



## Description

The 7010 is a robust portable pressure calibrator that is suitable for field and laboratory calibration work of both pressure and electrical process loop signals. It is a simple operation instrument ideal for calibrating and cross-checking pressure gauges, sensors, transmitters, transducers, indicators, switches, and many other devices. The following versions are available; 0.2, vacuum to 2, 5, 10, 20, 35, 70, 100, 200, 400, or 600 bar. Vacuum down to -850 mbar is possible on the 2 bar version.

For process signal calibration the loop signal is displayed on the LCD display to 0.05 % accuracy. Loop drive supply (24 V or 36 V) is also provided. Both pressure and loop signal can be displayed at the same time to speed up the calibration of pressure transmitters. Additionally a continuity function is available for testing for open circuit loops.

The 7010 allows switch selection of four pressure units in addition to mA. Common pressure units are configured as standard (see specifications), but user-specified units can be requested upon order. Common units are bar, PSI, kPa, MPa, inWg, cmWg, inHg, mmHg, Kg/cm<sup>2</sup>, atm. Both pressure and loop current are displayed on 4.5 digit LCD displays.

Power is via internal rechargeable cells (24 hours typical use) with a built-in mains charger. The unit can be powered directly from the mains if required. The 7010 is housed in an impact resistant safety case that provides protection and increased durability. All pressure connections are on the side of the case. The instrument is supplied with a pressure hose, electrical test lead, 2 electrical probes and 2 crocodile clips.

## Options

For the 7010, input pressure can be generated by external hand pumps. In the field the 7090 pneumatic (vacuum to 40 bar), or 7095 hydraulic (0 to 700 bar) pumps are suitable. Also available are a range of pumps suitable for workshop use, that feature an ergonomic mode of operation. These models include the 7193 (vacuum to 40 bar pneumatic) and 7194A (vacuum to 200 bar pneumatic). For hydraulic pressure generation the 7195 pump (vacuum to 700 bar) is ideal for supplementing pressure to the testing applications.

For process control signal simulation a practical tool like the Time Electronics handheld 7006 Loop-Mate is available as an option. It is a low cost, simple operation unit that provides 4 - 20 mA and 0 - 10 V signals at levels of 0 %, 10 %, 25 %, 50 %, 75 %, 90 %, 100 %. It can also step through these set points automatically to allow hands free calibration. It is battery powered and compact, pocket sized and easy to carry in the field.

## Features

- Vacuum to 600 bar versions available
- Accuracy 0.04 % of full scale
- Pneumatic or hydraulic
- 4 selectable pressure units plus mA
- Loop current measure
- 24/36 V loop power
- Over-pressure alarm
- RS-232 serial interface
- EasyCal software compatible
- Mains or battery powered

## EasyCal Calibration Software

The 7010 has an RS-232 interface and can be controlled via Time Electronics EasyCal software to automate the calibration process. This provides increased speed of calibration and consistency of results. Produce traceable calibration certificates and test reports for quality standards with additional uncertainty information for ISO 17025 conformance.





## Technical Specifications

Specifications are for 1 year at 23 °C ±5 °C.  
Accuracy includes linearity and long term effects. All accuracies are ±1 digit.  
For operation outside specified temperature range, apply 70 ppm per °C.

### Pressure

Range (bar)	0 to 0.2	Vac to 2	0 to 5	0 to 10	0 to 20	0 to 35	0 to 70	0 to 100	0 to 200	0 to 400	0 to 600
Accuracy (% FS)	0.1	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.1	0.1	0.1
Resolution (bar)	0.01 mb	.0001	0.001	0.001	0.001	0.01	0.01	0.01	0.01	0.1	0.1

**Units** ..... 0.2 bar: mbar, PSI, kg/cm2, cmWg & mA.  
 Vac to 2, 5, 10 & 20 bar: bar, PSI, kg/cm2, cmWg & mA.  
 35 bar and above: bar, PSI, kg/cm2, Atm & mA.

**Maximum pressure** ..... 2 x range, 1.5 x range for 20 bar and above.

**Sensor** ..... Piezo-resistive - stainless steel diaphragm.

**Over pressure warning** ..... 1.2 x range full scale - audio and visual (on LCD) warning.

**Fittings** ..... Minimesh (> 20 bar versions) and Quick Release (< 20 bar versions).

### Electrical

**Range** ..... Loop current measurement 0 to 200 mA.

**Resolution** ..... 10 µA.

**Resistance** ..... Loop load 5 Ω.

**Accuracy** ..... 0.05 % of reading ±1 digit.

**Loop drive** ..... 24 V or 36 V switch selectable, 50 mA max - isolated and with short circuit protection.

**Continuity** ..... Threshold: 100 Ω with audio and visual warning.

**Terminals** ..... 4 mm industry standard terminal posts.

## General Specifications

**Power source** ..... Internal rechargeable NiMH batteries, or mains supply (230 V or 110 V 50/60 Hz).

**Battery life** ..... 24 hrs of typical usage between charges.

**Display** ..... 7 segment LCD with 'Low Battery' warning indicator.

**Interfaces** ..... RS-232 for readback and re-calibration (software not supplied).

**Case** ..... Structural resin which is weather-proof to IP66 standard.

**Dimensions** ..... W 270 x H 175 x D 250 mm.

**Weight** ..... 3 kg.

**Supplied with** ..... 1 pressure hose: Minimesh for versions ordered over 20 bar, Quick release for under 20 bar.  
 Electrical Test Lead: Twin flexible lead, terminated with 4 off 4 mm gold plated plugs.  
 Electrical probes: 2 off low voltage probes and 2 crocodile clips. Mains power lead.

**Optional extras** ..... Pneumatic and hydraulic hand pumps, gauges, loop simulators, EasyCal calibration software, spare fuses, and calibration certificates.

## Ordering Information

7010 ..... **Single Channel Pressure Calibrator** (+ pressure range code a shown below).

Range (bar)	0.2	Vac to 2	5	10	20	35	70	100	200	400	600
Option Code	7100	7101	7102	7103	7104	7105	7106	7107	7108	7109	7110

**7090** ..... Pneumatic Hand Pump (vacuum to 40 bar). See separate datasheet for options.

**7095** ..... Hydraulic Hand Pump (0 to 700 bar). See separate datasheet for options.

**7195** ..... Hydraulic Benchtop Pump (vacuum to 700 bar). See separate datasheet for options.

**7006** ..... Loop-Mate 1: Loop Current Simulator.

**ECFLA** ..... EasyCal Calibration Software. See separate datasheet for further information.

**C178** ..... Traceable calibration certificate (Factory).

**C190** ..... Accredited calibration certificate (ISO 17025).

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