Digital Multifunction Instrument - Rish Master 3410

Application

Rish Master 3410 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, kVA, Neutral Current (for 4 Wire only), Total System Current Demand, Total System Maximum Current Demand, Total System kVA Demand and Maximum Total System kVA Demand.

Product Features:

Number of parameters measured: up to 18
The instrument measures 18 electrical parameters of 3 Phase network.

High Accuracy
Better than 0.5 % for Voltage ,Current and kVA

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.

Low back depth:
The instrument has very low back depth (behind the panel) of less than 80 mm.

True RMS measurement
The instrument measures distorted waveform up to 15th Harmonic.

Neutral Current Measurement (for 4 Wire only)
The instrument measures neutral current in 3 Phase 4 wire unbalanced load network.

Total System Current Demand and Total System Maximum Current Demand
The instrument measures system current demand and Maximum System Current demand. The demand time can be programmed on site from 8, 15, 20 and 30 minutes using front panel keys.

Total System kVA Demand and Maximum Total System kVA Demand
The instrument measures system kVA Demand and Maximum System kVA demand. The demand time can be programmed on site from 8, 15,20 and 30 minutes using front panel keys.

System kVA
The instrument measures the system kVA of a 3 Phase 3 wire or 4 Wire system.

High brightness 3 line 4 digits LED display:
Simultaneous display of 3 Parameters. The 4th additional digit for each parameter gives better resolution and high accuracy.

Simple operation with easy to use front keys:
There are two push button keys (Up & down) on front panel for easy operation

Back scrolling of Parameter screens:
Using the “down” key, it is possible to scroll back to the previous screen while searching the desired parameter screen.

Enclosure Protection for dust and water:
conforms to IP 54 (for front face) as per IEC60529

EMC Compatibility
Compliance to International standard IEC 61326

Technical Specifications:

Input Voltage:

Nominal input voltage (AC RMS)	Phase -Neutral 57.7 - 277V L-N, Line-Line100 - 480V L-L
Max continuous input voltage	120% of rated value

Input Current:

Nominal input current	1or 5A AC RMS (programmable on site)
System CT primary values	Std. values up to 4kA (1 or 5 Amp)
Max continuous input current	120% of rated value

Auxiliary Supply:

AC Auxiliary Supply	110V AC -15% / +20% / 230V AC -15% / +20% / 380V AC-15% / +20
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 rated value 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

RISHABH INSTRUMENTS
Measure, Control & Record with a Difference

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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	±0.5% of range (50...100% of rated value)
Current	±0.5% of range (10...100% of rated value)
Frequency	0.15% of mid frequency
System Apparent Power (VA)	±0.5% of range (10...100% of rated value)
Neutral Current (for 4 Wire only)	±4% of range (10...100% of rated value)

Influence of Variations:

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

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

IP for water & dust	IEC 61010-1-2001 , Permanently connected use IEC60529
Pollution degree:	2
Installation category:	III
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)

Parameter measurement and Display :

No	Parameter	3 Phase 3 Wire	3 Phase 4 Wire
1	System Volts	✓	✓
2	System Current	✓	✓
3	Frequency	✓	✓
4	Volts L1 – N	x	✓
5	Volts L2 – N	x	✓
6	Volts L3 – N	x	✓
7	Volts L1 – L2	✓	✓
8	Volts L2 – L3	✓	✓
9	Volts L3 – L1	✓	✓
10	Current L1	✓	✓
11	Current L2	✓	✓
12	Current L3	✓	✓
13	Neutral Current	x	✓
14	System Apparent Power	✓	✓
15	Total System Current Demand	✓	✓
16	Total System Maximum current Demand	✓	✓
17	Total System kVA Demand	✓	✓
18	Total System Maximum kVA Demand	✓	✓

✓ - Available x - Not available

Ordering Information

Ordering information	Ordering Code
	Rish Master 3410
Input Voltage	
110V L-L (63.5V L-N)	**110**
230V L-L (133V L-N)	**230**
415V L-L (239.6V L-N)	**415**
440V L-L (254V L-N)	**440**
AC Auxiliary Voltage	
110 V AC -15% / +20%	**L**
230 V AC -15% / +20%	**M**
380 VAC-15% / +20 %	**H**

Order Code Example :
Rish Master 3410- 230 - M

Rish Master 3410, 3 phase (programmable onsite as 4 wire or 3 Wire), 230L -L nominal voltage, 230 V AC auxiliary supply.
(No need to specify CT secondary as 5A or 1A is programmable on site)

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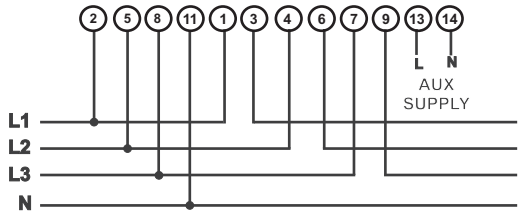
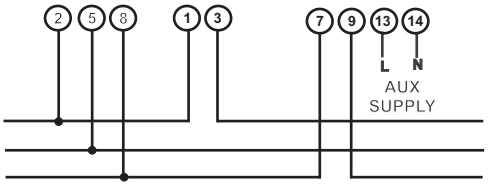
Electrical Connections

For 3 Phase 4 Wire Unbalanced Load

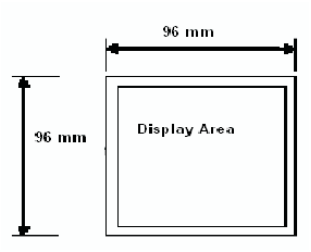


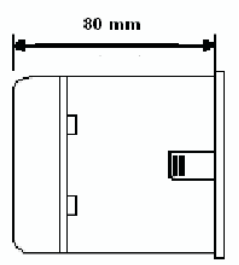
For 3 Phase 3 Wire Unbalanced Load

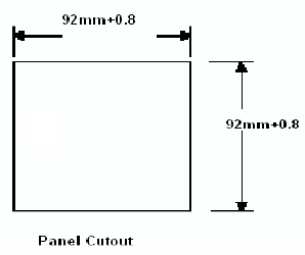


It is recommended that the wires used for connections to the instrument should have lugs soldered at the end. That is, the connections should be made with Lugged wires for secure connections. The Maximum diameter of the lug should be 7.0 mm and maximum thickness 3.5 mm. Permissible cross section of the connection wires: <= 4.0 mm^2 single wire or 2 × 2.5 mm^2 fine wire

Dimensions







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