User Manual of MT51AS Remote Control Automatic Reclosing Device

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Shanghai Matis Electric Co., Ltd.

Preface

Summary

The manual includes the introduction of the components, the panel and interface, the installation and operation, the module replacement, and the operation of the host computer software.

The images in the product manual are for reference only. Please refer to the actual product.

Reader Target

This document is primarily intended for the following engineers:

➢ Sales engineer

➢ Technical Support Engineer

➢ service engineer

Matters Need Attention

The following symbols may appear in this document and their meanings are as follows.

Symbol	Explain
⚠ 危险	High-level risk hazards that would result in death or serious injury if not avoided.
⚠ 警告	Medium risk hazards that, if not avoided, may result in death or serious injury.
⚠ 注意	Indicating a low level of risk that may result in minor or moderate harm if not avoided.
须知	Used to convey safety warnings for equipment or environments. Failure to comply may result in equipment damage, data loss, performance degradation, or other unforeseen consequences. This notice does not constitute personal injury.

Amendant Record

Changes track all document updates. The latest version includes updates from all previous versions.

Document version 1.1 (2021-06-18)

First official release.

Catalogue

1   Product Presentation

1.1 Product Overview

The MT51AS remote-controlled automatic reclosing system is designed for centralized control of all types of electrical equipment (local or remote) rated at 63A or below. It automatically detects and recloses circuit breakers, with trip duration and reclosing cycles adjustable on-site as needed. In fault-free conditions, it automatically recloses; for specific faults, it sends a signal to the control panel.

The control module panel features a rotary switch to select between Auto, Manu, and Lock modes.

1.2 Specification and Model Description

M	T	51	AS	W	-	1	N
Basic product family	Control Class, Self Dynamic reclosing type	Design sequence number	RS485 control with automatic reconnection	Adapter circuit breaker		Handle length	Current specification
				W:Matis MM50H/ML50/MR50/MRO50 J:Matis MM 60/ML60/ML60B K: Matis MM90 N:Schn eider Acti 9series MCB/RCBOl:Schneider Acti 9 Series RCD ilD L:Nader NDB2 MCB/ RCCB		1: Match 1 P/2P Circuit Breaker 2: Match 3 P/4P circuit breakers	E: DC24~48V F:DC110V G：DC220V N：AC220V

Circuit breaker	MCB			RCD		RCBO				
Product model / Number of poles of circuit breaker	1P	2P	3P/4P	2P	4P	1P	2P	3P	3P+N	4P
MT51AS -1	✔	✔		✔		✔	✔			
MT51AS-2			✔		✔			✔	✔	✔

1.3 Description
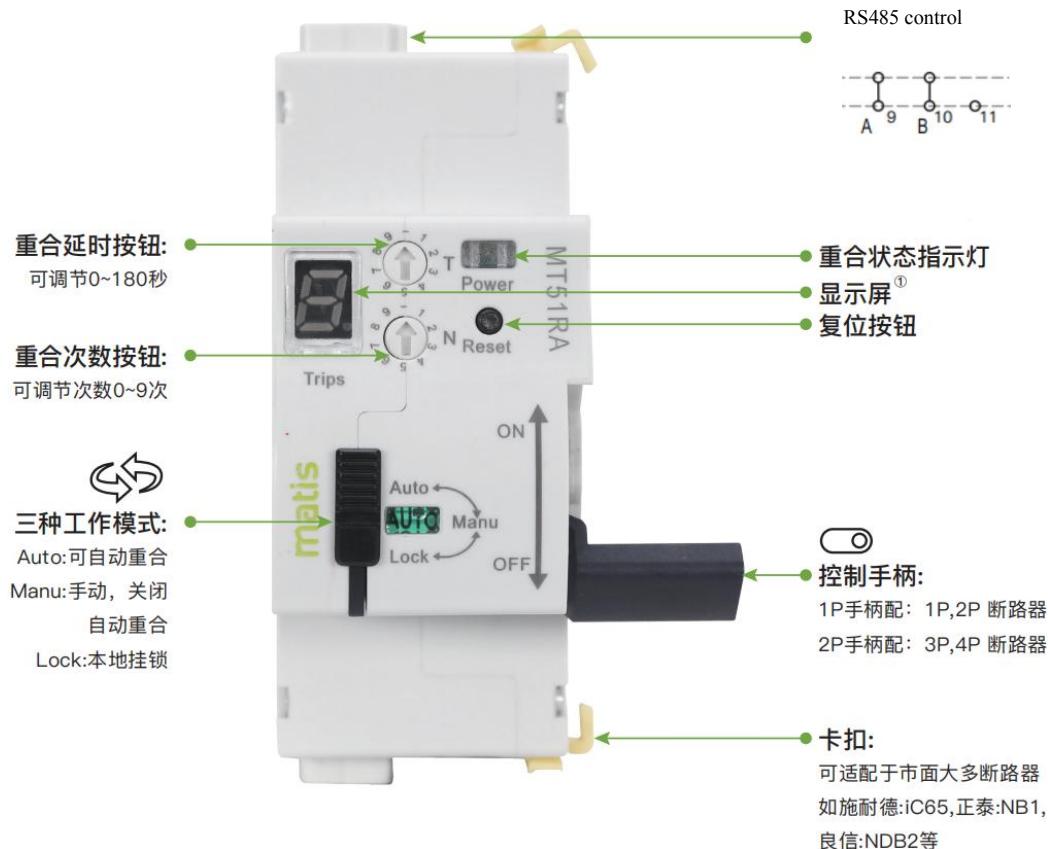
1.4 Product Features

➢ You can customize the reclosing time and frequency

➢ The product enables remote monitoring and control of circuits without requiring additional professional personnel.

➢ It can be used in many environments and fields by means of multi-mode extension.

➢ The standard 35mm guide rail installation is compact and easy to install.

➢ The product features automatic detection and reclosing of circuit breakers. When the number of non-fault trips exceeds the preset automatic reclosing limit, it sends an AUX signal to the control panel.

➢ Good compatibility: modular design, flexible installation, and the ability to assemble micro-circuit breakers from various manufacturers.

➢ Reliable performance: The mechanical lifespan reaches up to 20,000 cycles, more than double that of domestic and international products.

➢ The speed is more than twice as fast as the similar products at home and abroad.

➢ Multiple working modes: Auto mode, Manual mode, Lock mode

➢ The dual pivot parallel drive ensures reliable synchronous closing of 3P and higher circuit breakers.

➢ Good adaptability: side-mounted guide rail type;

➢ Energy efficiency and environmental protection: Low power consumption; All components are made of eco-friendly materials and comply with RoHS standards.

1.5 Pilot Lamp

Table 1-1 Indicator Light Description

Name	State	Explain
Status indicator	The green light is on.	Close the circuit in Auto mode or auto-overlap mode
	Red light always on	In manual or locked mode
	Blinking red lamp	Auto-reconnect is in progress

1.6 Safety Lock Push Button

Table 1-2 Push Button Description

Name	Pigment	Status & Description
Work mode indicator	Auto	Auto: Auto mode
(safety lock push button)	Manu	Manu: Manual mode
ton)	Lock	Lock: Mechanical lock mode (requires a padlock)

2 Equipment Installat-ion

2.1 Installation Notice

⚠ 警告

The MT51AS remote-controlled automatic reclosing device must be installed by certified electricians.

The manufacturer shall not be liable for any damage resulting from the user or installer's failure to comply with the warnings or recommendations in this manual, or from the use of non-original products or accessories, or from defects not attributable to the product itself.

⚠ 危险

➢ When the load side line is under maintenance or fault repair, the working mode of the equipment must be converted to the mechanical lock state first, and the safety lock must be hung in the safety lock position to ensure the safety of the maintenance personnel.

➢ When the safety lock is released, the device enters a self-locking state, automatically locking the handle in the open position.

2.2 Install and Secure

The MT51AS remote-controlled automatic reclosing device is a specialized unit designed for installation in distribution boxes or cabinets equipped with DIN rail mounting components.

1. Assemble the circuit breaker with the reclosing control module using the provided accessories. (This step is omitted if you are purchasing a complete set of equipment.)

   ① Place the actuator flat on the surface

   ② Loosen the clips 2 and 3 slightly.

   ③ Install the copper pipe at the indicated position

   ④ Mount the circuit breaker 5 on top of the actuator 1.

   ⑤ Push the clip 2 and clip 3 back to their original positions.

2. Remove the bottom rail clip of the equipment and suspend it on the DIN rail.

3. Rotate the device downward until it is secured to the lower end of the DIN rail, then reset the bottom latch.
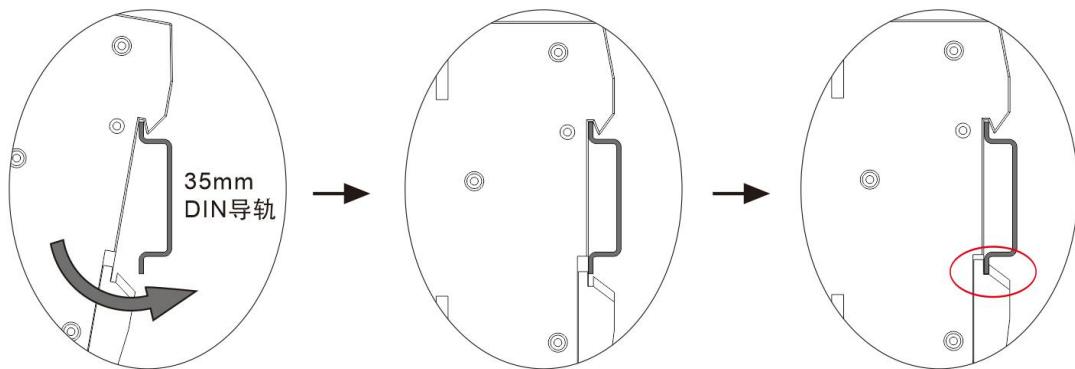
4. Ensure it is secured to the guide rail.

2.3 Terminal and Wiring Description

The MT51AS remote-controlled automatic reclosing device must be connected to the power circuit within its voltage range.

Table 2-1 Terminal Description

Port	Parameter	Explain	Port	Parameter	Explain
1	L	Fireline L pole	6		Auxiliary contact N (normally closed)
2	N	Neutral pole N	7	AUX	Always open auxiliary contact N
3	PE	Power supply grounding protection	8		Common port
4	SIGN	Remote alarm output normally open auxiliary contact NO	9	RS485_A	485 Communication A port
5			10	RS485_B	485 Communication B port
			11	-	Empty

Note: RS485 Terminal Wiring Requires A/B Connection.

2.4 Hookup

Figure 2-2 Terminal Connection Description
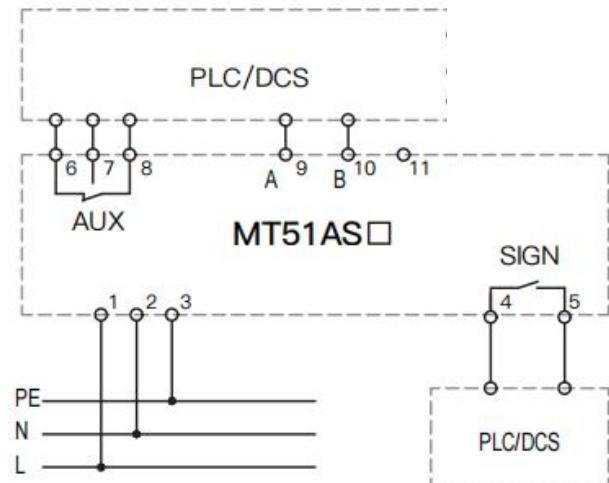
3 Equipment USE

3.1 Auto Pattern

The MT51AS remote-controlled automatic reclosing device operates in Auto mode under normal conditions, executing the reclosing procedure as described in Section 3.1.1.

To run in automatic mode, follow these steps.

1. Set the work mode switch to Manual (Manu) to open the device.

2. Check the power and communication wiring for errors.

3. Set the work mode switch to Auto and manually close the circuit.

3.1.1 Work Logic

Control Reclosing Through RS485 Commands in Auto Mode

➢ The RS485 interface enables control of circuit opening/closing and status monitoring.

Note: Auto mode: RS485 open/close functions are available. The RS485 communication address and baud rate support read/write operations.

Control the Number of Auto-Restart Attempts in Auto Mode

➢ By adjusting the Reclosing Delay button and Reclosing Count button, you can customize the automatic reclosing frequency and delay time for equipment misoperation. If the tripping count exceeds the set automatic reclosing frequency, an AUX signal will be sent to the control panel.

The custom overlap count and delay time comparison table is as follows:

N/ number of times	T/Delay Time	N/ number of times	T/Delay Time
-	0	5	60s
1	10s	6	90s
2	20s	7	120s
3	30s	8	150s
4	45s	9	180s

Unlocking: After manual troubleshooting, switch the operation mode from "Manu" to "Auto " and close the circuit once via RS485 before unlocking.

Note: The lock cannot be released even if you manually close the circuit or power it on again.

3.2 Manu Pattern

For the MT51AS remote-controlled automatic reclosing device, during field commissioning, the equipment must be set to manual mode (Manu), with the operating logic specified in Section 3.2.1.

To run in manual mode, follow these steps.

1. Set the work mode switch to Manual (Manu) to open the device.

2. Check the power and communication wiring for errors.

3.2.1 Work Logic

➢ The device automatically disconnects. This mode is used for temporary on-site maintenance to prevent safety accidents caused by remote power supply.

➢ The device cannot be controlled via RS485

➢ You can only manually close the switch.

3.3 Lock Pattern

The MT51AS remote-controlled automatic reclosing device must remain in Mechanical Lock mode during extended maintenance. To operate in Manual mode, follow these steps.

1. Set the work mode switch to Mechanical Lock mode (Lock) to automatically activate the device's open state.

2. The device must be locked with a security lock.

3.3.1 Work Logic

➢ The equipment is isolated and secured with a mechanical lock. This mode is used for extended maintenance away from the switch site to prevent accidental power-on and potential safety hazards.

4 Technical Feature

4.1 Technical Parameter Table

Functional description		
Number of poles of circuit breaker	1P/2P	3P/4P
Manual/Auto Switch	●	●
Splitting safety lock	●	●
Split state indicator	●	●
Open and close the circuit breaker	RS485 control	RS485 control
Electrical character		
Rated operating voltage (Un)	AC230V	
Rated insulation voltage (Ui)	500V	
Rated frequency	50Hz	
Mechanical properties		
Number of reclosing attempts	Number of reclosing attempts [N]: 0 to 9 corresponds to "0", "1", "2", "3", "4", "5", "6", "7", "8", and "9" attempts, respectively.	
Reclosing time	Re-closing time [T]: -to 9 seconds correspond to: "no reclosing", "10", "20", "30", "45", "60", "90", "120", "150", "180" seconds	
Maximum number of consecutive automatic reclosing operations	The number of reclosing attempts can be set	
Environmental characteristics		
Working temperature	-25℃~+60℃	
Storage temperature	-40℃~+70℃	
Relative humidity (no condensation)	55℃~RH 95%	
Remote control function		
Autoreclose circuit breaker	●	
The reclosing operation was interrupted due to a fault.	●	

Signal for reclosing operation	●	
Fault indicating lamp	●	13
Reconnect function on/off	●	

4.2 Outline Dimension
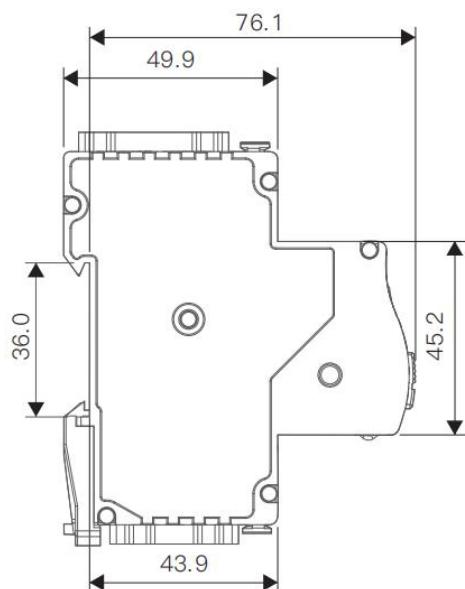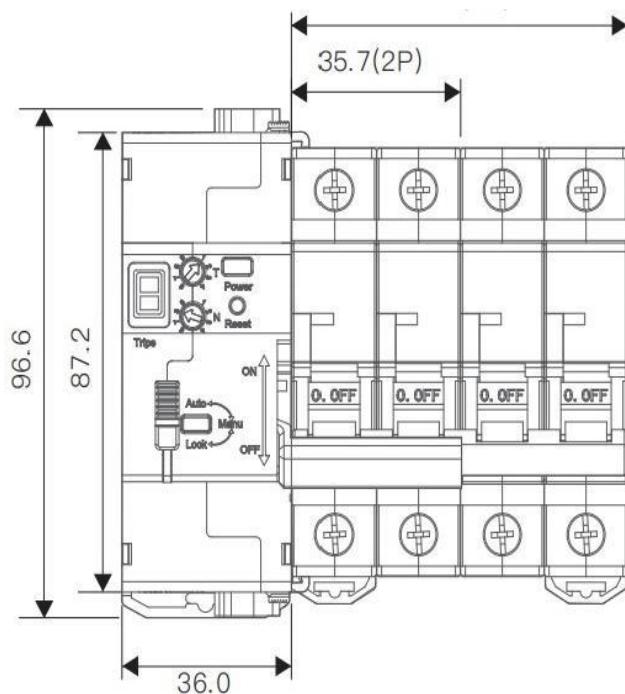
5   RS4 8 5 Communication

The MT51AS remote-controlled automatic reclosing device features an RS-485 communication port and utilizes the MODBUS-RTU communication protocol.

5.1 Communication

The RS-485 cable must be a twisted pair cable with mesh shielding (minimum 3 wires), and the maximum distance between the MT51AS and the main equipment is 1200 meters.

The bus can connect up to 32 MT51AS devices.

Use the intelligent RS-485 protocol converter to establish communication with the master device.
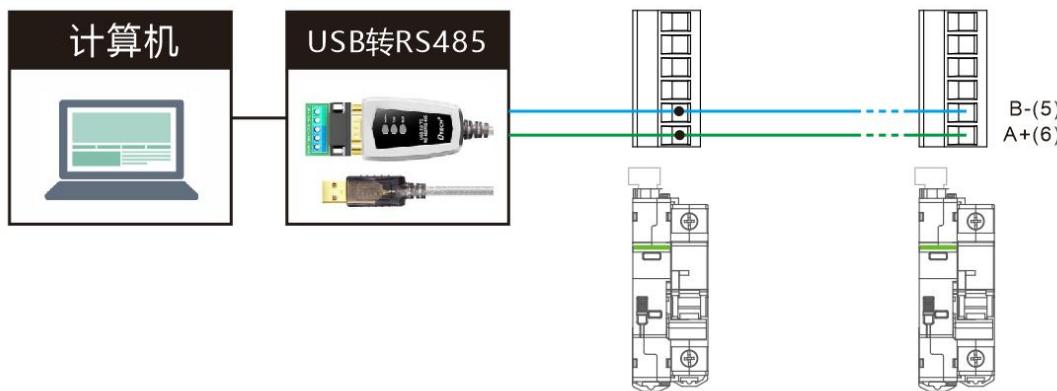
5.2 MODBUS Protocol

In the Modbus protocol, the MT51AS operates in RTU (Remote Terminal Unit) mode. For details on the Modbus functionality implemented in the device, see the "MT51AS Protocol Appendix".

5.3 MODBUS Communication Parameter Settings

The prerequisite for communication between the device and the master station is that the communication parameters must be set accurately. The communication parameters of the MT51AS include:

➢   The default address is 01, which can be modified by the host computer. The modification range is from 01 to 247 in decimal.

➢   Baud rate: Default is 9600, which can be adjusted via the host computer software.

➢   The communication parameters can be set freely if necessary.

6 Frequently Asked Questions

Problem presentation	Possible reasons	Terms of settlement
	Incorrect lock button position	Ensure the safety lock push button is in the indicated position At the Auto position
Delivery consistency of the meaning the target http	Line abnormality matches the defined RS485 communication address	Check if the circuit is disconnected Check if the device address
	Incorrect RS485 baud rate	Check whether the device communication rate is set
	Split/merge Gate command, none Reaction The host computer does not Can be native to Product Communication	
	485 The bus is too long and lacks termination resistors, causing current signal reflection is causing interference to the bus	Check if the 120-ohm resistor Check if the communication shielding layer is properly connected to avoid interference with the communication link
	Communication line error	Check if the communication cable is disconnected

7 Technical Service

Customers purchasing the MT51AS remote-controlled automatic reclosing device are entitled to a 24-month warranty from the date of purchase. During this period, any functional issues caused by product defects will be repaired or replaced free of charge. However, non-recoverable damage resulting from improper use, accidental drops, or incorrect installation wiring may require paid repairs or replacements. Note that unauthorized disassembly or modification of the device will void warranty coverage.

If you have any questions about device operation or malfunction, contact MaiDou technical support.

Statement：

➢ The information provided in this manual may be modified without prior notice.

➢ Shanghai Maidou Electric Co., Ltd. reserves the right to interpret the information.

Website:www.matismart.com

Mail:info@matismart.com

Telephone fax: 0086 2168682728

Mobile: 0086 186 2187 9631

Address: No.83, West Third Road, Pudong, Shanghai