**DESCRIPTION**

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

The functionality of the 1021 is based on the popular Time Electronics 1007 millivolt source, incorporating many of the well-proven features that enable fast and simple operation. Useful attributes include an LED voltage limit indicator, that shows the user 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.

The unique circuit design ensures that it stays well within specification for at least 12 months. Variation with temperature is better than 60ppm per °C, and typically better than 20ppm per hour at constant temperature. To improve the switch reliability, additional back-up contacts have been used, so even if a contact fails the 1021 will still operate correctly.

The accuracy and stability are such that a wide range of applications are possible. In the process industries it may be used to test and calibrate current sensitive transducers, and their associated indicating and recording instruments. The semiconductor industry requires constant current sources for parameter measurements. It may also be used to measure DC current accurately by using the null facility to back off the unknown current. Resolution of 1µA is possible.

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

**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 if required. It is easy to remove if the user prefers a stand-alone unit or to house the 1021 in the optional 9027 carry case.

**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 condition monitored by a meter on the top of the 1021.
1021 Applications and Specifications

APPLICATIONS

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.

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.

TECHNICAL SPECIFICATION

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

Accuracy
± 0.02% of setting ± 0.02% of range, ± 0.2µA.

Voltage Capacity
Adjustable between 14 and 40 volts. Maximum output power 2.4 watts.

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

Output Noise
Less than 15ppm of full scale.

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

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

Power Supply
NIMH rechargeable batteries with external mains recharger. Standard mains voltage is 220–250V, 50/60Hz. 100–125V, 50/60Hz is available but must be specified on ordering.

GENERAL SPECIFICATION

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

Weight
1kg (1.4kg including protective cover)

Optional Extras
Carry Case
Calibration Certificates – traceable to NPL and UKAS

Country of Origin
UK

ORDERING INFORMATION

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

9027
Leatherette Carry Case

C153
Factory (NPL Traceable) Calibration Certificate

C105
UKAS Calibration Certificate (ISO 17025)

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

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