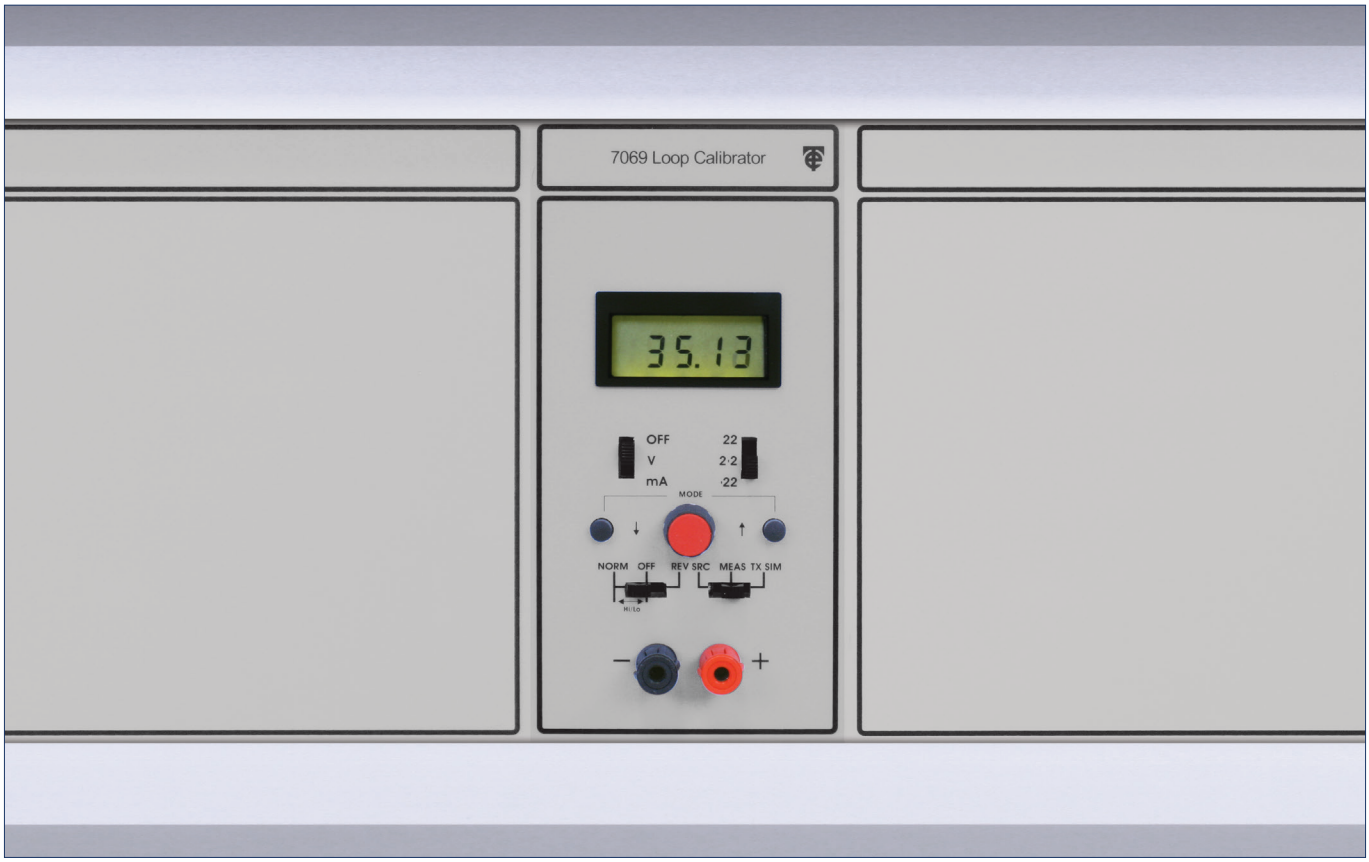
Time Electronics

7069 Voltage / Current / Loop Calibrator Module



Description

A precision module that operates as a current and voltage source and a multi-purpose loop calibrator. High performance and simple operation make it suitable for R&D, service, process control engineers, and calibration technicians. As a versatile calibrator, the source and measure capabilities with 0.02 % accuracy mean the 7069 is a solution for most simulation and test applications.

The 7069 combines the advantages of digital accuracy with analog control. Based on the popular functionality of the Time Electronics 1048 portable calibrator, the 7069 offers voltage and current across the three ranges, and features such as transmitter simulation, sink loop control, output stepping and ramping, and incremental fine adjustment. These make the module ideal for use in the process industry.

The large, easy to read 4.5 digit LCD front panel display shows the actual output, even when the connected load exceeds the specifications. This important feature eliminates the risk of large errors when connecting to unknown loads.

In the source mode, voltage up to 22 V and current up to 22 mA may be generated in three ranges. When in current source mode the 7069 has a high 24 V compliance voltage which is ideal for powering process loops.In the measurement mode, the range and function can be easily selected, with the measured input accurately shown on the display.

The step, ramp, and inching functions are simple operation, with no key press menus to learn, just switches and buttons. A multi-turn potentiometer controls the output, with up/down incrementing buttons for fine control. The output can be reversed (+/-) and zeroed at the flick of a switch. The automatic ramp function enables the user to choose either 5, 11, or 21 point calibration. Manual operation can be quickly restored by a single push of a button.

The 7069 module is 97 mm wide, and can be fitted in either the primary or secondary CalBench console. Connections are by standard 4 mm plugs or by simply clamping the wires under the terminals.

Features

- Easy to use process loop module
- Source/measure voltage and current
- 3 source ranges: 0 to 22 mA and 0 to 22 V
- 3 measure ranges: 0 to 70 mA and 0 to 50 V
- Accuracy 0.02 %
- Transmitter simulator/sink loop control
- Output steps and ramps
- Fine adjustment (inching)

Applications

Common use of the 7069 is to simulate a transducer or measure the current flow in a transducer loop. The 7069 can be used to check a 4 to 20 mA system in either source or measure modes of operation, with the 24 V compliance voltage powering the loop when current source mode is selected.

In the source mode, the 7069 may be used to calibrate meters, thermocouple indicators, data loggers, for signal injection, semiconductor characterisation, or as a backing off source. In the measure mode, the 7069 may be used in the same way as a digital multimeter, checking DC voltages and current over 3 ranges with excellent resolution and accuracy.

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Technical Specifications

Voltage source

Range	Resolution	Accuracy	Output current	Temp coefficient
0 to 220 mV	10 µV, 100 µV above 0.2 V	0.05 % of FS	20 mA	± 6 ppm/°C
0 to 2.2 V	100 µV, 1 mV above 2 V	0.02 % of FS		
0 to 22 V	1 mV, 10m V above 20 V	0.02 % of FS		

Voltage measure

Range	Resolution	Accuracy	Measure load	Temp coefficient
0 to 220 mV	10 µV, 100 µV above 0.2 V	0.05 % of FS ± 1 digit	1 MΩ	± 3 ppm/°C
0 to 2.2 V	100 µV, 1 mV above 2 V	0.02 % of FS ± 1 digit	1 MΩ	
0 to 22 V	1 mV, 10 mV above 20 V	0.02 % of FS ± 1 digit	10 MΩ	

Current source

Range	Resolution	Accuracy	Output voltage	Temp coefficient
0 to 220 µA	10 nA, 0.1 µA above 200 mA	0.05 % of FS	24 V Max	± 12 ppm/°C
0 to 2.2 mA	0.1 µA, 1 µA above 2 mA	0.02 % of FS		
0 to 22 mA	1 µA, 10 µA above 20 mA	0.02 % of FS		

Current measure

Range	Resolution	Accuracy	Input load	Temp coefficient
0 to 220 µA	10 nA, 0.1 µA above 200 mA	0.05 % of FS ± 1 digit	1 kΩ	± 8 ppm/°C
0 to 2.2 mA	0.1 µA, 1 µA above 2 mA	0.02 % of FS ± 1 digit	110 Ω	
0 to 22 mA	1 µA, 10 µA above 20 mA	0.02 % of FS ± 1 digit	16 Ω	

Settings and General Specifications

Sink (Tx Sim)..... 2 wire transmitter simulation: External excitation voltage, 3 V min, 50 V max.
The current sink levels are adjustable,with accuracies as per the 3 source ranges shown above.
Note: Accuracies in all measure modes are ± 1 digit.

Output steps .....5 fixed 4 mA steps for current output 4, 8, 12, 16 and 20 mA.
11 fixed 1 V steps for voltage output 0,1,2...10 V.
21 fixed steps 1 V/1 mA for V and I output 0,1,2...20.
Stepping can be done manually or automatically (Autostep). Stepping speed is adjustable (1 - 9 sec/step).
Dwell time (top and bottom) is one step period. In step mode the accuracy is limited to 0.05 % of span ± 1 digit.

Output adjustment.....A ten turn potentiometer for quick setting, with fine adjust using up/down increment buttons.

Connections.....Made by 4 mm connectors or clamped using the wire compression feature.

Power.....As per CalBench supplied.

Protection.....Can withstand open circuits, short circuits and reverse polarity up to 25 V. Additional protection is by an internal fuse.

Module dimensions.....H 201 x W 97 mm (can be fitted in primary or secondary console)

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

Ordering Information

7069..... **Voltage/Current/Loop Calibrator Module**

C176.....Traceable calibration certificate (Factory)

C138.....Accredited calibration certificate (ISO 17025)

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

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