

We touch your **electricity** everyday!

MRA PRO-V2

Trip Circuit Supervision Relay

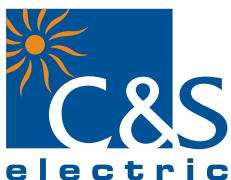


FLUSH
MOUNTING
ENCLOSURE

OUTPUT
CONTACTS

AUTO/MANUAL
OPERATION
MODE

SINGLE
PHASE
CB
MONITORING



PMD Division

CONTENTS

S.No.	Description	Page No.
1)	Introduction	03
2)	Features	03
3)	Functional Diagram	03
4)	Human Machine Interface	04
5a)	Connection Diagram (01 NO+01 NC).....	05
5b)	Connection Diagram (02 NO+02 NC).....	06
6)	Dimensional Details	07
7)	Function	08
8)	Output	08
9)	Ordering Information	08

Disclaimer

The information in this document is subject to change without any type of notice and should not be construed as a commitment by C&S. C&S assumes no responsibility for any errors that may appear in this document.

1) Introduction

Pro series offers a compact protection & supervision solution for Feeder, Generator, Motor & Transformer segment. MRA-Pro-V2 supervision relay is an advance numeric relay that provides circuit breaker coil supervision.

2) Features

- ◆ Microprocessor based design
- ◆ Continuous Trip circuit supervision of pre & 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
- ◆ 4 Output contacts (model dependent)
- ◆ 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 & Edit
- ◆ TEST function for Self Test facilitates routine maintenance
- ◆ Auto / Manual operation mode
- ◆ Wide range Auxiliary Supply

3) Functional Diagram

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.

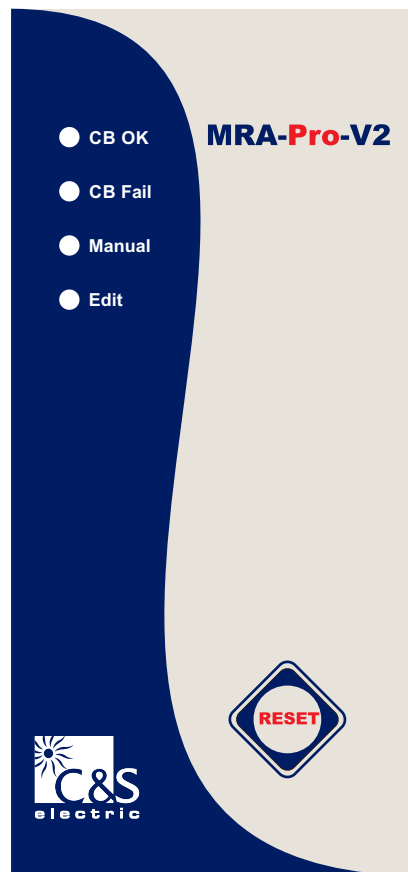
There are two modes of operation as under:

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 resets it through a front RESET key through 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.

4) Human Machine Interface



HMI 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:

- a) Setting of Supervision Time Delay
- b) 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.

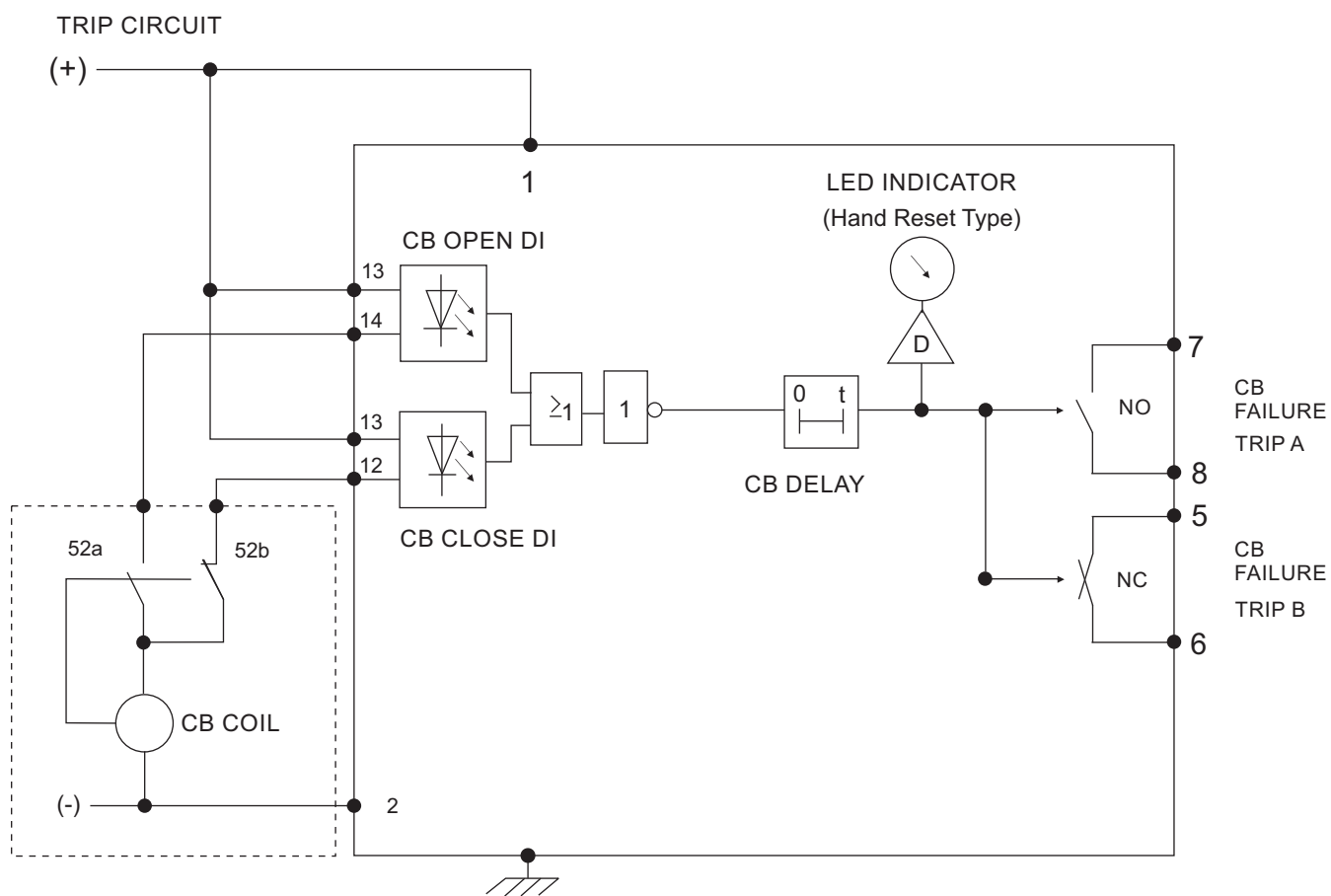
To save the above setting user has to press the RESET key again for a long duration. Once user has done so he/she will see blinking of EDIT LED and this will also indicate the current operation mode of MRA -Pro-V2 thru Manual LED.

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.

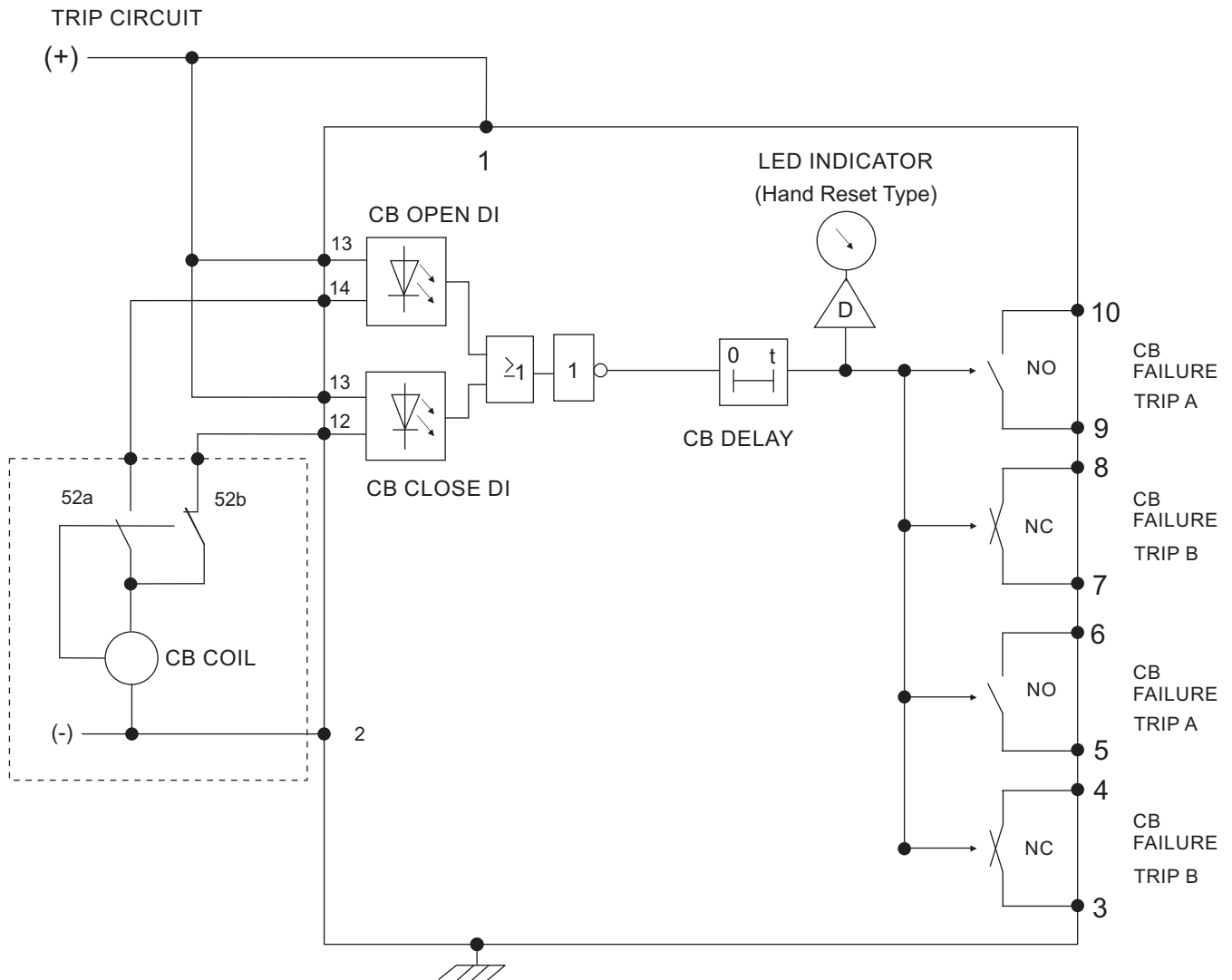
To save the above setting user has to press the RESET key again for a long duration. This will save the operation mode and will also bring MRA-Pro-V2 in normal operation as described in section Functional Operation. While in Edit mode if no key is pressed for about 60 seconds then the mode will change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

5a) Connection Diagram Model No.: MRA-Pro-V2-24/110/220-V-00



Terminal Description

Terminal No.	Description
1	Auxiliary Supply (+ve)
2	Auxiliary Supply (-ve)
5	N/C Contact for CB Failure Relay Trip B
6	COMM Contact for CB Failure Relay Trip B
7	N/O Contact for CB Failure Relay Trip A
8	COMM Contact for CB Failure Relay Trip A
12	CB Close DI
13	DI COMMON
14	CB Open DI



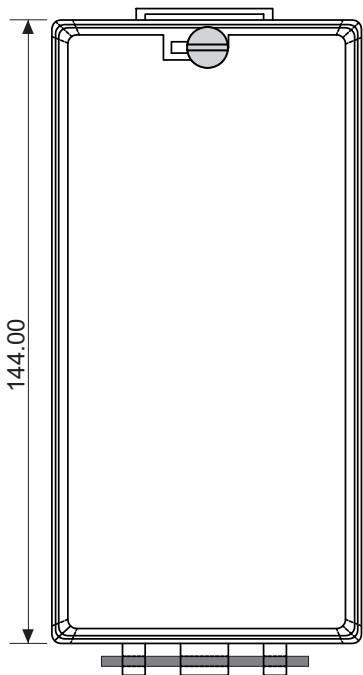
Terminal Description

Terminal No.	Description
1	Auxiliary Supply (+ve)
2	Auxiliary Supply (-ve)
3	N/C Contact for CB Failure Relay Trip B
4	COMM Contact for CB Failure Relay Trip B
5	N/O Contact for CB Failure Relay Trip A
6	COMM Contact for CB Failure Relay Trip A
7	N/C Contact for CB Failure Relay Trip B
8	COMM Contact for CB Failure Relay Trip B
9	N/O Contact for CB Failure Relay Trip A
10	COMM Contact for CB Failure Relay Trip A
12	CB Close DI
13	DI COMMON
14	CB Open DI

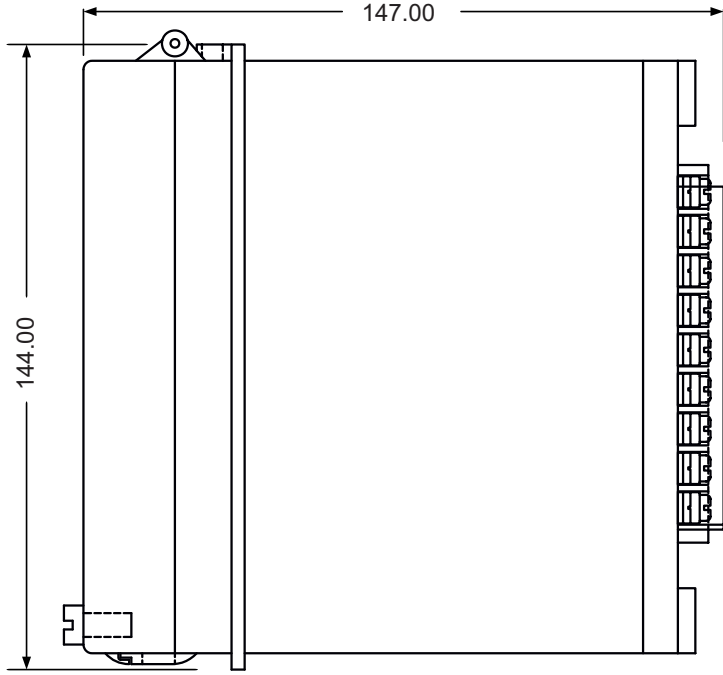
6) Dimension Details

(All the dimension are in mm, Gen. Tol : ± 1.0 mm)

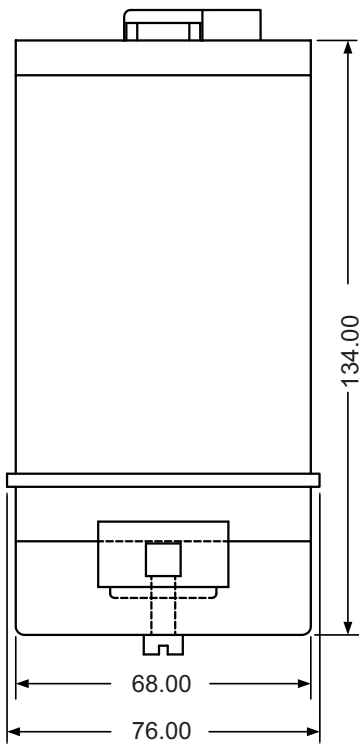
Front View



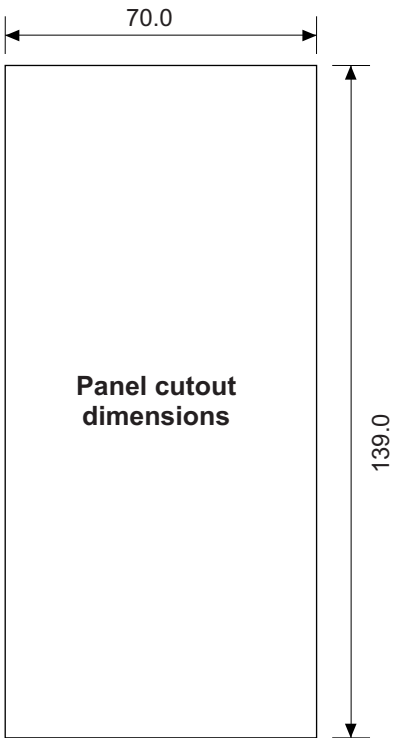
Side View



Top View



Panel cut out Details



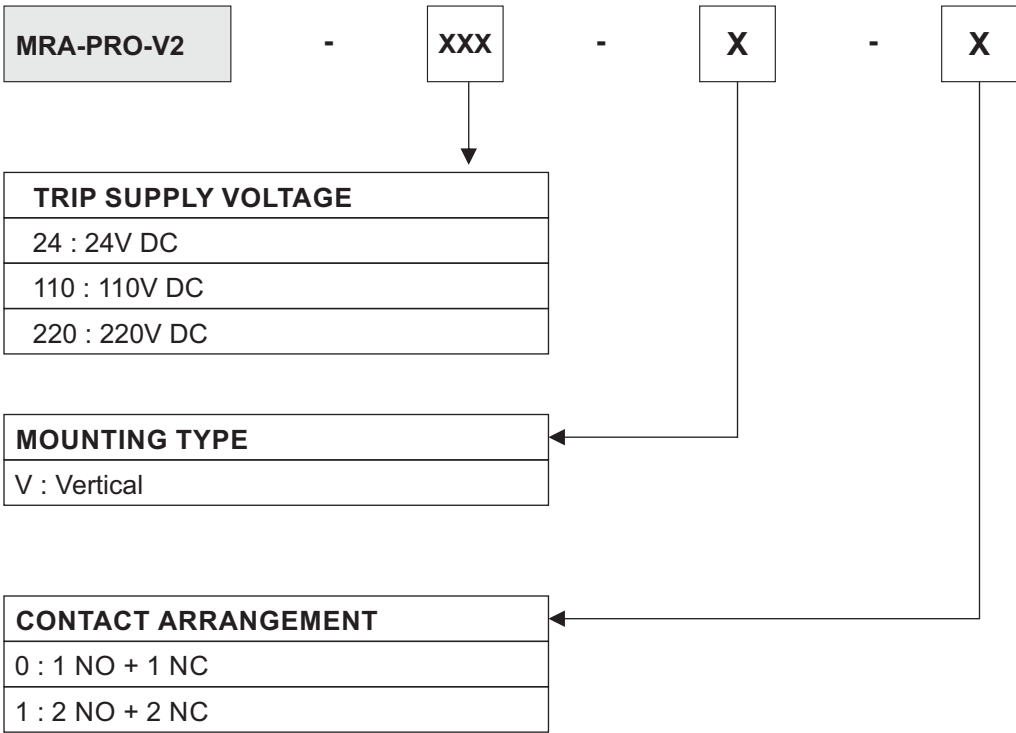
7) Functions

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

8) Output

Four Potential free output contacts are available for CB failure indication.	
Quantity	1: Trip circuit breaker fail (2 N/O)
	2: Trip circuit breaker fail (2 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.

9) Ordering Information



[illegible]

NOTE
The content in this document are not binding and is for general information.
C&S reserves the right to change the design, content or specification contained in this catalog without prior notice.

1800 572 2012

Branch	Phone	Fax	E-mail
Ahmedabad:	+91-79-615651 22/23/24	+91-79-61565130	ahmedabad@cselectric.co.in
Bangalore:	+91-80-305703 72/73, 30570347	+91-2558-4839	bangalore@cselectric.co.in
Bhubaneswar:	+91-674-2507265	+91-674-2507265	bhubaneswar@cselectric.co.in
Chennai:	+91-44-33534501,33534521-23	----	chennai@cselectric.co.in
Cochin:	+91-484-3071717	+91-0484-3071716	cochin@cselectric.co.in
Delhi:	+91-11-338490 00/10/11	+91-11-30838826	sales.pmd@cselectric.co.in
Hyderabad:	+91-40-485340 80/82	----	hyderabad@cselectric.co.in
Kolkata:	+91-33-392121 19-21	----	----
Mumbai:	+91-22-241147 27/28	----	cspc.mumbai@cselectric.co.in
Pune:	+91-20-242505 18/19	+91-20-30283244	pune@cselectric.co.in