

**RESIDUAL CURRENT AND
OVERCURRENT / SHORT-CIRCUIT
PROTECTION EQUIPMENT EQUIPPED
WITH SELF-RECLOSING SYSTEM**

**DIN RAIL SERIES
(WRT-6-25)**

USER'S MANUAL

USER'S GUIDE FOR

SELF-RECLOSING PROTECTION EQUIPMENT

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1.- INTRODUCTION

The **device** provides an overcurrent/short-circuit and residual current protection for either single or three-phase (with or without neutral wire) power systems, with **self-reclosing** ability for a residual current and/or overcurrent fault. In case of a trip, the electronic relay tries a reclosing action up to **10 times** for a residual current fault, and up to **2 times for an** overcurrent fault.

The **device** guaranties the power system to be cut either due to a residual current or overcurrent fault, so offering a complete protection of the electrical mains.

This system is specially suitable for those installations which, due to their location, are difficult to be controlled: cooling chambers, facilities at countryside, etc.

This protection equipment with self-reclosing system for DIN rail mounting is basically formed by following elements:

1. Electric-motorized circuit breaker model FA with 2 or 4 poles.
2. Tripping coil F3
3. Control relay WRT-6-25

The control relay of the WRT-6-25 system delivers following features and functions:

1. Counter of reclosing actions.
2. Display of instantaneous residual current.
3. Transformer for residual current detection purposes.
4. Free-voltage auxiliary contact for the indication of the relay latched situation.
5. Independent signaling leds for partial trips or latches.



2.- EQUIPMENT DESCRIPTION

2.1.- Residual current protective system

Two types are distinguished according to the rated sensitivity of the residual current protection system:

- **Code 550 554** - **WRT-6-25 -0,03** , rated sensitivity, $I_{\Delta N} = 30$ mA
- **Code 550 555** - **WRT-6-25.0,3** , rated sensitivity, $I_{\Delta N} = 300$ mA

The frontal cover incorporates three push-buttons, one display and diverse signaling leds.

Two terminals marked as E1/E2 in the lower part of the WRT-6-25 relay provides an optional indication of the locked situation of the equipment once the maximum allowable number of reclosing attempts is reached, either by residual current or overcurrent/short-circuit fault.

Push-buttons description:

Test: Test to check the residual protection system out.

Reset: Reclosing of the relay and reset to zero of internal counters of reclosing actions.

Select: Change of display values.

Display functions:

- No. of reclosing actions. (Rd led)
- Instantaneous value of the measured residual current. (Cd led)

Description of signaling leds:

Sign	Led description
Power	Power supply
OFF	Residual current &/or overload &/or short-circuit fault
Em	Indication of the circuit breaker status: Fixed on: latched situation after 2 reclosing attempts by overload &/or short-circuit trip.
Ed	Indication of the residual current relay status: Fixed on: latched situation after 10 reclosing attempts by residual current trip.
3-digit display	Indication of the total number of reclosing actions. Indication of instantaneous residual current (the value keeps in display after the relay sensitivity has been exceeded)
Cd	When ON the display shows the residual current value.
Rd	when ON the display shows the total number of reclosing actions.

2.2.- Overcurrent and short-circuit protective system**M41 Series: Range from 6 to 63 A**

The electric-motorized circuit breaker guarantees the effective protection against overcurrent or short-circuit (**10 kA DIN VDE**). These circuit breakers can be either single-phase or three-phase plus neutral type.

The circuit breaker can be closed or open either directly over the own circuit breaker or by means of a command given by the relay.

After a trip due to an overload or a short-circuit event, the circuit breaker will automatically switch to its ON position back (up to **2 attempts**) provided the fault in the installation has disappear once passed the set delay time (1 min).

The circuit breaker can be manually reclosed at any time just pressing the button RESET in the relay.

The circuit breaker motor incorporates:

- A yellow lever which permits the circuit breaker to be locked once it has been opened, in order to avoid this could be neither mechanically or manually put to the OFF position back. The circuit breaker can also be locked in the OFF position by means of a padlock (6 mm \varnothing passing hole).

- A set of auxiliary contacts to inform about the circuit breaker status. A closed contact means that the circuit breaker is in the OFF position.



SPECIFICATIONS OF M41 SERIES	
- Rated current In (A)	6 - 10 - 16 - 20 - 25 - 32 - 40 - 50 - 63
- Rated operation voltage Un	240 V / 415 V~
- Breaking capacity	10,000 A (DIN VDE 0641/6.78).
- Number of poles	1/ 2/ 3/ 4
- Tripping characteristics	C type curve.
- Rated operation frequency	50/60 Hz
- IP degree	IP 40 (DIN 40050)
- Storage temperature	- 55 °C to +55 °C
- Operation temperature	- 25 °C to +55 °C
- Case colour	RAL 7035

2.3.-Tripping coil F3



The tripping coil F3 is an emission type coil powered at 230 V~.

This coil enables a quick and safety trip of the circuit breaker when this receive the pertinent command from the residual current relay WRT-6-25 in case of a residual current fault event.

3.- OPERATION MODE

Features of the WRT-6-25 as a residual current protective device:

- Built-in measuring differential transformer, inner diameter of \varnothing 25 mm.
- Sensitivity set at 30 mA or 300 mA (adjustable in factory).
- Delay time between successive reclosing actions set at 1 minute.
- Allowable number of reclosing attempts set at 10.
- Period of 30 minutes to be waited before the internal counter of reclosing actions is reset to zero.

Features of the WRT-6-25 as a overcurrent/short-circuit protective device:

- Allowable number of reclosing attempts set at 2.
- Delay time between successive reclosing actions set at 1 minute.
- Period of 30 minutes to be waited before the internal counter of reclosing actions is reset to zero.

The electric-motorized circuit breaker guarantees the effective protection against overcurrent or short-circuit (10 kA DIN VDE). These circuit breakers can be either single-phase or three-phase plus neutral.

The circuit breaker can be closed or open either directly over the own circuit breaker or by means of a command given by the relay.

After a trip due to an overload or a short-circuit event, the circuit breaker will automatically switch to its ON position back (up to **2 attempts**) once passed the set delay time (1 min).

The circuit breaker can be manually reclosed at any time just pressing the button RESET in the relay.

The circuit breaker motor incorporates:

- A yellow lever which permits the circuit breaker to be locked once it has been opened, in order to avoid this could be neither mechanically or manually put to the OFF position back. The circuit breaker can also be locked in the OFF position by means of a padlock (6 mm \varnothing passing hole).
- A set of auxiliary contacts to inform about the circuit breaker status. A closed contact means that the circuit breaker is in the OFF position (short-circuit, overload or manual disconnection).

4. - GENERAL SPECIFICATIONS

4.1 Circuit breaker of M41 series

Operation rated voltage	230 V _{AC} 2 wires 400 / 230 V _{AC} III+N
Rated current, I _N (A)	6 - 10 - 16 - 20 -25 -32 - 40 - 63

4.2 Relay WRT-6-25

Auxiliary voltage	230 V a.c.
Built-in differential transformer	Diameter of 25 mm.
Residual current, I _{ΔN}	30 or 300 mA, adjustable in factory
3-digit display	Counter of reclosing actions
	Visualization of the instantaneous residual current, and hold in display in case of trip by residual current fault.
Allowable number of reclosing actions in case of trip by residual current fault	10 reclosing actions
Allowable number of reclosing actions in case of trip by overcurrent/short-circuit fault	reclosing actions
Delay time between reclosing actions	1 minute
Time period to be waited before the internal counter of reclosing actions is reset to zero, once the power supply has been restored and no other fault event occurs in the meantime.	30 minute
TEST Push-button	Test to the residual current protective system.
RESET Push-button	To reclose the system and reset to zero the counter of reclosing actions.
SELECT Push-button	Switch of the visualization mode between the number of reclosing actions and the value of the residual current.
Operation temperature	0° to 45° C
Storage temperature	-15° to + 60° C
Auxiliary signal (Terminals E1-E2)	NO free-voltage contact relay for the indication of a complete locked situation of the equipment either for the residual current or overcurrent/short-circuit reclosing system.

4.3 Tripping coil F3

Operation voltage	230 V _{AC}
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5. - SAFETY WARNINGS

5.1 - Circuit breaker M41:

- Repetitive switching ON-OFF actions may give rise to a high heating level, and even, a damage of the remote control system.

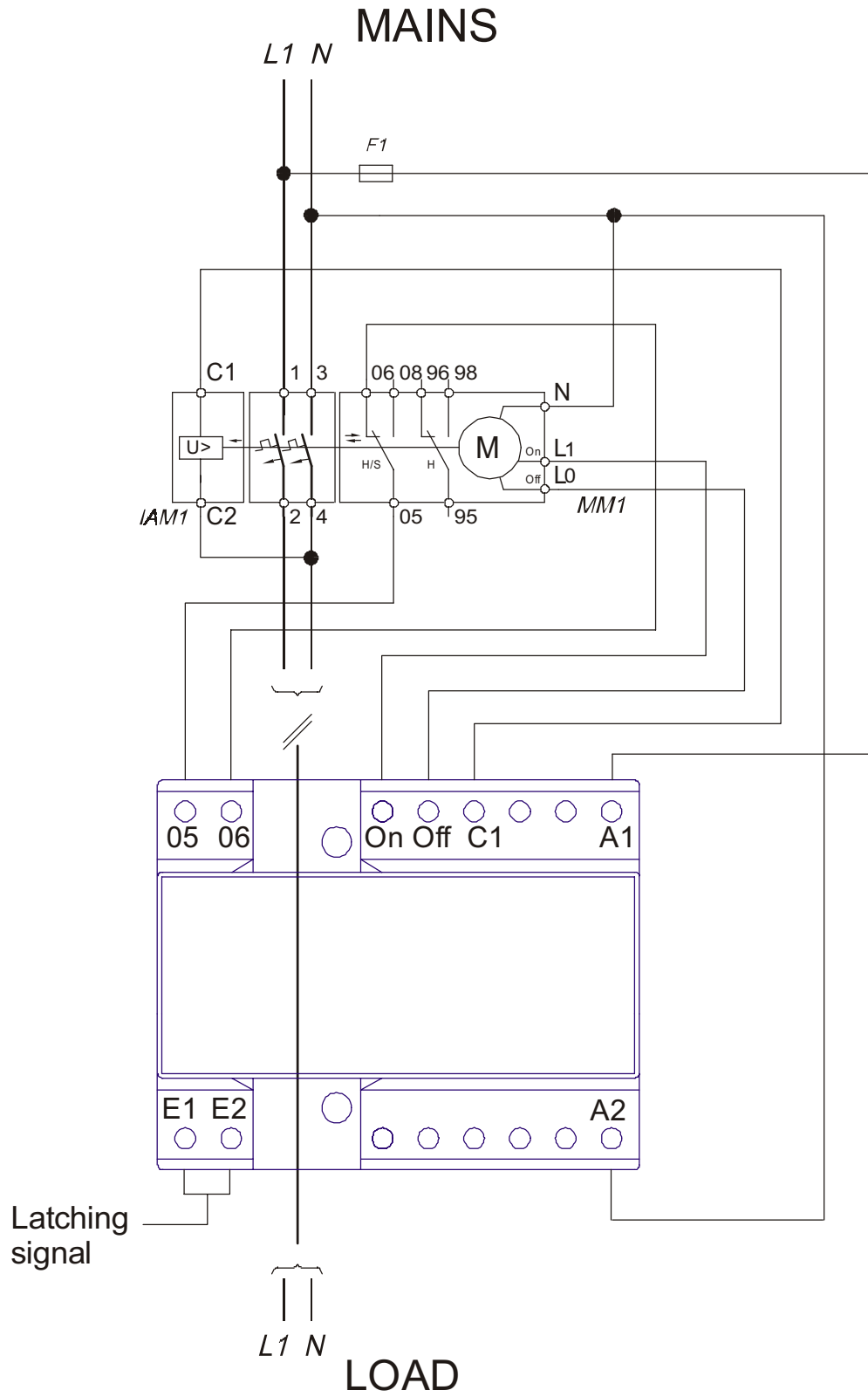
- After all reclosing attempts are completed, the fault in the installation must be solved before the circuit breaker is again manually switched ON.

- When the downstream installation is being manipulated, the yellow lever of the FA circuit breaker must be continuously placed in the OFF position to avoid not controlled reclosing actions to occur.

5.2. - Residual current protective relay:

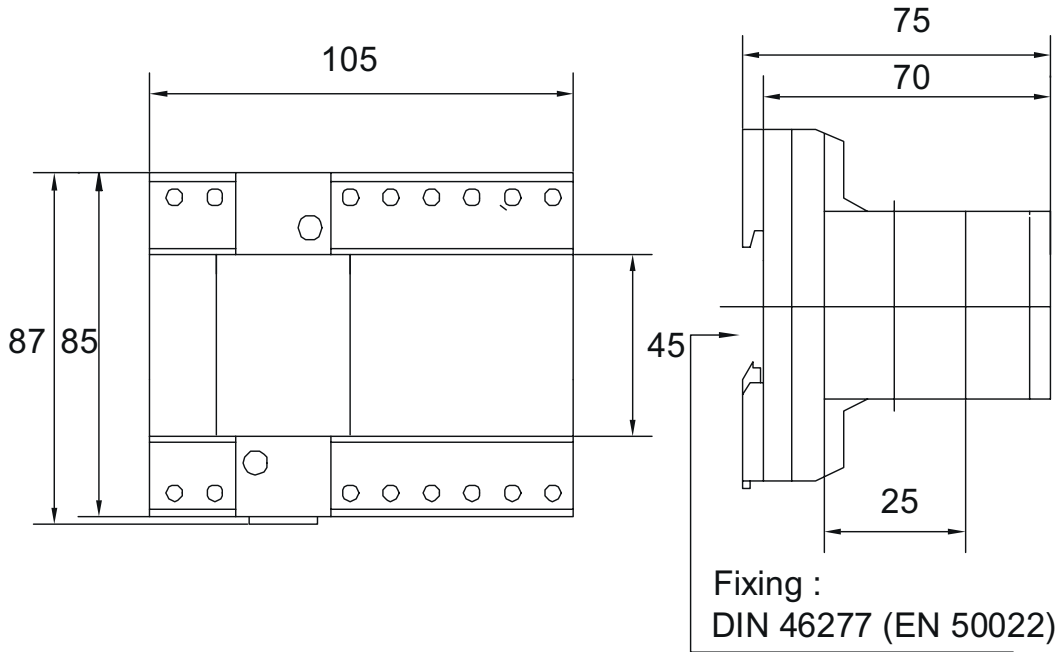
- The TEST push-button permits the user to check the correct operation of both the relay and the circuit-breaker.
- The RESET push-button enables:
 - Resetting to zero the internal counter of total reclosing actions.
 - Reclosing at any time the residual current and overcurrent/short-circuit-protective system.

6. - Connection diagram

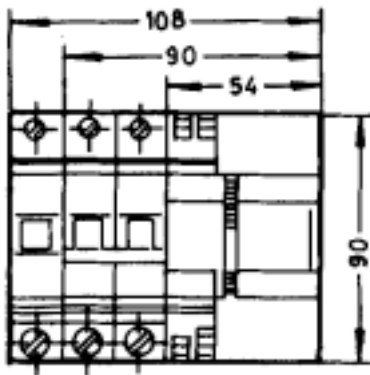


7. - DIMENSIONS

WRT-6-25-0,03
WRT-6-25-0,3



M41 2P+ F3



M41 3P + N + F3

