



471: 30A SINGLE PHASE KWH METER TESTER



REDPHASE INSTRUMENTS

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KEY FEATURES:

- **Single Phase kWh energy meter reference**
- **Direct Connection**
- **Phantom load ability**
- **Digital Signal Processing**
- **0.05% measurement accuracy**
- **Eleven load current settings**
- **Three Power Factor settings**
- **Robust and reliable**
- **Portable**

1.0. APPLICATIONS

The Model 471 is a portable single phase kWh meter tester designed for testing direct connected meters.

It is powered from an existing meter supply and contains a variable 30 Ampere current injection circuit, a Digital Signal processor to perform all of necessary voltage, current, power and energy measurements and a separate input and display processor for parameter entry and results display.

The Model 471 has been developed with the latest in Analog to Digital circuitry which has been specifically designed for the purposes of energy measurement to a very high accuracy.

With inbuilt current and voltage compensation the Model 471 can achieve an accuracy to 0.05% which makes it ideal for testing any single phase meter.

Although this test set can be used in the traditional manner for field testing, it should not be overlooked that with its powerful DSP processor this instrument can be very productively used in the workshop. In combination with a photocell for disc meters, or a LED pickup for solid state meters, the Model 471 allows rapid single rev testing with automatic calculation of the percentage registration of the meter.

2.0. HARDWARE FEATURES

2.1. Power Source

The Model 471 uses the existing service load as a supply to perform single phase meter tests. It has an internal solid state voltage supply which supplies the power required to drive the electronics within the unit.

The 471 also provides a controlled current source up to 30A to simulate the customer load. Instead of a using solid state source to generate the load currents we have opted for a reliable and more robust transformer technology which is not as sensitive to spurious supply conditions.

The 471 provides for up to 11 incremental load currents in forward and reverse.

2.2. Interface

The user interface is a combination of knobs, keypad and screen.

The alphanumeric keyboard on the front panel can be used to enter model, parametric and test type information about the item to be tested.

Above the keyboard is a backlit 6 inch graphic LCD screen which displays the keyed information and final test results.

General information displayed is;

- Voltage
- Current
- Power Factor
- Real Power

There are three test types which may be entered via the user interface to measure the energy accuracy of the meter under test:

- Pulse number
- Time based
- Hand Switch

The current source is provided via two rotary switches which adjust the current level output.

2.3. 471 Case .

The Model 471 is housed in a robust and hard wearing injection moulded plastic case.

There is an internal aluminium chassis and an aluminium front panel with a reverse screened "Lexan" polycarbonate finish.

2.3.1. Case Sizes (L x W x H)

471 case: 400mm X 340mm x 200mm.

Transit case: 640mm X 260mm X 510mm

2.3.1. Weight

471: ~10kgs

Test leads & accessories: ~3kgs

3.0. OPERATING RANGES

3.1. Measurable Voltage Range (AC)

Minimum: 70V
Maximum: 270V

3.2. Selectable Current Ranges (A)

0.1, 0.2, 0.5, 1.0, 1, 2, 3, 5, 10, 15, 30

3.3. Selectable Power Factor

- 30 deg Lag: 0.86 PF
- 60 deg Lag: 0.5 PF
- Unity

4.0. ACCURACY

4.1. Energy measurement accuracy is:

0.05% over the following ranges:

- 220V to 270V
- 0.5A to 30A
- 0.5PF lag to 1.0PF
- 48Hz to 52Hz or 58Hz to 62Hz

4.2. Accuracy of measured parameters

- Displayed Voltage and Current to 1%.
- Frequency to 0.1Hz
- Phase Angle to 1 deg

5.0. RECORDS

500 records may be stored on the Model 471. The operator is able to download the records via USB cable and a communication program to a PC or laptop.

6.0. PROTECTION FEATURES.

- Circuit breakers are used for overload protection.
- LED indicators are used to provide general status information on the 471.

7.0. POWER SUPPLY & CONSUMPTION

Mains Supply 100-270 VAC, 50/60Hz
Power Rating Max 30VA

7.1. Operating Temperature

Operating temperature range is 0 to 40 deg C. This is mainly due to the limitation of the LCD display.

Do not leave the 471 in situations where it may be below 0 deg C or where it may be subject to high temperatures or direct sunlight.

8.0. ACCESSORIES

8.1. Standard accessories

The Model 471 is supplied with the following:

One test lead and a set of adaptors for connecting to a standard 4 terminal single phase meter. The standard adaptor has M6 threads to suit the meter terminal grub screws.

8.2. Optional accessories

- One hand switch for disc meters.
- Photocell for disc meters or solid state meters with a LED pulse output. This photocell can be used with Email meters having a pulsing LCD bar.
- Opticon port pickup
- M5 or M8 adaptors can also be supplied on request.