

RI-D140 Series

Three Phase Multifunction DIN Rail Energy Meter (MID Certified)



- Four module DIN rail mounted
- Energy pulse LED
- -/1A or -/5A current transformer input (MID certification only on 5A)
- Single phase or three phase network compatible
- Programmable voltage and current transformer ratio
- True RMS measurement
- MID B+D Certified
- High definition white backlit LCD display
- Simple programming and operation
- Modbus communication
- Auto and manual page scrolling

Product Description

The RI-D140 is a MID approved DIN rail mounted multifunction energy meter. Suitable for monitoring energy consumption and many other electrical parameters in industrial and commercial applications. These meters may be used in single or three phase four wire systems.

A high efficiency white backlit LCD display provides a clear indication of the measured value in all light conditions. Push-buttons on the front of the meter allow the user access to the display page required.

Its MID status means the RI-D140 has been tested for the build quality and accuracy of the meter and is certified for billing purposes.

The meter is currently available in one version:

- With RS485 Modbus communication.

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

Displayed Parameters

Voltage – L-L, L-N and average

Current – Per phase and average

Power Factor – per phase and average

Frequency

Power – Active, Reactive and Apparent (per phase and total)

Power Min./Max. demand – Active and apparent power.

Energy – Active, reactive and apparent (per phase and total)

Import and export energy – Active, Reactive and Apparent (per phase and total)



Display

| | | |
|-------------------------------------|---|--|
| Display Type | LCD, High definition with white back-light | |
| Digit height | 6.35mm (Displayed parameter) | |
| Page scrolling | Manual by front key / or auto scroll mode | |
| Displayed parameters and accuracies | Voltage | 0.5% of full scale |
| | Current | 0.5% of full scale |
| | Frequency | 0.1% of full scale (L-N >20V) |
| | Power factor | 1% of unity |
| | Active power | 1% |
| | Reactive power | 1% |
| | Apparent power | 1% |
| | Active Energy | Class 1, Class B (IEC/EN62053-21, IEC/EN50470-3) |
| | Reactive Energy | Class 2 (IEC/EN62053-23) |
| Energy maximum display | 9999999 | |
| Resolution | 0.01K, 0.1K, 1K, 0.01M, 0.1M, 1M (depending on CT ratio & VT ratio) | |

Programming

| | |
|---|--|
| Parameters that can be changed using programming menu | <ul style="list-style-type: none"> CT Primary current CT Secondary current VT primary voltage VT secondary voltage Communication address Communication speed (Baud) Communication Parity Communication number of stop bits Back-light time-out period Demand period (for integration) Reset to Factory Default Reset Energy and Maximum Demand Reset Active Energy Reset Reactive Energy Reset Apparent Energy Reset Maximum Current Reset Maximum Active Power Reset Minimum Active Power Reset Maximum Reactive Power Reset Minimum Reactive Power Reset Maximum Apparent Power |
| <i>NOTE: Once Programming Mode Is entered The values in red will be locked out after 15 Mins. No further adjustment is possible without return to factory.</i> | |
| Programming access | Password protected (user selectable) |
| Memory retention | Non volatile memory |

Input

| | |
|---------------------------|--|
| Connection | Single phase (CT on L1 only), Three phase four wire |
| Certified voltage range | 3 x 85...240V (L - N), 3 x 147...415 (L - L) |
| Voltage rated burden | <0.2VA |
| Nominal current input | 0.05...5A |
| Max current (Imax) | 6A (1.2 x Nominal) |
| Current Rated Burden | 0.5VA |
| Starting current | 10mA |
| Short time overcurrent | 30 x Imax to IEC/EN62053-21 + 23 |
| Impulse voltage withstand | 6kV 1.2/50µS 0.5J |
| AC voltage withstand | 4kV 50Hz for 1 min. |
| CT primary current | 5...6000A |
| VT primary voltage | 100...600V |
| Frequency | 50Hz |
| Current distortion factor | According to IEC/EN50470 |

Auxiliary Supply

| | |
|---------------------|-------------------|
| Voltage range | 100...240V (±15%) |
| Operating frequency | 47...65Hz |
| Power consumption | <8VA |

Outputs

| Communication - Modbus | |
|---------------------------------------|---|
| Communication type | RS485 |
| Communication protocol | Modbus |
| Address | 1...255 |
| Number of bits | 8bits |
| Parity | None, odd, even |
| Baud rate | 300, 600, 1200, 2400, 4800, 9600, 19200 |
| 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 | 500M |

Insulation

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

Environmental Conditions

| | |
|---------------------------------------|-------------------------|
| Reference temperature | 23°C ±2°C |
| Specified temperature operating range | -10°C...+55°C |
| Storage temperature | -20°C...+75°C |
| Relative humidity | 0...85%, non condensing |
| Mechanical environment | M1 |
| Electromagnetic environment | E2 |

Mechanical

| Housing | |
|--|--|
| Housing | 4 module DIN 43880 |
| Mounting | Snap-on 35mm rail |
| Tamper sealing | Meter housing (by means of a tamper evident seal). Sealable terminal covers. |
| Housing material | Self-extinguishing polycarbonate (UL94 V-0) |
| Protection degree (IEC/EN60529) | IP20 (terminals), IP51 (front of housing) |
| Weight | <210g |
| Termination | |
| Current input terminal type | Screw clamp type |
| Max wire size | 2.5mm ² |
| Voltage input terminal type | Screw clamp type |
| Max wire size | 2.5mm ² |
| Communication output (RS485 and Pulse) | Screw clamp type |
| Max wire size | 1.5mm ² |

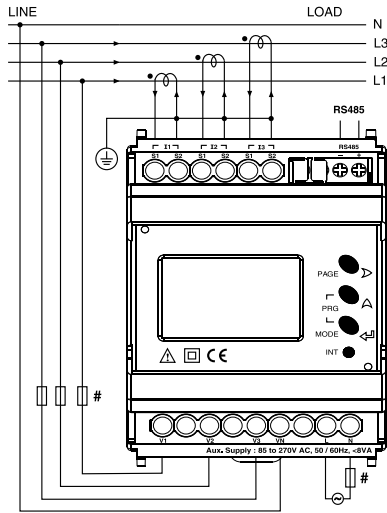
Conformity

| | |
|-------------------------------|---|
| Electromagnetic compatibility | IEC/EN61326-1, IEC/EN55011 Class A, IEC/EN61000-4-2, -3, -4, -5, -6, -8, -11 IEC/EN50470-1/3 |
| Accuracy and functionality | IEC/EN50470-1/3, IEC/EN62053-21, IEC/EN62053-23, DIRECTIVE 2014/32/EU |
| Safety | IEC/EN61010, IEC/EN62053-31 |

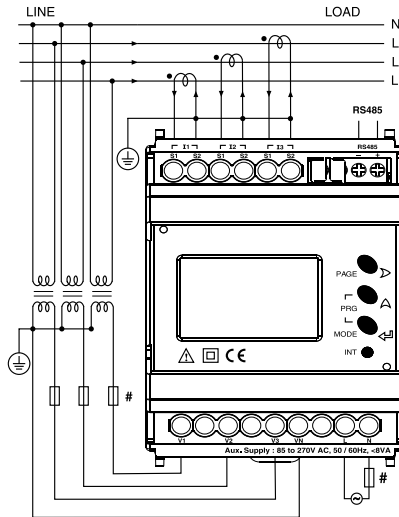
Wiring Diagrams

Note: # All fuse types : 0.5A class CC UL type
0.5A fast acting 600V

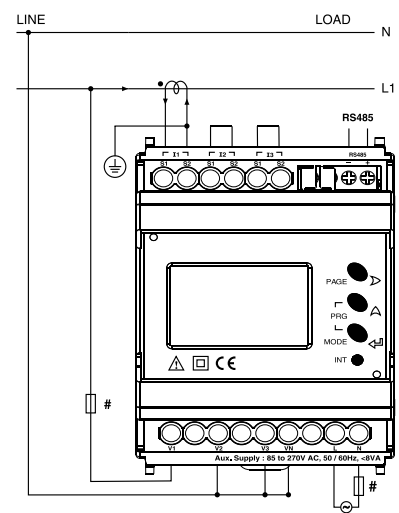
3 Phase 4 Wire - 3 CTs



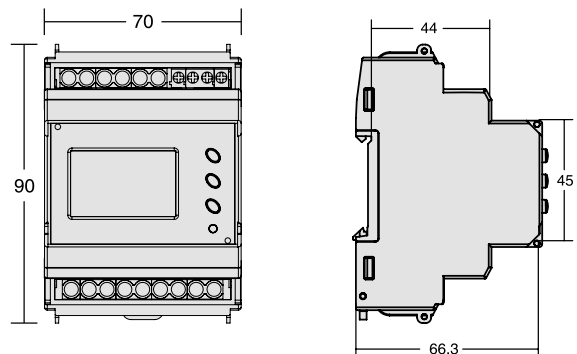
3 Phase 4 Wire - 3 CTs and 3 PTs



Single Phase 2 Wire - 1 CTs



Dimensions (mm)



Model Selection Table

| Communications | Model |
|---------------------|-------------|
| RS485 Modbus output | RI-D140-G-C |