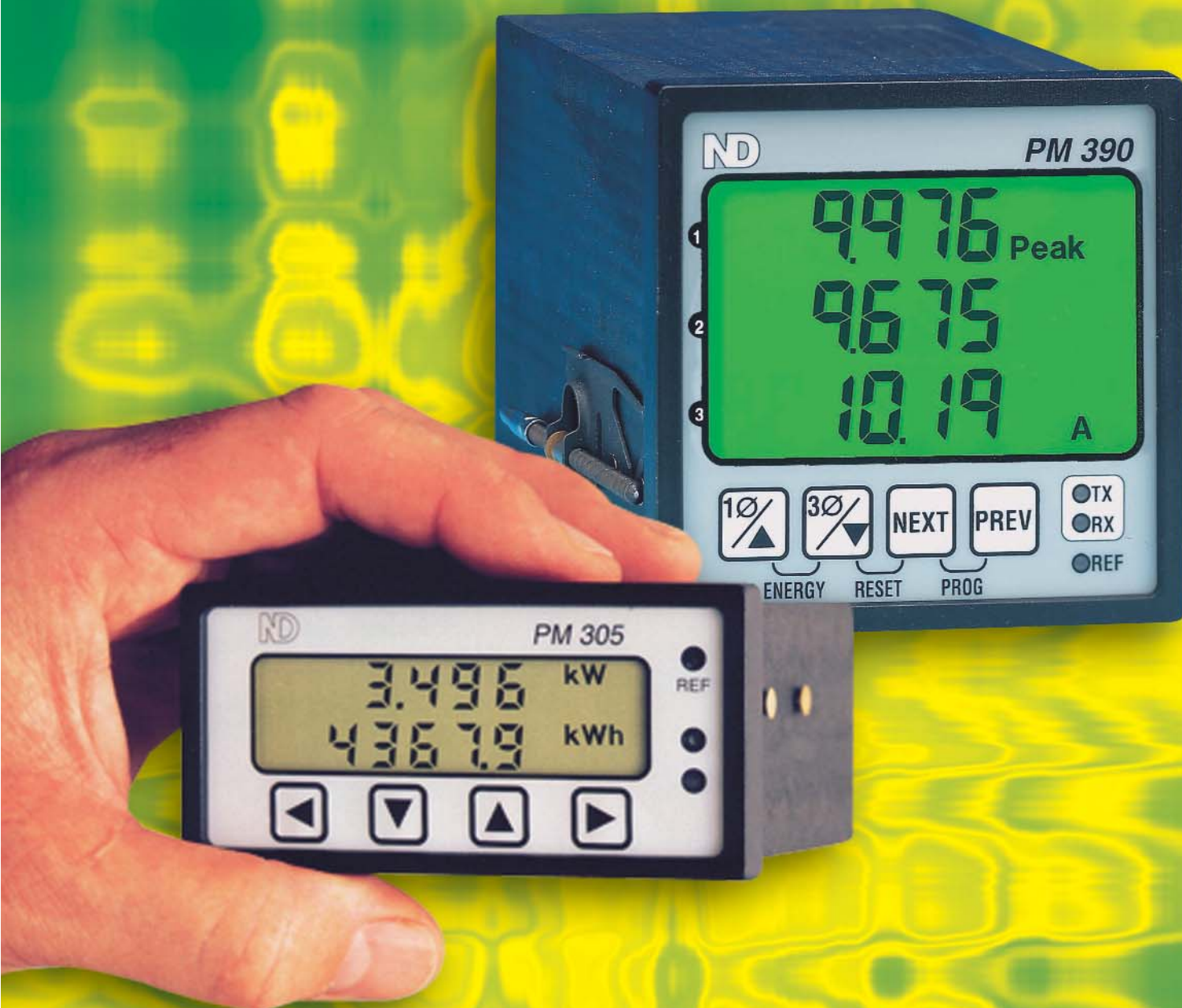


# Class 0.5 Meters

PM390 & PM305 Multifunction Meters



- **Measures All Your Values**

Per phase & total kW, kVA, kvar, Volts, Amps, PFs, etc.  
Import & Export Powers & Energies, Rolling & Real Time MD

- **Exceeds Your Tech Spec**

0.1% on instantaneous Volt, Amp, etc  
Class 0.5 EN 61036 for kWh

- **Low Loads? No Problem!**

Full 4 digit resolution even at low loads  
Legends & DPs change to suit load (watts, kW, MW, etc)

- **Fast Serial Communications**

PC can read 247 meters over a single cable  
RS422/485 Multi-drop or RS232

- **Links to Real World**

Dual Pulse/Alarm outputs to BEMS, loggers, etc  
Dual Analogue outputs to SCADA, etc

**up to 51 Power Parameters**

**0.1% Accuracy**

**Auto-ranging Display**

**MODBUS RTU Protocol**

**Digital & Analogue Outputs**



## MODBUS® and Serial Communications

**PM305** and **PM390** Meters may be optionally fitted with Serial Communications - either RS232 or RS422/485. This allows both reading and control of the Meter remotely from a PC or PLC. MODBUS® RTU is a Communications Protocol defining a set of commands and data formats which will be recognised by all compatible equipment connected to a system. It allows communications with one or multiple Meters, with each instrument having a unique address in the range 1 - 247.



### Available functions include:

- Reading all Instantaneous Values and Energy Registers
- Reading and Setting Meter Set-up and Configuration details
- Programming Analogue Outputs (if fitted)
- Reading & Setting the Real Time Clock (if fitted)
- Reading Meter Description (Type, Serial No, etc)
- Presetting Energy and (if fitted) MD registers to any value or Zero

For data integrity, all messages include Data Validation and Error Checking, **ND-COM** — a free software package — is available on request to aid set-up and configuration of communication systems. A feature of MODBUS® RTU communications with 305 & 390 Meters is that all measured parameters can be read - whether displayed or not. The only exceptions are Maximum Demand and the Real-Time Clock, since they require fitting of additional Hardware.

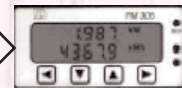
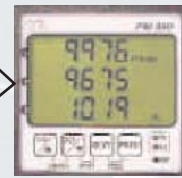
## Analogue Outputs

Two isolated analogue outputs can be fitted if specified at the time of order. These outputs provide isolated DC current signals in proportion to a selected parameter.

The user can programme the full scale value of the output, and select one of the following output ranges:

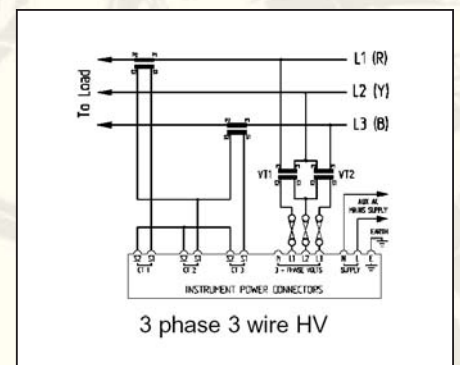
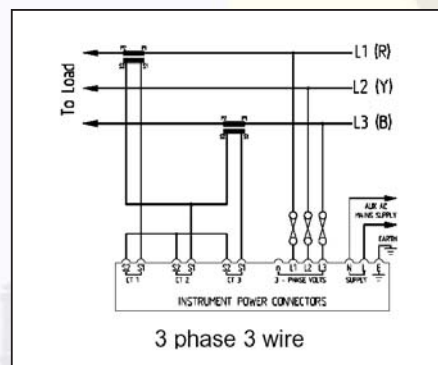
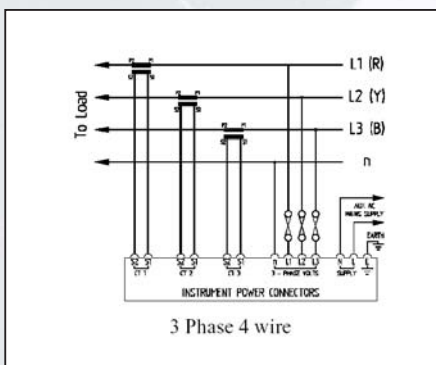
- Unipolar Range** Output of positive readings only
- Bipolar Range** Output of both negative and positive readings
- Absolute Range** Output of Value Only, ignoring the sign.

**Note:** On the **PM305**, this option is fitted in place of the Serial Communications option. It is not possible to fit both.



## Universal Connection

**PM305** and **PM390** Meters are suitable for connection to either 3 or 4 wire 3 $\phi$  loads, and can be user programmed to measure balanced loads – using just 1 CT or (on MV or HV systems) 1 VT and 2 CTs. They can also be used to monitor single phase loads.



## Brief Specification

INPUT VOLTAGE	
Input Type	3 phase 3 or 4 wire
Nominal Volts Un	400V Line, 230V Phase 60V or 120V Ph Optional
Operating Range	50% to 120% Un
Maximum Overload	2 x Un for 2 seconds
Voltage To Ground	300V AC rms maximum
Maximum Burden	350uA per phase
Frequency Range	16-550Hz fundamental **
Maximum Harmonic	Up to 20th of 50 Hz

INPUT CURRENT	
Input Type	Current Transformers
Nominal Current Ib	5 Amp per phase. (1 Amp optional)
Operating Range	0.5% to 120% Ib
Maximum Overload	10 x Ib for 10s; 40 x Ib for 1s
Voltage To Ground	300V AC rms maximum
Maximum Burden	0.1 VA per phase
Frequency Range	16-550Hz fundamental **
Maximum Harmonic	Up to 20th of 50 Hz
Starting Current	Less than 0.2% Ib
Isolation	2.5kV each phase

AUXILIARY SUPPLY	
Input Type	Single phase + earth 45-65Hz
Nominal Voltage	230V ±15% as standard
Options	115V ±15% or 62V ±15%
Maximum Power	6 Watts
Internal Fuse	100mA Type T (delay)
Voltage to Ground	300V AC rms maximum
Isolation	2.5kV

OUTPUT RELAYS (Optional on PM390, Standard on PM305)	
Type	2 x Bipolar Opto FETs
Usage	Pulse output or alarm
Contact Rating	120v 120mA AC, 250 mA DC
Rise Time	2ms maximum
Pulse Rate	Programmable. (Max every 1.2 sec)
Pulse Period	Programmable 0.1 to 5 sec
Alarm Parameter	Programmable (Displayed values only)
Alarm Set Point	Programmable (Depends on parameter)
Isolation	2.5kV (50V Output A to Output B)

DISPLAY	
Type	Intelligent supertwist custom LCD
Backlight	Green/Yellow LED
<b>PM390 Display Format</b>	2 rows of 4 digits, 1 row of 6 digits plus legends
Digit Height	12 mm
Legend Height	4mm
<b>PM305 Display Format</b>	2 rows of 7 digits plus legends
Digit Height	7mm each row
Legend Height	3.5mm

ACCURACY (45-65Hz)	
Watts	Class 0.2 EN 60688 5% - 120% FS kW ±1 digit
VA	Class 0.2 EN 60688 5% - 120% FS kVA ±1 digit
Var	Class 0.5 EN 60688 5% - 120% FS kvar ±1 digit
kWh	Class 0.5 (EN 61036)
kVAh	Class 1
kvarh	Class 1 (EN 61268)
Volts	Class 0.1 EN 60688 5% - 120% Un ±1 digit
Amps	Class 0.1 EN 60688 5% - 120% In ±1 digit
PF	±0.2 degrees
Frequency	±0.002Hz, ±1 digit

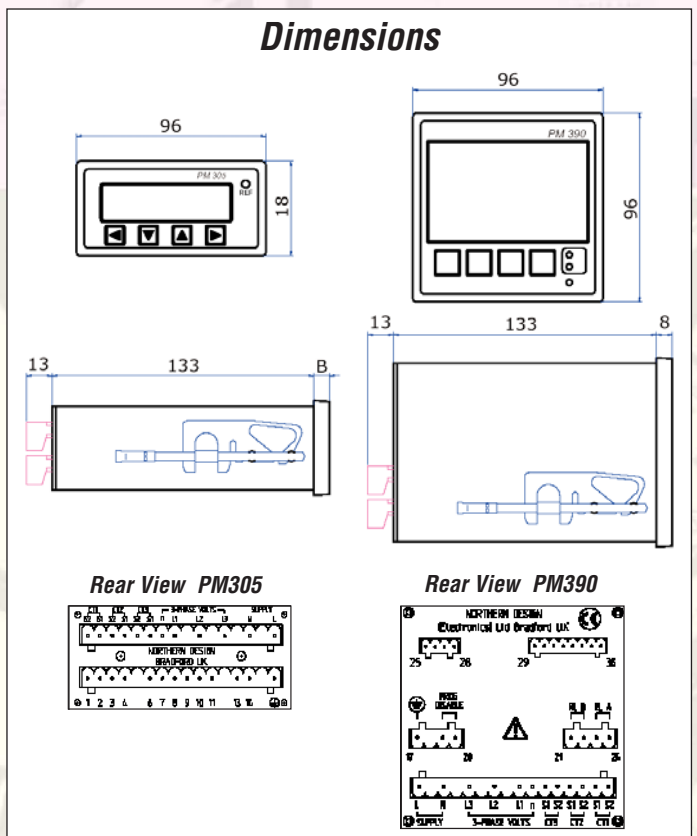
\*\* Frequency only measured to 258Hz

GENERAL	
Temperature	Operating -10°C to +55°C Storage -25°C to +70°C
Humidity	Operating <75% Non Condensing
Memory	25 years in event of power failure
Environment	IP55 When mounted in a panel
Safety	EN 61010 (Installation category 3)
EMC	EN 50081 : 1992 Part 1 EN 50082 : 1995 Part 2

MECHANICAL	
Material	Noryl GFN 2 SE
<b>PM390</b> Dimensions	96 x 96 x 139 mm
Weight	800g max
<b>PM305</b> Dimensions	96 x 48 x 139mm
Weight	600g maximum

COMMUNICATIONS Optional	
Type	RS422 or RS485 multidrop RS232 alternative
Data Format	1 Start bit , 8 data bits, 1 Stop Bit
Protocol	MODBUS® RTU
Baud Rate	2400 to 19200 programmable
Address Range	1-247 programmable
Number of Meters	Up to 32 on standard RS422/RS485 Up to 247 with external line repeaters
Isolation	2.5kV
Ext. Supply PM305 only	9V(min) - 12V(nom) dc @ 30mA per meter

ANALOGUE OUTPUTS Optional	
Type	Isolated dc loop powered current output
Output Current	4-20mA or 0-16mA selectable
Input Range	Programmed proportional to measured value
Scaling	Programmable up to 200% of input
Isolation	2.5kV
Isolation Output A-B	50V
Response Time	2 seconds maximum (updated every second)
Loop Impedance	500W maximum (@ 24V)
Accuracy	±0.5% FS of displayed value or ±1.0% rdg of displayed value
Ext. Supply PM305 only	18V(min), 24V(nom), 30V(max) d.c. @ 40mA d.c. per meter



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