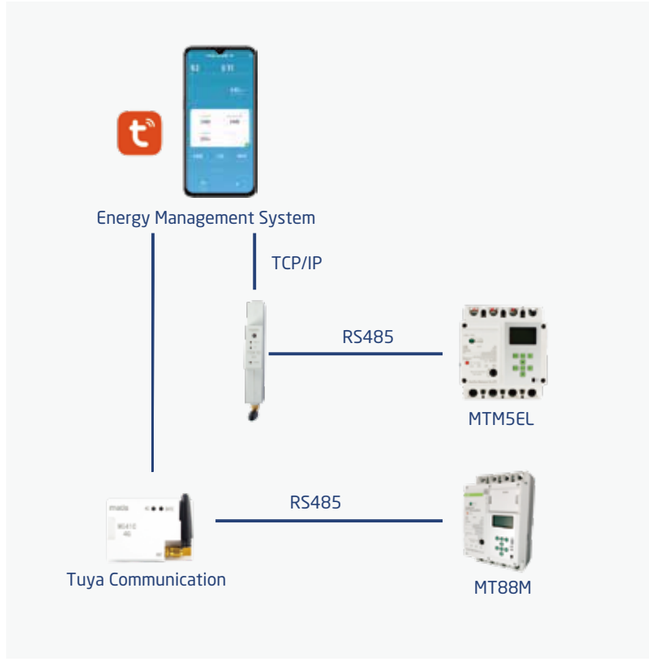
Local computing

Safe to use

External small size antenna

Low power consumption, low heat generation

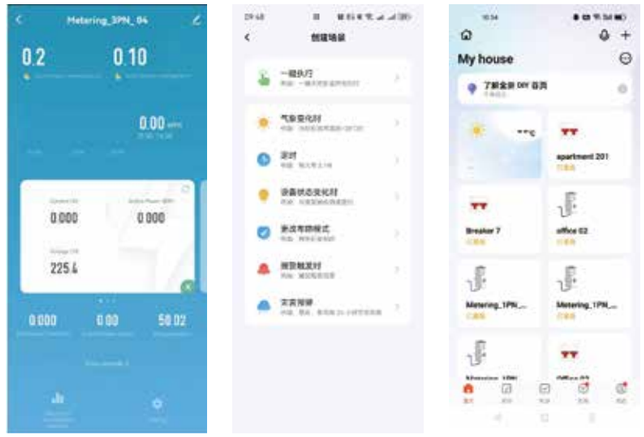
Wide voltage 100V-240V AC



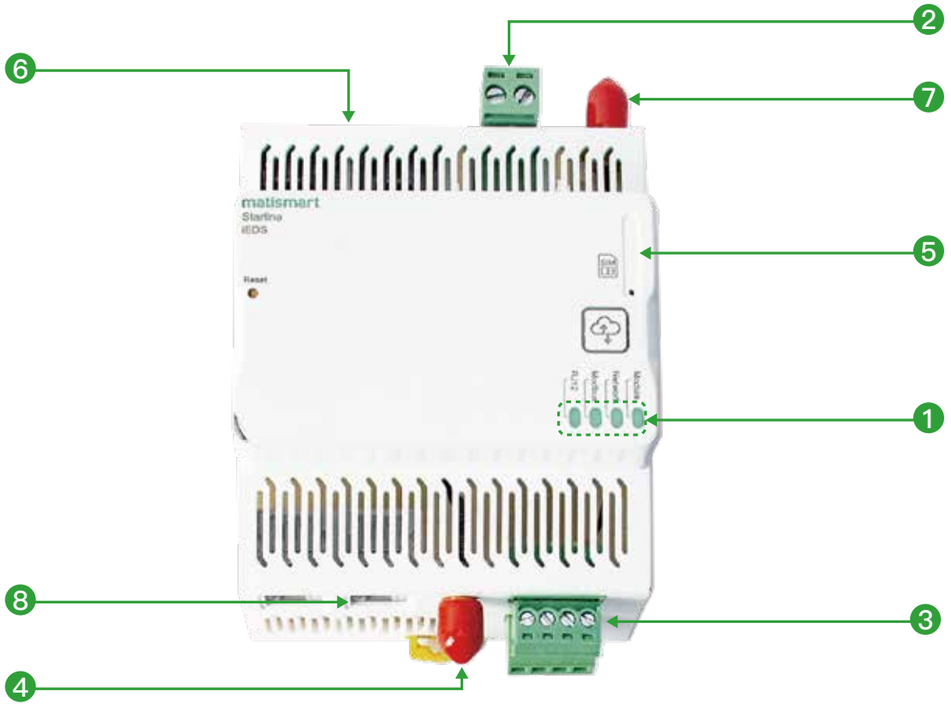
Tuya Communication:

- High-performance and multi-functional;
- Communicate with sub-device circuit breakers or MCCBs via RS485 or 645;
- Report the sub-device data to Tuya's cloud platform via 4G or WiFi;
- Read data in the Tuya app;
- Remote control and other functions;
- It has local computing capabilities and can calculate and report to the cloud platform according to requirements.

APP

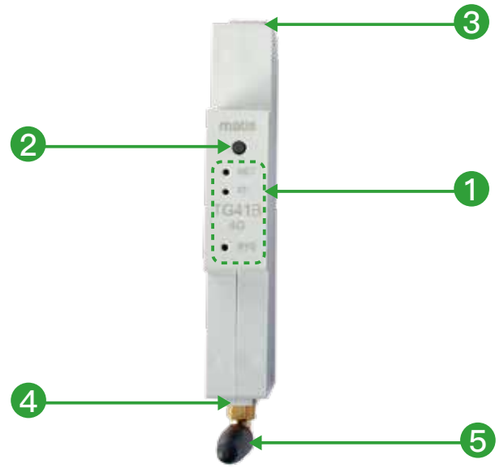


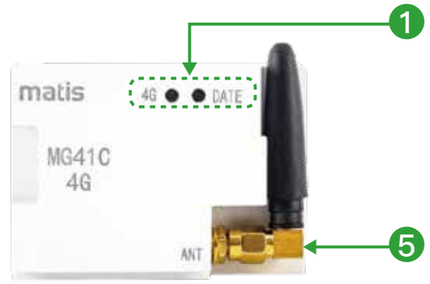
Interface



①: Indicator
②: Power terminal
③: RS485 terminal
④: Wifi antenna
⑤: SIM card slot
⑥: Ethernet port
⑦: 4G antenna
⑧: RJ12 cascading

Interface





①: Indicator
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Interface

①: Indicator
②: Button
③: Power terminal
④: RS485 terminal
⑤: Wifi antenna
⑥: SIM card slot

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Starline Smart Getway Technical Parameters

Model		Starline_G10	Starline_G20	Starline_G30
Power supply		12V DC		
Average power		≤ 5 W		
Ethernet port	Number of ports	1 way		
	Port speed	2* Ethernet 10/100 Mbit/s self-adaptive		
	Port type	RJ45, IEEE 802.3 compliant		
Wireless communication		/	Wifi	Wifi/4G
Network		Ethernet	Ethernet/Wifi	Ethernet/Wifi/4G
Serial port		4-way RS485 (including two RJ12 ports)		
Installation mode		DIN rail		
Dimensions		72mm x 105mm x 71mm		
Operating temperature		-20 ~65℃		
Storage temperature		-25 ~70℃		
Indicator		STATUS \ UPLINK \ DOWNLINK \ ENTHERNET		

DTU Technical Parameters

Model		PG41	PW11	PE11
Power supply		100-240VAC / 9-50VDC		
Average power		≤5 W		
Ethernet port	Number of ports	/	/	1 way
	Port speed	/	/	10/100 Mbit/s self-adaptive
	Port type	/	/	RJ45, IEEE 802.3 compliant
Wireless communication		4G	Wifi	/
Network		4G	Wifi	Ethernet
Serial port		1-way RS485		
Installation mode		DIN rail		
Dimensions		45mm x 32mm x 8mm		
Operating temperature		-20 ~65℃		
Storage temperature		-25 ~70℃		
Indicator		Net\Power\Active\Power		

Tuya Communication Technical Parameters

Model	TG41B	TW11B	MG41C	MW11C
Power supply	/			
Average power	/			
Wirelesscommunication	4G	Wifi	4G	Wifi
Network	4G	Wifi	4G	Wifi
Serial port	1-way RS485	1-way RS485	/	/
Installation mode	DIN rail	DIN rail	Pluggable	Pluggable
Dimensions	112.7mm×66.45mm×7.8mm		50mm×30mm×23mm	
Operating temperature	-20 ~ 65℃			
Storage temperature	-25 ~ 70℃			
Indicator	Net\Io\Sys		4G\Date	

Product Selection

Starline Smart Getway

Model	Operating Voltage(V)	Communication	Matching Subdevice	Subdevice Protocol
Starline_G10	12V DC	Ethernet/RS-485	No requirement	No requirement
Starline_G20		Ethernet/Wifi (Bluetooth)/RS-485		
Starline_G30		Ethernet/ Wifi(Bluetooth)/ 4G /RS-485		

DTU

Model	Operating Voltage(V)	Communication	Matching Subdevice	Subdevice Protocol
PE11	100~240VAC or 9~50VDC	Ethernet/RS-485	No requirement	No requirement
PW11		Wifi/RS-485		
PG41		4G/RS-485		

Tuya Communication

Model	Operating Voltage(V)	Communication	Matching Subdevice	Subdevice Protocol
TG41B	220V AC	4G/RS-485	MTM5EL	645
MG41C			MT88M	645
TW11B		Wifi/RS-485	MTM5EL	645
MW11C			MT88M	645

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