



- ***3 Single Phase Meters in a Single Enclosure***
- ***Standard DIN Rail Format***
- ***Available as a Retro-fit Kit with Split CTs***
- ***Installation Aids – ‘Right First Time’***
- ***Accuracy better than Class 1***
- ***Isolated Pulse Output***
- ***RS485 MODBUS<sup>®</sup>***
- ***Designed & Made in the UK with a 5 year Warranty***

**Rail 310** – 3 kWh Meters in a single DIN Rail mounting. Easy to install and convenient to use. These Meters have been designed to measure accurately irrespective of the type of load – ideal for modern electronically controlled loads.

### Multi-Parameter

Displayed	Meters	Additionally available via MODBUS	Meters
Volts, LN	1, 2, 3	PF	1, 2, 3 & $\Sigma$
Amps	1, 2, 3	kvar	1, 2, 3 & $\Sigma$
kW	1, 2, 3	Average Current	$\Sigma$
kWh	1, 2, 3	Average Volts	$\Sigma$
<b>True rms measurement of Volts &amp; Amps – and true Power Measurement – to the 30<sup>th</sup> harmonic at 50Hz.</b>		Total kW	$\Sigma$
		Total kWh	$\Sigma$

### Safe to Use

With fully isolated current inputs, installation safety is assured. This allows the **Rail 310** 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 and CTs can be earthed if required. (Does NOT apply to retro-fit Meters.

### Easy to Install

The **Rail 310** is fitted with large Rising Cage terminals – allowing connection to a wide range of cables from 0.25mm<sup>2</sup> to 4.0mm<sup>2</sup>

### Easy to Configure

**Rail 310** Meters are configured from the front panel to suit installations using Current Transformers, with decimal point and legend being automatically set to provide optimum resolution.

### Easy to Commission — Right First Time

**Wiring:** With Volts, Amps & kW displayed at the touch of a button, installations can be quickly and simply tested – connections confirmed & the load measured.

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

### Easy to Use

Complex menus structures are eliminated by limiting the displayed parameters to key values. All are however available via MODBUS. With a bold custom LCD display, the **Rail 310** can be read from any angle, with the necessary legends simplifying reading. The programmable isolated pulse outputs provide an interface to a data collection system or BEMs.

### Fully Supported

Comprehensive operating instructions provide 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 these 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.

### Accurate Real World Measurement

A precision measurement system maintains full accuracy up to the 30<sup>th</sup> harmonic (at 50Hz) in the presence of harmonics and randomly and/or periodically interrupted waveforms - as commonly found on modern electronically controlled loads.

### RS485 MODBUS<sup>®</sup> Communications

A high speed internal RS485 MODBUS<sup>®</sup> communications option allows readings to be read remotely and provides the extra information required for system management.

### Retro-fit Option

The **Rail 310** is optionally available with the special current inputs that can be used with the ND range of openable current sensors — from 5 Amp to 800 Amp.

## OUTLINE SPECIFICATION

INPUTS	
<b>System</b>	3 x Single Phase Load with common Neutral
<b>Voltage U<sub>n</sub></b>	3 x 230V. 3 x 110V optional. Others to order.
<b>Current I<sub>n</sub></b>	5A from external CTs. 1A optional. Fully isolated Option of 0.333mV (from External Sensors)
<b>Measurement Range</b>	<b>Voltage</b> 50% to 120% <b>Current</b> 0.2% to 120%
<b>Frequency Range</b>	<b>Fundamental</b> 45 to 65Hz <b>Harmonics</b> Up to 30 <sup>th</sup> harmonic at 50Hz
<b>Burden</b>	<b>Voltage</b> <0.1VA per phase <b>Current</b> <0.1VA per phase
<b>Overload</b>	<b>Voltage</b> x4 for 1 hour <b>Current</b> x40 for 0.5 second max
DISPLAY	
<b>Type</b>	Custom, Supertwist, LCD
<b>Data Retention</b>	10 years min. Stores kWh & Meter set-up
<b>Format</b>	8 x 9mm high digits with DPs & 2.8mm legends
<b>Scaling</b>	Direct reading. User programmable CT CT Primary programmable from 10A to 25kA
<b>Legends</b>	Wh, kWh, MWh etc. depending on user settings
AUXILIARY SUPPLY	
<b>Standard</b>	230V 50/60 Hz ±15%
<b>Options</b>	110V 50/60 Hz ±15% 24Vdc, 48Vdc or 110Vdc
<b>Load</b>	2VA max.
<b>Overload</b>	x1.2 continuous
ACCURACY All errors ± 1 digit	
<b>kWh</b>	Better than Class 1 per EN 62053-21 & BS 8431
<b>kW</b>	Better than Class 0.25 IEC 60688
<b>Amps &amp; Volts</b>	Class 0.1 IEC 60688 (0.01I <sub>n</sub> – 1.2I <sub>n</sub> or 0.1U <sub>n</sub> – 1.2U <sub>n</sub> )
<b>kvar (via MODBUS)</b>	Better than Class 0.5 IEC 60688
<b>PF (via MODBUS)</b>	±0.2° (0.05I <sub>n</sub> – 1.2I <sub>n</sub> and 0.2U <sub>n</sub> – 1.2U <sub>n</sub> )
PULSE OUTPUTS	
<b>Function</b>	1 Pulse per unit of energy
<b>Scaling</b>	Settable between 1 & 1000 counts of kWh register
<b>Pulse Period</b>	0.1 sec. default; Settable between 0.1 and 20 sec
<b>Rise &amp; Fall Time</b>	< 2.0ms
<b>Type</b>	N/O Volt free contact. Optically isolated BiFET
<b>Contacts</b>	100mA ac/dc max., 100V ac/dc max.
<b>Isolation</b>	2.5kV 50Hz 1 minute
MODBUS <sup>®</sup> Serial Comms Optional	
<b>Bus Type</b>	RS485 2 wire + 0v. ½ Duplex, ¼ unit load
<b>Protocol</b>	MODBUS <sup>®</sup> RTU with 16 bit CRC
<b>Baud Rate</b>	4800, 9600 or 19,2000 User settable
<b>Address</b>	1 – 247 User settable
<b>Latency</b>	Reply within 250ms max.
<b>Command Rate</b>	New command within 5ms of previous one
GENERAL	
<b>Temperature</b>	Operating -10°C to +65°C Storage -25°C to +70°C
<b>Humidity</b>	< 75% non-condensing
<b>Environment</b>	IP20 standard
MECHANICAL	
<b>Enclosure</b>	DIN 42880 6 Modules
<b>Material</b>	Noryl with fire protection to UL94-V-O. Self extinguishing
<b>Dimensions</b>	106mm x 90mm x 58mm (6 modules wide)
<b>Weight</b>	~ 325 gms
<b>Terminals</b>	Rising Cage. 4mm <sup>2</sup> (12 AWG) cable max.
SAFETY	
<b>Conforms to</b>	EN 61010-1 Installation Category III

**Northern Design (Electronics) Ltd**  
**228 Bolton Road**  
**Bradford BD3 0QW, England**  
**Tel: +44 (0) 1274 750 620**  
**Fax: +44 (0) 1274 721 074**  
**E-mail: [sales@ndmeter.co.uk](mailto:sales@ndmeter.co.uk)**  
**[www.ndmeter.co.uk](http://www.ndmeter.co.uk)**