

RISH Delta Digital Multifunction Instrument

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, Neutral Current (for 4 Wire only) & many more.

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 PT Secondary

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

User selectable single phase, 3phase 3wire or 4wire

(Option available with external aux only)

User can program on site the network connection as either single phase, 3phase 3wire or 4wire using front panel keys. In case of self powered Rish Delta either 3 Phase 4 wire or single phase network can be given.

Low back depth:

The instrument has very low back depth (behind the panel) of less than 54mm.

True RMS Measurement

The instrument measures distorted waveform up to 15th Harmonic.

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

Hour Run, ON Hour :

Hour run records the number of hours load is connected. ON Hour is the period for which the auxiliary supply is ON.

Onsite selection of Auto scroll / Fixed Screen

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



Parameter screen recall

In case of power failure, then instrument memorizes the last displayed screen. The displayed screen will get memorized only if user keeps this screen for minimum 60 second duration before power failure for fixed screen mode.

Min Max storage of parameters possible

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

3 line 4 digits LED display (Optional):

Simultaneous display of 3 Parameters.

One line alphanumeric LED display (Optional):

20mm LED display for parameter value display and 14mm alphanumeric display for parameter unit.

Four function keys:

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

Enclosure Protection for dust and water:

conforms to IP 54 (for front face) as per IEC60529

EMC Compatibility

Compliance to International standard IEC 61326



Rishabh Instruments

RISHABH
INSTRUMENTS
Measure, Control & Record with a Difference

RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007, India.
Tel.: +91 253 2202160, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

Version: E 11/06/10

RISH Delta Digital Multifunction Instrument

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:

| | |
|-----------------|---|
| External Aux | 40 V – 300V AC/DC ($\pm 5\%$) |
| Self powered | input voltage range 70 to 250 L-N (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 | 45 to 65 Hz |
| VA burden | 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 |

Operating Measuring Ranges

| | |
|---------------------------------|---------------------------|
| Voltage Range With External Aux | 5... 120% of rated value |
| Voltage Range With Self Power | 25... 120% of rated value |
| Current Range | 5 ... 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 $\pm 2\%$ |
| Auxiliary supply voltage | Rated Value $\pm 1\%$ |
| Auxiliary supply frequency | Rated Value $\pm 1\%$ |

Accuracy:

| | |
|-----------|--|
| Voltage | $\pm 1.0\%$ of range (50... 100% of nominal value) |
| Current | $\pm 1.0\%$ of range (10... 100% of nominal value) |
| Frequency | 0.5% of mid frequency |

Influence of Variations:

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

Display update rate:

| | |
|-----------------------------|---------------|
| Response time to step input | 1 sec approx. |
|-----------------------------|---------------|

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: | III |
| High Voltage Test | 2.2 kV AC, 50Hz for 1 minute between all electrical circuits |



RISH Delta Digital Multifunction Instrument

Technical Specifications:

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) |

Parameter measurement and Display :

| Sr No | Parameter | 3 Phase 3 Wire | 3 Phase 4 Wire | 1 Phase 2 Wire |
|-------|---------------------------------------|----------------|----------------|----------------|
| 1 | System Volts | ✓ | ✓ | ✓ |
| 2 | System Current | ✓ | ✓ | ✓ |
| 3 | Frequency | ✓ | ✓ | ✓ |
| 4 | Volts L1 – N | x | ✓ | x |
| 5 | Volts L2 – N | x | ✓ | x |
| 6 | Volts L3 – N | x | ✓ | x |
| 7 | Volts L1 – L2 | ✓ | ✓ | x |
| 8 | Volts L2 – L3 | ✓ | ✓ | x |
| 9 | Volts L3 – L1 | ✓ | ✓ | x |
| 10 | Current L1 | ✓ | ✓ | x |
| 11 | Current L2 | ✓ | ✓ | x |
| 12 | Current L3 | ✓ | ✓ | 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 | ✓ | ✓ | ✓ |

✓ - Available x - Not Applicable



RISHABH
INSTRUMENTS
Measure, Control & Record with a Difference

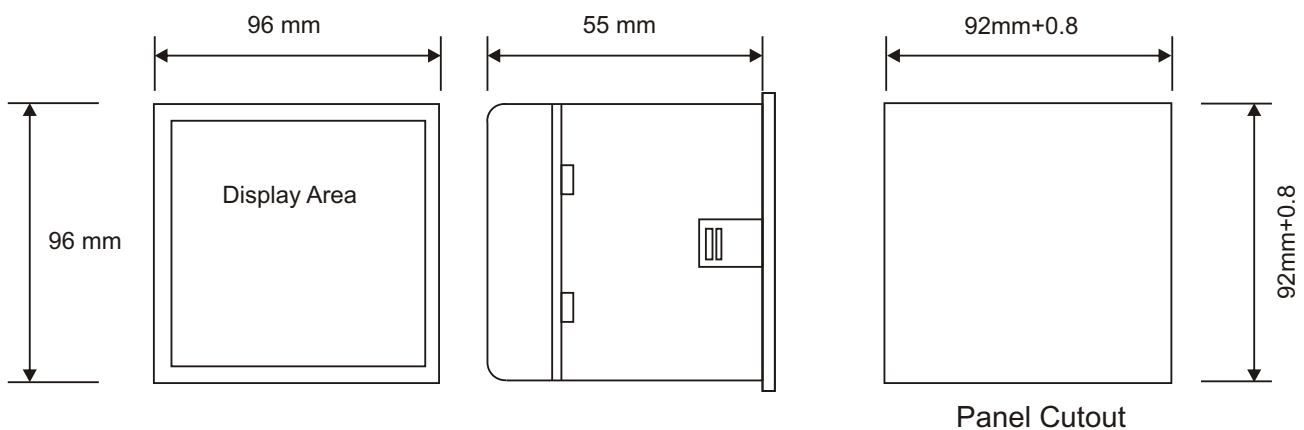
RISHABH INSTRUMENTS PVT.LTD.
F-31, MIDC, Satpur, Nashik-422 007, India.
Tel.: +91 253 2202160, 2202202 Fax : +91 253 2351064
E-mail : India :- marketing@rishabh.co.in
International :- exp.marketing@rishabh.co.in
www.rishabh.co.in

RISH Delta Digital Multifunction Instrument

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 | | |

Dimensions



Rishabh Instruments

RISHABH
INSTRUMENTS
Measure, Control & Record with a Difference

RISHABH INSTRUMENTS PVT.LTD.

F-31, MIDC, Satpur, Nashik-422 007, India.

Tel.: +91 253 2202160, 2202202 Fax : +91 253 2351064

E-mail : India :- marketing@rishabh.co.in

International :- exp.marketing@rishabh.co.in

www.rishabh.co.in

Version: E 11/06/10

RISH Delta Digital Multifunction Instrument

Parameter Measurement and Display:

| Ordering information | Ordering Code |
|---|-------------------|
| Display Type | RISH Delta |
| 3 Line | 3L |
| 1 Line (20mm display with alphanumeric display) | 1L |
| Auxiliary Supply | |
| Self Aux* | SA |
| (70 to 300VAC) | |
| External Aux | |
| 40 V – 300V AC/DC (-5% / +5 %) | EM |

Order Code Example:

RISH Delta 1L - SA

RISH Delta, One line 20mm display with alphanumeric display for parameter, Self Powered.

***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 all three networks are available (3Phase 4Wire / 3Phase 3Wire / Single Phase selectable)**



Rishabh Instruments

RISHABH
INSTRUMENTS
Measure, Control & Record with a Difference

RISHABH INSTRUMENTS PVT.LTD.

F-31, MIDC, Satpur, Nashik-422 007, India.

Tel.: +91 253 2202160, 2202202 Fax : +91 253 2351064

E-mail : India :- marketing@rishabh.co.in

International :- exp.marketing@rishabh.co.in

www.rishabh.co.in

Version: E 11/06/10