Time Electronics
1021 Milliamp Source with Null Indicator



Description

The 1021 is a precision DC current calibrator suitable for sourcing applications from micro-amp levels up to 100 mA. Three output ranges are available; 0 to 99.99 mA in 10 μA steps, 0 to 9.999 mA in 1 μA steps, and 0 to 999.9 μA in 0.1 μA steps. Output voltage is adjustable between 14 and 40 volts, with a maximum output power of 2.4 watts.

High accuracy and long term stability make the 1021 suitable for a wide range of testing workload. In process applications it can be used to calibrate and verify current sensitive transducers and their associated indicating and recording devices. For the semiconductor industry the unit can be used as a constant current source for parameter measurements. It can also be used to measure DC current accurately by using the null facility to back off the unknown current. Resolution of 1 μA is possible.

Operation of the 1021 is fast and simple operation. The user needs to only to switch on, check the battery condition, select the range, and set the required current using the thumbwheel switches. Useful features include an LED voltage limit indicator, that shows when the 1021 is unable to supply sufficient drive voltage to maintain the set output current. The instrument is also short circuit and overload protected.

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

Portable operation: Rechargeable batteries and mains charger are supplied with the unit as standard. Complete recharge time is 10 to 12 hours although sufficient charge for a few hours operation can be obtained with only 30 minutes charge. Full charge allows 10 hours typical use. The battery level is monitored by an LED indicator on the top of the unit.

Added protection: The 1021 comes fitted with an ergonomic rubber cover providing increased protection and durability. It has a textured grip for comfortable handling and openings at the top and bottom to allow access to the battery meter and a position to place labels. It is easy to remove if the user prefers a stand-alone unit or to house the 1021 in the optional 9027 carry case.

Features

- 0 to 100 mA output in 3 ranges
- Accuracy 0.02 %
- 25 ppm/hr stability
- Up to 40 V output drive
- Short circuit and overload protected
- Safety terminals
- Removable protective cover
- Supplied with rechargeable batteries
- 10 hours typical use between charges
- Optional carry case



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Applications

Resistance and Temperature Measurement

Low ohm and contact resistance of relays, switches, connectors, etc can be easily measured using the 1021 as the current source in a 4-terminal kelvin system where lead and probe resistance do not affect the accuracy of the reading. This method can also be used in thermometry for calibration and measurement of platinum-resistance thermometers and thermistors.

Transducers

The ability to source and measure current makes the 1021 ideal for testing and calibration of many types of current transducer and their associated measuring equipment.

Semiconductor Parameters

The 1021 covers many applications in a wide variety of semiconductor measurements including; forward voltage drops, zener diode characteristics and temperature coefficients, transistor gains (hfe) and saturation voltages. Characteristic curves of devices can be easily plotted by selecting suitable output currents on the 1021. It can also be used to drive Hall effect devices.

Technical Specifications

Output ..... 0 to 99.99 mA in 3 ranges.
0 to 99.99 mA in 10 μA steps.
0 to 9.999 mA in 1 μA steps.
0 to 999.9 μA in 0.1 μA steps.

Accuracy ..... ± (0.02 % of setting + 0.02 % of range + 0.2 μA).

Voltage capacity ..... Adjustable between 14 and 40 V. Maximum output power 2.4 W.

Voltage limit indicator ..... Provides indication of insufficient drive voltage.

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

Output stability ..... Better than 60 ppm per °C (–10 °C to + 50 °C). Better than 25 ppm/hr (at constant temperature).

Output noise ..... Less than 15 ppm of full scale.

Load regulation ..... Better than 20 ppm per volt change in output.

Null sensitivity ..... Adjustable from ± 20 mA to ± 20 μA FSD via front panel control. Maximum resolution is 1 μA.

Power supply ..... NiMH rechargeable batteries with external mains recharger.

General Specifications

Dimensions ..... 200 x 75 x 110 mm (215 x 100 x 120 mm including protective cover).

Weight ..... 1 kg (1.4 kg including protective cover).

Optional extras ..... Carry case.
Calibration certificates - traceable (factory) or accredited (ISO 17025).

Country of origin ..... UK.

Ordering Information

1021 ..... **DC Current Source with Null Meter**
(mains charger and protective cover included)

9027 ..... Carry Case

C153 ..... Traceable calibration certificate (Factory)

C105 ..... Accredited calibration certificate (ISO 17025)

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

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