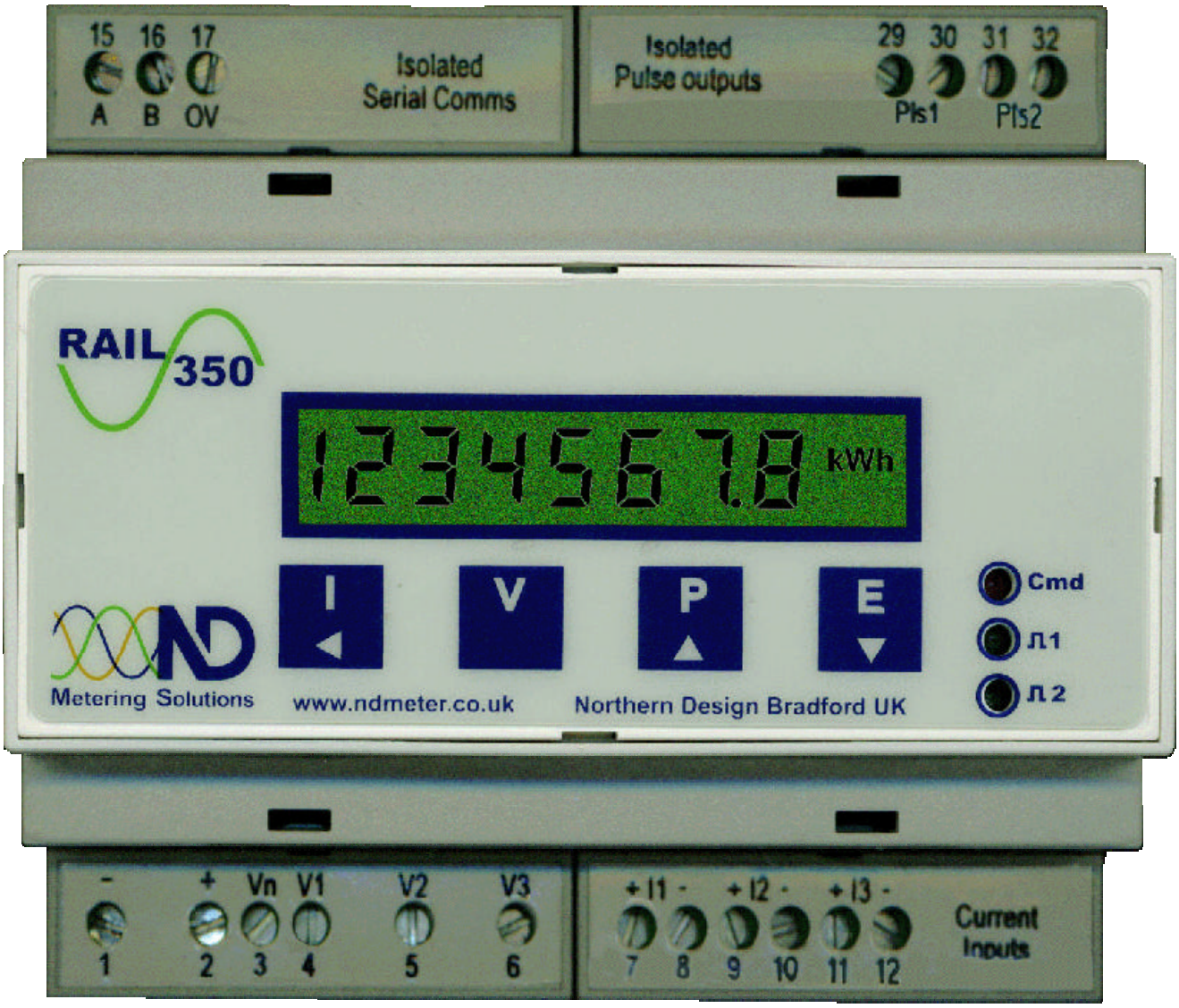
Rail 350
Multifunction Meter



- ***Standard DIN Rail Format***
- ***True rms measurement to the 30th harmonic***
  Individual harmonics to the 15th via MODBUS
- ***Available as a Retro-fit Kit with Split CTs***
- ***Installation Aids – 'Right First Time'***
- ***Accuracy better than Class 1***
- ***Isolated Pulse Output***
- ***RS485 MODBUS®***
- ***Designed & Made in the UK with a 5 year Warranty***

Rail 350 – a DIN Rail mounting Electronic Multifunction Meter. Easy to install and convenient to use. Equally suitable for both 3 wire and 4 wire 3f unbalanced loads, these Meters have been designed to measure accurately irrespective of the type of load – ideal for a motor or heater, or for a modern electronically controlled load.

Multi-Parameter

Displayed	Phases	Additionally available via MODBUS	Phases
Volts, LN & LL	1, 2, 3	Pk Volts LN	1, 2, 3
Amps	1, 2, 3	Pk Amps	1, 2, 3
PF	1, 2, 3 & Σ	Neutral Current	Σ
kW	1, 2, 3 & Σ	kVA & kvar	1, 2, 3 & Σ
kWh & kvarh	Σ	kVAh	Σ
Frequency		kW, kVA & kvar Demand	Σ
Hours Run (on Load)	Σ	Pk kW, kVA & kvar Demand	Σ
True rms measurement of Volts & Amps – and true Power Measurement – to the 30th harmonic at 50Hz.		Amp Demand & Peak	1, 2, 3
		%THD Volts & Amps	1, 2, 3
		V & I Harmonics 2nd – 15th	1, 2, 3

Safe to Use

With fully isolated current inputs, installation safety is assured. This allows the ***Rail 350*** 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.

Easy to Install

The ***Rail 350*** is fitted with large Rising Cage terminals – allowing connection to a wide range of cables from 0.25mm^2 to 4.0mm^2

Easy to Configure

Rail 350 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*

Wiring: With kW & PF 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. Links allow the display to be further simplified by disabling the per-phase kW and/or PF readings. All system parameters are however available via MODBUS. With a bold custom LCD display, the ***Rail 350*** 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 - supplied with every Meter – 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. Standard Meters are suitable for both 3 wire and 4 wire 3f unbalanced loads.

Accurate Real World Measurement

A precision measurement system maintains full accuracy up to the 30th 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® Communications

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

OUTLINE SPECIFICATION

INPUTS		
System	3 Phase 3 or 4 Wire Unbalanced Load	
Voltage U_n	400/230V. 3 Phase 3 or 4 Wire 110/63V & 208/120V optional. Others to order.	
Current I_n	5A from external CTs. 1A optional. Fully isolated	
Measurement Range	**Voltage**	50% to 120%
	Current	0.2% to 120%
Frequency Range	**Fundamental**	45 to 65Hz
	Harmonics	Up to 30th harmonic at 50Hz Individual to the 15th
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 440kV	
Legends	Wh, kWh, MWh etc. depending on user settings	
AUXILIARY SUPPLY		
Standard	230V 50/60 Hz ±15%	
Options	110V 50/60 Hz ±15% 24Vdc, 48Vdc or 110Vdc	
Load	2VA max.	
Overload	x1.2 continuous	
ACCURACY	All errors ± 1 digit	
kWh	Better than Class 1 per EN 62053-21 & BS 8431	
Kvarh	Better than Class 2 per EN 62053-23 & BS 8431	
kW & kVA	Better than Class 0.25 IEC 60688	
kvar	Better than Class 0.5 IEC 60688	
Amps & Volts	Class 0.1 IEC 60688 ($0.01I_n$ – $1.2I_n$ or $0.1U_n$ – $1.2U_n$)	
PF	±0.2° ($0.05I_n$ – $1.2I_n$ and $0.2U_n$ – $1.2U_n$)	
Neutral Current	Class 0.5 IEC 60688 ($0.05I_n$ – $1.2I_n$)	
PULSE OUTPUTS		
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 ma x.	
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	
GENERAL		
Temperature	Operating -10°C to +65°C Storage -25°C to +70°C	
Humidity	< 75% non-condensing	
Environment	IP22 standard	
MECHANICAL		
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	
Terminals	Rising Cage. 4mm^2 (12 AWG) cable max.	
SAFETY		
Conforms to	EN 61010-1 Installation Category III	

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