MULTISPAN

Motor Protection Device
MPD-192-M1

CE

FEATURES

User Selectable Trip Time
Auto/Manual/ZVR Reset Function
True RMS Measurement

Protection Available

- Over/Under Voltage
- Over/Under Current
- Over/Under Frequency
- Single Phase Prevention
- Short Circuit
- Unbalance
- Phase Loss
- Lock Rotor Point
- Phase Sequence
- Neutral Loss

TECHNICAL SPECIFICATION

INPUT:

Voltage AC	
Direct Voltage AC	30 to 300V(L - N) 50 to 500V(L - L)
Burden	< 0.2VA
Current AC	
Current AC	4.00Amp to 125Amp
Burden	< 0.2VA
Frequency	45.0 to 65.0 Hz

DISPLAY AND KEYS:

Display	3 Digit, 3 Line 7 Seg 0.56", RED LED
Keys	Scroll, SET, RST, INC, DEC

DIMENSION:

Size (mm)	96 (H) X 96 (W) X 54 (D) mm
Panel Cutout (mm)	92 (H) X 92 (W) mm

NETWORK SELECTION:

3 Phase - 4 Wire,3 Phase - 3 Wire

Johannesburg Branch
MIMIC COMPONENTS
Cape Town Branch
Mimic Cape

TRIP SETTING:

Under Current	4.00 to 125A
Over Current	4.00 to 125A
Under Voltage	50 to 520V For 3Ø - 3W 30 to 300V For 3Ø - 4W
Over Voltage	50 to 550V For 3Ø - 3W 30 to 330V For 3Ø - 4W
Over / Under Frequency	45.0 to 65.0 Hz
Short Circut	1 - 9 Scale
Lock Rotor Point	0.5 to 9.0 Scale
Unbalance	5 - 60%

TIME PARAMETER:

Power On Delay	0 to 99 Sec
Initial Time Delay	0 to 99 Sec
Trip Delay Time (Voltage, Current, Frequency, SSP, Unbalance)	0 to 999 Sec
Scrolling Time	1 to 99 Sec
Reset Time	0 to 99 Sec

OUTPUT SPECIFICATION:

Relay	2 Nos
Relay Type	1st Relay (NO - C - NC) 2nd Relay (NO - C)
Rating	1st Relay 10Amp, 250V AC 2nd Relay 5 Amp, 250V AC

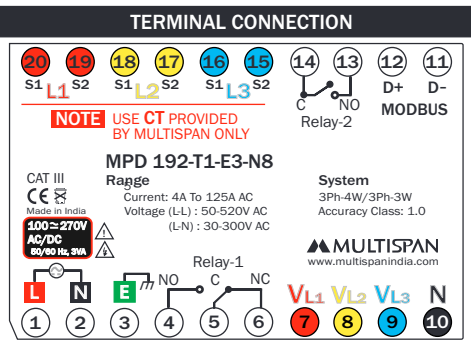
AUXILIARY SUPPLY:

Supply Voltage	100 to 270V AC/DC, 50/60Hz
Power Consuption	3VA @ 230 AC MAX

ENVIRONMENTAL CONDITION:

Working Temperature	0 to 55°C
Storage Temperature	0 to 55°C
Relative Humidity	95 % RH Non-Condensing
Protection Level (As Per request)	IP-65 (Front side As per IS/IEC 60529 : 2001)

TERMINAL CONNECTION

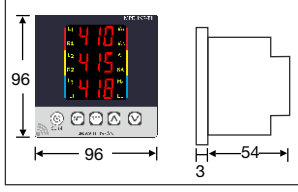


KEY OPERATION

Operator Mode	
To View Individual Parameters Value	OR
To Enter In Parameter Setting Mode	SET
To View The Voltage Page While Display Indicate fault	
To View The Current Page While Display Indicate fault	
To Reset The Relay Contact manually after Tripping	RST
To Scroll & Hold For 5 Second Press	Scroll
Parameter Setting Mode	
Edited Parameter Value to be Set, And Move to the Next Step	SET
To Increment Parameter Value	
To Decrement Parameter Value	

MECHANICAL INSTALLATION

Outline Dimension (mm)	Panel Cutout Dimension (mm)



1. Prepare the panel cutout with proper dimensions as shown above.
2. Fit the unit into the panel with the help of clamp given.
3. The equipment in its installed state must not come in close proximity to any heating source, caustic vapors, oil steam, or other unwanted process byproducts.
4. Use the specified size of crimp terminal (M3.5 screws) to wire the terminal block. Tightening the screws on the terminal block using the tightening torque of the range of 1.2 N.m.
5. Do not connect anything to unused terminals.

MAINTENANCE

1. The equipment should be cleaned regularly to avoid blockage of ventilating parts.
2. Clean the equipment with a clean soft cloth. Do not use isopropyl alcohol or any other cleaning agent.
3. Fusible resistor must not be replaced by operator.

SAFETY PRECAUTION

Please read the "Safety Warnings" in the instruction manual supplied with the instrument thoroughly and completely for correct use. Failure to follow the safety rules can cause fire, trouble, electrical shock, etc. Therefore, make sure to operate the instrument on a correct power supply and voltage rating marked on each instrument.

If all the equipment is not handled in a manner specified by the manufacturer, it might impair the protection provided by the equipment.

Read complete instructions prior to installation and operation of the unit.

WARNING : Risk of electric shock.

WARNING GUIDELINES

WARNING : Risk of electric shock.

1) To prevent the risk of electric shock, power supply to the equipment must be kept OFF while doing the wiring arrangement. Do not touch the terminals while power is being supplied.
2) To reduce electro magnetic interference, use wire with adequate rating and twists of the same of equal size shall be made with shortest connection.
3. Cable used for connection to power source, must have a cross section of 1mm or greater. These wires should have insulations capacity made of at least 1.5kV.
4) A better anti-noise effect can be expected by using standard power supply cable for the instrument.

INSTALLATION GUIDELINES

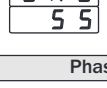
1) Do not allow pieces of metal, wire clippings, or fine metallic fillings from installation to enter the product or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.
2) Circuit breaker or mains switch must be installed between power source and supply terminal to facilitate power 'ON' or 'OFF' function. However this mains switch or circuit breaker must be installed at convenient place normally accessible to the operator.
3) Use and store the instrument within the specified ambient temperature and humidity ranges as mentioned in this manual.

FAULT MASSAGE

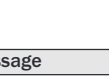
Under Current fault Message

1) Unc in R Phase

2) Unc in Y Phase

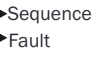


3) Unc in B Phase



4) Unc in RY Phase

5) Unc in YB Phase



6) Unc in RB Phase

7) Unc in RYB Phase

Frequency Fault Message

Over Frequency Fault Message

Under Frequency Fault Message

Unbalance Fault Message

1) Unb in R Phase

2) Unb in Y Phase

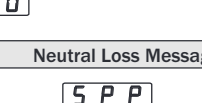
3) Unb in B Phase

4) Unb in RYB Phase

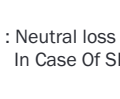
Phase Sequence Message

Phase Loss Message

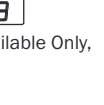
1) R Phase loss



2) Y Phase loss



3) B Phase loss



Single Phase Prevention Fault

1) SPP in R Phase

2) SPP in Y Phase

3) SPP in B Phase

SPP Fault Due to Phase Loss

1) SPP in R Phase

2) SPP in Y Phase

3) SPP in B Phase

Lock Rotor Point

1) LRP in R Phase

2) LRP in Y Phase

3) LRP in B Phase

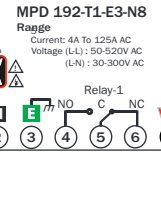
Neutral Loss Message

NOTE : Neutral loss Protection available Only, In Case Of SPP Enable

DISPLAY PAGES

3Ø - 4W NETWORK CONNECTION

1) VLN Page



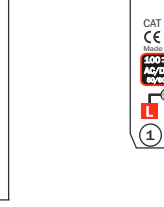
2) VLL Page

3) Amp Page

4) Frequency Page

3Ø - 3 W NETWORK CONNECTION

1) VLL Page



2) Amp Page

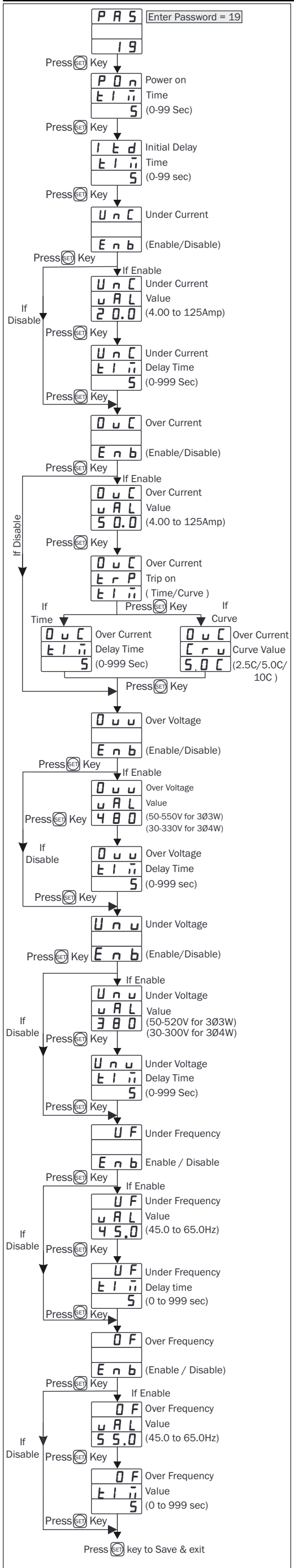
3) Frequency Page

WIRING CONNECTION

1) 3 Phase - 4 Wire

2) 3 Phase - 3 Wire

PARAMETER SETTING



Password = 19 » Power On Time & ITD Time Selection
» Under Current, Over Current, Under Voltage, Over Voltage, Under Frequency, Over Frequency

Password = 29 » Single Phase Prevention (SPP) Short Circuit, Lock Rotor Point, Unbalance Current, Phase Sequence, Phase Loss

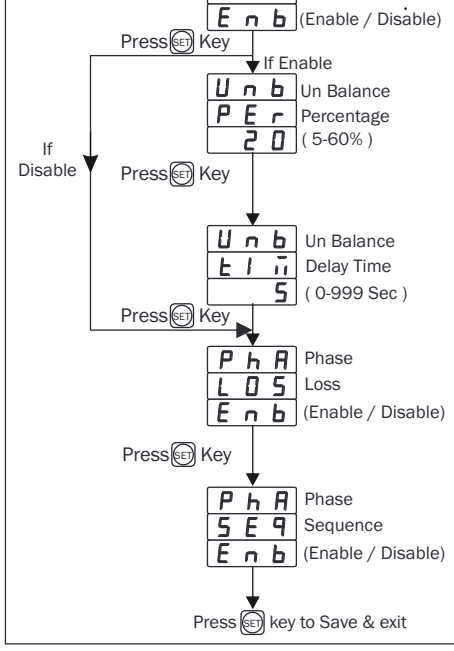
Password = 39 » Network Selection

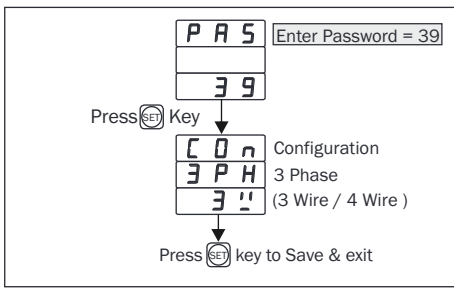
Password = 49 » Modbus Parameter Setting

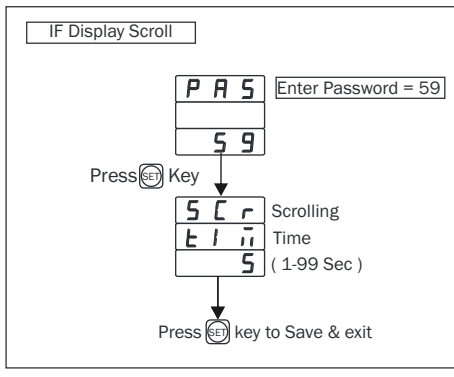
Password = 59 » Display Scrolling Time

Press ∧ & ∨ Key Together » Reset mode , Initial Trigger, Relay Fault mode selection.

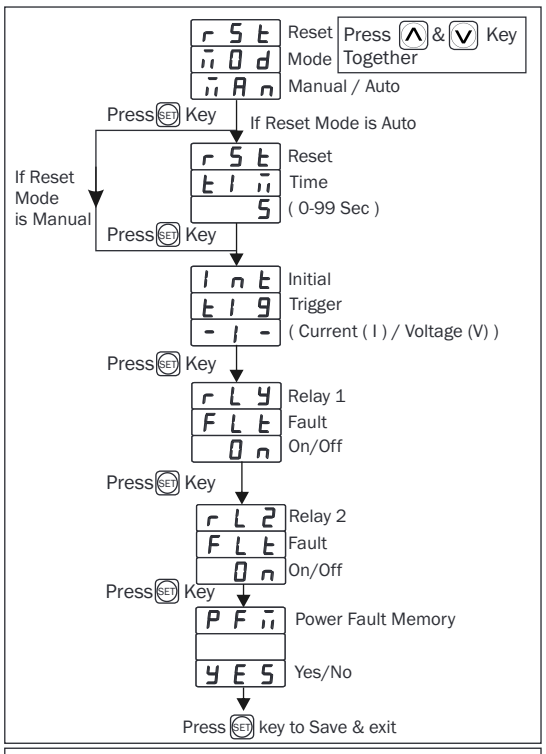
Long Press SET Key to enter into Password

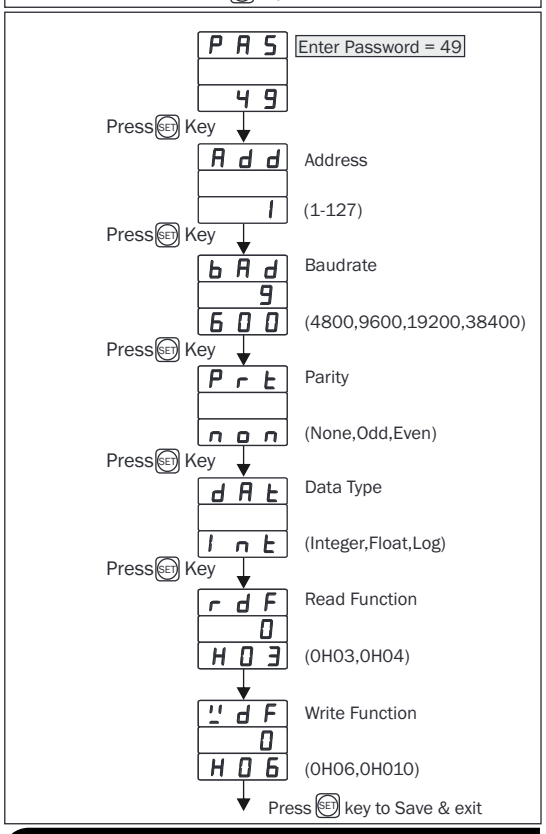






PARAMETER SETTING



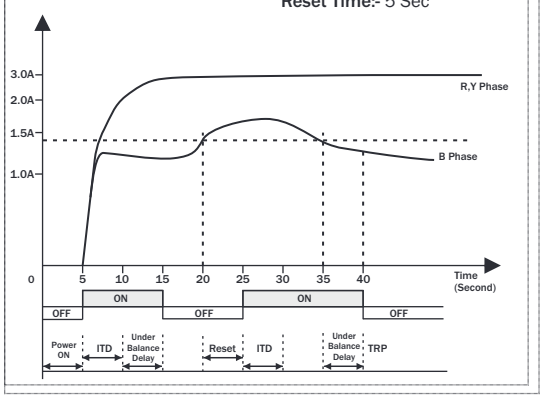


CONTROL FUNCTION

Unbalance

Power On:- 5 Sec
Initial Time Delay:- 5 Sec
Unbalance:- Enable

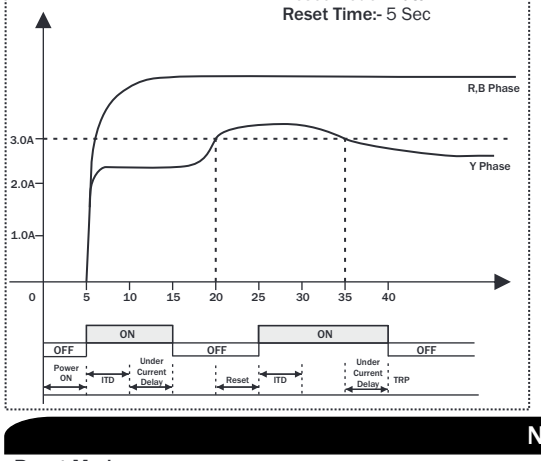
Unbalance Percentage:- 50%
Unbalance Time:- 5 Sec
Relay Fault:- OFF
Reset Mode:- Auto
Reset Time:- 5 Sec



Under Current

Power On:- 5 Sec
Initial Time Delay:- 5 Sec
Under Current:- Enable

Under Current:- 3.0A
Under Current time:- 5 Sec
Relay Fault:- OFF
Reset Mode:- Auto
Reset Time:- 5 Sec



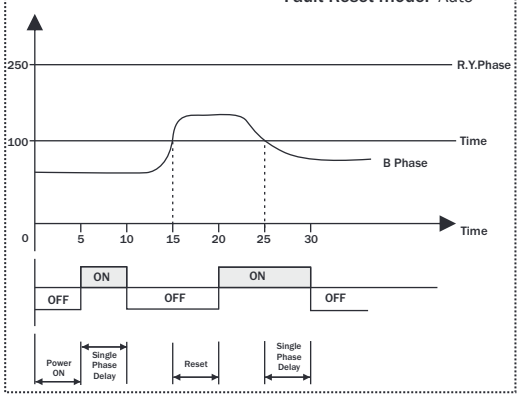
CONTROL FUNCTION

Single Phase Prevention (SPP)

(For Voltage)

Power On:- 5 Sec
Initial Time Delay:- 5 Sec
SPP:- Enable

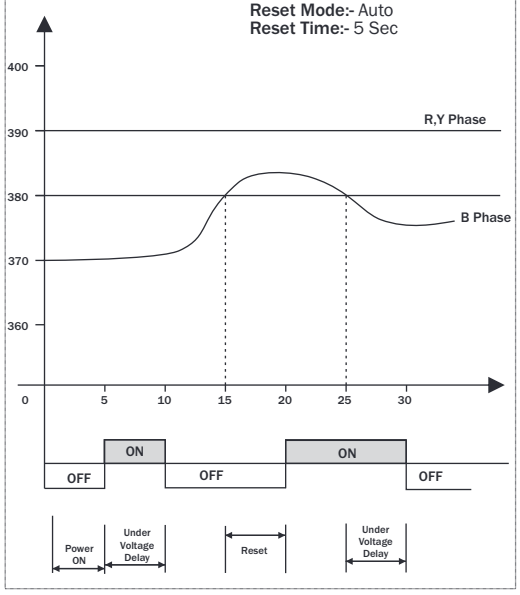
SPP Time:- 5 Sec
Reset Time:- 5 Sec
Reset Fault:- OFF
Fault Reset mode:- Auto



Under Voltage

Power On:- 5 Sec
Initial Time Delay:- 5 Sec
Under Voltage:- Enable

Under Voltage:- 380V
Under Voltage time:- 5 Sec
Relay Fault:- OFF
Reset Mode:- Auto
Reset Time:- 5 Sec

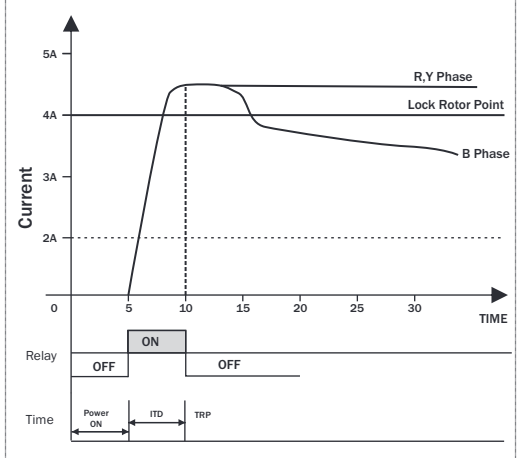


Lock Rotor Point

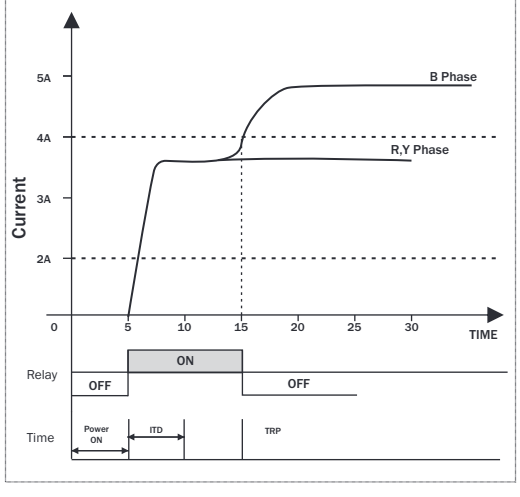
Power On:- 5 Sec
Intial Time Delay:- 5 Sec
Lock Rotor Point:- Enable
Over Current:- Disable

Lock Rotor Point:- 2.0
Over Current Value:- 2.0A
Relay Fault:- OFF
Reset Mode:- Auto
Reset Time:- 5 Sec

Case-1



Case-2



NOTES:-

Reset Mode:

1) If Reset Mode Selected is Manual, then the Fault will Reset Manually by pressing the Reset key on the instrument.
2) If Reset Mode Selected is Auto, then the Relay will be reset after Selected Reset time once the healthycondition achieved.

Initial Trigger:

1) If Initial trigger mode “I”is selected then Relay will start working once current is applied.
2) If Initial trigger mode “V“ is selected then Relay will start working once Voltage is applied.

Relay Fault:

1) If Relay fault selected is “off” than Relay will turn “off” when fault is achieved, otherwise Relay will remain turn“on”.
2) If Relay fault selected is “on” then Relay will turn “on” when fault is achieved, otherwise Relay will remain turn“off”.

MODBUS :- MPD-192-T1

Salve Address :	1 to 127
Baudrate :	4800,9600,19200,38400 bps
Parity :	None,Even,Odd
Datatype :	Integer, Log, Float (32 Bit Little Endian Byte Swap)
Read Function Register :	0x03 and 0x04
Write Function Register :	0x06 and 0x10

Note :- When Parameter Value is 32100,then Parameter is not Available.

Sr.No	Access Type	Parameter	Register Data Type Integer	Register Data Type Float
1	R	R Phase Voltage (V_{LN}Display in 3Ø-4W V_{LL} Display in 3Ø-3W)	0	0
2	R	Y Phase Voltage (V_{LN}Display in 3Ø-4W V_{LL} Display in 3Ø-3W)	1	2
3	R	B Phase Voltage (V_{LN}Display in 3Ø-4W V_{LL} Display in 3Ø-3W)	2	4
4	R	R Phase Current	3	6
5	R	Y Phase Current	4	8
6	R	B Phase Current	5	10
7	R	Frequency	6	12
8	R	NA	7	14
9	R	Relay 1 Status: Off 0, On 1	8	16
10	R	Fault Number: No Fault 0, SC (Short Circuit) 1, LRP (Lock Rotor Point) 2, SPP (Single Phase Prevention) 3, OV (Over Voltage) 4, UV (Under Voltage) 5, OC (Over Current) 6, UC (Under Current) 7, OF (Over Frequency) 8, UF (Under Frequency) 9, UNB (Unbalance) 10, PL (Phase Loss) 11, PS (Phase Sequence) 12	9	18
11	R	Fault Phase: No Fault Phase 0, R 1, Y 2, RY 3, B 4, BR 5, YB 6, RYB 7	10	20
12	R/W	Power On Time	11	22
13	R/W	Initial Time Delay	12	24
14	R/W	Under Current ENB/DIS: Enable 1, Disable 0	13	26
15	R/W	Under Current Value	14	28
16	R/W	Under Current Time	15	30
17	R/W	Over Current ENB/DIS: Enable 1, Disable 0	16	32
18	R/W	Over Current Value	17	34
19	R/W	Over Current Trip On Time/Curve: Time 1, Curve 0	18	36
20	R/W	OVC Time	19	38
21	R/W	OVC Curve: 2.5 C 0, 5.0 C 1, 10.0 C 2	20	40
22	R/W	Over Voltage ENB/DIS: Enable 1, Disable 0	21	42
23	R/W	Over Voltage Value	22	44
24	R/W	Over Voltage Time	23	46
25	R/W	Under Voltage ENB/DIS: Enable 1, Disable 0	24	48
26	R/W	Under Voltage Value	25	50
27	R/W	Under Voltage Time	26	52
28	R/W	SPP ENB/DIS: Enable 1, Disable 0	27	54
29	R/W	SPP trip on Voltage/Current: Current 0, Voltage 1	28	56
30	R/W	SPP Time	29	58
31	R/W	SC ENB/DIS: Enable 1, Disable 0	30	60
32	R/W	SC Scale	31	62
33	R/W	Lock Rotor Point ENB/DIS: Enable 1, Disable 0	32	64
34	R/W	LRP Scale	33	66
35	R/W	Unbalance ENB/DIS: Enable 1, Disable 0	34	68
36	R/W	Unbalance Percentage	35	70
37	R/W	Unbalance Time	36	72
38	R/W	Phase Loss ENB/DIS: Enable 1, Disable 0	37	74
39	R/W	Phase Sequence ENB/DIS: Enable 1, Disable 0	38	76
40	R/W	Under Frequency ENB/DIS: Enable 1, Disable 0	39	78
41	R/W	Under Frequency Value	40	80
42	R/W	Under Frequency Time	41	82
43	R/W	Over Frequency ENB/DIS: Enable 1, Disable 0	42	84
44	R/W	Over Frequency Value	43	86
45	R/W	Over Frequency Time	44	88
46	R/W	Reset Mode: Manual 0, Auto 1, ZVR 2	45	90
47	R/W	Reset Time	46	92
48	R/W	Initial trigger on Voltage/Current: Voltage 0, Current 1	47	94
49	R	CT Ratio	48	96
50	R/W	Network Selection: 3Ø-3W 1, 3Ø-4W 2	49	98
51	R	Relay status 2: On 0, Off 1	50	100
52	R/W	Address	51	102
53	R/W	Baudrate: 4800 0, 9600 1, 19200 2, 38400 3	52	104
54	R/W	Parity: None 0, Even 1, Odd 2	53	106
55	R/W	Data Type: Integer 0, long 1, Float 2	54	108
56	R/W	Read Function: 0H03 1, 0H04 0	55	110
57	R/W	Write Function: 0H06 0, 0H010 1	56	112
58	R/W	Relay 1 Fault Mode: On 1, Off 0	57	114
59	R/W	Relay 2 Fault Mode: On 1, Off 0	58	116
60	R/W	Display Mode: Hold 1, Scroll 0	59	118
61	R/W	Scrolling Time	60	120
62	R	NA	61	122
63	R	NA	62	124
64	R	NA	63	126
65	R/W	Power fail memory: NO 0, YES 1	64	128
66	—	NA	65	130
67	R/W	R Current DP	66	132
68	R/W	Y Current DP	67	134
39	R/W	B Current DP	68	136

Data type = Sign Integer show value as per following

Parameter	Actual Value	DP Display
R Current DP	$\frac{\text{Value}}{1}$ Amp	0
Y Current DP	$\frac{\text{Value}}{10}$ Amp	1
B Current DP	$\frac{\text{Value}}{100}$ Amp	2
	$\frac{\text{Value}}{1000}$ Amp	3
	Value x 10 Amp	4

Frequency	$\frac{\text{Value}}{10}$ DP = 1 Fix	-
LRP Scale	$\frac{\text{Value}}{10}$ DP = 1 Fix	-