Rayleigh Instruments

RI-D175

OP036 V03

OVERVIEW

MID

RI-D175-C Modbus

RI-D175-MB M-Bus

Pulse

DIN RAIL MOUNT

CE

RoHS

SPECIFICATIONS

Wiring input	1Ø, 2 wire Direct Connected	
Input voltage (Un)	230V	
Operating voltage range	196…253V	
Current rating (Imin-Iref)	0.02…5A / Max current (Imax) 100A	
Frequency range	50Hz (operating range 45...55Hz)	
Short time overcurrent	30 x Imax. for 10mS (IEC/EN62053-21 and -23)	
Impulse voltage withstand	6kV 1.2µS	
AC voltage withstand	2kV for 1 minute	
Auxiliary	Self supplied from measuring input	
Power consumption	≤2W / 10VA	
Energy maximum display	999999.9 (default) or 99999.99 programmable	
Displayed parameters and accuracy	Active energy: Reactive energy: Voltage: Current: Active power: Reactive power: Apparent power: Power factor: Frequency:	Class 1, Class B (IEC/EN62053 -21, IEC/EN50470 Class 2 (IEC/EN62053-23) 0.5% of full scale 0.5% of full scale 0.5% 0.5% 0.5% 1% of unity 0.1% of full scale (L-N >20V)
Communication	RS485: Modbus RTU or MBus EN13757-3 **Address Register at www.rayleigh.com**	
Modbus RTU (RI-D175-C only)	Address: Data bits / Parity: Baudrate: Bus loading: Max distance:	1… 255 8 bit / None, Odd, Even 1200, 2400, 4800, 9600 64 meters max 1000m
MBus EN13757-3 (RI-D175-MB only)	Address: Baudrate: Bus loading: Max distance:	1… 255 2400, 4800, 9600 64 meters max (dependant on converter and baudrate) 1000m (64 meters)
Pulse output	1 x fixed 1000 imp/kWh / 5 - 27V DC (external supply) / 27mA max / pulse duration 80mS	
Operating temperature	-25°C … +55°C	
Storage temperature	-30°C … +70°C	
Relative humidity	0… 95%, non-condensing	
Net weight	120g	
Housing material	Self-extinguishing ABS	
Insulation voltage rating	300V (L - N)	
Installation category	III	
Protection degree	IP20 (terminals), IP51 (front of housing)	

SAFETY PRECAUTIONS

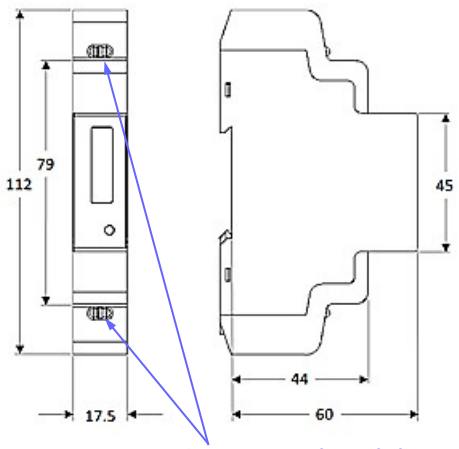
Safety related notification, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of personnel as well as the instrument.

- If the equipment is not used in a manner specified by the manufacturer it may impair the protection provided by the equipment
- Do not use the equipment if there is any mechanical damage
- Do not exceed the stated maximum ratings of the device
- No repairs, maintenance or adjustments are possible
- Read complete instruction prior to installation or operation of the unit
- The equipment in its installed state must not come into close proximity to any heating sources, oils, steam, caustic vapours or other unwanted process by-products
- Do not use in hazardous or classified location where explosion or other dangers can be triggered by the device

INSTALLATION

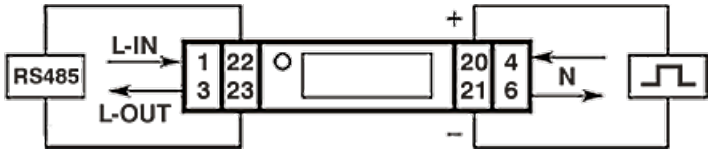
Risk of electric shock! To avoid personal and material damage, the installation process must be performed by qualified and trained personnel only.

- To prevent the risk of electrocution, always isolate and lock-off the power supply to the equipment prior to undertaking any work
- Always confirm absence of electricity prior to starting work using appropriate voltage detection equipment
- Wiring shall be done strictly according to the terminal layout
- Confirm that all connections are correct before energizing the equipment
- Routing of connecting cables should be away from any internal EMI sources
- Copper cable should be used



All dimensions in mm

Security Hasp: Must be sealed to comply with MID



RS485	22	23
Modbus	A	B
MBus	MBus1	MBus2

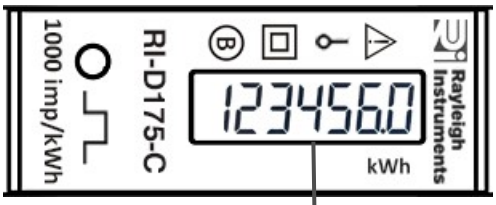
L/N	Output
0.4 Nm Max	0.2 Nm Max

	L/N: 7 AWG / 10.5mm² max	Output: 14 AWG / 2.5mm² max
	8mm	6mm
	+ Ø 3.5mm max	+ Ø 1.5mm

POWER UP CYCLE

Software version	34AE
Comm Baud Rate	bd 9600
Pulse Weight (imp/kWh)	C 1000
Comm ID	Id 01
Serial Number 2nd 4 digits	SNL 0010
Serial Number 1st 4 digits	SNH 1802

OPERATION



Auto-scroll

Total kWh	123456.0
Tariff 1 kWh	123456.0
Tariff 2 kWh	123456.0
Voltage	U 230.0
Current	A 12.00
Active Power	P 1234.0
Power Factor	PF 1.00
Frequency	F 50.0
Pulse Weight (imp/kWh)	C 1000
Baud Rate (Change via RS485)	bd 9600
Comm ID (Change via RS485)	Id 01
Serial Number 1st 4 digits	SNH 1802
Serial Number 2nd 4 digits	SNL 0010

EU DECLARATION OF CONFORMITY

RAYLEIGH INSTRUMENTS LIMITED
Raytel House, Cutlers Road, South Woodham Ferrers, Chelmsford, Essex CM3 5WA. UK

Hereby declares under its sole responsibility the products described below:

Product Family	**RI-D175 SINGLE PHASE ENERGY METER (DIN RAIL MOUNT)**
Models	**RI-D175-C / RI-D175-MB**

complies with the provisions of the following European Directives:

2014/32/EU – Measuring Instruments Directive (MID)
2011/65/EU – RoHS Directive

based on compliance with the following harmonised standards:

EN 50470-1:2006 - Electricity metering equipment (AC), General requirements, tests and test conditions.
EN 50470-3:2006 - Electricity metering equipment (AC), Particular requirements
EN 50581:2012 – Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

EC Type Examination	MID Annex B
Certificate Number	EU-TEC-T11307
Issued By	NMi Certain B.V - 0122

Particulars:

- The product is traceable by its serial number applied on the product's casing exterior
- CE marking is applied to the product's casing and packaging
- Conformance of installation is realized only when conducted by a competent installer

Issued: 28 May 2018 — Chelmsford UK

Chi Cheung - Technical Manager
On behalf of Rayleigh Instruments Limited