Rayleigh Instruments
EST. 1964

RI-D18-100-C Series

Single Phase Multifunction Energy Meter

- 100A direct connected
- High definition LCD display with blue back-light
- Import active energy measurement
- RS485 Modbus communication
- Single module width DIN rail mounted
- LED pulse indication
- Simple programming and operation
- Auto & manual page scrolling

Product Description

The RI-D18-100-C Series forms part of the Rayleigh Instruments family of energy meters.

This compact single phase digital multifunction energy meter has been designed for the accurate measurement of energy consumption in residential, commercial, industrial and utility applications. The direct connection of the unit to a 100A ac circuit means the meter does not require an additional current transformer.

This meter has a high definition LCD display with blue back-light and 10mm high digits allowing easy reading of the recorded value.

The meter is currently available in one version:-

- With RS485 Modbus communication.

The unit is housed in a compact single module width case suitable for 35mm DIN rail mounting.

Displayed Parameters

Phase to Neutral Voltage (V)

Phase Current (A)

Power Factor (PF)

Active Power (kW)

Reactive Power (kVAr)

Apparent Power (kVA)

Import Active Energy (kWh)

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Display

Display Type	LCD, high definition with blue back-light
Digit height	10mm (displayed value)
Page scrolling	Manual by front key / or auto scroll mode (displayed parameter changes every 5 seconds)
Displayed parameters and accuracies	Voltage 0.5% of Max. range Current 0.5% of nominal Power factor 1% of unity (0.01) Active power 1% of range maximum Reactive power 1% of range maximum Apparent power 1% of range maximum Active Energy Class 1 (IEC/EN62053-21)
Energy maximum display	99999.9
Resolution	100wh

Programming

Programmable parameters	*None - Special software is required to change the following parameters, software is available upon request:* *Communication address* *Communication speed (Baud)*
Programming access	Password protected (within software)
Memory retention	EEPROM - with battery backup

Input

Connection	Single phase only
Input voltage (Un)	230V (±20%)
Operating voltage range	184…264V
Voltage circuit power consumption (Max.)	<1W, 10VA
Current rating (Imin-Iref)	0.25…100A
Max current (Imax)	100A
Current circuit power consumption (Max.)	N/A combined with voltage input
Starting current	20mA
Short time overcurrent	30 Imax/ 10mS (IEC/EN62053-21 and -23)
Impulse voltage withstand	6kV 1.2/50µS 0.5J
AC voltage withstand	3kV for 1 minute
CT ratio range	N/A direct connection
VT ratio range	N/A direct connection
Frequency	50Hz

Auxiliary Supply

Voltage range	Self supplied from measuring input
Operating frequency	See input section
Power consumption	See input section

Outputs

Energy pulses	
Number of pulse outputs	N/A
Pulse output function	N/A
Pulse output type	N/A
Pulse output Max. current	N/A
Pulse output voltage range	N/A
Pulse duration	N/A
Communication - Modbus Version	
Communication type	RS485
Communication protocol	Modbus RTU
Address	1…255 (Default - 001)
Number of bits	Fixed - 1bit
Parity	Fixed - None
Baud rate	1200, 2400, 4800, 9600 (Default - 9600)
Required response time to request	≤100ms
Number of meters connected on the bus	32 (up to 255 with RS485 repeater)
Max. distance from Master device	1200M

Insulation

Installation category	III
Pollution degree	2
Insulation voltage rating	300V

Environmental Conditions

Reference temperature	23°C ±1°C
Specified temperature operating range	–20°C…+55°C
Storage temperature	–40°C…+70°C
Relative humidity	0…85%, non condensing
Mechanical environment	M1
Electromagnetic environment	E2

Mechanical

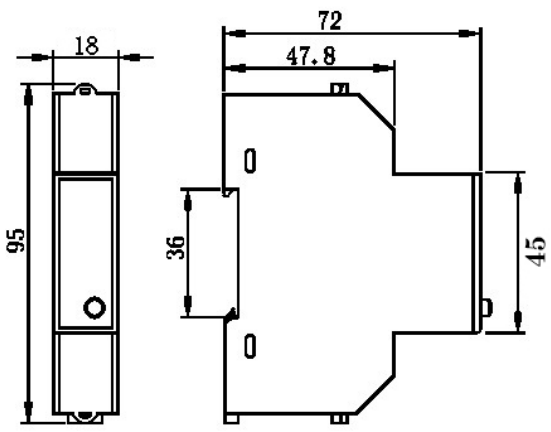
Housing	
Housing Type	1 module DIN 43880
Mounting	Snap-on 35mm rail
Tamper sealing	Terminal cover and meter housing (meter housing by means of a tamper sticker)
Housing material	Self-extinguishing ABS
Protection degree (IEC/EN60529)	IP20 (terminals), IP51 (front of housing)
Weight	<170g
Termination	
Current input terminal type	Screw type - rising clamp
Max. wire size	25mm²
Voltage input terminal type	Combined with current circuit
Max. wire size	N/A
Output terminal type	Screw type - rising clamp
Max. wire size	2.5mm²

Conformity

Electromagnetic compatibility	Emission and immunity tests according to IEC/EN50470 Immunity test according to IEC/EN50470
Accuracy and functionality	IEC/EN50470-1:2006 - Electricity metering equipment (a.c.). Part 1: General requirements, tests and test conditions Metering equipment (class indexes A, B and C) IEC/EN50470-3:2006 - Electricity metering equipment (a.c.) Part 3: Particular requirements Static meters for active energy (class indexes A, B and C) EC Directive 2004/22/EC

1 Live In
2 Live Out
23 RS485 A
24 RS485 GND
25 RS485 B

Dir



Model Selection Table

Description	Model
Single Phase kWh Meter - RS485 Modbus Output	RI-D18-100-C