



## Description

A precision handheld instrument primarily used for the calibration and simulation of voltage and current loops. The 7005 is a high accuracy calibrator incorporating source and measure capabilities. The compact and lightweight design make it easily portable and ideal for plant operations and field use. Combined with user friendly controls and simple operation the 7005 is an excellent model for both process engineers and calibration technicians.

The three operating modes provide a fast and easy solution to process applications; Loop current/voltage source for simulating a transmitter and the loop supply, sink of loop current for simulating a transmitter, and measurement of loop current/voltage for simulating a loop indicator.

Manual step of the output is possible at five calibration points; 0 %, 25 %, 50 %, 75 % and 100 % of span. Automatic stepping of the output is also available, both up and down with programmable dwell times. Continuous up/down ramping can also be performed, with user programmable ramp rates and dwell time (top and bottom).

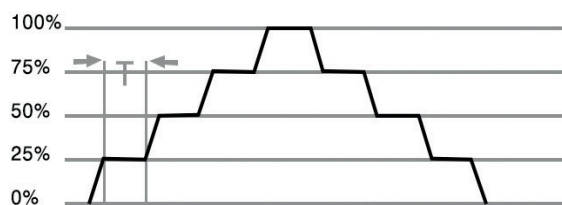
In source mode the range can be user programmed to any value between 0 mA and 50 mA, or 0 V and 21 V. For example a low point of 10 mA and a high point of 50 mA could be set giving a span of 40 mA.

Measure mode provides both voltage and current measuring capability with 5 digit resolution. Ranges are 0 to  $\pm 5$  V and  $\pm 5$  to  $\pm 25$  V, 0 to  $\pm 25$  mA and  $\pm 25$  to  $\pm 125$  mA. Alternatively the signal can be measured as a % of span for the following ranges; 4 to 20 mA, 0 to 20 mA, square root 4 to 20 mA, or square root 0 to 20 mA. For all measurements a Min/Max recording function is available on demand.

## Features

- Current measure: 125 mA, source: 50 mA
- Voltage measure: 25 V, source: 21 V
- Loop Current Sink
- Resolution 1  $\mu$ A or 1 mV
- Accuracy 0.01 %
- Transmitter and square root functions
- Auto-ranging feature
- Programmable steps and ramp
- Supplied with battery charger & case

An internal NiMH battery powers the unit for typically 9 hours continuous use and an external mains charger is supplied as standard. An automatic power-down feature is incorporated to conserve battery life, which can easily be disabled if not required. The unit is constructed in an impact resistant ABS case and connections are made via 4 off 4 mm binding terminal posts.





## Technical Specifications

### DC Voltage source

| Range     | Resolution | Accuracy                           | Output current | Output resistance |
|-----------|------------|------------------------------------|----------------|-------------------|
| 0 to 21 V | 1 mV       | $\pm 0.01\%$ of setting $\pm 4$ mV | 50 mA          | $< 1 \Omega$      |

### DC Voltage measure (0 to $\pm 25$ V, Auto-ranging)

| Range     | Resolution | Accuracy                             | Measure load  |
|-----------|------------|--------------------------------------|---------------|
| 0 to 5 V  | 0.1 mV     | $\pm 0.01\%$ of reading $\pm 0.4$ mV | 10 M $\Omega$ |
| 5 to 25 V | 1 mV       | $\pm 0.01\%$ of reading $\pm 2$ mV   | 10 M $\Omega$ |

### DC Current source

| Range      | Resolution | Accuracy                                | Output voltage | Loop resistance           |
|------------|------------|---|----------------|---------------------------|
| 0 to 50 mA | 1 $\mu$ A  | $\pm 0.01\%$ of setting $\pm 2$ $\mu$ A | 22 V Max       | 1100 $\Omega$ @ 20 mA max |

### DC Current measure (0 to $\pm 125$ mA, auto-ranging)

| Range        | Resolution | Accuracy                                 | Input load    |
|--------------|------------|--|---------------|
| 0 to 25 mA   | 1 $\mu$ A  | $\pm 0.01\%$ of reading $\pm 2$ $\mu$ A  | 24.5 $\Omega$ |
| 25 to 125 mA | 10 $\mu$ A | $\pm 0.01\%$ of reading $\pm 20$ $\mu$ A | 24.5 $\Omega$ |

### DC Current source

| Range      | Resolution | Accuracy                                | Min external drive | Max external drive |
|------------|------------|---|--------------------|--------------------|
| 0 to 50 mA | 1 $\mu$ A  | $\pm 0.01\%$ of setting $\pm 2$ $\mu$ A | 4 V                | 40 V               |

## Summary of Functions

### Source Mode

- User programmable ranges - any values between 0 and 50 mA or 0 and 21 V.
- Fixed ranges are available: 4 to 20 mA, 0 to 20 mA, sqrt 4 to 20 mA, sqrt 0 to 20 mA.
- Fine adjustment (inching) is available for precise deviation from the calibration point.
- Manual step output - five calibration points 0 %, 25 %, 50 %, 75 %, and 100 %.
- Automatic step output (up/down) - five cal points with programmable dwell period.
- Ramp output - programmable ramp rate (0 to 20 mA/sec or 0 to 20 V/sec). Programmable dwell period (0 to 1000 seconds).

### Measure Mode

- Voltage and current measuring capability with 5 digit resolution.
- Ranges: 0 to  $\pm 5$  V and  $\pm 5$  to  $\pm 25$  V, 0 to  $\pm 25$  mA and  $\pm 25$  to  $\pm 125$  mA.
- Signal can also be measured as a % of span on ranges: 4 to 20 mA, 0 to 20 mA, square root 4 to 20 mA, square root 0 to 20 mA.
- For all measurements a Min/Max recording function is available on demand.

## General Specifications

Dimensions .....H 165 x W 90 x D 45 mm.

Weight.....0.42 kg.

Operating temperature .....-10 to 50 °C. Storage temperature -30 to 70 °C.

Operating humidity.....0 to 90 % non-condensing at 25 °C.

Power.....Internal rechargeable NiMH battery pack. Battery life typically 9 hours. Auto power-down feature. Full recharge from being exhausted will take approximately 16 hours with the unit switched off.

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

Country of origin.....UK.

## Ordering Information

7005..... Voltage/Current/Loop Calibrator

C184.....Traceable calibration certificate (Factory)

C195.....Accredited calibration certificate (ISO 17025)

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