



Time Electronics

1024 DC Current Calibrator



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

DESCRIPTION

A precision DC current source for calibration and test applications from nanoamp levels to 100mA. 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.

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 10ppm per °C are used to maintain the accuracy and stability of the initial calibration.

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. The battery condition monitored by a meter on the front panel.

Safety Terminals: Fitted as standard and fully compatible with 4mm shrouded plugs, as well as standard plugs, bare wires, and spade terminals.

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.

1024 Specifications

TECHNICAL SPECIFICATION

| | |
|-------------------------------|---|
| Output | <i>0 to 100mA in 5 ranges</i> 0 to 99.999mA in 1 μ A steps 0 to 9.9999mA in 100nA steps 0 to 999.99 μ A in 10nA steps 0 to 99.999 μ A in 1nA steps 0 to 9.9999 μ A in 0.1nA steps |
| Accuracy | $\pm 0.02\%$ of setting + $\pm 0.005\%$ of range + ± 0.2 nA |
| Voltage Capacity | 15V with new batteries or mains power (11V with minimum allowable battery volts). |
| Regulation | Load: better than 5ppm per volt. Supply: better than 5ppm per volt. |
| Output Polarity | Positive or negative switch selected. A centre 'off' position provides an open circuit on the output terminals. |
| Out of Limit Warning | A front panel LED indicator provides warning of insufficient drive voltage. |
| Output Stability | Less than 30ppm per $^{\circ}$ C (0 $^{\circ}$ C to + 50 $^{\circ}$ C) Less than 10ppm per hour at constant temperature. Less than 75ppm per 6 months. |
| Output Noise | 100mA, 10mA and 1mA ranges: less than 5ppm of full scale. 100 μ A and 10 μ A ranges: less than 10ppm of full scale ± 0.1 nA. |
| Null Sensitivity | Adjustable from ± 25 mA to ± 25 μ A FSD via front panel control. Maximum resolution is 0.5 μ A. |
| 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 display provides a continuous indication of the battery state. |

GENERAL SPECIFICATION

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|------------------------|--|
| Dimensions | W217 x H160 x D193mm |
| Weight | 3.3kg |
| Optional Extras | Carry Case Calibration Certificates – traceable to NPL and UKAS |
| Country of Origin..... | UK |

ORDERING INFORMATION

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|------------|---|
| 1024 | DC Current Calibrator with null measuring facility |
| 9021 | Carry Case |
| C154 | Factory (NPL Traceable) Calibration Certificate |
| C106 | UKAS Calibration Certificate (ISO 17025) |

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