

## FEATURES

- Digital power meter
- Panel mounting
- 92 mm<sup>2</sup> cut-out on panel
- Backlit digital LCD display with 4 digits
- -/1A or -/5A CT operated
- Two digital inputs
- RS485 (Modbus RTU) output
- Plug-in terminals
- 1% meter accuracy
- Three phases
- Pulse output
- Minimum measurement of 0kWh
- Maximum measurement of 9999999.9 (Active) kWh, 9999999.9 (Reactive) kVARh
- Compliant with EN 61000-6-1: 2007 (LVD)
- Compliant with EN 61000-6-3: 2007

## RS PRO 3 Phase LCD Digital Power Meter with Pulse Output, 96mm Cutout Height, Type Electronic

RS Stock No.: 871-8314



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

### Product Description

Use this RS PRO digital power meter to measure the consumption of machinery, lighting or appliances. It covers a wide range of parameters, from total active energy (kWh) to instantaneous reactive power (kVARh), so there's no need for multiple parts.

With dual-pulsed outputs and built-in Modbus communication protocol, this meter will accommodate most requirements. It can be retrofitted and functions as a CT-operated meter. You can configure it to work with both single-phase and 3-phase applications.

The meter offers user-friendly menu navigation and set-up, with a back-lit digital display for easy reading. It complies with EN 61000-6-1: 2007 (LVD) on electromagnetic compatibility, EN 61000-6-3: 2007 on emissions for light industrial environments and EN 61010-1: 2010 (EMC) on safe measuring instruments.

### General Specifications

<b>Meter Type</b>	Electronic
<b>Display Type</b>	LCD
<b>Number of Digits</b>	4
<b>Meter Accuracy</b>	1%
<b>Communication Port Type</b>	RS485 Output for Modbus RTU
<b>Mounting Type</b>	Door (Panel) Mounted
<b>Colour</b>	Black
<b>Applications</b>	Demand-side management, sub-metering and energy monitoring applications

**Electrical Specifications**

Number of Phases	3
Pulse Output	Yes
Maximum Measurement	9999999.9 (Active) kWh, 9999999.9 (Reactive) kVarh
Minimum Measurement	0kWh
Measurement Range	0kWh to 9999999.9 (Active) kWh, 0kVarh to 9999999.9 (Reactive) kVarh
Current Range	0.25A - 5A(6)A AC rms
Frequency	45Hz - 65Hz.
Active Power	0 to 9999999.9kWh
Reactive Power	0 to 9999999.9kVarh

**Mechanical Specifications**

Cut-out Height	96mm
Cut-out Width	96mm
Depth	55mm

**Operation Environment Specifications**

Minimum Temperature	-25°C
Maximum Temperature	+55°C
Storage Temperature	-40°C to +70°C
Relative Humidity	0 to 95%, non-condensing

**Protection Category**

IP Rating	IP54 Indoor
-----------	-------------

## Approvals

<b>Compliance/Certifications</b>	CE, EN 61000-6-1: 2007 (LVD), EN 61000-6-3: 2007, EN 61010-1: 2010 (EMC), ANSI/ESD S20.20:2014 and BS EN 61340-5-1:2007, RoHS (Restriction of Hazardous Substances) Compliant, UL 94 V-0
<b>Approvals</b>	MID B+D Certified



## UK

The 871-8305 power monitor will measure and display electrical power quality parameters. It has been engineered to cover most applications (Single Phase and Three Phase networks / RS485 Modbus / Import and Export kWh), replacing the need for several different models of this power meter.

- Single & Three Phase
- Import / Export kWh
- Backlit Display
- High/Low Alarm Relays

The 871-8314 is produced to the highest quality and utilizes the latest microprocessor and technology. It has a blue backlit display and 16 different measuring parameters. This includes a negative power reading to indicate reversal of CT installation or connection. With built in pulsed outputs and RS485 Modbus RTU it is fully compatible for integration with BMS and remote monitoring systems.

### Parameters

- Phase to Phase Voltage
- Phase to Neutral Voltage
- Frequency
- Voltage Total Harmonic Distortion (THD)
- Current
- Neutral Current (Calculated)
- Current Max Demand
- Current Total Harmonic (THD)
- kW
- kVA
- kVAr
- Power Max Demand
- Power Factor
- Import kWh
- Export kWh
- Import kVarh
- Export kVarh

## Specifications

### Measured Parameters

The unit can monitor and display the following parameters of a single phase two wire (1p2w), three phase three wire (3p3w) or three phase four wire (3p4w) system.

### Voltage and Current

- Phase to neutral voltages 100 to 289V a.c. (not for 3p3w supplies).
- Voltages between phases 173 to 500V a.c. (3p supplies only).
- Percentage total voltage harmonic distortion (THD%) for each phase to N (not for 3p3w supplies).
- Percentage voltage THD% between phases (three phase supplies only).
- Current THD% for each phase

### Power factor and Frequency and Max. Demand

- Frequency in Hz
- Instantaneous power:
- Power 0 to 3600 MW
- Reactive power 0 to 3600 MVAR
- Volt-amps 0 to 3600 MVA
- Maximum demanded power since last Demand reset Power factor
- Maximum neutral demand current, since the last Demand reset (for three phase supplies only)

### Interfaces for External Monitoring

Three interfaces are provided:

- RS485 communication channel that can be programmed for Modbus RTU protocol.
- Digital Input - Can be used to read an external pulse from gas/water meter.
- 2 Alarm Relay Outputs (Set as Min & Max alarms for Current, Voltage or Power).

The Modbus configuration (baud rate etc.) and the pulse relay output assignments (kW/kVarh, import/export etc.) are configured through the set-up screens.

## RS485 Output for Modbus RTU

For Modbus RTU, the following RS485 communication parameters can be configured from the set-up menu:

Baud rate 2400, 4800, 9600, 19200, 38400

Parity none (default) / odd / even

Stop bits 1 or 2

RS485 network address - 3-digit number, 1 to 247  
Modbus™ Word order Hi/Lo byte order is set automatically to normal or reverse. It cannot be configured from the set-up menu.

## Energy Measurements

Imported/Exported active energy	0 to 9999999.9 kWh
Imported/Exported reactive energy	0 to 9999999.9 kVARh
Total active energy	0 to 9999999.9 kWh
Total reactive energy	0 to 9999999.9 kVARh

## Auxiliary Supply

Two-way fixed connector with 2.5mm<sup>2</sup> stranded wire capacity. 85 to 275V a.c. 50/60Hz  $\pm 10\%$  or 120V to 380V d.c.  $\pm 20\%$ . Consumption <2W 10VA.

Operating range	87...275VAC $\pm 10\%$ / 120...380VDC $\pm 20\%$
-----------------	--

## Measured Inputs

Voltage inputs through 4-way fixed connector with 2.5mm<sup>2</sup> stranded wire capacity. single phase two wire(1p2w), three phase three wire(3p3w) or three phase four wire(3p4w) unbalanced. Line frequency measured from L1 voltage or L3 voltage. Three current inputs (six physical terminals) with 2.5mm<sup>2</sup> stranded wire capacity for connection of external CTs. Nominal rated input current 5A or 1A a.c. Rms.

Nominal Voltage Input	(Ph+N) 100 to 289V (Ph+Ph) 173 to 500V
Max Continuous Voltage	120% of nominal
Nominal Input Current	0.25-5A(6)A AC rms
Max Continuous Current	120% of nominal
Nominal Input Current Burden	0.5VA
Frequency	45-65Hz

## Accuracy

Voltage	0.5% of range maximum
Current	0.5% of nominal
Frequency	0.2% of mid-frequency
Power factor	1% of unity (0.01)
Active power (W)	$\pm 1\%$ of range maximum
Reactive power (VAR)	$\pm 1\%$ of range maximum
Apparent power (VA)	$\pm 1\%$ of range maximum
Active energy (Wh)	Class 1 IEC 62053-21
Reactive energy (VARh)	$\pm 1\%$ of range maximum
Total harmonic distortion	1% up to 31st harmonic
Response time to step input	1s, typical, to >99% of final reading, at 50 Hz.

## Reference Conditions of Influence Quantities

Influence Quantities are variables that affect measurement errors to a minor degree. Accuracy is verified under nominal value (within the specified tolerance) of these conditions.

Ambient temperature	23°C $\pm 1^\circ\text{C}$
Input waveform	50 or 60Hz $\pm 2\%$
Input waveform	Sinusoidal (distortion factor < 0.005)
Auxiliary supply voltage	Nominal $\pm 1\%$
Auxiliary supply frequency	Nominal $\pm 1\%$
Auxiliary supply waveform (if AC)	Sinusoidal (distortion factor < 0.05)
Magnetic field of external origin	Terrestrial flux

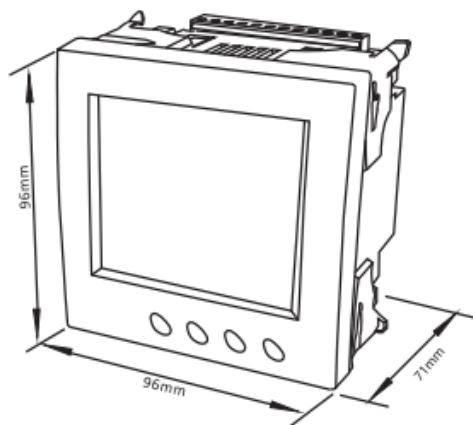
## Environment

Operating temperature	-25°C to +55°C*
Storage temperature	-40°C to +70°C*
Relative humidity	0 to 95%, non-condensing
Altitude	Up to 3000m
Warm up time	1 minute
Vibration	10Hz to 50Hz, IEC 60068-2-6, 2g
Shock	30g in 3 planes

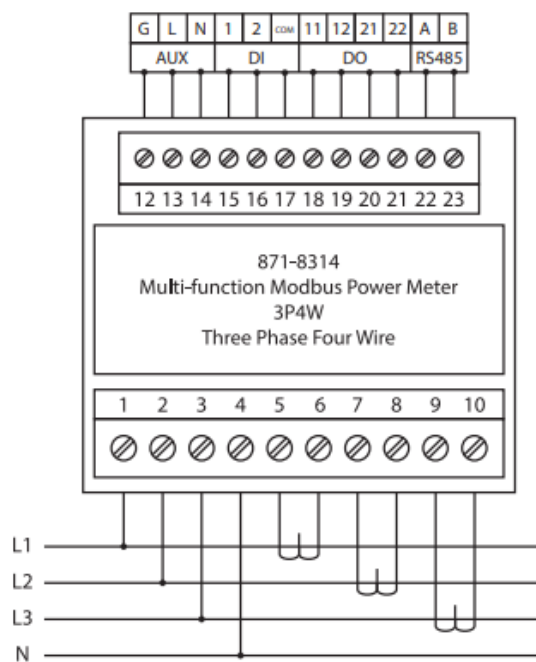
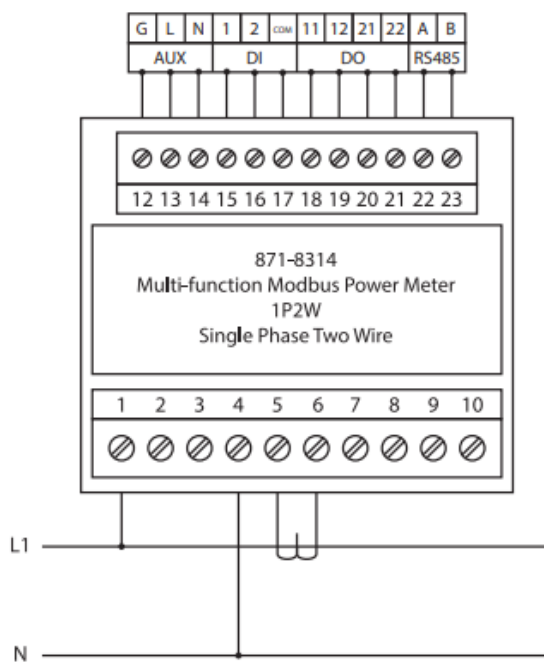
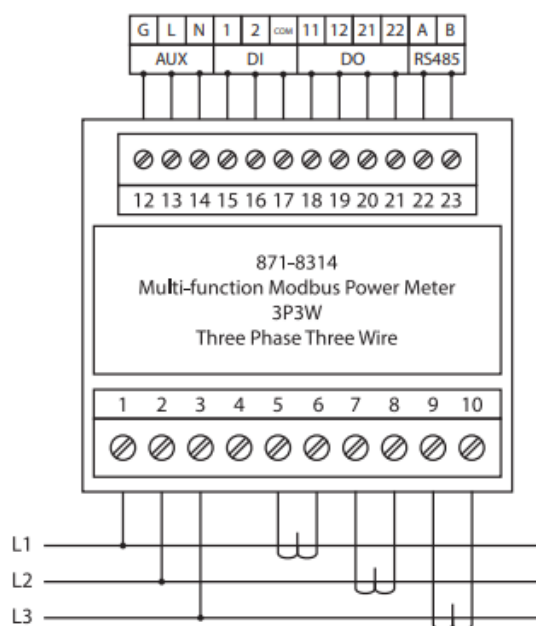
\*Maximum operating and storage temperatures are in the context of typical daily and seasonal variation.

## Mechanics

Cut Out Dimensions	92mm <sup>2</sup>
Mounting	Door (Panel) Mounted
Sealing	IP54 Indoor
Material	Self-extinguishing UL 94 V-0



## Installation



Specifications are subject to change without notice.