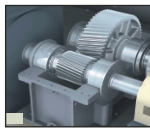


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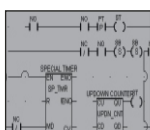
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# ELECTRICAL PRODUCTS

Meters / APFCs / Current Transformers



## METERS

- Multifunction
- Energy
- DPM
- Analog

## AUTOMATIC POWER FACTOR CONTROLLERS

- 8/12 steps in 144 x 144mm size
- 8/12 steps with built in MFM in 144x144mm size
- 4/6/8 steps in 96 x 96mm size

## CURRENT TRANSFORMERS

- SPCT(Bus Bar type)
- RCT(Cable type)
- TWCT (Tape Wound type)

Applicable EMI / EMC Standards		
Product Standard : IEC 61326-1		
Category	Standards Compliance	
ESD Immunity	IEC 61000-4-2	Level III
Surge Immunity	IEC 61000-4-5	+/- 2 kV common mode, +/- 1 kV differential mode
Radiated Susceptibility	IEC 61000-4-3	Level III, 80 to 1000MHz Level II, 1GHz to 2GHz Level I, 2GHz to 2.7GHz
Conducted Susceptibility	IEC 61000-4-6	Level II
Voltage Dips and Interruptions	IEC 61000-4-11	Dips : 0% residual voltage / 1 cycle (Criteria B.), 40% residual voltage / 10 cycles 50 Hz / 12 cycles 60 Hz (Criteria C) 70% residual voltage / 25 cycles 50 Hz / 30 cycles 60 Hz (Criteria C) Interruptions : 0% residual voltage / 250 cycles 50 Hz / 300 cycles 60 Hz (Criteria C)
Conducted Emission	CISPR-11	
Radiated Emission	CISPR-11	
Electrical Fast Transient	IEC 61000-4-4	Level III

Note : Above standards are applicable only for CE certified Multifunction Meters, Digital Panel Meters & Automatic Power Factor Controllers

Multifunction Meters



**MFM384**  
Size : 96 x 96mm



**MFM383A**  
Size : 96 x 96mm



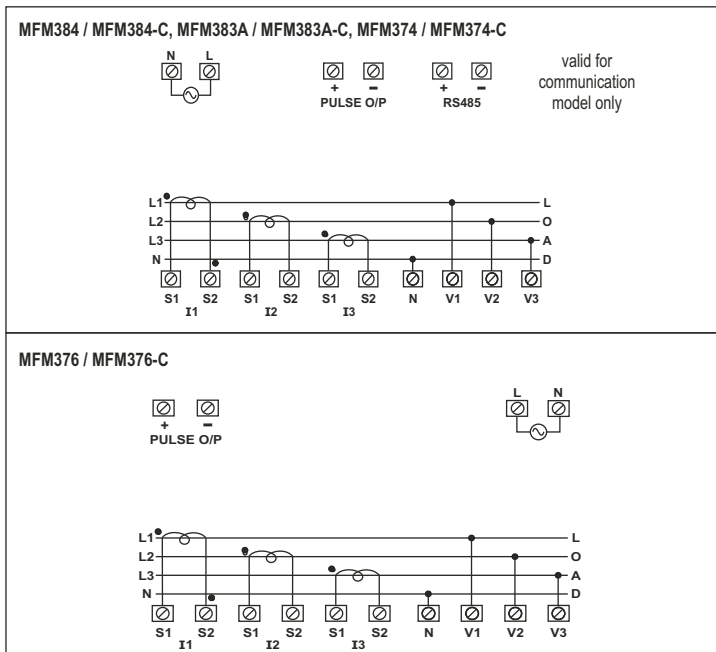
**MFM374**  
Size : 96 x 96mm



**MFM376**  
Size : 96 x 96mm

FEATURES	<ul style="list-style-type: none"> <li>LCD type with Bargraph</li> <li>Single Pulse Output</li> <li>THD upto 31<sup>st</sup> Harmonics</li> <li>Max / Min Demand (Power)</li> <li>Max Demand Current</li> </ul>	<ul style="list-style-type: none"> <li>Single Pulse Output</li> <li>Energy ( Active / Reactive / Apparent)</li> </ul>	<ul style="list-style-type: none"> <li>Single Pulse Output</li> <li>Import / Export Energy</li> <li>Phase Angle Display</li> </ul>	<ul style="list-style-type: none"> <li>Single Pulse Output</li> <li>Max / Min Demand (Power)</li> <li>Run Hour</li> <li>Auxiliary Interrupts</li> </ul>
DISPLAY	LCD with Backlight	LCD with Backlight	7 segment LED	7 segment LED
DIGITS	4 rows of 4 digits, Bargraph representation for current, 1 row of 8 digits for energy display	3 rows of 4 digits, 7½ digits for energy	3 rows of 4 digits	3 rows of 4 digits
ELECTRICAL CONNECTION	3Ø - 4W, 3Ø - 3W, 2Ø - 3W, 1Ø - 2W			
RATED INPUT VOLTAGE	11 to 300V AC (L-N), 19 to 519 V AC (L-L)			
RATED INPUT CURRENT	Nominal 5A AC (11mA min; 6A max)			Nominal 5A AC (14mA min; 6A max)
RESOLUTION	For energy- 0.01k, 0.1k, 1k, 0.01M, 0.1M, 1M (depending upon CT ratio x PT ratio), For Power, Voltage & Current - Auto resolution, For Power factor - 0.001	For energy- 0.1k, 1k (depending upon CT ratio x PT ratio) For Power, Voltage & Current - Auto resolution, For Power factor - 0.001	For energy- 0.01k, 0.1k, 1k, 0.01M, 0.1M, 1M (depending upon CT ratio x PT ratio), For Power, Voltage & Current - Auto resolution, For Power factor - 0.001	For energy- 0.01k, 0.1k, 1k, 0.01M, 0.1M, 1M (depending upon CT ratio x PT ratio), For Current, Voltage, Power : Auto resolution, For Power factor - 0.001
CT PRIMARY	1 / 5A to 10kA (Programmable for any value)			
CT SECONDARY	1 or 5A			
PT PRIMARY	100V to 500kV (Programmable for any value)	100V to 10kV (Programmable for any value)	100V to 500kV (Programmable for any value)	100V to 500kV (Programmable for any value)
PT SECONDARY	100 to 500V AC (L-L) (Programmable for any value)			
COMMUNICATION	RS485 Communication MODBUS RTU Protocol (Optional)			
MEASURING PARAMETER	Voltage (L-L/L-N)(Individual/Average), Current(I1,I2,I3) (Individual / Average), Frequency, Power Factor (Individual / Total), Active, Reactive & Apparent power (Individual/Total), Active, Reactive & Apparent Energy (Total)			
ADDITIONAL FUNCTIONS	Phase sequence detection	---	Import / Export Energy	Max instantaneous (Current / Voltage), (Import / Export) Energy, THD upto 31st Harmonics(For MFM376-C)
SUPPLY VOLTAGE	100 to 240V AC, -15% to +12%, 50/60 Hz (±5%) (Power consumption: Less than 8VA)			240V AC, ±20%(For MFM376-230VAC), 85V - 270V AC & 40 - 270V DC (For MFM376-C)

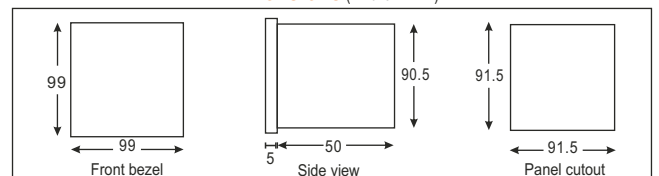
Terminal Connections



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE	OUTPUT		CERTIFICATION
		PULSE OUTPUT	COMMN (RS485)	
MFM384	100V-240V AC, -15% to +12%	■	■	---
MFM384-C		■	■	---
MFM384-C-CU-G		■	■	CE RoHS LISTED
MFM384-D		■	■	---
MFM374		■	■	---
MFM374-C		■	■	---
MFM374-CU		■	■	CE RoHS LISTED
MFM374-C-CU		■	■	CE RoHS LISTED
MFM383A		■	■	---
MFM383A-C		■	■	---
MFM383A-CU	■	■	CE RoHS LISTED	
MFM383A-CE	■	■	CE	
MFM383A-C-CE	■	■	CE RoHS	
MFM376-230V	240V AC ± 20%	■	■	---
MFM376-C	85-270V AC, 40-270V DC	■	■	---

Dimensions (All are in mm)



Din Rail Multifunction Meters



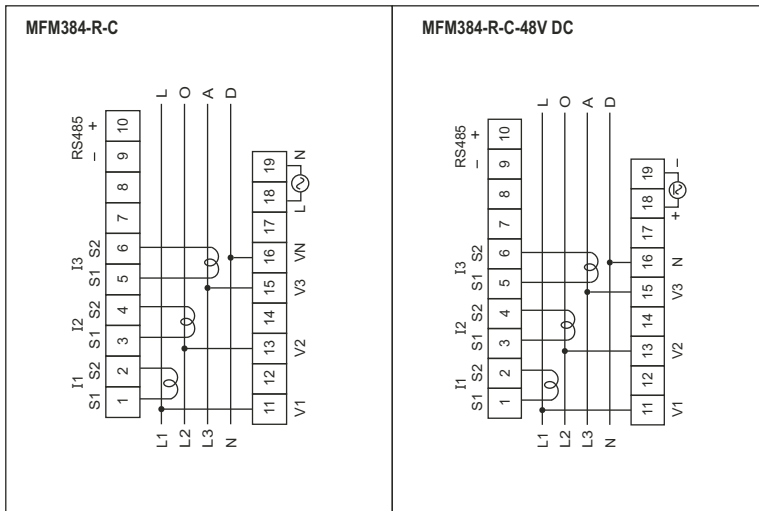
MFM384-R-C  
Size : 70 x 90mm



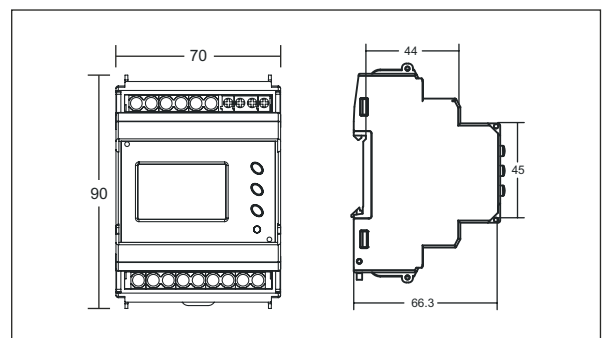
MFM384-R-C-48V DC  
Size : 70 x 90mm

FEATURES	<ul style="list-style-type: none"> <li>• Energy (Active, Reactive, Apparent)</li> <li>• RS485 Communication MODBUS RTU Protocol</li> <li>• Import / Export Energy</li> <li>• Max / Min Demand (Power)</li> <li>• 85 to 270V AC, 50/60Hz Supply</li> </ul>	<ul style="list-style-type: none"> <li>• Energy (Active, Reactive, Apparent)</li> <li>• RS485 Communication MODBUS RTU Protocol</li> <li>• Import / Export Energy</li> <li>• Max / Min Demand (Power)</li> <li>• DC: 30-60V ; AC: 18-36V Supply</li> </ul>
DISPLAY	LCD with backlight	
DIGITS	1 Row of 4 digits, 2 Rows of 7 digits	
ELECTRICAL CONNECTION	3Ø - 4W, 3Ø - 3W, 2Ø - 3W, 1Ø - 2W	
RATED INPUT VOLTAGE	11 to 300V AC (L-N), 19 to 519V AC (L-L)	2 to 76.2V AC (L-N), 3.5 to 132V AC (L-L)
RATED INPUT CURRENT	Nominal 5A AC (11mA min; 6A max)	
FREQUENCY	45Hz - 65Hz	
RESOLUTION	For Energy: 0.01k,0.1k,1k,0.01M,0.1M,1M (Depending upon CT ratio x PT ratio), For Power, Voltage, Current : Auto resolution, For Power Factor: 0.01, Frequency : 0.1Hz	For Energy: 0.01k,0.1k,1k,0.01M,0.1M,1M (Depending upon CT ratio x PT ratio), For Power, Voltage, Current : Auto resolution, For Power Factor : 0.01, Frequency : 0.1Hz
ACCURACY CLASS	Voltage (L-L / L-N), Current : ±0.5% Power Factor : ±0.01 of full range, Frequency : ±0.1% of full range Power (kW, kVA, kVAr) : 1% of full range Energy (Active, Reactive, Apparent) : 1% of full range	Voltage & Current - ±0.5% of range, Frequency - ±0.15% of mid frequency Power (Active, Reactive, Apparent) - ±0.5% of range Energy (Active, Reactive, Apparent) - ±0.5% Power Factor - ±0.5% of unity.
CT PRIMARY	5 to 10kA (Programmable for any value)	
CT SECONDARY	1 or 5A	
PT PRIMARY	100V to 500kV(Programmable for any value)	80V to 500kV (Programmable for any value)
PT SECONDARY	100V to 500V AC (L-L) (Programmable for any value)	80V to 140V AC (L-L) (Programmable for any value)
MEMORY RETENTION FOR ENERGY	10 years	
COMMUNICATION	RS485 Communication MODBUS RTU Protocol (Optional)	
INDICATIONS	LCD - Max Demand of Power, Communication in progress ; LED - Integration of Energy.	
MEASURING PARAMETER	Voltage (L-L/L-N)(Individual/Average), Current(I1,I2,I3) (Individual / Average), Frequency, Power Factor (Individual / Total), Active, Reactive & Apparent power(Individual/Total), Active, Reactive & Apparent Energy (Total), Demand (Min / Max Active & Reactive Power, Max Apparent Power)	
SUPPLY VOLTAGE	85 to 270V AC, 50/60Hz	DC : 30-60V ; AC : 18-36V

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE	OUTPUT	CERTIFICATION
MFM384-R-C	85-270V AC	Commn (RS485)	---
MFM384-R-C-CE			CE RoHS
MFM384-R-C-48V DC	DC : 30-60V AC : 18-36V	Commn (RS485)	---

Plug-n-Wire Multifunction Meters



MRJ4M  
Size : 90 x 70mm



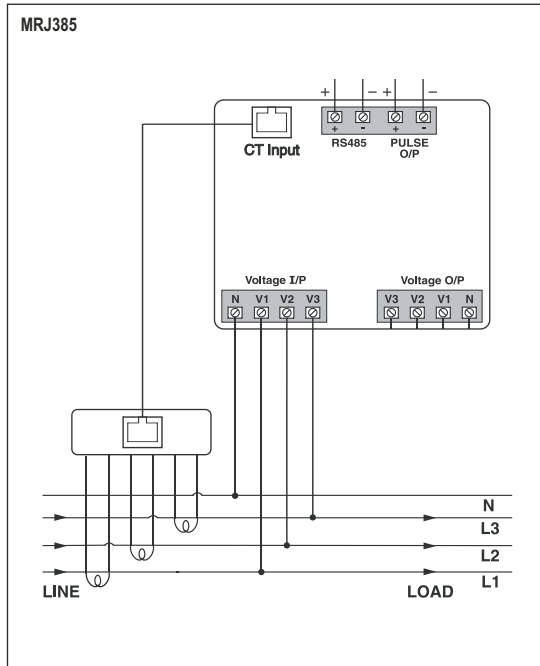
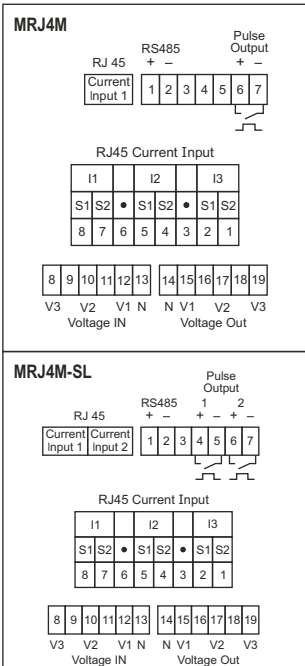
MRJ4M-SL  
Size : 90 x 70mm



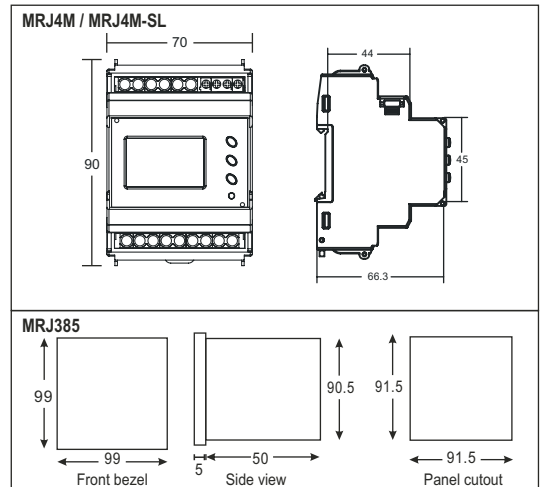
MRJ385  
Size : 96 x 96mm

FEATURES	<ul style="list-style-type: none"> <li>Energy (Active, Reactive)</li> <li>Plug-N-Wire Quick Connect Current Input</li> <li>Pulse Output.</li> <li>Max Demand of Power</li> <li>Self powered</li> </ul>	<ul style="list-style-type: none"> <li>Energy (Active, Reactive)</li> <li>Plug-N-Wire Quick Connect Current Input</li> <li>2 Pulse Output.</li> <li>Max Demand of Power</li> <li>Self powered</li> </ul>	<ul style="list-style-type: none"> <li>Energy (Active, Reactive, Apparent)</li> <li>Plug-N-Wire Quick Connect Current Input</li> <li>Pulse Output.</li> <li>Max / Min Demand of Power</li> <li>Self Powered</li> <li>THD upto 31<sup>st</sup> Level</li> </ul>
DISPLAY	LCD with backlight		
DIGITS	2 Rows of 4 digits, 1 Row of 7 digits to show electrical parameters		4 rows of 4 digits, Bargraph representation for current, 1 row of 8 digits for energy display
ELECTRICAL CONNECTION	3Ø - 4W, 1Ø - 2W		
RATED INPUT VOLTAGE	60 to 300V AC (L - N), 104 to 520V AC (L - L)		100 to 240V AC (L - N) , 173 TO 415V AC (L - L)
RESOLUTION	For Energy : 0.01K,0.1K,1K,0.01M,0.1M (depending upon CT ratio x PT ratio) For Power, Voltage, Current : Auto resolution For Power Factor : 0.01		For Energy : 0.01K,0.1K,1K,0.01M,0.1M,1M (depending upon CT ratio x PT ratio) For Power, Voltage, Current :Auto resolution For Power Factor : 0.01
CT PRIMARY	5 to 10kA (Programmable for any value)		
CT SECONDARY	330mV		
PT PRIMARY	100V to 10kV		100V to 500kV (Programmable for any value)
PT SECONDARY	100 to 500V AC (L-L) (Programmable for any value)		173 to 415V AC (L-L) (Programmable for any value)
COMMUNICATION	RS485 Communication MODBUS RTU Protocol (Optional)		
INDICATIONS	LCD : Max demand of power, communication in progress ; LED : Integration of energy		LCD : Max / Min demand of power, communication in progress ; Integration of energy, Unit in Configuration Menu
MEASURING PARAMETER	Voltage (L-L / L-N) (Individual / Average) Current (I1, I2, I3) (Individual / Average) Frequency, Power factor (Individual / Average) Active, Reactive, Apparent power (Individual / Total), Active & Reactive Energy, Demand ( Max Active Power, Max Apparent Power)	Voltage (L-L / L-N) (Individual / Average) Current (I1, I2, I3) (Individual / Average), Frequency, Power factor (Individual / Average), Active, Reactive, Apparent power (Individual / Total), Active & Reactive Energy, Total Active & Reactive Energy (Current input-1 plus current Input-2), Demand ( Max Active Power, Max Apparent Power)	oltage (L-L / L-N) (Individual / Average) Current (I1, I2, I3) (Individual / Average) Frequency, Power factor (Individual / Average) Active, Reactive, Apparent power (Individual / Total), Active, Reactive, Apparent Energy (Phase wise (Import / Export) & Total (Import / Export)), Demand (Min / Max Active Power, Min/Max Reactive Power, Max Apparent Power) Harmonics individual for voltage & Current upto 31 <sup>st</sup> level.
SUPPLY VOLTAGE	Self powered.		

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	OUTPUT		CERTIFICATION
	PULSE OUTPUT	COMM (RS485)	
MRJ4M	■	■	CE RoHS
MRJ4M-SL	■	■	CE RoHS
MRJ385-G-PNW	■	■	CE RoHS

Energy Meters



EM306A  
Size : 96 x 96mm



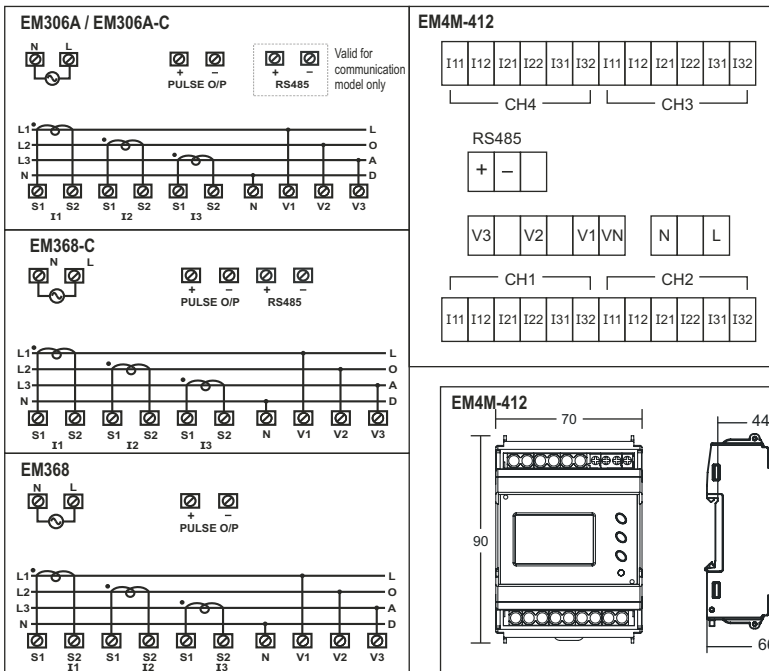
EM368  
Size : 96 x 96mm



EM4M-412  
Size : 70 x 90mm

FEATURES	<ul style="list-style-type: none"> <li>Potential Free Pulse Output for Energy</li> <li>Active Energy</li> </ul>	<ul style="list-style-type: none"> <li>Potential Free Pulse Output for Energy</li> <li>Power (Active / Reactive)</li> <li>Energy (Active / Reactive / Apparent)</li> </ul>	<ul style="list-style-type: none"> <li>Four Loads (3 Ø), 12 Loads (1 Ø) Energy Monitoring</li> <li>Power(Active / Reactive / Apparent)</li> <li>Energy (Active / Reactive / Apparent)</li> </ul>
DISPLAY	7 segment LED	LCD with Backlight	LCD with Backlight
DIGITS	6 digits	8 digits	2 Rows of 4 digits, 1 Row of 7 digits to show electrical parameters
ELECTRICAL CONNECTION	3 Ø - 4 W, 3 Ø - 3 W, 2 Ø - 3 W, 1 Ø - 2 W		
RATED INPUT VOLTAGE	11 - 300V AC (L-N), 19 - 519V AC (L-L)		
RATED INPUT CURRENT	Nominal 5A (min:11mA; max:6A)		
RESOLUTION	0.01K, 0.1K, 1K & 10K (depending on CT ratio)	For energy- 0.01k, 0.1k, 1k, 0.01M, 0.1M, 1M, 10M (depending upon CT ratio X PT ratio) For Power - Auto resolution, For Power factor - 0.01	For Energy : 0.01k, 0.1k, 1k, 0.01M, 0.1M, 1M
ACCURACY	Class 1	Active Energy : Class 1, Reactive / Apparent Energy: ±1% Active/Reactive power : ±1%, PF & Avg. PF: ±1%	Active Energy : 1%
POWER CONSUMPTION	8VA Max		
CT PRIMARY	1 / 5A to 10kA (Programmable for any value)		1A to 10kA (Programmable for any value)
CT SECONDARY	1 or 5A		1A
PT PRIMARY	---	100V to 500kV (Programmable for any value)	100V to 10kV (Programmable for any value)
PT SECONDARY	---	100V to 500V AC(L-L) (Programmable for any value)	100V to 500V AC (L-L) (Programmable for any value)
COMMUNICATION	RS485 Communication MODBUS RTU Protocol (Optional)		
MEASURING PARAMETER	Active Energy (kWh) Resettable	Power (Total Active / Reactive) Energy (Total Active / Reactive / Apparent), Power factor (Individual & Average)	Voltage, Current, Frequency, PF, 4 Loads & 12 Loads Energy, (Active, Reactive, Apparent), Power (Active, Reactive, Apparent)
LED INDICATIONS	Integration of energy, Resolution is 10, Reverse connected CT warning	Integration of energy, Resolution is 10, Reverse connected CT warning, Communication in progress, pulse output (All Indications on LCD)	Integration of energy
SUPPLY VOLTAGE	230V AC ±20% (50/60Hz) For EM306A 100V-240V AC, -15% to +12% (50/60Hz) For EM306A-C	100 to 240V AC, -15% to +12%, 50/60 Hz (±5%)	85 - 270V AC, (50/60Hz)

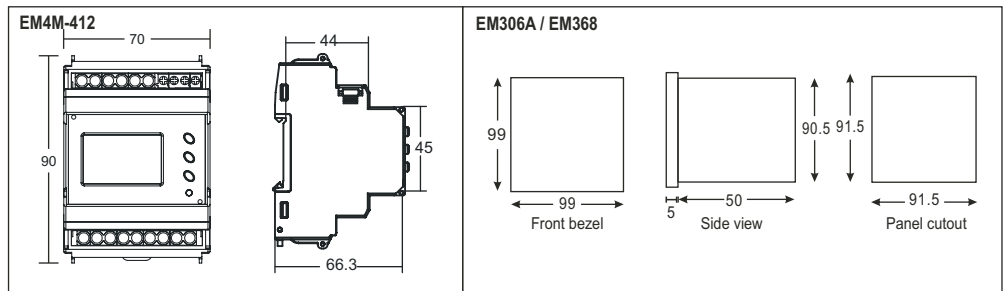
Terminal Connections



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE	OUTPUT		CERTIFICATION
		PULSE OUTPUT	COMM. (RS485)	
EM368	100-240V AC, -15% to +12%	■	---	---
EM368-C		■	■	---
EM368-CU		■	---	CE RoHS
EM368-C-CU		■	■	CE RoHS
EM306A	230V AC, ±20%	■	---	---
EM306A - C	100V-240V AC, -15% to +12%	■	■	---
EM4M-412	85 - 270V AC	---	■	---
EM4M-412-CE	85 - 270V AC	---	■	CE RoHS

Dimensions (All are in mm)



Voltage Ampere Frequency Meters



**VAF36A**  
Size : 96 x 96mm



**VAF39A**  
Size : 96 x 96mm



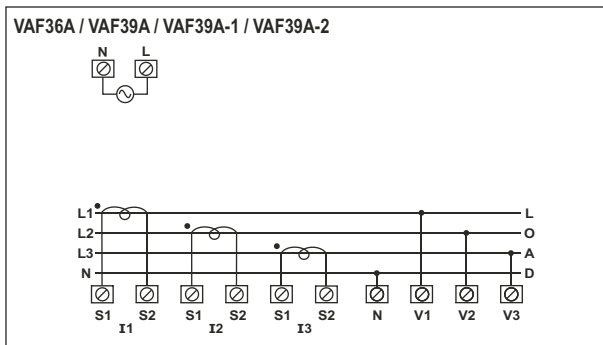
**VAF39A-1**  
Size : 96 x 96mm



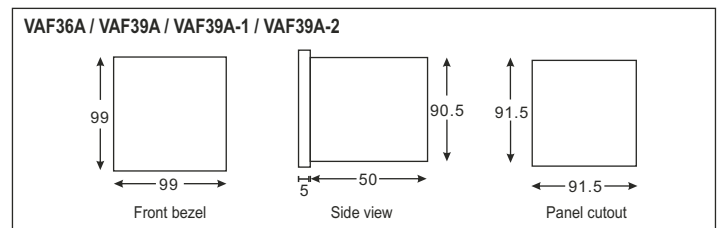
**VAF39A-2**  
Size : 96 x 96mm

FEATURES	<ul style="list-style-type: none"> <li>• 3Ø (True RMS) Voltage &amp; Current</li> <li>• Frequency</li> <li>• Run Hour (Hour - Mins)</li> <li>• RPM</li> <li>• Analog Style Bargraph Indication</li> </ul>	<ul style="list-style-type: none"> <li>• 3Ø (True RMS) Voltage &amp; Current</li> <li>• Frequency</li> <li>• Run Hour (Hour - Mins)</li> <li>• RPM</li> </ul>	<ul style="list-style-type: none"> <li>• 3Ø (True RMS) Voltage &amp; Current</li> <li>• Frequency</li> <li>• Run Hour (Hour - Mins)</li> <li>• RPM</li> </ul>	<ul style="list-style-type: none"> <li>• 3Ø (True RMS) Voltage &amp; Current</li> <li>• Frequency</li> <li>• Run Hour (Hour - Mins)</li> <li>• RPM</li> <li>• Programmable CT Secondary</li> </ul>
DISPLAY	LCD (with Backlight)	7 segment LED	7 segment LED integrated with parameter units	
DIGITS	3 Rows , 3 digits			
ELECTRICAL CONNECTION	3Ø - 4W, 3Ø - 3W, 2Ø - 3W, 1Ø - 2W			
RATED INPUT VOLTAGE	11 to 300V AC (L-N), 19 to 519V AC (L-L)			
RATED INPUT CURRENT	Nominal 5A (min : 20mA , max : 6A)		Nominal 5A (min : 30mA , max : 6A)	
RESOLUTION	Current & Voltage : Depending on CT & PT primary setting, RPM : 0.1, Run Hour : 0.1hr			
ACCURACY	Voltage(L-N/L-L/Average) : ± 0.5% of F.S. ± 2 digits, Current & Average Current : ± 1% of F.S. ± 2 digits, Run Hour : ± 1%, RPM : ± 0.5%, Frequency : ± 0.1 Hz ± 1 digit			
CT PRIMARY	5A to 10kA (Programmable for any value)			
CT SECONDARY	5A fixed (External CT must be connected for current more than 5A)		1 or 5A (External CT must be connected for current more than 5A)	
PT PRIMARY	100V to 500kV (Programmable for any value)			
PT SECONDARY	100 to 500V AC (L-L) (Programmable for any value)			
MEASURING PARAMETER	Voltage (L-N / L-L) (Individual / Average), Current (I1, I2, I3) (Individual / Average), Frequency, RPM , Run Hour			
SUPPLY VOLTAGE	230V AC ±20% (50/60 Hz), 110V AC ±20% (50/60 Hz)		230V AC ±20% (50/60 Hz)	

Terminal Connections



Dimensions (All are in mm)



Ordering Information

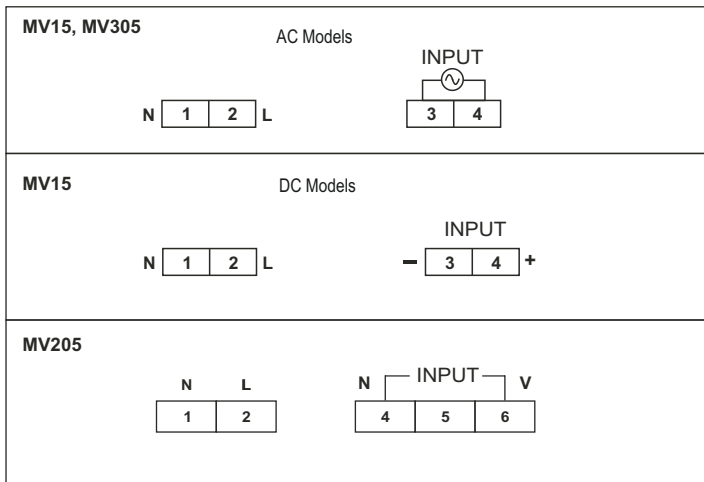
PRODUCT CODE	SUPPLY VOLTAGE		CERTIFICATION
	110V AC	230V AC	
VAF36A-230-CE-RoHS	---	■	CE RoHS
VAF36A-110V-CU-RoHS	■	---	CE RoHS
VAF39A-230V-CE-RoHS	---	■	CE RoHS
VAF39A-110V-CU-RoHS	■	---	CE RoHS
VAF39A-1-230V	---	■	---
VAF39A-2-230V AC	---	■	---

LED Voltmeters

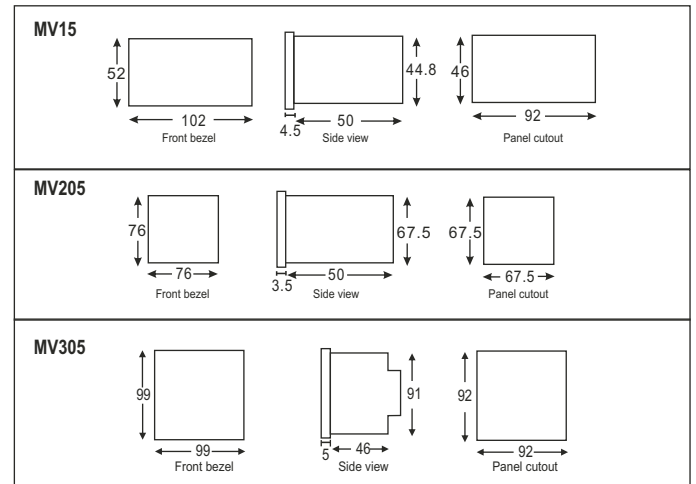


	MV15 Size : 48 x 96mm	MV15-DC-200V Size : 48 x 96mm	MV15-AC-20/200V Size : 48 x 96mm	MV205 Size : 72 x 72mm	MV305 Size : 96 x 96mm	MV334-230V Size : 96 x 96mm
FEATURES	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> </ul>	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> </ul>	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> </ul>	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> </ul>	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> </ul>	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 3Ø - 4W, 3Ø - 3W, 1Ø - 2W Electrical Network</li> <li>• K LED for Kilo Indication</li> </ul>
DISPLAY	7 segment LED					
DIGITS	3 digits	3½ digits			3 digits	4 digits
ELECTRICAL CONNECTION	1Ø - 2W					3Ø - 4W, 3Ø - 3W, 1Ø - 2W
RATED INPUT VOLTAGE	50 to 480V AC (516V max)	0 to ±200V	0 to 20/200V	50 to 480V AC (516V max)		11 to 300V AC (L-N) 19 to 516V AC (L-L)
RESOLUTION	1V	0.1	0.01 / 0.1	1V		Auto Resolution
ACCURACY	± 0.5% of full scale over rated operating condition					± 0.5% of full range
PT PRIMARY	--					100V - 999kV
PT SECONDARY	--					100V - 500V
SUPPLY VOLTAGE	240V AC ±20% (50/60 Hz), 110V AC ±20% (60 Hz)					230V AC (±20%) 50/60 Hz

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE		CERTIFICATION
	110V AC	230V AC	
MV15	---	■	---
MV15-110V-CU-RoHS	■	---	CE RoHS LISTED
MV15-230V-CE-RoHS	---	■	CE RoHS
MV15-DC-2V	---	■	---
MV15-DC-20V	---	■	---
MV15-DC-20V-110V-CU-RoHS	■	---	CE RoHS LISTED
MV15-DC-200V	---	■	---
MV15-DC-200V-110V-CU-RoHS	■	---	CE RoHS LISTED

PRODUCT CODE	SUPPLY VOLTAGE		CERTIFICATION
	110V AC	230V AC	
MV15-DC-200mV	---	■	---
MV15-AC-20/200V	---	■	---
MV15-AC-200/2000mV	---	■	---
MV205	---	■	---
MV305	---	■	---
MV305-110V	■	---	---
MV334-230V	---	■	---



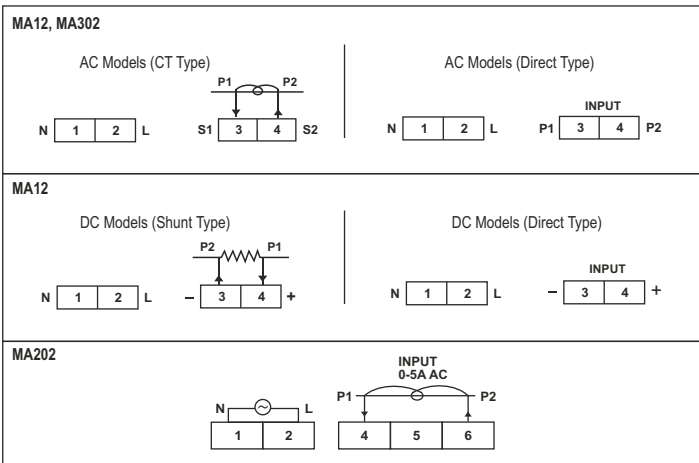
LED Ammeters



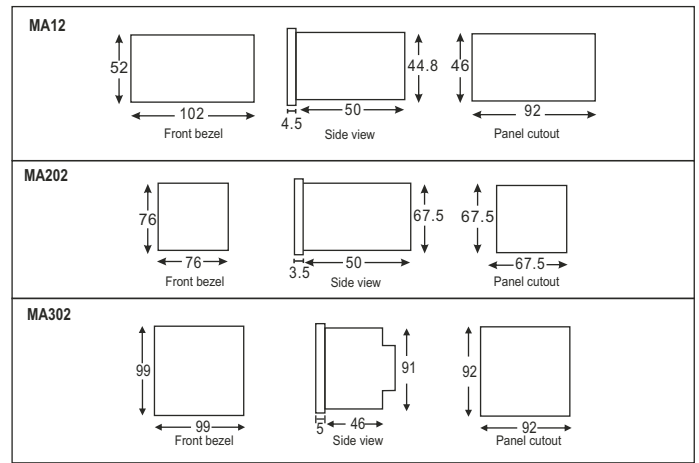
<b>MA12</b> Size : 48 x 96mm	<b>MA202</b> Size : 72 x 72mm	<b>MA302</b> Size : 96 x 96mm	<b>MA12-75mV-DC</b> <b>MA302-75mV-DC</b>	<b>MA335-230V AC</b> Size : 96 x 96mm	<b>MA12-20A-AC</b> <b>MA302-20A-AC</b>	<b>MA12-DC-2mA</b> Size : 48 x 96mm	<b>MA12-AC-2/20mA</b> Size : 48 x 96mm
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FEATURES	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> <li>• CT Primary Programmable Upto 4000A</li> </ul>		<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> <li>• Shunt Programmable</li> </ul>		<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• K LED for Kilo Indication</li> </ul>		<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> </ul>	
DISPLAY	7 segment LED							
DIGITS	4 digits					3½ digits		
ELECTRICAL CONNECTION	1Ø - 2W			3Ø - 4W, 3Ø - 3W, 1Ø - 2W		1Ø - 2W		
INPUT TYPE	CT		Shunt		CT		Direct	
RATED INPUT CURRENT	5AAC (min : 50mA, max : 6.2A)		0 to 75 mV DC(0-5A) 6.2A max		5AAC (min : 50mA, max : 6.2A)		20A direct 0 to ± 2mA 0 to 2/20mA	
RESOLUTION	0.001,0.01,0.1,1A (depending upon CT primary settings)		0.001,0.01,0.1,1A (depending upon Shunt settings)		Auto resolution depend upon CT ratio		0.001,0.01,0.1,1A 0.001 0.001/0.01	
ACCURACY	± 0.5% of full scale							
CT PRIMARY	5 to 4000A (Programmable in steps)		---		1 - 999.0kA		---	
CT SECONDARY	5A Fixed		---		1 or 5A		---	
SHUNT SETTINGS	---		5 to 4000A		---		---	
SUPPLY VOLTAGE	240V AC ±20% (50/60 Hz), 110V AC ±20% (60 Hz)				230V AC ±20% (50/60Hz)		240V AC ±20% (50/60 Hz), 110V AC ±20% (60 Hz)	

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE		CERTIFICATION
	110V AC	230V AC	
MA12	---	■	---
MA12-110V-CU-RoHS	■	---	CE RoHS
MA12-CE-RoHS	---	■	CE RoHS
MA12-AC-2/20mA	---	■	---
MA12-AC-200/2000mA	---	■	---
MA12-50mV-DC	---	■	---
MA12-50mV-DC-110V-CU-RoHS	■	---	CE RoHS
MA12-75mV-DC	---	■	---
MA12-DC-2mA	---	■	---

PRODUCT CODE	SUPPLY VOLTAGE		CERTIFICATION
	110V AC	230V AC	
MA12-DC-20mA	---	■	---
MA12-DC-200mA	---	■	---
MA12-20A-AC	---	■	---
MA12-20A-AC-110V	■	---	---
MA202	---	■	---
MA302	---	■	---
MA302-20A-AC	---	■	---
MA302-75mV-DC	---	■	---
MA335-230V AC	---	■	---

LCD Ammeters /  
LCD Voltmeters



MA501 / MA201  
Size : 48 x 48mm / 72 x 72mm



MA2301  
Size : 72 x 72mm



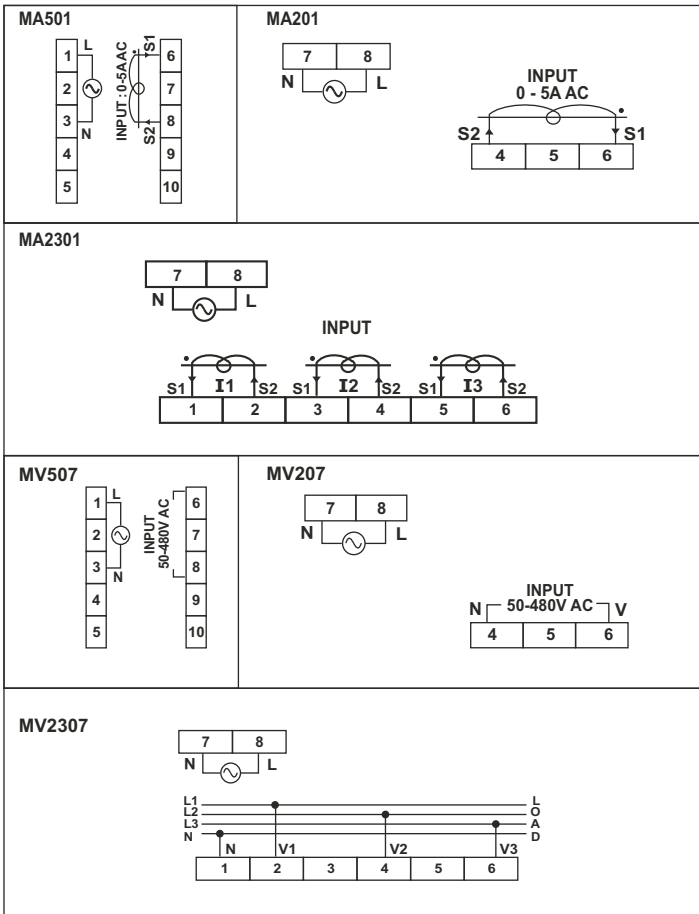
MV507 / MV207  
Size : 48 x 48mm / 72 x 72mm



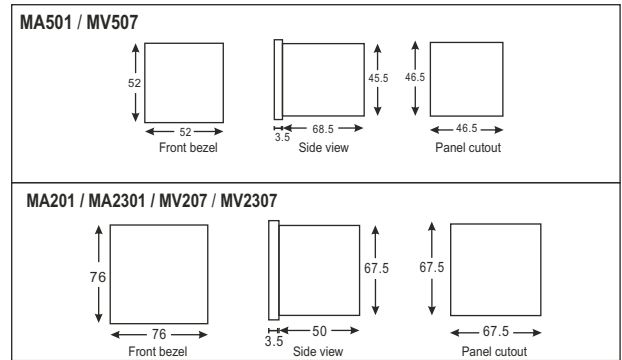
MV2307  
Size : 72 x 72mm

FEATURES	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> <li>• Analog Style Bargraph Indication</li> <li>• CT Primary Programmable Upto 5000A</li> </ul>	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 3Ø - 4W Electrical Network</li> <li>• Analog Style Bargraph Indication</li> <li>• CT Primary Programmable Upto 5000A</li> <li>• Page Selection Using Selector Switch</li> </ul>	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 1Ø - 2W Electrical Network</li> <li>• Analog Style Bargraph Indication</li> </ul>	<ul style="list-style-type: none"> <li>• True RMS Measurement</li> <li>• 3Ø - 4W, 3Ø - 3W Electrical Network</li> <li>• Analog Style Bargraph Indication</li> <li>• Page Selection using Selector Switch</li> </ul>
DISPLAY	LCD(with analog style bargraph indication)			
DIGITS	4 Digits		3 Digits	
ELECTRICAL CONNECTION	1Ø - 2W	3Ø - 4W	1Ø - 2W	3Ø - 4W, 3Ø - 3W
RATED INPUT VOLTAGE	--		50 to 480 V AC (max : 516V)	
RATED INPUT CURRENT	5A AC (min : 50mA, max : 6.2A)		--	
RESOLUTION	0.001, 0.01, 0.1, 1A (Depending on CT primary settings)		1V	
ACCURACY	± 0.5% of F.S.		± 0.5% of F.S. Over rated operating condition	
CT PRIMARY	5 to 5000 A (Programmable in steps)		--	
CT SECONDARY	5A Fixed		--	
SUPPLY VOLTAGE	240 V AC ±20% (50/60 Hz), 110V AC ±20% (60 Hz)			

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE		CERTIFICATION
	110V AC	230V AC	
MA501	---	■	---
MA501-110V-CU-RoHS	■	---	CE RoHS
MA501-230V-CE-RoHS	---	■	CE RoHS
MA201	---	■	---
MA201-110V-CU-RoHS	■	---	CE RoHS
MA201-230V-CE-RoHS	---	■	CE RoHS
MA2301	---	■	---
MA2301-110V-CU-RoHS	■	---	CE RoHS
MA2301-230V-CE-RoHS	---	■	CE RoHS
MV507	---	■	---
MV507-110V-CU-RoHS	■	---	CE RoHS
MV507-230V-CE-RoHS	---	■	CE RoHS
MV207	---	■	---
MV2307	---	■	---
MV2307-110V-CU-RoHS	■	---	CE RoHS
MV2307-230V-CE-RoHS	---	■	CE RoHS

Frequency Meters / Power Factor Meters



**MF16**  
Size : 48 x 96mm

**MF216**  
Size : 72 x 72mm

**MF316**  
Size : 96 x 96mm

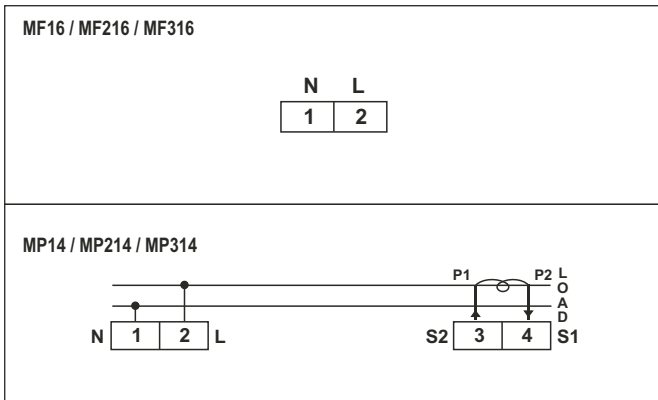
**MP14**  
Size : 48 x 96mm

**MP214**  
Size : 72 x 72mm

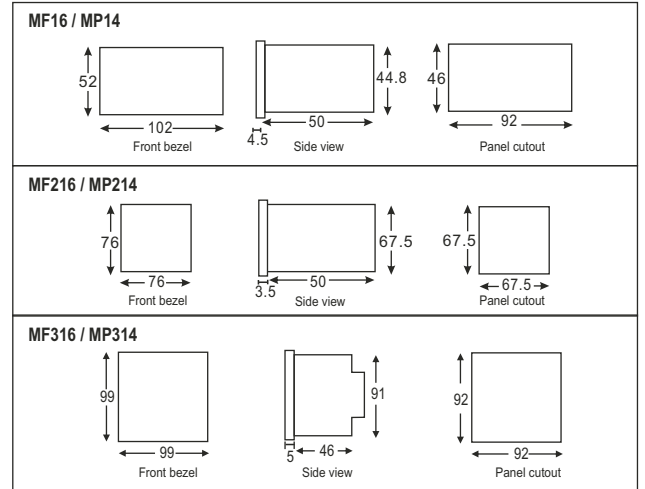
**MP314**  
Size : 96 x 96mm

FEATURES	<ul style="list-style-type: none"> <li>• 4 digits 7 segment LED Display</li> <li>• 0.01 Resolution</li> </ul>	<ul style="list-style-type: none"> <li>• 4 digits 7 segment LED Display</li> <li>• 0.01 Resolution</li> </ul>	<ul style="list-style-type: none"> <li>• 4 digits 7 segment LED Display</li> <li>• 0.01 Resolution</li> </ul>	<ul style="list-style-type: none"> <li>• 4 digits 7 segment LED Display</li> <li>• 0.001 Resolution</li> </ul>	<ul style="list-style-type: none"> <li>• 4 digits 7 segment LED Display</li> <li>• 0.001 Resolution</li> </ul>	<ul style="list-style-type: none"> <li>• 4 digits 7 segment LED Display</li> <li>• 0.001 Resolution</li> </ul>
DISPLAY	7 segment LED					
DIGITS	4 digits					
ELECTRICAL CONNECTION	1Ø - 2W					
RESOLUTION	0.01Hz			0.001		
ACCURACY	± 0.05 Hz			± 0.5% ± 1 digit		
MEASUREMENT RANGE	45 to 65 Hz			-1.000 to +1.000		
SUPPLY VOLTAGE	240V AC ±20% (45 to 65Hz), 110V AC ±20% (45 to 65 Hz)			240V AC ±20% (50/60Hz), 110V AC ±20% (50/60 Hz)		

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE		CERTIFICATION
	110V AC	230V AC	
MF16	---	■	---
MF16-110V-CU-RoHS	■	---	CE RoHS
MF216	---	■	---
MF316	---	■	---

PRODUCT CODE	SUPPLY VOLTAGE		CERTIFICATION
	110V AC	230V AC	
MP14	---	■	---
MP14-110V-CU-RoHS	■	---	CE RoHS
MP214	---	■	---
MP314	---	■	---

Analog Meters



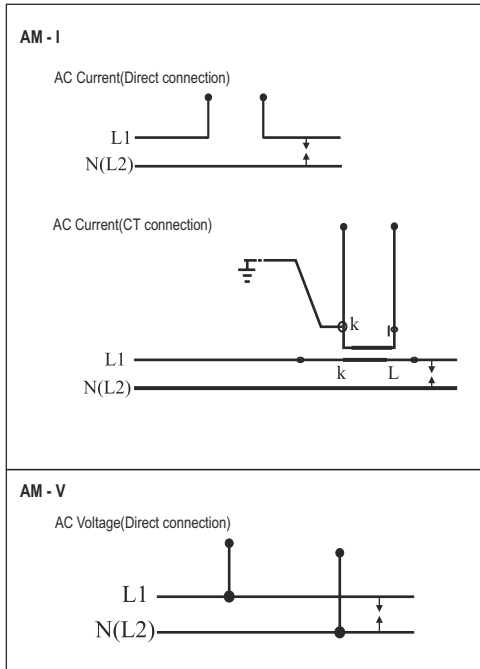
**AM - I**  
Size : 72 x 72mm / 96 x 96mm



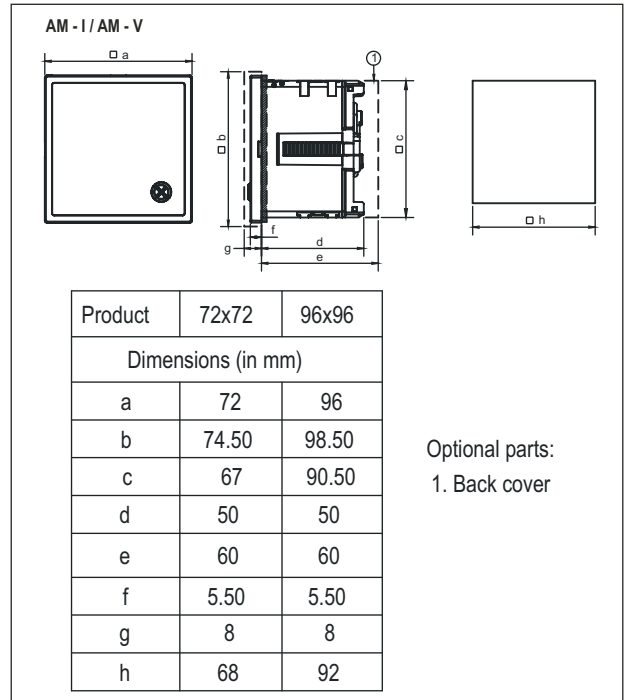
**AM - V**  
Size : 72 x 72mm / 96 x 96mm

<b>FEATURES</b>	<ul style="list-style-type: none"> <li>• Scale Interchangeability</li> <li>• Near Linear Scale</li> <li>• Knife Edge Pointer</li> <li>• Glass filled Nylon / Polycarbonate Housing</li> <li>• Easy Installation / Termination</li> </ul>	<ul style="list-style-type: none"> <li>• Scale Interchangeability</li> <li>• Near Linear Scale</li> <li>• Knife Edge Pointer</li> <li>• Glass filled Nylon / Polycarbonate Housing</li> <li>• Easy Installation / Termination</li> </ul>
<b>MEASURING PARAMETER</b>	AC Current	AC Voltage
<b>POINTER DEFLECTION</b>	0 to 90°	
<b>SCALE CHARACTERISTICS</b>	Near Linear above 10% of Nominal full scale value	
<b>SCALE LENGTH</b>	72 X 72 mm : 63 mm / 96 X 96mm : 97 mm	
<b>MEASURING VOLTAGE RANGE</b>	--	0 to 300V & 0 to 500V
<b>MEASURING CURRENT RANGE</b>	0 to 5A (CT Secondary) , Suppress scale : 0 to 5 / 30A(CT Secondary)	--
<b>ACCURACY</b>	Class 1.5	
<b>FREQUENCY</b>	45 to 65Hz	

Terminal Connections



Dimensions (All are in mm)



Note :- For ordering information consult factory

Current Transformers



SPCT



RCT



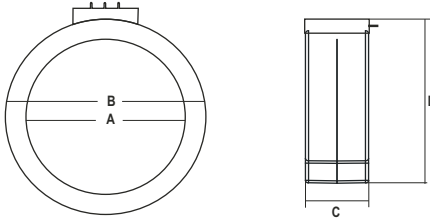
TWCT

FEATURES	<ul style="list-style-type: none"> <li>• Use with different Bus Bar Size</li> <li>• Panel Mount / Din Rail Mount (Require optional accessory)</li> <li>• Accuracy : Class 0.5 to 5</li> </ul>	<ul style="list-style-type: none"> <li>• Selable Terminal / Wire type Output</li> <li>• Panel Mount</li> <li>• Accuracy : Class 1 to 5</li> </ul>	<ul style="list-style-type: none"> <li>• Terminal Output</li> <li>• Accuracy : Class 0.5 to 5</li> </ul>
RATED PRIMARY RATING	30 to 4000A	30 to 600A	30 to 1600A
RATED SECONDARY OUTPUT	5A		
RATED BURDEN	1 to 15VA	1.5 to 5VA	1.5 to 10VA
ACCURACY	0.5 to 5	1 to 5	0.5 to 5
OPERATING FREQUENCY	AC 50/60Hz		
SYSTEM VOLTAGE	720V maximum		
APPLICABLE STANDARD	IEC 61869-2		

Dimensions (All are in mm)

<p>SPCT-62/22 ,62/30, 62/40</p>	<p>SPCT-62/40</p>	<p>SPCT-100/60</p>	
<p>SPCT-62/22</p>	<p>SPCT-62/30</p>	<p>SPCT-140/100</p>	
<p>RCT-T-D50</p>	<p>RCT-T-D30</p>	<p>RCT-W-D30</p>	<p>RCT-W-D50</p>

**Dimensions** (All are in mm)

TWCT		PRODUCT	A	B	C	D
		TWCT-T-D35	35	70	45	80
		TWCT-T-D55 150/5 A	55	90	35	100
		TWCT-T-D55	55	90	25	100
		TWCT-T-D65	65	95	30	105
		TWCT-T-D110	110	35	35	145
		TWCT-T-D120	120	155	25	165

**Ordering Information**

**SPCT**

PRODUCT CODE	WIRE APERTURE In mm	CURRENT RATIO	BURDEN IN VA	ACCURACY CLASS
SPCT 62/22 30/5 A VA 1 CL 5	DIA 22	30/5	1	5
SPCT 62/30 50/5 A VA 1 CL 3	30x10	50/5	1	3
SPCT 62/30 50/5 A VA 1.5 CL 3	30x10	50/5	1.5	3
SPCT 62/30 75/5 A VA 1 CL 3	30x10	75/5	1	3
SPCT 62/30 75/5 A VA 3 CL 3	30x10	75/5	3	3
SPCT 62/30 100/5 A VA 1 CL 1	30x10	100/5	1	1
SPCT 62/30 100/5 A VA 3 CL 1	30x10	100/5	3	1
SPCT 62/40 100/5 A VA 1 CL 1	40x10	100/5	1	1
SPCT 62/40 125/5 A VA 1 CL 1	40x10	125/5	1	1
SPCT 62/40 150/5 A VA 1.5 CL 1	40x10	150/5	1.5	1
SPCT 62/40 150/5 A VA 3 CL 1	40x10	150/5	3	1
SPCT 62/40 160/5 A VA 1.5 CL 1	40x10	160/5	1.5	1
SPCT 62/40 200/5 A VA 2.5 CL 0.5	40x10	200/5	2.5	0.5
SPCT 62/40 200/5 A VA 3 CL 1	40x10	200/5	3	1
SPCT 62/40 250/5 A VA 2.5 CL 0.5	40x10	250/5	2.5	0.5
SPCT 62/40 250/5 A VA 3 CL 1	40x10	250/5	3	1
SPCT 62/40 300/5 A VA 3 CL 0.5	40x10	300/5	3	0.5
SPCT 62/40 400/5 A VA 3.75 CL 0.5	40x10	400/5	3.75	0.5
SPCT 62/40 400/5 A VA 5 CL 1	40x10	400/5	5	1
SPCT 100/60 500/5 A VA 5 CL 1	60x12	500/5	5	1
SPCT 100/60 600/5 A VA 5 CL 0.5	60x12	600/5	5	0.5
SPCT 100/60 600/5 A VA 7.5 CL 1	60x12	600/5	7.5	1
SPCT 100/60 800/5 A VA 10 CL 0.5	60x12	800/5	10	0.5
SPCT 100/60 1000/5 A VA 15 CL 0.5	60x12	1000/5	15	0.5
SPCT 100/60 1200/5 A VA 15 CL 0.5	60x12	1200/5	15	0.5
SPCT 140/100 800/5 A VA 15 CL 0.5	100x30	800/5	15	0.5
SPCT 140/100 1000/5 A VA 15 CL 0.5	100x30	1000/5	15	0.5
SPCT 140/100 1200/5 A VA 15 CL 0.5	100x30	1200/5	15	0.5
SPCT 140/100 1250/5 A VA 15 CL 0.5	100x30	1250/5	15	0.5
SPCT 140/100 1500/5 A VA 15 CL 0.5	100x30	1500/5	15	0.5
SPCT 140/100 1600/5 A VA 15 CL 0.5	100x30	1600/5	15	0.5
SPCT 140/100 2000/5 A VA 15 CL 0.5	100x30	2000/5	15	0.5
SPCT 140/100 2500/5 A VA 15 CL 0.5	100x30	2500/5	15	0.5
SPCT 140/100 3000/5 A VA 15 CL 0.5	100x30	3000/5	15	0.5
SPCT 140/100 3500/5 A VA 15 CL 0.5	100x30	3500/5	15	0.5
SPCT 140/100 4000/5 A VA 15 CL 0.5	100x30	4000/5	15	0.5

**RCT**

PRODUCT CODE	WIRE APERTURE In mm	CURRENT RATIO	BURDEN IN VA	ACCURACY CLASS	NO OF PRIMARY TURNS
RCT-T-D30-30/5 A VA 1.5 CL5	DIA 30	30/5	1.5	5	---
RCT-T-D30-30/5 A VA 5 (2T) CL5	DIA 30	30/5	5	5	2
RCT-T-D30-50/5 A VA 5 CL5	DIA 30	50/5	5	5	---
RCT-T-D30-75/5 A VA 5 CL5	DIA 30	75/5	5	5	---
RCT-T-D30-100/5 A VA 5 CL1	DIA 30	100/5	5	1	---
RCT-T-D30-150/5 A VA 5 CL1	DIA 30	150/5	5	1	---
RCT-T-D50-200/5 A VA 5 CL1	DIA 50	200/5	5	1	---
RCT-T-D50-250/5 A VA 5 CL1	DIA 50	250/5	5	1	---
RCT-T-D50-300/5 A VA 5 CL1	DIA 50	300/5	5	1	---
RCT-T-D50-400/5 A VA 5 CL1	DIA 50	400/5	5	1	---
RCT-T-D50-500/5 A VA 5 CL1	DIA 50	500/5	5	1	---
RCT-T-D50-600/5 A VA 5 CL1	DIA 50	600/5	5	1	---
RCT-W-D30-30/5 A VA 1.5 CL5	DIA 30	30/5	1.5	5	---
RCT-W-D30-30/5 A VA 5 (2T) CL5	DIA 30	30/5	5	5	2
RCT-W-D30-50/5 A VA 5 CL5	DIA 30	50/5	5	5	---
RCT-W-D30-75/5 A VA 5 CL5	DIA 30	75/5	5	5	---
RCT-W-D30-100/5 A VA 5 CL1	DIA 30	100/5	5	1	---
RCT-W-D30-150/5 A VA 5 CL1	DIA 30	150/5	5	1	---
RCT-W-D50-200/5 A VA 5 CL1	DIA 50	200/5	5	1	---
RCT-W-D50-250/5 A VA 5 CL1	DIA 50	250/5	5	1	---
RCT-W-D50-300/5 A VA 5 CL1	DIA 50	300/5	5	1	---
RCT-W-D50-400/5 A VA 5 CL1	DIA 50	400/5	5	1	---
RCT-W-D50-500/5 A VA 5 CL1	DIA 50	500/5	5	1	---
RCT-W-D50-600/5 A VA 5 CL1	DIA 50	600/5	5	1	---

**TWCT**

PRODUCT CODE	WIRE APERTURE In mm	CURRENT RATIO	BURDEN IN VA	ACCURACY CLASS
TWCT-T-D35 30/5 A VA 1.5 CL 5	DIA 35	30/5	1.5	5
TWCT-T-D35 50/5 A VA 5 CL 5	DIA 35	50/5	5	5
TWCT-T-D35 75/5 A VA 5 CL 5	DIA 35	75/5	5	5
TWCT-T-D35 100/5 A VA 5 CL 1	DIA 35	100/5	5	1
TWCT-T-D35 150/5 A VA 5 CL 1	DIA 35	150/5	5	1
TWCT-T-D55 150/5 A VA 5 CL 1	DIA 55	150/5	5	1
TWCT-T-D55 200/5 A VA 5 CL 1	DIA 55	200/5	5	1
TWCT-T-D55 250/5 A VA 5 CL 1	DIA55	250/5	5	1
TWCT-T-D55 300/5 A VA 5 CL 1	DIA 55	300/5	5	1
TWCT-T-D55 400/5 A VA 5 CL 1	DIA 55	400/5	5	1
TWCT-T-D65 500/5 A VA 5 CL 1	DIA 65	500/5	5	1
TWCT-T-D65 600/5 A VA 5 CL 1	DIA 65	600/5	5	1
TWCT-T-D110 800/5 A VA 10 CL 0.5	DIA 110	800/5	10	0.5
TWCT-T-D110 1000/5 A VA 10 CL 0.5	DIA 110	1000/5	10	0.5
TWCT-T-D120 1000/5 A VA 10 CL 0.5	DIA 120	1000/5	10	0.5
TWCT-T-D120 1200/5 A VA 10 CL 0.5	DIA 120	1200/5	10	0.5
TWCT-T-D120 1600/5 A VA 10 CL 0.5	DIA 120	1600/5	10	0.5

# AUTOMATIC POWER FACTOR CONTROLLERS



**APFC148 : With 3 CT sensing**  
Size : 144 x 144mm



**APFC147 : With 3 CT sensing**  
Size : 144 x 144mm



**APFC147 : With 1 CT sensing**  
Size : 144 x 144mm



**APFC347 : With 1 CT sensing**  
Size : 96 x 96mm

FEATURES	<ul style="list-style-type: none"> <li>• With Built In Multifunction Meter</li> <li>• Dual Colour Backlight for Alarm Indication</li> <li>• Auto Detection of Capacitor Back Values</li> <li>• Configurable Alarm Settings</li> <li>• Dual Password Protection</li> <li>• RS485 Communication MODBUS RTU Protocol *(Only for 12 stage variant)</li> </ul>	<ul style="list-style-type: none"> <li>• Auto Detection of Capacitor Back Values</li> <li>• Configurable Alarm Setting</li> <li>• Dual Password Protection</li> </ul>	<ul style="list-style-type: none"> <li>• Auto Detection of Capacitor Back Values</li> <li>• Configurable Alarm Settings</li> <li>• Dual Password Protection</li> </ul>	<ul style="list-style-type: none"> <li>• Auto Detection of Capacitor Back Values</li> <li>• Configurable Alarm Settings</li> <li>• Dual Password Protection</li> </ul>
DISPLAY	LCD with Dual Colour Backlight		7 segment LED	
DIGITS	3 Rows, 4 Digits to show electrical parameters		1 Row, 4 Digits to show Power Factor	
ELECTRICAL CONNECTION	3Ø - 4W, 3Ø - 3W, 2Ø - 2W , 1Ø - 2W		L-N , L-L	
RATED INPUT VOLTAGE	11 to 300V AC (L-N), 50 to 520V AC (L-L)		40 to 300V AC (L-N), 50 to 530V AC (L-L)	
RATED INPUT CURRENT	Nominal 5AAC (min: 11mA, max: 6A)		Nominal 5AAC (min: 50mA, max: 6A)	
POWER CONSUMPTION	15VA max		7VA max.	
FREQUENCY	45 to 65 Hz			
MEASUREMENT RANGE	Power Factor: 0.8 Lag to 0.8 Lead			
ALARM SETTINGS	Over / Under Voltage, Over / Under Compensation, CT Polarity Error, Current Absent Indication, THDI error, Step Error, Over Temperature, Fan Setting, No voltage		Over / Under Voltage, Over / Under Compensation, CT Polarity Error, Current Absent Indication	
PHASE COMPENSATION	0°, 90°, 120°, 210°, 240°, 330°			
ACCURACY	Power Factor: ± 0.01, Voltage (L-N/L-L), Current: ±0.5% of full scale, Frequency - For L-N >20V, For L-L >35V : ±0.1% of full scale, Power (kW, kVA, kVAh): 1%, Energy (kWh, kVAh, kVAh): Class 1 Temperature : ±3°C of full scale		Power Factor: ±0.01	
CT PRIMARY	1 / 5A to 9999A (Programmable for any value)			
CT SECONDARY	1 or 5 A (Programmable)			
PT PRIMARY	100V to 500kV (Programmable for any value)		--	
PT SECONDARY	100 to 500V (Programmable for any value)		--	
STEPS	1 to 8 / 12 / 14* (FAN & ALARM output can be used as 13 <sup>th</sup> & 14 <sup>th</sup> step)		1 to 12	3 to 8 / 12
RELAY CONTACT	5A @ 250V AC			
SWITCHING PROGRAM	Automatic / Linear / Rotational			
STEP TIME	1 to 999s			
DISCHARGE TIME	1 to 9999s		1 to 999s	
CONTROL MODE	Automatic / Manual			
CONTROL SENSITIVITY	55 to 100%			
AUTO INITIALIZATION	Yes / No			
COMMUNICATION	RS485 MODBUS RTU *(Only for 12 stage variant)		--	
SUPPLY VOLTAGE	90 to 550V AC, 50 / 60Hz		85 to 270V AC, 50 / 60Hz	

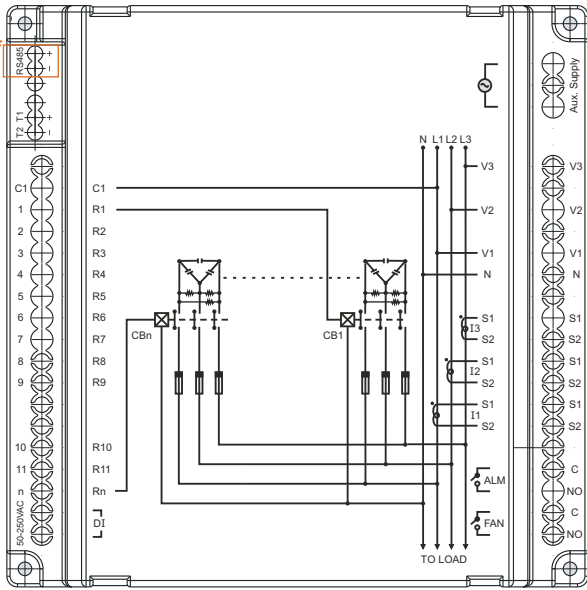
### Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE	OUTPUT		CERTIFICATION
		STEPS	COMM. (RS485)	
APFC148-312-90/550V-CE-RoHS	90 to 550V AC, 50 / 60Hz	12	■	CE RoHS
APFC148-308-90/550V-CE-RoHS	90 to 550V AC, 50 / 60Hz	8	---	CE RoHS
APFC147-312-90/550V-CE-RoHS	90 to 550V AC, 50 / 60Hz	12	---	CE RoHS
APFC147-112-90/550V-CE-RoHS	90 to 550V AC, 50 / 60Hz	12	---	CE RoHS in process
APFC147-108-90/550V-CE-RoHS	90 to 550V AC, 50 / 60Hz	8	---	CE RoHS in process
APFC347-108-230V-CE-RoHS	85 to 270V AC, 50 / 60Hz	8	---	CE RoHS in process
APFC347-106-230V-CE-RoHS	85 to 270V AC, 50 / 60Hz	6	---	CE RoHS in process
APFC347-104-230V-CE-RoHS	85 to 270V AC, 50 / 60Hz	4	---	CE RoHS in process

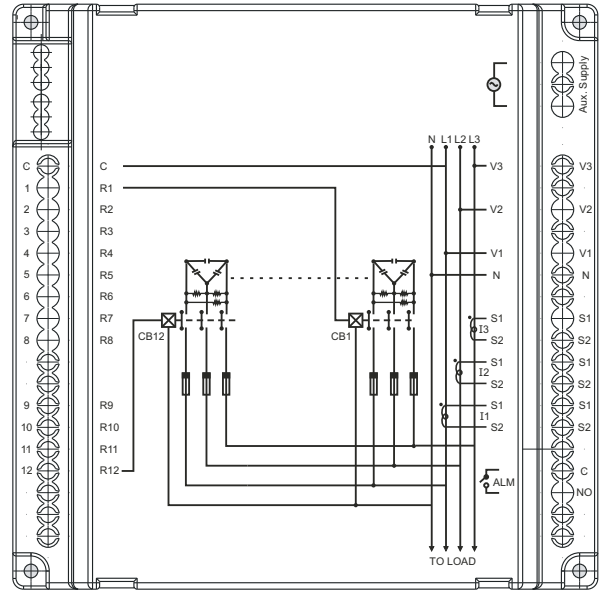
## Terminal Connections

**APFC148: With 3 CT sensing**

Where n - 12 For 12 stage variant.  
8 For 8 stage variant.  
\* Valid Only For 12 stage variant.

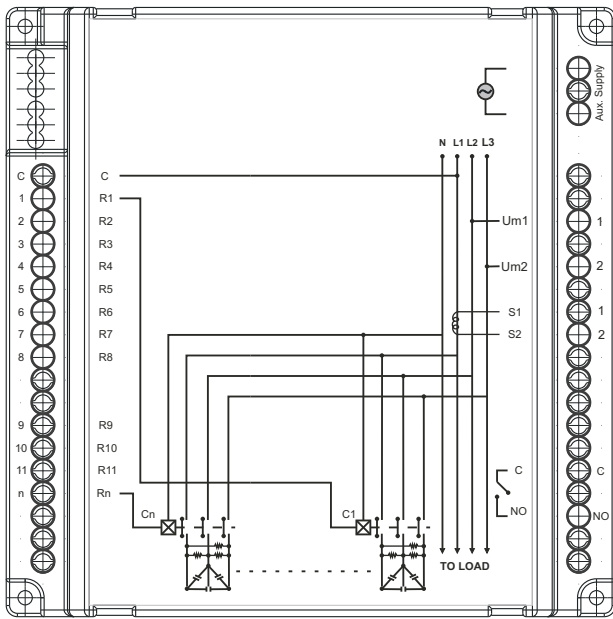


**APFC147: With 3 CT sensing**



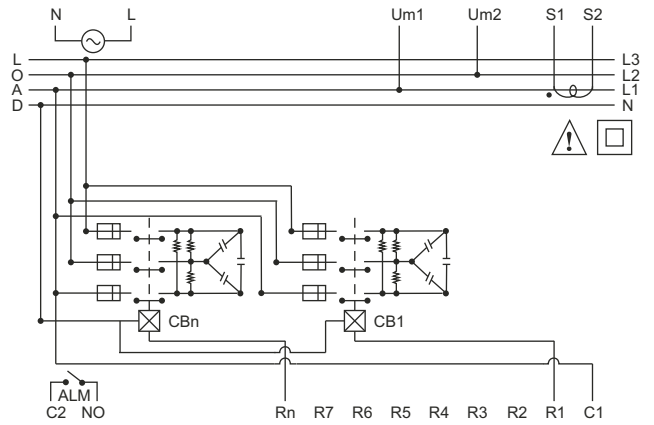
**APFC147: With 1 CT sensing**

Where n - 12 For 12 stage variant.  
8 For 8 stage variant.



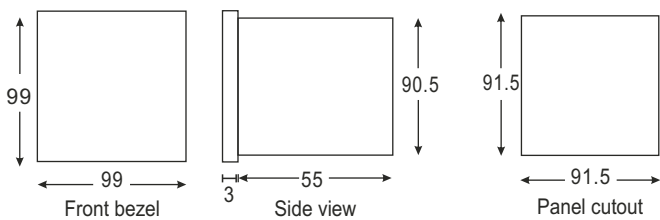
**APFC347: With 1 CT sensing**

Where n - 8 For 8 stage variant.  
6 For 6 stage variant.  
4 For 4 stage variant.

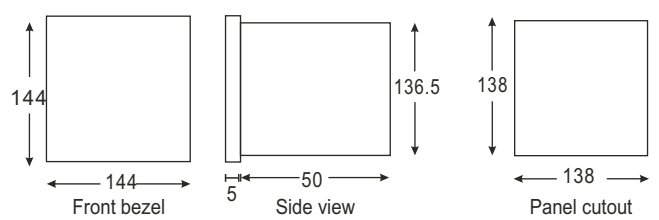


## Dimensions (All are in mm)

**APFC347**



**APFC148 & APFC147**







## Types : Analog / Digital Protection Relays

- Line Monitoring Relay
  - Phase Sequence Relay
  - Voltage Protection Relay
- Current Protection Relay
- Earth Leakage Relay
- Earth Fault Relay
- Motor Protection Relay
- Water Level Controller

### Applicable EMI / EMC Standards

#### Product Standard :

Products	Electromagnetic Compatibility
Phase Sequence	IEC60947-5-1
Voltage Protection	IEC61326-1
Current Protection	IEC60947-1
Earth Leakage Current	IEC60947-2
Earth Fault Relay	IEC60947-5-1
Water Level Controller	IEC60947-5-1

Category	Standards Compliance	
ESD Immunity	IEC 61000-4-2	Level III
Surge Immunity	IEC 61000-4-5	+/- 2 kV common mode, +/- 1 kV differential mode
Radiated Susceptibility	IEC 61000-4-3	Level III, 80 to 1000MHz Level II, 1.4GHz to 2GHz Level I, 2GHz to 2.7GHz
Conducted Susceptibility	IEC 61000-4-6	Level III
Voltage Dips and Interruptions	IEC 61000-4-11	Dips : 0% residual voltage / 1 cycle (Criteria B.), 40% residual voltage / 10 cycles 50 Hz / 12 cycles 60 Hz (Criteria C) 70% residual voltage / 25 cycles 50 Hz / 30 cycles 60 Hz (Criteria C) Interruptions : 0% residual voltage / 250 cycles 50 Hz / 300 cycles 60 Hz (Criteria C)
Conducted Emission	CISPR-11	
Radiated Emission	CISPR-11	
Electrical Fast Transient	IEC 61000-4-4	Level III

Note : Above standards are applicable only for CE certified Analog / Digital Protection Relays

Phase Protection Relays



**600PSR**  
Size : 17.5 x 90mm



**800PSR**  
Size : 22.5 x 76.85mm



**PSR1**  
Size : 35 x 90mm



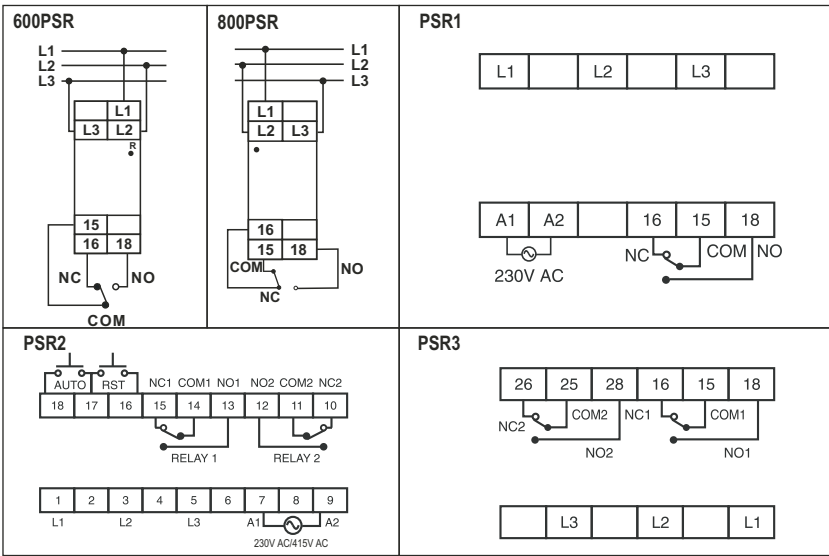
**PSR2**  
Size : 52.5 x 90mm



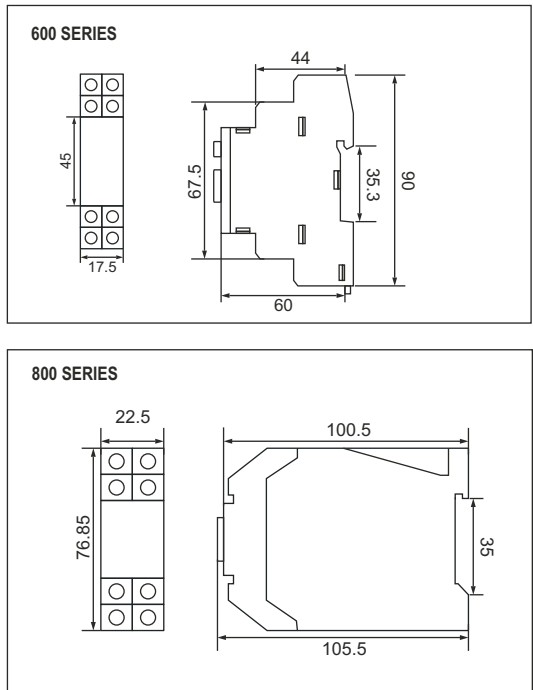
**PSR3**  
Size : 35 x 96mm

FEATURES	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Phase Failure</li> <li>Phase Reversed</li> <li>Phase Imbalance</li> <li>Space Saving Design</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Phase Failure</li> <li>Phase Reversed</li> <li>Phase Imbalance</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Phase Failure</li> <li>Phase Reversed</li> <li>Phase Imbalance</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Phase Failure</li> <li>Phase Reversed</li> <li>Phase Imbalance</li> <li>Knob Adjustable setting</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Phase Failure</li> <li>Phase Imbalance</li> <li>Under Voltage &amp; Over Voltage</li> </ul>
MODES	Phase Reversed, Phase Failure Trip :- <154V AC (L-L) Phase asymmetry :- 30V Fixed Reset :- Auto Reset		Phase asymmetry :- 40V Fixed , Phase Failure & Phase Reversed, Reset :- Auto Reset	Phase asymmetry :- 30-70 V (Knob Adjustable setting) Phase Failure & Phase Sequence Reset :- Auto/Manual Mode	Phase asymmetry:- 30V (Fixed), Phase Failure, Over Voltage Trip :- 10% of 415V AC Under Voltage Trip:-15% of 415V AC Reset :- Auto Reset
TIME RANGES	Power On Delay :- 200msec		Trip Time Delay(Fixed) :3.5s Power ON Delay (Fixed) : <500ms Recovery Time Delay :- Phase Failure & Phase Asymmetry :<120ms Phase Sequence :<250ms	Trip Time Delay (Fixed) : 3.5s Power ON Delay (Fixed) : <500ms Recovery Time Delay :- Phase Failure & Phase Asymmetry :- <120ms Phase Sequence :<250ms	Power On Delay : 3s (Fixed) Trip & Recovery Time Delay :- Phase Failure & Phase Asymmetry :<120ms Over Voltage & Under Voltage :<200ms
ACCURACY	Trip accuracy : ±10V		Trip Voltage : ±1% of F.S, Trip Time : ±5% of F.S±100ms		
OUTPUT CONTACT	1 C/O SPDT			2 C/O DPDT	
OUTPUT RATING	NC:3A @ 250V AC, NO:5A @250V AC				NC:5A @ 250V AC, NO:5A @250V AC
ELECTRICAL CONNECTION	3Ø - 3W				
OPERATING VOLTAGE	154 to 500V AC (L-L)		Auxiliary Supply : 230V AC ±20%	Auxiliary Supply : 230V AC/415 V AC ±20%	280 to 520V AC (L-L)

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	OPERATING RANGE	CERTIFICATION
600PSR	154-500V AC	---
600PSR-CE-ROHS		CE RoHS
600PSR-165/300-CU	165-300V AC	CE RoHS
800PSR	154-500V AC	---
PSR1-2M-1-230V	230V AC	---
PSR2-3M-2-230V		---
PSR2-3M-2-415V	415 V AC	---
PSR3-2M-2-280/520V	280 to 520V AC	---

Voltage Protection Relays



600VPR-310/520V  
Size : 17.5 x 90mm



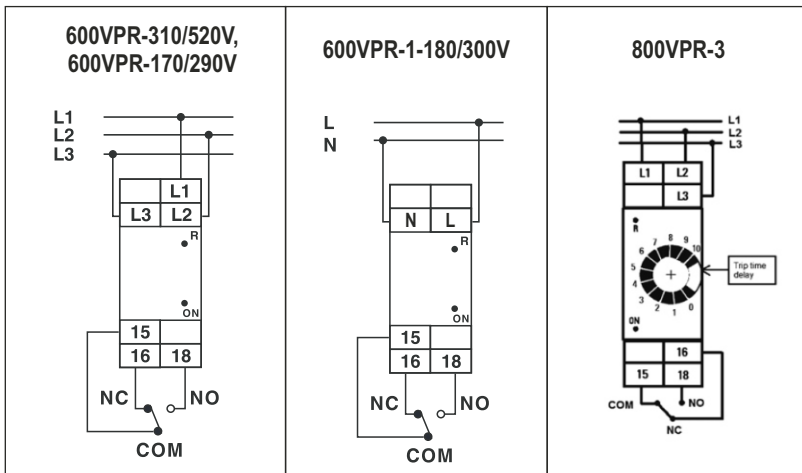
600VPR-170/290V  
Size : 17.5 x 90mm



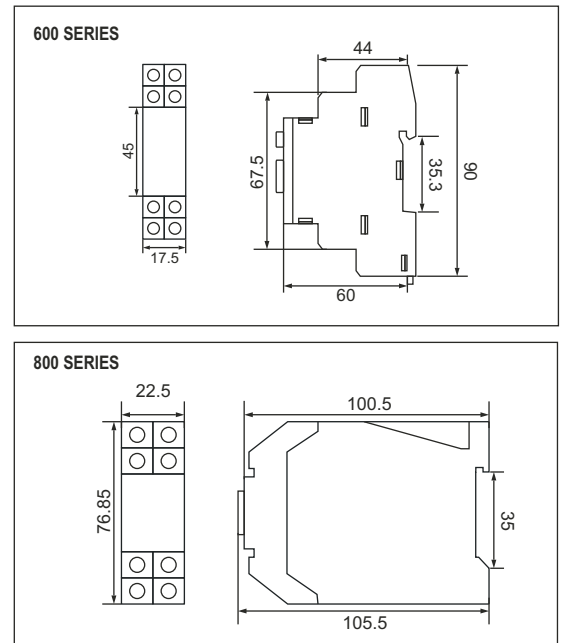
800VPR-3  
Size : 22.5 x 76.85mm

FEATURES	<ul style="list-style-type: none"> <li>• Din Rail Mount</li> <li>• Under Voltage</li> <li>• Over Voltage</li> <li>• Phase Reversed</li> <li>• Phase Loss</li> <li>• Space Saving Design</li> </ul>	<ul style="list-style-type: none"> <li>• Din Rail Mount</li> <li>• Under Voltage</li> <li>• Over Voltage</li> <li>• Space Saving Design</li> </ul>	<ul style="list-style-type: none"> <li>• Din Rail Mount</li> <li>• Under Voltage</li> <li>• Over Voltage</li> <li>• Phase Reversed</li> <li>• Phase Loss</li> </ul>	
MODES	Under voltage trip :- 310 to 405V AC (-25% to -2.5% of 415V AC) Over Voltage trip :- 425 to 520V AC (+2.5% to +25% of 415V AC) Phase Sequence : YES Phase Loss : YES Reset : Auto Reset	Under voltage trip :- 170 to 224V AC (-25% to -2.5% of 230V AC) Over Voltage trip :- 236 to 290V AC (+2.5% to +25% of 230V AC) Phase Sequence : YES Phase Loss : YES Reset : Auto Reset	Under voltage trip :- 180 to 234V AC (-25% to -2.5% of 240V AC) Over Voltage trip :- 246 to 300V AC (+2.5% to +25% of 240V AC) Reset : Auto Reset	Under voltage trip :- 310 to 405V AC (-25% to -2.5% of 415V AC) Over Voltage trip :- 425 to 520V AC (+2.5% to +25% of 415V AC) Phase Sequence : YES Phase Loss : YES Reset : Auto Reset
TIME RANGES	Trip time delay:- 0.2 to 10 sec Power On Delay :- 400msec			Trip Delay : 0 to 10s (for under voltage and over voltage) : Instantaneous (For phase loss & phase sequence)
ACCURACY	Trip Voltage : ±0.5% of F.S Trip Time : ±5% of F.S			
OUTPUT CONTACT	1 C/O SPDT			
OUTPUT RATING	NC: 3A @ 250V AC NO: 5A @250V AC			NC: 5A @ 250V AC,(Resistive Load) NO: 5A @250V AC
ELECTRICAL CONNECTION	3Ø - 3W			3Ø - 3W
OPERATING VOLTAGE	310 to 520V AC (L-L)	170 to 290V AC (L-L)	180 to 300V AC(L-N)	310 to 520V AC (L-L)

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	OPERATING RANGE	CERTIFICATION
600VPR-310/520	310-520V AC	--
600VPR-310/520-CE		CE RoHS
600VPR-170/290-CU	170-290V AC	CE RoHS <small>UL LISTED</small>
600VPR-1-180/300	180-300V AC	--
600VPR-1-180/300-CE		CE RoHS
800VPR-3	310-520V AC	--

Voltage Protection Relays



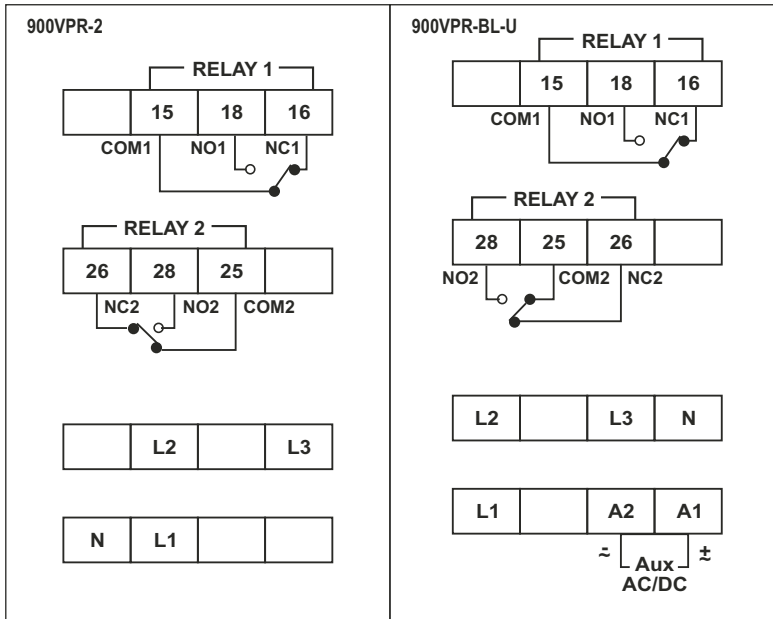
900VPR-2  
Size : 35 x 90mm



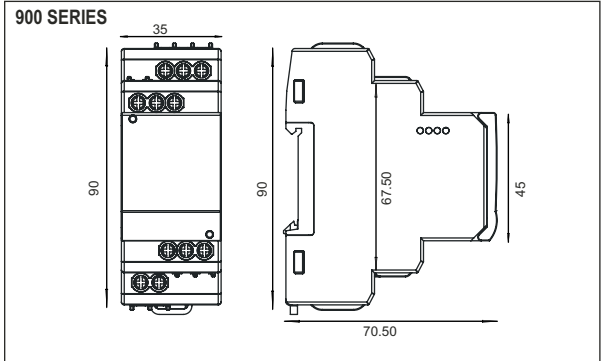
900VPR-BL-U  
Size : 35 x 90mm

FEATURES	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Monitors Under Voltage, Over Voltage, Under Frequency, Over Frequency, Phase Asymmetry, Phase Failure and Phase Sequence</li> <li>True RMS Measurement</li> <li>Adjustable Switching Hysteresis</li> <li>Two Separate Alarm Relays</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Monitors Under Voltage, Over Voltage, Under Frequency, Over Frequency, Phase Asymmetry, Phase Failure, Neutral Loss and Phase Sequence</li> <li>True RMS Measurement</li> <li>Adjustable Switching Hysteresis</li> <li>Two Alarm Relays With NO or NC Operation selectable</li> </ul>
MEASUREMENTS	Under / Over Voltage, Under / Over Frequency, Phase Asymmetry, Phase Failure, Phase Sequence, (Neutral loss applicable only for 900VPR-BL-U)	
DISPLAY	3 digits LCD	3 digits LCD with backlight
ALARM INDICATIONS	Trip	
ELECTRICAL CONNECTION	3Ø - 3W, 3Ø - 4W	
TRIP SETTING	Under / Over Voltage: 280 to 520V AC L-L (for 3Ø - 3W system) 160 to 300V AC L-N (for 3Ø - 4W system) Under / Over Frequency: 45-65Hz, Voltage Asymmetry: 5.0 – 99.9%	Under / Over Voltage: 85 to 500V AC L-L (for 3Ø - 3W system) 50 to 288V AC L-N (for 3Ø - 4W system) Under / Over Frequency: 45-65Hz, Voltage Asymmetry: 5.0 – 30.0%
TRIP TIME SETTING	Power ON Delay: 2 – 99.9sec Trip Time Delay: 0 – 99.9sec Delay on Release: 0 – 99.9sec Response Time: <200ms	Power ON Delay: 0.5 - 300sec Trip Time Delay: 0 - 300sec Recovery Time Delay: 0 - 300sec Response Time: <120ms
HYSTERESIS	Voltage: 1.0 – 99.0V, Frequency: 0.2 – 2Hz, Asymmetry: 2-20%	Voltage: 1.0-40V, Frequency: 0.1-2Hz, Asymmetry: 2-20%
RESOLUTION	Voltage: 1V, Frequency: 0.1Hz	
ACCURACY	Voltage: ±1% of set value, Frequency: ±0.3Hz, Time (Recovery Time, Trip delay, Power on delay): ±5% of setting +200ms	Voltage: ±1% of set value ±2 digits, Frequency : ±0.5% ± 1 digits, Time (Recovery Time, Trip delay, Power on delay): ±5% of Setting +120ms
OUTPUT CONTACT	2 x 1C/O SPDT	
RELAY RATING	NO : 5A @ 250V AC ; NC : 3A @ 250V AC (Res.)	
SUPPLY VOLTAGE	Self Powered, Operating Voltage: 280 to 520V AC (L-L) : 160 to 300V AC (L-N)	85 - 270V AC/DC
FREQUENCY	45 - 65Hz	
POWER CONSUMPTION	30VA max.	4VA max.

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	OPERATING RANGE	CERTIFICATION
900VPR-2-280/520V	280 - 520V AC	---
900VPR-2-280/520V-CE		CE RoHS
900VPR-2-280/520V-CU		CE RoHS (L87ED)
900VPR-BL-U-CE	85 - 270V AC / DC	CE RoHS

Voltage Protection Relays



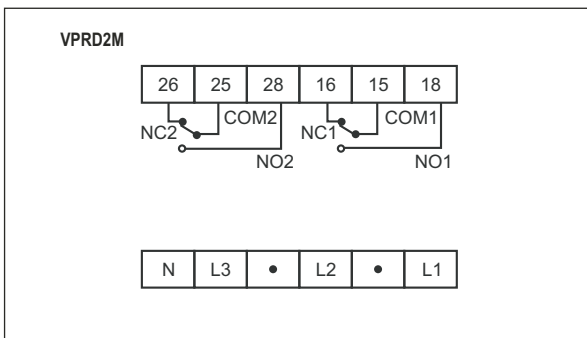
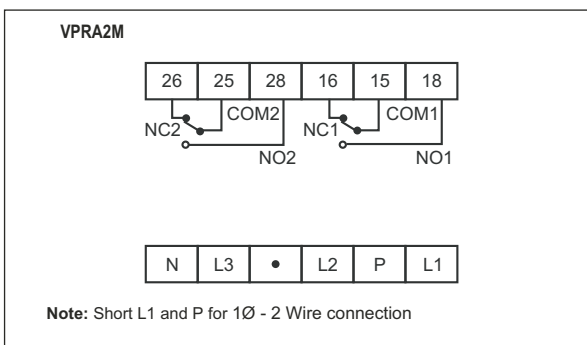
VPRA2M  
Size : 35 x 90mm



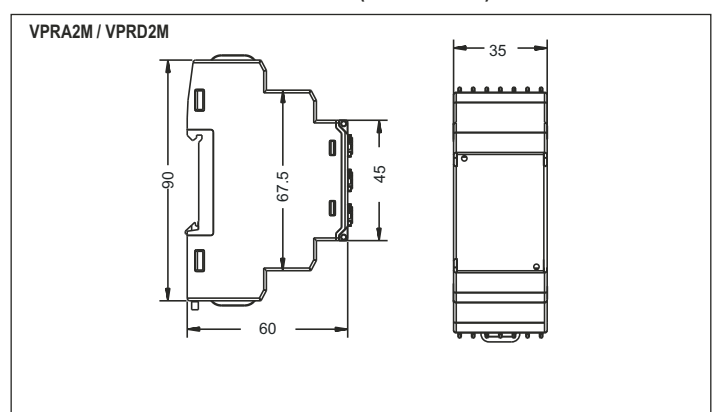
VPRD2M  
Size : 35 x 90mm

FEATURES	<ul style="list-style-type: none"> <li>• Din Rail Mount</li> <li>• Monitors Under Voltage, Over Voltage, Phase Asymmetry, Phase Failure, Phase Sequence &amp; Neutral Loss Detection</li> <li>• True RMS Measurement</li> <li>• Adjustable Over and Under Voltage Trip Level.</li> <li>• Adjustable Operate Time &amp; Trip Time Delay</li> <li>• Auto Reset</li> </ul>	<ul style="list-style-type: none"> <li>• Din Rail Mount</li> <li>• Monitors Under Voltage, Over Voltage, Phase Asymmetry, Phase Failure &amp; Phase Sequence</li> <li>• True RMS Measurement</li> <li>• Adjustable Switching Hysteresis</li> <li>• One Relay with Two Change Over Alarm Relay operation</li> </ul>
MEASUREMENT	Under voltage, Over voltage, Phase Failure, Phase Sequence, Phase asymmetry (Neutral loss applicable only for VPRA2M)	
DISPLAY	LED indications for Power ON, Phase Loss, Under Voltage, Over Voltage, Phase Sequence / Asymmetry	3 digits LCD or (LCD with backlight), 2 LED
ELECTRICAL CONNECTION	1Ø - 2W, 3Ø - 4W	
TRIP SETTING	Under Voltage: 55 to 95% of Un [127 to 219V AC (L-N)] Over Voltage: 105 to 125% of Un [242 to 288V AC (L-N)] Phase Asymmetry: > 10%	Under Voltage: 127 to 219V AC (L-N), Over Voltage: 242 to 288V AC (L-N) Phase Asymmetry: 5 - 30%
TRIP TIME SETTING	Power ON Delay: 0 – 15 sec, Trip Time Delay: 0 – 15 sec Recovery Time Delay: 5sec ± 200ms, L1/Neutral Loss trip delay <200msec, Phase sequence trip delay <250msec	Power ON Delay: 0.5 - 300 sec, Trip Time Delay: 0 - 300 sec Recovery Time Delay: 0 – 300 sec, Response Time: <150ms
HYSTERESIS	Voltage : 7V (±2V) of trip voltage	Voltage: 1.0 - 99.9V, Asymmetry:2-20%
ACCURACY	Trip Setting Accuracy: ±5% of F. S. Time Setting Accuracy: ±10% of F. S.	Voltage: ±1% ±2 digits, Time (Recovery Time, Trip delay, Power on delay): ±5% of Setting ± 150ms
OUTPUT CONTACT	2 C/O DPDT	
RELAY RATING	NO, NC : 5A @ 250V AC (Res.) / 28V DC	NO, NC : 5A @ 250V AC / 28 V DC
SUPPLY VOLTAGE	Self powered, Nominal Input Voltage (Un): 230V AC (L-N), Operating Voltage: 127 to 288V AC (L-N)	
FREQUENCY	48 - 63Hz	
POWER CONSUMPTION	5VA max	

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	OPERATING RANGE	CERTIFICATION
VPRA2M	127-288V AC	---
VPRA2M-CE		CE RoHS
VPRD2M		---
VPRD2M-CE		CE RoHS
VPRD2M-BL-CE		CE RoHS

Current Protection Relays



900CPR-1  
Size : 35 x 90mm



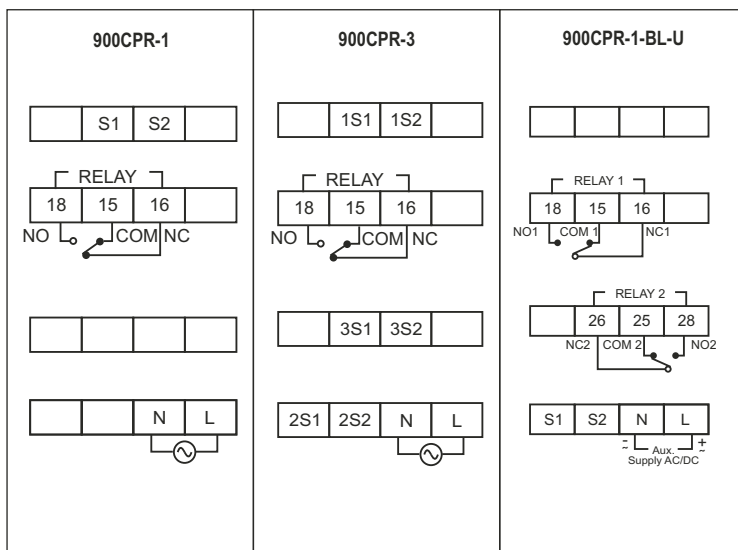
900CPR-3  
Size : 35 x 90mm



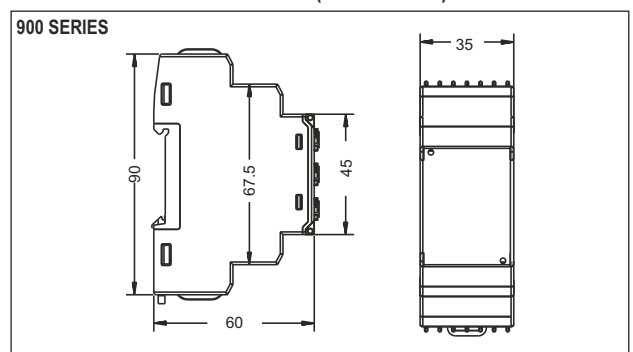
900CPR-1-BL-U  
Size : 35 x 90mm

FEATURES	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Under Current &amp; Over Current Protection for 1Ø system</li> <li>True RMS Measurement</li> <li>One Alarm Relay with NC or NO operation</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Under Current &amp; Over Current Protection for 1Ø &amp; 3Ø system</li> <li>True RMS Measurement</li> <li>One Alarm Relay with NC or NO operation</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Under Current &amp; Over Current Protection for 1Ø system</li> <li>True RMS Measurement</li> <li>Two Alarm Relay with NC or NO operation</li> </ul>
MEASUREMENTS	Under Current, Over Current (Current Asymmetry applicable only for 900CPR-3)		
DISPLAY	3 digits LCD		3 digits LCD with backlight
ALARM INDICATIONS	Trip		
ELECTRICAL CONNECTION	1Ø - 2W	1Ø - 2W, 3Ø - 3W, 3Ø - 4W	1Ø-2 wire
CT SETTING	CT Primary: 1A/5A - 999A, CT Secondary: 1A / 5A (selectable)		
TRIP SETTING	Under Current: 0-999A, Over Current: 0.5 – 1.19kA, (Current Asymmetry: 5.0 – 99.9% applicable only for 900CPR-3)		
TRIP TIME SETTING	Power ON Delay: 0.5 – 99.9sec Trip Time Delay: 0 – 99.9sec Recovery Time Delay: 0 – 99.9sec Response Time: < 200ms		
HYSTERESIS	Current: 0.1 – 99.9A		
RESOLUTION	Current: 0.01, 0.1, 1A, 0.01kA (Depends on CT setting)		
ACCURACY	Current: ±1% of Setting ± 2 digits, Time (Recovery Time, Trip delay, Power on delay) : ±5% of setting +100ms	Current: ±1% of Setting ± 2 digits, Time (Recovery Time, Trip delay, Power on delay) : ±5% of setting +200ms	
OUTPUT CONTACT	1C/O SPDT		2 x 1 C/O SPDT
RELAY RATING	NO : 5A @ 250V AC; NC : 3A @ 250V AC		
SUPPLY VOLTAGE	230V AC (factory set); ±15%	230V AC (factory set) / 110V AC:±15%	85 - 270V AC/DC
FREQUENCY	45 - 65Hz		
POWER CONSUMPTION	12VA max.		4VA max.

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE	CERTIFICATION
900CPR-1-230V	230V AC	---
900CPR-3-230V		---
900CPR-1-BL-U-CE	85 - 270V AC / DC	CE RoHS

Current Protection Relays



CPRD2M  
Size : 35 x 90mm



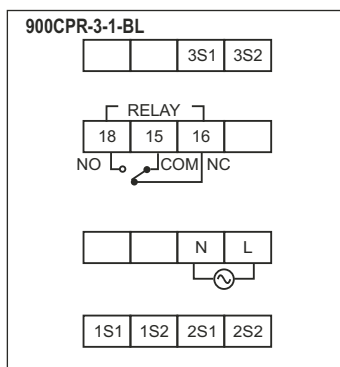
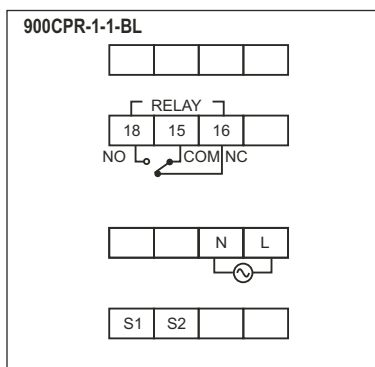
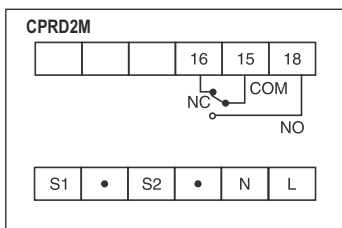
900CPR-1-1-BL  
Size : 35 x 90mm



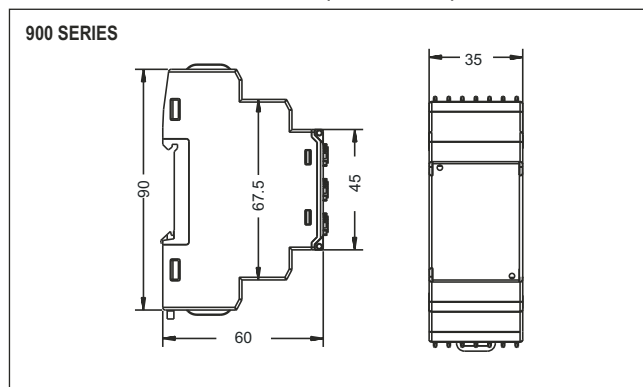
900CPR-3-1-BL  
Size : 35 x 90mm

FEATURES	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Under Current &amp; Over Current Protection for 1Ø system</li> <li>True RMS Measurement</li> <li>One Alarm Relay with NC or NO operation Selectable</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Under Current &amp; Over Current Protection for 1Ø system</li> <li>True RMS Measurement</li> <li>One Alarm Relay with NC or NO operation Selectable</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Under Current &amp; Over Current Protection for 1Ø &amp; 3Ø system</li> <li>True RMS Measurement</li> <li>One Alarm Relay with NC or NO operation</li> </ul>
MEASUREMENTS	Under current & over current monitoring		Under current & over current monitoring, current asymmetry
DISPLAY	3 digits LCD		3 digits LCD with backlight
ALARM INDICATIONS	Trip		
ELECTRICAL CONNECTION	1Ø - 2W		1Ø - 2W, 3Ø - 3W, 3Ø - 4W
CT SETTING	CT Primary: 5A/10A - 999A(selectable), CT Secondary: 5A / 10A (selectable)		CT Primary: 1A/5A - 999A, CT Secondary: 1A / 5A (selectable)
TRIP SETTING	Under Current: 0-999A, Over Current: 0.5 – 1.09kA		Under Current: 0-999A, Over Current: 0.5 – 1.19kA, Current Asymmetry: 5.0 – 99.9%
TRIP TIME SETTING	Power ON Delay: 0.5 – 99.9sec Trip Time Delay: 0 – 99.9sec Recovery Time Delay: 0 – 99.9sec Response Time: < 100ms		Power ON Delay: 0.5 – 99.9sec Trip Time Delay: 0 – 99.9sec Recovery Time Delay: 0 – 99.9sec Response Time: < 200ms
HYSTERESIS	Current: 0.1 – 99.9A		
RESOLUTION	Current: 0.01, 0.1, 1A, 0.01kA (Depends on CT setting)		
ACCURACY	Current: ±1% of Setting ± 2 digits, Time (Recovery Time, Trip delay, Power on delay) : ±5% of setting ±200ms		
OUTPUT CONTACT	1C/O SPDT		
RELAY RATING	NO : 10A @ 250V AC; NC : 10A @ 250V AC		NO : 5A @ 250V AC; NC : 3A @ 250V AC
SUPPLY VOLTAGE	230V AC (factory set); ±15%		230V AC/110V AC; ±15%
FREQUENCY	50 - 60Hz		45 - 65Hz
POWER CONSUMPTION	18VA max.		15VA max.

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE	CERTIFICATION
CPRD2M-1-1-230V-CE	230V AC	CE RoHS
900CPR-1-1-BL-230V-CE		CE RoHS
900CPR-3-1-BL-230V-CE		CE RoHS

Earth Leakage Relays



900ELR-2  
Size : 35 x 90mm



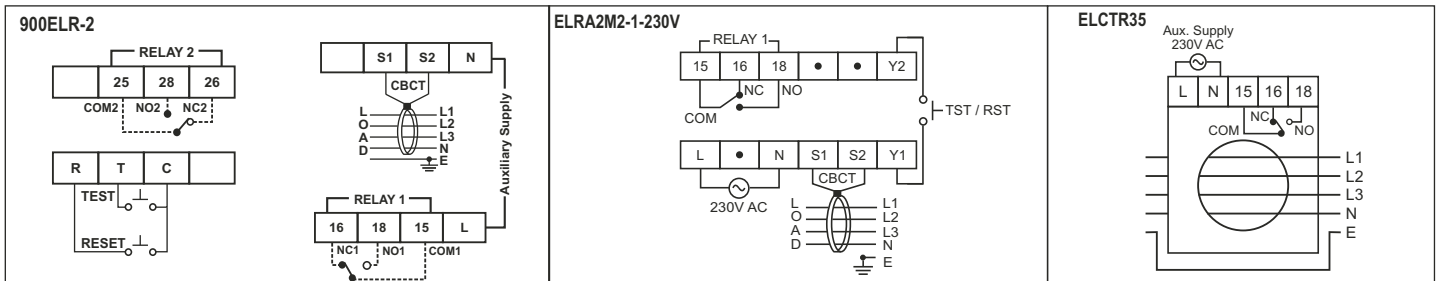
ELRA2M  
Size : 35 x 90mm



ELCTR35  
Size : 74 x 105mm

FEATURES	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Leakage Current Monitoring in 3Ø &amp; 1Ø systems</li> <li>RMS Value Measurement (AC)</li> <li>Test and Reset via Front / Remote</li> <li>Two Separate Alarms Relays with NO or NC operation selectable</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Monitors True Rms Earth Leakage Current (upto 30A) Sensitivity and Time Delay Adjustable</li> <li>Test and Reset Function</li> <li>CBCT Open Circuit Indication</li> </ul>	<ul style="list-style-type: none"> <li>Din Rail Mount</li> <li>Inbuilt CBCT</li> <li>Monitors True RMS Earth Fault Current Test and Reset Function</li> <li>1 SPDT Output Protection Relay</li> </ul>
MEASUREMENT	Earth Leakage Current (Via external CBCT)		Earth Leakage Current (internal CBCT)
DISPLAY	3 Digits LCD with backlight. 2 LED for Trip indication	5 LED indication	2 LED indication
ELECTRICAL CONNECTION	1Ø - 2W, 3Ø - 4W, 3Ø - 3W	1Ø - 2W, 3Ø - 4W	1Ø - 2W, 3Ø - 3W, 3Ø - 4W
TRIP SETTING	10mA - 30A	30mA - 30A	75% of 30mA or 300mA
TIME RANGES	Power ON Delay : 0.5 - 99.9 sec, Trip Time Delay : 0-99.9 sec, Delay On Release : 0-99.9 sec	Trip Time Delay : 0 to 9 sec (NA when In=0.03A)	Reset time : Instantaneous
HYSTERSIS	5 to 40%	--	8% of input current
RESOLUTION	0.1mA, 1mA, 0.01A, 0.1A	--	--
ACCURACY	Current : ± 5% of setting, Recovery Time, Trip Delay, Power ON delay: ± 5% of setting + 100ms	Trip : ± 5% of Set Trip Current Time : ± 5% of set Time + Response Time	Trip : ± 5% of input Current Time : ± 5% of Response Time
OUTPUT CONTACT	2 C/O SPDT	1 C/O SPDT	1 C/O SPDT
OUTPUT RATING	NC:3A @ 250V AC, NO:5A @ 250V AC		NC:5A @ 250V AC, NO:5A @ 30V AC
SUPPLY VOLTAGE	230V AC/110V AC /10-28V DC	230V AC(± 15%)	230V AC(± 15%)
FREQUENCY	45-65Hz	50 / 60Hz	50 / 60Hz
POWER CONSUMPTION	3VA max	<5 VA max	15 VA max

Terminal Connections



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE	CERTIFICATION	PRODUCT CODE	SUPPLY VOLTAGE	CERTIFICATION
900ELR-2-230V	230V AC	---	ELCTR35-1-30mA-230V	230V AC	---
900ELR-2-230V-CE-ROHS		CE RoHS	ELRA2M1-2-230V		---
ELCTR35-1-300mA-230V		---	ELRA2M2-1-230V		---

CBCT for Earth Leakage Relays



DESCRIPTION	CBCT for ELRA2M	CBCT for 900ELR-2
CT RATIO	1000:1	
SIZES (inner diameter)	35 mm, 70 mm, 120 mm, 210mm, 310mm	

Ordering Information

Inner Diameter (in mm)	Order Code
35	CBCT-35-1
70	CBCT-70-1
120	CBCT-120-1
210	CBCT-210-1
310	CBCT-310-1



Earth Fault Relays



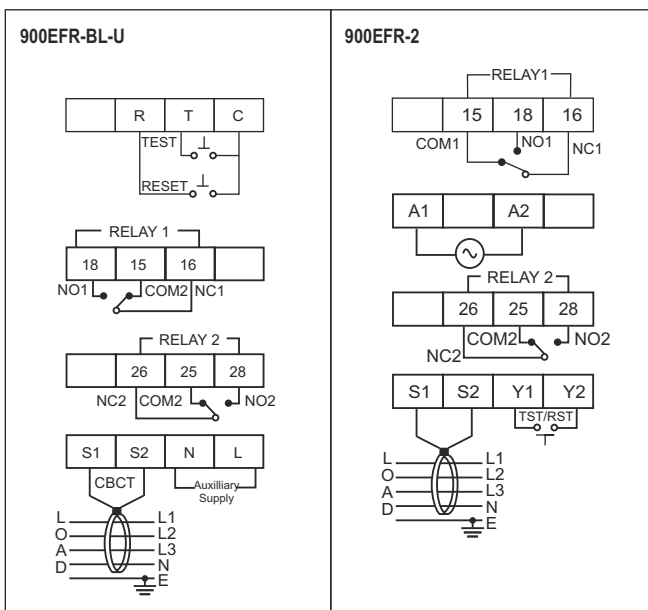
900EFR-BL-U  
Size : 35 x 90mm



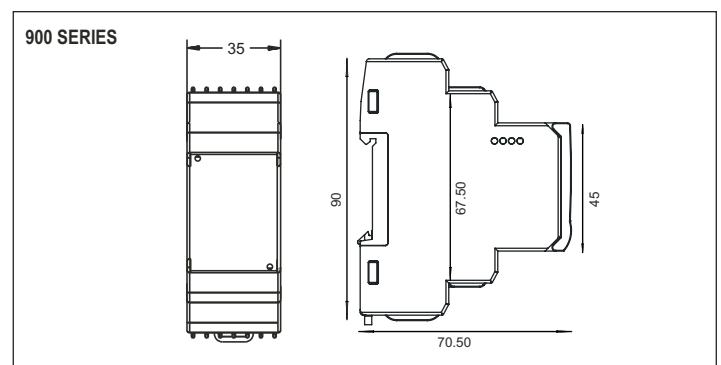
900EFR-2  
Size : 35 x 90mm

FEATURES	<ul style="list-style-type: none"> <li>• Din Rail Mount</li> <li>• Earth Fault Current Monitoring in 1Ø and 3Ø systems,</li> <li>• RMS Value Measurements(AC)</li> <li>• Alarm Relays With NO and NC operation selectable</li> </ul>	<ul style="list-style-type: none"> <li>• Din Rail Mount</li> <li>• Earth Fault Current Monitoring in 1Ø and 3Ø Systems</li> <li>• RMS Value Measurements(AC)</li> <li>• Alarm Relays with NO and NC operation selectable</li> </ul>
	Earth fault Current (via external CBCT)	
MEASUREMENT	Earth fault Current (via external CBCT)	
DISPLAY	3 Digits Liquid Crystal Display with backlight, 2 LED for Trip indication	3 Digits Liquid Crystal Display without backlight, 3 LED for Trip indication
ELECTRICAL CONNECTION	1Ø - 2W, 3Ø - 3W, 3Ø - 4W	
FRAME RATING (CT PRIMARY)	160A, 250A, 630A	
M.C.C.B RATING	Depends on Frame Rating	16A to Frame Rating
TRIP SETTING	10% to 80% of selectable MCCB frame rating	Upto 80% of MCCB rating
TIME RANGES	Response time : <100ms Trip time delay : 0-99.9sec Recovery time : 0-99.9sec Power ON delay : 0.5-99.9sec	Trip time delay : 0-99.9sec Recovery time : 0-99.9sec Power ON delay : 0.5-99.9sec 1-10% of fault current settings
HYSTERSIS	1-10% of fault current settings	
RESOLUTION	0.1A when fault current is less than or equal to 99.9A 1A when fault current is greater than 100A	
ACCURACY	Current : ±5% of the settings ±2digit Time : ±5% of the settings ± 100ms	
OUTPUT CONTACT	2 x C/O SPDT	
OUTPUT RATING	NC:3A @ 250V AC NO:5A @ 250V AC	
SUPPLY VOLTAGE	Auxillary Supply : 85-270V AC/DC	415V AC
FREQUENCY	50 / 60Hz	
POWER CONSUMPTION	4VA max	50VA max

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE	CERTIFICATION
900EFR-BL-U	85 to 270V AC/DC	---
900EFR-BL-U-CE-RoHS		CE RoHS
900EFR-2-415V-CE-RoHS	415V AC	CE RoHS

Motor Protection Relay /  
Water Level Controller



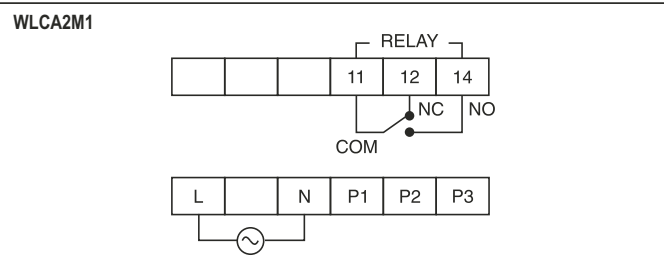
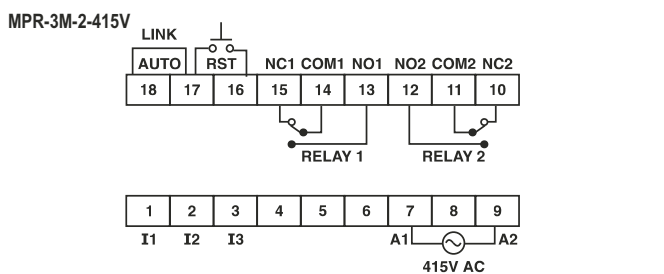
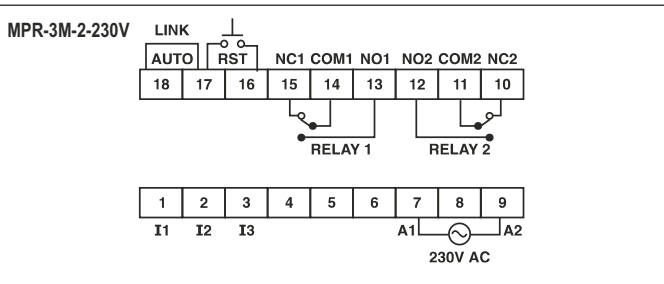
**MPR-3M**  
Size : 52.5 x 90mm



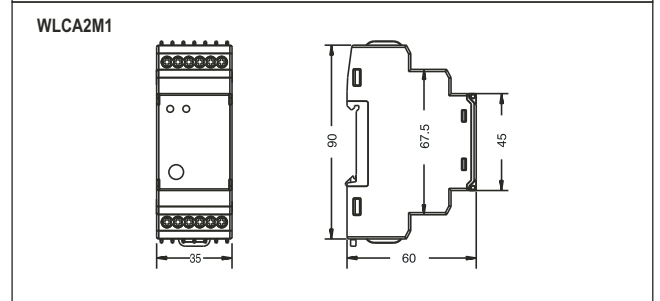
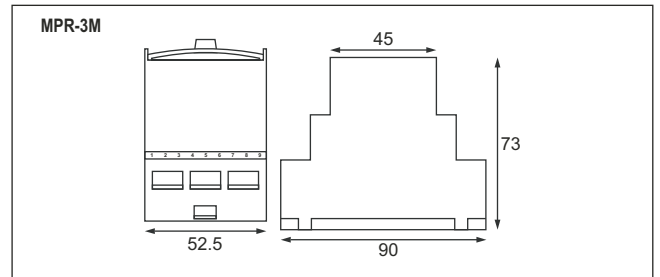
**WLCA2M1**  
Size : 35 x 90mm

FEATURES	MPR-3M	WLCA2M1
DISPLAY	3 LED Indication	2 LED Indication
AUXILLARY SUPPLY	230 / 415V AC ±15%	85 - 270V AC/DC
FREQUENCY	45 - 65Hz	50 - 60Hz
ELECTRICAL CONNECTION	3Ø - 3W	Auxiliary Supply
POWER RATING	5 VA max	3 VA max
TRIP SETTING	Phase unbalance :50% of motor current (Fixed) T(sec) setting : To select 2 ,4 ,6 ,8 ,10 sec trip time curve in overload trip curve graph. Under Current :- 50% of Motor Current X Imax : To select motor current rating	According to the levels of sensor placed in the water tank
SENSITIVITY	NA	1 Kohms - 200Kohms
TRIP TIME	Single Phase trip : 5 sec, Phase unbalance :5 sec, Phase sequence :5 sec Over load trip :as per graph 1, Under current trip : 5 Sec	0.5 sec (approx)
MODE	Auto /Manual/ remote	Automatic
ACCURACY	Time :± 5% of full scale ±100msec Current :± 5% of full scale	NA
OUTPUT CONTACT	2 C/O DPDT	1 C/O SPDT
OUTPUT RATING	NC : 5A@240V AC NO:5A @240V AC	10A @ 250V AC /28V DC

Terminal Connections



Dimensions (All are in mm)



Ordering Information

PRODUCT CODE	SUPPLY VOLTAGE	CERTIFICATION
MPR-3M-2-230V	230V AC	---
MPR-3M-2-415V	415V AC	---
WLCA2M1	85 - 270V AC/DC	---