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RI-D480

Quad Load Three Phase **easywire**® Multifunction DIN Rail Energy Meter

- Four module DIN rail mounted
- Energy pulse LED
- 4 x separate 3 Phase or 12 x Single Phase inputs (330mV) from easywire® CTs (-/5A or -/1A CTs with converter)
- Single phase or three phase network compatible
- Independently programmable CT ratios (Load 1, 2, 3, 4)
- Programmable voltage transformer ratio
- True RMS measurement
- High definition white backlit LCD display
- Simple programming & operation + auto/manual page scrolling
- Modbus communication
- Voltage OUT connector for daisy chaining up to 32 meters from one supply



Product Description

The RI-D480 series are part of the **easywire*** family of meters. The **easywire*** system has been designed to save up to 90% installation time compared to a standard meter and current transformer installation.

This series of meters contain four metering circuits in one case, and accepts inputs from four separate **easywire*** three phase current transformers or 12 x single phase current transformers with TAS-SCTEWA adapters while still utilizing the same voltage reference.

These DIN rail mounted multifunction energy meters are suitable for monitoring energy consumption and many other electrical parameters in industrial and commercial applications. This series is particularly suited for use in multi-circuit metering boards 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.

A particular feature of this meter is that up to $32 \times \text{RI-D480}$ devices can be linked together on one Modbus system.

Each meter is provided with an input and output RJ12 Modbus ports, making 'daisy-chain' connection between devices simple.

This means that up to $128 \times 128 \times$

The meter is available in one version:-

• With RS485 Modbus communication (RJ12 - In and Out).

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

(LOAD 1, LOAD 2, LOAD 3 and LOAD 4 or 12 x Single Phase)

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 (per load 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 (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) | |

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Programming

| Parameters that can be changed using programming menu | Number of Channels: 4 or 12 Network Selection: 3PH4W or Single Phase (L1, L2 or L3) CT Primary current - Load 1, Load 2, Load 3, Load 4, CT (each load independently settable) 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) Pulse duration Pulse output (kWh) 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 Reactive Power Reset Minimum Reactive Power Reset Minimum 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 voltage reference), Three phase four wire Single phase 12 x CTs on same phase |
|--|--|
| Input voltage range | 3 x 100240V (L - N), 3 x 173415V (L - L) |
| Voltage Rated Burden | <8VA (L1 - supply), <0.2VA (L2 and L3) |
| Nominal current input | 4 x easywire® input - 330mV |
| Max current (Imax) | easywire® input - 396mV (Nominal x 1.2) |
| Current Rated Burden | N/A (easywire® input) |
| Starting current | 10mA (3.3mV) |
| Short time overcurrent | 30 x lmax 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 | 5A10000A |
| VT primary voltage | 100500KV |
| Frequency | 4565Hz |

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Auxiliary Supply

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

Outputs

| Communication - Modbus | |
|---------------------------------------|---|
| Communication type | RS485 |
| Communication protocol | Modbus |
| Address | 1255 |
| 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 |

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| Storage temperature | -20°C+75°C |
|---------------------|----------------------|
| Relative humidity | 085%, non condensing |

Mechanical

| Housing | |
|--|---|
| 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), IP51 (front of housing) |
| Weight | <240g |
| Termination | |
| Current input terminal type | N/A - RJ45 connection |
| Max. wire size | N/A |
| Voltage input terminal type | Pluggable terminal block - Screw clamp type |
| Max. wire size | 2.5mm² |
| Voltage output terminal type | Pluggable terminal block - Screw clamp type |
| Max. wire size | 2.5mm ² |
| Communication output (RS485 and Pulse) | 2 x RJ12 connection (In & Out) |
| Max. wire size | N/A |

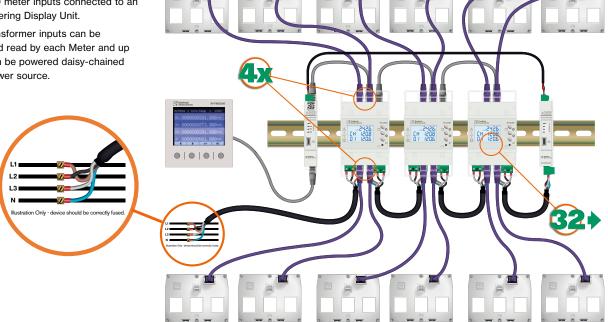
Conformity

| 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/EN62053-31 | |

Schematic

The illustration shows a typical set up using multiple RI-D480 meter inputs connected to an RI-FMDU96 Metering Display Unit.

Four current transformer inputs can be connected to and read by each Meter and up to 32 Meters can be powered daisy-chained from a single power source.



Wiring Diagrams

Note: # All fuse types : Class CC UL type

fast acting 600V

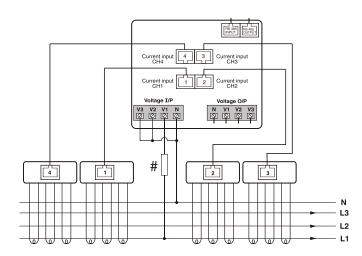
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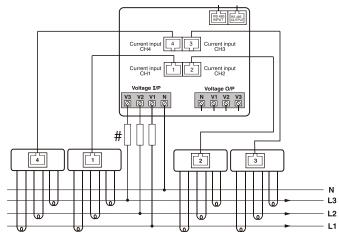
Max. 3A (Actual rating is dependent on the number of meters connected to the

voltage supply and must be determined during system design).

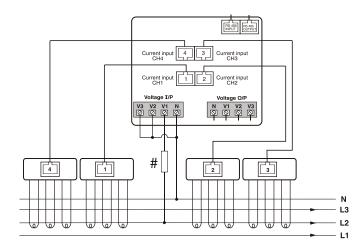
Up to 12 Single Phase L1**



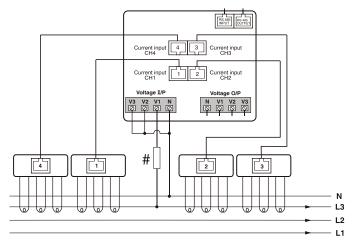
3 Phase 4 Wire - 4 x 3 Phase CTs



Up to 12 Single Phase L2**



Up to 12 Single Phase L3**



** Note: Irrespective of which phase is being monitored, the voltage connection must be connected to V1 on the meter.

Model Selection Table

| Communications | Model |
|--|-------------|
| Quad Load Input with RS485 Modbus Output | RI-D480-G-C |