



# Data Sheet

## Rish Delta VAF

Multifunction DC Energy Meter



Measure



Control



Record



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### Application:

**RISH Delta** measures important electrical parameters in 3 phase 4 Wire and 3 phase 3 Wire Network & replaces the multiple analog panel meters. It measures electrical parameters like AC Voltage, AC Current, Frequency & many more.

### Salient Features:

- Fast & Easy Installation on panel with self clicking.
- True RMS measurement.
- Limit Switch (optional).(Available only in 3 Line Display)
- 3 Line 4 Digits ultra bright LED Display (up to 9999).
- On site Programmable CT/PT Ratios.
- User selectable CT Secondary 1A/5A.
- User selectable PT Secondary from 100 VLL to 500 VLL.
- User selectable 3ph3wire / 3ph4wire / single phase Network.
- Wide auxillary Power Supply which can accept any input between 40V – 300V AC/DC or 12V – 48V DC .
- Storage of MIN / MAX values.
- Measurement & Display of RPM, Run hours, On hours & No. of Interrupts.
- Load Manager for indicating percentage of system current. (available in single line only)



### Products 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 PT Secondary

The secondary of external Potential Transformer (PT) can be programmed on site from 100VLL to 500VLL using front panel keys.

#### User selectable 3 phase 3Wire or 4Wire or Single phase Network

User can program on site the network connection as either 3 Phase 3 Wire or 4 Wire or single phase network using front panel keys.

In case of self powered Rish Delta only either 3 Phase 4 wire or single phase network are available.

#### Storage of parameters possible

The instrument stores minimum and maximum values for System Voltage, System Current, Run Hour, ON Hour & number of Interrupts. Every 60 sec stored values are updated.

#### Four function keys:

Using the four function key, it is possible to go desired parameter screen instantly.

#### Onsite selection of Auto scroll / Fixed Screen

User can set the display in auto scrolling mode or fixed screen mode using front panel keys.

#### Low back depth:

The instrument has very low back depth (behind the panel) of less than 55mm (without output options).

#### True RMS measurement

The instrument measures distorted waveform up to 15th Harmonic.



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**RPM Measurement:** The instrument display Rotation per minutes for generator applications. Number of poles can be set on site depending upon application requirement.

### Optional Limit switch (Relay):

The instrument will trip the relay if the programmed parameter exceeds the programmed Trip Limits.

### 3 line 4 digits LED display:

Simultaneous display of 3 Parameters.

### Enclosure Protection for dust and water:

Conforms to IP 50 (for front face) & IP 20 (for back) & as per IEC60529.

### EMC Compatibility

Compliance to International standard IEC 61326.

- Interference Emission : IEC 61326-1 : 2005, Class A
- Interference Immunity : IEC 61326-1 : 2005
- Electrostatic discharge : IEC 61000-4-2 -- 4kV/8kV contact/air. (ESD)
- EM Field : IEC 61000-4-3 -- 10 V/m (80 MHz to 1 GHz)  
-- 3 V/m (1.4 Ghz to 2 GHz)  
-- 1 V/m (2 GHz to 2.7 GHz)
- Burst : IEC 61000-4-4 -- 2 kV (5/50 ns, 5 kHz)
- Surge : IEC 61000-4-5 -- 1 kVLL / 2 kVLN.
- Conducted RF : IEC 61000-4-5 -- 3 V (150 kHz to 80 MHz)
- Rated Power Frequency magnetic Field : IEC 61000-4-8 -- 30 A/m
- Voltage dip : IEC 61000-4-11 -- 0% during 1 cycle.  
-- 40% during 10/12 cycles.  
-- 70% during 25/30 cycles.
- Short interruptions : IEC 61000-4-11 --  
0% during 25/30 cycles.  
25 cycles for 50 Hz test.  
30 cycles for 60 Hz test.

## Technical Specifications:

### Input Voltage:

Nominal input voltage (AC RMS)	Phase –Neutral 290V L-N , Line-Line 500V L-L
Max continuous input voltage	120% of rated value
Nominal input voltage burden	< 0.3 VA approx. per phase (For external auxiliary meter)
System PT secondary values	100VLL to 500VLL programmable on site.
System PT primary values	100VLL to 692kVLL programmable on site.

### Input Current:

Nominal input current	5A AC RMS
System CT secondary values	1A & 5A programmable on site.
System CT primary values	From 1A up to 9999A (for 1 or 5 Amp )
Max continuous input current	120% of rated value
Nominal input current burden	< 0.2 VA approx. per phase

### Auxiliary Supply:

AC-DC External Aux	40 V – 300V AC-DC (± 5 % )
DC External Aux	12 V – 48V DC

### Self powered

Input voltage range from 80% to 100% of Rated value.  
(Self powered meter is available only in 3Phase 4 Wire and Single Phase network.)

Auxiliary input is derived from Phase 1 (R phase)

Frequency range  
VA burden

45 to 65 Hz  
3 VA Approx.

### Overload Withstand:

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



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### Technical Specifications:

#### Operating Measuring Ranges

Voltage Range With External Aux	10... 120% of rated value
Voltage Range With Self Power	80... 120% of rated value
Current Range	10 ... 120% of rated value
Frequency	45...65 Hz

#### 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%

#### Accuracy:

Voltage	±1.0% of range (20... 100% of Nominal value)
Current	±1.0% of range (10... 100% of Nominal value)
Frequency	0.5% of mid frequency

#### Influence of Variations:

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

#### Limit Switch (Relay):

Switching Voltage & Current for Relay	240 VDC ,5 A (1NO+1NC)
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#### Applicable Standards:

EMC	IEC 61326-1: 2005
Safety	IEC 61010-1-2001 , Permanently connected use
IP for water & dust	IEC60529

#### Safety:

Pollution degree:	2
Installation category:	III
High Voltage Test	3.3 kV AC, 50Hz for 1 minute between Aux. and measuring inputs

#### Environmental:

Operating temperature	0 to +50°C
Storage temperature	-25°C to +70°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:

Front	IP 50.
Back	IP 20.



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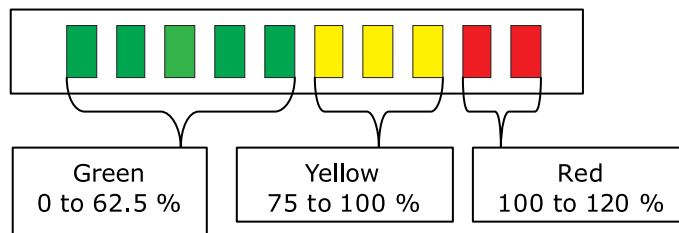
Analyze

### Technical Specifications:

#### Dimensions and Weights:

Bezel size	96 mm x 96 mm DIN 43 718.
Panel cut-out	92 +0.8 mm x 92 + 0.8 mm.
Overall depth	55 mm (without output options) 62 mm (with output options).
Panel Thickness	1 - 3 mm for self clicking, 1 – 6 mm for swivel screws.
Weight	320 gm. Approx (with output options)..

Load Manager For System Current



### Electrical Parameters

Sr No	Parameter	3 Phase 4 Wire	3 Phase 3 Wire	1 Phase 2 Wire
1	System Volts	✓	✓	✓
2	System Current	✓	✓	✓
3	Frequency	✓	✓	✓
4	Volts R–N	✓	x	✓
5	Volts Y–N	✓	x	x
6	Volts B–N	✓	x	x
7	Volts R–Y	✓	✓	x
8	Volts Y–B	✓	✓	x
9	Volts B–R	✓	✓	x
10	Current R	✓	✓	✓
11	Current Y	✓	✓	x
12	Current B	✓	✓	x
13	RPM	✓	✓	✓
14	Max (System Voltage / System Current)	✓	✓	✓
15	Min (System Voltage / System Current)	✓	✓	✓
16	Hour Run	✓	✓	✓
17	ON Hour	✓	✓	✓
18	Number of auxiliary interrupt	✓	✓	✓



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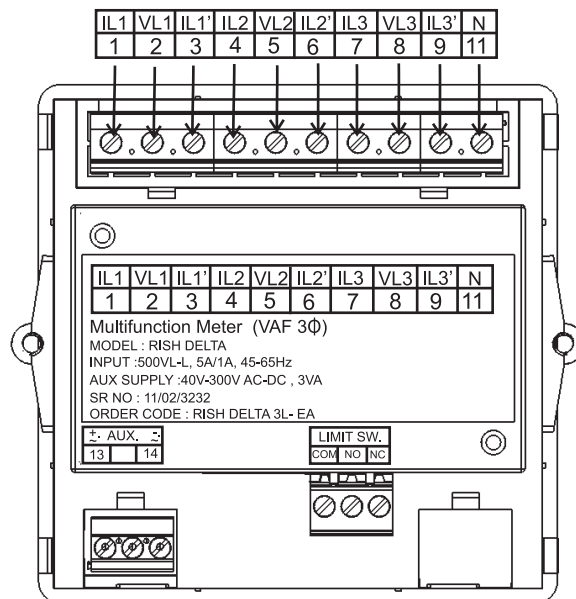


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### Electrical Connections:

	Self Powered Aux	External Powered Aux
3 Phase 4 Wire Unbalanced Load		
3 Phase 3 Wire Unbalanced Load	Not Applicable	
1 Phase 2 Wire		

### Rear Connection



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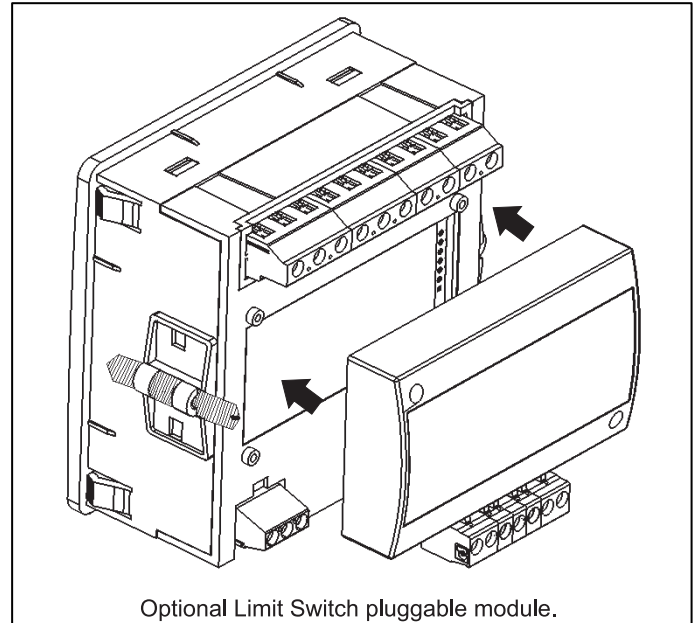
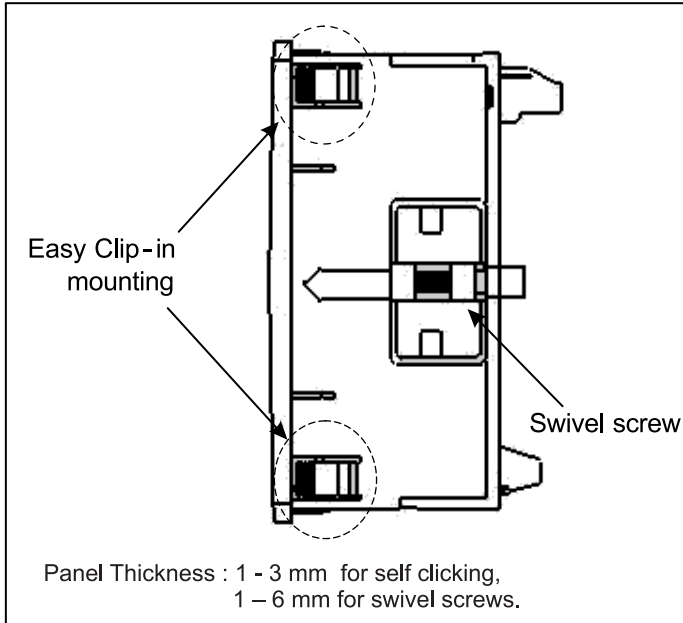
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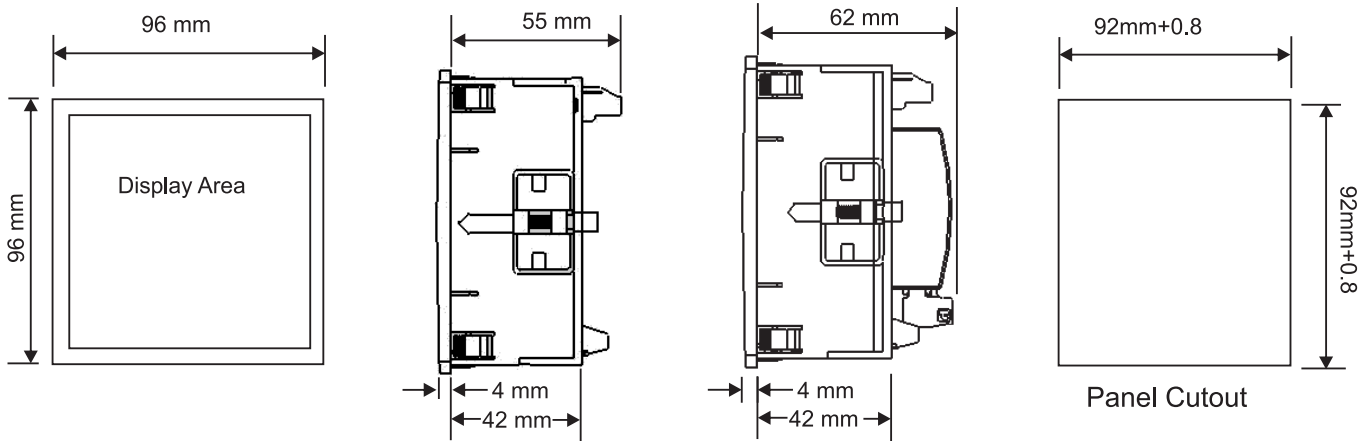
### Installation:

Easy Clip in Installation on Panel.



### Dimension Details:

With optional Limit switch.



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Ordering information	Ordering Code
	RISH Delta
<b>Display Type</b>	
3 Line	3L
1 Line (20mm display with alphanumeric display)	1L
<b>Auxiliary Supply</b>	
Self Aux*	SA
AC DC External Aux (40 V – 300V AC-DC)	EA
DC External Aux (12 V – 48V DC)	DC
<b># Limit switch (Relay) - Optional</b>	
With Limit switch	LS
Without Limit switch	Z

# Available only in three line Display model

### Order Code Example:

RISH Delta– 3L –EA – LS

RISH Delta, Three line 4Digit display, external aux (40V – 300V AC-DC),With Limit Switch

**\*NOTE:** Self Auxiliary meter is available only in 3Phase 4 Wire and Single Phase network.  
Auxiliary input is derived from Phase 1 (R phase).  
In case of external auxiliary meter all three networks are available  
(3Phase 4Wire / 3Phase 3Wire / Single Phase)



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