



Time Electronics
Calibration, Test and Measurement

CalBench

A complete calibration
laboratory in one test bench





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About CalBench

CalBench is the ultimate multifunction calibration station from Time Electronics. Each bench is custom-made to meet specific user requirements. Offering versatility and precision it is ideal for laboratories and workshops in need of multi-product testing that meets the highest industry standards.

A wide range of modules can be fitted to the primary console creating a highly flexible system that is both functional and easy to use. Further expansion can be achieved by adding the secondary console, mounted under the primary.

Calibration modules cover electronic signal, temperature, loop, and pressure applications. Power supplies, DMMs, oscilloscopes and generator modules can also be fitted into the bench consoles. Functions are clearly defined on each module and a competent technician will quickly master the operation of the system without training or constant reference to manuals. Various fittings, functions, and additional devices can be added to CalBench to create a comprehensive work environment.



Calibrates

Multimeters

Loop Signal Indicators

Temperature Indicators

Pressure Transducers

AC/DC Signal Sources

Pressure Gauges

Temperature Sensors

Frequency Meters

Signal Generators

Clamp Meters

RTD Transmitters

Decade Boxes

Oscilloscopes

Tachometers

Timer Counters

Pressure Transmitters

AC/DC Millivoltmeters

Power Supplies

Thermocouple Transmitters

Ohmmeters

And more

Module Options and Extras

Pressure: Precision calibrators, indicators, and controller modules. Ranges from vacuum to 600bar.

Power Supplies: Fixed and adjustable AC and DC power supplies, dual and programmable units.

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

Multifunction Calibrator and DMM Modules: The 7051 provides high accuracy multi-product calibration and has an internal 6½ digit multimeter. Also available are the 5065B (6½ digit) and 5075B (7½ digit) DMM modules.

Additional Modules: Further modules include oscilloscopes, frequency counters, function generators, and harmonics analyzers. Custom design modules can be fitted allows the user to integrate a familiar instrument into their system.

External Options: Pneumatic and hydraulic calibration pumps, pressure gauges, dead weight testers, dry block calibrators, pressure test kits, hoses and connectors, test lead sets, solder stations, vices, and much more.

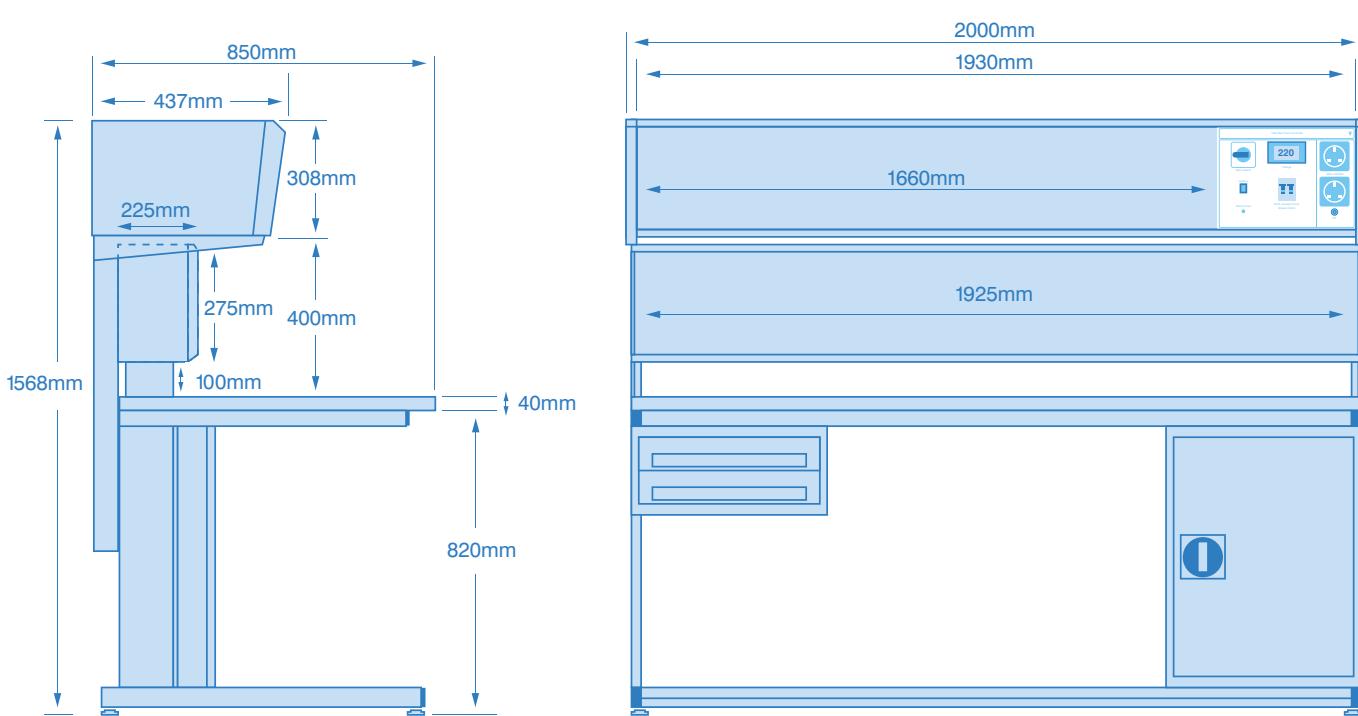
Bench Fittings: Various fittings can be added to CalBench to improve usability and create a more efficient and organised workspace. Under-worktop drawers, cabinets, and CPU holders; tool holders and hooks for the perforated back panel; air preparation kits, desktop mountable devices, and more.

Laboratory Design and Supply: Time Electronics offers a turnkey laboratory design service for customers requiring a complete and efficient test facility. Using 3D software we create the layout then generate images and videos to visualise the concept. We supply all the necessary test equipment and surrounding laboratory furniture.



CalBench General Specifications

Bench dimensions and console settings



The above drawing represents the bench with 7081 secondary console fitted. Without this option the overall height can be set at the shown 1568mm or 1413mm depending on user preference. The under-worktop fittings shown are optional (see page 4).

CalBench Details

The 7080 CalBench consists of the workstation frame, table top, and primary console. The 7082 mains power module is fitted as standard in every bench. The remaining space in the primary console houses the modules selected by the user for their applications.

The primary console is mounted on two support arms that fix to the rear of the workstation frame. There are two fixed settings available, allowing the user to position the console 250mm or 400mm above the worktop. A perforated back panel is fitted below the primary console. It is sized to accommodate both height settings and can be complemented with tool hooks, holders, and accessories.

The 7081 secondary console is an optional expansion that mounts under the primary, housing additional modules. Being 225mm deep it maintains user worktop space. When fitted the perf panel is removed.

Each bench is heavy duty, constructed from mild steel throughout with side panels and console support arms welded to provide a reinforced frame. The bench worktop is a durable laminate finish with rolled front edge. An antistatic worktop is also available.

Bench set up is fast and simple as the consoles are supplied complete, fully tested, and with the modules installed. The complete system requires only basic construction and once the mains power and line pressure is connected it is ready for use.

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. The secondary console is powered from the primary console via an IEC power link cable. For pressure, the external line input ports are arranged on the rear of the consoles.

7060 Tabletop Bench Console

The 7060 is a 1000mm wide tabletop console. It is designed for laboratories requiring a modular unit where space is limited or a mobile system is required. It can be supplied as a standalone unit ready for fitting or pre-mounted on either a standard or mobile workbench.

A compact 150mm 7082 mains power module is fitted as standard. This allows a further 830mm of module space for calibrators, power supplies, and more. Multiple 7060's can be used side by side or mounted on top of each other. Mains power can be separate for each console or combined, creating more module space.

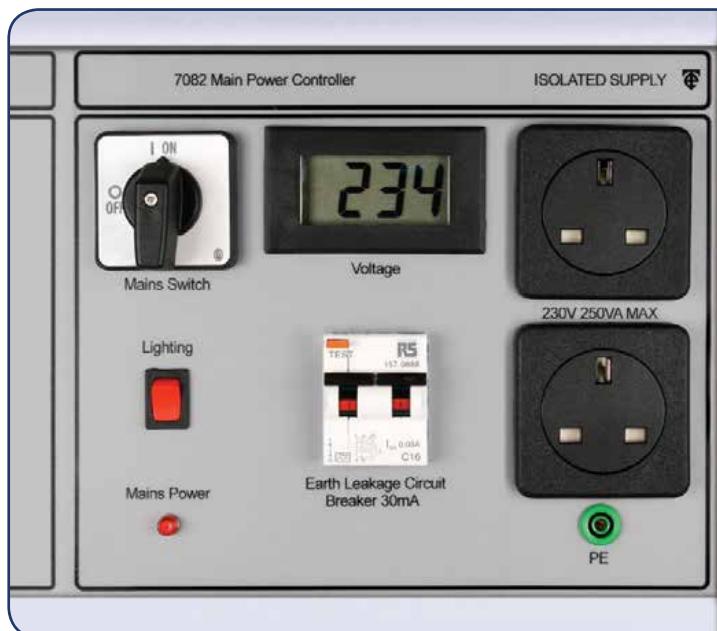
The 7060 is supplied as a complete system with all modules fitted and tested, ready for use.



7082 Mains Power Controller Module

Fitted as standard in every bench the 7082 mains power controller module is a single-phase unit equipped with 2 power sockets and digital voltage meter.

- Mains power on/off switch to provide isolation for the entire bench
- Lighting switch to provide separate control of the worktop lighting
- 16A overload protection for bench. Residual current protection 0.03A
- 2 front panel earthed sockets (4 under console earthed sockets)
- Digital mains voltage meter (0 to 300V)
- 2 filters (mains and lighting) fitted to attenuate mains spikes
- Cooling via 2 mains powered 80mm extraction fans fitted internally
- PE socket is provided for wrist bands, mats, etc
- All metallic parts of the bench are connected to mains earth
- Optional isolated mains output sockets (7063)
- Various socket types available: UK 13A, Euro Schuko 16A, Indian Round Pin 15A, US 15A



Bench Fittings

A number of fittings can be added to each bench. Standard items include under worktop drawers and cabinets, and tool hooks/holders for the perforated back panel.

- Under console lighting and 4 power sockets fitted as standard
- Under worktop single and multi drawer units
- Combination drawer and cabinet units
- Slotted divider kits and rubber mat inserts for drawers
- Horizontal or vertical fitted under worktop PC holders
- 20, 40, or 60 piece tool hook kits for the perforated back panel
- Perforated panel shelf units, storage bins, and power strips
- Bench mounted side arms for monitors, tools, and more
- Air preparation kits and filters (fitted under bench)



Bench Modifications and Extras

Modifications and add-ons are available to incorporate user specified features. Lab furniture to accompany the bench and create a complete and custom test facility can also be supplied.

- Optional secondary console shelf unit (7081S)
- Custom modules for additional functions (see page 23)
- Optional quad power socket module
- Worktop mounted tools and instruments
- Side tables, mobile benches, trolleys, cabinets and cupboards
- Wall mounted perforated panels for tools, storage bins, and more
- Tool cases and service kits
- Bench stools, height adjustable chairs, and foot rests
- ESD workstation kits and mats



Calibrates

Digital/Analog Multimeters

Process Calibrators

Clamp Meters

Oscilloscopes

Handheld/Bench DMMs

Voltage & Current Sources

Temperature Indicators

Decade Boxes

Frequency Meters

Transducers/Transmitters

R-C-L Meters

Data Loggers

And more

Calibrator / DMM / Touch Screen PC

Mounted centrally in the primary console the 7051 combines a precision multifunction calibrator, 6½ digit multimeter, and industrial touch screen PC. It is the principle module for on-site facilities that require high performance calibration and maximum functionality.

Calibrator: Provides a wide range of calibrated outputs for AC/DC voltage and current, RTD and thermocouple simulation, plus a range of resistance and frequency functions. Internal options can be added for increased capabilities. These include high voltage/current, capacitance/inductance, and oscilloscope calibration. Further enhancements can be made by additional side modules, adaptors, and benchtop instruments.

DMM: The integral 6½ digit multimeter measures DC voltage to 1000V, AC voltage to 750V, resistance to 100MΩ, and frequency to 300kHz.

PC: The operating system is Windows XP embedded, running on a 2GHz PC which allows standard peripherals to be connected. The calibrator control software allows the wide range of functions to be easily selected using mouse, keyboard, or touch screen.

EasyCal: Enables automatic calibration to increase speed and efficiency of work. In addition EasyCal has features to manage and administrate both inventory and quality control. To complement the system a printer and connectivity kit is supplied as standard, for generation of certificates and reports.

Communication: Using EasyCal the operator can read back from compatible electrical, temperature, pressure, and loop modules within the bench. EasyCal can also be used with external instruments such as dry block calibrators and portable test instruments.

7051Plus Package: A comprehensive package including specific options to cover the calibration requirements for electrical and process applications. As a package it incorporates the full internal capabilities of the 7051, and is complemented by external adaptors for increased functionality. It is suitable for users in need of rapid multi product testing with automated test runs using EasyCal software. Further supplied accessories include bar code reader and label printer.



Standard Features

Calibrator (source)	Range	Best 1 year Specification
Voltage DC	0 to \pm 22V	\pm 15ppm of setting
Current DC	0 to \pm 220mA	\pm 80ppm of setting
Voltage AC	1mV to 22V (10Hz to 20kHz, sine-wave)	\pm 300ppm of setting
Current AC	10µA to 220mA (20Hz to 1kHz, sine-wave)	\pm 0.05% of setting
Decade Resistance	1Ω to 1GΩ (Fixed values, decade steps)	\pm 20ppm of setting
Simulated Resistance	10Ω to 40MΩ	\pm 0.02% of setting
Conductance	1s to 1ns (Fixed values, decade steps)	\pm 20ppm of setting
Thermocouple	-270 to 1820°C (Type J, K, R, T, S, B, E, N)	\pm 0.15°C
PT100 Simulation	-180 to 850°C	\pm 0.15°C
Frequency/Period	0.1Hz to 10MHz / 100nS to 10S	\pm 20ppm of setting

6.5 Digit Multimeter (measure)	Range	Best 1 year Specification
Voltage DC	0 to 1000V	35ppm of rdg + 6ppm of rng
Current DC	0 to 3A	500ppm of rdg + 50ppm of rng
Voltage AC	0 to 750V	0.06% of rdg + 0.04% of rng
Current AC	0 to 3A	0.1% of rdg + 0.04% of rng
Resistance	0 to 100MΩ	100ppm of rdg + 50ppm of rng
Frequency	3Hz to 300kHz	0.01% of rdg
Thermocouple	-270 to 1800°C (Type J, K, R, T, S, B, E, N)	\pm 0.5°C
PT100	-180 to 850°C	\pm 0.08°C

Internal PC	Specification/Details
Processor	2GHz
RAM	512MB
Hard Drive	60GB
Ports	4 x USB, 1 x Fast Ethernet
Display	10.5" LCD, (Touch Screen)
Operating System	Windows XP Embedded
Pre loaded Software Programs	EasyCal Calibration Software
Supplied Hardware/Accessories	USB keyboard, Printer, DVD-RW, 4 port USB hub, Numeric key pad, USB Stick

Options (* denotes options that are included in the 7051Plus package)

Calibrator (internal)	Range/Values	Best 1 year Specification
High Voltage/Current (9782*)	220mA to 22A / 22V to 1050V AC/DC	DCI 250ppm. DCV 50ppm. ACI 0.2%. ACV 0.08%
Wideband AC Voltage (9771*)	20 to 200mV/300kHz. 0.2 to 2V/1MHz. 2 to 20V/100kHz	\pm 0.05% of setting
Capacitance (9798*)	1nF, 10nF, 100nF, 1µF, 10µF, 100µF	\pm 0.25% of setting
Inductance (9798*)	1mH, 1.9mH, 5mH, 10mH, 19mH, 50mH, 100mH, 190mH, 500mH, 1H, 10H	\pm 0.1% of setting
Full Range Resistance (9787*)	1Ω to 120MΩ (Variable)	\pm 100ppm of setting
- PT100	-180 to 850°C	\pm 0.07°C
Oscilloscope Calibration (9770*)		
- Amplitude	6mV to 200V and 6mV to 2V 50Ω (square-wave or DC)	\pm 0.05%
- Frequency/Period	0.1Hz to 100MHz / 10ns to 10s	\pm 20ppm
- Duty Cycle	3 frequencies: 100Hz, 1kHz, 10kHz, settable from 0 to 100%	
- Fast-Rise	< 400ps. Bandwidth checking up to 400MHz	
Frequency Reference (9783*)	0.1Hz to 10MHz / 100ns to 10s	\pm 0.1ppm
Scope 2.2GHz Sweep (9769)	100MHz to 2.2GHz levelled sine-wave (0.5, 1, 1.5V pk-pk)	Amplitude \pm 1%, Frequency \pm 20ppm

Adaptors and Accompanying Bench Instruments (see page 7 for further details)

External Adaptors	Clamp meter adaptor (9780*), tacho adaptor (9773*), torque wrench calibration adaptor (9759)
External Instruments	Current transformers, bench/portable calibrators, attenuators, references
EasyCal Accessories	Bar code reader (9777*), Calibration & ID label printer (9778*), Job & address label printer (9779)

7051 Accompanying Equipment

Supplied accessories and external options for use with the 7051 module



Supplied Accessories

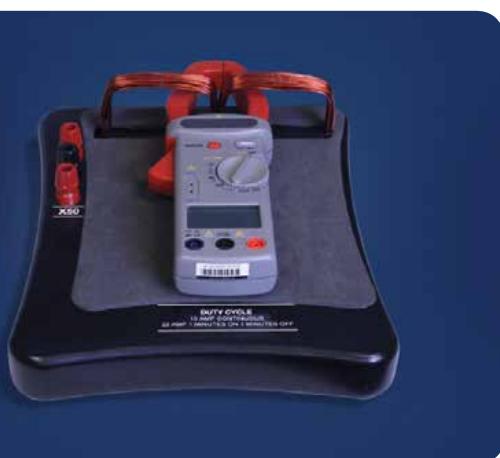
Supplied as standard with the 7051. The printer and connectivity kit provides all the required components for use with the in-built PC. The test lead set has the necessary connections for virtually all test applications.

Printer and Connectivity Kit

- Keyboard and mouse
- Ink jet printer
- DVD-RW
- 4 port USB hub
- Numeric key pad
- USB memory stick

Premium Test Lead Set

- General purpose 4mm test leads
- 4 wire screened, 4mm test leads
- BNC test lead
- BNC to 4mm plug
- 4mm test lead couplers
- Low thermal 4mm test leads & clips
- 4mm to mini thermocouple
- 4mm to spade adaptors
- Thermocouple male to male CU
- Pair of 4mm test Clips



Adaptors

Various adaptors can be used with the 7051 for increased capabilities. Standard adaptors for clamp meters, tachometers and torque wrenches are available. Custom adaptors for user specific applications can be supplied upon request.

- Clamp meter adaptor x50 turn - AC/DC current up to 1100A (DC, 45 to 90Hz)
- Optical tacho adaptor – 6 rpm (0.1Hz) - 600,000 rpm (10kHz)
- Current probe adaptor (for 7051 with oscilloscope calibration option fitted)
- Torque wrench calibration adaptors
- Humidity and temperature sensor adaptors
- Picoamp source adaptors
- Customer specific adaptors



Accompanying Instruments

The 7051 can be complemented by several benchtop instruments that enhance capabilities and provide more functions. Also available are portable versions of modules for site calibration work.

- 100A AC current transformer (9790)
- Power calibrator: 0 to 20kW AC and DC (5077)
- Power amplifier: 60V AC, 90V DC – 100mA (9760 shown)
- Low noise attenuators: 100:1 and 1000:1 versions (9766 and 9767)
- Rubidium frequency reference (9762) for use with oscilloscope calibration option
- Dry block calibrators with EasyCal communication (see page 25)
- TE digital pressure gauges with EasyCal communication (see page 24)
- Additional instruments and modules for specific applications (see pages 23 to 25)



Easycal Software Accessories and Options

Several options are available for use with EasyCal calibration software. Items include a bar code reader which enables fast identification of devices in the pre-calibration stage, and label printers for tagging units after calibration.

- Bar code reader
- Calibration and ID label printer
- Job card and address label printer
- Durable over-laminate labels for field devices situated in harsh environments
- Cables, leads, and adaptors for interfacing EasyCal with separate computers
- Extra user licenses for additional computers
- EasyAdmin security add-on: set of user rights, access levels, and more
- WebCerts online certificate upload/retrieval add-on



7051 General Specification

Warm up	30 minutes to full accuracy
Settling Time	Less than 5 seconds
Interfaces	4 x USB, 1 x Fast Ethernet
Temperature Performance	Operating: 5 to 45°C. Full Spec: 22°C +/- 3°C. Storage: -10°C to 50°C
Operating Humidity/Altitude	<80% non condensing. Altitude: 0 to 3km. Non operating: 3km to 12km
Line Power	100 to 230V AC 50/60 Hz. 200W maximum
Dimensions	w425mm, h201mm (primary console fitting only)

7051 Ordering Information

7051 Multifunction Calibrator and Control Centre - Features and included items

- Precision Multifunction Calibrator
- AC/DC 22V / 220mA
- Decade Resistance 1Ω to 1GΩ
- Simulated Resistance 10Ω to 40MΩ
- PT100 Simulation (-180°C to 850°C)
- Thermocouple Simulation (J,K,R,T,S,B,E,N)
- 10MHz Frequency
- Internal DMM – 6.5 Digit (AC/DC 1kV/3A, 100MΩ, 300kHz)
- Internal PC – 10.5" colour LCD/touch screen
- 7051 Calibrator/DMM Control software
- EasyCal Calibration Software (Full License)
- Printer and Connectivity kit
- Premium Test Lead Set
- User Manuals

7051Plus Package - For Comprehensive Electrical and Process Calibration

Includes all of the features and items listed above with selected options (*) shown below for maximum multi product calibration capabilities.

Internal Options

9782*	High Voltage/Current option AC/DC 1kV/22A (Multimeter Calibration)
9798*	Capacitance (1000pF to 100μF) / Inductance (1mH to 10H)
9787*	Full Range Resistance (1Ω to 120MΩ) including advanced PT100 simulation
9771*	Wideband AC Voltage (1MHz Max. 20mV to 20V)
9770*	Oscilloscope Calibration (1mV to 200V, 0.1Hz to 100MHz, bandwidth check to 400MHz)
9783*	Frequency Reference for timer/counter calibration (9770 option must also be fitted)
9769	Scope 2.2GHz Levelled Sine Generator

External Options

9762	Rubidium High Stability Frequency Reference (9770 scope calibration option must fitted)
9773*	Optical Tacho Adaptor
9780*	Clamp Meter Adaptor (1 and 50 turn coil)
9759	Torque Wrench Calibration Adaptor
9764	Current Probe Calibration Adaptor (oscilloscope calibration option must fitted)
9790	100 Amp AC Current Transformer
5077	Power Calibration (0 to 20kW AC and DC) - External Calibrator
9760	Power Amplifier (60V AC, 90V DC – 100mA)
9766	External Low Noise Attenuator 1000:1
9767	External Low Noise Attenuator 100:1
C165*	Factory Calibration Certificate (NPL traceable)
C134	UKAS Calibration Certificate (ISO 17025)

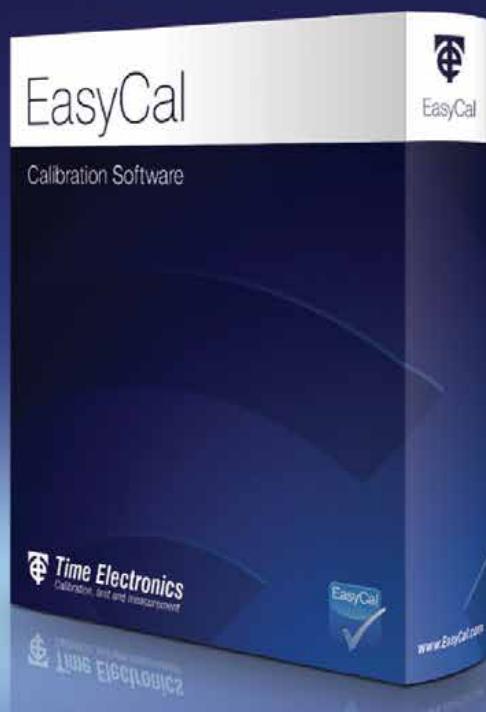
EasyCal Options

9777*	Bar Code Reader
9778*	Calibration and ID Label Printer
9779	Job and Address Label Printer
EC2FL	Additional Users License - For use on separate PC's
EAD5	EasyAdmin security add-on: Set user rights, access levels, and more (5 users).
EWC	WebCerts add-on: Online application for upload and retrieval of certificates and reports

* These options are included in the 7051Plus package.

Full 7051 technical specifications and further information on EasyCal licenses and options available at www.timeelectronics.com

Manage, Automate and Optimise the Calibration Process



About EasyCal

EasyCal is a complete software package with features covering all aspects of calibration work and management. It is designed to reduce workload, improve efficiency, and provide the essential platform for companies looking to create and sustain an effective calibration program. The comprehensive features simplify the administration process from reminder reports through to despatch. With a familiar and intuitive user interface all operators can quickly learn and navigate through the applications. This allows fast, straightforward implementation and integration of the software.

Communication and Control

EasyCal is supplied as standard with the 7051 control centre module or can be installed and used on separate computers in the test facility. User friendly features and controls aid the process to decrease calibration times. EasyCal can also read back values and data from compatible pressure, process and electrical modules, and can be used with external instruments such as dry block calibrators.

For Multiple Industries and Disciplines

EasyCal is a versatile solution to multi-device calibration with the comprehensive functionality that is required across industries. It is globally used as the principal software in both calibration businesses and companies with on-site test facilities.

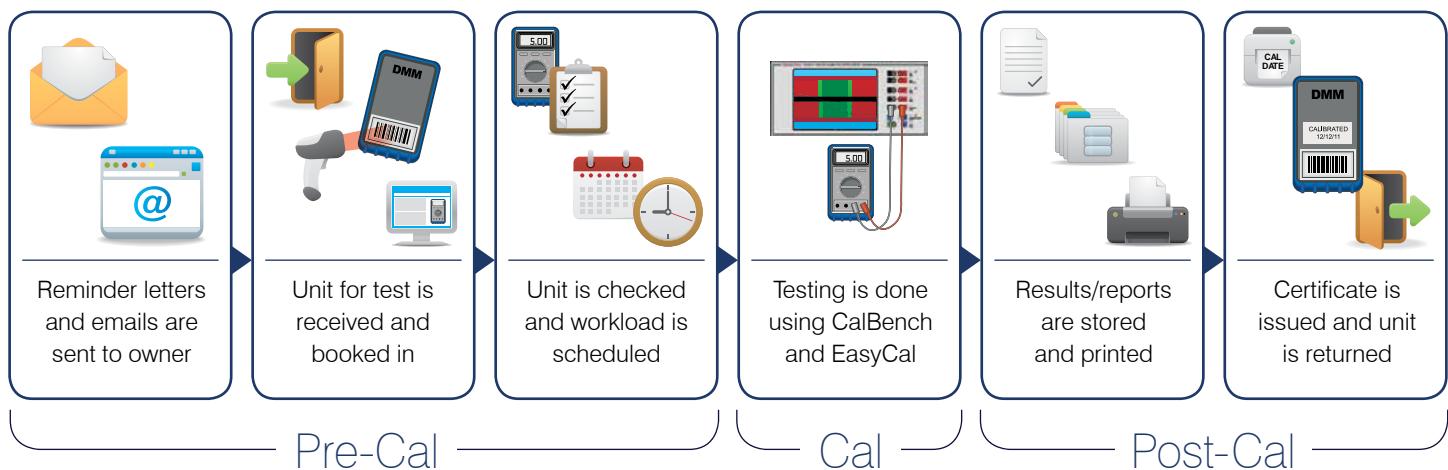
EasyCal is also designed for universal testing applications and can cover a wide range of disciplines. Users can calibrate and verify various instruments and devices: electrical and electronic; level, pressure, and flow; temperature and loop; mechanical and dimensional.

Features

- Supplied as standard with the 7051 control centre module
- Communicate with compatible CalBench modules
- Automated planning and scheduling
- For use with multiple devices and instruments
- Print/email/store certificates and reports
- Network compatible
- Produce calibration labels
- Quickly generate procedures using templates
- 1200+ pre-written test procedures included
- Calibration due reminder system
- E-mail reminder letters and lists
- Customise reports and certificates
- Create PDF reports and certificates (PDF engine)
- Print and read bar codes
- Universal instrument control
- HART and Foundation Fieldbus communication
- Secure user log in and electronic signatures
- Create uncertainty tables for laboratory & site
- WebCert feature for online certificates



Automating the Calibration Process with EasyCal



EasyCal: For the Calibration Process

Automating the calibration process brings important benefits and provides increased speed of calibration and consistency of results.

Pre-Calibration: The calibration management features of EasyCal make the planning and organisation of instrumentation calibration simple. A recall/reminder system informs the user of upcoming jobs, and search functions allow the user to quickly identify a unit for test.

Calibration: EasyCal controlled calibration significantly decreases testing times, meaning less instrument downtime and faster turnaround. This improves throughput meaning greater return on investment. EasyCal optimises the process by allowing the user to create procedures quickly and easily with the help of the included design wizards and pre-written templates.

Post Calibration: Easily produce calibration certificates and reports to ISO 9001, ISO 17025, and other quality standards. These can be printed, stored, or emailed as PDFs. EasyCal has a selection of preformatted certificate templates suitable for displaying typical calibration results.



The Core Benefits of using EasyCal

Achieve compliance with quality standards

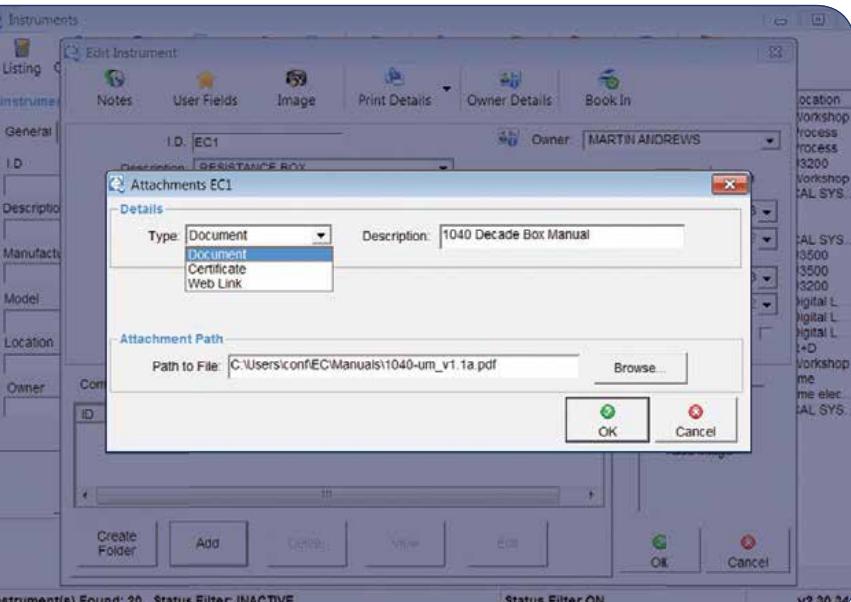
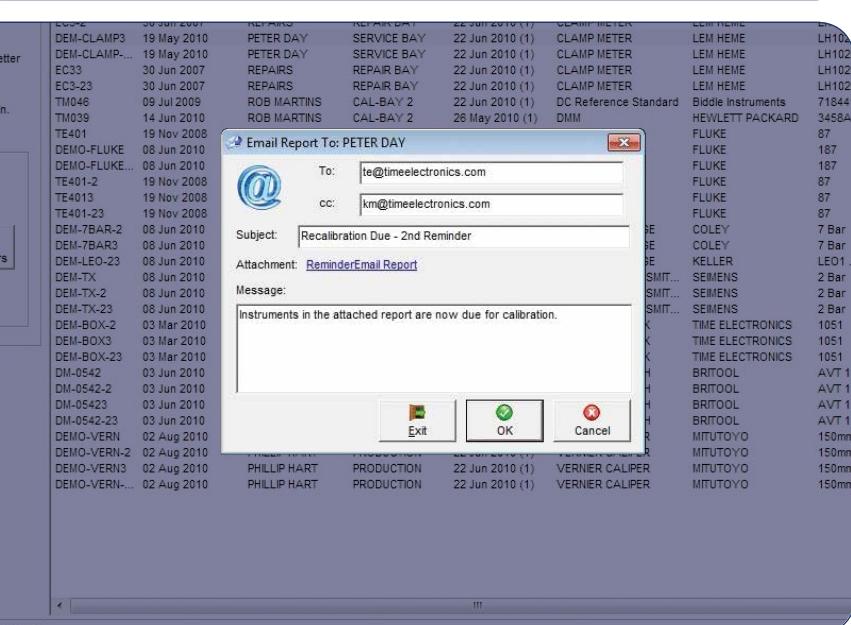
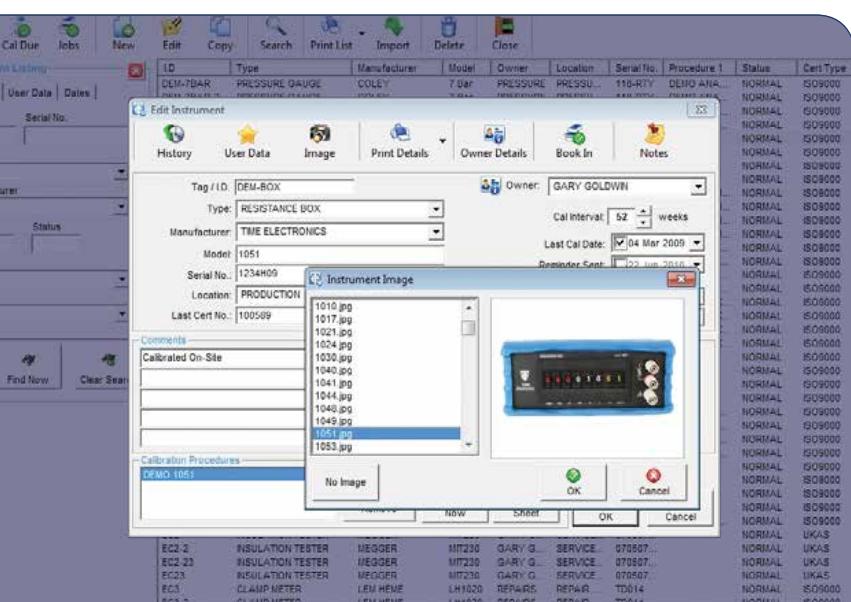
- Automated document control ensures conformity and quality
- Establish procedures to maintain repeatability and monitor quality
- Schedule and maintain calibration intervals.
- Evidence of traceability to national standards
- Record calibration environmental conditions
- Produce calibration labels, maintain calibration history
- Reduce possibilities for errors or omissions
- Electronic record retention ensures integrity for successful audits

Create an efficient control and management system

- Reduce testing times
- Eliminate continual outsourcing calibration costs
- Full control over the calibration process
- Improve turnaround
- Quick and easy solution to instrument analysis when needed
- Internal scheduling for calibrations. No external factors
- Centralised document management
- On demand networked review of certificates and reports

EasyCal Calibration Software

Overview of applications and features



Inventory, Reminders, and Jobs

A comprehensive inventory database can be created and customised to company requirements. For internal calibration and quality management, departments and users can be specified. Alternatively EasyCal can be used as the controlling system for a calibration business based around customers and owners.

Search

A powerful search feature enables the user to enter specific criteria to quickly find the required data. When adding details the user is aided by drop-down lists, which automatically update when new information is added.

Input Fields

Used to add details such as ID and serial number, manufacturer and model, instrument status and service notes. In addition custom fields can be created to integrate with a company system. Images can be uploaded to provide further reference.

Instrument Recall and Reminder System

Instruments which are due for calibration are listed on screen. Reminder letters and lists can be printed or emailed directly to the customer or department. An advanced notice period can be set to bring forward the recall date allowing for response time.

Job Management

When a unit for test is booked in the job process starts. Specific information about the job is entered; such as 'service required', 'sub contracted' and 'accessories supplied'. A job sheet and label can be produced at this stage to accompany the instrument. As the job is put through the system these parameters can be updated, for example 'quote price', 'job status' and 'invoiced'.

Attachments

Create links to technical files, specifications, web pages, word documents, videos, and more. These can be set to automatically display prior to the calibration run.

Devices and Standards used for Calibration

Traceability information for instruments and standards that perform the calibration work is stored and maintained by EasyCal.

Uncertainties

Uncertainty tables for laboratory and site can be created for each calibrating instrument. These are then automatically processed and applied to certificates as required.



Procedure Writing and Editing

Creating and editing test procedures is made simple with an intuitive, user-friendly interface. Editing test information can be done by adding, inserting, or copy and pasting. EasyCal keeps track of each time a procedure is edited.

Procedure Library

A calibration library comprising of over 1200 procedures covering a wide variety of instruments and devices is included as standard.

Procedure Templates

Procedure templates for multimeters, clamp meters, decade boxes, insulation testers, and more can be used for creating any new procedures as required.

The screenshot shows the 'Procedure Library' window. At the top, there's a toolbar with buttons for 'Copy', 'Print List', 'Search', 'Library', 'Import', 'Export', 'Delete', 'Close', and 'Details'. Below the toolbar is a table with columns for 'Name', 'Description', 'Manufacturer', 'Model', 'Comments 1', 'Comments 2', and 'Comments 3'. The table lists various calibration items like 'Pressure Indicator Analogue', 'Thermocouple', 'CLAMP METERS', etc. A large text box in the center says 'The procedures below are primarily written for use with Time Electronics' calibrating equipment.' It lists categories such as 'Digital/Analog Multimeters, RCL Meters...', 'Clamp Meters and Current Sensors...', 'Oscilloscopes and Scope Meters...', etc. At the bottom right of the main window is a 'Close' button.

Fast Procedure Creation and Editing

Copy and paste multiple tests. Globally edit a group of tests. Colour coded listing helps sort and identify different test types.

Procedure Simulation

The Calibration Run Simulator enables a procedure to be tested without the need for a controlling instrument. To further assist with development of procedures a test can also be edited during the actual calibration run.

Format Certificates

Colour code and add borders to test group titles. Add column headers where a change of layout is required. A preview feature allows the user to check the certificate layout to determine if formatting is correct.

The screenshot shows the 'Test Wizard for Pressure Indicator Digital' dialog box. It has sections for 'Input' and 'Output'. Under Input, it shows 'Function: Pressure', 'Calibrating Inst: 7065 Pressure Calibrator 10bar', 'Range: 0 to 2 bar', 'Setting Resolution: 0.0001', and 'Setting Band +/- 0.0005 bar'. Under Output, it shows 'Function: Pressure Alm', 'D.U.T: Pressure Indicator Digital', 'Range: 0 to 2 Alm', and 'Resolution: 0.0001'. At the bottom, there are fields for 'Reject Error: 0.3 % of Span', 'Method: Up/Down', 'Number of Test Points: 6', 'Number of Devices Under Test: 1', and buttons for 'Create' and 'Cancel'.

Conversion Tables

Conversion tables for thermocouples, RTDs, current transformers, and clamp meter adaptors are included. Alternatively user-defined tables can be created.

Remote Commands

For more complex instrument control, commands can be sent on a test-by-test basis or run as a script. Closed loop calibration is also achievable using the universal readback feature. This allows EasyCal to control third party calibration equipment and communicate with devices under test.

The screenshot shows the 'T-DMM3000 Test Details' dialog box. It has tabs for 'Test Name', 'Test Line', 'Test Type', 'Test Fun.', 'Required Value', 'Input Meth.', 'Allowed', 'Dec.', 'Sh.', and 'Prompt Text'. A table lists test parameters like 'DC Volt', '3V DC Range', 'LINEARITY 10V', etc. Below the table is a 'Test 4 - Time Calibrator (5025), Proc: T-DMM3000' dialog box with fields for 'Name: 3V DC Range', 'Prompt: SELECT 3V DC RANGE', and 'OK' and 'Cancel' buttons. Another dialog box titled 'Additional GPIB/Serial Commands' is open, showing 'GPIB Commands' and 'Serial (RS232) Commands' sections. It includes fields for 'Port Settings: 1,9600,n,8,1', 'Before Test: (WAIT?2#UNC DC, 2.8V, OUTPUT ON(1))', and 'After Test:'. At the bottom, there are buttons for 'Edit Additional GPIB/Serial Commands', 'Save & Close', 'Save & Exit', 'OK', and 'Cancel'.

EasyCal Calibration Software

Overview of applications and features

The screenshot shows a graphical user interface for a calibration run. At the top, there's a table of test parameters for a 'Multifunction Calibrator'. Below this is a large window titled 'Calibration Run' showing a digital multimeter with its front panel and internal circuitry. Graphical prompts like 'CONNECT AS SHOWN. SELECT 300Ω RANGE ON METER' and 'Continue' are overlaid on the meter. A color-coded bar at the bottom shows results for individual test points. The software also includes a summary table for the 'Instrument Under Test'.

This screenshot shows a 'LINEARITY 30V' test. It features a graphical interface with a red and green bar chart, a numeric keypad, and a keyboard entry field. A 'Prompt' box at the bottom asks the operator to select the 30V DC range. The software also includes a summary table for the 'Instrument Under Test'.

This screenshot shows a 'CLAMP-AC1000A' test. It includes a table of test details, a procedure table with many rows of data, and a 'Test Control' window where operators can enter 'Yes' or 'No' responses for various test items. The software also includes a summary table for the 'Instrument Under Test'.

Instrument and Device Calibration

Automated calibration run provides fast and accurate collection of data, whether using direct instrument control or manual entry. EasyCal guides the operator through the procedure using graphical test screens and user prompts.

Search

Selection of the device under test is quick and easy. With the use of a barcode scanner this selection becomes automatic.

Calibration Prompts

Text and graphical prompts aid the user with instrument range selection and connection. So even the most complex calibrations can be performed with relative ease.

Graphical Test Screen

The calibration run is made simple and efficient by a graphical user-interface, which increases speed of data entry. The colour coded indication bar displays the test limits. This allows the operator to easily identify out of tolerance results.

Test Control

At any stage during the calibration run a summary can be displayed, this includes both completed and remaining tests. Colour coding indicates tests passed or failed. The operator is able to move forward or backward through the procedure as required.

End of Calibration Run

Data for every test is stored, including a snap shot of the procedure used. If required calibration comments and service history can be updated. The operator is able to print the certificate, produce a calibration label and/or store the results to be issued as required.

Recovery Mode

If for any reason a calibration run is interrupted, EasyCal's recovery mode allows the user resume the test run from the point of termination.

Calibration Test Forms

Alternatively 'calibration test forms' for hand written results are available. This data is then entered manually into EasyCal at a later date.

Certificates/Reports/Data Management

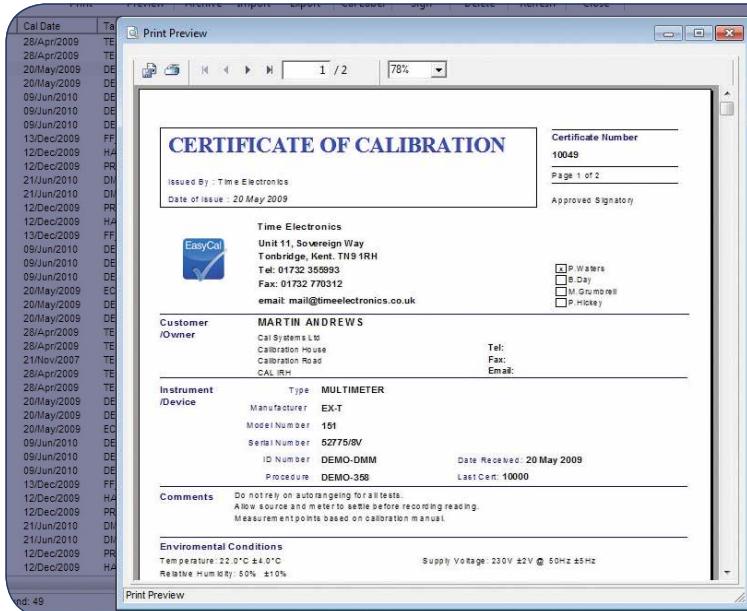
Produce, print, and store calibration certificates, reports, and labels. Simple search facilities enable the user to locate any data on demand. Keeping track of instrument history and servicing is made easy.

Certificate Templates

A range of pre-formatted templates are available for immediate use. A company logo can be added without the need for 3rd party software.

Electronic Signatures

Password protected electronic signatures allow management to approve certificates. In addition a scanned image of the signature can automatically be inserted, eliminating the need to print certificates.



Built-in PDF Engine

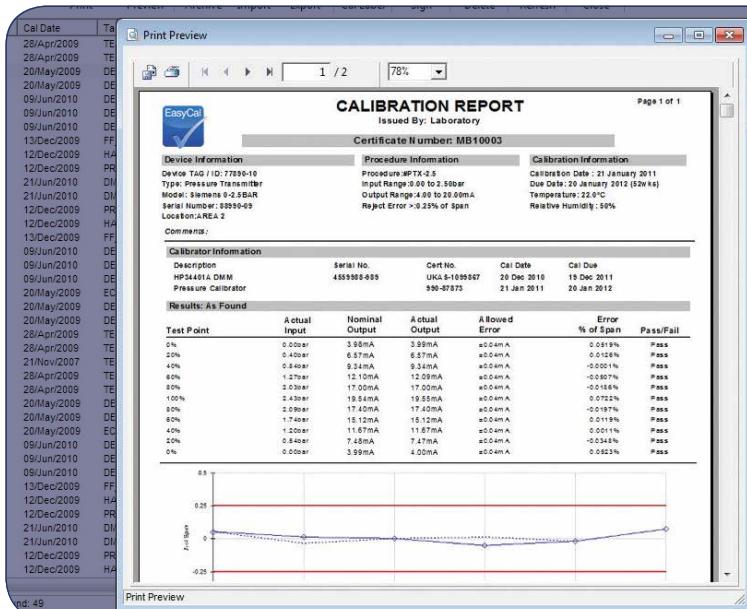
Generate PDF reports and certificates ready for emailing and universal review.

Calibration Reports

Documented traceability provides a recorded audit trail. Reports showing calibration duration times can assist with costing and assessments.

Archive

The results database can be streamlined by using the archive feature. This improves data organisation and management. Archives are quickly retrieved, giving instant access to historical certificate data.



Import and Export

Exchange data from one system to another using the import/export feature. This method is ideal for site and field calibration work, where data is recorded externally then uploaded to the main database upon return.

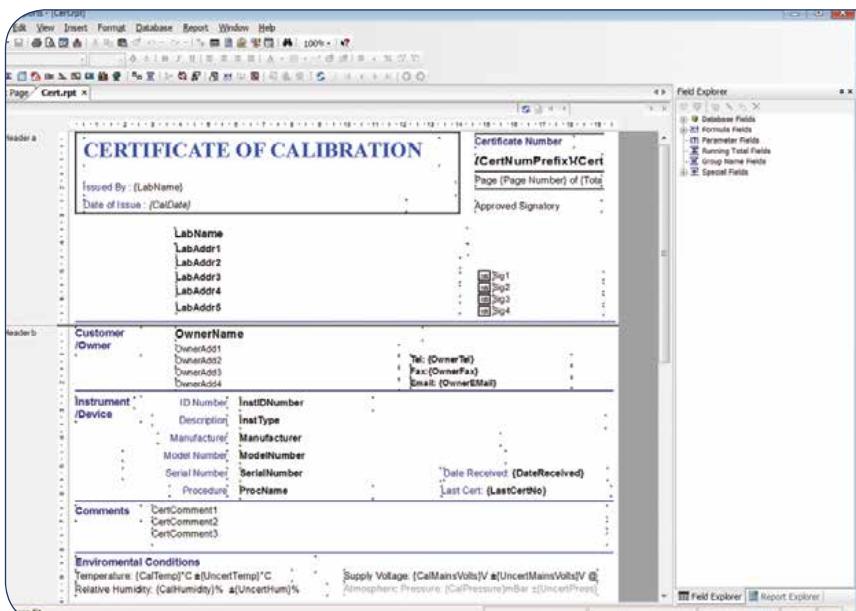
Customise

Crystal Reports (optional) allows full modification of certificate, label, and report layouts. Design custom reports using queries, formulas, and running totals.

Add-Ons

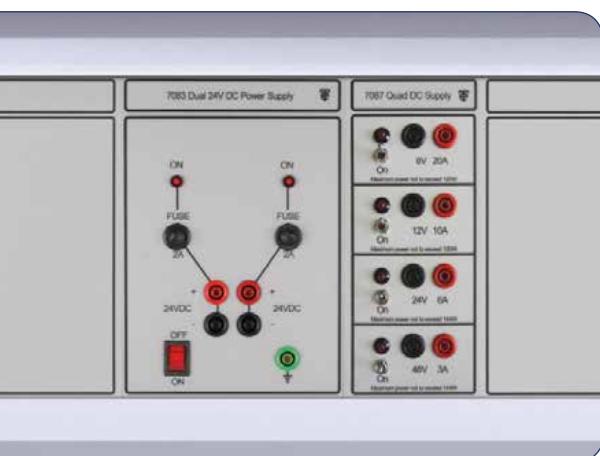
EasyAdmin is an optional add-on that enables advanced security for EasyCal via user rights and access levels. It provides a central administration point for calibration instruments, certificate information and user fields.

WebCerts is a web based application that enables EasyCal users to upload and retrieve certificates and reports online. A secure log in feature allows access the user's private folder with their relevant documentation.



Power Supply Modules

Fixed and adjustable AC and DC power modules



7083 and 7087 Fixed DC Power Supplies

Fixed DC power supplies suitable for powering loop signal instrumentation.

7083 – 2 independent 24V (2A) floating supplies

- 4mm shrouded output sockets
- Ripple: Typically 240mV
- Regulation: Typically 2%
- Over-volt and current overload protection

7087 – 4 fixed independent floating supplies: 6V (20A), 12V (10A), 24V (6A), 48V (3A)

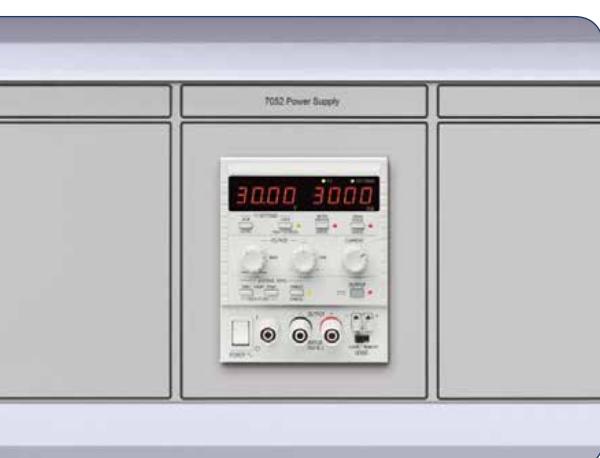
- 4mm shrouded output sockets
- Ripple and Noise: 50mV or 1% pk-pk of VNOM, whichever is greater
- Over-volt and current overload protection
- Supplies can be connected in series to obtain an alternative output voltage



7075 Fixed 110V DC Power Module

The 7075 provides an isolated DC supply. Output is pre-specified between 96 and 144 volts with a current capacity up to 7.5 amps. Output voltage and current are monitored on two analogue moving coil meters, access is from two 4mm shrouded sockets.

- 96V to 144V preset single fixed output
- Output Current 7.5A max (limit to 800 watts)
- 4mm shrouded output sockets
- Line regulation: $\pm 0.1\%$
- Load regulation: $\pm 0.5\%$
- Output accuracy: $\pm 1.5\%$ of reading
- Output ripple ($> 50\text{Hz}$): $< 50\text{mV rms}$
- Hold up time: $> 5\text{ms}$



7052 Adjustable DC Power Supply

A high performance linear regulated DC power supply with true analog controls and digital functionality.

- 0 to 30V, 0.1mA to 3A (90W maximum)
- High accuracy four digit meters have a fixed resolution for consistent readings
- Low current range gives 0.1mA meter resolution and finer low current setting
- S-Lock function - instantly lock settings
- V-Span function - customise the voltage range
- Independent, isolated tracking, ratio tracking
- DC output switches and "view limits" button
- Safety binding post terminals
- Programmable version available (USB or RS-232) - 7052P



7053 Precision Adjustable DC Power Supply

A DC linear power supply with high accuracy, resolution, stability and noise. Multiple output ranges provide increased current capability at lower voltages. An advanced user interface gives superior control, combining speed with safety.

- Single Output, 3 ranges: 0 to 56V, 0 to 2A. 0 to 25V, 0 to 4A. 0 to 56V, 0 to 500mA
- 112W maximum output power
- 1mV setting resolution at all output voltages
- Setting by direct numeric entry or spin wheel
- Multiple non-volatile setting memories with preview
- OVP and OCP trips with alarm output
- Selectable remote sense terminals
- Programmable version available (USB, RS-232 or GPIB) - 7053P



7054 and 7055 High Voltage Adjustable DC Supplies

Precision linear regulated DC power supplies with high power density and smart analog controls for voltages up to 120V or 250V.

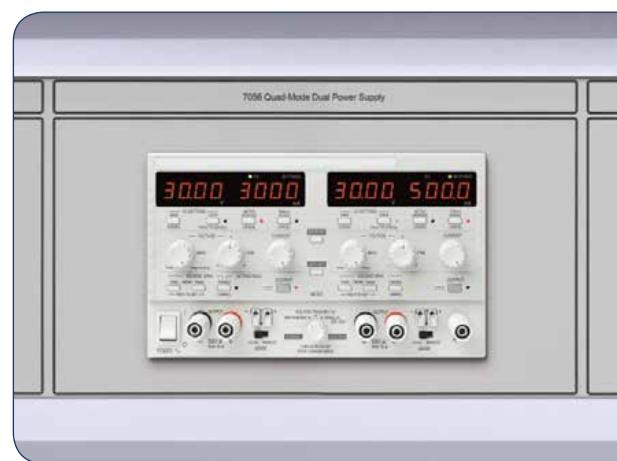
- 7054: 0 to 120V / 0.01mA to 750mA (90W maximum)
- 7055: 0 to 250V / 0.01mA to 375mA (94W maximum)
- High accuracy four digit meters have a fixed resolution for consistent readings
- Low current range gives 0.1mA meter resolution and finer low current setting
- S-Lock function - instantly lock settings
- V-Span function - customise the voltage range
- Isolated analog remote control of voltage and current
- Low current range and current meter averaging
- Programmable version available (USB or RS-232) - 7054P and 7055P



7056 Dual Adjustable DC Power Supply

A quad-mode dual output power supply with two identical outputs as per the 7052, with tracking and parallel modes.

- Dual outputs of 0 to 30V, 0.1mA to 3A (90W maximum)
- Single output of 0 to 30V, 0.2mA to 6A (180W maximum)
- 4 modes: Independent, isolated tracking, isolated ratio tracking, & true parallel
- In parallel mode power is channelled to the Master output for supply up to 6A
- In tracking mode the outputs can be wired in series to generate 0 to 60V
- High accuracy four digit meters have a fixed resolution for consistent readings
- Low current range gives 0.1mA meter resolution and finer low current setting
- Safety binding post terminals
- Programmable version available (USB or RS-232) - 7056P



7088 Adjustable AC Power Supply

The 7088 provides variable 50Hz AC power up to 10A. Two meters monitor the output voltage and current which is available from the front panel socket.

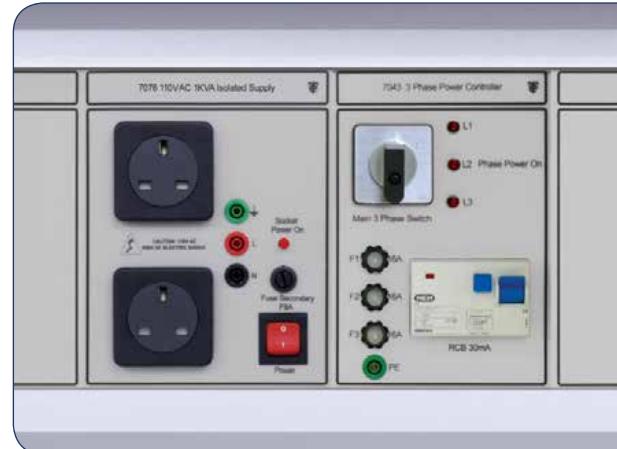
- Variable output voltage from 0 to 110% above line input
- 0 to 265V 50Hz, 10A at 240V input
- 0 to 121V 50Hz, 10A at 110V input
- Simple front panel analogue deviation control
- 0 to 10A output current
- Input fuse 10A slow blow
- Output circuit breaker: 10A (medium response time)
- AC moving iron meters to standard DIN specification
- Various socket types: UK 13A, Euro Schuko 16A, Indian Round Pin 15A, US 15A



Additional Power Modules

Further AC and DC power modules can be fitted in the bench consoles. These include fixed AC supplies, variable AC/DC supplies, 3 phase controllers, and custom fitted modules for specific user requirements.

- 7076 – 110V Fixed 8A AC Module (shown)
- 7043 – 3 phase mains controller module (shown)
- 7086 – 60V DC 3A Adjustable Power Supply (also see 7053)
- 7046 – Variable AC/DC Power Supply. AC 500VA, DC 400W, Freq 40 - 500Hz
- 7047 – Variable AC/DC Power Supply. AC 1000VA, DC 800W, Freq 40 - 500Hz
- 9758B – DC Electronic Load, 80A, 80V, 300W (see page 23)
- 7063 – Isolated mains output sockets for 7082 mains power module
- Customer specified power modules (supplies, sockets, controllers etc)





7062 Pressure Calibrator with Regulator 7059 Vacuum and Pressure Calibrator with Regulator

Regulated pneumatic pressure modules that are simple operation and high accuracy. The 7062 is pressure only, the 7059 is a combined vacuum and pressure calibrator.

- 7062 – Regulated Module: Vacuum, 0.2, 2, 5, 10, or 20bar (290psi) versions
- 7059 – Regulated Dual Module: Vacuum plus 0.2, 2, 5, or 10bar (145psi) versions

Range (bar)	Vacuum	0.2	2	5	10	20
Accuracy (% of fs)	0.04	0.1	0.04	0.04	0.04	0.04
Resolution	.0001	0.01mbar	.0001	0.001	0.001	0.001

- 4.5 digit display
- 5 selectable pressure units
- Quick release fittings
- < 70ppm/°C temperature coefficient
- Over pressure warning
- Integrates with EasyCal software

7064 High Pressure Calibrator with Regulator

For pneumatic pressure calibration with versions available up to 200bar (2900psi). Output pressure is controlled by a non-relieving type regulator, with bleed and block needle valves used to vent and isolate the output port. Common applications include testing pressure gauges and sensors.

Range (bar)	35	70	100	200
Accuracy (% of fs)	0.04	0.04	0.04	0.1
Resolution	0.01	0.01	0.01	0.01

- 4.5 digit display
- 5 selectable pressure units
- Minimess fittings
- < 70ppm/°C temperature coefficient
- Over pressure warning
- Integrates with EasyCal software

7066 Differential Pressure Calibrator

A precision module designed for very stable measurement of differential pressures between its two output ports, enabling the calibration of differential pressure gauges, transducers, and transmitters. Versions from vacuum to 10bar (145psi).

Range (bar)	Vacuum	0.2	2	5	10
Accuracy (% of fs)	0.04	0.1	0.04	0.04	0.04
Resolution	.0001	0.01mbar	.0001	0.001	0.001

- 4.5 digit display
- 5 selectable pressure units
- Quick release fittings
- < 70ppm/°C temperature coefficient
- Over pressure warning
- Integrates with EasyCal software

7032 Semi-Automatic Pressure Calibrator

A pneumatic pressure module designed to speed up routine calibration of pressure gauges, indicators and pressure transmitters. The user presets the required calibration points, typically 0%, 25%, 50%, 75%, 100% of full scale. These pressures can be quickly switched to the output port manually or remotely via EasyCal. Three versions are available: 2, 5 and 10bar (145psi).

Range (bar)	2	5	10
Accuracy (% of fs)	0.04	0.04	0.04
Resolution	.0001	0.001	0.001

- 4.5 digit display
- Pre-set 5 point calibration
- Quick release fittings
- < 70ppm/°C temperature coefficient
- 4 precision regulators
- Control and readback via EasyCal

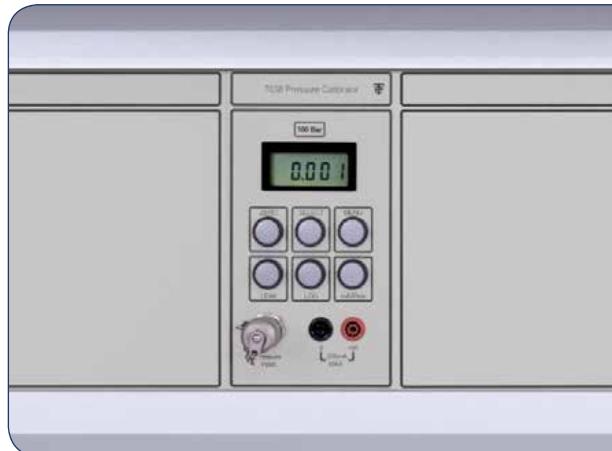


7038 Multifunction Pressure Indicator

A precision indicator module with versions from vacuum up to 600bar (8700psi). The 7038 has loop current measure, min/max logging (pressure & current), and leak rate display features. Fittings are quick release under 20bar and minimess from 35 to 600bar. It is suitable for pneumatic and hydraulic calibration applications.

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

- 4.5 digit display
- Pneumatic or hydraulic input
- 9 selectable pressure units
- < 70ppm/°C temperature coefficient
- Over pressure warning
- Integrates with EasyCal software



7065 Pressure Indicator

The 7065 is a precision indicator module that can be used for pressure or vacuum calibration up to 600bar (8700psi). It is a simple operation, ideal for calibrating and cross-checking pressure gauges, sensors, transmitters, switches, and many other devices. Fittings are quick release under 20bar and minimess from 35 to 600bar.

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

- 4.5 digit display
- Pneumatic or hydraulic input
- 5 selectable pressure units
- < 70ppm/°C temperature coefficient
- Over pressure warning
- Integrates with EasyCal software



7084 Line Pressure Controller

The 7084 is used to provide adjustable regulated pressure for connection bench modules and external pressure devices. Incoming pneumatic line pressure is connected via the rear of the console, with output via the front panel port. The 63mm gauge displays the regulated line pressure.

- 5, 10, 20, 35, 70, 100, and 200bar (2900psi) versions available
- Pneumatic self-relieving regulator
- 63mm anti-shock analogue gauge
- Front panel output connection
- Needle isolation valve
- Quick test fittings
- Pneumatic input connection



TE Gauge Pressure Modules

Module versions of Time Electronics digital pressure gauges fitted into the CalBench consoles. They offer a solution to customers requiring high accuracy pressure calibration (0.025% FS) or ranges not covered by the standard modules.

- Pressure ranges up to 700bar (10,000psi)
- 0.025% FS accuracy
- Available as indicator only or regulated versions to 200bar pneumatic
- Gauge pressure as standard (absolute, differential & compound upon request)
- Easy-to-read backlit display with 5 digit resolution
- 3 times per second measure speed
- Fully temperature compensated accuracy
- EasyCal compatible for readback on 7051 or PC (RS-232 connection)
- Higher pressure ranges available upon request





Temperature and Process Loop Modules

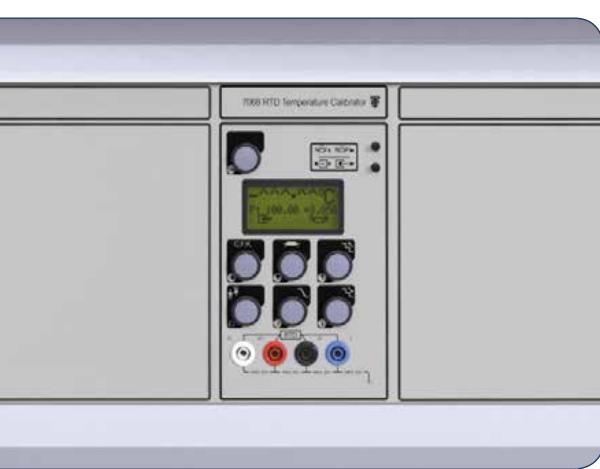
Loop Calibrators, RTD and Thermocouple Calibrators



7085 Temperature Distribution Panel

A temperature distribution panel module that switches 8 thermocouple inputs and 1 RTD reference to a common output. The 7085A automatic switching version requires the 7051 control centre module and EasyCal.

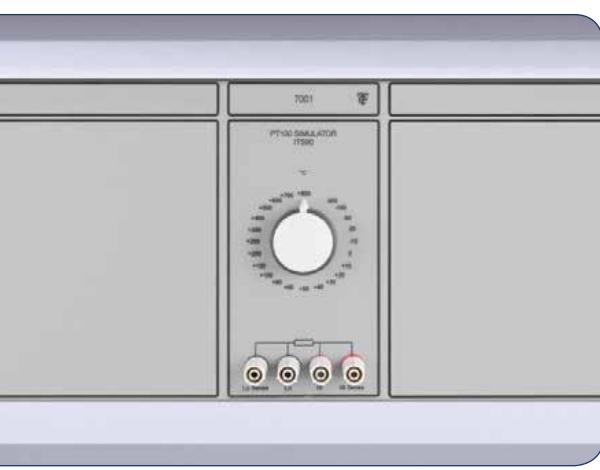
- Cold junction temperature display
- Records min/max ambient temperatures
- Integrates with 7051 and EasyCal
- Clear visual display of temperature (LCD)
- Suitable for use with dry block calibrators
- Automatic switching version available (7085A)



7068 Programmable RTD Temperature Calibrator

A calibrator for accurately simulating and measuring the most commonly used RTD probes. The 7068 is specifically designed to automate and to speed up the task of calibrating instrumentation used in the process control industry. It can also be used as a temperature reference for dry block and other precision temperature baths.

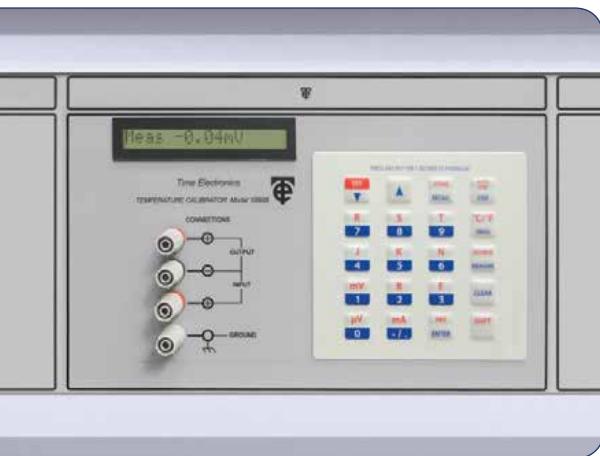
- Temperature – Accuracy 0.05°C (0.09°F). Resolution 0.01°C (0.02°F)
- Resistance – Accuracy 0.03Ω. Resolution 0.01Ω
- 2, 3, and 4 wire connections
- Measure and simulate °C, °F, °K, and ohms
- Ramp and step
- PT100 plus 7 other RTD types
- User programmable



7001 Class A °C PT100 Simulator

A precision simulator for PT100 0.3850 platinum resistance elements used for accurate temperature measurement. High performance metal film resistors are used throughout to ensure a good temperature coefficient and long term stability.

- -200°C to +800°C with 23 set points
- Accuracy $\pm 0.3^\circ\text{C}$
- Less than 30ppm/°C temperature coefficient
- ITS-90 IEC60751
- Exceeds class A
- Passive resistance source
- °F version available (-100°F to 1000°F, $\pm 0.5^\circ\text{F}$ accuracy)



7077 Process Calibrator

A key-press operation module that combines source and measurement functions for thermocouples, RTDs, mV and mA. The 7077 features a memory storage function that holds frequently used values.

- Measures/simulates 8 thermocouple types, PT100-RTD, mV and mA
- Displays units in °C, °F, $\mu\text{V}/\text{mV}$, or mA
- Accuracy: Source 0.02% of range, 0.5°C. Measure 0.05% of range, 0.7°C
- Automatic or manual cold junction compensation
- 10 point memory recall feature
- Inch and step functions with time configurable steps
- Process loops 4 to 20mA and 0 to 50mA
- 24V loop drive voltage



7061 Multifunction Process Calibrator

A process calibrator that combines the essential functions of measurement and simulation of volts, millivolts, millamps, and ohms with the direct readout simulation of thermocouples and RTDs in °C or °F units.

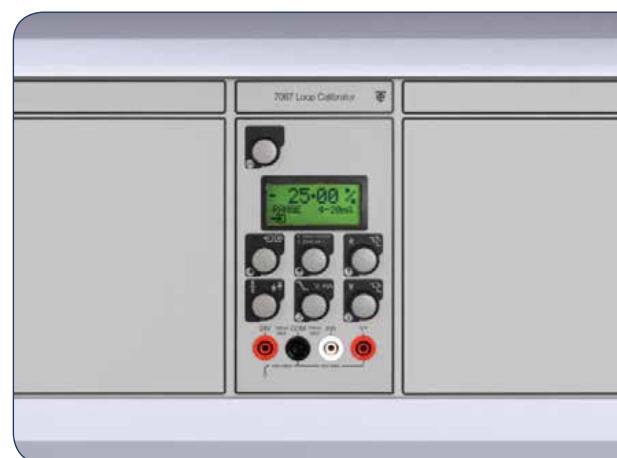
- Measure (3 ranges) up to 40V, 400mA, 40kΩ
- Output voltage (3 ranges) up to 10V, 1µV resolution
- Output current (3 ranges) up to 20mA, 1µA resolution
- Output Resistance (3 ranges) up to 40kΩ, 0.01Ω resolution
- Accuracy: Source and measure 0.03% of range
- Thermocouple measure and simulate: J, K, T, E, R, S, B, N
- RTD measure and simulate: PT100
- Ramp function



7067 Loop Calibrator

A high accuracy module for the calibration and simulation of voltage and current loops with source and measure capabilities.

- Loop current/voltage source (simulating a transmitter and the loop supply)
- Sink of loop current (simulating a transmitter)
- Measurement of loop current/voltage (simulating a loop indicator)
- Current measurement: 125mA, source 50mA. Resolution 1µA
- Voltage measurement: 25V, source 21V. Resolution 1mV
- Accuracy: Source 0.01% of setting. Measure 0.01% of reading
- Transmitter and square root functions
- Auto-ranging feature
- Programmable steps and ramp



7069 Voltage/Current/Loop Calibrator

A voltage, current, and process loop calibrator for ideal for process control applications. The 7069 combines digital accuracy with simple analogue control and is well suited to plant operations such as powering control loops.

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



7079 Loop Ancillaries Calibrator

A simple operation module suitable for powering process instrumentation such as pressure transmitters that require an external loop supply (4-20mA). An RS-232 connection is available at the rear of the console enabling communication for data read back using EasyCal calibration software.

- Loop measure 0 to 199.99mA
- Continuity test (100Ω threshold or below - audible/visual indication is given)
- 24V output for powering 4 - 20mA loops
- 4.5 digit display
- Overload protection to loop
- Supply line protection by F250mA fuse
- RS-232 connection - Allows read back with EasyCal software





Electrical/Electronic Test & DMM Modules

Insulation tester calibrators, digital multimeters, and DC electronic loads



5068B Insulation Tester/ Megohmmeter Calibrator

A precision module for calibrating general purpose insulation testers and megohmmeters with test voltages up to 2.5kV.

- Insulation resistance from 100KΩ to 10GΩ
- Low ohm verification at 1Ω, 10Ω, 100Ω, 1KΩ
- Accuracy: Resistance 1% of setting. Voltage and Current to 1% of reading
- Up to 2.5kV operation
- Continuous connection – no arcing
- Fully shrouded safety connectors
- Display of open circuit voltage (0 to 1.999kV or 0 to 2.50kV)
- Display of short circuit current (0 to 2mA or 0 to 20mA)



5065B Digital Multimeter

A versatile 6½ digit multimeter module with 19 measurement functions. Simple operation, stability, and high accuracy make the 5065B an ideal DMM for a variety of applications.

- 6½ digit resolution
- Accuracy 0.005% DC voltage
- RS-232 and USB interface
- Optional GPIB interface
- Temperature measurements
- SCPI command set
- High sample rate
- 10 channel scanner card option
- PC control via EasyCal software



5075B Digital Multimeter

A digital multimeter that combines high performance with simple operation. The 5075B easily measures from nanovolts to 10kV, from picoamps to 30 amps, from micro-ohms up to 1GΩ, from picofarads to 300μF, with up to 7½ digit accuracy.

- 7 digit resolution
- 10nV to 10kV, 10pA to 30A
- Resistance, capacitance, frequency
- 18ppm accuracy/best 1 year
- 10 channel low thermal emf scanner option
- 7051/PC control via EasyCal software
- GPIB interface (USB adaptor available)



9758B DC Electronic Load Module

The 9758B electronic load works by putting a required DC load across a power source under test. It can be also be used to investigate the behaviour of many different types of power source such as batteries, solar cells, fuel cells or wind generators, as well as electronic power supply units.

- Constant current, resistance, conductance, voltage and power modes
- Wide voltage and current range, 0 to 80 volts and 0 to 80 amps
- 300 watts continuous dissipation at 40°C
- Ten turn controls for level setting
- Built-in transient generator with variable slew
- Current monitor output for waveform viewing
- Variable drop-out voltage for battery testing
- Analogue remote control capability

Signal Generation & Analysis Modules

Oscilloscopes, frequency counters, function generators, and RF signal generators

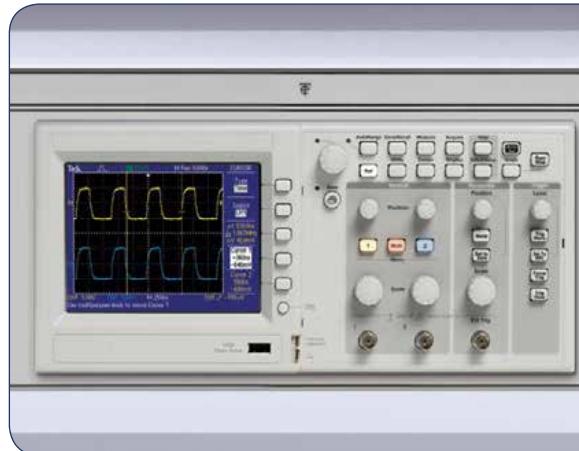


Oscilloscope Modules

Oscilloscope modules with standard features including USB connectivity, automated measurements, limit testing, data logging, and context-sensitive help.

- 5.7" LCD colour display
- External trigger output
- Autoset and signal auto-ranging
- Probe check wizard

Model	Bandwidth	Channels	Sample Rate/Ch	Record Length
7021	70MHz	2	1.0GS/s	2.5k points
7022	70MHz	4	1.0GS/s	2.5k points
7023	100MHz	4	2.0GS/s	2.5k points
7024	200MHz	4	2.0GS/s	2.5k points
7026	500MHz	4	5.0GS/s	10k points



7027 3GHz Universal Frequency Counter

The 7027 is a high quality 3GHz universal frequency counter which offers period measurement, frequency ratio, pulse width and event counting.

- 0.001Hz to 3000MHz frequency range
- TCXO timebase with better than 1ppm stability
- Frequency, period, pulse width and totalise modes
- Reciprocal counting measurements
- High impedance measurement up to 125MHz
- Low pass filter, attenuator and trigger level control
- AC or DC coupling, 1M/50Ω selection, polarity invert
- Large 10 digit LCD display with annunciators
- Remote control and readback via USB interface



7029 and 7031 Function Generators

High performance DDS arbitrary/function generators that offer high quality standard waveforms, high speed arbitrary waveforms, and full pulse generator facilities.

- 1μHz to 50MHz (7031) or 25MHz (7029); 14 digits or 1μHz resolution
- Sine, square, ramp, pulse, sin(x)/x, noise, exponential logarithmic rise waveforms
- True pulse generator with variable delay and variable rise/fall
- Arbitrary waveforms of up to 128K points at up to 125MS/s
- Waveform storage using USB flash drives
- Large graphic LCD with simultaneous text and waveform display
- Internal and external digital modulations including AM, FM, PM, PWM, and FSK
- 20mV to 20V pk-pk output from 50Ω; plus multifunction aux. out
- Programmable via USB interface
- Also available: 7028 10MHz DDS function generator (6 digits or 1mHz resolution)



7048 Synthesised RF Signal Generator

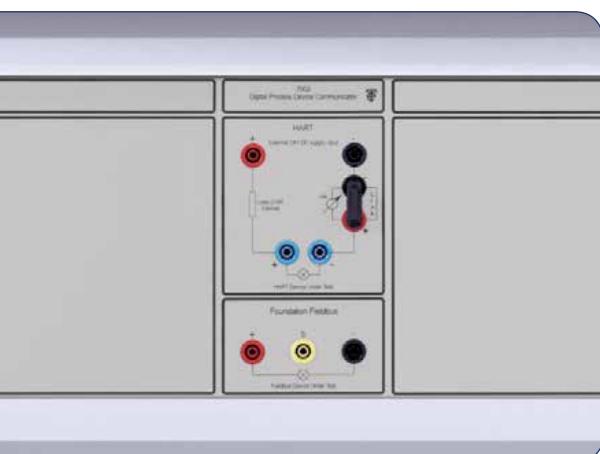
A signal generator with the essential features required for most development, test and service work. The 7048 has high frequency accuracy and stability, wide dynamic range, low phase noise and leakage, and flexible modulation capabilities.

- 150kHz to 2000MHz frequency range
- 10Hz setability, ± 1ppm frequency stability
- Locking to external frequency standard
- -127dBm to +7dBm amplitude, 0.1dB steps
- AM, FM and Phase modulation, internal or external
- 80 character back-lit LCD display
- Keyboard and rotary encoder control
- Full remote control via RS-232 interface
- Also available – 7058 6GHz signal generator



Additional Bench Modules

Extra modules for communication, soldering, and customer specific applications



7002 Hart Communicator Module 7003 Foundation Fieldbus Module

Available as two independent modules or a combined Hart and Fieldbus unit as shown. Enables communication with Hart and Fieldbus devices, with a user friendly interface via EasyCal software (7051 or PC with EasyCal must be ordered).

- EasyCal software communication programs for Hart and Foundation Fieldbus
- Provides monitoring of primary values and sensor outputs
- Provides conditioned power and network termination
- Device configuration and read back
- Combined module available with Hart and Fieldbus communication (7004)
- Patch Panel module for electrical/process interconnections incl. Hart resistor (7008)



7035 Soldering, De-Soldering and Re-Work Module

An all-in-one industrial station module with features to improve quality and process control across a wide range of applications. The 7035 has three simultaneously powered ports for soldering, de-soldering and hot air re-work.

- Soldering, desoldering and hot air rework system
- 3 simultaneous powered ports
- LCD display for set up and operation
- °C or °F configuration
- Manual or auto modes
- Built-in pump for vacuum and air flow (no external pressure source needed)
- Digital airflow indicator
- ESD safe
- Supplied complete with handpieces, tip, nozzles and workstands



Bench Module Modifications

CalBench modules can be modified to incorporate features and functions depending on customer applications. These can be simple additions such as extra power sockets and input/output ports or internal fittings and components to provide extended capabilities.

- Existing modules can be modified to include specific functions
- Touch screen PC only module - 10.5" LCD display (shown)
- Automatic switching version of 7085 temperature distribution panel
- Programmable versions of DC power supplies 7052, 7053, 7054, 7055, and 7056
- Additional sockets, fittings, and connections on modules
- Customer specified hand wheel types for regulators on high pressure modules



Custom Design Modules

Specific devices and instruments can be custom fitted into the bench as per customer requirement. This allows the user to integrate a familiar instrument into the workstation.

- External instruments such as handheld DMMs, analysers, and more
- Fitted instruments can be configured to communicate with EasyCal software
- Additional power sockets and controller modules
- TE Gauge pressure indicator modules (see page 18)
- Portable instruments can be fitted to perforated back panel for easy removal
- Empty module space can be made into shelving for tool storage
- Depth constraints are 425mm for the primary console, 200mm for the secondary.

Pressure Instruments for Lab and Field

Pumps, digital pressure gauges, and portable calibrators



Benchtop Pressure Calibration Pumps

Benchtop pumps that are a comfortable and simple operation, providing an easy way to generate pressure in the lab. Each pump is a dual pressure source for connection to both a DUT and pressure module, enabling reference calibration.

- 7193 Pneumatic Pump – 0.95bar vacuum to 40bar pressure (600psi)
- 7194 Pneumatic Pump – 0.95bar vacuum to 100bar pressure (1500psi)
- 7195 Hydraulic Pump – 0.9bar vacuum to 600bar pressure
- Easy to use with smooth pressure generation and high pressure stability
- Dual pressure source (double output manifold)
- Fine pressure adjustment
- 7193 – w198 x H140 x D315mm, weight 2.7kg
- 7194 – w270 x H178 x D450mm, weight 7.5kg
- 7195 – w198 x H135 x D290mm, weight 3.2kg



Handheld Pressure Calibration Pumps

Pneumatic and hydraulic calibration pumps that combine high performance with durability. Features include contoured cushioned handles for comfort and dual o-rings on all pistons to ensure zero leakage. Designed for arduous use in the field, these pumps provide a solution to on site checking of various pressure devices.

- 7090 – Pneumatic pressure to 40bar (600psi), Vacuum to -950mbar
- 7095 – Hydraulic pressure to 700bar (10,000psi)
- Non-oil based lubricant used on all moving parts
- Both supplied as kits with carry case, hoses, and fittings
- 7090 – H200 x w125mm, weight 0.91kg
- 7095 – H240 x w125mm, weight 1.4kg
- Digital pressure gauges available



Digital Pressure Gauges

A range of digital pressure gauges are available to accompany the CalBench system. Each gauge is robust design with simple controls and various features for excellent usability. Suitable for use in the lab or with handheld pumps in the field.

- Pressure ranges up to 2500bar (37500psi)
- Gauge/Absolute/Differential/Compound models
- 0.025%, 0.05%, 0.1% or 0.2% FS accuracy
- Easy-to-read backlit display with 5 digit resolution
- Unique self-protection capability technology
- 3 times per second measure speed
- Fully temperature compensated accuracy
- RS-232 connection on rear of gauge, EasyCal compatible for readback on 7051
- H178 x w112 x D45mm, weight 0.6kg



7198 Pressure Calibration Accessories Kit

A comprehensive set of accessories to accompany pressure calibration benches. The 7198 kit includes adaptors, fittings, connectors, and hoses to provide a quick solution to pressure component requirement in both the field and laboratory.

- Adaptors for metric, BSP parallel, taper threads, and NPT (male and female)
- Coupling connectors included allow any two adaptors to be connected together
- 1/4 BSP G hose fittings for pushfit 4mm and 6mm external diameter hose
- Quick release couplings and barbed 6mm and 8mm internal diameter hose
- Nylon hose set with quick release connectors for low pressure connections
- Additional 4mm and 6mm nylon hoses to build up custom lengths as required
- Minimess 1620 test point adaptors and micro bore hose for high pressure
- 10" adjustable spanner and PTFE tape
- Kit supplied in adaptor case and hose bag





Additional Calibration Instruments

Benchtop and portable test instruments for use in the lab or field



Dry Block Calibrators

Precision compact dry block calibrators for calibration of RTDs, thermocouples, thermoswitches, thermistors, and other common temperature sensing devices.

- Interchangeable inserts
- Multi-hole insertion tubes
- MVI Mains Variance Immunity
- Multi information display
- Auto stepping
- EasyCal software compatible

Model	Temp Range	Heating Time	Accuracy	Stability	Immersion depth	Insert diameter
7070	-17 to 140°C	15 min	0.4°C	0.05°C	115mm	19mm
7071	33 to 320°C	4 min	0.5°C	0.1°C	110mm	26mm
7072	33 to 650°C	20 min	0.9°C	0.1°C	110mm	26mm



Portable Calibrators – 1090 Process Calibrator

A precision calibrator that combines source and measurement functions for thermocouples, RTDs, mV and mA. The 1090 features a memory storage function that holds frequently used values. It is equivalent to the 7077 bench module.

- Measures/simulates 8 thermocouple types, PT100-RTD, mV and mA
- Displays units in °C, °F, µV/mV, or mA
- Automatic or manual cold junction compensation
- Inch and step functions with time configurable steps
- Process loops 4 to 20mA and 0 to 50mA
- 24V loop drive voltage
- Mains or battery operation – 60 hours typical use between charges
- Supplied with battery charger and carry case
- H235 x W150 x D75mm, weight 1.2kg



Decade Boxes – 1067 Precision Resistance Box

Time Electronics have a wide range of decade boxes for resistance, capacitance, and inductance. The 1067 is suitable for simulating and calibrating PT100 sensors and temperature indicators/meters that use resistive sensors.

- Range 0 to 12kΩ in 10mΩ steps, accuracy ± 0.01%
- Residual Resistance: Less than 10mΩ. Less than 1mΩ variation
- Power Rating: 0.35 watt per resistor
- Stability: 20ppm/year (>1Ω), 100ppm/year (<1Ω)
- Voltage Rating: Maximum 200V DC/AC RMS
- Temperature Coefficient: 10ppm/°C (20ppm/°C below 1Ω)
- Dimensions / Weight: W355 x H63 x D89mm / 1.1kg
- Other resistance, capacitance, and inductance decade boxes available



7151 Vernier and Micrometer Calibration Kit

A comprehensive kit for dimensional calibration applications including verniers, calipers, micrometers, and depth gauges.

- 47 piece grade 1 block set comprising of:
 - 21 pcs - 1mm to 1.19mm x .01mm, (plus 1.005mm)
 - 8 pcs - 1.2mm to 1.9mm x .1mm
 - 8 pcs - 2mm to 9mm x 1mm
 - 10 pcs - 10mm to 100mm x 10mm
- 300mm gauge block holder and cylindrical jaws for internal measurements
- 4 optical parallels (0 - 25mm, grade 1)
- Compact granite surface plate for precision depth measurements
- Supplied with gloves, oil, wipes, 2 compact carry cases and calibration certificate

Supporting Laboratory Equipment

Air supply tools, test kits, repair and maintenance, and ESD options



Air Compressors, Boosters, Vacuum Pumps

For customers that require the supply of line pressure and vacuum to the CalBench. Standard compressors are available for pressures under 10bar, with air amplifiers and gas boosters to achieve higher pressures up to 600bar.

- 8bar compressor – 8.7 cfm displacement/50L/2.5hp (7173)
- 10bar silent running compressor – 14.9 cfm displacement/24L/3.3hp (7174)
- High pressure compressor with 225bar regulated output (7160)
- Single end air amplifier system – increases line pressure from 7 to 34bar (7175)
- Gas booster power unit – uses gas and 8bar line pressure for up to 600bar (7176)
- Electrical vacuum pump (7149)
- Vacuum/Pressure Cabinet housing vacuum pump and air amplifier (7162 shown)
- Air preparation kits, filters, and regulators for clean supply
- Pneumatic/Hydraulic benchtop and handheld pumps (see page 24)



Additional Calibration Tools and Test Kits

For applications that cannot be performed using the modules fitted to CalBench. These include test weights for calibrating scales and balances, and gauge block sets for vernier and micrometer calibration.

- Test Weight Sets (7179A shown: 6110g total weight, 7179B: 11110g total weight)
- Vernier and Micrometer Calibration Kit (see page 25)
- Dual pressure manifold kit with two 1/4" BSP hand-tight quick connectors (7161)
- Differential pressure flow meters, ranging from 0.01ml to 1000L
- Decade boxes, portable test instruments and digital multimeters
- Benchtop calibrators and analytical instruments
- Customer specified calibration tools and kits



Repair and Maintenance Equipment

Various repair and maintenance instruments such as oscilloscopes can be fitted into the bench as modules. External equipment is also supplied for benchtop use. These include solder stations, vices and service kits.

- Compact digital solder station (7144 shown)
- High performance soldering, de-soldering and rework kit (7145)
- Benchtop fume extraction kit for the above (7147)
- Heavy duty benchtop vice (7150)
- Tabletop circuit board holder (7180)
- Magnifying lamp (7181)
- Benchtop turntable with locking mechanism (7154)
- 82 piece electronics service kit (7183 shown)



ESD Equipment and Options

CalBench is a class 1 instrument, so for protection a ground connection must be provided. Each bench has earth bonding between the consoles and frame, a separate protective earth terminal on rear of console, and PE connection on the 7082 mains controller module. Various extras are available upon request.

- Melamine ESD bench worktop: Anti-static, scratch, impact & stain resistant (7185)
- ESD workstation kit: Mat, signage, bonding plugs, wrist strap & leads (7186)
- Individual anti-static benchtop mats
- Grounding products
- Anti-static wrist wraps
- Anti-static labels, tapes, and bags
- Heel and toe grounders
- Static test meters



The Design Process

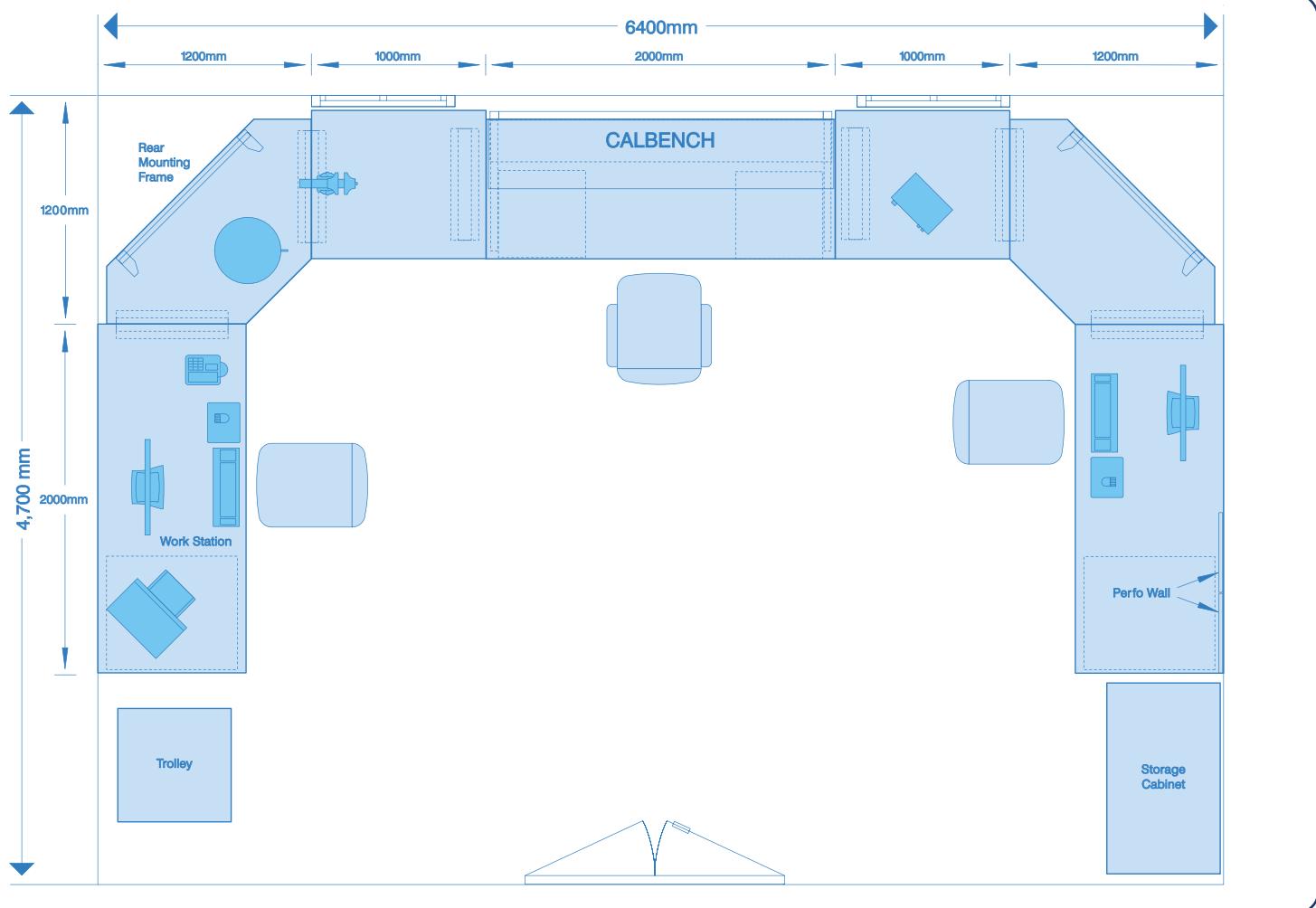
Time Electronics offer a turnkey design and supply service for customers requiring an efficient and ergonomic on-site calibration laboratory. It is created virtually, then supplied complete including all specified test instruments, tools, and furniture. CalBench acts as the primary work station of the laboratory, and is used for the main testing and verification workload.

The process starts by understanding the user's requirements and applications. Once this is determined the design team will firstly configure the suitable calibration bench or benches, and if necessary add supporting instruments for customer specific applications. Following this the workspace dimensions are supplied and the virtual design begins. Using custom software we create a 2D overview of the laboratory, then generate 3D images and videos to allow the end users to visualise the concept.

Each laboratory is designed to optimise the calibration process. This is accomplished by a dual approach of hardware and software. CalBench modules provide the functions to calibrate devices and instruments, whilst EasyCal software is the controlling platform for all work and management. It enables the operators to schedule workload, organise jobs, database and print/store information.

It also speeds up calibration by automating test runs when used with the 7051 multifunction calibrator/DMM or other compatible bench modules and instruments.

In addition to the primary focus of calibration, the lab can incorporate customer designated areas of use. These could be stations for administration work, repair and maintenance, or storage units. Laboratories can be designed to be fully self-sufficient, including line pressure tools such as compressors and vacuum pumps.





On-site Bench Installation, Training, & Calibration

Time Electronics have comprehensive after-sales support packages for customers that purchase calibration benches, accompanying test instruments, and workshop equipment.

On-site bench and lab installation: A travelling engineer will visit the test facility and install and commission the CalBench, supporting instruments, and laboratory furniture. Our technicians can perform site visits worldwide and are qualified to work on offshore platforms, power and processing plants, and refineries.

On-site training and demonstration: Bench training can be included with the lab installation or scheduled for a later date. The technician will educate the users on how to set up the system and operate the bench modules and additional test instruments. They will also simulate the calibration process by demonstrating tests on actual devices at the site.

On-site annual bench calibration and maintenance service: A technician can visit the test facility annually to perform calibration of the CalBench and test equipment. This can be scheduled before or after installation and can include additional training if required.

Factory acceptance testing and bench training at TE UK: Customers can visit Time Electronics UK and receive training on their ordered system prior to shipment. We will schedule and arrange all aspects of the visit, including local transport and accommodation. Factory acceptance testing can be undertaken by the end user or their designated inspection company.

Online EasyCal training: Using remote desktop sharing we can help customers understand and utilise the software for calibration work and management. We can provide basic tutorials or troubleshoot specific applications relative to the user's system.



Calibration Benches and Consoles

7080	CalBench (W2000 x D850 x H1568/1413mm). Includes frame, worktop, primary console, 7082 mains module. 1660mm module space. All modules can be fitted.
7081	Secondary Console (W2000 x D225 x H390mm). 1925mm available module space.
7060	Tabletop Bench Console (W1000 x D470 x H385mm). 830mm available module space.

Standard Under Worktop Fittings (page 4)

7120	Cabinet with 1 door and 1 x shelf (W500 x D550 x H600mm)
7121	2 drawer Unit (W500 x D550 x H250mm)
7122	3 drawer Unit (W500 x D550 x H450mm)
7131 ...	Combination Drawer/Cabinet Unit (W500 x D550 x H600mm)
7132	5 drawer Unit (W500 x D550 x H600mm)
7134	Slotted Divider Kit for drawers (3, 6, or 9 compartments)
7123	CPU Holder (Vertical)

Perforated Panel Options - only available without 7081 (page 4)

7125	20 piece Tool Hook Kit
7137	40 piece Tool Hook Kit
7138	60 piece Tool Hook Kit
7139	Shelf (W450 x D250 x H130mm)
7140	Shelf (W900 x D250 x H130mm)
7141	Storage Bin Strip (W450 x H75mm). With 4 x 1L bins
7143	Document Holder (W450 x H360mm)

Modules

Module Width

Multifunction Calibrator/Control Centre (for full listings with options see page 8)

7051	CalBench Control Centre and Multifunction Calibrator.....	425mm
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Digital Multimeter, Electrical and Electronic Test Modules (page 21)

5075B	Precision Digital Multimeter Module.....	500mm
5065B	6.5 Digital Multimeter Module (note equivalent DMM housed inside 7051).....	295mm
5068B	Insulation Tester Calibration Module (100kΩ – 10GΩ)	240mm
9758B	DC Electronic Load, 80A, 80V, 300W (for DC power supply calibration)	295mm
7033	High Precision LCR Meter Module (12Hz – 200kHz).....	380mm

Power Supply Modules (page 15)

7082	Mains Power Controller (fitted as standard, socket type to be selected).....	270mm
- 7063	Isolated mains output sockets for 7082 Mains Power Module	
7075	110V Fixed 7.5A DC Module with 2 shrouded 4mm safety sockets	160mm
7076	110V Fixed 10A AC Module	150mm
7043	3 phase mains controller Module	150mm
7083	Dual 24V DC Power Supply – 2 x 24v (2A)	131mm
7087	Quad DC Power Supply – 6V(20A), 12V(10A), 24V(6A), 48V(3A)	80mm
7052	30V DC 3A Adjustable Power Supply – Digital (programmable version 7052P).....	150mm
7053	56V DC 4A Adjustable Power Supply – Digital (programmable version 7053P).....	180mm
7086	60V DC 3A Adjustable Power Supply – Digital	168mm
7054	120V DC 750mA Adjustable Power Supply (programmable version 7054P).....	150mm
7055	250V DC 375mA Adjustable Power Supply (programmable version 7055P).....	150mm
7056	Dual Adjustable Power Supply, 2 x 30V DC 3A – Digital (programmable version 7056P).....	295mm
7088	Adjustable AC Supply 0 – 270V/10A (or 110% above line voltage)	350mm
7046	Variable AC/DC Power Supply. AC 500VA, DC 400W, Frequency 40 to 500Hz	295mm
7047	Variable AC/DC Power Supply. AC 1000VA, DC 800W, Frequency 40 to 500Hz	500mm

Pressure Modules and Accompanying Accessories (page 17)

7062	Pressure Calibrator with regulator (Vac/0.2/2/5/10/20bar versions)	129mm
7059	Combined Vacuum/Pressure Calibrator (Vac and 0.2/2/5/10/20bar versions)	129mm
7064	High Pressure Calibrator with regulator (35/70/100/200bar versions)	200mm
7066	Differential Pressure Calibrator (0.2/2/5/10bar versions)	150mm
7032	Semi-Automatic Pressure Calibrator (2/5/10bar versions)	340mm
7038	Multifunction Pressure Indicator (Vac/0.2/2/5/10/20/35/70/100/200/400/600bar versions)	100mm
7065	Pressure Indicator (Vac/0.2/2/5/10/20/35/70/100/200/400/600bar versions)	96mm
7084	Line Pressure Controller (5/35/70/100/200bar versions)	150mm
TEG-Module	Digital Pressure Gauge Module from TE Gauge Range (see separate brochures)	180mm
7198	Pressure Calibration Accessories Kit (fittings, adaptors, hoses)	
7148	Air Preparation Kit (Mounted on bench rear under panel or specified by customer)	

Pressure option codes for 7062, 7059, 7064, 7066, 7032, 7038, 7066, and 7084:

Range (bar)	Vac	0.2	2	5	10	20	35	70	100	200	400	600
Option Code	7111	7100	7101	7102	7103	7104	7105	7106	7107	7108	7109	7110



Modules

Module Width

Temperature and Process Loop Modules (page 19)

7001	PT100 Simulator Module	95mm
7085	Temperature Distribution Module (Thermocouple and RTD)	250mm
7085A	Auto Switching Temperature Distribution Module (requires 7051 and 9714B)	250mm
7068	RTD Temperature Calibrator Module	107mm
7077	Temperature and Process Calibrator Module	295mm
7061	Process Calibrator Module	285mm
7067	Precision Loop Calibrator Module	97mm
7069	V-I Loop Calibrator Module	97mm
7079	Loop Ancillaries Module	96mm
7008	Patch Panel Module for electrical/process interconnections (includes Hart resistor)	75mm

Oscilloscope Modules (page 22)

7021	Digital Oscilloscope Module – 60MHz, 2 channel, colour LCD display	425mm
7022	Digital Oscilloscope Module – 60MHz, 4 channel, colour LCD display	425mm
7023	Digital Oscilloscope Module – 100MHz, 4 channel, colour LCD display	425mm
7024	Digital Oscilloscope Module – 200MHz, 4 channel, colour LCD display	425mm
7026	Digital Oscilloscope Module – 500MHz, 4 channel, colour LCD display	425mm

Universal Frequency Counters, Function Generators, RF and EMC Test Modules (page 22)

7027	3GHz Universal Frequency Counter	295mm
7028	10MHz DDS Function Generator	295mm
7029	25MHz Function/Arbitrary/Pulse Generator	295mm
7031	50MHz Function/Arbitrary/Pulse Generator	295mm
7048	2GHz Synthesised Signal Generator (AM, FM, phase modulation)	295mm
7058	6GHz Signal Generator	295mm
7170	Mains/Harmonics Analyzer including Flicker	400mm
- 7171	1kW Low Distortion Power Source (side module for 7170)	400mm

Soldering, De-Soldering and Rework Modules (page 23)

7034	Digital Soldering Station Module	180mm
7035	High Performance Soldering/De-Soldering/Rework Station Module	200mm

Hart and Foundation Fieldbus Modules (page 23)

7002	Hart Communication Module	100mm
7003	Foundation Fieldbus Communication Module	100mm
7004	Combined Hart and Foundation Fieldbus Communication Module	100mm

External Equipment

Pressure / Temperature / Flow / Repair and Maintenance / ESD Equipment (page 23 to 26)

7193	Pneumatic Benchtop Pump (-950mbar to 40bar)	7070	Dry Block Calibrator (-17 to 140°C)
7194	Pneumatic Benchtop Pump (-950mbar to 100bar)	7071	Dry Block Calibrator (33 to 320°C)
7195	Hydraulic Benchtop Pump (-900mbar to 600bar)	7072	Dry Block Calibrator (33 to 650°C)
7090	Pneumatic Pump Kit (vac to 40bar) with hoses, fittings, case	7177	Mass Flow Meter 0.1 to 10 L/min (other ranges available)
7095	Hydraulic Pump Kit (0 to 700bar) with hoses, fittings, case	7151	Grade 1 Vernier and Micrometer Calibration Kit
7161	Dual Pressure manifold kit (for use up to 40bar)	7179A & B	Test Weight Sets (6110g & 11110g total weight)
7096	Digital Pressure Gauge (0 to 700bar, 0.2% accuracy)	7144	Standard Benchtop Solder Station
7091	Digital Pressure Gauge (Vac to 40bar, 0.2% accuracy)	7145	Benchtop Solder Station, De-Soldering and Rework Kit
7078	Auto Ranging Digital Gauge (Vac to 200bar, 0.1% accuracy)	- 7146	Extra Solder Tips for the above solder stations (6 piece set)
TEG	Pressure Gauges (Vac to 2500bar, 0.025/0.05/0.1/0.2% accuracy)	- 7147	Benchtop Fume Extraction kit for above solder stations
7160	225bar custom made compressor for CalBench	7150	Heavy Duty Vice, jaw width 125mm incl. turntable
7173	9bar Compressor (12.6 cfm displacement/100L/3hp)	7180	Table top Circuit Board Holder
7174	10bar Silent Compressor (14.9 cfm displacement/24L/3.3hp)	7181	Magnifying Lamp (175mm diameter, 1.75x mag lens)
- 7189	External receiver tank (200L) for 7174	7182	Table Base for magnifying lamp
7149	Electrical Vacuum Pump	7154	Benchtop Turntable with locking mechanism
7175	Double End Air Amplifier System	7183	Electronic service case (82 tools)
7176	Gas Booster Power Unit (for high output pressure)	7185	Melamine Faced ESD Tabletop for CalBench
7162	Vacuum/Pressure Cabinet (with 7149 and 7175)	7186	ESD workstation kit for CalBench

For additional instruments, lab design and install services, and more please visit www.timeelectronics.com or contact us for details.



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