Auto-Reclosing Series (RS485)

MT53ASp Series

Product Manual (RS485 Version)

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1. Product Definition and Scope of Application

1. 1 Product Definition

The MT53ASp is a PRO-type automatic reclosing module designed for mechanical coupling with a compatible circuit breaker. The module identifies the circuit breaker's status through position and trip feedback. In AUTO mode, it performs delayed reclosing following a fault trip eligible for automatic recovery, according to the selected reclosing strategy. Through RS485 Modbus RTU, it supports status monitoring, parameter configuration, remote opening, remote closing, and lockout control.

1. 2 Core Functions

- AUTO/MAN (or mechanical lockout) mode detection;
- Status monitoring for circuit breaker opening, closing, and fault tripping;
- Customizable reclosing sequences with 1–5 attempts and four preset reclosing strategies;
- Independent configuration of the waiting time before each reclosing attempt and the stabilization time after reclosing;
- Recording of opening, closing, and lockout causes, as well as operation counts;
- Permanent fault detection if the circuit breaker trips again within ≤700 ms after closing;
- Remote opening, closing, lockout, parameter configuration, reset, and restart via RS485;
- Independently enabled automatic closing upon restoration of power.

1.3 Applications

Application	Recommendation	Limitations
General lighting and power branch circuits	Select Short-3 or configure according to site requirements	Confirm that automatic restoration will not pose a risk to personnel or equipment
Fans, water pumps, and factory auxiliary circuits	Select Long-fixed	Verify restart interlocks and mechanical safety
Unattended equipment and communication circuits	Select Progressive	Maintain remote monitoring and lockout capabilities
Circuits prone to nuisance tripping caused by transient surges	Select Short-1	Repeated reclosing must not be used to mask persistent faults

2. Technical Specifications

Category	Item	Design Parameters / Definition
Power Supply	Rated operating voltage	230 V AC
	Rated frequency	50/60Hz
Communication	Physical interface	RS485, Modbus RTU slave
	Default slave address	1; configurable from 1 to 247
	Default serial settings	9600 bps, 8N1 (default register value: 0x1002)
	Supported baud rates	2400/4800/9600/19200/38400/115200 bps
Reclosing	Preset programs	Four selectable programs, with 0–5 reclosing attempts; defaults to the three-attempt reclosing program
	Custom number of attempts	Configurable from 1 to 5 attempts
	Custom timing	Waiting time before each reclosing attempt: 1–65535s, independently configurable
Safety	Permanent fault detection	Circuit breaker trips again within ≤700 ms after closing
Installation	Mounting method	DIN rail mounting / mechanical coupling with a compatible circuit breaker; refer to the mechanical drawings
Environment	Temperature	−25 °C to +55 °C

3. Operating Modes and Safety Lockout

3.1 AUTO (Automatic Mode)

- Automatic reclosing is permitted according to the selected strategy.
- RS485 remote control is permitted only after remote control has been enabled.
- Automatic reclosing is prohibited following manual opening or RS485 remote opening.

3.2 MANU (Manual Mode)

- Automatic reclosing is prohibited in MAN mode.
- Local manual opening and closing are permitted.
- Switching from AUTO to MAN immediately cancels any pending automatic reclosing operation.

3.3 LOCK (Mechanical Lockout Mode)

- When the mechanical safety lock is engaged, all closing operations are prohibited, including motorized closing, automatic reclosing, remote closing, and manual closing.

4. Automatic Reclosing Logic

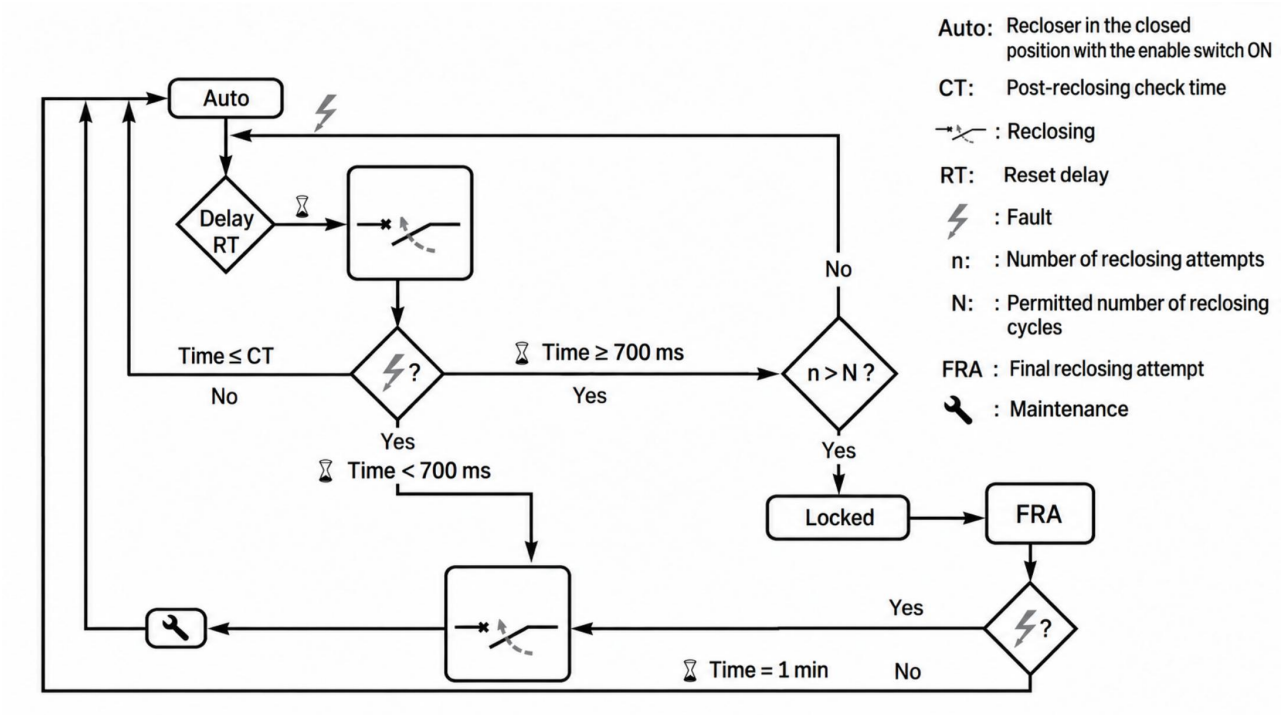
4.1 Conditions for Permitting and Prohibiting Automatic Reclosing

Condition	Action
AUTO mode; fault trip detected; no manual or remote opening; device operating normally; reclosing enabled; reclosing attempts remaining	Start automatic reclosing according to the selected strategy
MAN mode or mechanical LOCK engaged	Automatic reclosing is prohibited
Intentional manual or remote opening	Remain open; do not initiate automatic reclosing
Reclosing strategy set to Disabled	Remain open
Circuit breaker trips again within ≤700 ms after closing	Identify as a permanent fault and activate lockout

4.2 Automatic Reclosing Strategies

Mode Value	Mode Name	Attempts	Delay Strategy	Application
0	Disabled	0	—	Disable automatic reclosing
1	Custom	1～5	Independently configurable for each attempt	Adjustment to suit site conditions
2	Short-1	1	10s	Nuisance tripping caused by transient surges
3	Short-3	3	10s / 1min / 3min	General lighting and power circuits; recommended default
4	Long-fixed	5	10s / 1min / 3min / 3min / 3min	Factory main power feeders and fan circuits
5	Progressive	5	10s / 1min / 3min / 4min / 5min	Abnormal fluctuations and self-recovery scenarios

4.3 Reclosing Sequence



5. LED Indication Logic

The module's front panel features a multicolor LED indicator that provides real-time feedback on the device's operating status:

Status	Indication
● Steady green	AUTO mode; normal operation
● Flashing green	MAN mode; manual opening and closing required
● Flashing red	Waiting for reclosing / countdown in progress
● Steady red	Automatic reclosing sequence locked out or permanent fault detected
● Steady yellow	Remote motorized closing failed

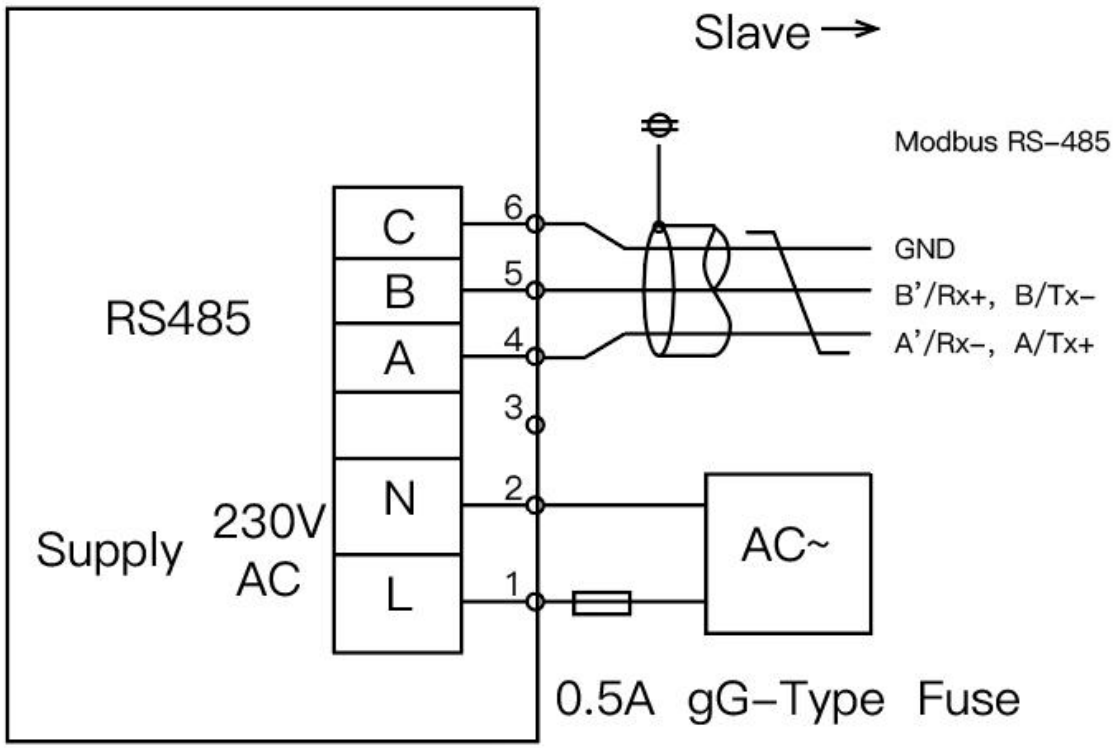
6. Terminal Definitions

Terminal No.	Function	Description
1、 2	Power input	230V AC (±15%）
4	RS-485 A	Communication interface A
5	RS-485 B	Communication interface B
6	RS-485 GND	Communication ground (optional connection)

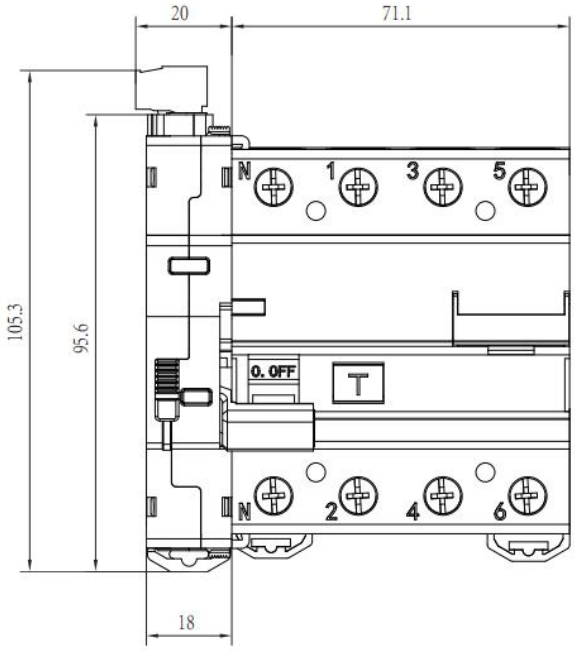
RS485 Communication (Modbus): Enables bidirectional communication with the monitoring platform via terminals 4 and 5, supporting real-time reading of trip counts and fault causes, as well as remote reset commands.

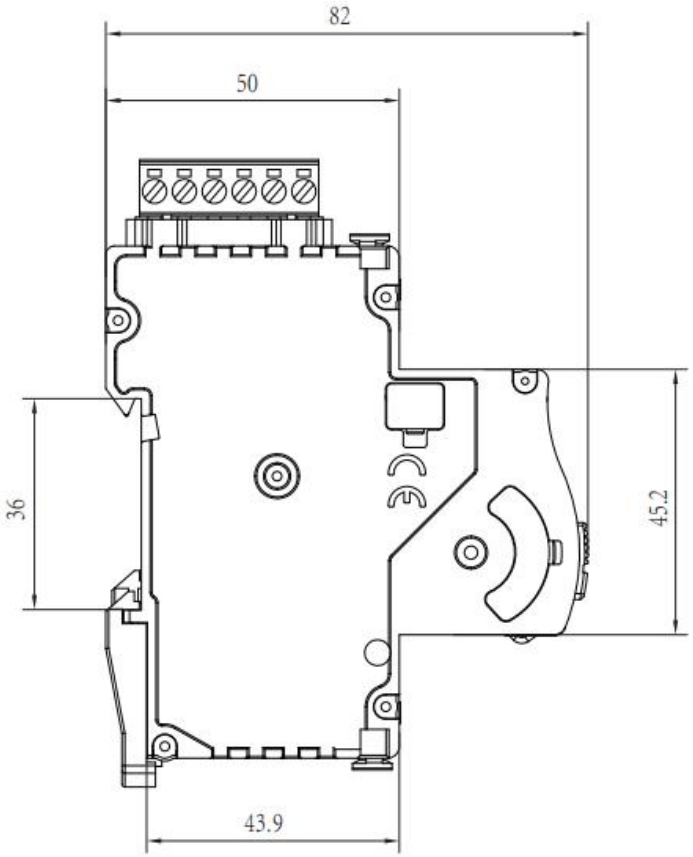
Auxiliary Module Connection: The side expansion interface supports up to two auxiliary signaling modules (OF & SD) for dry-contact outputs or integration with a local alarm system.

6.1 Wiring Diagram



7. Dimensional Drawing





8. EMC Standards

Test	Basic Standard	Test Level / Description
Electrostatic discharge immunity (ESD)	IEC 61000-4-2	Level 3; air discharge: 8 kV; contact discharge: 6 kV
Radiated radio-frequency electromagnetic field immunity (RS/RFI)	IEC 61000-4-3	Level 3; 10 V/m, 80–1000 MHz
Electrical fast transient/burst immunity (EFT)	IEC 61000-4-4	Level 2; 2 kV (power lines), 5/50 ns
Surge immunity	IEC 61000-4-5	Level 3; common mode: 4 kV; differential mode: 2 kV
Conducted disturbance immunity (CS)	IEC 61000-4-6	Level 2; 3 V, 150 Ω, 0.15–80 MHz
Power-frequency magnetic field immunity	IEC 61000-4-8	Level 4; 30 A/m, continuous wave
Immunity to common-mode conducted disturbances below 150 kHz	Test values based on IEC 61000-4-16	Test Level 3
Radiated emissions (RE)	EN 55022 / CISPR 22	Class B
Conducted emissions (CE)	EN 55022 / CISPR 22	Class B