OPERATING INSTRUCTIONS
COP-ER
(ANSI –64R)

MRM PROCOM Pvt Ltd

An ISO-9001-2008 certified organization

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1.0 Introduction

- 16 Bit RISC, state of art, microcontroller based System.
- Fundamental measurement of all measured parameters with 1% accuracy of measured value (Not full scale)
  Backlit LCD Display for easy reading and parameter settings. No need to consult the manual while programming the unit. All system parameters are user programmable
- All the inputs such as AC voltage and auxiliary voltage are completely isolated
- Fast Fourier Transformation to extract fundamental components of current and voltage to avoid spurious tripping
- Housed in 92X92mm Din Standard housing.

2.0 Protection, Supervision Salient Features

- Restricted Earth Fault Protection (64R)

Display and Measurement

- Display of differential earth current

Salient Features

- Wide range SMPS auxiliary supply (supply range from 50 to 300 VAC/DC Or 8-35 VDC)
- Digital fast Fourier transformation.
- Selectable display of current in primary or secondary value
- Two digital inputs for external reset and external blocking.
- One common trip contact
- Three programmable alarm contact
- Selectable auto / manual scroll of measurement

3.0 Output Contact

Four NO contact Contacts are available, one is reserved for tripping function, three are programmable for alarm function.

- Trip (NO Contact)
- Alarm 1 (NO Contact)
- Alarm 2 (NO Contact)
- Alarm 3 (NO Contact)

4.0 Front Panel Switch

COP-ER has four switch provided on its front panel. Switch can have more than one functions assigned to them. The table below describes the operation of these

S.No.	Switch Symbol	Switch Function	Description
1	⬆	Next	**Normal operation mode**: In this mode this scrolls the displayed parameters. **Programming Mode**: It is used to select the next parameter to be programmed.
2	✚	Increment	**Programming Mode** It's used to increment value of the selected parameters.
3	-	Decrement	**Programming Mode** It's used to decrement value of the selected parameters.
4	**R**	Reset	In manual reset option this Key is used to reset the faults LED and Contact output In it is used to reset the LED indication.
5	**R** & **–**	Programming Mode Entry	Press "R" Key and than press "**–**" while the "R" Key is pressed to enter the programming mode.

5.0 Setting Procedure

COP has provision to program the operating parameters.
Press "R" & "–" switch simultaneously.
The LCD shall display, "Parameter Mode"
To enter parameter setting mode press ⬆.
To go to next menu press ✚.
The LCD shall display "Set Alarm".
This menu can be entered by pressing ⬆.
To go to next menu press ✚.
The LCD shall display "Set Blocking".
This menu can be entered by pressing ⬆.

6.0 Parameter Mode

Sl. .No	Display	Explanation of parameter	Factory setting	Setting Range	Setting step
7	I er> in I/In	Desired restricted Earth fault value in % of the rated current (Not available in COP-I)	0.20	0.05-2.5 I/In	0.05I/In
8	I er> Def Time	Definite time delay in seconds, will be valid only when definite time characteristic is selected (Not available in COP-I)	10 Sec	0.03 – 150 Sec	0.01 Sec
11	I er> > in I/In	Desired restricted earth fault high set value in % of the rated current (Not available in COP-I)	1.0	0.3-4.0 I/In	0.1 I/In
12	I er>> Def Time	Time delay setting for earth fault high set (Not available in COP-I)	0.6	0.02 – 20 Sec	0.01 Sec
13	CT Ratio	Ratio of current transformer, Rated CT Primary current / Rated CT Secondary current	100	1-2500	1
14	Reset Delay	Delay time for resetting the trip contact, after fault clearance.	1	0.1- 20 Sec	0.1 Sec.
15	Dis I in Pri/Sec	Selection of Current display in primary values or secondary values	Primary	Primary/Secondary	
16	Disp Auto Scroll	Measurement display auto scroll or manual scroll selection	Auto Scroll On	Auto Scroll On / Auto Scroll off	
17	Trip Reset	Reset type for tripped LED indication	Manual	Auto / Manual	

7.0 External Alarm Contact

Alarm Contact 1,2 & 3 can be programmed / activated on different protection functions e.g. for activating alarm 1 on over current, set 1. **By default no alarm is active**. If the alarms are required, they have to be programmed at the time of installing the relay.
The protections on which alarms can be programmed are:

Protection Function	Protection Symbol	Activated Alarm, default setting	Remark
Restricted Earth Fault	Ier >	0	No Alarm activated on Ier >
High set Restricted Earth Fault	Ier >>	0	No Alarm activated on Ier >>

8.0 Set Blocking Function

Group of Selected protection function can be disabled on activation of blocking input (By externally shorting terminal 7 and 8)e.g. If . Ier > and Ier >>are programmed as enabled for blocking input then on shorting terminal 7 and 8 and High set over and under voltage protection will be blocked/disable.

Protection Function	Protection Symbol	Blocking enable/ Disable default setting	Remark
Restricted Earth Fault	Ier >	Disable	Blocking function is disable
High set Restricted Earth Fault	Ier >>	Disable	Blocking function is disable

9.0 Reset – Auto / Manual

User can programme COP-ER either as auto reset or manual reset relay.

- Auto Reset : The trip contact will reset automatically after Reset Delay, Indication will reset automatically after clearance of fault and expiry of reset delay.
- Manual Reset : The trip contact will reset automatically after Reset Delay, Indication will reset after pressing the reset button.

10.0 Terminal Description

Terminal Number	Description
1	Not Connected
2	Not Connected
3	Not Connected
4	Not Connected
5	CT –Restricted Earth Current
6	CT – Restricted Earth Current
7	Common for external reset and blocking
8	External Block
9	External Reset
10	Auxiliary Supply
11	Auxiliary Supply
12	Not Connected
13	Trip NO Contact
14	Trip NO Contact
15	Alarm 1 NO
16	Alarm 2 NO
17	Alarm 3 NO
18	Common terminal for Alarm 1,2 & 3.
19,20	Not Connected
21,22	Not Connected
23,24	Not Connected

11.0 Model Selection Chart

Type	Protection	Rated Current	Auxilliary Voltage
COP	ER : Restricted Earth fault & high set in restricted earth fault	1 : Secondary 1A 5 : Secondary 5A	L: 8-35 VDC H: 50-300 VAC/DC

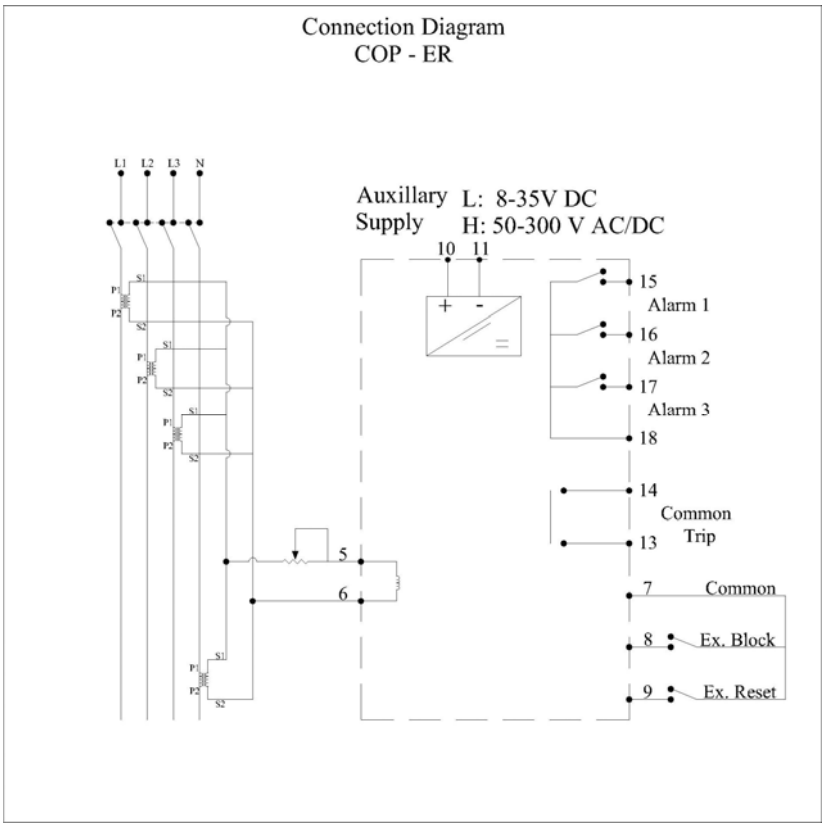
12.0 Technical specification

AC voltage withstand	330 VAC, Continuously, (Phase to neutral)
Frequency Range	40-70 Hz
Rated Current	1A /5A
Current withstand	4 times rated current
Measurement Accuracy	

Voltage & Current	± 2%
Frequency	± 0. 05 Hz.
Surge 1.2/50Usec	2.5KV
Auxiliary Voltage	8-35V/DC OR 50-300 V AC/DC
Contact Rating	230 VAC, 5A
Cut out Dimensions	90mm X 90mm
Depth	120mm

13.0 Connection Diagram

COP-ER- Restricted earth fault protection



It is our endeavour to constantly upgrade our products, hence specifications are subject to change without any notice.