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AIoT Electric

We Make Electricity Safer and Smarter

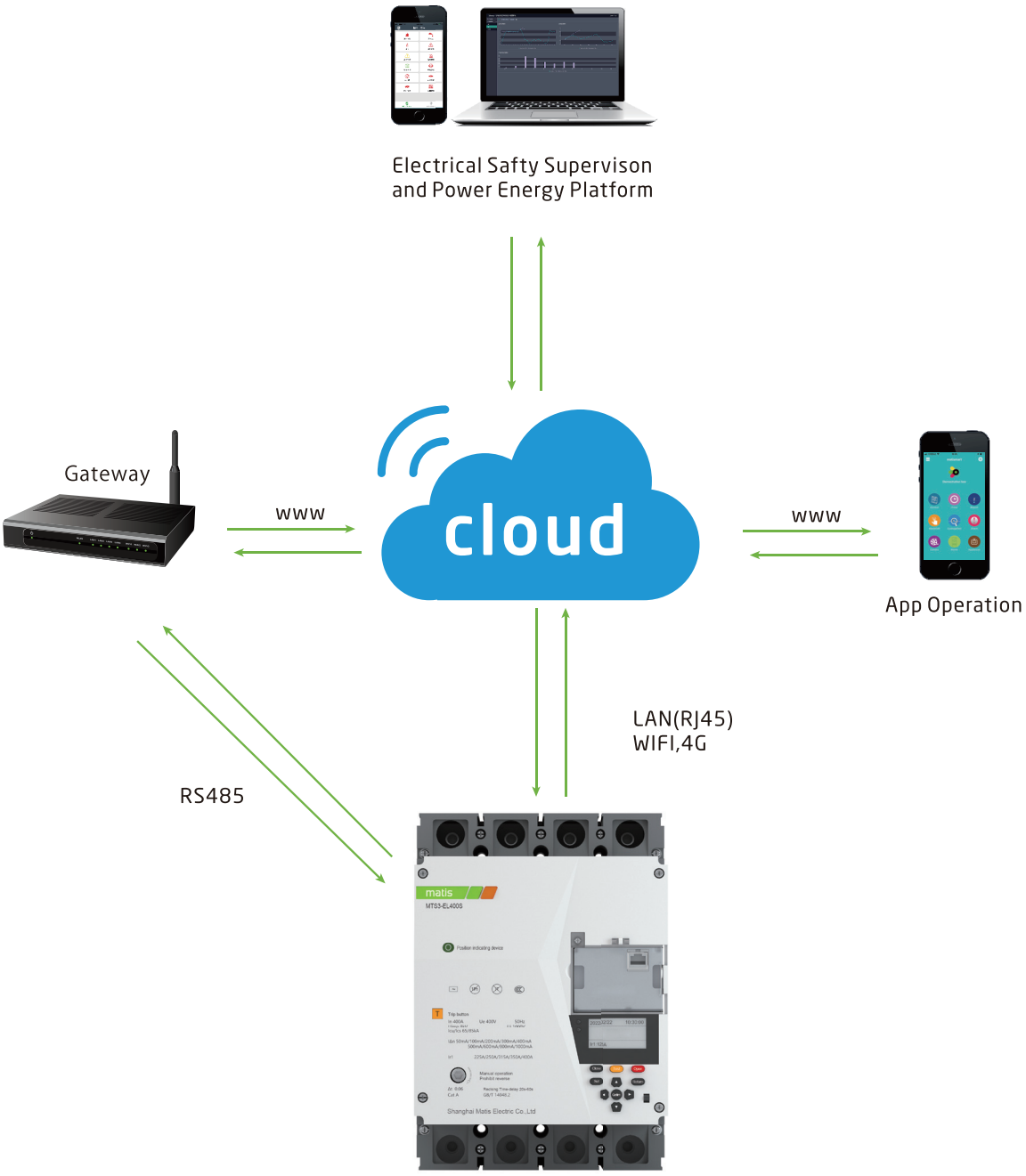
MTS3–EL

Smart Metering MCCB

iEMS

AI Energy Management System

Overview



MTS3-EL is a smart electric safety supervision and power Management system and includes both hardware and software, which integrates the most frontier technologies: AI, Big data, IoT and cloud computing.

The system can realize pre-alarm before loading failure, online power management, real-time power efficiency monitoring, real-time monitoring of electrical circuit parameter (voltage, current, residual current,etc),and help identify energy savings and further to save energy cost, through analysis of collected data, power consumption analysis.

Features

Safe and reliable

Double CPU double protection electronic tripping, high breaking capacity design. Long-delay, short-delay and instantaneous three-stage protection can reliably perform overcurrent and short-circuit protection functions when the line voltage is abnormal.

Full Protection

Support short circuit, overvoltage, overcurrent, overload, overtemperature, phase loss, unbalance, neutral loss (only three-phase unbalanced loads support), and residual current protection.

Function parameters can be set

Support fault automatic reclosing function, close function, close delay and close times can be configured.

Real-time display of electrical parameters

Built-in high-precision measurement dedicated chip, supports high-precision current, voltage, active power, reactive power, apparent power measurement. It can display various electrical parameters, alarm information and operating status in real time.

Real-time display and analysis of electrical quality

Support power quality analysis function, which can monitor grid frequency, harmonics, unbalance, and support real-time display of current and voltage waveforms of each phase.

Cloud platform remote communication, telemetry and remote adjustment

Support infrared and RS485 communication functions, and can also plug in standard communication modules to support 4G, HPLC, WIFI communication, support cloud platform, and realize remote signaling, telemetry, remote control, and remote adjustment.

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Benefits

Electrical System Monitoring and Safety Supervision

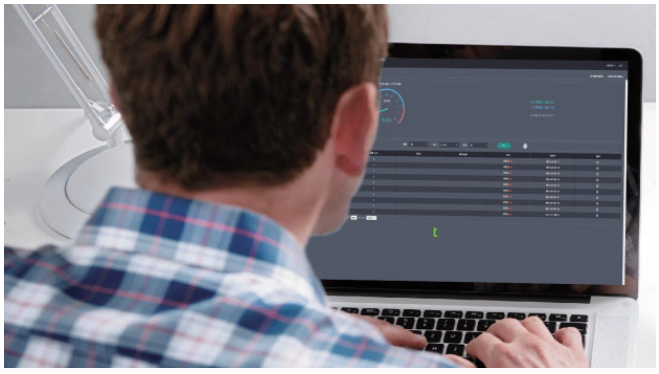
The system can track and respond to power anomalies and gain valuable information about how the electrical distribution system delivers power to device and critical loads. Maintain easy control of electrical device while improving electrical system safety. With real time monitoring of electrical parameters, and robust alarm management features, the system help customers to attack potential problems before they become crises. Power monitoring and electrical system performance tracking help to enhance system reliability.

Power management

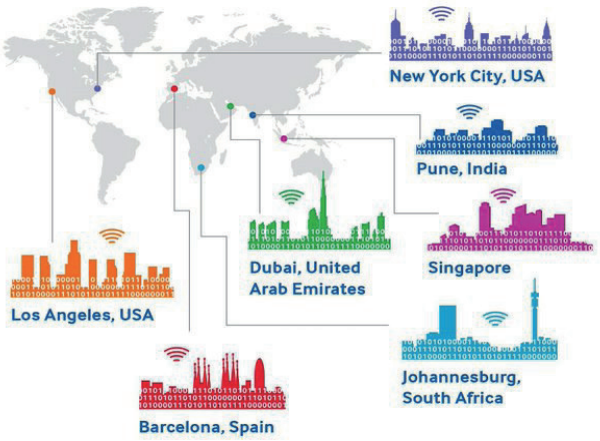
With energy data collection and visibility through easy-to-use dashboards and reports in APP and software platform, the system may help customers to improve energy efficiency and reduce energy costs, manage, analyze and control the energy use.

- Monitor energy use and aggregate data from all energy assets
- Access real-time and historical data with easy-to-use analytics
- Energy cost allocation and billing
- Track energy performance
- Reduce peak demand and power factor penalties

Remote control

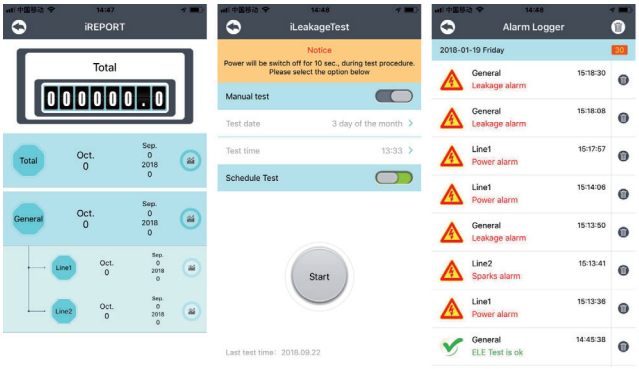


The hardware device may be controlled by App and software anytime and anywhere to make life easier and safer.



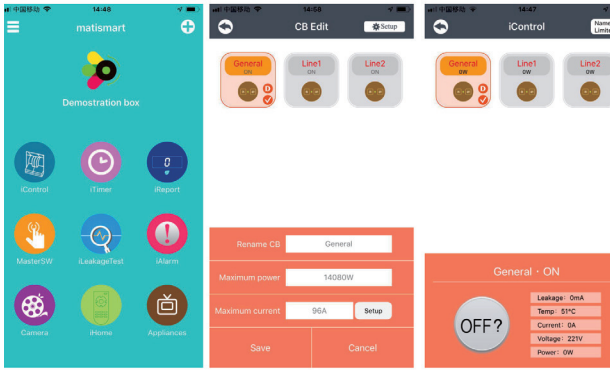
Software Introduction

The Matismart smart electric safety supervision and power management system is an innovative cloud-computing platform designed to monitor, optimize and control the electrical system. This system also provides access to multi-site level, simultaneously monitoring and comparing the performance of different facilities. It also can provide personal user profiles depending on the level of access they require. It mainly includes App operation version in smart phone and software platform for electric safety supervision and power management.



APP

It includes six functions:
Remote control, Real-time monitoring, Event alarm and push, Power consumption curve, Timer, Max. Power and Current setting, Auto-test of residual current.



Power consumption

Power consumption curve of main lines and each sub-lines may be showed in APP monthly and hourly.

Event alarm and push

All the events recorded and fault alarm will be pushed through App.

Auto-test of residual current

Auto-test of earth leakage current in fixed date each month in the App instead of manual test monthly

Timer

Users are able to remotely set the power demand they want to target with a weekly, daily or hourly resolution

Remote control

iMCCB can be operated individually or be switched on/ off all together through App remotely. And for safety, it can not be switched on through APP after switching off manually.

Real-time monitoring

The system monitors electrical circuit parameters : voltage, current, power ,temperature, residual current and KWH and these parameters may be showed in APP.

Max. Power and current setting

The max. power and current may be set through APP and the setting value must be lower than rated current and power.

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Software Platform

The software platform includes two main parts: electrical safety supervision and power management.

Electrical safety supervision

The system will monitor all the electrical circuit parameter of all main and branch lines in real-time such as voltage, current, power, temperature, residual current and KWH and it may do pre-judgement and action through these electrical data collection and analysis.

Device location montioring

After installation, the location information of each device will be recorded and showed in the map in software platform. The software platform may monitor the real-time status of all device installed all over the world, in case warning or fault alarm happened, the supervisor may find the device and its location quickly, then solve it accordingly before any unforeseen event.

Information management

Through software platform, you can easily view contact information of technician of each project management site. If any warning and alarms happens, the software platform will inform the contact person to deal with it immediately.

Warning and alarm

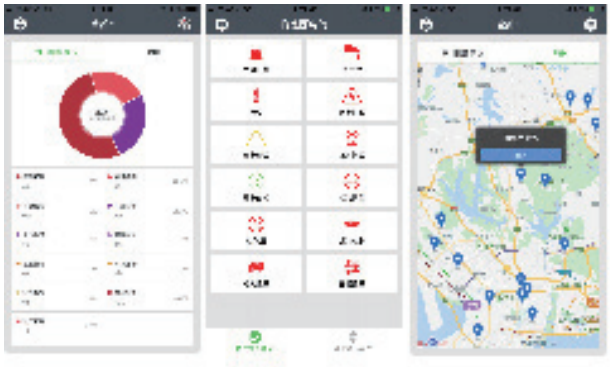
we can read the warning and alarm information in software platform as follows:

- Alarm of earth leakage current
- Warning of earth leakage current
- Warning of high temperature
- Auto-test function of earth leakage protection
- Warning and alarm of overload and over current
- Warning and alarm of overvoltage and undervoltage
- Alarm of short circuit
- Alarm of unbalance
- Alarm of electricity fraud

Electrical parameter monitoring

we can read the electrical parameter monitoring in software platform as follows:

- Temperature monitoring
- Current monitoring
- Voltage monitoring
- Power monitoring
- Earth leakage current monitoring



Software Introduction

In this software platform, the user may find the basic analytic functions such as a dashboard data, instantaneous values, comparison functions and cost allocation by consumer group.
The building energy flows and costs are transparent, therefore, this solution is suitable for energy management and energy cost allocation application seeking energy efficiency improvement and cost reductions.
The platform realizes the collection, storage, management and efficient use of the terminal energy information. It analyzes, processes, handles all energy data, and output to keep the system run in best status, after system intelligent configuration.
In order to further provide conditions for mining, analyzing, processing and handling energy data, the energy efficiency management system we built, can not only effectively solve real-time energy balance and monitoring management, but also build up condition to further dig, analyze, process, handle data, through filing and management of a large amount of historical data.

Power consumption statistic, analysis and comparison

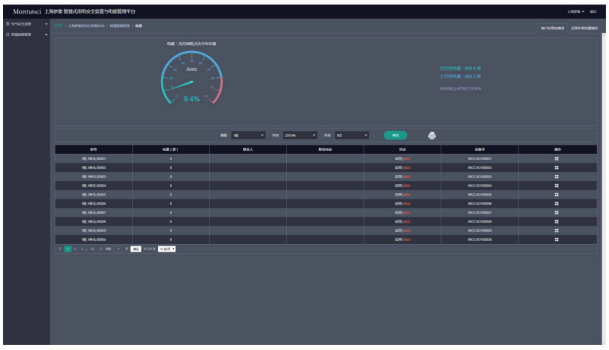
- Power consumption comparison between current month and last month
- Power consumption percentage of current month in the total amount of the whole year.
- Power consumption statistic and sum of each classified divisions
- Power consumption comparison monthly in last two years

Load statistic and comparison

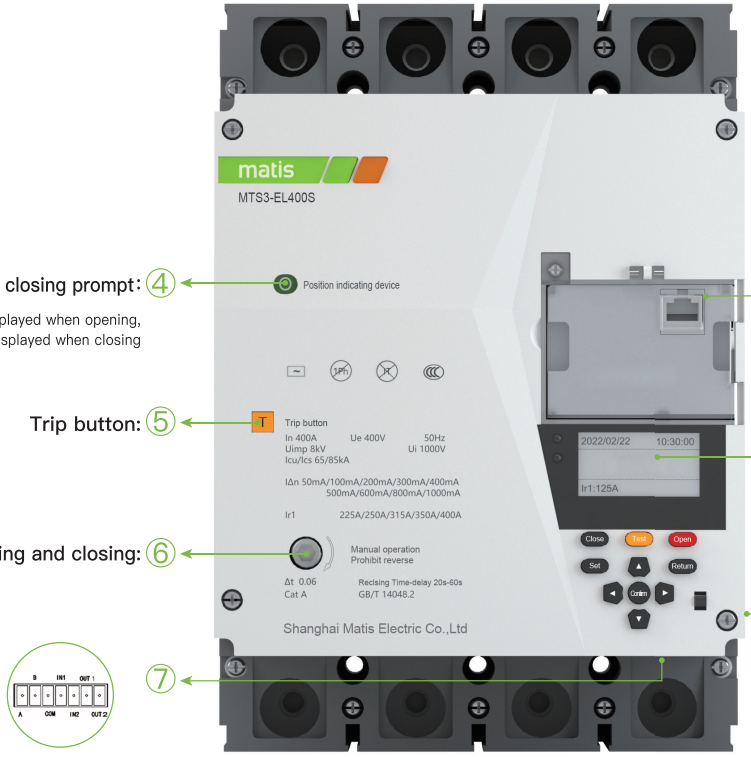
- Load status and comparison of today and yesterday
- Load status and comparison of this week and last week
- Load status and comparison of this year and last year

Control and Management

- Rename of each device
- Remote control
- Scene setting with timer function
- Password management



Structure



Opening and closing prompt: ④

"O" is displayed when opening,
"C" displayed when closing

Trip button: ⑤

Manual opening and closing: ⑥

Plug-in terminal description: ⑦

Plug-in terminals are used to realize electrical connections and terminal posts, and terminal blocks are usually used for wiring inside the distribution box, and generally bear less power

① Communication function module:

For the details of the replaceable communication module,please see "Communication Module Description"

② LCD electronic display:

through the button below, the device can be operated by "parameter setting", "system setting", "query record", "operation and maintenance", "energy analysis" and other operations

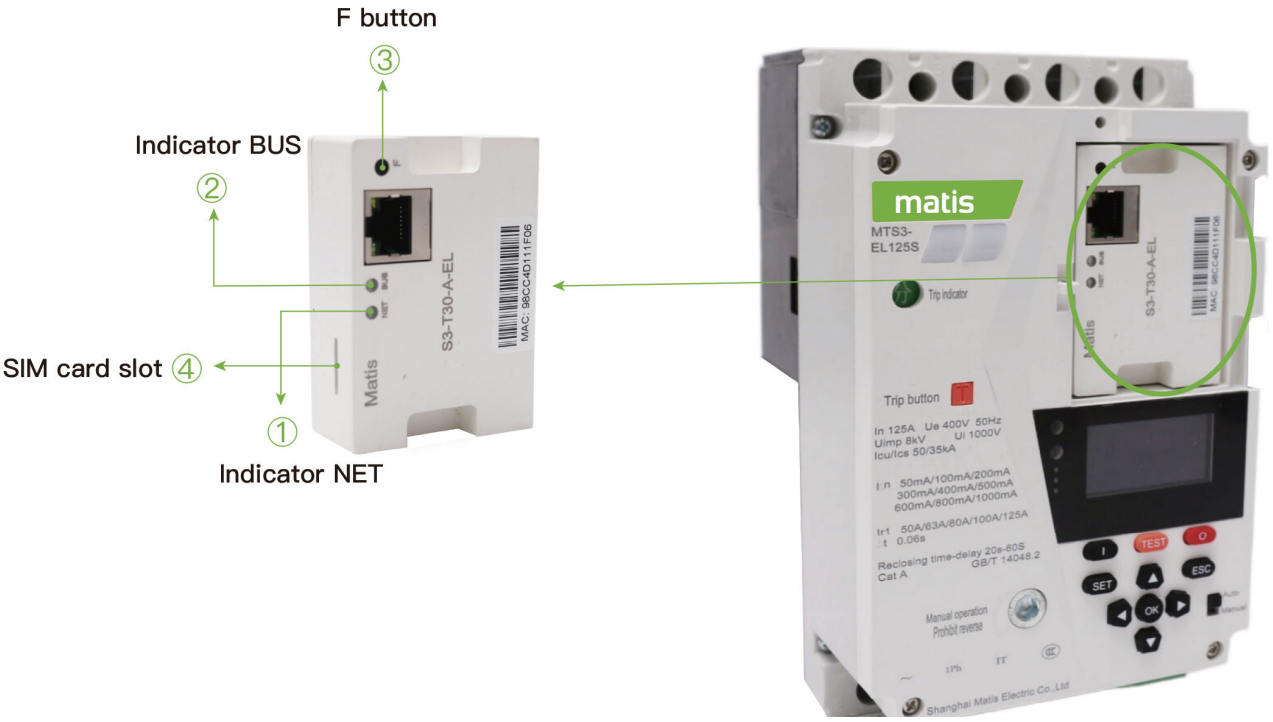
③ CAN interface:

CAN is a bus-type serial communication method The bus structure is divided into two layers: the physical layer and the data link layer

Plug-in terminal description

A	B	COM	IN1	IN2	OUT1	OUT2
RS485 interface		Common port	External open dry contact input/active and reactive pulse	External close dry contact input/second pulse output	Multi-function open-drain output1/ alarm input 1	Multi-function open-drain output 2/ alarm input 2

Structure



Communication function description

No.	Way of Communication	4G+WIFI(WIFI by default)	WAN+WIFI (WIFI by default)	HPLC
①	Indicator NET	Flashing: connecting On: connected Off: disconnected	Flashing： connecting On: connected Off： disconnected	For the standard HPLC module, please refer to the State Grid HPLC description
②	Indicator BUS	Flashing： connecting Off： disconnected	Flashing： connecting Off： disconnected	For the standard HPLC module, please refer to the State Grid HPLC description
③	F button	Set WIFI Hotspot	Set WIFI Hotspot	None
④	SIM card slot	SIM card is required, see 2.3 for card insertion instructions	None	None

Technical Specification

Items		Specifications			
		125	250	400	630
Frame Current		125A	250A	400A	630A
Poles		3P+N			
Rated Voltage Ue		AC 400V 50Hz			
Rated Insulation Voltage Ui		AC 1000V			
Rated Impulse Withstand Voltage Uimp		8000V			
Arcing Distance		≥ 50mm	≥ 50mm	≥ 100mm	≥ 100mm
Ultimate Short-circuit Breaking Capacity Icu		50kA	50kA	85kA	85kA
Operating Short-circuit Breaking Capacity Ics		35kA	35kA	65kA	65kA
Rated Residual Short-circuit Making (Breaking) Capacity IΔm		12.5kA	12.5kA	16.25kA	16.25kA
Residual Current Operating Characteristics		AC type			
Rated Residual Operating Current IΔn		30mA, 50mA, 75mA, 100mA, 150mA, 200mA, 300mA,			
		400mA, 500mA, 600mA, 800mA, 1000mA, Auto, OFF			
Residual Action Time Characteristics		Delay type			
Delay Type Limit Non-driving Time		2IΔn: 0.06s			
Auto Reclosing Time		20 ~ 60s			
Operational Performance (times)	Electrical life	1500	1000	1000	1000
	Mechanical life	8500	7000	4000	4000
	Total	10000	8000	5000	5000
Overload and Short Circuit Characteristics		Three-stage protection, electronically adjustable, see "Protection Features Description" for details			
Joint Control Delay Time		≤3000ms			
Communication Delay Time		≤500ms			

Technical Specification

Items	Specifications			
	125	250	400	630
Basic Function	Remote ON/OFF control; high-precision electrical parameter measurement function; power quality analysis function; waveform display function; fault record statistics function; remote signaling, remote adjustment,remote control, and telemetry			
General Protection Function	Split-phase short-circuit protection; split-phase inverse time overcurrent protection; split-phase/summed power overload protection; upper and lower terminal temperature over-temperature alarm, warning; phase loss; phase sequence; three-phase unbalance; overvoltage and undervoltage warning, alarm; leakage current protection; field setting			
	Current			
Measurement Accuracy	Voltage, current, power level 0.5; energy metering level 1			
PV Grid-connected Protection Function	Island judgment, power failure and disconnection, monitoring grid status recloser, sharp, peak, shoulder, off-peak statistics			
Electrical Parameter Accuracy	Voltage			0.50%
	Current			0.50%
	Power Factor			1.00%
	Active Power			1.00%
	Reactive Power			2.00%

Technical Specification

Alarms	Set Range				Default Value				Whether Alarm/ Warning is Enabled (Default)	Whether OFF is Enabled (Default)	Whether Recloser is Enabled (Default)
	125	250	400	630	125	250	400	630	All models	All models	All models
Overvoltage Delay	100ms ~ 10000ms				5000ms				Yes	Yes	No
Overvoltage Alarm	100V ~ 350V				275V						
Overvoltage Warning	100V ~ 350V				240V						
Undervoltage Delay	100ms ~ 15000ms				5000ms				No	No	No
Undervoltage Alarm	80V ~ 220V				165V						
Undervoltage Warning	80V ~ 220V				200V						
Overcurrent Alarm	5A ~ 150A	5A ~ 300A	5A ~ 480A	5A ~ 7560A	150A	250A	480A	756A	Yes	Yes	No
Overcurrent Warning	5A ~ 125A	5A ~ 250A	5A ~ 400A	5A ~ 630A	100A	200A	320A	504A			
Inverse Time Alarm Delay	3s ~ 18s				5s						
Overcurrent Alarm Delay	3s ~ 15s				5s						
Rated Current Ir1	50A 63A 80A 100A 125A	100A 125A 140A 160A 180A 200A 225A 250A	225A 250A 315A 350A 400A	400A 500A 630A	125A	250A	400A	630A			
Inverse Time Parameter	1 ~ 3				2						
Instantaneous Short Circuit Ir3	4Ir1 ~ 14Ir1				10Ir1				Yes	Yes	No
Delay Short Circuit Ir2	2Ir1 ~ 12Ir1				6Ir1						
Delay Short Circuit Delay	100ms ~ 1000ms				500ms						
Shunt Overload	100W ~ 27.5kW	100W ~ 55kW	No	No	No	55kW	88kW	138.65kW	No	No	No
Bus Overload	300W ~ 82.5kW	300W ~ 165kW	300W ~ 264kW	300W ~ 415.8kW	82.5kW	165kW	264kW	415.8kW			

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Alarm Parameters

Alarms	Set Range				Default Value				Whether Alarm/ Warning is Enabled (Default)	Whether OFF is Enabled (Default)	Whether Recloser is Enabled (Default)
	125	250	400	630	125	250	400	630	All models	All models	All models
Overvoltage Delay	3s ~ 15s				10s						
Over Temperature Alarm	10℃~ 140℃				90℃				Yes	Yes	No
Over Temperature Warning	10℃~ 112℃				70℃						
Over Temperature Delay	3s ~ 15s				5s						
Residual Alarm	30mA, 50mA, 75mA, 100mA, 150mA, 200 mA,300mA,400mA,500mA,600mA,700mA, 800mA,900mA, 1000mA				500mA				Yes	Yes	No
Residual Delay	50ms ~ 3000ms				500ms						
Residual	15ms ~ 1000mA				400mA						
Current Phase Loss Threshold Current	0.5A ~ 30A				0.5A				No	No	No
Current Phase Loss Delay	3s ~ 15s				5s						
Voltage Phase Loss Threshold Voltage	10V ~ 50V				30V				No	No	No
Voltage Phase Loss Delay	3s ~ 15s				5s						
Unbalanced Alarm	2% ~ 100%				30%				No	No	No
Unbalanced Alarm Delay	3s ~ 15s				5s						
Reverse Phase Sequence Alarm Delay	3s ~ 15s				5s				No	No	No
Total Harmonic Distortion Alarm	2% ~ 100%				20%				No	No	No
Harmonic Distortion Delay	3s ~ 15s				5s						

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Model

Company code

MT

S3

Product code
(Smart breaker)

—

EL: Earth leakage

EL

630

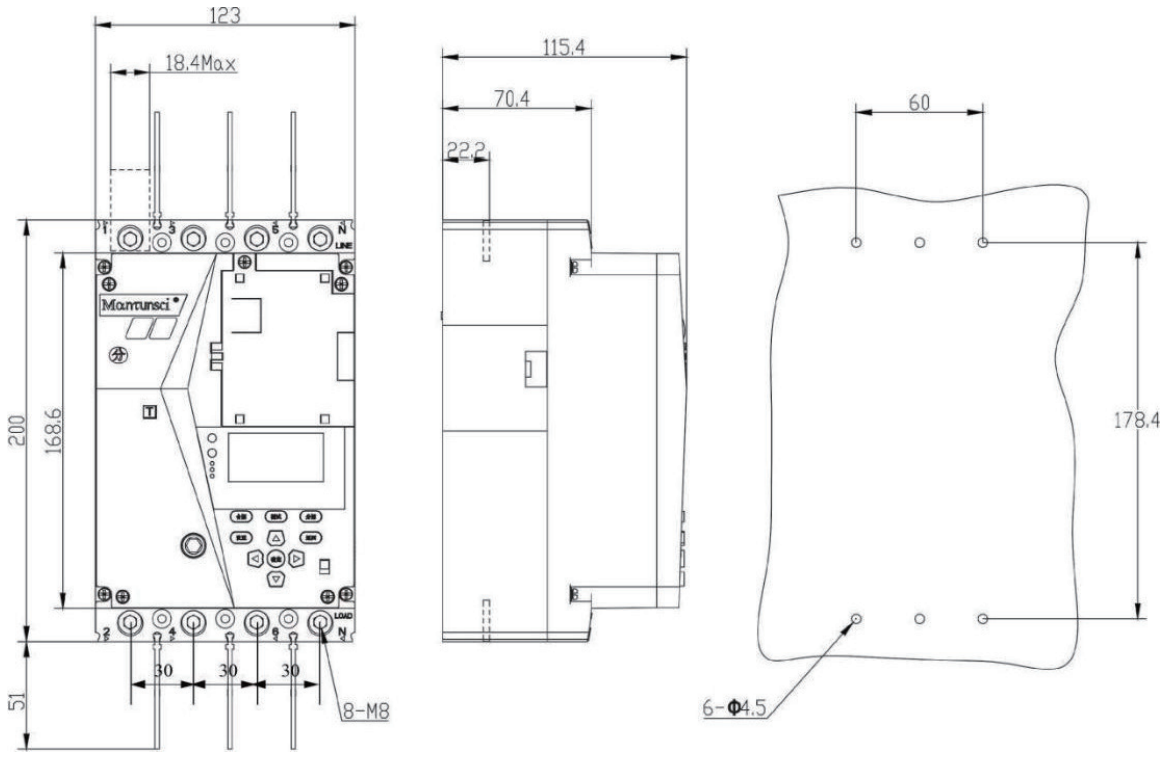
Rated current
Frame **125A**:50A,63A,80A,100A,125A
Frame **250A**:100A,125A,140A,160A
180A,200A,225A,250A
Frame **400A**:200A,225A,250A,315A,
350A,400A
Frame **630A**:315A,350A,400A,
500A,630A

Selection Table

Product	Leakage value (adjustable)	Commu-nication mode	Poles	Frame Rated Current	Adjustable Rated Current	Code number
Smart circuit breaker	30mA、50mA、75mA、100mA、150mA、200mA、300mA、400mA、500mA、600mA、800mA、1000mA、OFF、Auto	RS 485	3P + N	125A	50A, 63A, 80A, 100A, 125A	MTS3-EL 125A
				250A	100A、125A, 140A, 160A, 180A, 200A, 225A, 250A	MTS3-EL 250A
				400A	225A, 250A, 315A, 350A, 400A	MTS3-EL 400A
				630A	400A, 500A, 630A	MTS3-EL 630A

Accessories (optional)	Communication mode	Code number
Communication module	wifi&ethernet	MTS3-T30-A-ELW
	4G	MTS3-T30-4GC-ELW

Dimensions



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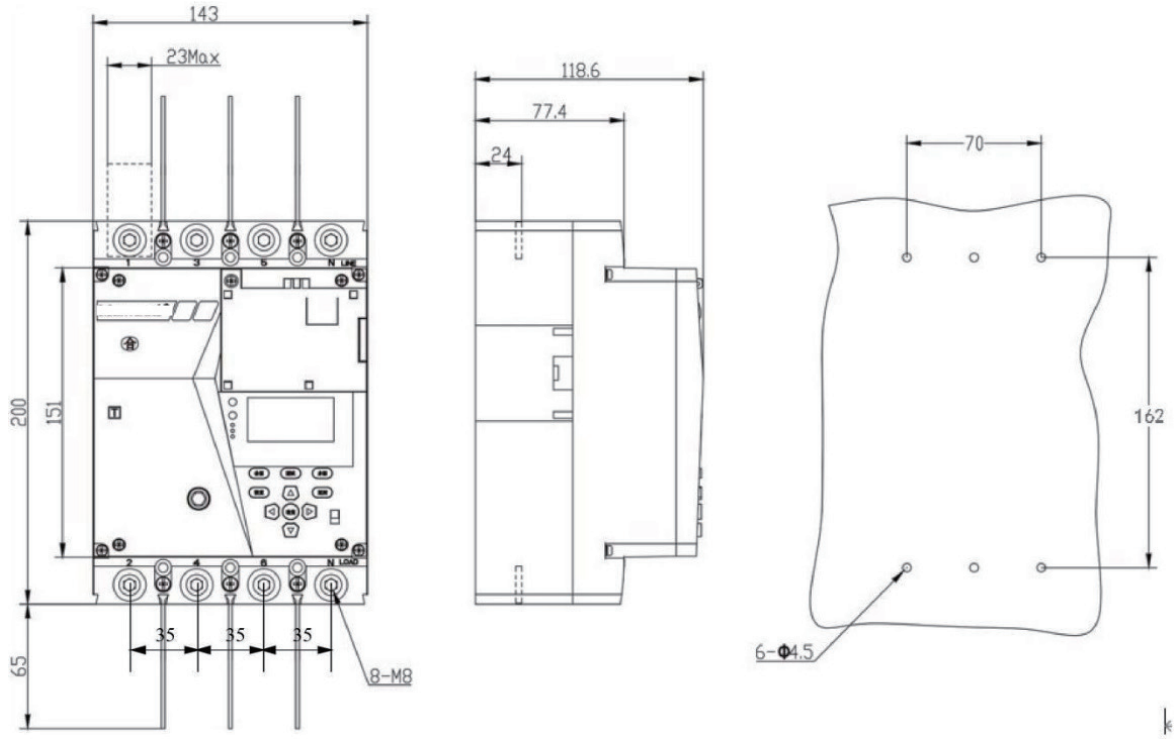
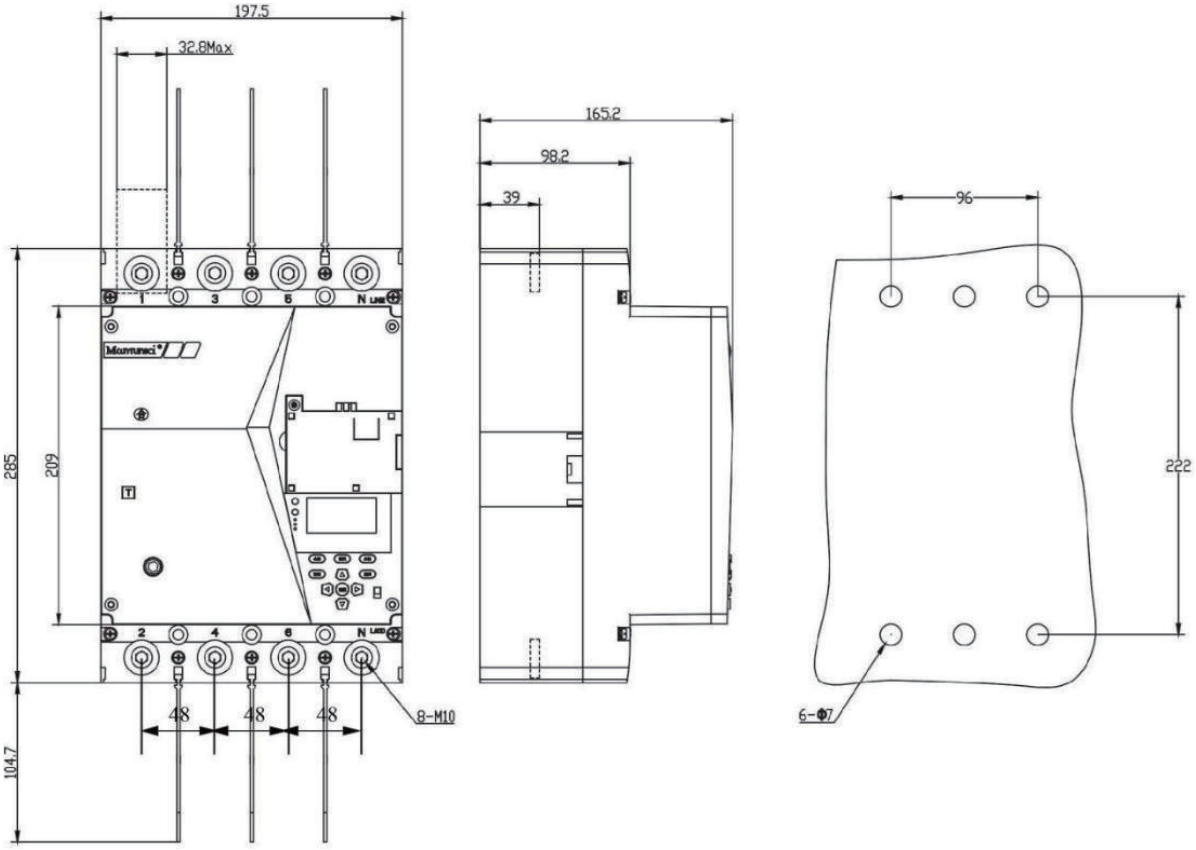


MTS3-EL250S



MTS3-EL400S & MTS3-EL630S

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