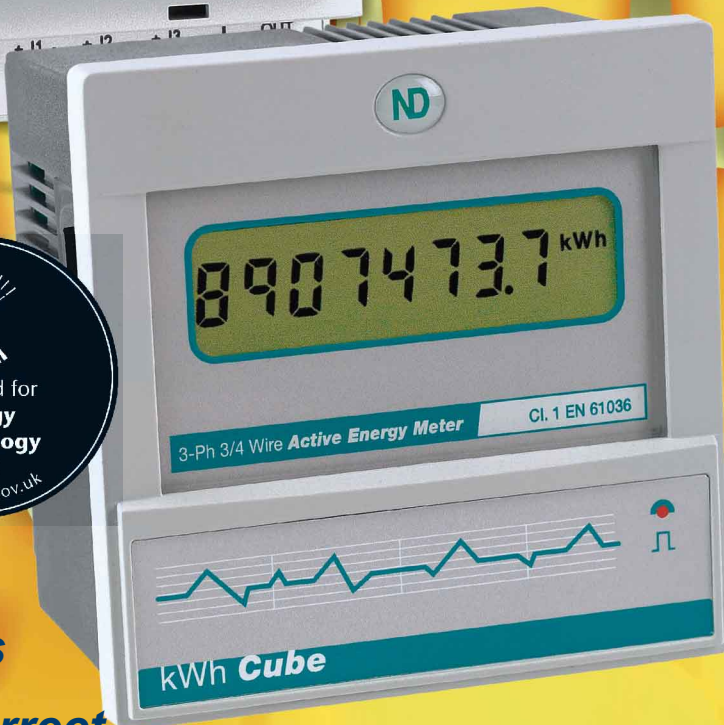


kWh & kW Meters kWh Cube PowerRail 303



- **Large Clear Displays**
- **kW Display to aid correct installation**
- **Accuracy better than Class 1**
- **Dual Energy Registers**
Resettable & non-resettable
- **Pulse Outputs**
- **RS485 MODBUS® Option**



kWh Cube and PowerRail 303 - Electronic kWh Meters. Panel or DIN rail mounting, easy to install and convenient to use. Equally suitable for both 3wire and 4wire 3 ϕ unbalanced loads (optionally for single phase or balanced 3 ϕ systems), 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.

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 **kWh Cube** and **PowerRail 303** are fitted with large Rising Cage terminals – allowing connection to a wide range of cables from 0.25mm² to 4.0mm². The kWh Cube is in DIN 96x96 panel-mount format, while the **PowerRail 303** mounts on a standard symmetrical DIN rail, and can be wall mounted using an optional protective enclosure.

Easy to Commission - Right First Time - kW can be displayed at the push of a button. This allows installations to be quickly and simply tested – connections can be confirmed & the load measured. To remove the possibility of reading errors, the display reverts to kWh after 60 seconds.

Easy to Use - The **kWh Cube** and **PowerRail 303** can be read irrespective of location, under all lighting conditions – from bright sunlight to pitch darkness. The large, bold backlit 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. A programmable isolated pulse output is optionally available for interface to a remote data collection system or BEMs.

Input Scaling - These Meters may be user configured to suit installations using Current and/or Voltage Transformers, with decimal point and legend being automatically set to provide optimum resolution.

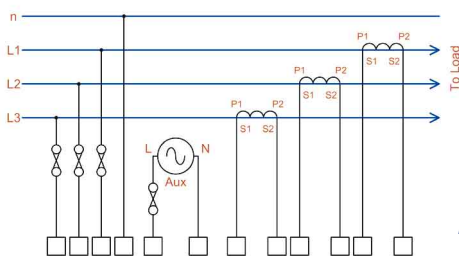
Fully Supported - Comprehensive operating instructions - supplied with every **kWh Cube** and **PowerRail 303** - include full information on installation. These include connection schematics and configuration details for virtually all CT ratios. Full technical support is readily available from your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

Universality of Connections - For maximum convenience all **kWh Cube** and **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. Both **PowerRail 303** and **kWh Cube** Meters are suitable for both 3 wire and 4 wire 3 ϕ unbalanced loads, and can be used on single phase.

Accurate Real World Measurement - A precision analogue 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 Registers - Both the **kWh Cube** and **PowerRail 303** have dual kWh registers, one user resettable; the other cannot be reset. This simplifies measurement of periodic energy consumption, with the user resetting the register at the end of each period/shift etc.

RS485 MODBUS® Communications - kWh Cube only
- A high speed internal RS485 MODBUS® communications option allows all readings to be read remotely.



Typical Connection Drawing

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
Current	5A from external CTs. 1A optional. Fully isolated
Measurement Range	Voltage 50% to 120% Current 0.5% to 120%
Frequency Range	Fundamental 45 to 65Hz
Burden	Harmonics Up to 40th harmonic Voltage <0.1VA per phase Current <0.1VA per phase
Overload	Voltage x4 for 1 hour Current x40 for 1 second max

DISPLAY

Type	Custom, Supertwist, LCD with LED backlight
Data Retention	25 years min. Stores kWh & Meter set-up
Format	8 x 9mm high digits with DPs & 3mm legends
Scaling	Direct reading. User programmable CT & VT CT Primary x VT constant programmable from 5A to 2000kA
Legends	Wh, kWh, MWh etc. depending on user settings

AUXILIARY SUPPLY

Standard	230V 50/60 Hz \pm 15%
Options	110V 50/60 Hz \pm 15%
Load	3VA max.

ACCURACY

kWh	Better than Class 1 per EN 61036 (IEC 1036) Better than Class 1 per BS 8431
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OUTPUT RELAY

Function	1 Pulse per unit of energy
Scaling	Settable 1, 10, 100 or 1000 counts of kWh register
Pulse Period	0.1 sec.; optionally 0.5 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

MODBUS® Serial Comms

Bus Type	RS485 2 wire + 0v. 1/2 Duplex, 1/4 unit load
Protocol	MODBUS® RTU with 16 bit CRC
Baud Rate	4800, 9600 or 19,200 User settable
Address	1 – 247 User settable
Latency	Reply within 100ms 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	kWh Cube IP52 when mounted in panel PowerRail 303 IP22

MECHANICAL

Terminals	Rising Cage. 4mm ² (12 AWG) cable max.
kWh Cube	Enclosure DIN 43700 96 x 96 Material Mablex® with fire protection to UL94-V0. Self extinguishing.
PowerRail 303	Dimensions 96 x 96 mm x 72 mm behind panel Weight 300 gms Enclosure DIN 43880, 6 Modules Material Noryl ULV94-V0 Dimensions 106mm x 90mm x 58mm Weight 325gms

SAFETY

Conforms to	EN 61010-1
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Distributed by:



Metering Solutions

Northern Design (Electronics) Ltd
228 Bolton Road Bradford BD3 0QW UK

Sales & Technical Support +44 (0)1274 750620
fax +44 (0)1274 721074 www.ndmeter.co.uk

sales@ndmeter.co.uk
+44 (0)1274 729533

