

## RI-D440



### Three Phase **easywire**<sup>®</sup> Multifunction DIN Rail Energy Meter

- Four module DIN rail mounted
- Energy pulse LED
- 330mV Input from **easywire**<sup>®</sup> CTs (or -/1A and -/5A current transformer input with TAS-SCTEWA module)
- Single phase or three phase network compatible
- Programmable voltage and current transformer ratio
- True RMS measurement
- High definition white backlit LCD display
- Simple programming and operation
- Pulse output and Modbus communication
- Auto or manual page scrolling
- Voltage OUT connector for daisy chaining up to 32 meters from one supply

#### Product Description

The RI-D440 series are part of the **easywire**<sup>®</sup> family of meters. The **easywire**<sup>®</sup> system has been designed to save up to 90% installation time compared to a standard meter and current transformer installation.

They are a range of DIN rail mounted multifunction energy meters. 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 applications.

A high efficiency white backlit LCD display provides clear indication of measured values in all light conditions.

Push-buttons on the front of the meter allow the user access to the display page required.

The meter is available in one version:-

- With single pulse output and RS485 Modbus communication.

The unit is housed in a compact four module width housing suitable for 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 Max. demand - Active and apparent power**

**Energy - Active, reactive and apparent (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 (IEC/EN62053-21)      |
|                                     | Reactive Energy   | Class 2 (IEC/EN62053-23)      |
| Energy maximum display              | 9999999   |                               |
| Resolution                          | 0.01K, 0.1K, 1K, 0.01M, 0.1M (depending on CT ratio & VT ratio) |                               |

## Programming

|   |  |
|---|--|
| Parameters that can be changed using programming menu | CT Primary current<br>VT primary voltage<br>VT secondary voltage<br>Communication address<br>Communication speed (Baud)<br>Communication Parity<br>Communication number of stop bits<br>Back-light time-out period<br>Demand period (for integration)<br>Pulse duration<br>Pulse output (kWh)<br>Reset to Factory Default<br>Reset Energy and Maximum Demand<br>Reset Active Energy<br>Reset Reactive Energy<br>Reset Apparent Energy<br>Reset Maximum Current<br>Reset Maximum Active Power<br>Reset Minimum Active Power<br>Reset Maximum Reactive Power<br>Reset Minimum Reactive Power<br>Reset Maximum Apparent Power |
| Programming access                                    | Password protected (user selectable)   |
| Memory retention                                      | Non volatile memory  |

## Input

|  |   |
|--|---|
| Connection (1ph, 3ph etc., configurable) | Single phase (selectable L1, L2 or L3 CT connection), Three phase four wire |
| Input voltage range                      | 3 x 100...240V (L - N),<br>3 x 173...415V (L - L)                           |
| Voltage Rated Burden                     | <8VA (L1 - supply), <0.2VA (L2 and L3)                                      |
| Nominal current input                    | <b>easywire</b> <sup>®</sup> input - 330mV                                  |
| Max current (Imax)                       | <b>easywire</b> <sup>®</sup> input - 396mV (Nominal x 1.2)                  |
| Current Rated Burden                     | N/A ( <b>easywire</b> <sup>®</sup> input)                                   |
| Starting current                         | 10mA (3.3mV)  |
| 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                       | 1A, 5A...10000A   |
| VT primary voltage                       | 100...500KV   |
| Frequency                                | 45...65Hz   |

## Auxiliary Supply

|                     |   |
|---------------------|---|
| Voltage range       | Self supplied from measuring input (L1 - N) |
| Operating frequency | See input section                           |
| Power consumption   | See input section                           |

## Outputs

| <b>Energy pulses</b>                  |   |
|---------------------------------------|---|
| Number of pulse outputs               | 1   |
| Pulse output function                 | kWh   |
| Pulse output type                     | 1   |
| Pulse output Max. current             | 100mA   |
| Pulse output voltage range            | 5...27VDC   |
| Pulse duration                        | 100ms...2s  |
| Pulse resolution                      | 0.01K, 0.1K, 1K, 0.01M, 0.1M (depending on CT ratio & VT ratio) |
| <b>Communication - Modbus</b>         |   |
| 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

| <b>Housing</b>                         |   |
|--|---|
| Housing                                | 4 module DIN 43880                                |
| Mounting                               | Snap-on 35mm rail                                 |
| Tamper sealing                         | Meter housing (by means of a tamper evident seal) |
| Housing material                       | Self-extinguishing polycarbonate (UL94 V-0)       |
| Protection degree (IEC/EN60529)        | IP20 (terminals), IP54 (front of housing)         |
| Weight                                 | <210g   |
| <b>Termination</b>                     |   |
| Current input terminal type            | RJ45  |
| Max. wire size                         | N/A   |
| Voltage input terminal type            | Pluggable terminal block - Screw clamp type       |
| Max. wire size                         | 2.5mm <sup>2</sup>                                |
| Voltage output terminal type           | Pluggable terminal block - Screw clamp type       |
| Max. wire size                         | 2.5mm <sup>2</sup>                                |
| Communication output (RS485 and Pulse) | Pluggable terminal block - Screw clamp type       |
| Max. wire size                         | 1.5mm <sup>2</sup>                                |

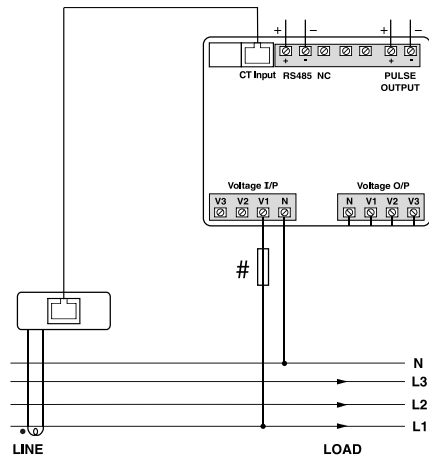
## Conformity

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

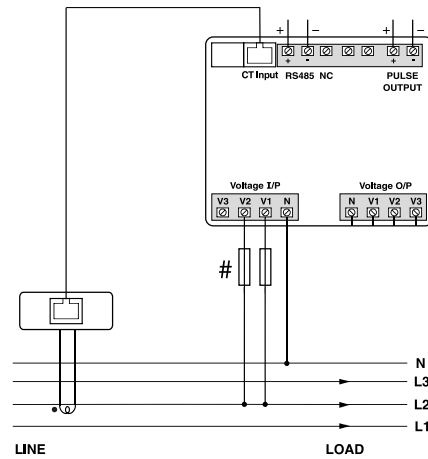
**Wiring Diagrams**

**Note:** # All fuse types : Class CC UL type fast acting 600V Max. 3A (Actual rating is dependent on the number of meters connected to the voltage supply and must be determined during system design).

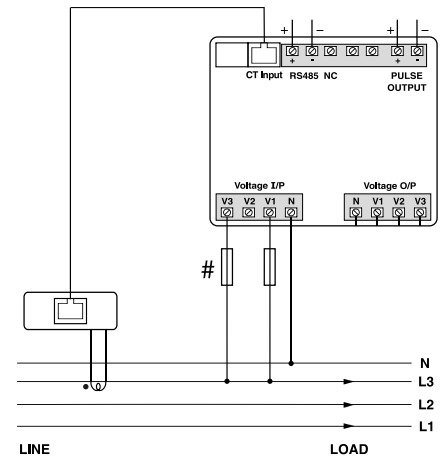
**Single Phase L1**



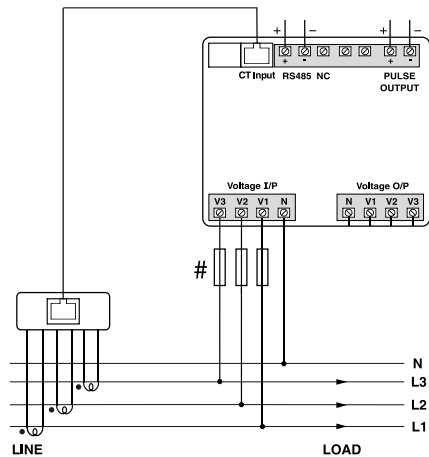
**Single Phase L2**



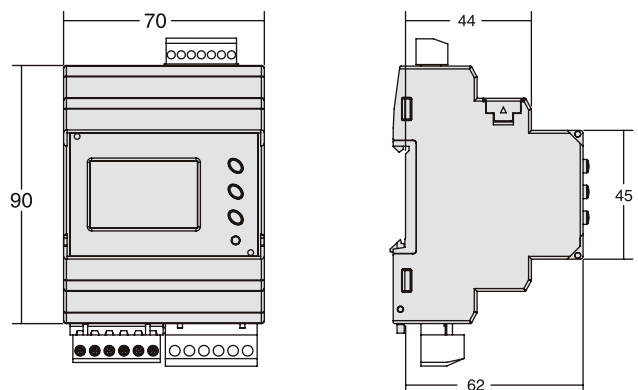
**Single Phase L3**



**3 Phase 4 Wire - 1 CT**



**Dimensions**



**Model Selection Table**

| Communications                       | Model       |
|--------------------------------------|-------------|
| Single Pulse and RS485 Modbus Output | RI-D440-G-C |