



MRA-Pro-V2

Trip Circuit Supervision Relay

Introduction

Pro series offers a compact protection & supervision solution for Feeder, Generator, Motor & Transformer segment.

MRA-Pro-V2 supervision relay is a advance numeric relay that provides circuit breaker coil supervision.

Features

- Continuous Trip circuit supervision of both pre closing and post closing conditions in circuit breaker.
- Detection and alarm of trip circuit supply failure and circuit breaker tripping mechanism failure such as loss of voltage, trip circuit connection, contact degeneration in wires, contacts and coils.
- Single-phase CB monitoring
- Flush mounting enclosure
- 2 output contacts.
- Operation delay to avoid spurious signals for instance, on circuit breaker operations
- Functional Operation indication by 4 LED's namely CB OK , CB Fail , Manual and Edit.
- TEST function for Self Test facilitates routine maintenance.
- Auto / Manual operation mode.
- Wide range Auxiliary Supply.

MRA-Pro-V2 Model

MRA-Pro-V2 is available in two types of variants.

(1) Horizontal (H) (2) Vertical (V)

With ordering information of trip supply (24V/110V/220V DC models)

*See the further detail in model selection guide

Functional Operation:

The trip circuit of circuit breaker is normally wired through CB auxiliary contacts, and other interlocks (like spring charging full etc.) and then connected to Trip solenoid coil of circuit breaker and control voltage source through fuse links.

MRA-Pro-V2 continuously monitors these junction points. In the event of fault (like as TC coil is open or short, TC coil supply is less than 40% or CB contact failure) in the trip circuit it immediately triggers the internal timer (0.1-0.6sec supervision time delay).After expiration of supervision time delay if the faulty condition persists then it is reported as fault by two output relay operation and CB Fail LED indication.

This scheme ensures that all trip circuit wiring (tripping route) from the trip contact to the trip coil is supervised in either the breaker closed or open condition.

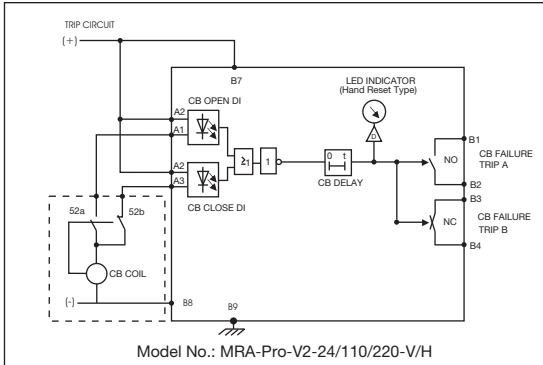
There are two modes of operation as under:

a) Auto Mode: In this mode Trip Circuit Faulty Status indication automatically gets reset once Trip Circuit becomes healthy.

b) Manual Mode: In this mode Trip Circuit Faulty Status indication will not be reset unless user reset it thru a front RESET key thru a single press.

To facilitate routine checkup there is a provision for TEST function in MRA-Pro-V2. User can enter into this mode by keeping the RESET key in pressed condition and then providing the auxiliary supply. To bring back to normal operation from this mode user has to switch off and then switch on the auxiliary supply of MRA-Pro-V2.

Functional & Connection Diagram



Terminal Description :

A1	CB Open DI
A2	DI COMMON
A3	CB Close DI
A4	x
A5	x
A6	x
A7	x
A8	x
B1	N/O Contact for CB Failure Relay Trip A
B2	COMM Contact for CB Failure Relay Trip A
B3	N/C Contact for CB Failure Relay Trip B
B4	COMM Contact for CB Failure Relay Trip B
B5	x
B6	x
B7	Auxiliary Supply (+ve)
B8	Auxiliary Supply (-ve)
B9	Earth

Man-Machine Interface(MMI)

MMI interface is available only in "Edit" mode. In this mode normal operation i.e trip circuit fault monitoring and fault status indicator reset function are deactivated and user can do following functions:

- Setting of Supervision Time Delay
- Setting of Auto / Manual mode.

This interface constitutes of 4 LEDs (CB OK, CB Fail, Manual & Edit) and front "RESET" key for setting and other operations for local access.

In normal mode once user press the "RESET " key for long duration (> 4 Sec) MRA Pro enters into EDIT mode. It will be visualized by switching ON of "EDIT LED" and it will also indicate the current Supervision Time Delay by glowing appropriate LED.

CBOK	0.1 Sec
CB Fail	0.3 Sec
Manual	0.6 Sec

While in this mode, user can change the Supervision Time Delay by pressing again the same key for short duration (< 0.3 Sec) and the change of supervision time delay would be reflected thru above 3 LED indication.

To save the above setting user has to press the "RESET" key again for a long duration. Once user has done so he/she will see blinking of "EDIT" LED and this will also indicate the current operation mode of MRA -Pro-V2 thru "Manual" LED.

Auto:	"Manual" LED OFF
Manual:	"Manual" LED ON

While in this mode, user can change the operation mode by pressing again the same key for short duration (< 0.3 Sec) and the change of operation mode would be reflected thru above "Manual" LED indication.

To save the above setting user has to press the "RESET" key again for a long duration. This will save the operation mode and will also bring MRA-Pro-V2 in normal operation as described in section "Functional Operation". While in "Edit" mode if no key is pressed for about 60 seconds then the mode will change to Normal operation mode.

Functions

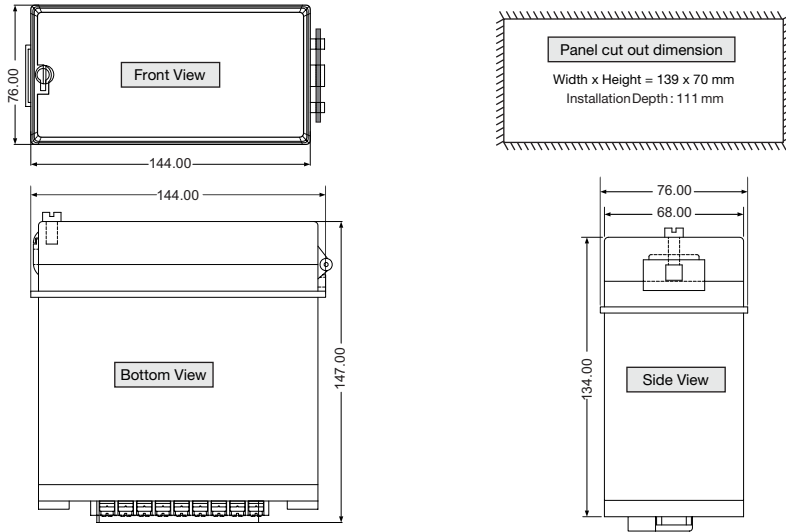
Trip circuit supervision
 24V DC (12V <Operative range< 48V)
 110V DC (55V <Operative range< 180V)
 220V DC (110V <Operative range< 280V)
 (Hysteresis: 15V DC)

Output

Two Potential free output contacts are available for CB failure indication.
 Quantity
 1: Trip circuit breaker fail (1 N/O)
 2: Trip circuit breaker fail (1 N/C)
 Max Breaking capacity
 AC: 1250 VA (AC), DC (Resistive load)
 0.4A, 200V DC
 Max.continuous Current
 for CB failure relay contacts
 6A at 230V AC/24V DC
 Aux. Supply
 24V/110V/220V DC
 CB Operating Time
 (Supervision Time)
 (0.1s/0.3s/0.6s) user settable with accuracy of ± 30 ms.

Dimensional Details

All dimensions in : mm



Model Selection

		-X-	-X-
Model No.	MRA-Pro-V2		
Trip Supply Voltage			
24V DC		24	
110V DC		110	
220V DC		220	
Mounting Type			
Vertical (V)			V
Horizontal (H)			H

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