OPERATING INSTRUCTIONS
COP-V
(ANSI –27,59)

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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

Protection

Two Stage, Three Phase Under Voltage (COP-V, COP-UV)
Two Stage Three Phase Over Voltage (COP-V, COP-OV)

Display and Measurement
- Display of R,Y,B Phase Voltage

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 voltage 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-V 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 -V 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
1	Uv> in V/Vn	Under Voltage value in % of rated Voltage (Not available in COP OV)	0.80	0.5-1.7 V/Vn	0.05V/Vn
2	Uv> Def Time	Definite time delay in seconds. (Not available in COP OV)	1.0	0.01 – 20 Sec	0.01 Sec
3	Uv > > in V/Vn	Under Voltage high set value in % of rated Voltage. (Not available in COP OV)	0.60	0.5-1.7 V/Vn	0.05V/Vn
4	Uv> > Def Time	Definite time delay in seconds. (Not available in COP OV)	0.10	0.01 – 20 Sec	0.01 Sec
5	Ov> in V/Vn	Over Voltage value in % of rated Voltage. (Not available in COP UV)	1.10	0.5-1.7 V/Vn	0.05V/Vn
6	Ov> Def Time	Definite time delay in seconds. (Not available in COP UV)	1.0	0.01 – 20 Sec	0.01 Sec
7	Ov> > in V/Vn	Over Voltage high set value in % of rated Voltage (Not available in COP UV)	1.20	0.5-1.7 V/Vn	0.05V/Vn
8	Ov>> Def Time	Definite time delay in seconds. (Not available in COP UV)	0.10	0.01 – 20 Sec	0.01 Sec
9	PT Ratio	Ratio of Voltage transformer, Rated VT Primary voltage / Rated PT Secondary voltage	1	1-1200	1
10	Input Connection	Voltage connection to the controller is selectable for 3Phase 4 wire, system and for 3Phase 3wire system.	Ph-Neu - 230 V	Ph-Neu-230 V, Ph-Ph-110 V 1Ph 230 VAC	
11	Reset Delay	Delay time for resetting the trip contact, after fault clearance.	1	0.1- 20 Sec	0.1 Sec.
12	Dis I in Pri/Sec	Selection of voltage display in primary values or secondary values	Primary	Primary/Secondary	
12	Disp Auto Scroll	Measurement display auto scroll or manual scroll selection	Auto Scroll On	Auto Scroll On / Auto Scroll off	
13	Trip Reset	Reset type for tripped LED indication	Manual	Auto / Manual	
14	Power on U/V	Initial trip can be blocked by selecting	0V	0 Volt / less than	0 Volt

	Pickup	"less than under voltage setting." In this case under voltage element will activate only if the voltage value once goes above the pickup value of under-voltage., if zero volt is selectable than under-voltage protection will not be blocked and will be active switching on the auxiliary supply.		under voltage setting	

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 voltage, 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
Over Voltage Low Set **(Not available in COP UV)**	OV >	0	No Alarm activated on OV >
Over Voltage High Set **(Not available in COP UV)**	OV >>	0	No Alarm activated on OV >>
Under Voltage Low Set **(Not available in COP OV)**	UV <	0	No Alarm activated on UV <
Under Voltage High Set **(Not available in COP OV)**	UV <<	0	No Alarm activated on UV <<

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 . UV >> and OV >> 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.

Following are default settings

Protection Function	Protection Symbol	Blocking enable/ Disable default setting	Remark
Over Voltage Low Set **(Not available in COP UV)**	OV >	Disable	Blocking function is disable
Over Voltage High Set **(Not available in COP UV)**	OV >>	Disable	Blocking function is disable
Under Voltage Low Set **(Not available in COP OV)**	UV >	Disable	Blocking function is disable
Under Voltage High Set **(Not available in COP OV)**	UV >>	Disable	Blocking function is disable

9.0 Reset – Auto / Manual

User can programme COP-V 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	R Phase Voltage
2	Y Phase Voltage
3	B Phase Voltage
4	Neutral
5	Not Connected
6	Not Connected
7	Common for external reset and blocking
8	External Block
9	External Reset
10	Auxiliary Supply (+ Ve/ Ph)
11	Auxiliary Supply (-Ve/N)
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 Voltage	Auxilliary Voltage
COP	V : Under & Over Voltage U/V: Under Voltage O/V: Over Voltage	110/230 VAC	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
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

Connection Diagram
COP - V / OV / UV

L1
L2
L3
N

Auxillary   L: 8-35V DC
Supply   H: 50-300 V AC/DC

10   11

15
Alarm 1
16
Alarm 2
17
Alarm 3
18

1
2
3
4

14
Common
13   Trip

7   Common

8   Ex. Block

9   Ex. Reset

Connection 3P-4W, 230V AC
Note : For 110V 3P-3W connection N is not to be connected.
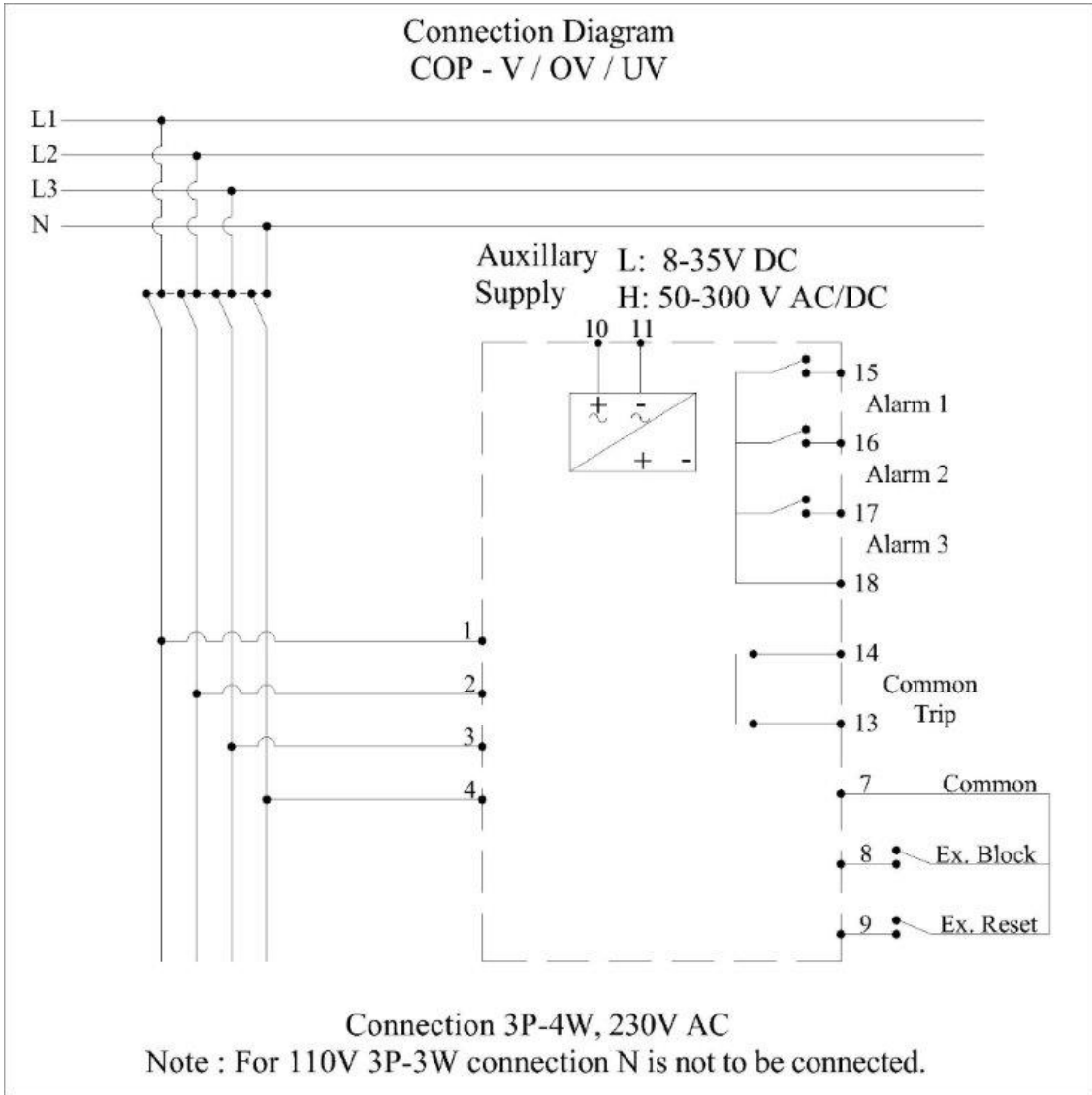
It is our endeavour to constantly upgrade our products, hence specifications are subject to change without any notice.