



Data Sheet

RISH DELTA ENERGY NX RJ12 (100mA)



Measure



Control



Record



Analyze



Optimize

Data Sheet

RISH Delta Energy NX - RJ12 (100mA)

RISH Delta Energy NX measures important electrical parameters in 3phase 4wire, 3phase 3wire, 1phase 2wire and 1phase 3wire network. It displays many parameters at a glance. It measures electrical parameters like Active / Reactive / Apparent energy, power and all basic parameter. The instrument has one optional built in Relay output which can be configured as pulse output for energy measurement, as well as limit output. Optional MODBUS RTU over RS-485 is built in for remote monitoring and configuration.

Product Features

Energy as per IEC 62053-21

- RISH Delta Energy NX is available in Accuracy Class 1
- Active Energy accuracy Class 1 as per 62053-21
- Independent Import and Export Energy counter. Active energy (kWh), Reactive energy (kVAh), Apparent energy (kVAh) measurement.

THD Measurement

The instrument measures per phase and system THD up to 31st harmonics for voltage and current.

True RMS Measurement

The instrument measures distorted waveform up to 31st harmonic.

On site programmable PT/CT ratios

It is possible to program primary, secondary of external potential transformer (PT) & primary of external current transformer (CT) via front panel keys and MODBUS.

Limit (Alarm) or Pulse Output (Optional)

- Available in Potential Free output
- Configurable as pulse output which can be used to drive an external counter for energy measurement.
- Configurable as limit (alarm) switch.

MODBUS (RS485) Output: (Optional)

- RS485 output enables the instrument to transmit all the Measured parameters over standard MODBUS protocol
- The instrument can be configured locally via front panel keys as well as MODBUS communication.

Storage of parameters possible

The instrument stores minimum and maximum values of System Voltage, System Current. Also Run Hour, ON Hour and number of AUX interrupts are stored.

Energy Count Storage

In case of power failure, the instrument memorizes the last energy count. The instrument updates the energy counter in the non-volatile memory.

Impulse LED

Impulse LED on the front of the instrument is useful for checking the accuracy of energy measured by the instrument.

Display

- 3 Line, 4 Digit bright Red LED display and indication LEDs
- Display can be configured for automatic scrolling of parameters or manual scrolling through 4 keys as per requirement and application of user.

Demand

- RISH Delta Energy NX integrates demand value for Active Power (kW), Apparent Power (kVA) and Current (A).
- The demand integration time can be configured from 1min to 60min

Compliance to International Safety standards

Compliance to International Safety standard IEC 61010-1- 2018

EMC Compatibility

Compliance to International standard IEC 61326



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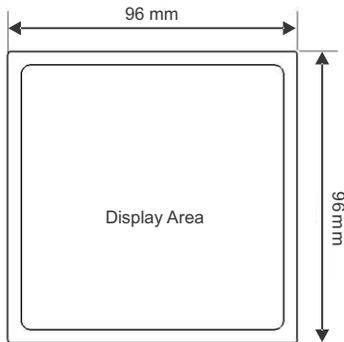


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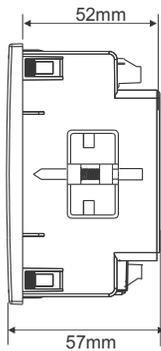
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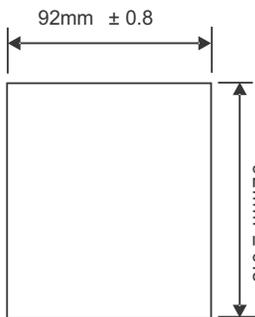
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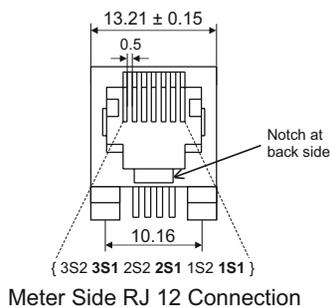
Front View



Side View



Panel Cutout



Meter Side RJ 12 Connection

Technical Specifications:

Input Voltage:

Nominal input voltage (AC RMS)
programmable on site.

100VLL to 500VLL
(57.5VLN to 288.67VLN)

System PT primary values

100VLL to 1200kVLL programmable on site.
(1000MVA maximum power per phase)
(1200kVLL when CT primary \leq 1002A)

Max continuous input voltage

120% of nominal value

Overload Indication

"-ol-" $>$ 121% of Nominal value

Nominal input voltage burden

$<$ 0.3VA approx. per phase (at nominal 240V)

Overload Withstand

2 x rated value for 1 second, repeated 10 times at 10 second intervals

Input Current

Nominal input current

100mA Fixed (Factory Set)

System CT primary values

From 1A to 9999A
(1000 MVA maximum power per phase)
(9999A when PT primary \leq 120kVLL)

Max continuous input current

120% of nominal value

Overload Indication

"-ol-" $>$ 121% of Nominal value

Nominal input current burden

$<$ 0.3VA approx. per phase

Overload Withstand

20 x rated value for 1 second, repeated 5 times at 5 minute intervals

Auxiliary Supply

Higher Auxiliary supply range

60-300V AC/DC (230V AC/DC nominal)

Lower Auxiliary supply range

20-60V AC/DC (24V AC / 48V DC nominal)

Aux Supply frequency

45 to 65 Hz range

Auxiliary Supply burden

$<$ 6VA approx

Operating Measuring Ranges

Current (Energy Measurement)

1 to 120% of nominal value

I(Starting) & I(Minimum)

As per Standard IEC 62053-21 & IEC 62053-23

Voltage

19VLL to 600VLL
(11VLL to 346VLL)

Power Factor

0.5 Lag ... 1 ... 0.5 Lead

Frequency

40Hz to 70Hz

Reference Conditions for Accuracy

Reference temperature

23°C \pm 2°C

Influence of temperature

0.015%/°C for Voltage & 0.025%/°C for Current

Input Waveform

Sinusoidal (distortion factor 0.005)

Input frequency

50/60 Hz \pm 2%

Auxiliary supply frequency

50/60 Hz \pm 1%

Voltage Range

20 ... 120% of nominal value

Current Range

10 ... 120% of nominal value

Total Harmonic distortion

40% (up to 31st Harmonics)

Voltage range for THD

50% ... 100% of nominal value

Current range for THD

20% ... 100% of nominal value



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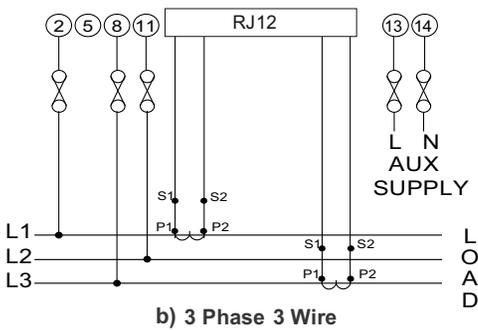
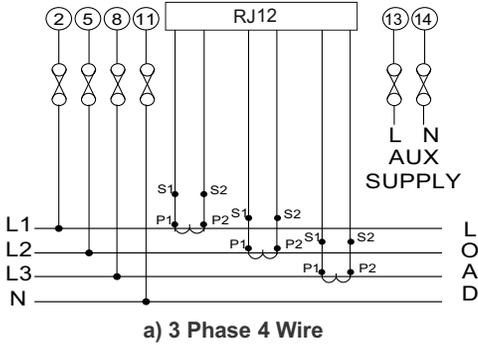
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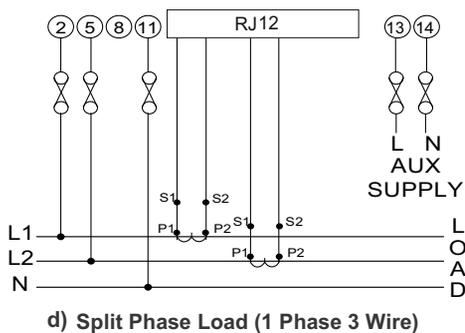
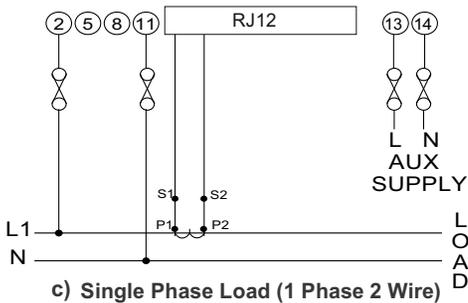
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Electrical Connections:

Network Types :



Note: L2 phase needs to be connected in terminal 11 instead of terminal 5 only for 3 Phase 3 Wire connections.



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

Technical Specifications:

Accuracy (Energy)

Active Energy	Class 1 as per IEC 62053 – 21
Apparent Energy	Class 1
Reactive Energy	Class 2 as per IEC 62053 – 23

Accuracy

Voltage	± 0.5% of Nominal value
Current	± 0.5% of Nominal value
Frequency	± 0.1% of mid frequency
Active Power	± 1% of Nominal value
Re-Active Power	± 1% of Nominal value
Apparent Power	± 1% of Nominal value
Power Factor/ angle	±2°
THD (Voltage / Current)	±3%

Display update rate

Response time to step input	1 sec approx.
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Applicable Standards

EMC	IEC 61326 – 1 :Table 2
Safety	IEC 61010-1-2018 use
IP for water & dust	IEC 60529

Isolation

Pollution degree	2
Installation category	III

High voltage test :

Input + AUX Vs Surface	4kV RMS, 50Hz, 1min
Input + AUX Vs Remaining Circuit	3.3kV RMS, 50Hz, 1min
MODBUS Vs Relay	2kV RMS, 50Hz, 1min

Environmental

Operating temperature	-20 to +70°C
Storage temperature	-25 to +75°C (Tested as per IEC 60688)
Relative humidity	0... 95% RH (non condensing)
Warm up time	Minimum 3 minute
Shock (As per IEC60068-2-27)	Half sine wave, Peak acceleration 30gn (300 m/s ²), duration 18ms.

Vibration

Number of Sweep cycles,	10 ... 150 ...10 Hz, 0.15mm amplitude
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Enclosure

Altitude	IP 20 (Terminal side) and IP 54 (Front side)
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Installation

Mechanical Housing	Lexan 940 (polycarbonate), Flammability Class, V-0 acc. to UL 94, self extinguishing, non dripping, free of halogen
Mounting Position	Panel Mounted (96X96)
Connection Element	Conventional screw type terminal with indirect wire terminals (Screw Torque: 0.5N.m)
Connection Terminal	4mm ² solid or 2.5mm ² stranded cable
Weight	250 Gram Approx.



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Technical Specifications:

Interfaces

Impulse LED

For Energy testing

Relay (Optional)

250 VAC, 5A AC

30VDC, 5A DC

MODBUS (Optional)

RS485, max.1200m.

Baud rate: 2.4k, 4.8k, 9.6k, 19.2k, 38.4k, 57.6k bps (Response time < 200ms)

Measured Parameter System wise:

√ : Available

x : Not Available

Sr. No.	Parameter	3 Phase 4 Wire	3 Phase 3 Wire	1 Phase 2 Wire	1 Phase 3 Wire
1	System Volts	√	√	√	√
2	System Current	√	√	√	√
3	Voltage L1	√	x	x	√
4	Voltage L2	√	x	x	√
5	Voltage L3	√	x	x	x
6	Voltage L12	√	√	x	√
7	Voltage L23	√	√	x	x
8	Voltage L31	√	√	x	x
9	Current L1	√	√	x	√
10	Current L2	√	√	x	√
11	Current L3	√	√	x	x
12	Frequency	√	√	√	√
13	System Active Power	√	√	√	√
14	Active Power L1	√	x	x	√
15	Active Power L2	√	x	x	√
16	Active Power L3	√	x	x	x
17	System Re-active Power	√	√	√	√
18	Re-active Power L1	√	x	x	√
19	Re-active Power L2	√	x	x	√
20	Re-active Power L3	√	x	x	x
21	System Apparent Power	√	√	√	√
22	Apparent Power L1	√	x	x	√
23	Apparent Power L2	√	x	x	√
24	Apparent Power L3	√	x	x	x
25	System Phase Angle	√	√	√	√
26	System Power Factor	√	√	√	√
27	Power Factor L1	√	x	x	√
28	Power Factor L2	√	x	x	√
29	Power Factor L3	√	x	x	x
30	Phase Angle L1	√	x	x	√
31	Phase Angle L2	√	x	x	√
32	Phase Angle L3	√	x	x	x
33	Import Active Energy	√	√	√	√
34	Export Active Energy	√	√	√	√
35	Inductive Re-active Energy	√	√	√	√



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Measured Parameter System wise:

√: Available x : Not Available

Sr. No.	Parameter	3 Phase 4 Wire	3 Phase 3 Wire	1 Phase 2 Wire	1 Phase 3 Wire
36	Capactive Re-active Energy	√	√	√	√
37	Apparent Energy	√	√	√	√
38	RPM	√	√	√	√
39	Min and Max System Voltage	√	√	√	√
40	Min and Max System Current	√	√	√	√
41	Run Hour	√	√	√	√
42	On Hour	√	√	√	√
43	Number of Interruptions	√	√	√	√
44	Current Demand	√	√	√	√
45	kVA Demand	√	√	√	√
46	Import kW Demand	√	√	√	√
47	Export kW Demand	√	√	√	√
48	Max Current Demand	√	√	√	√
49	Max kVA Demand	√	√	√	√
50	Max Import kW Demand	√	√	√	√
51	Max Export kW Demand	√	√	√	√
52	Neutral Current	√	x	x	√
53	Max Neutral Current	√	x	x	√
54	%THD Voltage L1	√	√	x	√
55	%THD Voltage L2	√	x	x	√
56	%THD Voltage L3	√	√	x	x
57	%THD Current L1	√	√	x	√
58	%THD Current L2	√	x	x	√
59	%THD Current L3	√	√	x	x
60	System Voltage THD	√	√	√	√
61	System Current THD	√	√	√	√
62	Min and Max Import Active Power*	√	√	√	√
63	Min and Max Export Active Power*	√	√	√	√
64	Min and Max Inductive Re-active Power*	√	√	√	√
65	Min and Max Capacitive Re-active Power*	√	√	√	√
66	Min and Max Apparent Power*	√	√	√	√
67	Min and Max Line Voltage*	√	√	√	√
68	Min and Max Line Current*	√	√	√	√

*Note - Line and System parameters Min Max values are shown on Modbus only.



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Ordering Information :

Ordering Information	DE30-	3	3	01	01	X	X	5	00000
Product Type	Delta Energy NX - RJ12 CT Input - 100mA								
System Type	3 Phase (On site configurable as 1 / 3 Phase)								
Input voltage	100-500VLL 50/60Hz								
Input Current	CT-RJ12-100mA								
Output Option	NONE					Z			
	RS485 - 1 Relay Output					R			
Auxiliary Supply	20-60VAC/DC						L		
	60-300 AC/DC						H		
Accuracy	Class 1								

Order Code Example : DE30-330101RH50000

Rish Delta Energy NX- Input 500VLL 50/60Hz, 100mA RJ12 CT, With RS485 + 1 Relay Output, Aux 60-300V AC/DC



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Rishabh Current Transformers with RJ12 Output



3 Phase RJ 12 CT



Quick Fix Module



Single Phase RJ12 CT



3 Phase Nano CT with RJ12



Measure



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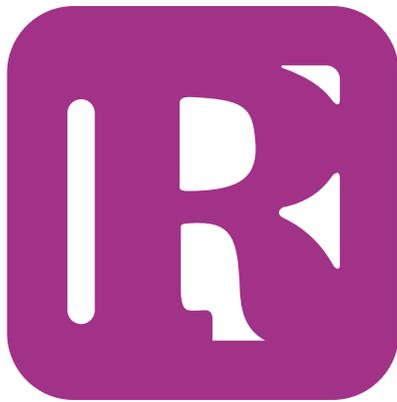
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Specifications may change without prior notice



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