



Aggressive for innovative upgradation ?

The next generation of Motor Management



i.MWM

intelligent . Motor and poWer Manager

Metering and Sub-metering Product with protections and Global monitoring

More intelligent, influential, simpler and more flexible

The next generation i.MWM

intelligent . Motor and poWer Manager

The new i.MWM is more compact, flexible and easily integrated into the overall Plant or Factory or Project. Complex and expensive Hardware & Software changes, integration are just not necessary. In one device i.MWM you get intelligent higher level automation system with all

integrated multi functions : Measurement, Protection, Monitoring, Control, Local Monitoring and Remote Monitoring. With i.MWM you save more space, save more time and important is you save more costs. However the best is yet to come : you get data to uncover all opportunities,

detect abnormalities, avoid risks, track progress against goals and verify success. It optimizes the use of Motor feeder, increases the plant and system availability and provides significant cost saving in planning, commissioning, operating and servicing.

The new i.MWM - HA can replace

- Bimetal Overload Relay / Electronic Motor Protection Relay upto 5000 A
- Star-Delta Timer with pause time
- 5 conventional push buttons
- 16 Indicator lights
- 13 Fault Annunciator
- Digital Ammeter
- Ammeter selector switch
- 3 Current Transformers (upto 65 A)
- Digital Voltmeter
- Voltmeter selector switch
- Earth protection / short circuit protection relay
- Energy Meter
- Power Factor & Frequency meter
- Harmonics Meter / Analyzer
- Digital Input module of PLC-4 DI
- Digital Output module of PLC-3 DO
- Operating Hour Meter
- Starting Counter
- Trip Counter
- Anti Recycle Timer



Multi Functions

- μ -MMS with Graphic Touch Screen display
- Multifunctional micro computerized motor protection, independent of higher level automation system EMS.
- Built in MMI (16 X 2) LCD with keyboard.
- Improve system Reliability and reduces downtime
- Built in 7 I/Os for local protection and interlock logic
- Alarming or Event notifications for Event or Crisis management
- Digital display of Voltage, Current, Power, Power Factor, Frequency, Harmonics, etc.
- Built-in Current & Voltage measuring modules.
- Various Timers – Star Delta Timer, Anti-recycle Timer, Pause Timer, Start delay Timer
- Various Counters – Start counter, Trip counter, ...etc.
- Operating Hours - Motor running hours
- Integrated many items instead of expensive hardware wiring.
- **Protections** : Voltage protections, Current Protections, Power Protections
- Modular expansion available using expansion modules.
- Expandable Digital inputs and Outputs
- Expandable Temperature sensors / Analog module
- Communication port RS 485 with MODBUS Protocol
- Global Remote monitoring, SMS facility
- Important is the system has been designed for mixed operations. This means these devices can combined with other devices depending on the functional requirement and that without any additional cost.
- Graphic parameterization & diagnostics Software

MMI : Man Machine Interface : The operator panel makes it all possible.



MMI dimensions are 90 x 66 mm having 16 X 2 LCD with backlit and 4 keys operator console.

The operator console can replace :

- 5 conventional push buttons
- 16 Indicator lights
- 13 Fault Annunciator
- Local display of Digital Ammeter
- Local display of Digital Voltmeter
- Local display of Energy Meter
- Local display of Power Factor & Frequency meter
- Local display of Harmonics Meter / Analyzer
- Local display of Operating Hour
- Local display of Starting Counter
- Local display of Trip Counter

Digital Inputs and Outputs : The new i.MWM has 4 Digital Inputs externally supplied with 110 – 240 V AC/DC. Which are used for increased Protection, Safety & Operational Interlocks, Remote Start/Stop push button interface. 3 nos. potential free Digital Outputs are programmable such

as Controlling, Selecting Pre-alarms and Trip alarms.

Analog Module : The new i.MWM has built-in 4 Current measuring function & 3 Voltage measuring function for protection and measurement of Power, Voltage and Current.

i.MWM has 4 different current ranges modules : 0.25 to 5 A and 4 to 61 A which do not require external C.T. Also 40 to 500A and 250 to 2500A models are present with external C.T. selectable ratio.

The new i.MWM has additional powerful matching software μ-MMS (Micro – Motor Management Software). The system can be optimally used when these ergonomically designed tools are utilized. Being profitable in today’s market means controlling expenses. Greater utilization is therefore the order of the day. In order to achieve this, there must be more transparency in the actual utilization, the degree of efficiency and the losses. Also it is important

to ensure safe, clean, reliable power, and meet expanding demand without raising production costs. μ-MMS is the new parameterizing software running on PC or Touch Screen MMI. μ-MMS software is designed in extremely user friendly fashion. MMI can be installed either in the field or Panel or from a central location. All of the operating, service and diagnostics data are displayed. If a fault does occur, disturbances can be quickly localized and

removed. Tools are available to uncover all opportunities, detect abnormalities, avoid risks, track progress.



Protective Functions :

- Phase Loss Current protection
- Phase Loss Voltage protection
- Phase Reverse Current protection
- Phase Reverse Voltage protection
- Overload protection
- Over Voltage protection
- Underload protection
- Under Voltage protection
- Phase Voltage Unbalance protection
- Phase Current Unbalance protection
- Lock Rotor protection
- Earth fault protection
- Short circuit protection
- Winding Temperature Module- Optional
- Operating hours monitoring
- Number-of-starts monitoring

Expanded monitoring functions :

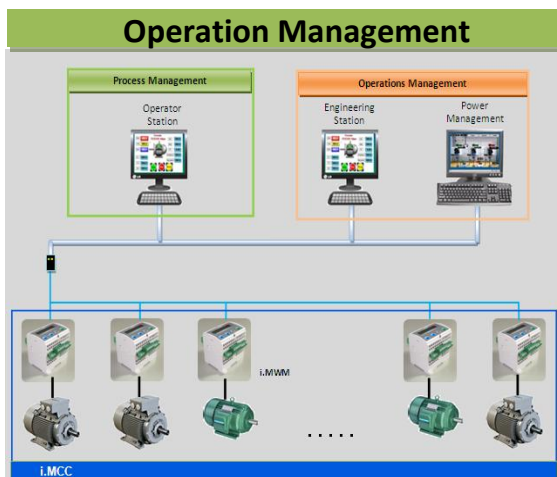
- Total **Reactive Energy** Accumulation (KVarh)
- Total **Apparent Energy** Accumulation (KVAh)

Control Functions :

- Direct online starter
- Star-delta starter
- Star-delta timer (in built)
- Starter for Star-star winding (part motor)
- Starter for generator change over mechanism
- Control output for Solenoid valve actuation
- Control output for Positioner actuation
- Control output for Soft starter actuation

Operating data :

- Voltage monitoring
- Power monitoring
- Current monitoring
- **Power Factor** monitoring
- **Frequency** monitoring
- **Harmonics** monitoring
- Total **Active Energy** Accumulation (KWh)
- Motor switching state (on, off)
- Currents in phase 1, 2, 3
- Voltages in phase 1, 2, 3
- Active power
- Apparent power



Service data :

- Motor operating hours
- Number of motor starts
- Number of trips ...etc

Diagnostics data :

- Numerous detailed early-warning and fault messages
- Check back faults (e.g. no current flowing in the main circuit after an On control command)

S.N.	Feature	i.MWM-HA	i.MWM-H	i.MWM-I/O	i.MWM
1	MMI / HMI	LCD or (Touch Screen *)	LCD or (Touch Screen *)	LCD or (Touch Screen *)	LCD or (Touch Screen *)
2	Digital Ammeter / Volt for All R, Y, B Phase.	✓	✓	✓	✓
3	Auto SCROLLING of currents / Voltage	✓	✓	✓	✓
4	ANNUNCIATION in built	✓	✓	✓	✓
5	Wide Range (A : 0.25 to 5A, B : 4 to 61A, C : 40 to 500A, D : 250 to 2500A)	A, B, C, D	A, B, C, D	A, B, C, D	A, B, C, D
6	3 Ph Current Measurement & Display	✓	✓	✓	✓
7	3 Ph Voltage Measurement & Display	✓	✓	✓	✓
8	Power Factor Measurement & Display per phase	✓	✓	✓	✓
9	Average Power Factor Measurement & Display	✓	✓	x	x
10	Power Factor Status (Lead / Lag)	✓	✓	x	x
11	Active Power KW Measurement & Display per Phase	✓	✓	✓	✓
12	Active Energy KWH Measurement & Display per Phase	✓	✓	✓	✓
13	Reactive Power KVAR Measurement & Display per phase	✓	✓	x	x
14	Reactive Energy KVARh Measurement per Phase through communication	✓	✓	x	x
15	Apparent Power Measurement & Display per phase	✓	✓	x	x
16	Apparent Energy KVARh Measurement per Phase through communication	✓	✓	x	x
17	Total Active KW Measurement & Display	✓	✓	x	x
18	Phase Angle V-I per phase through communication	✓	✓	x	x
19	Voltage Angle per phase through communication	✓	✓	x	x
20	Frequency Measurement & Display	✓	✓	x	x
21	Total Current Harmonics Distortion & noise Measurement & Display (R,Y,B)	✓	x	x	x
22	Total Voltage Harmonics Distortion & noise Measurement & Display(R,Y,B)	✓	x	x	x
23	Total Power Factor Harmonics & Distortion Measurement & Display (R,Y,B)	✓	x	x	x
24	Total Active Power Harmonics & Distortion Measurement & Display (R,Y,B)	✓	✓	x	x
25	Individual Active Power Harmonics & Distortion of any 3 settable 1,2,3,.....upto 56 Measurement & Display (R,Y,B)	✓	x	x	x
26	Per phase Peak current Value detection	✓	✓	x	x
27	Per phase Peak Voltage Value detection	✓	✓	x	x
28	In-built Y-Δ timer with PAUSE time	✓	✓	✓	x
29	ART – Anti Recycle Timer 10 Sec to 15 Min	✓	✓	✓	x
30	Operating Hours Meter	✓	✓	✓	✓

S.N.	Feature	i.MWM-HA	i.MWM-H	i.MWM-I/O	i.MWM
31	Starting Counter Meter	✓	✓	✓	✓
32	Trip Counter Meter	✓	✓	✓	✓
33	Control Output OR Pre Alarm / Trip (On O/L, KW, PF, U/L, etc.)	v(3 No's)	v(3 No's)	v(3 No's)	x
34	Password Protection	✓	✓	✓	✓
35	Trip Time settable (I-T Curve)	✓	✓	✓	✓
36	Winding temp module (optional)	✓	✓	✓	✓
37	Communication : RS-485 : MODBUS	✓	✓	✓	✓
38	Hardware Interface 4-20mA O/P (optional)	✓	✓	✓	✓
39	GSM Connectivity for PC Data Logging-with touch screen (optional)	✓	✓	✓	✓
40	SMS Facility for trip annunciation (optional)	✓	✓	✓	✓
41	Ethernet / LAN Connectivity (optional)	✓	✓	✓	✓
42	E-Mail generation on fault trip – with touch screen (optional)	✓	✓	✓	✓
43	Agriculture App	✓	✓	✓	x
44	Motor Start / Stop with key on MMI in local mode	✓	✓	✓	x
45	Start / Stop from Remote PC - SCADA, Mobile.	✓	✓	✓	✓
46	Safety / Process interlock for operational / trip logic	✓	✓	✓	x
47	Global Remote Access through Internet (Wired or Wireless) / Mobile (optional)	✓	✓	✓	✓
48	Twin / triple model	NA	NA	NA	NA
49	Over Load / Current Protection	✓	✓	✓	✓
50	Under Load / current Protection	✓	✓	✓	✓
51	SPP / Phase Loss Protection	✓	✓	✓	✓
52	Phase Reversal Protection	✓	✓	✓	✓
53	Phase Current Unbalance Protection	✓	✓	✓	✓
54	Phase Voltage Unbalance Protection	✓	✓	✓	x
55	Lock Rotor Protection	✓	✓	✓	✓
56	Earth Fault Protection	✓	✓	✓	✓
57	Short circuit protection	✓	✓	✓	✓
58	Over Voltage Protection	✓	✓	✓	✓
59	Under Voltage Protection	✓	✓	✓	✓
60	Voltage Loss Protection	✓	✓	✓	✓
61	Phase Voltage Reversal Protection	✓	✓	✓	✓
62	Over Power Alarm	✓	✓	✓	x
63	PF Alarm	✓	✓	✓	x
64	Over Harmonics Alarm	✓	X	x	x
65	Split Model	✓	✓	✓	✓
66	Programmable settable parameters on Digital Display	✓	✓	✓	✓
67	Selectable C.T. ratio (250/5A, 500/5A, 1000/5A, 2000/5A) For 40 to 500A & 250 to 2500A	✓	✓	✓	✓
68	Total I/Os	✓ (8 No's)	✓ (8 No's)	✓ (8 No's)	x
69	I/O programmable section of DO & DI	✓ (7 No's)	X	x	x

i.MW – i.KW Energy Monitoring : Product Features Comparison

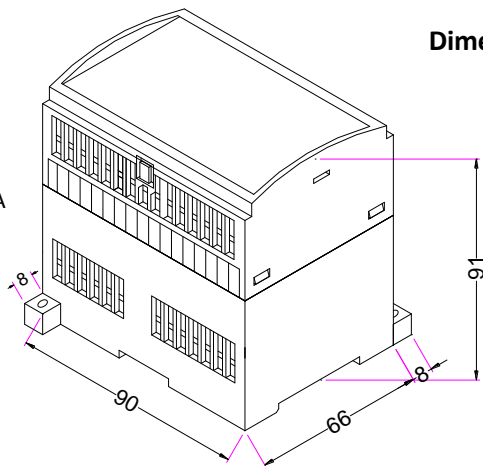
S. N.	Feature	i.MW-HT	i.MW	i.KW
1	MMI / HMI	LCD or (Touch Screen *)	LCD or (Touch Screen *)	LCD or (Touch Screen *)
2	Digital Ammeter / Volt for All R, Y, B Phase.	✓	✓	✓
3	Auto SCROLLING of currents / Voltage	✓	✓	✓
4	ANNUNCIATION in built	✓	✓	✓
5	Wide Range (A : 0.25-5A, B : 4-61A, C : 40-500A, D : 250-2500A)	A, B, C, D	A, B, C, D	A, B, C, D
6	3 Ph Current Measurement & Display	✓	✓	✓
7	3 Ph Voltage Measurement & Display	✓	✓	✓
8	Power Factor Measurement & Display per phase	✓	✓	✓
9	Average Power Factor Measurement & Display	✓	✓	✓
10	Power Factor Status (Lead / Lag)	✓	✓	✓
11	Active Power KW Measurement & Display per Phase	✓	✓	✓
12	Active Energy KWH Measurement & Display per Phase	✓	✓	✓
13	Reactive Power KVAR Measurement & Display per phase	✓	✓	✓
14	Reactive Energy KVARh Measurement per Phase Through communication	✓	✓	✓
15	Apparent Power Measurement & Display per phase	✓	✓	✓
16	Apparent Energy KVARh Measurement per Phase Through communication	✓	✓	✓
17	Total Active KW Measurement & Display	✓	✓	✓

S. N.	Feature	i.MW-HT	i.MW	i.KW
18	Phase Angle V-I per phase through communication	✓	✓	✓
19	Voltage Angle per phase through communication	✓	✓	✓
20	Frequency Measurement & Display	✓	✓	✓
21	Current Harmonics Measurement & Display(R,Y,B)	✓	✓	✓
22	Voltage Harmonics Measurement & Display(R,Y,B)	✓	✓	✓
23	Power Factor Harmonics Measurement & Display(R,Y,B)	✓	✓	✓
24	Active Power Harmonics Measurement & Display(R,Y,B)	✓	✓	✓
25	Per phase Peak current Value detection	✓	✓	✓
26	Per phase Peak Voltage Value detection	✓	✓	✓
27	Password Protection	✓	✓	✓
28	Communication : RS-485 : MODBUS	✓	✓	✓
29	Hardware Interface 4-20mA O/P (optional)	✓	✓	✓
30	GSM Connectivity for PC Data Logging—with touch screen (optional)	✓	✓	✓
31	SMS Facility for trip annunciation (optional)	✓	✓	✓
32	Ethernet / LAN Connectivity (optional)	✓	✓	✓
33	E-Mail generation on fault trip – with touch screen (optional)	✓	✓	✓
34	Split Model	✓	✓	✓
35	Programmable settable parameters on Digital Display	✓	✓	✓
36	Selectable C.T. ratio (250/5A, 500/5A, 1000/5A, 2000/5A) for 40 to 500A & 250 to 2500A	✓	✓	✓
37	Selectable P.T. ratio	✓	x	x

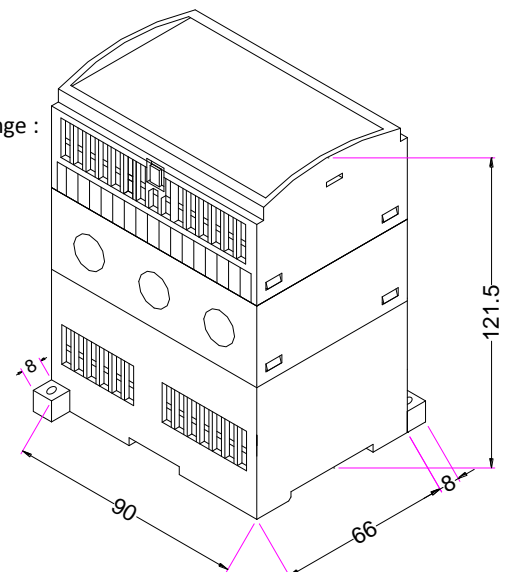
Dimensional Drawing

For Model Range :

- 40 to 500 A
- 0.25 to 5 A
- 250 to 2500 A



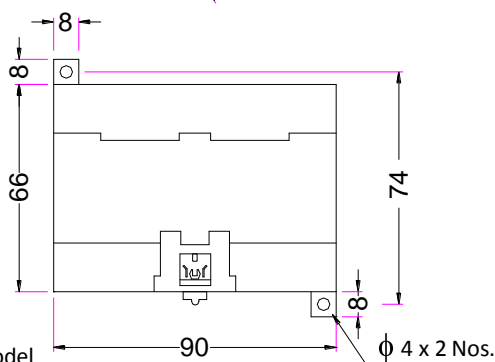
For Model Range :
4 to 61 A



Mounting Details :

Screw / DIN Rail

Same for other Model



BOTTOM VIEW

TECHNICAL SPECIFICATIONS :

1. Model Range :

- 0.25 to 5 A with inbuilt CT
- 4 to 61 A with inbuilt CT
- 40 to 500 A with external CT
- 250 to 2500 A with external CT

2. Aux. Supply Voltage :

415 VAC, 3 Phase, 4 wires
Terminals: 10 A / 415 V /
 4 pin, 7.5mm pitch (R,Y,B ,N)
 Connection capacity : maximum
 for 2.5 sq.mm cable

3. Incoming current Terminals:

10A / 300 V / 6 pin, 5.08 mm
 pitch (R1, R2,Y1,Y2,B1,B2)
 suitable for 2.5 sq.mm cable

4. E1,E2 Terminals :

2 pin , 3.81 mm pitch

5. Communication Terminals

2 pin, 3.81 mm pitch, suitable
 for 1.5 sq.mm Cable

6. Frequency : 50Hz +/- 10%

7. Accuracy: For Power Class 1.0

8. Electron Magnetic Compatibility

ESD, EFT, Surge

9. Display : Backlit LCD 16 x 2

10. Digital Input : 110 VAC OR
 230VAC +/- 15%
 Terminals for
 DI 1, DI2, DI3, DI4 &
 Common pole (Neutral)
Terminals : 8 A / 300 VAC /
 5 pin, 3.81 mm pitch
 connection capacity
 maximum 1.5 sq.mm cable

11. Digital Output

- DO 1: P –NO-NC :
 3A / 250 VAC
- DO 2 : P-NO-NC :
 3A / 250 VAC
- DO 3 : P- NO :
 5 A / 250 VAC
- DO 4 : P-NO :
 5 A / 250 VAC

- Terminals : 3 pin, 3.81 mm
 pitch (DO1, DO2) 8 A/300 VAC.
 connection capacity maximum
 1.5 sq.mm cable

- Terminals : 2 pin, 3.81 mm
 pitch (DO3 ,DO4) 8 A/300 VAC.
 connection capacity maximum
 1.5 sq.mm cable

12. Temperature:

- 10°C to 60 °C for operation.
- 20°C to 70°C for storage

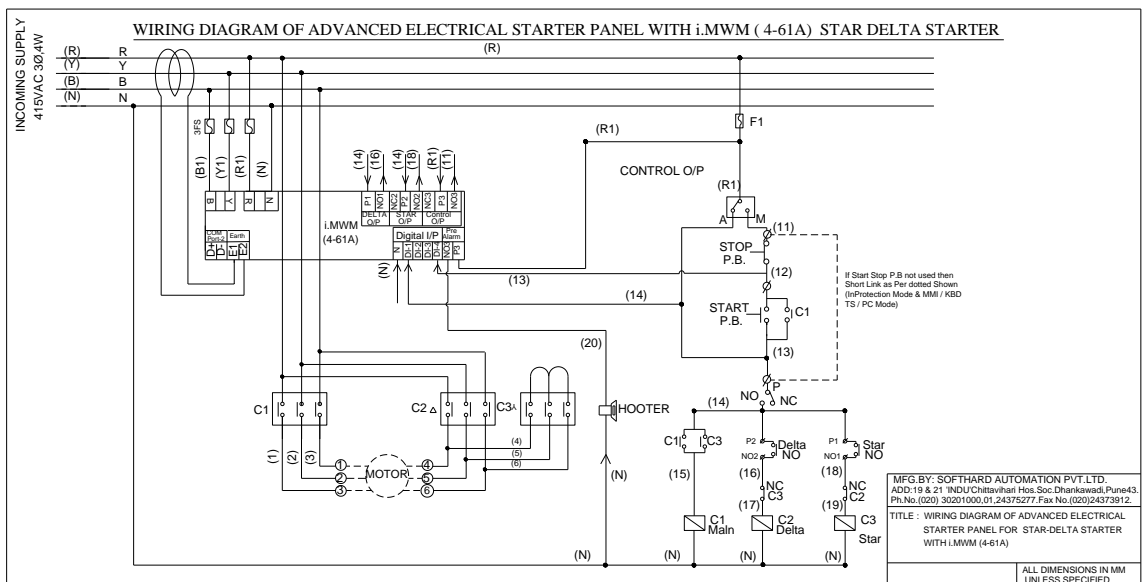
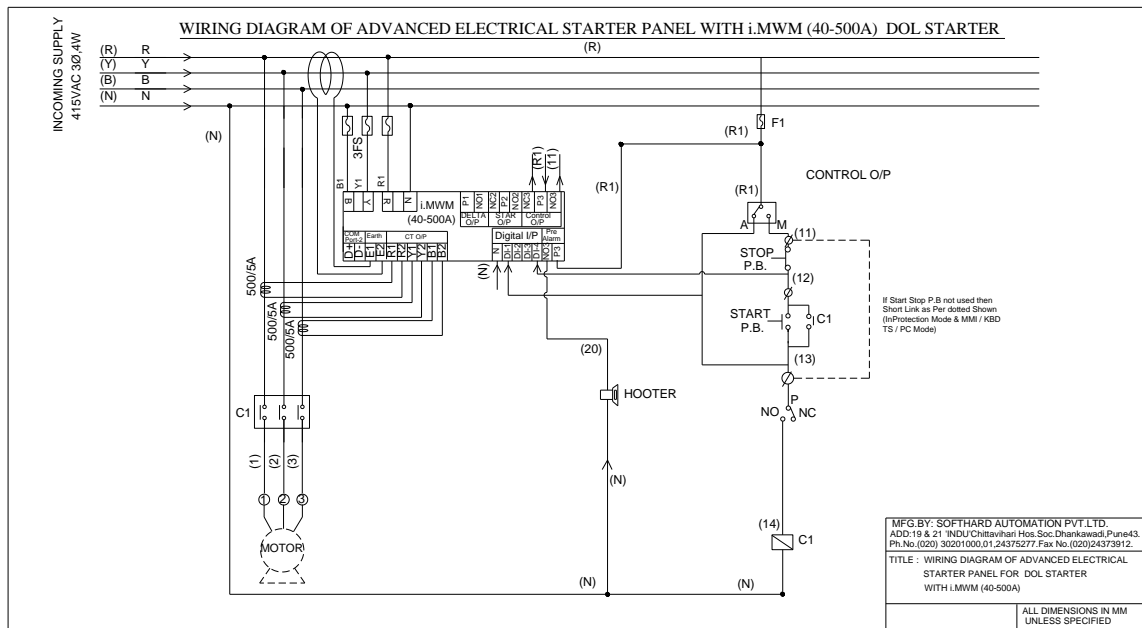
13. Case Material : ABS Moulded Protected to IP20

14. Humidity : 95% RH non condensation

15. Weight : 0.59 Kg for each Model range

16. Dimension details :

- 90 (W) x 66 (H) x 91 (D) mm
 for Range : 40 to 500 A ,
 0.25 to 5 A, 250 to 2500 A
- 90(W) x 66 (H) x 121.5 (D) mm
 for Range : 4 to 61 A



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Thinking inside the controls

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