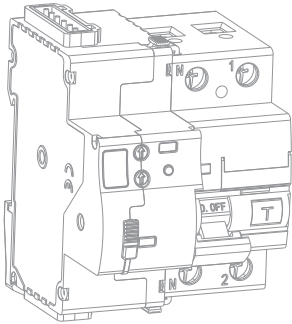# 1. MT51SD Series Remote Recloser with Insulation Control

The MT51SD is an intelligent reclosing attachment for end–branch distribution circuits, integrating the following functions:

· Automatic Reclosing   · RS485 (Modbus RTU) remote control

· Insulation detection before closing   · Electrical interlocking and mechanical locking

· Local C1/C2 control input   · Opening/closing status, fault output

Applicable to the following protection devices:

	MCB		RCD		RCBO				
	1P/2P	3P/4P	2P	4P	1P	2P	3P	3P+N	4P
MT51SD-1	✔		✔		✔	✔			
MT51SD-2		✔		✔			✔	✔	✔

2. Product Installation
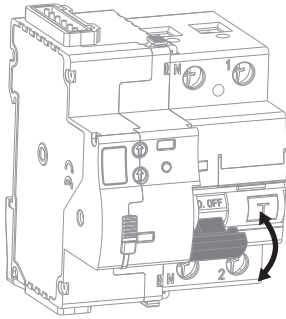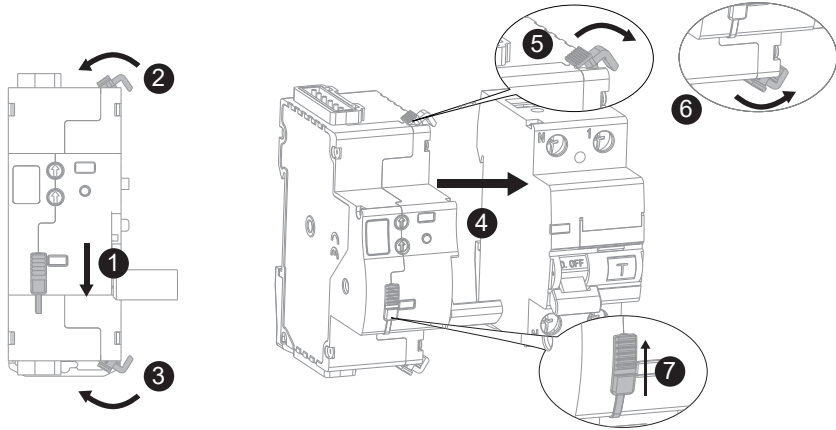
3. Product Structure and Component Description
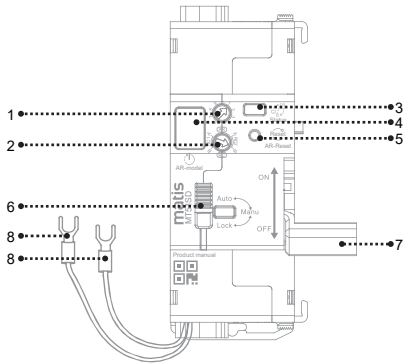
1: AR Knob (Reclosing Mode Selection)

2: RC Knob (Control Mode Selection)

3: Status Indicator Light

4: Reclosing Counter Display

5: RESET Button

6: Auto/Manu/Lock Switch

   (Supports Mechanical Padlock)

7: Opening/Closing Operating Handle

8: Insulation Detection L/N Wires

   (Must be connected to the circuit breaker load side)

4. Overview of Top and Bottom Terminal Wiring
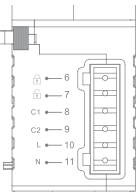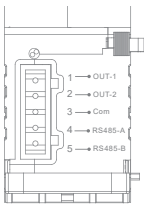
1: OUT1 (Closing/Opening Status)

2: OUT2 (Insulation Fault/Reclosing Failure)

3: Common Terminal

4: RS485–A

5: RS485–B

6: Lockout (Inhibit Automatic Reclosing; Optional Disable for C1/C2, RS485)
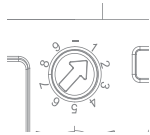
7: Unlock

8: C1 Continuous Control Signal (Close/Open)

9: C2 Pulse or Authorization Signal (According to RC Mode)

10: L(AC 220V Live Wire)

11: N(AC 220V Live Wire)

5. Knob Functions (AR and RC)

Knob 1 (AR): Auto–reclosing Mode

Knob 1 is used to select the auto–reclosing operating mode. There are two types, matching [MCB/PCBO] & [FCCB/RCBO] respectively. After the auto–reclosing program is locked, one reclosing operation can be performed remotely via control terminals or RS485. If the reclosing attempt fails, remote or manual reset is required to restore the auto–reclosing settings.

MR0: Disable Auto–reclosing

· MR1 — MR9: MCB/RCBO Mode

ER1 — ER9: FCCB/RCBO Mode

· MR9/ER9: User–defined Mode
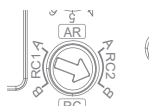
Knob 2 (RC): Control Mode

Knob 2 selects whether the MT51SD accepts signals from a central control source or local override control signals, depending on its position.

· RC1: Local C1/C2 control has priority; RS485 is auxiliary

· RC2: RS485 control has priority; local control acts as a forced override

6. Main Functions

Auto–Reclosing

- Automatically attempts to re–close according to preset program after non–commanded tripping
- Supports multiple modes: MP0~MP9, EP0~EP9

Insulation Detection

- Performs L/N to ground insulation test before each auto–reclosing attempt
- Blocks closing and outputs M/Fault signal if insulation is unsatisfactory

Local Control

- C1: Continuous signal control
- C2: Pulse/Authorization control (depending on RC mode)

RS485 Remote Control

- Open/Close operation
- Parameter reading
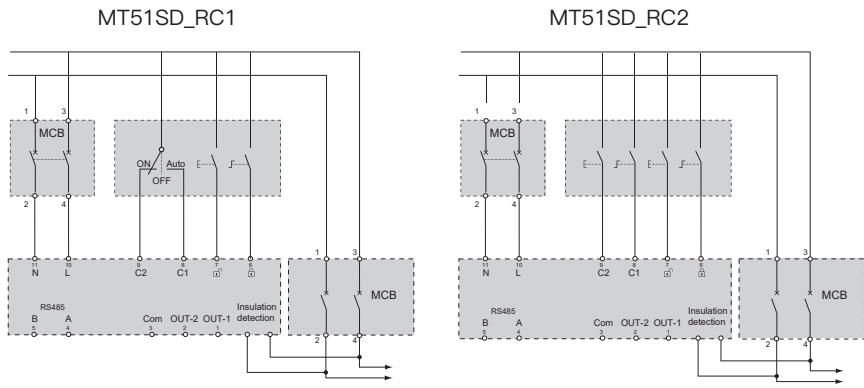- Reading of reclosing cycle and status

Electrical Lockout

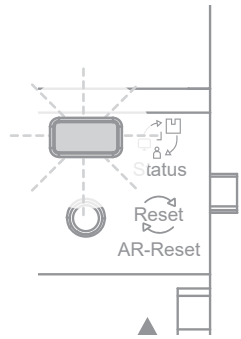- When lockout input is active: Disables auto–reclosing + Optionally disables remote/local control

Status Output

- Opening/Closing status
- Insulation fault
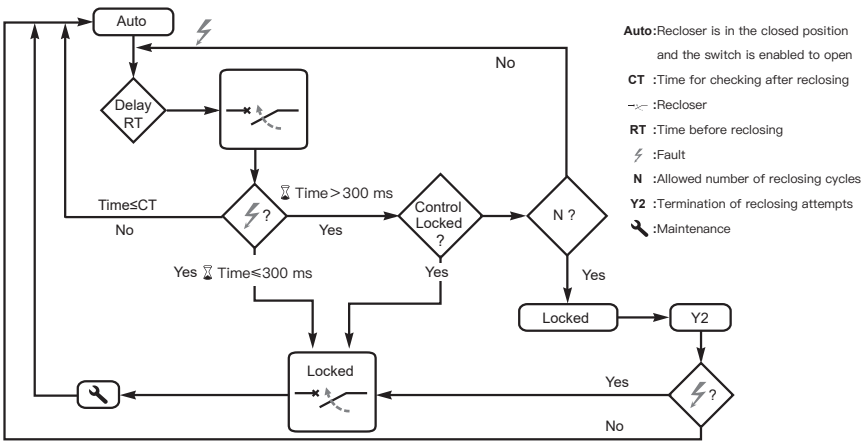- Reclosing failure (End of Cycle)

7. Wiring Instructions

MT51SD_RC1

MT51SD_RC2

8. Indicator Light Status

Indicator Light Status (Status Indicator Description)

Color	Status		Description
Green	Solid On	Fixed brightness	Closed Status (Normal operation)
	Slow Flash	2–second cycle	Waiting after Unlock or Reset
Red	Solid On	Fixed brightness	Open/Self–Lock/Safety Lockout
	Slow Flash	2–second cycle	Automatic Reclosing Waiting
Yellow	Solid On	Fixed brightness	Insulation Detection Failed
	Slow Flash	2–second cycle	Electrical Interlock Active

9. Reclosing Logic Diagram (Applicable to MCB & RCBO)

Auto: Recloser is in the closed position and the switch is enabled to open
CT : Time for checking after reclosing
–⁄ : Recloser
RT : Time before reclosing
⚡ : Fault
N : Allowed number of reclosing cycles
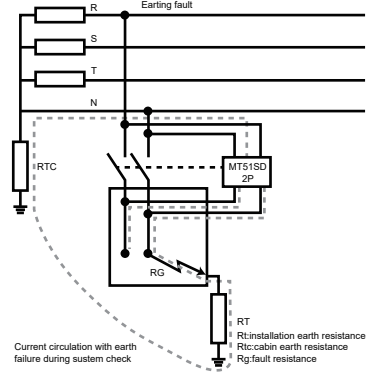Y2 : Termination of reclosing attempts
🔧 : Maintenance

Note: Remote command opening or C1/C2 signal will immediately terminate the closing process.

10. Reclosing Logic Diagram (Applicable to RCCB & RCBO)
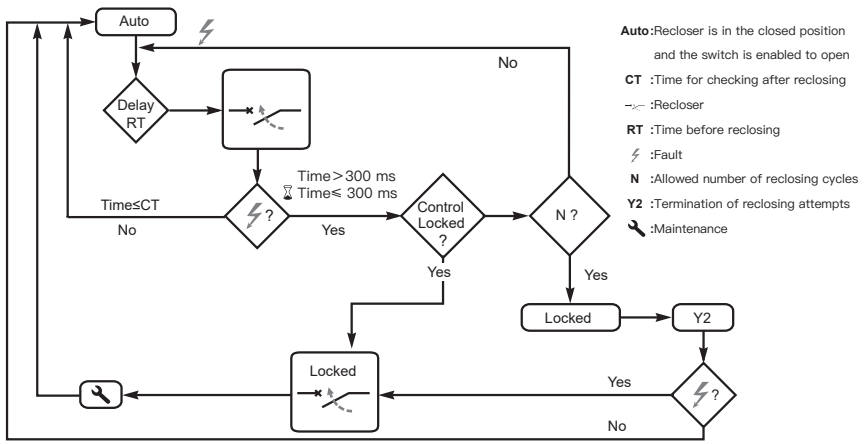
Auto: Recloser is in the closed position and the switch is enabled to open
CT : Time for checking after reclosing
–⁄ : Recloser
RT : Time before reclosing
⚡ : Fault
N : Allowed number of reclosing cycles
Y2 : Termination of reclosing attempts
🔧 : Maintenance

Note: Remote command opening or C1/C2 signal will immediately terminate the closing process.

11. Insulation Detection

Current circulation with earth failure during sustem check
Rt:installation earth resistance
Rtc:cabin earth resistance
Rg:fault resistance

Detection is only performed before automatic reclosing

When resistance (Rg≤8kΩ), automatic reclosing is forbidden
· The device's indicator light is solid yellow, and the system outputs an IM Fault alarm;

When resistance (Rg≥16kΩ), automatic reclosing is allowed
· The device's indicator light slow–flashes red, and it enters automatic reclosing;

Insulation fault state is cleared within 15 minutes
· utomatically exits the fault state, restores the reclosing logic, and continues to execute the remaining closing process

Insulation fault state persists for ≥15 minutes
· Enters "Permanent Fault Protection State", prohibiting all remote and local control operations

Press RESET for 3 seconds after clearing the fault