Rayleigh Instruments
EST. 1964

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RI-D175CT Series

Single Phase Energy Meter

- -/5A current transformer input
- Single module width DIN rail mounted
- Import active energy measurement
- Modbus + Pulse or M-Bus + Pulse versions
- LED pulse indication
- MID B+D Certified

MID

Product Description

The RI-D175CT series form part of the Rayleigh Instruments family of energy meters, designed for the accurate measurement of energy consumption in residential, commercial, industrial and utility applications.

This meter is housed in a single module width case suitable for DIN rail mounting, with a high definition backlit LCD display allowing easy reading of the recorded values.

Its MID status means the RI-D175CT has been tested for build quality and accuracy and is certified for billing purposes.

The meter is currently available in two versions, both with output communication, enabling the remote recording of power consumption:-

- RI-D175CT-C - Modbus-RTU + Pulse output
- RI-D175CT-MB - M-Bus + Pulse output

Displayed Parameters

Import Active Energy (kWh)
Voltage (V)
Current (A)
Active power (W)
Power factor (Unity)
Frequency (Hz)

MID APPROVED FOR BILLING APPLICATIONS
Measuring Instruments Directive

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Display

Display Type	LCD, high definition
Digit height	5mm (displayed value)
Page scrolling	Auto scroll
Displayed parameters and accuracies	Active energy Class 1, Class B (IEC/EN62053-21, IEC/EN50470) Voltage 0.5% of full scale Current 0.5% of full scale Active power 1% Power factor 1% of unity Frequency 0.1% of full scale (L-N >20V)
Energy maximum display	99999.99 or 999999.9 Default (user programmable via RS485)
Resolution	0.01K or 0.1K depending energy Max. display setting
Tariffs	1

Programming

Programmable parameters	Communication address, Communication speed (Baud rate), Energy Max. display, CT Ratio
Programming access	RS485
Memory retention	Non volatile memory

Input

Connection	Single phase only
Input voltage (Un)	230V AC
Operating voltage range	195.5...253V AC (–15%...+10% Un)
Voltage circuit power consumption (Max.)	2W / 10VA
Primary current rating (Imin-Iref)	0.25...5A **Note:** The CT ratio can be set by RS485 command. Twenty-five CT ratios are available - 5:5, 15:5, 25:5, 30:5, 40:5, 50:5, 60:5, 75:5, 80:5, 100:5, 120:5, 125:5, 150:5, 200:5, 250:5, 300:5, 350:5, 400:5, 500:5, 600:5, 750:5, 800:5, 1000:5, 1200:5, 1250:5.
Max current (Imax)	6/100A
Current circuit power consumption (Max.)	N/A combined with voltage input
Starting current	25mA
Short time overcurrent	30 Imax/ 10mS (IEC/EN62053-21 and -23)
Impulse voltage withstand	6kV 1.2µS
AC voltage withstand	2kV for 1 minute
CT ratio range	5:5...1250:5
VT ratio range	N/A
Frequency	50Hz ±10%
Current distortion factor	According to IEC/EN50470

Auxiliary Supply

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

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Outputs

Energy pulses - All Versions	
Number of pulse outputs	1
Pulse output function	1 x fixed at 1000imp/kWh.
Pulse output type	Passive transistor, require external DC supply
Pulse output Max. current	27mA
Pulse output voltage range	5...27VDC
Pulse duration	80mS
Modbus Communication - RI-D175-C	
Communication type	RS485
Communication protocol	Modbus-RTU
Address	1...255
Number of bits	8 bit
Parity	None (Default), Odd, Even
Baud rate	1200, 2400, 4800, 9600 (Default 2400)
Bus loading (Max.)	64 meters
Max. distance from master device	1000m
M-Bus Communication - RID175-MB	
Communication type	RS485
Communication protocol	M-Bus EN13757-3
Address	1...255
Baud rate	2400, 4800, 9600 (Default 2400)
Bus loading (Max.)	64 (dependant on the converter and baud rate, higher speed reduces number of meters)
Max. distance from master device	1000m (64 meters)

Insulation

Installation category	II
Pollution degree	2
Insulation voltage rating	300V

Environmental Conditions

Reference temperature	23°C ±1°C
Specified temperature operating range	–25°C...+55°C
Storage temperature	–30°C...+70°C
Relative humidity	0...95%, non condensing
Mechanical environment	B
Electromagnetic environment	B

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Mechanical

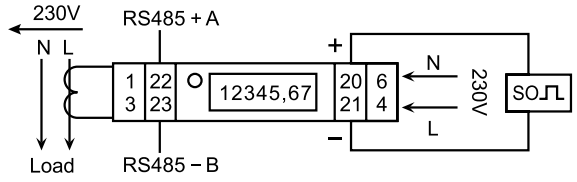
Housing	
Housing Type	1 module DIN 43880
Mounting	Snap-on 35mm rail
Tamper sealing	Terminal cover and meter housing (meter housing by means of crimped seal)
Housing material	Self-extinguishing ABS
Protection degree (IEC/EN60529)	IP20 (terminals), IP51 (front of housing)
Weight	120g
Termination	
Current input terminal type	Screw type - rising clamp
Max. wire size	10.5mm²
Voltage input terminal type	Combined with current circuit
Max. wire size	10.5mm²
Output terminal type (pulse and communication)	Screw type - rising clamp
Max. wire size	2.5mm²

Conformity

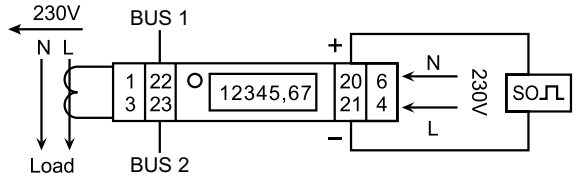
Electromagnetic compatibility	Emission and immunity tests according to IEC/EN50470 Immunity test according to IEC/EN50470
Accuracy and functionality	IEC/EN50470-1:2006 - Electricity metering equipment (a.c.). Part 1: General requirements, tests and test conditions Metering equipment (class indexes A, 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

Wiring Diagrams

RI-D175CT-C - Modbus

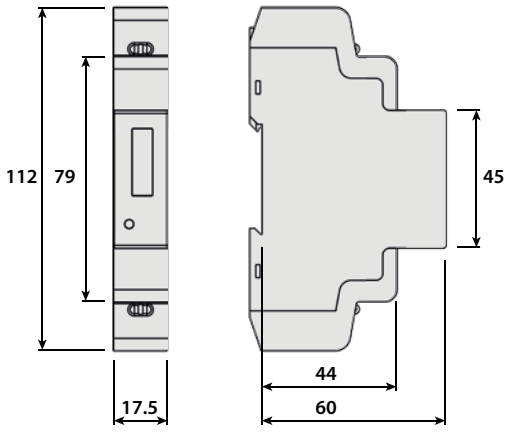


RI-D175CT-MB - MBus



1	CT (+)
3	CT (–)
4	Line in - Live (+)
6	Line in - Neutral (–)
20	Pulse output (+)
21	Pulse output (–)
22	RS485 A (+) / MBUS 1
23	RS485 B (–) / MBUS 2

Dimensions (mm)



Model Selection Table

Description and Communications	Model
Modbus-RTU + Pulse	RI-D175CT-C
M-Bus + Pulse	RI-D175CT-MB

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