Cube 400
Multifunction Meter

- *DIN 96x96 Standard Format*
- *True rms measurement to the 30th harmonic*
  Individual harmonics to the 15th
- *Accuracy better than Class 1*
- *Isolated Pulse Outputs as standard*
- *RS485 MODBUS®*
- *IP54 Protection Category*
- *Designed & Made in the UK with a 5 year Warranty*

Cube400 – a DIN 96x96 panel mounting Electronic Multifunction Meter, with a backlit 3 line display. 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.

MultiParameter

	Phases		Phases
Volts, LN & LL	1, 2, 3	Pk Volts LN	1, 2, 3
Amps	1, 2, 3	Pk Amps	1, 2, 3
Amp Demand & Peak	1, 2, 3	Neutral Current	Σ
PF	1, 2, 3 & Σ	kW, kVA & kvar	1, 2, 3 & Σ
kW, kVA & kvar Demand	Σ	Pk kW, kVA & kvar Demand	Σ
kWh & kVAh	Σ	kvarh, Ind & Cap	Σ
Frequency		Export kWh, kVAh & kVAh	Σ
Hours Run (on Load)	Σ		
%THD Volts & Amps	1, 2, 3	V & I Harmonics 2nd – 15th	1, 2, 3

True rms measurement of Volts & Amps – and true Power Measurement – to the 30th harmonic at 50Hz

Safe to Use

With fully isolated current inputs, installation safety is assured. This allows the ***Cube400*** 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 ***Cube400*** 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

Cube400 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 Outputs: With a **Pulse Test** facility, pulses can be generated – without any load present – to test all downstream equipment.

Easy to Use

With a bold backlit 3 line custom LCD display, the ***Cube400*** can be read from any angle, with the necessary legends simplifying reading.

Fully Supported

Comprehensive operating instructions - supplied with every ***Cube400*** - 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 ***Cube400*** 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. User assignable registers simplify communications.

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 up 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%	
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	kWh plus kvarh / kVAh	
Function	1 Pulse per unit of energy	
Scaling	Settable between 1 & 1000 counts of energy 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		
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	
Register	Fixed & User Asignable	
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	IP54 standard, IP65 optional	
MECHANICAL		
Terminals	Rising Cage. 4mm^2 (12 AWG) cable max.	
Enclosure	DIN 43700 96 x 96	
Material	Mablex® with fire protection to UL94-V-O. Self extinguishing	
Dimensions	96 x 96 mm x 83.5 mm (72 mm behind panel)	
Weight	~ 250 gms	
SAFETY		
Conforms to	EN 61010-1 Installation Category III	