

Data Sheet

Transducer for measuring
electrical parameters



Application :

Rish Trans measures important electrical parameters in 3 phase Network & replaces the multiple analog panel meters. It measures electrical parameters like AC current, Voltage, frequency, Active The instrument has 4 analog output, RS232 interface for on site configuration, RS485 interface for on line data collection and optional seven segment LED display.

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 locally via RS232 interface or local display (optional) or remotely via MODBUS (RS485).

User selectable CT Secondary 5A/1A

The secondary of external Current Transformer (CT) can be programmed on site to either 6A to 1A locally via RS232 interface or local display (optional) or remotely via MODBUS (RS485).

User selectable PT Secondary

The secondary of external potential Transformer (PT) can be programmed on locally via RS232 interface or local display (optional) or remotely via MODBUS (RS485)

User selectable 3 phase 3W or 4W

User can program on site the network connection as either 3 Phase 3 Wire or 4 Wire locally via RS232 interface or local display (optional) or remotely via MODBUS (RS485).

True RMS measurement

The instrument measures distorted waveform up to 15th Harmonic.

High brightness 3 line 4 digits LED display (OPTIONAL)

Simultaneous display of 3 Parameters

Fast Analog output response(Less then 500ms)

Analog output responds for step input within 500ms.

Number of parameters measured: more than 28

The instrument measures more than 28 electrical parameters of Phase network.

MODBUS (RS485) Output

The ModBus output enables the instrument to transmit all the measured parameters over standard MODBUS (RS485).

Configuration of the Instrument via MODBUS

The instrument settings can be configured locally via RS232 interface or local display (optional) or remotely via MODBUS (RS485).

Note: The MODBUS communication parameters can only be set locally via RS232 interface or local display (optional).

Analog Outputs (4 Outputs)

4 Analog outputs can be programmed from a list of input parameters.

Compliance to International Safety standards

Compliance to International Safety standard IEC 61010-1- 2001

Technical Specifications

Input Voltage:

Nominal input voltage (AC RMS) Phase –Neutral 57.7 –400 V L-N
Line-Line 100 – 693V L-L

Max continuous input voltage 1.2 *Un Continuously

Input Current:

Nominal input current 1 to 6A AC RMS
(programmable on site)
System CT primary values Std. values up to 200kA
(1 or 5 Amp)
Max continuous input current 9Amps

Operating Measuring Ranges

Voltage 5... 120% of rated value
Current 5 ... 150% of rated value
Frequency 46...63 Hz

Measured Parameters

Sr No	Measured Parameters	3 Phase 4 Wire	3 Phase 3 Wire
1.	System Volts	✓	✓
2.	System Current	✓	✓
3.	Volts L1 – N	✓	×
4.	Volts L2 – N	✓	×
	Volts L3 – N	✓	×
6.	Volts L1 – L2	✓	✓
7.	Volts L2 – L3	✓	✓
8.	Volts L3 – L1	✓	✓
9.	Current L1	✓	✓
10.	Current L2	✓	✓
11.	Current L3	✓	✓
12.	Frequency	✓	✓
13.	System Active Power	✓	✓
14.	Active Power L1	✓	×
15.	Active Power L2	✓	×
16.	Active Power L3	✓	×
17.	System Re-active Power	✓	✓
18.	Re-active Power L1	✓	×
19.	Re-active Power L2	✓	×
20.	Re-active Power L3	✓	×
21.	System Apparent Power	✓	✓
22.	Apparent Power L1	✓	×
23.	Apparent Power L2	✓	×
24.	Apparent Power L3	✓	×
25.	System Active Power Factor (PF)	✓	✓
26.	Active Power Factor L1 (PF1)	✓	×
27.	Active Power Factor L2 (PF2)	✓	×
28.	Active Power Factor L3 (PF3)	✓	×
29.	System Reactive Power Factor (QF)	✓	✓
30.	Reactive Power Factor L1 (QF1)	✓	×
31.	Reactive Power Factor L2 (QF2)	✓	×
32.	Reactive Power Factor L3 (QF3)	✓	×
33.	System Load Factor (LF)	✓	✓
34.	Load Factor (LF1)	✓	×
35.	Load Factor (LF2)	✓	×
36.	Load Factor (LF3)	✓	×

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

LED INDICATIONS :

STATUS OF INSTRUMENT	LED RESPONSE	LED COLOUR
STATUS LED		
1) Power ON self check OK	Flashing	Green
2) Power ON self check fail	Steady	Red
POWER ON LED		
Instrument auxiliary supply powered ON.	Steady	Red

Analog Output Response

Response time to step input Less then 500m sec approx.

Display update rate

Response time to step input 1 sec approx.

Accuracy*

Voltage	±0.5% of range (10... 120% of rated value)
Current	±0.5% of range (10... 150% of rated value)
Frequency	0.15% of mid frequency
Active Power	±0.5% of range (50... 150% of a programmed system power)
Apparent Power	±0.5% of range (50... 150% of a programmed system power)
Re-Active Power	±0.5% of range (50... 150% of a programmed system power)
Power Factor	0.5 % of Unity

Reference conditions for Accuracy

Reference temperature	23°C +/- 2°C
Input waveform	Sinusoidal, Form factor 1.1107
Input frequency	50 or 60 Hz
Auxiliary supply voltage	Rated Value ±1%
Auxiliary supply frequency	Rated Value ±1%
Power Factor	Cos Ø =1 (Active Power Factor) Sin Ø =1(Reactive Power Factor)

Influence of Variations

Temperature coefficient : ±0.1% / 10k
(for rated value range of use (0...50°C))

Auxiliary Supply

AC / DC Auxiliary Supply 85V – 230V Or 24V – 60V

VA Burden

Nominal input voltage burden	≤ U ² /400 K Ohm
Nominal input current burden	< 0.5 VA approx. per phase
DC Auxiliary burden	Approximately 7 VA (additional 1VA with display).
AC Auxiliary burden	Approximately 15 VA (additional 2 VA with display).

Environmental

Operating temperature	-10 to +55°C
Storage temperature	-40 to +85°C
Relative humidity	0... 90% non condensing
Warm up time	Minimum 3 minute
Shock	±2g in 3 planes
Vibration	10... 55 Hz, 0.15mm amplitude
Enclosure	Ip40 housing & IP20 terminals

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
Protection Class	II

High Voltage Test

50Hz for 1 minute according to DIN EN61010-1
5.55kV input circuit /RS 485 / Analog output/Aux supply versus Case.
3.25kV between input circuits.
3.7kV Aux supply versus analog output/RS 485/ Case
490V analog output versus RS 485.

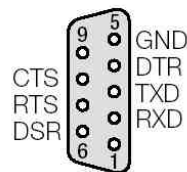
RS485 Interface



Connecting Cable	Screened twisted Pair
Maximum Distance	Approx 1200m
Baudrate	4800/9600/19200bps
Number of device	32 Including Master)

(Electrically Isolated from all other circuits)

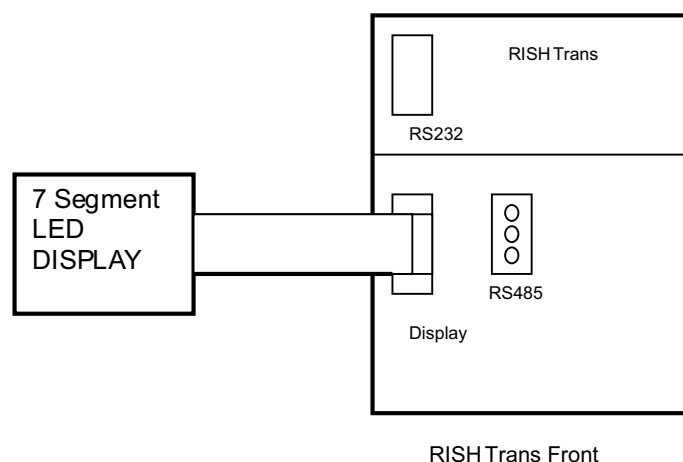
RS232 Interface



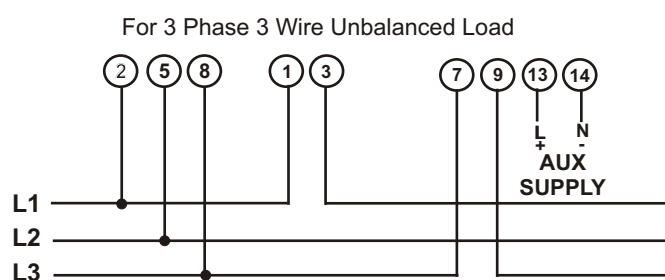
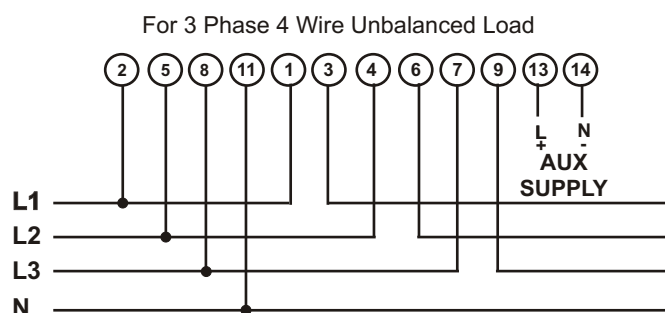
DSUB Socket 9 Pin

(Electrically Isolated from all other circuits)

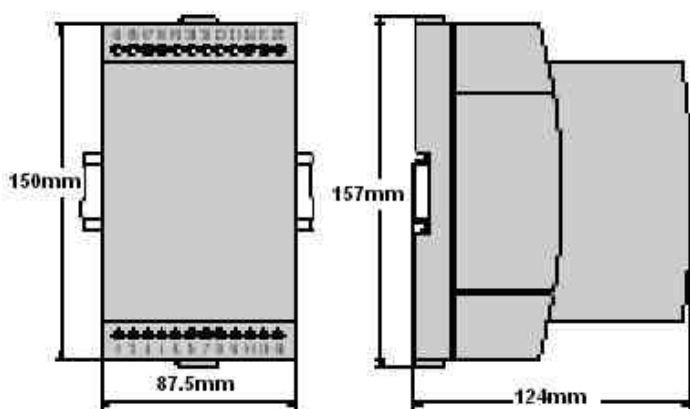
DISPLAY INTERFACE



Electrical Connections



Dimensions



Ordering information	Ordering Code
AC Auxiliary Voltage	
85V ... 230V AC DC -10% / +10 %	H
24V ... 60V AC DC -10% / +10 %	L
Optional:	
MODBUS (RS485) output	R
MODBUS Option not used	Z
Optional: Display (Seven Segment LED Display)	
With Display	DP
WithOut Display	Z
Optional: Analog Outputs	
Current Output	I
Voltage Output	V
For Output A	A / Full scale Output/I or V
For Output B	B / Full scale Output/I or V
For Output C	C / Full scale Output/I or V
For Output D	D / Full scale Output/I or V
Ana log Outputs option not used	Z

Analog Output Options

Standard Ranges	Programmable outputs
Current	0...20mA , -20...0...20 mA, 4...20mA
	0... 10mA
	0...5mA
	0...2.5mA
	0...1mA
Voltage	0...10V , -10...0...10V
	0...5V
	0...2.5V
	0...1V
	0...1V

Order Code Example

RishTrans – H – R – DP – A/20/I - B/10/V - C/20/I -D/20/I

RISH TRANS With Aux 85V...230V AC /DC – RS485 – with Optional Display Analog - Output A with 20mA–Analog Output B with 10V – Analog Output C with 20mA–Analog Output D with 20mA.



www.rishabh.co.in



RISHABH

**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