



Calibration Bench

The ultimate multifunction calibration station from *Time Electronics*

TEMPERATURE – PRESSURE – ELECTRICAL SIGNALS



- Multimeters
- AC/DC signal sources
- Signal generators
- Frequency meters
- Timer counters
- Oscilloscopes
- AC/DC Milli-voltmeters
- Ohm meters
- Resistance boxes
- Temperature indicators
- Clamp meters
- RTD transmitters
- Temperature sensors
- Power supplies
- Loop signal indicators
- Thermocouple transmitters
- Pressure transducers
- Pressure transmitters
- Pressure switches, gauges
- Loop signal transmitters

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Introduction

CalBench is the ultimate multifunction calibration station from Time Electronics. A wide range of standard modules can be mounted in the primary console; this gives a highly flexible system that is both functional and easy to use. Further expansion can be achieved by adding the optional secondary console 7081.

Core modules cover electronic signal, temperature, and pressure applications, non-standard modules for special applications can be incorporated into the bench consoles; each module is an independent item and there is a high degree of inter-changeability. This allows each bench to be custom designed to meet specific engineering requirements.

Functions are clearly defined on each module and a competent technician will quickly master the operation of the system without expensive training or constant reference to manuals.



Module Options

Pressure: Ranges from vacuum to 600bar. Also available is an Automatic Pressure Calibrator that allows 4 preset points to be selected at the push of a button, or by EasyCal remote control.

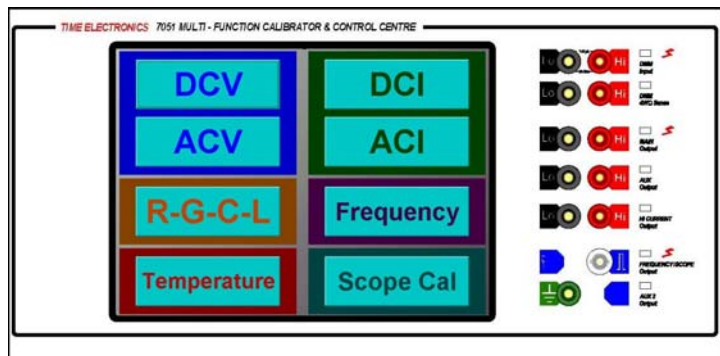
Power: Variable AC mains, variable DC and fixed quad or dual DC supplies can be fitted.

Loop and Temperature: High accuracy loop calibrator modules with source, measure and sink functions. Temperature calibrators capable of measuring and simulating RTDs/thermocouples.

External Options: Pneumatic (35bar) and hydraulic (250bar) handheld calibration pumps. Dry block calibrators with ranges from -25°C to 700°C.

Multifunction Calibrator and Control Centre

Mounted centrally in the console with touch screen control. Source and measure voltage, current, resistance, frequency and much more. To make calibration faster and more productive, the control centre is preloaded with Time Electronics' well-established EasyCal software, which integrates with bench modules. Offering over 850 test procedures and networking capabilities, it fully automates the calibration process. Engineers can print and customise test certificates as required.



7080 Bench, Primary Console and 7081 Secondary Console

The Calibration Bench is constructed from a **7080** bench and primary console. The Secondary Console, **7081** is an optional expansion.




The bench consists of frame, back plates, support arms, and worktop. It is supplied in knockdown format that is simple to assemble - a separate assembly instruction manual is provided.

The primary console is mounted above the tabletop workspace and houses the calibration modules, DC and AC power supplies and the central control centre. Switchable under-console lighting is provided as a standard feature.

The Secondary console is located under the primary console, and can house power supplies, pressure calibration modules, and temperature distribution.

These consoles are supplied complete, fully tested and with the modules installed. They are ready to operate and require only mains power and line pressure to be connected.

The bench assembly is constructed from mild steel throughout. The side panels and console support arms are welded to provide a strong frame. The whole assembly paint finished in hardwearing light grey oven baked paint.

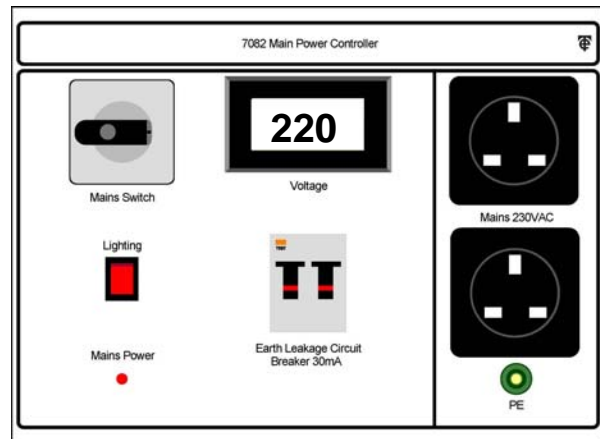
		
<p>Primary Console</p>	<p>Bench with back plate and drawer option</p>	<p>Secondary Console</p>
<p>Dimensions</p>		
<p>Overall (including console):</p>	<p>Width 200 x height 156 (or 166) x depth 85cm, 175Kg typical.</p>	
<p>Primary Console:</p>	<p>Width 200 x height 29 x depth 47cm, 90Kg typical.</p>	
<p>Secondary Console:</p>	<p>Width 192 x height 40 x depth 19.5 cm, 30Kg typical.</p>	
<p>Height from worktop</p>		
<p>Primary Console:</p>	<p>42cm</p>	
<p>Secondary Console:</p>	<p>12.5cm</p>	
<p>Worktop:</p>	<p>Width 200 x 80 deep x 3.8cm, 85cm above floor, durable finish.</p>	
<p>Supply Connections</p>		
<p>Electrical – The Primary console is powered from a single-phase mains supply via a 16A heavy-duty type IEC socket at the rear of the console.</p>		
<p>The Secondary console is powered from the primary console via a IEC power link cable.</p>		
<p>Pressure - 'The external line pressure input ports are arranged on the rear of the primary and secondary consoles</p>		

Power Modules

7082 Mains Power Controller

Mains Power is controlled via a **7082** single-phase unit equipped with 2 mains power sockets (types selectable). A further 4 sockets are available on the underside of the console. A main power switch, residual current circuit breaker with over-current protection (RCBO), and under console lighting switch are included. Mains input and lighting supply lines are filtered.

The mains voltage is continuously monitored on a digital meter. The two front panel sockets can be supplied via an isolation transformer as an optional extra. With this fitted the total current from the two sockets is limited to 1A. Another additional option is a 110V DC 5A supply with circuit breaker.



Available fittings include UK 13A, Euro Shuko 16A, Indian Round Pin 15A, and US 15A

Panel size: Width 270 x height 201mm

Specification

Switches:	Mains power on/off switch to provide isolation for the entire bench Lighting switch to provide separate control of the work-top lighting
Protection:	16A overload protection for entire bench. Residual current protection is 0.03A. 5amp circuit breaker is fitted for the unregulated 110 volt DC supply option.
Sockets:	2 x console front panel earthed sockets, 4 x console underside earthed sockets. 2 x 4mm front panel shrouded sockets for the 110-volt DC supply option.
Meters:	Mains voltage (0-300V)
Filter:	2 filters fitted to attenuate mains spikes.
Panel size:	Width 270 x height 198mm.
Cooling:	2 x Mains powered 80mm cooling fans are fitted internally to the console.
Earthing:	A PE socket is provided. All metal parts of the bench are connected to mains earth.

Options

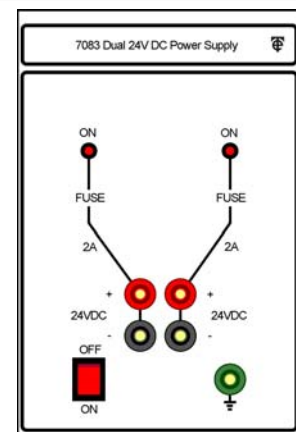
7063	Isolated mains power up to 1 Amp, from the two front sockets. A 1 Amp cartridge fuse protects the supply.
7075	110 volts DC up to 5 Amps. The supply is via two front panel mounted shrouded sockets and is protected by a reset-able 5 Amp circuit breaker, this also acts as a independent 110V power switch.

7083 Dual 24V DC Supply

The **7083** provides two 24V, 2A outputs, which are floating with respect to each other and ground. A power on/off switch, fuses and LED indicators are provided. It is suitable for powering loop signal instrumentation.

Output: 2 x 24v, 2A

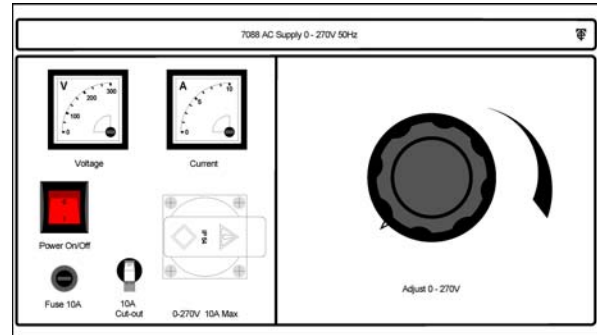
Panel size: Width 131 x height 201mm



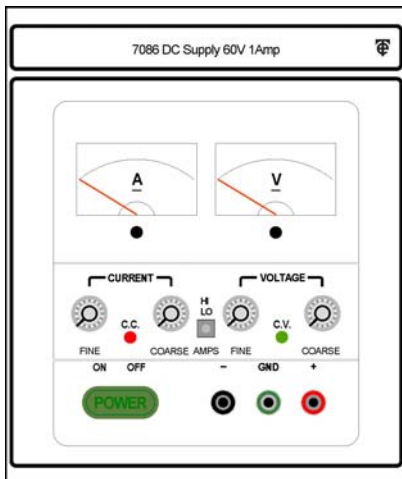
Power Modules

7088 Variable 0 to 270V 50Hz 10A Power Unit (0 to 150v 60Hz 10A also available)

The **7088** provides variable 50Hz AC power up to 10Amps. The output voltage and current are monitored on two meters and is available from a front panel socket (type selectable when placing order). The output is protected by a 10A circuit breaker. Further protection is provided a front panel fuse. The output voltage is adjustable by turning the front panel control knob. An independent incoming power switch is also provided. **Please note this power supply is not isolated from the mains supply and the highest voltage is dependant upon the mains line voltage**



Panel size: Width 350 x height 201mm



7086 Adjustable DC Power Supply: 0 to 60V or 0 to 30V

The output voltage and current for the **7086** is shown simultaneously on meters and course and fine control is provided with adjustable current limit. For maximum output current see below.

Output: 0 to 30V 3A
0 to 60V 1A

Panel size: Width 168 x height 201mm

7087 Quad DC Power Supplies

The **7087** Quad DC Power Supply provides four fixed independent floating supplies. The voltage and current ratings are 6V(8A), 12V(8A), 24V(4A), 48V(3A).

Each supply can be switched on/off individually and has its own fuse and power LED. Output connections are industry standard 4mm shrouded sockets. The supplies can be connected in series to obtain an alternative output voltage. However, the current rating is that of the lowest rated supply.

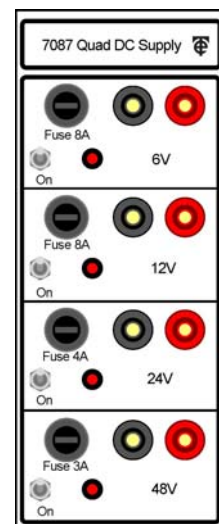
Regulation: 6V, 0.3V at 8A: 12V, 0.2V at 8A: 24V, 0.15V at 4A: 48V, 0.2V at 3A

Ripple and Noise: 50mV or 1% pk-pk, whichever is greater

Over-volt protection: 1.25 x nominal voltage output

Current Overload: 1.4 x max current rating

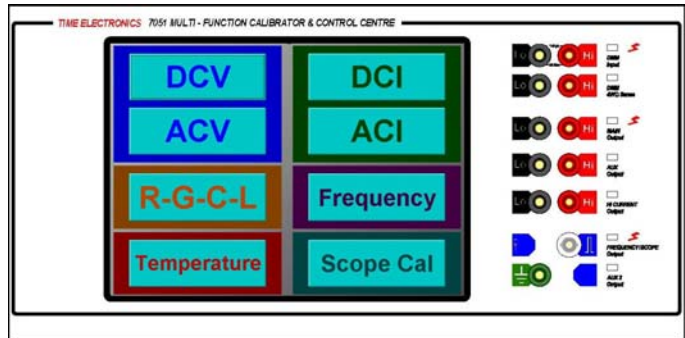
Panel size: Width 80 x height 201mm



Bench Control Centre

7051 Multifunction Calibration System

- 0-22V AC/DC, 0 – 220mA AC/DC
- 0 - 1G ohm - decade steps
- 10 MHz frequency
- Thermocouple Simulation/Measure 10 types
- RTD Simulation/Measure
- Digital Multi Meter 6½ digit - internal
- Simulated Resistance 10 ohms to 40M ohms
- Pressure Calibration control software
- EasyCal Calibration software
- Touch Screen



Panel size: Width 425 x Height 201mm

Mounted centrally in the primary console the **7051** acts as a control centre for the whole bench. It incorporates an industrial PC that is preloaded with the control programs and Time Electronics well established EasyCal calibration software. Full control of Electrical, Temperature, Pressure, and Loop signals, both in source and measure modes is available.

The control software allows a wide range of functions to be selected using mouse, keyboard, or touch screen. Precise calibration is possible using the deviation function - this provides a direct error readout for the instrument being calibrated.

The standard 7051 can calibrate, bench and handheld multi-meters, frequency meters, ohm meters, ac/dc millivoltmeters, thermocouple indicators etc. With 7051 options added, resistance boxes, clamp meters, temperature indicators/sensors, RTDs, power supplies, signal generators, ac/dc signal sources, timer counters, oscilloscopes. **For specifications and options see the 5051 datasheet.**

The **7051** includes a comprehensive package of options and provides a lab ready solution. It comes equipped with every item required for a complete calibration station:

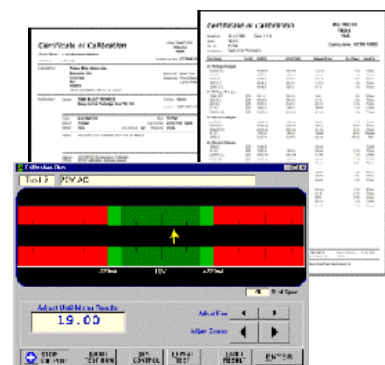
DMM; Simulated Resistance; Touch Screen; Test Lead Set; EasyCal; Printer and Connectivity Kit (As Shown).



A suite of calibration programs that simplify and speed up calibration.

If you have an instrument that needs calibrating against specification and the results stored and printed, **EasyCal** is the answer.

CalMan provides the overall administration function for a modern cal lab. Providing calibration reminders, job control, site and pre-cal documentation



Pressure Modules

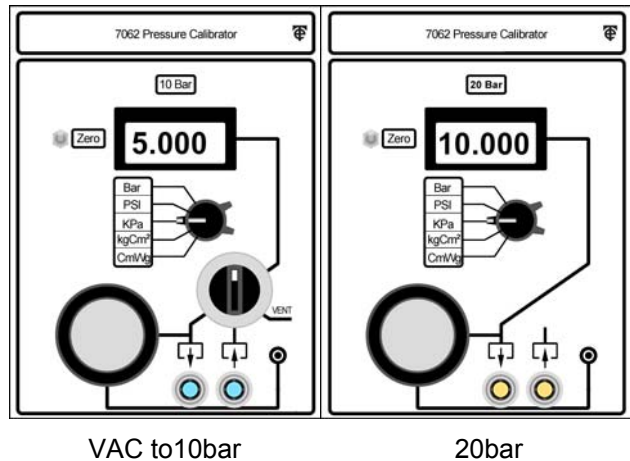
7062 Pressure Calibrator

Features a 4.5 digit display with 5 selectable pressure units.

A pneumatic switch allows direct pressure input, regulator output or vent control (not fitted on 20bar model). See **table 1, page 20** for units of engineering selection.

Fully integrated with the 7051 Control Centre and EasyCal the user can define pressure calibration procedures. Fully traceable calibration certificates can be printed as required.

Panel size: Width 129 x Height 201mm



Specification

Range	Vacuum	0.2	2	5	10	20
Resolution (bar)	.001	0.01mb	.0001	0.001	0.001	0.001
Regulator	Yes	Yes	Yes	Yes	Yes	Yes
Accuracy % +/- 1 digit	0.04	0.1	0.04	0.04	0.04	0.04
Temp Stability	Less than 70 ppm per degC					
Units	Bar, PSI, kPa, Mpa, inWg, cmWg, inHg, mmHg, Kg/cm2, atm**					
Maximum Pressure	2 x range. 1.5 x range for 20 bar					
Sensor	Piezo-resistive – stainless steel diaphragm					
Over press warning	1.2 x range full scale – audio and visual (on LCD) warning					
Fittings	Quick Release					
** Specify on ordering: 5 pressure units max						

General Information and Options

Regulator Supply:	Maximum of 15bar for 0.2, 2, 5,10bar modules Maximum of 30bar for 20bar modules.		
Connections:	Quick release couplings		
Panel size:	Width 129 x Height 201mm		
Order code:	7062 / Pressure range option code		
Pressure Options	7100 = 200mbar range	7101 = 2bar range	7102 = 5bar range
	7103 = 10bar range	7104 = 20bar range	7111 = Vacuum regulator

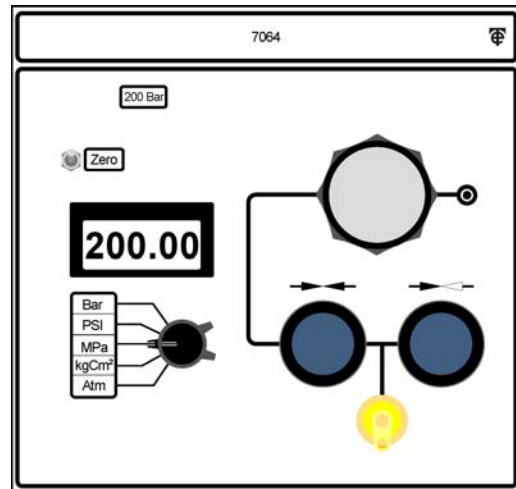
Pressure Modules

7064 High Pressure Calibrator

Features a 4.5 digit display with 5 selectable units. External line pressure (pneumatic) is connected to the console rear panel. Output pressure is controlled by a non-relieving type regulator, with Bleed and Block needle valves used to vent and isolate the output port. All connections are Minimesh high-pressure type. For units of engineering selection see **table 1, page 20**.

Fully integrated with the 7051 Control Centre and EasyCal the user can define pressure calibration procedures.

Panel size: Width 200 x Height 201mm



Specification

Range	35	70	100	200
Resolution (bar)	0.01	0.01	0.01	0.01
Regulator	Yes	Yes	Yes	Yes
Accuracy % +/- 1 digit	0.04	0.04	0.04	0.1
Temp Stability	Less than 70 ppm per degC			
Units	Bar, PSI, kPa, Mpa, inWg, cmWg, inHg, mmHg, Kg/cm2, atm**			
Maximum Pressure	1.5 x range			
Sensor	Piezo-resistive – stainless steel diaphragm			
Over press warning	1.2 x range full scale – audio and visual (on LCD) warning			
Fittings	Minimesh			

** Specify on ordering: 5 pressure units max

General Information and Options

Panel size:	Width 200 x Height 201mm		
Order code:	7064 / Pressure range option code		
Pressure Options	7105 = 35bar range	7106 = 70bar range	
	7107 = 100bar range	7108 = 200bar range	

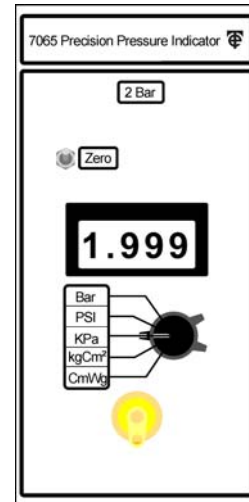
Pressure Modules

7065 Calibration Precision Pressure Indicator

Features a 4.5 digit display with 5 selectable pressure units.
 For use with pneumatic up to 20bar and hydraulic/pneumatic up to 600bar.
 Input connection is standard quick release or minimess high-pressure type
 above 20bar. For units of engineering selection see **table 1, page 20**.

Fully integrated with the 7051 Control Centre and EasyCal the user can
 define pressure calibration procedures.

Panel size: Width 96 x Height 201mm



Specification

Range	Vacuum	0.2	2	5	10	20	35	70	100	200	400	600
Resolution (bar)	.0001	0.01mb	.0001	0.001	0.001	0.001	0.01	0.01	0.01	0.01	0.1	0.1
Accuracy % +/- 1 digit	0.04	0.1	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.1	0.1	0.1
Temp Stability	Less than 70 ppm per degC											
Units	Bar, PSI, kPa, Mpa, inWg, cmWg, inHg, mmHg, Kg/cm2, atm**											
Maximum Pressure	2 x range, 1.5 x range for 20 bar and above											
Sensor	Piezo-resistive – stainless steel diaphragm											
Over press warning	1.2 x range full scale – audio and visual (on LCD) warning											
Fittings	Minimess (> 20 bar) and Quick Release (< 20 bar)											
** Specify on ordering: 5 pressure units max												

General Information and Options

Connections: Quick release coupling for 0.2 to 20 bar ranges.
 Minimess coupling for 35 to 600 bar ranges.

Panel size: Width 96 x Height 201mm

Order code: 7065 / Pressure range option code

Pressure Options	7100 = 200mbar range	7101 = 2bar range	7102 = 5bar range
	7103 = 10bar range	7104 = 20bar range	7105 = 35bar range
	7106 = 70bar range	7107 = 100bar range	7108 = 200bar range
	7109 = 400bar range	7110 = 600bar range	7111 = Vacuum regulator

Pressure Modules

7038 Multifunction Precision Pressure Indicator

Features a 4.5 digit display with up to 9 selectable Pressure units depending on what pressure range is chosen, Loop current can also be displayed in mA, or as a percentage of span (4-20mA).

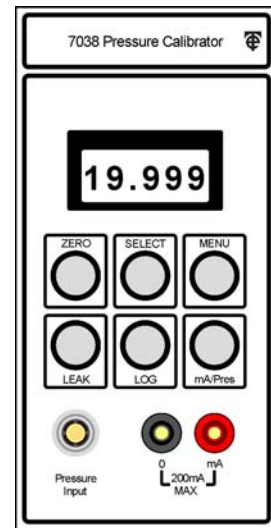
A min/max logging function (pressure or loop current) is provided. The min or max values can be recalled to the display and if required can be viewed in real time.

An additional feature is leak rate display. This allows the actual leakage rate to be observed in real time in the selected 'pressure units' per sec, or per min.

Input connection is standard quick release or minimess high pressure type. For units of engineering selection see **table 1, page 20**.

The 7038 is fully intergratable with the 7051 control centre and Easycal The user can define pressure calibration procedures.

Panel size: Width 100 x Height 201mm



Specification

Range	Vacuum	0.2	2	5	10	20	35	70	100	200	400	600
Resolution (bar)	.0001	0.01mb	.0001	0.001	0.001	0.001	0.01	0.01	0.01	0.01	0.1	0.1
Accuracy % +/- 1 digit	0.04	0.1	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.1	0.1	0.1
Temp Stability	Less than 70 ppm per degC											
Units	Bar, PSI, kPa, Mpa, inWg, cmWg, inHg, mmHg, Kg/cm2, atm**											
Maximum Pressure	2 x range, 1.5 x range for 20 bar and above											
Sensor	Piezo-resistive – stainless steel diaphragm											
Over press warning	1.2 x range full scale – audio and visual (on LCD) warning											
Fittings	Minimess (> 20 bar) and Quick Release (< 20 bar)											

** Specify on ordering: 9 pressure units max

General Information and Options

Connections: Quick release coupling for 0.2 to 20 bar ranges.
Minimess coupling for 35 to 600 bar ranges.

Panel size: Width 100 x Height 201mm

Order code: 7038 / Pressure range option code

Pressure Options	7100 = 200mbar range	7101 = 2bar range	7102 = 5bar range
	7103 = 10bar range	7104 = 20bar range	7105 = 35bar range
	7106 = 70bar range	7107 = 100bar range	7108 = 200bar range
	7109 = 400bar range	7110 = 600bar range	7111 = Vacuum regulator

Pressure Modules

7066 Differential pressure calibrator module

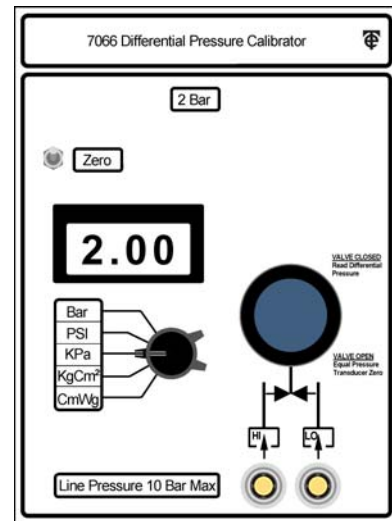
Pneumatic – The connection is made via two front panel quick release connector ports. These are available for differential pressure input (Hi and Lo ports).

Electrical - The 7066 is powered from an internal power supply located in the console.

Optional: Vacuum regulator and rear panel connection.

The regulator is for vacuum and can be configured to supply the differential pressure on the negative side of the 7066 differential pressure module. The regulator must in turn be supplied by a primary high vacuum electric pump (not supplied) – this should be connected via the console rear. The level of vacuum achievable will depend on the efficiency of the Primary Pump.

Panel size: Width 150 x Height 201mm



Specification

Range	Vacuum	0.2 bar	2 bar	5 bar	10 bar
Resolution (bar)	0.001 mbar	0.01 mbar	0.1 mbar	0.001 bar	0.001 bar
Accuracy % +/- 1 digit	0.04	0.1	0.04	0.04	0.04
Full scale		199.99 mbar	1.9999 bar	5.000	10.000
Temp Stability	100ppm per degC				
Units	Bar, PSI, Kg/Cm ² , inHg, mmHg, KPa, cmWg. **				
Linearity	0.02% of full scale				
Maximum Static Pressure	20bar				
Sensor	Piezo-resistive – stainless steel diaphragm				
Over press warning	1.2 x range full scale – audio and visual (on LCD) warning				
Fittings	Quick Release				
** Specify on ordering: 5 pressure units max					

General Information and Options

Panel size:	Width 150 x Height 201mm		
Order code:	7066 / Pressure range option code		
Pressure Options	7100 = 200 mbar range	7101 = 2 bar range	7102 = 5bar range
	7103 = 10bar range	7111 = Vacuum regulator	

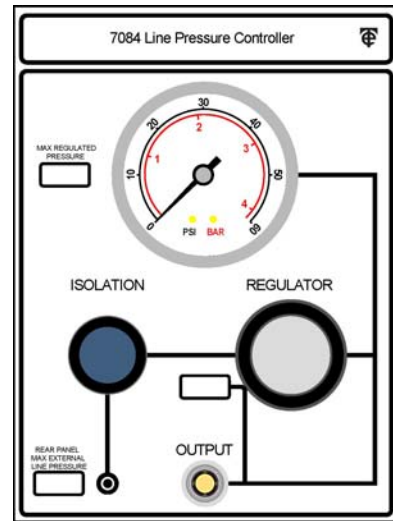
Pressure Modules

7084 Pneumatic Line Pressure Controller

The **7084** is used for management of internal line pressures. The external line pressure is connected to the console rear panel (the maximum permitted pressure depending upon the version ordered). The regulator used is of the self-relieving type and sets the internal line pressures to the calibration modules.

Multiple 7084's can be fitted to provide a choice of pressures simultaneously. The 60mm Gauge displays the internal regulated line pressure. The external line pressure can be isolated using a needle block valve on the front panel. Direct output of the internal line pressure is also available on the front panel via Minimes or Quick Release connectors.

Panel size: Width 150 x Height 201mm



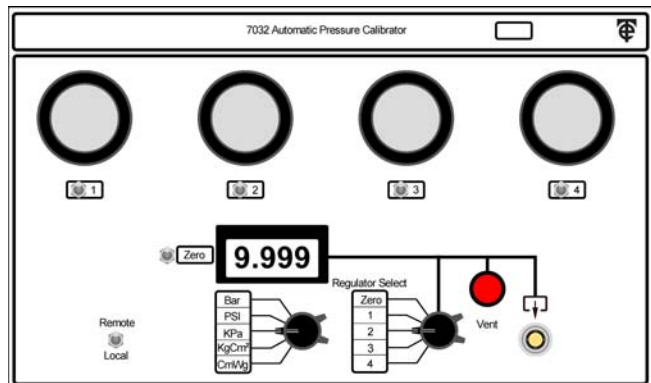
Specification			
Gauges	63mm anti-shock analogue		
Regulators	Pneumatic self-relieving. Maximum input pressure 400bar, depending on regulator		
Output pressure range	See pressure options below		
Fittings	Minimes and Quick release		
Line input port	Rear of console. Quick release 5bar; minimes or NPT for 35 and 70bar options.		
Front panel output port	Same connection options as line input port		
Valve	Swagelok needle isolation valve on line input port		
General Information and Options			
Panel size:	Width 150 x Height 201mm		
Order code:	7084 / Pressure range option code		
Pressure Options	7102 = 5bar range	7105 = 35 bar	7106 = 70 bar

Pressure Modules

7032 Automatic Pressure Calibrator

The **7032** is a low cost programmable pressure calibrator module that features a 4.5 digit display with 5 selectable pressure units. It is designed to speed up routine calibration of pressure gauges, indicators and pressure transmitters. The user presets the required calibration points, usually 0%, 25%, 50%, 75%, 100% of full scale – these are generally considered most useful. However for example, 0%, 10%, 50%, 70%, 95% could be used.

The output line can be vented either by pressing the vent button or selecting zero on the regulator switch to enable zero checking. Output pressure is displayed on the 4.5 digit LCD display.



Panel size: Width 340 x Height 201mm

Manual operation

The 7032 can be controlled manually from a front panel, which allows immediate selection of any of the pre-set calibration pressures.

PC (7051) controlled operation – EasyCal

The 7032 is connected to the 7051 Console Controller and automatic calibration is possible. Using EasyCal, Time Electronics universal calibration software, the calibration procedure can be fully automated. Procedures can be written for pressure gauges, indicators, and pressure transmitters. The results of the calibration are automatically stored on the 7051, and can be printed on demand. Closed loop calibration of pressure transducers can be fully automated by implementing transmitter read-back using the 7051's internal DMM.

Specification

Range	Vacuum	0.2	2	10
Resolution (bar)	.0001	0.01mb	.0001	0.001
Regulator	Yes	Yes	Yes	Yes
Accuracy % +/- 1 digit	0.04	0.1	0.04	0.04
Temp Stability	Less than 70 ppm per degC			
Units	Bar, PSI, kPa, Mpa, inWg, cmWg, inHg, mmHg, Kg/cm2, atm**			
Maximum Pressure	2 x range			
Sensor	Piezo-resistive – stainless steel diaphragm			
Over press warning	1.2 x range full scale – audio and visual (on LCD) warning			
Fittings	Minimess (>20 bar) & Quick Release (<20 bar)			
** Specify on ordering: 5 pressure units max				

General Information and Options

Power Supply:	Internal to Calibration Bench Console		
Panel size:	Width 340 x Height 201mm		
Order code:	7032 / Pressure range option code		
Pressure Options	7100 = 200mbar range	7101 = 2bar range	
	7103 = 10bar range	7111 = Vacuum regulator	

Loop and Temperature Modules

7079 Loop Ancillaries Calibrator

The **7079** provides the following for the testing and calibration of electrical process loop signals.

0 to 199.99mA Measurement

To measure current connect the 7079 in series with the circuit under test. The display will now show the current flow in the circuit together with the polarity.

Continuity

To test for circuit continuity connect the circuit under test in series with the 7079 continuity terminals. If a circuit exists a audible and visual alarm will sound. The threshold for this test is approximately 100 ohms.

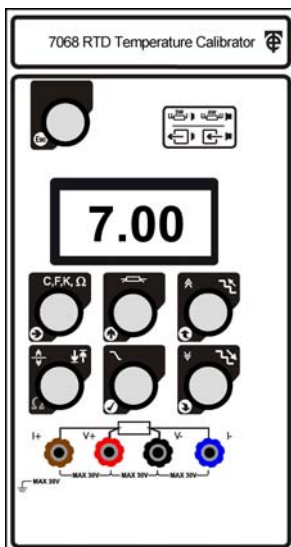
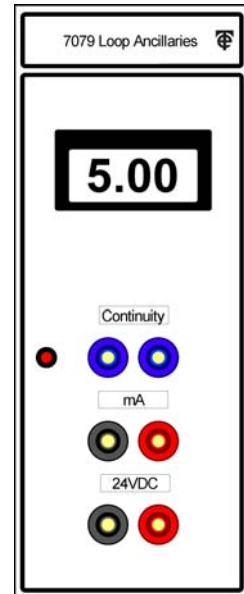
Output 24V

A separate isolated 24VDC supply is provide to enable the powering up of 4 - 20mA loops for the instrumentation under test. This output is overload protected with an auto re-settable fuse. In the event of an overload allow the fuse to cool for a few minutes before further use.

EasyCal

An RS232 port is provided for connection to an EasyCal control port. EasyCal can readback the loop current on demand to allow automatic calibration of pressure transmitters.

Panel size: Width 96 x height 201mm



7068 RTD Temperature Calibrator

The **7068** Resistance Temperature Detector (RTD) is a Microprocessor-based calibrator. The calibrator is capable of accurately simulating and measuring the most commonly used RTD probes, which facilitates the calibration of process RTD input instruments without the need for expensive probes and the use of slow temperature baths.

If used with a certified probe the unit performs as a highly accurate thermometer. Readout is available in °C, °F and °K.

The 7068 is specifically designed to automate and to speed up the task of calibrating instrumentation used in the process control industry. Simply enter in engineering units (°C; °F or °K) the desired zero and span values and the calibrator will automatically calculate the standard five calibration points (0, 25, 50, 75 and 100%).

Panel size: Width 107 x height 201mm

Loop and Temperature Modules

7067 Loop Calibrator

The **7067** is a micro-processor based instrument for the calibration of voltage and current loop signals. It can operate in three modes:

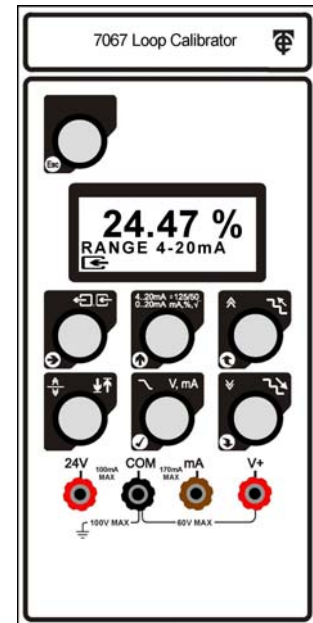
- a) Loop current/voltage source (simulating a transmitter and the loop supply)
- b) Sink of loop current (simulating a transmitter)
- c) Measurement of loop current/voltage (simulating a loop indicator).

Display is via a dot matrix LCD screen. User input is by 7 front panel buttons. Source functions are a) Manual step, b) Auto step c) Ramp. In step function there are five calibration points, 0%, 25%, 50%, 75% and 100% of span. In ramp function the output ranges between 0% and 100% of span the ramp rate and dwell time are user programmable.

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

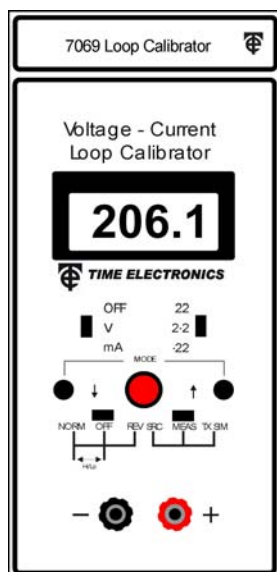
In measure mode only fixed ranges are available. Current and voltage is displayed in 5-digit format in mA or Volts. Alternatively the current may be displayed in % of span.

An automatic power-down feature is incorporated and turns the unit off after approximately 7 minutes if no buttons are pressed. If required the automatic power-down feature can be disabled in the user set-up.



Panel size: Width 97 x height 201mm

7069 Current Voltage Loop Calibrator



The **7069** is a current, voltage, and loop calibrator that meets the needs of R&D labs and process control engineers. It provides source and measure functions in three ranges, plus a transmitter simulator/sink function. Accuracy is 0.02% of span with a display resolution of 4.5 digits.

Output modes include steps and ramps. No menus to learn, just switches and buttons. A multi-turn potentiometer controls coarse output adjustment while increment/decrement buttons are provided for fine control. The source output can be reversed (+/-) and zeroed at the flick of a switch. The front panel features a large easy-to-read 4.5 Digit LCD display that auto-ranges to allow the ranges to be extended by 10% above the normal 0.2/2.0/20 full scale. Manual reset of the ramp function is also provided for quick restore.

When used as a source the output can be zeroed and reversed to enable the calibration of centre-zero type voltage or current instruments e.g. -10V to 0 to +10V.

If the unit is not operated for approximately 15 minutes, it will automatically power down. If required this feature can be disabled in the user set-up.

Panel size: Width 97 x height 201mm.

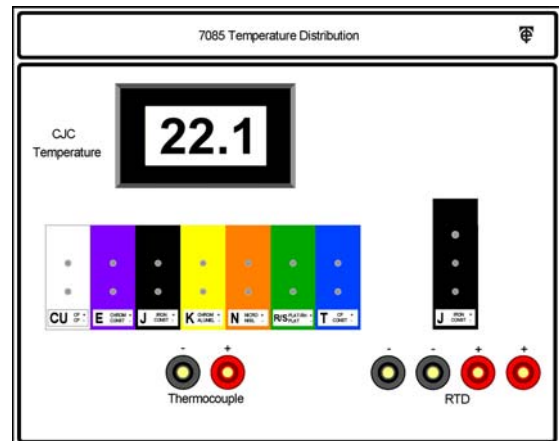
Loop and Temperature Modules

7085 Temperature Distribution Panel

Has a range of different types of thermocouple and 4 wire RTD. Both simulate and measure mode calibration is available. To simplify thermocouple calibration the Cold Junction Compensation (CJC) temperature is displayed in clear easy-to-read digits.

Fully integrated with the 5051 Control Centre and EasyCal, the user can define both thermocouple and RTD temperature calibration procedures.

Panel Size: Width 250 x height 201mm

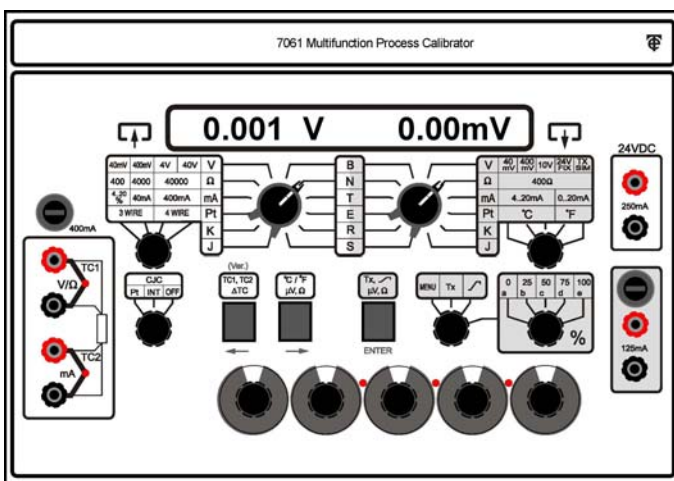


7061 Multifunction Process Calibrator

The **7061** is a comprehensive microprocessor controlled temperature and loop control calibrator. It is the latest version of the series and incorporates high performance digital technology.

The 7061 is primarily designed to perform calibration of thermocouple and resistance thermometer input/output instruments. In addition, the calibration and measurement of volts, millivolts, milliamps and ohms can be performed.

Panel size: Width 285 x height 201mm



Features and Functions

Input signals are connected via 4 sets of terminals, which can be switched by the system to measure thermocouples, volts, milliamps and resistance thermometers. The terminals can be configured for use in many different configurations, e.g. 4 wire resistance thermometers or twin thermocouples.

The output section is galvanically isolated from the input section, thus allowing the unit to perform calibrations on both the input and output of the same instrument without regard for common mode voltages, which could otherwise upset the calibration results.

The output section can source volts and milliamps, and simulate thermocouples and PT100 resistance thermometers via a pair of terminals. The input and output values are displayed simultaneously on a large alphanumeric LCD display.

In addition to conventional functions and ranges, this section provides special ramp and Tx features to enable automatic calibration of loops. The operational parameters of these functions are set-up using menu driven procedures.

External Options

7070 / 7072 Dry block temperature calibrators

Provides a convenient precision temperature source for the calibration of industrial thermometers. It is able to fully automate closed loop temperature calibration and can be configured using Time Electronics **EasyCal Software**. The cold Junction Compensation (CJC) temperature is available to allow correction for the ambient temperature.

Temperature ranges: -25 to +140 degC or +50 to +700 degC

Power requirements: 230VAC, 115VAC, 320VA maximum.

Size: Width 305 x height 325 x deep 165mm



7090A Pneumatic Calibration Pump

This is hand operated and ideal for pneumatic calibration work from Vacuum (-950mbar) to 40bar and features adjustable volume chamber.

It comes complete with a set of hoses, adapters and a carrying case. A digital pressure gauge which locates on the top of the pump body is available as an optional extra.

7089: Optional digital pressure gauge

Can display pressure in bar, mbar/hpa, kPa, MPa and PSI, the user can set the zero reference or use factory default. Maximum and minimum pressures can be stored. Features an auto turn – off function, which can be disabled. The supplied battery life is about 1000 hours in normal measuring mode. Accuracy: 0.2% FS typical.



7095A Hydraulic Calibration Pump

Hand operated for hydraulic calibration work from 0 to 700bar. It comes complete with hoses and a carrying case. A digital pressure gauge that locates on the top of the pump body is available as an optional extra.

7096: Optional digital pressure gauge. Features see 7089.

7097 Minimesse test kit

A selection of items from the Minimesse 1620 series connectors used on the high-pressure calibration modules.

The kit includes In-line tees for 1/4", 3/8" and 1/2" BSP, and a capped Minimesse / 1/4" BSP test point enabling easy quick connection to most pressure systems.

Also included are two reducing bushes, male to female, 1/2" / 1/4" BSP and 3/8" to 1/4" BSP. 3 Dowty washers, a gauge adaptor, one Microbore hose and a cloth wipe.

The whole kit comes in a convenient plastic case, with cut outs for gauges if required. The adaptors are made of mild steel.

Dimensions: 272 x 230 x 81mm. (case closed), weight: 1.44Kg



Bench Extras

The Time Electronics Calibration Bench is a custom-made unit with a full range of extras. Listed below are some of the available options, with many more available upon request.

ESD equipment

- Laminated tabletops
- Mats
- Grounding kits
- Wrist wraps



Tools

- Soldering/de-soldering stations
- Vacuum pumps
- Vices
- Oscilloscopes, multimeters, clamp meters
- Magnifying lamps
- Test lead sets and racks
- Printer kits
- Bar code readers

Fittings

- Under-counter CPU holder
- Pull-out roller bearing keyboard tray
- Under-counter draw units and cabinets
- Bench stools or chairs
- Tool holders
- Extendable dry block calibrator Shelf
- Top mount monitor arm
- Document holders
- Palm and forearm supports



Reference Tables

Engineering units to pressure Compatibility table

Table 1

Unit of Pressure	Vacuum	200mb	2bar	5bar	10bar	20bar	35bar	70bar	100bar	200bar	400bar	600bar
bar	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
PSI	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
kPa	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no
inWg	yes	yes	yes	yes	yes	yes	yes	no	no	no	no	no
cmWg	yes	yes	yes	yes	yes	yes	no	no	no	no	no	no
inHg	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
mmHg	yes	yes	yes	yes	yes	yes	no	no	no	no	no	no
Kg/cm2	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
atm	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Mpa	no	no	no	no	no	no	no	no	no	no	yes	yes
Regulator	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no

CalBench Quick-Guide Specifications Table

Table 2

Console Dimensions			
Overall:		Width 200 x height 156 x depth 85cm, 175Kg typical. With secondary console fitted height is 166cm.	
Primary Console:		Width 200 x height 29 x depth 47cm, 90Kg typical.	
Secondary Console:		Width 192 x height 40 x depth 19.5 cm, 30Kg typical.	
Individual module height 201mm standard, Individual module width shown in brackets.			
Power Modules			
7082 Mains Power Controller (270mm)		7083 Dual 24V DC Supply (131mm)	
7086 Adjustable DC Power Supply (168mm)		7087 Quad DC Power Supplies (80mm)	
7088 Power Unit (350mm)			
7051 Multifunction Calibrator and Control Centre (425mm)			
<ul style="list-style-type: none"> ▪ 0-22V AC/DC, 0 – 220mA AC/DC ▪ 0 – 1GΩ - decade steps ▪ 10 MHz frequency 		<ul style="list-style-type: none"> ▪ Digital Multi Meter 6½ digit – internal ▪ Simulated Resistance 10Ω to 40MΩ ▪ RTD Simulation/Measure ▪ Thermocouple Simulation/Measure 10 types ▪ EasyCal Calibration Management Software ▪ Touch Screen 	
Options: Hi Voltage/Current AC/DC1050V/22A (9782), Oscilloscope calibration (9775), Capacitance / Inductance (9798), Clamp meter adapter (9780), Tacho Meter adapter (9773), and Test lead set (9796).			
Pressure Modules			
Available Units of Measure: Bar, PSI, kPa, MPa, inWg, cmWg, inHg, mmHg, Kg/cm2, atm.			
Pressure Range Option Codes: 200mbar (7100), 2bar (7101), 5bar (7102), 10bar (7103), 20bar (7104), 35bar (7105), 70bar (7106), 100bar (7107), 200bar (7108), 400bar (7109), 600bar (7110), Vacuum Regulator (7111).			
Module and Description	Range (bar)	Accuracy (%)	Fittings
7062 Pressure Calibrator (129mm)	VAC, 2, 5, 10, 20	0.04	Quick release
	0.2	0.1	
7064 High Pressure Calibrator (200mm)	35, 70, 100	0.04	Minimess
	200	0.1	
7065 Pressure Indicator (96mm)	VAC, 2, 5, 10, 20, 70, 100	0.04	Under 20bar Quick release Over 20bar Minimess
	0.2, 200, 400, 600	0.1	
7038 Multifunction Pressure Indicator (100mm)	VAC, 2, 5, 10, 20, 70, 100	0.04	Under 20bar Quick release Over 20bar Minimess
	0.2, 200, 400, 600	0.1	
7066 Differential Pressure Calibrator (150mm)	VAC, 2, 5, 10	0.04	Quick release
	0.2	0.1	
7032 Automatic Pressure Calibrator (340mm)	VAC, 2, 10	0.04	Quick release
	0.2	0.1	
7084 Pneumatic Line Pressure Control (150mm)	Regulator sets the internal line pressures to the calibration modules: 5, 35, 70bar		
Temperature and Loop Calibration Modules			
7085 Temperature Distribution Panel (250mm)	7079 Loop Ancillaries Calibrator (96mm)	7067 Loop Calibrator (97mm)	
7068 RTD Temperature Calibrator (107mm)	7061 Multifunction Process Calibrator (285mm)	7069 V-I Loop Calibrator (97mm)	