



# Data Sheet

## RISH POWER/ POWER FACTOR DPM

(72X144)



Measure



Control



Record



Analyze



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### Application

RISH DPM 72X144 series measures system active Power (Import / Export), Reactive Power (Import / Export), Apparent Power & Power Factor of Three phase and Single phase Network. It has 4 digit single line auto ranging LED display with polarity indication.

### Product Features

- Active Power (kW) DPM.
- Reactive Power (kVAr) DPM.
- Apparent Power (kVA) DPM.
- Power Factor (PF) meter.

### Product Features

- **On site programmable PT/CT ratios**  
It is possible to program primary of external potential Transformer (PT), primary of external Current Transformer (CT) on site via front panel keys by entering into Programming mode.
- **User selectable CT Secondary 5A/1A**  
The secondary of external Current Transformer (CT) can be programmed on site to either 5A or 1A using front panel keys.
- **User selectable 3 phase 3W or 4W**  
User can program on site the network connection as either 3 Phase 3 Wire or 4 Wire using front panel keys.  
\*Note: For Power Factor DPM Customer need to specify CT ratio, PT ratio & network type 3phase (3 or 4 wire) / single phase (1P2W) requirement while ordering
- **User selectable Power Parameter**  
User can select any one of the power parameter (Active / Reactive / Apparent) on site as per its requirement, reducing inventory cost.
- **High System Power Measurement**  
User can set Potential Transformer and Current Transformer ratio such that instrument is able to measure Nominal Power upto 694.4 Mega for three phase system and 231.5 Mega for Single Phase system. The Maximum Power the instrument can measure goes upto 1000 Mega for three Phase system and 333 Mega for single phase system.
- **True RMS measurement**  
The instrument measures distorted waveform up to 15<sup>th</sup> Harmonic.
- **High brightness LED display**  
Single line four digit. Digit heights 26mm.
- **Enclosure Protection for dust and water**  
Conforms to IP 54 (front face) as per IEC60529
- **Compliance to International Safety standards**  
Compliance to International Safety standard IEC 61010-1- 2001
- **EMC Compatibility**  
Compliance to International standard IEC 61326



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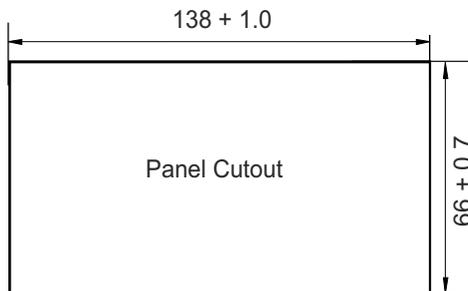
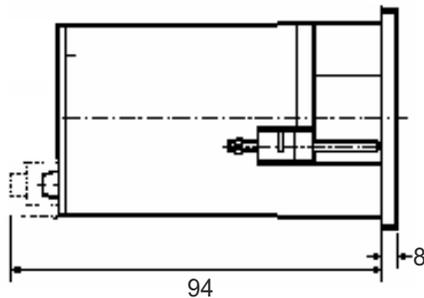
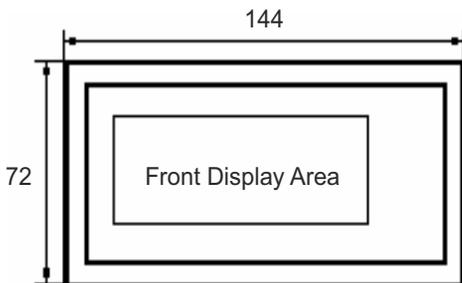


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### Dimensions Details



Note: All dimensions are in mm

### Technical Specifications

#### Input voltage (AC RMS)

Nominal Input voltage Phase –Neutral 63.5 / 133 / 239.6 / 254 V<sub>L-N</sub>  
Line-Line 110 / 230 / 415 / 440 V<sub>L-L</sub>  
Max continuous input voltage 120% of rated value

#### Input Current

Nominal input current 1A or 5A AC RMS (Programmable on site)  
System CT primary values Std. values up to 9999A  
Max continuous input current 120% of rated value

#### Auxiliary Supply

AC/DC Auxiliary Supply 45 – 300 VAC /DC +/- 10% OR  
20-40VAC/20-60VDC +/- 10%  
AC Auxiliary supply frequency range 45 to 66 Hz

#### VA Burden

Nominal input voltage burden < 0.2 VA approx. per phase  
Nominal input current burden < 0.6 VA approx. per phase  
AC Supply burden 4 VA

#### Overload Withstand

Voltage 2 x rated value for 1 second, repeated 10 times at  
10 second intervals  
Current 20x for 1 second, repeated 5 times at 5 min

#### Operating Measuring Ranges

Voltage 5... 120% of rated value  
Current 5 ... 120% of rated value  
Frequency 40...70 Hz  
Power Factor 0.5 Lag ... 1... 0.5 Lead for kW, kVAr DPM / 0.1  
Lag ... 1... 0.1 lead for PF DPM

#### Reference conditions for Accuracy

Reference temperature 23°C +/- 2°C  
Input waveform Sinusoidal (distortion factor 0.005)  
Input frequency 50 or 60 Hz ±2%  
Auxiliary supply voltage Rated Value ±1%  
Auxiliary supply frequency Rated Value ±1%  
Power (Power DPM) Cos phi / Sin phi= 1 for Active / Reactive Power  
Power Factor (PF DPM) 0.5 Lag...1...0.5 Lead  
Voltage Input 50 ... 100% of rated value  
Current Input 50 ... 100% of rated value

#### Accuracy

Active Power ±0.5% of range  
Reactive Power ±1% of range  
Apparent Power ±0.5% of range  
Power Factor ± 2°

#### Influence of Variations

Temperature coefficient (for rated value range of use (0...50°C)) 0.025%/°C for Voltage (50... 120% of rated value)  
0.05%/°C for Current (10... 120% of rated value)



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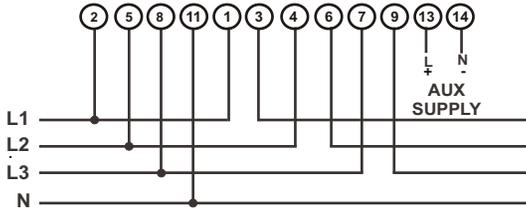
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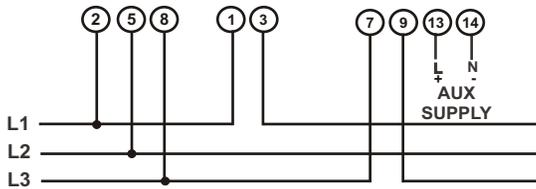
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### Electrical Connection

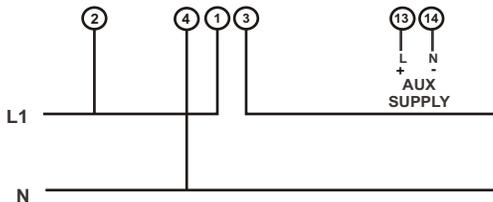
#### For 3 Phase 4 Wire Unbalanced Load



#### For 3 Phase 3 Wire Unbalanced Load



#### For Single Phase



It is recommended that the wires used for connections to the instrument should have lugs soldered at the end. That is, the connections should be made with Lugged wires for secure connections.

### Technical Specifications

#### Display

Response time to step input      min 1 sec approx.  
Resolution                                0.001 (4 digit).

**Note:- Measurement error is normally much less than the error specified above. Variation due to influence quantity is less than twice the error allowed for reference condition**

#### Applicable Standards

EMC	IEC 61326
Immunity	IEC 61000-4-3, 10V/m min – Level 3 industrial low level
Safety	IEC 61010-1-2001 , Permanently connected use
IP for water & dust	IEC60529
Pollution degree	2
Installation category	CAT III 300V ac rms
High Voltage Test	2.2 kV AC, 50Hz for 1 minute between all electrical circuits

#### Environmental

Operating temperature	-10 to +55°C
Storage temperature	-20 to +65°C
Relative humidity	0... 90% non condensing
Warm up time	Minimum 3 minute
Shock	15g in 3 planes
Vibration	10... 55 Hz, 0.15mm amplitude
Enclosure	IP54 (front face only)



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### Ordering Information :

#### Power DPM - Size 72 X 144

Ordering Information	PP44-	H	X	XX	8A	X	2	00000
Product Type	Rish DPM - Power* (Active, Reactive, Apparent)							
Size	72 X 144mm							
System Type	1 Phase		1					
	3 Phase**		3					
Input voltage - 1 Phase	63.5V L-N			2S				
	110V L-N			2D				
	220V L-N			3T				
	230V L-N			2G				
	240V L-N			2H				
	254V L-N			2R				
	277V L-N			2U				
Input voltage - 3 Phase	100V L-L			3A				
	110V L-L			3B				
	230V L-L			3R				
	415V L-L			3M				
	440V L-L			3S				
Input Current (Programmable)	1/5A 50/60Hz							
Auxiliary Supply	45 -300V AC/DC					L		
	20-40VAC/20-60VDC					P		
Display Height	20 mm							

\*Any one of the parameter can be selected to be displayed on site.

\*\*CT ratio / PT ratio / Network type (3wire / 4wire) programmable on site only for power DPM (S / P / Q).

#### Order Code Example : PP44-H33B8AL200000

RISH DPM -Size 72 X 144, 3Phase, Input 110VLL 50/60Hz, 1A/5A, Aux supply 45-300V AC/DC



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### Ordering Information :

#### Power Factor DPM - Size 72 X 144

Ordering Information	PF44-	H	X	XX	XX	X	X	00000
Product Type	Rish DPM - Power Factor							
Size	72 X 144mm							
System Type	1 Phase-2 Wire		1					
	3 Phase-3 Wire		3					
	3 Phase-4 Wire		4					
Input voltage - 1 Phase	63.5V L-N			2S				
	100V L-N			3A				
	110V L-N			2D				
	133V L-N			2V				
	150V L-N			2F				
	220V L-N			3T				
	230V L-N			2G				
	240V L-N			2H				
	254V L-N			2R				
	277V L-N			2W				
Input voltage - 3 Phase	100V L-L			2X				
	110V L-L			3B				
	120V L-L			2T				
	230V L-L			3R				
	400V L-L			3W				
	415V L-L			3M				
	440V L-L			3S				
	480V L-L			2U				
	500V L-L			3N				
	Input Current (Fixed CT)	1A 50/60Hz				51		
5A 50/60Hz					54			
Auxiliary Supply	45 -300V AC/DC					H		
	20-40VAC/20-60VDC					P		

#### Order Code Example : PF44-H43N54H00000

RISH Power Factor DPM -Size 72 X 144, 3 Phase - 4 Wire, Input 500VLL 50/60Hz, 5A, Aux supply 45-300V AC/DC



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