Time Electronics
1024 DC Current Calibrator



Description

A precision DC current source for calibration and test applications from nanoamp levels to 100 mA. The 1024 is a solid state battery powered instrument which is easily portable and convenient for laboratory, field, or industrial use. It incorporates many of the well-proven circuit techniques of the Time Electronics type 1010 DC voltage calibrator.

The null balance system enables the 1024 to be used for making accurate current measurement in addition to its basic function as a calibrator. Operation is by backing the current source output against the current to be measured, with the difference being displayed on a sensitive centre zone null meter. At the null point, there is no voltage drop across the 1024.

Stability and Temperature Coefficient

The 1024 employs a precision aged reference diode as a basic reference source. Excellent zero stability is ensured by the use of a high performance FET chopper amplifier system.

Precision metal film resistors with temperature coefficients of less than 10 ppm per °C are used to maintain the accuracy and stability of the initial calibration.

Safety Terminals

The 1024 output connections are via safety terminals that are compatible with 4 mm shrouded plugs, standard plugs, bare wires, and spade terminals.

These terminals are specifically designed with safety features including limited opening distance and a raised flange around the metal connection surface. This ensures that the clearances are sufficient to make the exposed metal parts touch-proof.

Features

- 0 to 100 mA in 5 ranges
- Accuracy 0.02 %
- 10 ppm/hr stability
- 30 ppm/°C temperature coefficient
- Up to 15 V output drive
- Battery or mains operation
- 12 hours typical use between charges
- Battery level indicator
- Optional carry case

Portable Operation

The 1024 can be powered from mains supply or by the internal rechargeable battery pack. When the calibrator is plugged into the mains supply the internal batteries will automatically start to recharge. If unplugged from the mains during operation the internal batteries will continue to power the instrument. Full charge allows 12 hours typical use. An LED indicator on the front panel displays the battery condition.

Applications

Applications include calibration and testing of current sensitive transducers; calibration and linearity tests on digital and electronic current meters; and semiconductor parameter measurements, for example diode conduction voltages at specified current levels.

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Technical Specifications

Output ..... 0 to 100 mA in 5 ranges.
0 to 99.999 mA in 1 μA steps.
0 to 9.9999 mA in 100 nA steps.
0 to 999.99 μA in 10 nA steps.
0 to 99.999 μA in 1 nA steps.
0 to 9.9999 μA in 0.1 nA steps.

Accuracy ..... $\pm$ 0.02 % of setting + $\pm$ 0.005 % of range + $\pm$ 0.2 nA.

Voltage capacity ..... 15 V with new batteries or mains power (11 V with minimum allowable battery volts).

Regulation. ..... Load: better than 5 ppm per volt. Supply: better than 5 ppm per volt.

Output polarity ..... Positive or negative switch selected.
A centre 'off' position provides an open circuit on the output terminals.

Output stability ..... Less than 30 ppm per °C (0 °C to + 50 °C).
Less than 10 ppm per hour at constant temperature.
Less than 75 ppm per 6 months.

Output noise ..... 100 mA, 10 mA and 1 mA ranges: less than 5 ppm of full scale.
100 μA and 10 μA ranges: less than 10 ppm of full scale $\pm$ 0.1 nA.

Null sensitivity ..... Adjustable from $\pm$ 25 mA to $\pm$ 25 μA FSD via front panel control.
Maximum resolution is 0.5 μA.

Power supply ..... Time Electronics power unit type PU2 which is housed in the rear of the 1024.
The PU2 will power the 1024 direct from the mains or an internal rechargeable battery.
The battery is automatically charged when mains power is connected.
Access to the power supply is from the back of instrument.

Battery level indicator ..... A front panel LED provides an indication of the battery condition.

General Specifications

Dimensions ..... W 217 x H 160 x D 193 mm.

Weight ..... 3.3 kg.

Optional extras ..... Leather carry case
Calibration certificates: Traceable (Factory) and Accredited (ISO 17025).

Country of origin ..... UK.

Ordering Information

1024 ..... **DC Current Calibrator with null measuring facility**

9021 ..... Carry case

C154 ..... Traceable calibration certificate (Factory)

C106 ..... Accredited calibration certificate (ISO 17025)

Due to continuous development Time Electronics reserves the right to change specifications without prior notice.

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