RI-D250 Series

Three Phase Multifunction DIN Rail Energy Meter

- 100A direct connected
- High definition backlit LCD display
- Four module width DIN rail mounted
- Import and export active and reactive energy measurement - per phase and totals
- 2 x pulse outputs
- Modbus or MBus communication
- LED pulse indication
- Reversible Input direction (fed from top or bottom)
- Generator tariff mode
- Single phase and three phase network compatible

Product Description

The RI-D150 is a DIN rail mounted multifunction energy meter. Suitable for monitoring energy consumption and many other electrical parameters in industrial and commercial applications. The meter also has a standby generator mode tariff. This allows the user to record the energy from a diesel generator, or similar, on a separate tariff without affecting the standard import/export register reading.

The meters may be used in single or three phase, three, or four wire systems and may be connected directly up to 100A ac, and do not require external current transformers.

A high efficiency White backlit LCD display provides a clear indication of the measured values. Push-buttons on the front of the meter allow the user access to the display page required. A particularly useful feature is the ability to program whether the input current is supplied from the bottom or the top of the meter, making for a convenient installation.

The meter is currently available in two versions:-

- With two pulse outputs and RS485 Modbus RTU communication
- With two pulse outputs and MBus communication

Displayed Parameters

Import Active Energy (kWh) - per phase and total

Export Active Energy (kWh) - per phase and total

Import Reactive energy (kVArh) - per phase and total

Export Reactive energy (kVArh) - per phase and total

Apparent energy (kVA) - per phase and total

Voltage (V)

Current (A)

Active power (kW) - per phase and total

Reactive power (kVAr) - per phase and total

Apparent power (kVA) - per phase and total

Power factor (PF)

Frequency (Hz)

Generator tariff (kWh)

Active Power Max. Demand

Reactive Power Max. Demand

Apparent Power Max. Demand

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Display

Display Type	LCD, high definition
Digit height	6.35mm (displayed value)
Page scrolling	Auto/Manual scroll
Displayed parameters and accuracies	Active energy — Class 1 (IEC/EN62053-21) Reactive energy — Class 2 (IEC/EN62053-23) Apparent energy — 1% Voltage — 0.5% of full scale Current — 0.5% of nominal Active power — 1% Reactive power — 1% Apparent power — 1% Power factor — 0.1% of unity Frequency — 0.2% of nominal
Energy maximum display	9999999
Resolution	0.01

Programming

Programmable parameters	Communication address Communication speed (Baud rate) Energy Max. display Parity, Stop bits Backlight Max. Demand Network selection DG On or Off Pulse output configuration Change password Top or Bottom wiring input
Programming access	Password protected (user selectable)
Memory retention	Non-volatile memory

Input

Connection	1Ph-2W (P1,P2,P3), 3Ph-3W, 3Ph-4W
Input voltage (Un)	85...285V (L - N), 150...495V (L - L),
Power consumption (Max.)	≤4VA - Combined voltage / current circuit
Current rating (Imin-Iref)	0.5...10A
Max current (Imax)	100A Direct Connected
Current circuit power consumption (Max.)	N/A combined with voltage input
Starting current	40mA
Short time overcurrent	30 Imax / 10mS (IEC/EN62053-21 and -23)
Impulse voltage withstand	6kV 1.2µS
AC voltage withstand	4kV for 1 minute
Frequency	50Hz / 60Hz (Operating range 45...65Hz)
Generator tariff activation	100...240VAC
Current distortion factor	According to IEC/EN50470

Auxiliary Supply

Voltage range	Self supplied from measuring input (any phase)
Operating frequency	See input section
Power consumption	See input section

Outputs

Energy pulses	
Number of pulse outputs	2
Pulse output function	1 x 1000imp/kWh. 1 x User configurable pulse rate and energy type (kWh or kVArh)
Pulse output type	Semiconductor (does not support volt-free operation)
Pulse output Max. current	100mA (Class A to IEC/EN62053-31)
Pulse output voltage range	5...27VDC
Pulse duration	Selectable 50, 100, 150, 200, 300, 400, 500mS
Selectable pulse resolution	1, 10, 100, 1000 imp/kWh (or kvarh)
Modbus Communication (RI-D250-C)	
Communication type	RS485
Communication protocol	Modbus RTU
Address	1...255
Number of bits	8 bit (Stop bits 1 or 2)
Parity	None (default) / Odd / Even
Baud rate	2400, 4800, 9600 (default), 19200, 38400
Number of meters connected on the bus (Max.)	32 (up to 255 with RS485 repeater)
Max. distance from Master device	500m
Response time	100ms max - Regardless of Baud rate
MBus Communication (RI-D250-MB)	
Communication type	RS485
Communication protocol	MBus EN13757-3
Address	1...255
Baud rate	300, 600, 2400, 4800, 9600, 19,200
Number of meters connected on the bus	32 (up to 255 with RS485 repeater)
Max. distance from Master device	1000m (64 meters)

Insulation

Installation category	III
Pollution degree	2
Insulation voltage rating	300V (L - N)

Environmental Conditions

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Reference temperature	23°C ±1°C
Specified temperature operating range	–25°C...+55°C
Storage temperature	–30°C...+75°C
Relative humidity	0...95%, non condensing
Mechanical environment	M1
Electromagnetic environment	E2

Mechanical

Housing	
Housing Type	4 module DIN 43880
Mounting	Snap-on 35mm rail
Tamper sealing	Terminal cover and meter housing (meter housing by means of a crimped seal)
Housing material	Self-extinguishing polycarbonate
Protection degree (IEC/EN60529)	IP20 (terminals), IP51 (front of housing)
Weight	400g
Termination	
Current input terminal type	Screw type - rising clamp
Max. wire size	50mm^2
Voltage input terminal type	Combined with current circuit
Max. wire size	N/A
Output terminal type	Screw type - rising clamp
Max. wire size	1.5mm^2

Conformity

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Electromagnetic compatibility	IEC/EN61326-1, IEC/EN55011 Class A, IEC/EN61000-4-2, -3, -4, -5, -6, -8, -11,
Accuracy and functionality	IEC/EN62053-21, IEC/EN62053-23
Safety	IEC/EN61010, IEC/EN62053-31

Connection Diagram
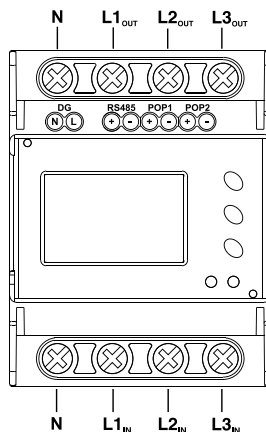
Please Note:

The direction of current flow can be reversed in the programming menu to allow feed from the Top or Bottom of the meter.

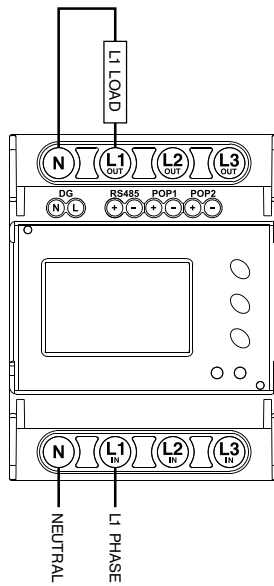Default direction is from the BOTTOM.

Dimensions (mm)

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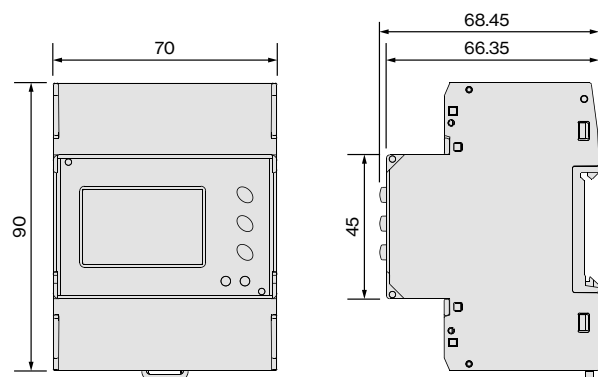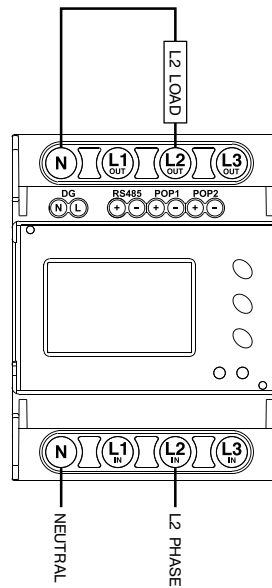
Wiring Diagrams
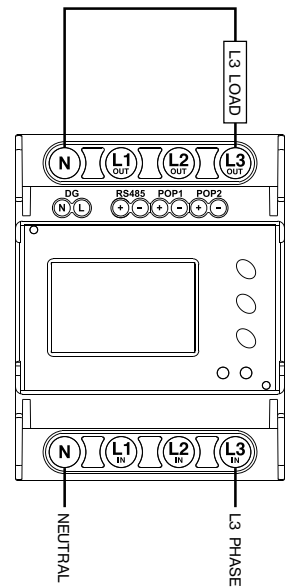
3 Phase - 4 Wire
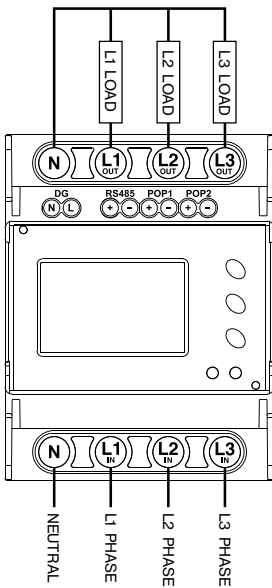
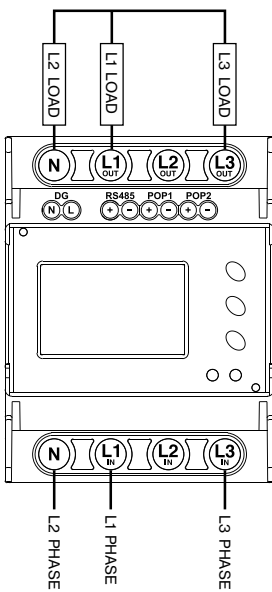**1 Phase - 2 Wire - L1 (P1)**

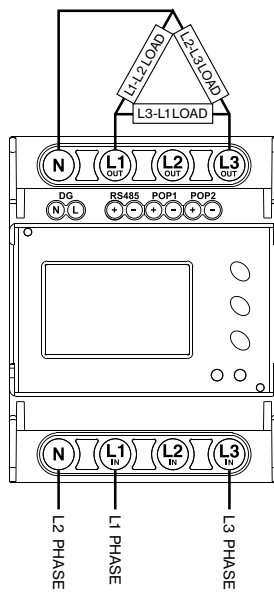**1 Phase - 2 Wire - L2 (P2)**

1 Phase - 2 Wire - L3 (P3)

3 Phase - 3 Wire (Star Load)

3 Phase - 3 Wire (Delta Load)

2 Phase - 3 Wire

Please Note:

The direction of current flow can be reversed in the programming menu to allow feed from the Top or Bottom of the meter.

Default direction is from the BOTTOM.

Model Selection Table

Description and Communications	Model
100A Direct Connect with 2 pulse outputs and Modbus RTU communication	RI-D150-G-C
100A Direct Connect with 2 pulse outputs and MBus communication	RI-D250-G-MB

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