

RI-D175 Series

Single Phase Energy Meter (MID Certified)



MID



- 45A direct connected
- Single module width DIN rail mounted
- Import active energy measurement (RI-D175-P)
- Import and Export active energy measurement (RI-D175-C and RI-D175-MB)
- Modbus + Pulse, M-bus + Pulse or Pulse only versions
- MID B+D Certified
- LED pulse indication

Product Description

The RI-D175 Series forms part of the Rayleigh Instruments family of MID Certified energy meters, designed for the accurate measurement of energy consumption in residential, commercial, industrial and utility applications. The direct connection of the unit to a 45A ac circuit means the meter does not require additional current transformers.

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-D175 has been tested for build quality and accuracy and is certified for billing purposes.

The meter is available in three versions:-

- With Pulse output and Modbus RTU communication
- With Pulse output and M-Bus communication
- With Pulse output only

The pulse only version displays import active energy only. The Modbus and M-Bus versions are capable of displaying both import and export active energy values.

Displayed Parameters

Import Active Energy (kWh) - RI-D175-P, RI-175-C and RI-175-MB

Export Active Energy (kWh) - RI-175-C and RI-175-MB

Voltage (V)

Current (A)

Active power (W)

Power factor (Unity)

Frequency (Hz)



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	
Energy flow direction	[I] = Import [E] = Export	

Programming

Programmable parameters	Communication address, Communication speed (Baud rate), Energy Max. display
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
Voltage circuit power consumption (Max.)	2W / 10VA
Current rating (Imin-Iref)	0.25...5A
Max current (Imax)	45A
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 1.2μS
AC voltage withstand	4kV for 1 minute
CT ratio range	N/A direct connection
VT ratio range	N/A direct connection
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

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)
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)
Bus loading (Max.)	64 (dependant on the converter and baudrate, higher speed reduces number of meters)
Max. distance from master device	1000m (64 meters)

Insulation

Installation category	III
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	M1
Electromagnetic environment	E2

Mechanical

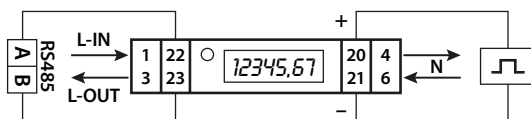
Housing	
Housing Type	1 module DIN 43880
Mounting	Snap-on 35mm rail
Tamper sealing	Terminal cover and meter housing (meter housing by means of crimped seal)
Housing material	Self-extinguishing ABS
Protection degree (IEC/EN60529)	IP20 (terminals), IP51 (front of housing)
Weight	120g
Termination	
Current input terminal type	Screw type - rising clamp
Max. wire size	10.5mm ²
Voltage input terminal type	Combined with current circuit
Max. wire size	N/A
Output terminal type	Screw type - rising clamp
Max. wire size	2.5mm ²

Conformity

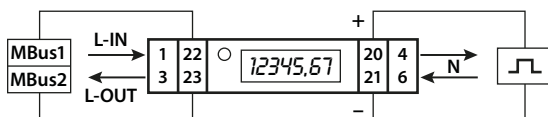
Electromagnetic compatibility	Emission and immunity tests according to IEC/EN50470 Immunity test according to IEC/EN50470
Accuracy and functionality	IEC/EN50470-1:2006 - Electricity metering equipment (a.c.). Part 1: General requirements, tests and test conditions Metering equipment (class indexes A,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

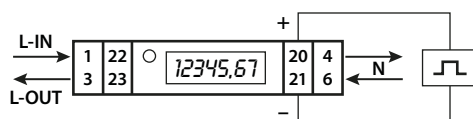
RI-D175-C - Modbus



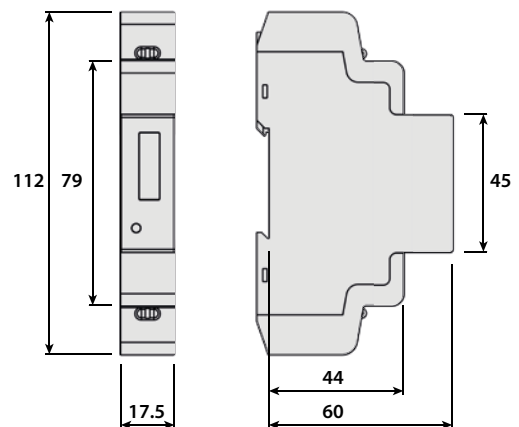
RI-D175-MB - M-Bus



RI-D175 Pulse



Dimensions (mm)



Model Selection Table

Description and Communications	Model
Modbus-RTU + Pulse	RI-D175-C
M-bus + Pulse	RI-D175-MB
Pulse only	RI-D175-P