

RØI RED PHASE INSTRUMENTS

MODEL 4025D FREQUENCY SELECTIVE MULTIMETER



1. BRIEF DESCRIPTION

The Model 4025D Tunable Multimeter is a frequency selective ammeter and voltmeter used to measure the magnitude and phase angles of signals produced by the Model 4024/4024B Injection Units. The voltmeter part of the 4025D allows touch and step voltages to be measured easily and accurately, which is important for the safety of both the general public and utility personnel.

The current input is specifically for use with a (Rogowski) Type 545 worm coil or a LEM~flex RR3020 AC current probe. The Rogowski coil and LEM current probe are available as optional accessories. These accessories are very convenient current measuring devices, which can simply be wrapped around current carrying structures. The ability to measure currents in various structures is important in tracking earth currents during investigations. Utility engineers need an accurate picture of the earth currents flowing in substations, power stations and similar large installations when designing protection systems.

The Multimeter operates in the 40 - 69 Hz range, catering for both 50 Hz or 60 Hz power frequencies. The high quality of the Multimeter's filters allows it to be used at frequencies up to a limit of 1Hz from the power frequency and still reject power frequency interference. The Model 4025D is designed for portable use in the field; powered via an internal rechargeable battery.

RED PHASE INSTRUMENTS AUSTRALIA PTY LTD ACN 005 176 670
10 Ceylon Street, Nunawading, Melbourne, Victoria, 3131, Australia
Tel: + 61 3 9877 6988 Fax: + 61 3 9878 8508
Email: sales@redphase.com.au

2.0. CONTROLS & INSTRUMENTATION

2.1 Multifunction LCD and keypad:

LCD

The LCD with backlight, shows measurements in large easy to read digits and all instrument settings. Full alphanumeric keypad to enter user and device under test parameters.

Measurement selection

Simultaneous measurement of voltage and current (Rogowski coil or Lem) are made. Phase and impedance calculations are also displayed.

Frequency selection

Frequency is selected using the **FREQ ▲** and **▼** buttons: 40 to 69 Hz in 1 Hz steps.

Auto or Manual Range selection

Manual range is selected using the **RANGE ▲** and **▼** buttons. Possible ranges are:

Voltage: **20mV, 0.2V, 2V, 20V, 200V**

Current: **0.2A, 2A, 20A, 200A**

LEM: **3000mV** (full-scale output from LEM).

(Current range on LEM RR3020:

30A / 300A / 3000A select via slide switch).

Measurement Hold

The measured values can be put on hold via the **HOLD** button.

2.2 Input Connections

Voltage Input

The input connection is made via two 4mm binding post terminals on the front panel.

Rogowski Coil / Type 545 worm Current Input

The coil connection is made with a 3 pin socket on the front panel.

LEM~flex Current Input

The LEM~flex module 4mm safety plugs connect directly to the LEM input terminals without any additional cables required.

2.3 Overload Indication

Overload is indicated on the LCD when the input circuit is overloaded with excessively high signal levels and/or noise.

2.4 Voltage Input impedance Switch:

In the "Hi-Z" position the voltmeter measures voltages, with 1M Ω input. In the 1k Ω (or 1k5 Ω) position the voltmeter simulates a human body

for "step and touch" potential measurements.

The voltage input is fuse protected.

2.5 BNC Output:

For monitoring the conditioned Rogowski signal. Due to filtering, this lags the actual by a few degrees typically.

2.6 Test records via USB interface:

The instrument can store up to 7000 test records, including time and date information. The test results may be downloaded to a PC via the front panel **USB** interface.

3.0. BATTERY Operation

The instrument is powered by a internal rechargeable lead-acid battery 6V 4.2Ah . The battery can be recharged by the AC mains supply. Each full recharge will provide continuous use for approximately 8 to 10 hours (no back-light).

The user will be alerted to a low battery condition via the LCD. Battery voltage is also shown during instrument power-up.

To conserve battery life, the unit turns off automatically after 1 hour if no keys are pressed.

4.0. PERFORMANCE SPECIFICATIONS

Frequency range: 40 - 69 Hz.

Frequency increment: 1 Hz

Linearity Error: < 1%

Magnitude Error: < 1%

Phase Error: < 1 degree max, +/- 3 counts typ.

Typical 50Hz or 60Hz noise attenuation:

+/- 1 Hz of power frequency -42 dB min

> +/- 3 Hz of power frequency -48 to -60dB

> +/- 5 Hz power frequency -54 to -64dB

> +/- 10Hz power frequency -60 to -74dB

Noise overload level: +17.5dB typically above full scale.

Maximum power consumption 3.5 Watts

LCD backlight consumption 1.3 Watts

5.0. ENCLOSURE

The unit is housed in a fully moulded light weight case. The case offers high resistance to impact, thermal shock, moisture, weather, and corrosion. The front panel is covered with a polycarbonate label for durability and appearance.

6.0. SIZE AND WEIGHT.

Instrument (including moulded case):

345 x 300 x 150 mm. Weight 5.5 kg approx.

Every care has been taken to ensure that the above data is correct at the time of printing. Always refer to the latest data sheet when purchasing. RED PHASE INSTRUMENTS reserves the right to alter specifications without notice.