



- **Standard DIN Rail Format**
- **Installation Aids – ‘Right First Time’**
kW Display
Configuration Display (CT, VT & Pulse setting)
- **Accuracy better than Class 1**
- **Isolated Pulse Output**
- **RS485 MODBUS RTU[®], MD & Dual Tariff Options**
- **Designed & Made in the UK with a 5 year Warranty**
- **Large Clear Backlit Display**

PowerRail 303 - a DIN Rail mounting Electronic kWh Meter. Easy to install and convenient to use. Equally suitable for both 3 wire and 4 wire 3f unbalanced loads (optionally for single phase or balanced 3f systems), these Meters have been designed to measure accurately irrespective of the type of load - ideal for a motor, a heater, or a modern electronically controlled load.

Safe to Use

With fully isolated current inputs, installation safety is assured. Current input isolation allows these meters to be directly connected under certain conditions and provides versatility of connection. Installation in conjunction with other instrumentation can be carried out safely, without affecting accuracy.

Easy to Install

The **PowerRail 303** is fitted with large Rising Cage terminals - allowing connection to cables from 0.25mm² to 4.0mm²

Easy to Configure

PowerRail 303 Meters are configured from the front panel to suit installations using Current and/or Voltage Transformers, with decimal point and legend being automatically set to provide optimum resolution.

Easy to Commission — Right First Time

Configuration: CT, VT & Pulse configuration can be displayed at the touch of a button. Links at the rear of the meter can be removed to disable Configuration.

Wiring: With kW displayed at the push of a button, installations can be quickly and simply tested - connections confirmed & the load measured. To remove the possibility of reading errors, the display reverts to kWh after 60 seconds.

Pulse Output: With its **Pulse Test** facility, pulses can be generated - without any load - to test all downstream equipment.

Easy to Use

The **PowerRail 303** can be read from any angle. The bold LCD display overcomes small character size, poor visibility and short life associated with electromechanical counters and provides the necessary legends (Wh, kWh, MWh) to simplify reading. The programmable isolated pulse output provides an interface to a remote data collection system or BEMs.

Fully Supported

Comprehensive operating instructions - supplied with every **PowerRail 303** - include full information on installation. These include connection schematics and configuration details for virtually all CT ratios. Full technical support is readily available from your local Distributor or from Technical Sales at ND Metering Solutions.

Universality of Connections

For maximum convenience all **PowerRail 303** Meters can be powered from the measurement voltage. Where supplies may be subject to unusually wide variations, the Meters may be powered from a separate auxiliary supply. Standard Meters are suitable for both 3 wire and 4 wire 3f unbalanced loads, and can be used on single phase.

Accurate Real World Measurement

A precision measurement system maintains full accuracy in the presence of harmonics and randomly and/or periodically interrupted waveforms - as commonly found on modern electronically controlled loads.

Dual Tariff Option

The **PowerRail 303** is optionally available with 2 registers for Dual Tariff applications. Tariff changeover is effected by an external signal.

Maximum Demand Option

The **PowerRail 303** is optionally available with kW Maximum Demand measurement. Power is averaged over a user defined demand period, typically 15 or 30 minutes. The peak value of demand – Peak or Maximum Demand is retained in non-volatile memory.

RS485 MODBUS® Communications

A high speed internal RS485 MODBUS® communications option allows all readings to be read remotely.

OUTLINE SPECIFICATION

| INPUTS | |
|----------------------------------|---|
| System | 3 Phase 3 or 4 Wire Unbalanced Load 3 Phase Balanced & Single Phase to order |
| Voltage | 400/230V. 3 Phase 3 or 4 Wire 110/63V & 208/120V optional. Others to order. |
| Current Measurement Range | 5A from external CTs. 1A optional. Fully isolated Voltage 50% to 120% Current 0.2% to 120% |
| Frequency Range | Fundamental 45 to 65Hz Harmonics Up to 30th harmonic at 50Hz |
| Burden | Voltage <0.1VA per phase Current <0.1VA per phase |
| Overload | Voltage x4 for 1 hour Current x40 for 0.5 second max |
| DISPLAY | |
| Type | Custom, Supertwist, LCD |
| Data Retention | 10 years min. Stores kWh & Meter set-up |
| Format | 8 x 6.66mm high digits with DPs & 3.2mm legends |
| Scaling | Direct reading. User programmable CT & VT CT Primary programmable from 10A to 25kA VT primary programmable from 11V to 55kV |
| Legends | Wh, kWh, MWh etc. depending on user settings |
| AUXILIARY SUPPLY | |
| Standard | 230V 50/60 Hz ±15% |
| Options | 110V 50/60 Hz ±15% |
| Load | 2VA max. |
| Overload | x1.2 continuous |
| ACCURACY | |
| kWh | Better than Class 1 per EN 61036 & EN 62053-21 Better than Class 1 per BS 8431 |
| kW | Better than ±1% reading; Class 1 BS 8431 |
| PULSE OUTPUT | |
| Function | 1 Pulse per unit of energy |
| Scaling | Settable between 1 & 1000 counts of kWh register |
| Pulse Period | 0.1 sec. default; Settable between 0.1 and 20 sec |
| Rise & Fall Time | < 2.0ms |
| Type | N/O Volt free contact. Optically isolated BiFET |
| Contacts | 100mA ac/dc max., 100V ac/dc max. |
| Isolation | 2.5kV 50Hz 1 minute |
| MODBUS® Serial Comms | |
| Optional | |
| Bus Type | RS485 2 wire + 0v. ½ Duplex, ¼ unit load |
| Protocol | MODBUS® RTU with 16 bit CRC |
| Baud Rate | 4800, 9600 or 19,2000 User settable |
| Address | 1 – 247 User settable |
| Latency | Reply within 250ms max. |
| Command Rate | New command within 5ms of previous one |
| MAXIMUM DEMAND | |
| Optional | |
| Measurement | Rolling Demand with 30 sub-periods |
| Demand Period | 1 – 60 minutes, user settable |
| Display | Adds MD and Peak MD to the display pages |
| MD Reset | Front panel – may be disabled |
| GENERAL | |
| Tariff Change | Normal V _{in} < 35V ac or dc |
| Signal | Alternate 60V < V _{in} < 300V ac or dc |
| (Option) | Isolated at 2.5kV from all other inputs & outputs |
| Temperature | Operating -10°C to +65°C Storage -25°C to +70°C |
| Humidity | < 75% non-condensing |
| Environment | IP54 standard, IP65 optional |
| MECHANICAL | |
| Terminals | Rising Cage. 4mm ² (12 AWG) cable max. |
| Enclosure | DIN 42880 6 Modules |
| Material | Noryl with fire protection to UL94-V-O. Self extinguishing |
| Dimensions | 106mm x 90mm x 58mm (6 modules wide) |
| Weight | ~ 325 gms |
| SAFETY | |
| Conforms to | EN 61010-1 Installation Category III |