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Time Electronics
Calibration, Test and Measurement

Driven by Innovation

Time Electronics has been manufacturing test and measurement solutions for over 55 years.

Innovation and continuous improvement has enabled us to create a diverse range of products and services that help solve the problems our customers have today and prepare them for the challenges of tomorrow.

Over 55 years of manufacturing precision instruments for test and measurement.

Established in 1967 Time Electronics Ltd is an UK based company that designs and manufactures calibration and metrology instruments. Our comprehensive range of products provides users with solutions for test and measurement applications within their respective industries.

Models include decade boxes, electrical calibrators, digital multimeters, process calibrators, pressure testing instruments and calibration software. In addition we manufacture customised multifunction test benches, and design and supply turnkey calibration labs, electrical and instrument workshops, and engineer training centres.

During our 55 years of continuous development we have used innovative engineering to develop performance products for automated calibration applications. Our software driven solutions enable users to manage, automate, and optimise the calibration process. They increase efficiency and productivity, reduce testing times and provide customers with the features and capabilities to achieve compliance with quality standards.
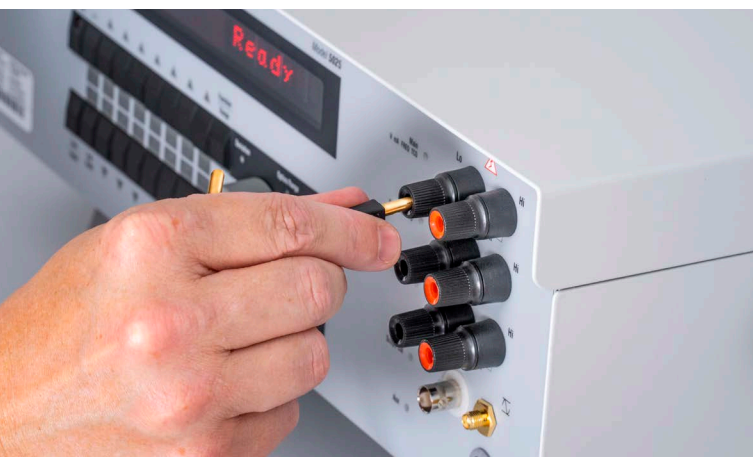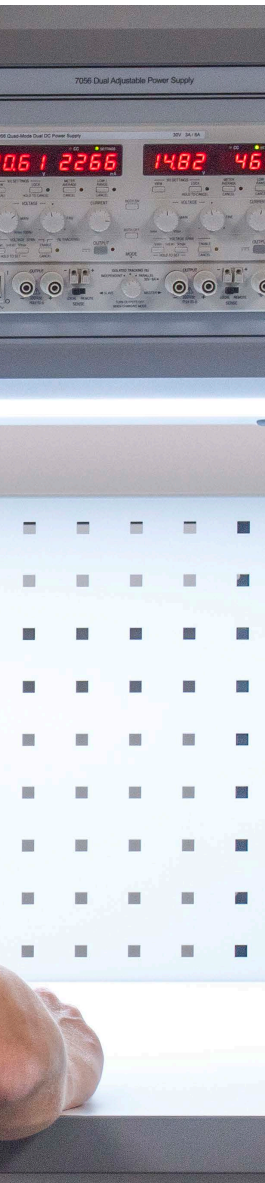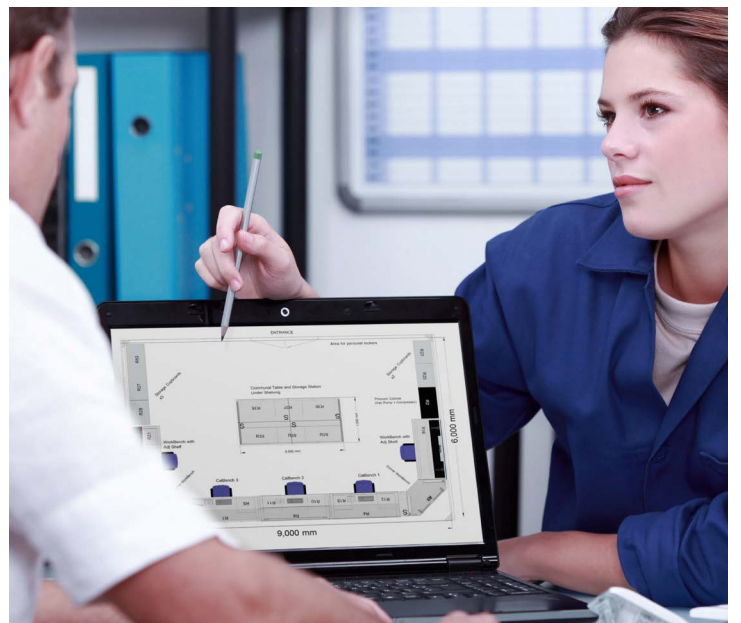
Providing Solutions to Industries Worldwide

Quality is an integral part of our company philosophy. In addition to building accurate and durable test instruments we provide extensive technical support.

We focus on establishing strong business relationships based on customer satisfaction and commitment to providing quality products and services. Our approach is to prioritise consultancy to ensure solutions cover applications.

This has given us a valuable reputation with organisations worldwide, and is one reason for our continued success in international markets. We have a global distribution network and are represented by companies with strong technical capabilities and skilled engineers. Time Electronics Ltd is accredited to ISO 9001:2015.

Decade Boxes

Decade Boxes

Time Electronics decade boxes are an established range of products with over 55 years of manufacturing history and quality behind them. These passive devices utilise a series of internal resistors, capacitors, or inductors to replicate specific electrical values. They are commonly used as a time-saving tool in electronic circuit design where electrical values can be substituted into a circuit and replace any standard value component. This enables users to find the optimum value for circuit operation instead of trialling several components individually.

For calibration work decade boxes are suitable for verifying the accuracy of measuring devices and test equipment including multimeters. Resistance decade boxes are commonly used for Pt100 simulation to calibrate RTD transmitters and various temperature devices.

Our decade boxes are dependable quality products that combine precision and long-term stability, with simple operation and robustness. We designed them for reliability to cover the requirements for both lab and field use. This has made them the preferred choice of engineers, technicians and educators for over half a century.

1051 Low Ohm Resistance Decade Box

Range / Resolution:...0 to 1 MΩ, 8 decades / 0.01 Ω steps

Decade	0.01 Ω	0.1 Ω	1 Ω	10 Ω	100 Ω	1 kΩ	10 kΩ	100 kΩ
Accuracy	± 10 %	± 5 %	± 1 %	± 0.5 %	± 0.1 %	± 0.1 %	± 0.1 %	± 0.1 %
Max Current	1A	1 A	1 A	0.3 A	0.1 A	33 mA	10 mA	3 mA

Residual Resistance: ....Less than 90 mΩ
Power Rating: ....1 watt per resistor
Voltage Rating: ....Maximum 250 V DC/AC RMS
Temperature Coefficient: ....50 ppm/°C
Dimensions / Weight:......................W 215 x H 100 x D 120 mm / 1 kg (incl. protective boot)
Features: ....Colour coded digits, safety terminals, and protective rubber boot

1040 Wide Range Resistance Decade Box

Range / Resolution:...0 to 100 MΩ, 8 decades / 1 Ω steps

Decade	1 Ω	10 Ω	100 Ω	1 kΩ	10 kΩ	100 kΩ	1 MΩ	10 MΩ
Accuracy	± 1 %	± 0.5 %	± 0.1 %	± 0.1 %	± 0.1 %	± 0.1 %	± 0.1 %	± 1 %
Max Current	0.5 A	0.3 A	100 mA	30 mA	3 mA	0.3 mA	30 μA	3 μA

Residual Resistance: ....Less than 250 mΩ
Power Rating: ....1 watt per resistor
Voltage Rating: ....Maximum 250 V DC/AC RMS
Temperature Coefficient: ....50 ppm/°C
Dimensions / Weight:......................W 215 x H 100 x D 120 mm / 1 kg (incl. protective boot)
Features: ....Colour coded digits, safety terminals, and protective rubber boot

1041 Low Ohm Resistance Decade Box

Range / Resolution...0 to 1 kΩ, 5 decades / 0.01Ω steps

Decade	0.01 Ω	0.1 Ω	1 Ω	10 Ω	100 Ω
Accuracy	± 10 %	± 5 %	± 1 %	± 0.5 %	± 0.1 %
Max Current	1 A	1 A	1 A	0.3 A	0.1 A

Residual Resistance: ....Less than 60 mΩ
Power Rating: ....1 watt per resistor
Voltage Rating: ....Maximum 100V DC/AC RMS
Temperature Coefficient: ....50 ppm/°C
Dimensions / Weight:......................W 215 x H 100 x D 120 mm / 1 kg (incl. protective boot)
Features: ....Colour coded digits, safety terminals, and protective rubber boot

1061 Resistance Decade Box

Range / Resolution:...0 to 1.2 MΩ, 6 decades / 1 Ω steps
Accuracy: ....± 1 %
Residual Resistance: ....Less than 150 mΩ
Power Rating: ....0.75 watt per resistor
Voltage Rating: ....Maximum 300 V DC/AC RMS
Dimensions / Weight:..W 355 x H 63 x D 82 mm / 0.75 kg
Features: ....Slimline design and front panel safety terminals

1067 Precision Resistance Decade Box

Range / Resolution:	0 to 12 kΩ, 6 decades / 10 mΩ steps
Accuracy:	± 0.01 %
Residual Resistance:	Less than 10 mΩ. Less than 1 mΩ variation
Power Rating:	0.35 watt per resistor
Stability:	20 ppm/year (> 1 Ω), 100 ppm/year (< 1 Ω)
Voltage Rating:	Maximum 200 V DC/AC RMS
Insulation:	Case to resistance terminals 2 kV / 50 Hz maximum
Temperature Coefficient:	10 ppm/ºC (20 ppm/ºC below 1 Ω)
Dimensions / Weight:	W 355 x H 63 x D 89 mm / 1.1 kg
Contacts:	Make before break – silver alloy

1065 Power Resistance Decade Box

|	
Range / Resolution:	0 to 120 kΩ, 6 decades / 0.1 Ω steps
Accuracy:	± 5 % (0.1 Ω), ± 1 % (1 Ω to 120 kΩ)
Residual Resistance:	Less than 20 mΩ
Power Rating:	10 watt per resistor
Voltage Rating:	Maximum 500 V DC/AC RMS
Temperature Coefficient:	200 ppm/ºC
Dimensions / Weight:	W 390 x H 80 x D 150 mm / 2 kg
Features:	Ventilated robust metal case and multi-wafer switches for low switch contact resistance

1070 and 1071 Capacitance Decade Boxes

1070 Range / Resolution:	0 to 10 µF, 5 decades / 100 pF steps
1070 Residual Capacitance:	Less than 38 pF
1071 Range / Resolution:	0 to 100 µF, 7 decades / 10 pF steps
1071 Residual Capacitance:	Less than 50 pF
Accuracy:	1 % (5 % above 10 µF – 1071
Voltage Rating:	Maximum 300 V DC, 200 V AC
Dimensions / Weight:	W 215 x H 100 x D 120 mm / 1 kg (incl. protective boot)
Features:	Bi-polar working, colour coded digits, safety terminals, and protective rubber boot

1053 Inductance Decade Box

Range / Resolution:	0 to 10 H, 4 decades / 1 mH steps
Accuracy at 1kHz:	3 % of setting
Voltage Rating:	Maximum 30 V AC
Maximum Current:	150 mA
Residual Resistance:	Less than 0.2 Ω
Residual Inductance:	Less than 1 µH
Dimensions / Weight:	W 248 x H 62 x D 102 mm / 0.8 kg
Features:	Robust metal case and front panel safety terminals
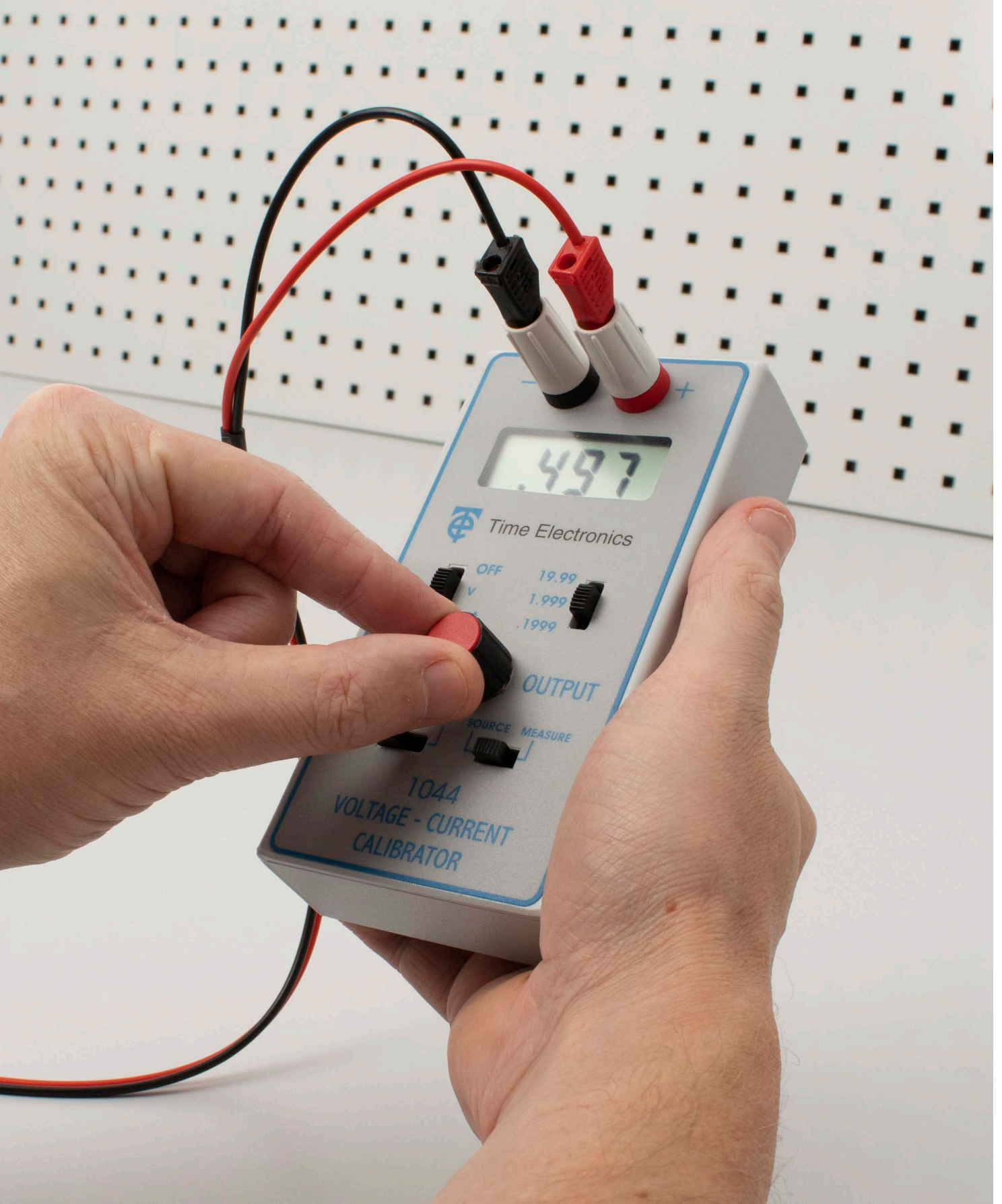
Portable Electrical & Process Calibrators

Portable Electrical & Process Calibrators

Time Electronics manufacture a wide range of portable test instruments for sourcing and measuring voltage, current and process signals. Products include handheld electrical simulators and sources, compact multifunction calibrators, and battery-powered transportable calibrators for use in the lab or on-site.

These practical calibration instruments combine simple operation with accuracy and reliability. They provide a high-performance portable solution for diagnostics and testing work. Robust design means they can be utilised in various field conditions.

Applications include dedicated DC voltage and current signal injection, transducer simulation and 4 to 20 mA loop checking. Calibrate electrical functions on measuring devices, test and verify instrumentation like transmitters, controllers and recorders. Temperature calibrators and simulators are used for RTD, Pt100 and thermocouple testing applications.

Portable Electrical Calibration Instruments
Handheld and transportable Calibrators, Simulators, and Sources

1006 DC Millivolt Source
1007 DC Millivolt Potentiometer and Calibrator

High accuracy handheld millivolt sources primarily used for voltage injection or potentiometric voltage measurement (1007). Applications include thermocouple simulation and calibration of A/D converters and chart recorders.

- 3 ranges up to 1 V
- Accuracy 0.02 % of setting + 0.02 % of rng
- 20 mA output current
- Best resolution 1 μV
- Short circuit and overload protected
- LED null measuring facility (1007)

- Safety terminals
- Removable protective boot
- Powered by 6 x AA batteries
- 100 hours typical battery life
- Optional carry case
- H215 x W100 x D120 mm, weight 1.2 kg

1010 DC Voltage Calibrator

A highly stable and accurate calibrator designed for applications requiring a precision voltage source of low internal resistance. Suitable for calibration, linearity, and gains stability measurements on DC amplifiers, voltmeters, data loggers, and chart recorders.

- 0.01 μV to 10 V in 5 ranges
- Accuracy 0.02 % of setting
- 10 ppm/hr stability
- 30 mA output current
- Safety terminals

- Battery or mains operation
- 40 hours typical use between charges
- Battery level indicator
- Optional carry case
- W217 x H160 x D193 mm, weight 3.3 kg

1024 DC Current Calibrator

A portable benchtop DC current source for calibration and test applications from nanoamp levels to 100 mA. Applications include current transducer testing and calibration and linearity tests on digital and electronic current meters.

- 0 to 100 mA output in 5 ranges
- Accuracy 0.02 % of setting
- 10 ppm/hr stability
- 30 ppm/°C temperature coefficient
- Up to 15 V output drive
- Null meter measures to 1 μA resolution

- Safety terminals
- Battery or mains operation
- 12 hours typical use between charges
- Battery level indicator
- Optional carry case
- W217 x H160 x D193 mm, weight 3.3 kg

1021 Milliamp Source with Null Indicator

A precision DC current source suitable for calibration and test applications from micro-amp levels up to 100 mA. The 1021 is used to calibrate current sensitive transducers and their associated indicating and recording instruments.

- 0 to 100 mA output in 3 ranges
- Accuracy 0.02 % of setting + 0.02 % of rng
- 25 ppm/hr stability
- Up to 40 V output drive
- LED null measuring facility
- Short circuit overload protected

- Safety terminals
- Removable protective boot
- Supplied with rechargeable batteries
- 10 hours typical use between charges
- Optional carry case
- H215 x W100 x D120 mm, weight 1.4 kg

1077 Milliamp Transducer Simulator

A multi-purpose handheld test instrument that can be used as an adjustable current load, adjustable power supply, or precision current source. The 1077 is commonly used for the testing and simulation of milliamp transducer systems.

- 3 operating modes
- Accuracy 0.02 % of setting + 0.02 % of rng
- 100 mA source and load in 3 ranges
- 24 V line mode
- Variable drive source 14 to 40 V
- Short circuit and overload protected
- Safety terminals
- Removable protective boot
- Supplied with rechargeable batteries
- 10 hours typical use between charges
- Optional carry case
- H215 x W100 x D120 mm, weight 1.5 kg

1017 Voltage/Current/Resistance Calibrator

A portable multifunction calibrator with voltage, current, and resistance ranges. The 1017 is suitable for calibrating a wide range of instruments including thermocouples, transducers, transmitters, and platinum resistance thermometers.

- DC Voltage 10 nV to 100 V
- DC Current 100 nA to 100 mA
- Resistance 10 mΩ to 10 kΩ
- Accuracy 0.005 % of setting + 0.002 % of rng
- 1 ppm setting resolution
- Noise < 2 ppm (0.1 to 1 Hz)
- Stability < 5 ppm/day, < 25 ppm/yr
- Residual resistance < 200 mΩ
- Deviation control – Voltage and Current
- Battery or mains operation
- 12 hours typical use between charges
- W250 x H119 x D314 mm, weight 2.4 kg

1030 Voltage/Current Source

A simple operation pocket-sized calibrator suitable for voltage and current loop signal simulation as well as thermocouple simulation. A cost-effective and popular instrument used in various applications across industries.

- 10 mV, 100 mV, 1 V ranges
- 10 mA, 100 mA ranges
- Accuracy 0.1 % of range
- Linearity 0.15 %
- Up to 8 V output (using 1 kΩ resistor)
- Precision 10-turn dial
- 1 kΩ resistor supplied
- Battery level indicator
- Battery powered 9 V PP3
- 60 hours typical battery life
- Supplied with carry case
- H115 x W62 x D55 mm, weight 0.24 kg
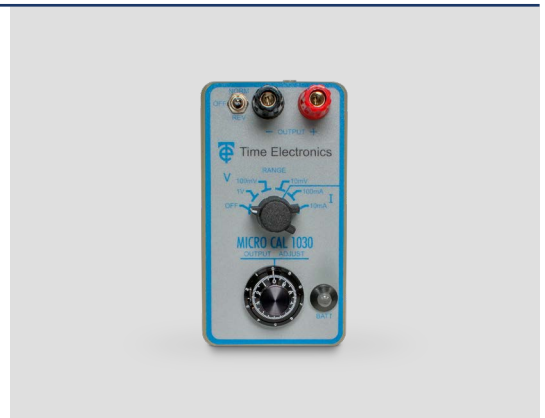
1044 Voltage/Current Calibrator

A precision handheld calibrator that can be used as a general purpose current and voltage source. High performance and ease of use make it suitable for test engineers, R&D, service, and calibration technicians.

- Measure voltage and current
- Source voltage and current
- 3 voltage ranges 0 to 20 V
- 3 current ranges 0 to 20 mA
- Accuracy 0.05 % of range
- 3.5 digit LCD display
- Battery powered 9 V PP3
- 28 hours typical battery life
- Optional mains power supply
- Supplied with carry case
- H142 x W78 x D50 mm, weight 0.30 kg
- Voltage/Current/Loop version 1048

1048 Voltage/Current/Loop Calibrator

A compact voltage, current, and process loop calibrator for engineering, manufacturing, test, and process control applications. The 1048 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 22 mA and 0 to 22 V
- 3 measure ranges: 0 to 70 mA and 0 to 50 V
- Accuracy 0.02 % of range
- Transmitter simulator/sink loop control
- Output steps and ramps
- Fine adjustment (inching)
- Battery powered 9 V PP3, 20 hours typical use
- H 142 x W 78 x D 50 mm, weight 0.34 kg

7005 Voltage/Current/Loop Calibrator

A handheld instrument for the calibration and simulation of voltage and current loops. The 7005 is a high accuracy compact calibrator with source and measure capabilities.

- Current measurement: 125 mA, source 50 mA. Resolution 1 μA
- Voltage measurement: 25 V, source 21 V. Resolution 1 mV
- Accuracy: Source 0.01 % of setting. Measure 0.01 % of reading
- Transmitter and square root functions
- Auto-ranging feature
- Programmable steps and ramp
- 9 hours typical use between charges
- Supplied with battery charger and carry case
- H 165 x W 90 x D 45 mm, weight 0.42 kg

7006 Loop-Mate 1: Loop Simulator and Source

A cost-effective handheld loop simulator that provides 4 to 20 mA or 0 to 10 V loop signals. Features include manual and automatic step modes with audible indication that changes pitch as the output increases/decreases.

- 4 to 20 mA or 0 to 10 V ranges
- Set-points: 0, 10, 25, 50, 75, 90, 100 % of range
- Accuracy 0.1 % of range
- TxSim or RxTest modes
- Internal loop supply, 25 mA maximum
- Auto-stepping mode: up/down/up, 0.5, 1, 2, 4, or 8 sec/step
- Battery powered 9 V PP3, 40 hours typical use
- Supplied with carry case
- H 140 x W 65 x D30 mm, weight 0.18 kg

7007 Loop-Mate 2: Loop Signal Indicator

A simple operation portable loop signal indicator with LCD display. Suitable for use with the 7006 Loop-Mate 1.

- 4 to 20 mA, 0 to 10 V, 0 to 50 V ranges
- LCD 4 digit display, mA, V, or % of range
- Accuracy 0.05 % of reading
- RxSim, TxTest, or 50 mA/50 V measure modes
- Internal loop supply, 25 mA maximum
- Battery powered 9 V PP3, 40 hours typical use
- Supplied with carry case
- H 140 x W 65 x D 30 mm, weight 0.20 kg

1049 Pt100 Simulator

A handheld precision simulator for Pt100 0.3850 platinum resistance elements used for accurate temperature measurement. High performance metal film resistors are used throughout which ensures a good temperature coefficient and long term stability.

• –200 °C to +800 °C, 23 set points
• Accuracy ± 0.3 °C
• Less than 30 ppm/°C temperature coefficient
• ITS-90 IEC60751
• Exceeds class A
• Passive resistance source
• Supplied with carry case
• H 112 x W 61 x D 55 mm, weight 0.17 kg

1050 Pt100 Simulator

A compact pocket-sized simulator, the °F version of the 1049 model. It follows the Pt100 scale from -100 to +1000 °F with 23 set points. High performance metal film resistors are used to ensure a good temperature coefficient and long term stability.

• –100 °F to +1000 °F, 23 set points
• Accuracy ± 0.5 °F
• Less than 30 ppm/°F temperature coefficient
• ITS-90 IEC60751
• Exceeds class A
• Passive resistance source
• Supplied with carry case
• H 112 x W 61 x D 55 mm, weight 0.17 kg

7000 RTD Temperature Calibrator

A portable process control instrument that combines a precision digital thermometer (using RTD probes) with an RTD/ohms calibrator.

• Temperature: Accuracy 0.05 °C (0.09 °F). Resolution 0.01 °C (0.02 °F)
• Resistance: Accuracy 0.03 Ω. Resolution 0.01 Ω
• 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
• 24 hours typical use between charges
• Supplied with battery charger and carry case
• H 165 x W 90 x D 45mm, weight 0.42 kg

1090 Process and Temperature Calibrator

A portable, key-press operation instrument that combines source and measurement functions for thermocouples, RTDs, mV and mA. The 1090 features a memory storage function that holds frequently used value.

• Measures/simulates 8 thermocouple types, Pt100-RTD, mV and mA
• Displays units in °C, °F, μV/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
• Inching and step functions with time configurable steps
• Process loops 4 to 20 mA and 0 to 50 mA
• Mains or battery operation, 60 hours typical use between charges
• Supplied with battery charger and carry case
• H 235 x W 150 x D 75 mm, weight 1.2 kg
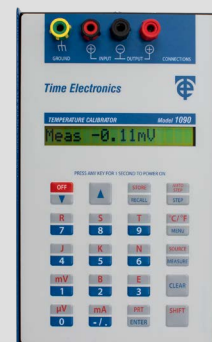
Pressure Calibration Instruments
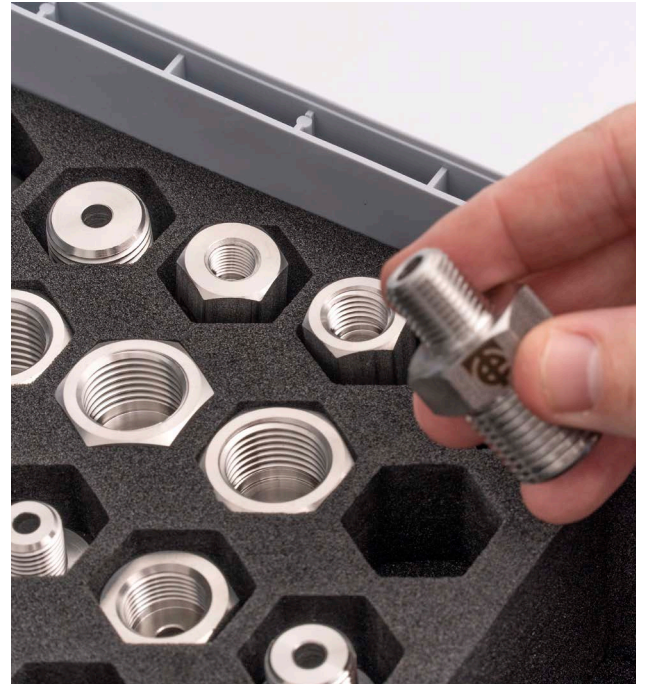
Pressure Calibration Instruments

Our pressure calibration instruments include calibrators, controllers, digital gauges and pumps. These products are used to calibrate devices such as transducers, transmitters, switches and indicators.

We have equipment for pneumatic and hydraulic testing applications, for absolute, gauge and differential pressure types.

We have laboratory solutions for manual and automatic pressure generation, high stability control and precision measurement. Portable pressure calibrators provide users with robust test tools for applications in the field.

Also available is a comprehensive range of pressure calibration accessories including manifolds, regulators, adaptor kits and more.

8030 Pressure Controller
Precision control and calibration for laboratory testing applications

Automatic Pressure Calibration

The 8030 is an advanced pressure controller/calibrator suitable for wide workload calibration of pressure devices such as transmitters, sensors and gauges. The standard unit can be configured for multiple ranges from vacuum to 100 bar (1500 psi), integrating up to three high accuracy reference sensors for maximum workload coverage. Additionally a barometric reference option enables absolute pressure emulation. High range dual sensor versions up to 230 bar (3350 psi) are also available.

Due to its fully configurable design, the 8030 offers the maximum flexibility to end user requirements. Accuracy is 0.01 % FS for each internal sensor fitted, and control stability is 0.005 % FS of the active sensor range. This provides the necessary coverage for applications with outstanding accuracy, control and speed for testing applications.

With up to three sensors integrated into the instrument the user is always offered an optimal calibration solution over a very wide pressure range. The 8030 is suitable as a high performance pressure standard in process plants, factories and calibration labs. Routine testing of pressure instrumentation is made quick and simple, whether using the 8030 touch screen display or via EasyCal calibration software. A virtual control software is also included for manual control of the 8030 via PC or laptop.

Supplied Accessories and Options

The 8030 is supplied with a benchtop 2 port manifold (model 7161) and contamination trap (model 7115) as standard. Options include the 7165 compact compressor pumps that can supply pressure up to 70 bar. Vacuum pumps, test stands, adaptor kits, fittings and hoses are also available to optimise user set ups and applications.

Features

- Multi-range pneumatic pressure controller
- 3 sensor versions to 100 bar, dual sensor versions to 230 bar
- Gauge, compound, absolute, differential
- Control stability 0.005 % FS (of active sensor)
- Auto-ranging capabilities
- Accuracy 0.01 % FS (of active sensor)
- Barometric reference option
- Touch screen user interface
- Virtual control panel software included
- EasyCal software compatible
- Hydraulic versions available (8030-H)

Applications

- Workload calibration of pressure transmitters and sensors
- Pneumatic calibration of gauges, indicators and calibrators
- Wide range automated pneumatic pressure sourcing

7165 Electric Compressor Pump

A range of compact pressure compressor pumps for supplementing calibration benches and pressure instruments. Primarily designed for use with the 8030 pressure controller, 7165 models can be used to create a fully automated pressure calibration system. This removes the requirement for nitrogen cylinders or bulky high pressure compressors.

• Compact pressure system for use with 8030 pressure controller
• Models for 17, 35, 50 or 70 bar
• Provides clean air to pressure controller, no need for external filters
• Accuracy 1 % FS
• Oil-less system
• Setting display for modifying the pressure output and maintenance
• Dimensions: L 280 x H 330 x W 210 mm
• Weight: 12 kg
• Supplied pre-configured when purchased with controller

7115 Contamination Trap

The 7115 is a contamination trap designed for use with pressure equipment, such as controllers, calibrators and pressure generators. It protects against impurities, liquids (water, oil etc.) and residues released by manifolds, gauges, transmitters and other pressure instrumentation under test.

• Contamination trap to protect pressure calibrators and controllers
• Supplied as standard with 8030 pressure controllers
• Pressure range: -1 to 210 bar
• Pressure media: Pneumatic only, gas or air
• Material: Stainless steel, polycarbonate and nitrile rubber seals
• Connections: 2 x adaptors – minimess type with hoses supplied
• Dimensions: W 120 x D 120 x H 120 mm
• Weight: 1 kg

7161 Pneumatic Manifold

The 7161 is a pneumatic manifold that provides two output ports with hand-tight connectors for pressure instrumentation under test. It is a compact solution used for pressure calibration from vacuum to 200 bar (3000 psi). Features include an anodized aluminium manifold block and a bleed valve to vent pressure when required.

• Dual port benchtop pressure manifold
• Suitable for vacuum to 200 bar (3000 psi) use
• Compact for benchtop or field work
• Hand-tight quick connectors
• Vent valve to bleed pressure when required
• Suitable for use with pumps and gauges
• Supplied with connection hose
• Ideal for use with CalBench modules
• Dimensions / Weight: W 275 x D 140 x H 130 mm / 1.7 kg
• Can be fitted to the 8100 instrumentation test stand
• Supplied as standard with 8030 controllers

Portable Pressure Calibrators
Robust calibrators for field pressure testing applications

7010 Single Channel Pressure Calibrator

A robust portable pressure calibrator that is suitable for field and laboratory calibration work of both pressure and electrical process loop signals. It is a simple operation instrument ideal for calibrating and cross-checking pressure gauges, sensors, transmitters, transducers, indicators, switches, and many other devices.

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

7015 Dual Channel Pressure Calibrator

A portable calibrator with two internal sensors to enable coverage of a wide pressure range with excellent accuracy and efficiency. Suitable for field calibration of pressure and process instrumentation including transmitters, gauges, indicators, switches.

- Vacuum to 600 bar versions available
- Accuracy 0.04 % of full scale
- Pneumatic or hydraulic
- Dual channel – 4 and 5 engineering units
- Loop current measure
- 24/36 V loop power
- Over-pressure alarm
- RS-232 serial interface
- EasyCal software compatible
- Mains or battery powered

7016 Regulated Pressure Calibrator

The 7016 is a fully integrated pressure test and calibration system. It provides both regulated pressure and source/measure of electrical process loop signals. The instrument is available as a positive pressure or vacuum regulated calibrator.

- Vacuum, 0.2, 2, 5, or 10 bar versions available
- Accuracy 0.04 % of full scale
- Pneumatic
- 4 selectable pressure units plus mA
- Loop current measure
- 24/36 V loop power
- Over-pressure alarm
- RS-232 serial interface
- EasyCal software compatible
- Mains or battery powered

7018 Differential Pressure Calibrator

A robust portable calibrator for field testing pressure instrumentation such as differential pressure sensors and transmitters. The instrument is designed for very stable measurement of differential pressures between two quick release connector ports (Hi and Lo for DP input).

- 0.2, 2, 5 and 10 bar versions available
- Accuracy 0.04 % of full scale
- Pneumatic
- Calibrate DP sensors, transmitters, gauges
- Loop current measure
- 24/36 V loop power
- Over-pressure alarm
- RS-232 serial interface
- EasyCal software compatible
- Mains or battery powered

7040 Digital Pressure/Current Calibrator

A compact portable pressure calibrator suitable for workshop, laboratory and field use. With the capability to measure process loop current and pressure, it enables users to calibrate pressure and process instrumentation.

- Vacuum to 20 bar versions available
- Accuracy 0.04 % of full scale
- Pneumatic
- Up to 9 selectable engineering units
- Loop current measure
- Min/Max logging & leak rate functions
- 4.5 digit display
- RS-232 serial interface
- EasyCal software compatible
- Battery powered (9 V PP3, 50 hours use)

7078 Auto-Ranging Digital Pressure Gauge

A high performance durable digital pressure gauge that has the ability to auto-range and maintain a 0.1 % of reading accuracy from vacuum to 200 bar. The 7078 eliminates the need for multiple gauges to span many different ranges, solving the problem of over ranging errors. It provides a convenient wide range pressure measurement solution for field calibration and testing, commonly utilised with a hand pump.

- Vacuum to 200 bar (3000 psi)
- Accuracy 0.1 % of reading
- 9 engineering units
- High accuracy silicone piezo resistive sensors
- Reads both gauge and absolute pressure
- Easy to read backlit display
- Robust with protective rubber housing
- Ideal for use with calibration pumps

Calibration Hand Pumps
Portable pressure pumps for field calibration and testing work

7090 Pneumatic Calibration Pump

A pneumatic pressure calibration hand pump that combines performance with rugged design. It is designed for arduous use in the field or as a pressure and vacuum source in test facilities. The 7090 is ideal for checking the calibration of gauges, pressure switches, transmitters, recorders and other pressure equipment. It covers a range from vacuum to 40 bar (600 psi).

- Pressure to 40 bar (600 psi)
- Vacuum to 950 mbar
- Oversized check valve for smooth operation
- Non-oil based lubricant on all moving parts
- Contoured cushioned handles
- Protective caging for vent valve
- Hoses, fittings, and carry case included
- Dimensions: H 200 x W 125 mm / Weight: 0.91 kg
- Optional digital pressure gauges

7095 Hydraulic Calibration Pump

The 7095 is a hydraulic calibration hand pump commonly used for field testing applications. It is designed for ease of use with a fully adjustable stroke control providing quick priming, easy pumping and a fast pressure generation up to 700 bar (10,000 psi).

- Hydraulic pressure to 700 bar (10,000 psi)
- Priming feature for fast air purge
- Oversized check valve – smooth operation
- Triple filtration (prevents failure caused by dirt)
- Non-oil based lubricant on all moving parts
- Contoured cushioned handles
- Built-in pressure relief valve
- Hoses, fittings, and carry case included
- Dimensions: H 240 x W 125 mm / Weight: 1.4 kg
- Optional digital pressure gauges

7117 and 7118 Portable Pressure Pumps

Pocket sized pumps that provide a simple and compact solution to field pressure generation. Each pump combines a smooth and controlled operation with rugged design, making them the ideal tool for site pressure testing work.

- 7118: Pneumatic Pressure: 0 to 7 bar (100 psi)
- 7117: Vacuum: 0 to 950 mbar (28 "Hg)
- Non-oil based lubricant used on all moving parts
- Dual o-rings on all pistons ensure no leakage
- Oversized check valve for smooth operation
- Made from anodized aluminium with a durable plastic handle
- Dimensions: H 220 x W 40 mm / Weight: 0.70 kg
- Digital pressure gauges available

7198 Pressure Calibration Accessories Kit

A comprehensive set of pressure accessories to accompany pumps, gauges, and calibrators. 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 & female)
- Coupling connectors allow any two adaptors to be connected together
- ¼ BSP hose fittings for pushfit 4mm and 6mm external diameter hose
- Nylon hose set with quick release connectors for low pressure connections
- Additional 4 mm and 6 mm nylon hoses to build up custom lengths
- Minimess 1620 test point adaptors and micro bore hose for high pressure
- 10" adjustable spanner and PTFE tape included
- Available as BSP version (7198) or NPT version (7198-NPT)
- Case with partitioned top section for hoses and extras

8100 Instrumentation Test Stand

A multi-purpose test stand for use with process instrumentation in the workshop or lab. It is a compact workstation that provides users with quick and customiseable setups for common testing applications and service work. These include practical mounting of various pressure transmitters, gauges, temperature transmitters, RTDs & thermocouples.

- Multi-purpose test stand for process instrumentation
- Configurable solution with track base on rubber mat
- 2 transmitter fixing poles for U-bolt connections
- Vertical and horizontal pole positioning, height adjustable
- Pressure manifold with hand-tight quick connection
- Quick-vice with sliding jaw and one handed lever arm
- Upright support with clamp mechanism
- Easy to configure as per user requirements
- Clamping section can be used for direct mounting of UUTs
- Selection of tools supplied

XREG Pressure Regulator Kit

A piston sensed pressure single stage reducing regulator for use in providing a stable pressure to precision pressure control devices. Suitable for controlling pressures up to 210 bar (3045 psi), the regulator covers the range needed for the majority of line pressure requirements in calibration applications.

- Suitable for user with compressed air or nitrogen cylinders
- Used for regulation up to 210 bar (3045 psi)
- Smooth pressure adjustment with bronze bearing
- Inlet and outlet gauges supplied, 250 bar (3500 psi)
- Pressure media: Pneumatic only, air or inert gas
- Materials: Anodized Aluminum, Stainless Steel
- Seal Materials: Buna-N, Delrin, Teflon
- Operating Temp: Min: 60 °C / 140 °F. Max: -18 °C / 0 °F
- W 140 x H 150 x D 150 mm (including gauges & fitting)
- Weight: 1.1 kg

Electrical Test Equipment Calibrators

Electrical Test Equipment Calibrators

A range of instruments that provide users with calibration capabilities for electrical testers and meters. With these products you can test and verify the broad scope of electricians testing devices, accurately and efficiently.

There are various types of testers that check a wide range of electrical parameters. Models can be either single-function devices or comprehensive multifunction units. A combination of calibration equipment is often needed to test and verify different types and functions.

The 5068 and 5069 models are primarily resistance units for use in calibrating insulation testers. The 5070 is designed for 4-wire calibration of micro-ohmmeters and the 5080 for portable appliance testers.

The 5030 is a multifunction calibrator for RCD, loop, insulation, earth testers and multifunction installation testers. It is typically utilised in the calibration laboratory, with automated testing using EasyCal software.

5030 Electrical Tester Calibrator

Instruments for rapid calibration of electrical safety test equipment

Description

A precision instrument designed to calibrate RCD, loop, insulation, earth testers and multifunction installation testers. The 5030 accurately simulates RCD trip times and measures currents produced by RCD testers. It replicates loop impedance and auto adjusts for local line impedance. It also provides insulation resistances and measures test voltages and currents. User control is via the central navigation keypad. Scrolling though menus and settings is intuitive and easy, with measurements and settings shown on the large clear LCD display.

Regional test sockets and fault detection: For loop and RCD tests the electrical tester (device under test) connects directly to the dedicated front panel mains socket. The 5030 can be fitted with a number of regional type sockets (specified on order). In these test conditions, if the device under test is faulty, the 5030 auto detects the fault, disconnects the output and warns the user. The 5030 is designed not to trip any RCDs on the local supply.

Loop impedance with auto local loop measurement: With 10 measurement points the 5030 covers a wide range of loop testers. The precision resistors that make up the loop calibration function are high power and capable of withstanding up to 30 A. An accurate automatic measurement of the local loop is made by the 5030 and added to the resistor value to give the loop impedance value, allowing for precise loop impedance calibration.

Precise RCD trip times: RCD trips can be simulated from 10 to 2000 ms in duration. The trip time can be set to predefined values for quick selection, or to a user time via the front panel.

RCD current measurements: Current measurement is made of the applied RCD test current. Current measurements are true RMS for AC, half wave rectified as well as being able to measure DC tests. The ranges covered are from 6 mA to 1000 mA, with multipliers of x0.5, x1, x2, and x5 up to a maximum of 2500 mA. To avoid false current measurements the 5030 incorporates a 'pre-test delay' setting. This feature is for use with RCD testers that produce a pre-test signal. A test current threshold setting (0 to 100 % of nominal current) is also user selectable.

Insulation resistance and test voltage measurement: The 5030 tests the functions of megohm meters using precision high value resistors up to 2 GΩ. Resistance value can be set via front panel or via remote control to allow many test points to be automated. Voltage measurement functions allow accurate test voltages up to 1 kV to be measured whilst under 0.5 mA or 1 mA test conditions.

Continuity and earth resistance: The 5030 precision low ohm resistors allow calibration of continuity functions found on most multifunction testers and insulation testers. Applied test voltages and currents are also measured.

Mains voltage and frequency: The local mains supply voltage and frequency is precisely measured by the 5030. This is used to cross reference the voltage reading on the unit under test and confirm the instruments accuracy.

Features

- RCD 3 mA to 2500 mA, 10 ms to 2000 ms

- Loop 50 mΩ to 1.8 kΩ

- Insulation up to 2 GΩ / 1 kV

- Continuity 0.1 Ω to 10 kΩ

- Regional test sockets

- RS-232 / USB Control

- Fast and intuitive user interface

- PC/laptop control via EasyCal software

EasyCal Calibration Software

The 5030 can be controlled via Time Electronics EasyCal software to automate the calibration process. This provides increased speed of calibration and consistency of results

Produce traceable calibration certificates and test reports for quality standards with additional uncertainty information for ISO 17025 conformance.

Technical Specifications

Loop

Function	Range / Values	Resolution	Accuracy
Loop Impedance Resistor Values	1800, 330.0, 180.0, 33.00, 18.00, 3.300, 1.800, 0.330, 0.150, 0.050 Ω	4 digit	± 0.5 % of displayed value ± 30 mΩ
Local Loop Compensation	0 to 9.999 Ω	0.001 Ω	± 0.5 % of value ± 30 mΩ
Test Current	30 A max (200 ms) / 50 W max	–	–

RCD

Function	Range / Values	Resolution	Accuracy
Trip Time	10 to 2000 ms	10 ms	± 0.5 ms
Current	6.000, 10.00, 30.00, 100.0, 300.0, 500.0, 1000 mA	4 digit	± 0.5 % of reading ± 1 % with x5 multiplier
Current Multipliers	x0.5, x1, x2, x5	–	–
Maximum Current	2500 mA	–	–
Waveforms	AC, DC & half wave rectified	–	–
Phase Detection	0° or 180°	–	–
Pre Trigger Delay	0 to 2000 ms	10 ms	–
Pre Trigger Threshold	0 to 100 % of nominal current	1 %	–

Insulation

Function	Range / Values	Resolution	Accuracy
Resistance	1 MΩ to 2000 MΩ	1 MΩ	1 % of value
	50 kΩ to 1990 kΩ	50 kΩ	1 % of value
Test Voltage Measurement @ 0.5 mA or 1.0 mA Load	50.0 to 99.9 V DC	0.1 V	1 % of reading
	100 to 1200 V DC	1 V	1 % of reading

Continuity

Function	Range / Values	Resolution	Accuracy
Resistance	0.1 Ω to 100.0 Ω	0.1 Ω	1 % of value + 20 mΩ
	250 Ω, 500 Ω, 1.00 kΩ, 2.50 kΩ, 5.00 kΩ & 10.0 kΩ	3 digit	1 % of value
Test Voltage Measurement (input resistance 10 MΩ)	0.0 to 50.0 V DC	0.01 V	0.5 % of range
Test Current Measurement (between 1 Ω and 2 Ω)	0 to 400 mA DC	0.1 mA	0.5 % of range
Power Dissipation	1 watt maximum	–	–

Voltage

Function	Range	Resolution	Accuracy
Line Voltage Measurement	200.0 to 260.0 V RMS	0.1 V	0.5 % of reading
Line Frequency Measurement	45.00 to 65.00 Hz	0.01 Hz	0.1 % of reading

General Specifications

Warm up .... 30 minutes to full accuracy.

Settling time .... Less than 5 seconds.

Standard interfaces .... RS-232 and USB.

Temperature performance .... Operating: 10 to 35 °C, Full spec: 23 °C ± 5 °C, Storage: -10 °C to 50 °C.

Operating humidity/altitude .... < 80 % non condensing / Altitude: 0 to 3 km. Non operating altitude: 3 to 12 km.

Line power .... 220 to 240 V AC 50 Hz. Power consumption 200 W maximum.

Dimensions / Weight .... W 430 x H 155 x D 255 mm / Weight: 8 kg.

Supplied with .... User manual, RS-232 cable, USB adaptor/cable.

Ordering Information

5030 .... Electrical Tester Calibrator

C201 .... Traceable calibration certificate (Factory)

C137 .... Accredited calibration certificate (ISO 17025)

ECFLA .... EasyCal Software (see separate datasheet for options)

5068 Insulation Tester / Megohmmeter Calibrator

A precision instrument suitable for calibrating and testing general purpose insulation testers and megohmmeters with test voltages up to 2.5 kV. It is constructed in a high strength co-polymer plastic case and is powered by a rechargeable battery. This ensures full isolation from the mains and prevents stray leakage.

The insulation tester being calibrated can be tested for open circuit voltage and short circuit current. These are displayed on the digital meter mounted on the front panel. Nine selectable precision resistors provide the insulation resistance test. Also fitted are 4 fixed low resistance values for verification of the low ohm ranges and continuity. Rugged, compact and portable, the 5068 is easy to transport and ideal for site calibration work.

- Insulation resistance from 100 kΩ to 10 GΩ
- Low ohm verification at 1 Ω, 10 Ω, 100 Ω, 1 kΩ
- Resistance accuracy: 1 % of setting
- Voltage and current accuracy: 1 % of reading
- Up to 2.5 kV operation
- Battery operation (over 150 hours between charges)
- Continuous connection – no arcing
- Fully shrouded safety connectors
- Display of open circuit voltage (0 to 1.999 kV or 0 to 2.50 kV)
- Display of short circuit current (0 to 2 mA or 0 to 20 mA)
- W 270 x H 175 x D 250 mm, weight 2.1 kg

5069 Insulation Tester / Megohmmeter Calibrator

A calibrator that consists of a high precision resistance box, voltmeter and a milliamp meter. It is used to test and verify insulation testers and megohmmeters with test voltages up to 10 kV. The unit is constructed from high insulation materials, including the case, and is fully isolated from any external circuits including the mains supply. The insulation tester being calibrated can be tested for open circuit voltage and short circuit current. These are displayed on the front panel digital meter.

The insulation resistance is provided by a precision 4 dial decade resistance bank which can be set to a maximum of 99.99 GΩ. Additional resistance values of 100 kΩ, 200 kΩ, 500 kΩ, 1 MΩ, 2 MΩ and 5 MΩ can be switched in as required.

- Insulation resistance from 100 kΩ to 100 GΩ
- Low ohm verification at 1 Ω, 10 Ω, 100 Ω, 1 kΩ
- Resistance accuracy: 1 % of setting
- Voltage and current accuracy: 1 % of reading
- Up to 10 kV operation
- Battery operation (over 150 hours between charges)
- Continuous connection – no arcing
- Fully shrouded safety connectors
- Display of open circuit voltage (0 to 2 kV or 0 to 10 kV)
- Display of short circuit current (0 to 2 mA or 0 to 20 mA)
- W 406 x H 175 x D 330 mm, weight 4.4 kg

5080 Portable Appliance Tester Calibrator

A precision calibrator designed to provide rapid high accuracy calibration of portable appliance testers and insulation/continuity testers. The 5080 has calibration functions for earth bond, insulation, leakage, touch leakage, and load test. It is a practical and simple operation instrument that can be utilsed in the lab as a calibration standard or as a mobile testing unit for site calibration work.

Housed in a robust safety case the 5080 is easily portable, rugged and ideal for field use. It is battery powered, which ensures isolation and prevents inaccuracies due to stray leakage. Features include safety interlock that prevents contact with earth bond studs during insulation and leakage tests, and an LCD display for voltage and current.

- Earth bond range 18 Ω to 20 mΩ
- Earth bond currents up to 50 A AC
- Load test currents up to 13 A AC
- Resistance accuracy: 1 % of setting
- Voltage and current accuracy: 0.25 % of reading
- Voltage and current displayed on integral LCD display
- Safety interlock feature
- Portable robust carrying case
- Battery powered (over 200 hours between charges)
- W 406 x H 175 x D 330 mm, weight 5.5 kg

5070 Ductor Tester / Micro-Ohmmeter Calibrator

The 5070 DuctorCal is a portable instrument suitable for calibrating high current ductor testers and micro-ohm meters. It incorporates 5 sets of high current standard resistors that are used to enable precision calibration. It has full 4 terminal capabilities with extra large terminals for the current connection. Gold plated terminals are used throughout to reduce contact resistance and thermal EMFs.

It has a substantial maximum continuous current rating, but can also be used with much higher transient/pulse test currents. The internal resistance standards are all high quality manganin types with good long term stability and temperature coefficients. Rugged and portable, the 5070 is ideal for site calibration work, housed in a safety yellow field case with carry handle.

- 0.2, 2, 20, 200, 2000 mΩ ranges with fixed resistance values
- 50, 100, 150, 200 $\mu\Omega$ values: 0.8 % accuracy, 200 A max current
- 0.5, 1, 1.5, 2 mΩ values: 0.5 % accuracy, 100 A max current
- 5, 10, 15, 20 mΩ values: 0.2 % accuracy, 30 A max current
- 50, 100, 150, 200 mΩ values: 0.1 % accuracy, 10 A max current
- 0.5, 1, 1.5, 2 Ω values: 0.1 % accuracy, 3 A max current
- 5 point calibration: 0, 25, 50, 75, 100 %
- Gold plated terminals, low thermal EMF connection
- Portable robust carrying case
- W 540 x H 210 x D 410 mm, weight 11 kg

Multifunction Calibrators & Digital Multimeters
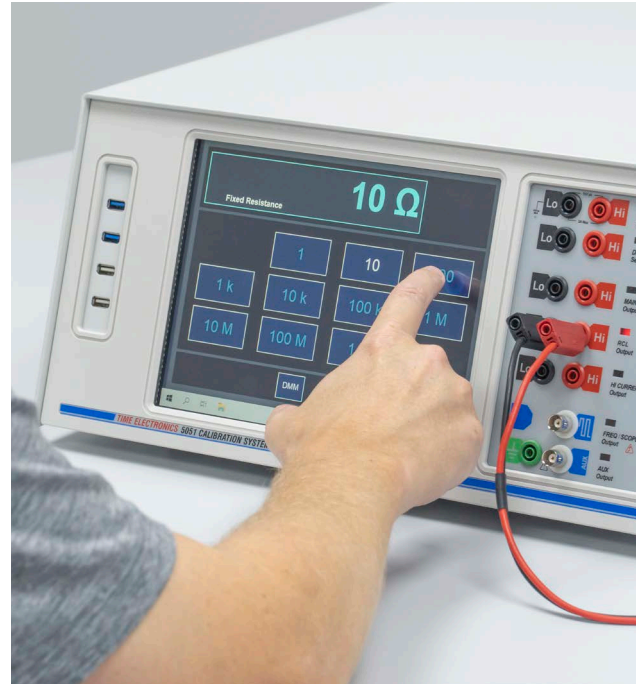
Multifunction Calibrators & Digital Multimeters

Time Electronics have a range of test systems designed for laboratory calibration work. Multifunction calibrators encompass a range of capabilities to cover a wide testing workload including electrical and electronic test tools and various types of instrumentation. Laboratory grade multimeters provide precision measurement for testing of sourcing and simulating devices and instruments. Additionally we manufacture programmable calibrators that can be utilised in automated test rigs for applications including controlled electrical signal injection.

Our laboratory calibration solutions provide users with the key benefit of software driven calibration. Each model communicates with EasyCal Calibration Software to automate and optimise the calibration process. Increase speed of calibration, consistency of results and produce calibration certificates and reports to ISO 9001, ISO 17025, and other quality standards. With comprehensive features it provides the ideal platform for an efficient calibration program.

5025 Series 2 Multifunction Calibrators
Precision calibration for wide workload coverage

Efficient Multi-Product Calibration

The 5025 Series 2 models are multifunction calibrators that provide a wide range of precision outputs for the calibration of electrical test tools, meters, and various types of measuring devices. They combine performance and functionality with simple operation, making them suitable for calibration laboratories, workshops and on-site test facilities.

Functions include AC/DC voltage and current, digital frequency, variable resistance, conductance, capacitance, inductance, thermocouple and Pt100 simulation. AC and DC power calibration via simultaneous voltage and current output, with adjustable phase, and frequency to 500 Hz. An oscilloscope calibration option enables generation of levelled sine-waves up to 2.2 GHz.

Clamp meter calibration is simplified by additional turn coil ranges for DC and AC current, designed for use with the 9780 adaptor. Further options include an optical tachometer calibration adaptor, 100 A AC current transformer, and a power amplifier that increases the AC/DC voltage output drive capabilities to 100 mA.

Accessories include test lead sets, carry cases and rack mount kits. EasyCal software is available to enable software driven calibration.

Automate the Calibration Process: EasyCal Software

The 5025 models can be controlled by EasyCal software to automate the calibration process. This provides increased speed of calibration and consistency of results. Produce traceable calibration certificates and test reports for quality standards with additional uncertainty information for ISO 17025 conformance.

Features

- 0 to 1050 V AC/DC voltage
- 0 to 22 A AC/DC current
- Variable resistance
- Thermocouple and Pt100 simulation
- Power calibration
- Capacitance
- Optional oscilloscope calibration
- Clamp meter calibration
- RS-232, USB, and GPIB interfaces
- PC Virtual Control Software included
- EasyCal software compatible

Calibration Capabilities

- Analogue & digital multimeters, panel meters, process meters
- Clamp meters (with clamp coil option 9780)
- Power meters, watt meters
- Tachometers, chart recorders, data loggers
- Thermocouple and Pt100 meters, electronic thermometers
- Oscilloscopes and timer counters (with SCP option)

Basic Technical Specifications

Function	Range / Values	Best 1 year Specification	
		5025C-S2	5025E-S2
Voltage DC	0 to ± 1050 V	± 15 ppm of setting	± 40 ppm of setting
Current DC	0 to ± 22 A 1000 A with clamp meter adaptor (option 9780)	± 60 ppm of setting	± 120 ppm of setting
Voltage AC	2 mV to 1050 V / 20 Hz to 1 MHz sine-wave	± 0.05 % of setting	
Current AC	10 μA to 22 A / 20 Hz to 5 kHz sine-wave 100 A with current transformer (option 9790) 1000 A with clamp meter adaptor (option 9780)	± 0.05 % of setting	± 0.07 % of setting
Digital frequency	0.1 Hz to 10 MHz	± 20 ppm of setting	
Digital period	100 ns to 10 s (fixed values 1, 2, 5 sequence)	± 20 ppm of setting	
Conductance	100 mS to 1 nS (decade values)	± 100 ppm of setting	
2-wire variable resistance	1 Ω to 1.1 GΩ	± 100 ppm of setting	
4-wire decade resistance (5025C only)	1 Ω to 100 kΩ	± 30 ppm of setting	n/a
RTD simulation	–180 to 850 °C. Type Pt100, Pt200, Pt500, Pt1000	± 0.03 °C	
Thermocouple simulation	–210 to 2315 °C. Type J, K, R, T, S, B, E, N, C, L, U	± 0.05 °C	
Capacitance	1nF, 10nF, 20nF, 50nF, 100nF, 200nF, 500nF, 1μF, 10μF, 20μF, 50μF, 100μF	± 0.2 % of setting	
Inductance (5025C only)	1mH, 1.9mH, 5mH, 10mH, 19mH, 50mH, 100mH, 190mH, 500mH, 1H, 10H	± 0.1 % of setting	n/a
Power	22 A, 1050 V, 23 kW, 40 to 500 Hz	ACV: 0.05 %, DCV: 0.01 %. ACI: 0.1%, DCI: 0.05 %	
Phase / Power factor	± 90.0° / 0.00 to 1.00 PF	± 0.25°	
Option 9780: Clamp meter adaptor	AC/DC Current up to 1000 A (DC, 45 to 90 Hz)	± 0.5 %	
Oscilloscope Calibration (SCP Option)			
Amplitude	2 mV to 200 V (1 M Ω) and 1 mV to 2 V 50 Ω (Square-wave or DC)	± 0.05 %	
Frequency (fixed values 1, 2, 5 sequence)	0.1 Hz to 10 MHz 20 MHz, 50 MHz, 100 MHz	± 0.1 ppm ± 20 ppm	
Period (fixed values 1, 2, 5 sequence)	10 s to 100 ns 50 ns, 20 ns, 10 ns	± 0.1 ppm ± 20 ppm	
Duty cycle	3 frequencies: 100 Hz, 1 kHz, 10 kHz, settable from 0 to 100 %	–	
Fast-rise	< 400 ps. Bandwidth checking up to 400 MHz	–	
Levelled sine wave	50 to 1000 kHz & 10 MHz to 2.2 GHz levelled sine-wave (0.35 to 3.5 V pk-pk)	Amplitude ± 0.5 %, Frequency ± 50 ppm	

External Options

|	
External Adaptors/Instruments	9780: Clamp meter adaptor (1 and 50 turn coil) • 9773: Optical tacho adaptor • 9790: 100 Amp AC current transformer 9760: Power amplifier (60 V AC, 90 V DC, 100 mA) • 9762: Rubidium high stability frequency reference 9764: Current probe calibration adaptor • 9766: Low noise attenuator (1000:1) • 9767: Low noise attenuator (100:1)
Accessories	9085: Soft carry case • 9059: Hard transit case • 9728: 19 " Universal rack mount kit
EasyCal Software	ECFLA: EasyCal full license • 9777: Bar code reader • 9779: Job and address label printer EC2FL/EC2WL: Additional user licenses • EAD: EasyAdmin add-on • EWC: WebCerts • CREP: Crystal Reports software

General Specifications

Mains voltage......................100 to 260 V AC 50/60 Hz.

Fuse ratings ....3.15 A anti-surge.

Power consumption ....120 W typical, 200 W maximum.

Temperature performance..................Operating: 10 to 40 °C. Storage: –10 to 50 °C.

Operating humidity..............................< 80 % non condensing.

Altitude ....0 to 3 km. Non operating: 3 to 12 km.

Warm up ....30 minutes to full accuracy.

Interfaces...........................RS-232, GPIB and USB (via RS-232 adaptor). Command set: Standard SCPI.

Dimensions / Weight..........................W 447 x H 152 x D 470 mm. Weight: 16.5 kg.

Supplied accessories..........................Test lead set, PC virtual control software, RS-232 cable, RS-232 to USB adaptor, user manual.

5051Plus Multifunction Calibration System
Precision calibration for wide workload coverage
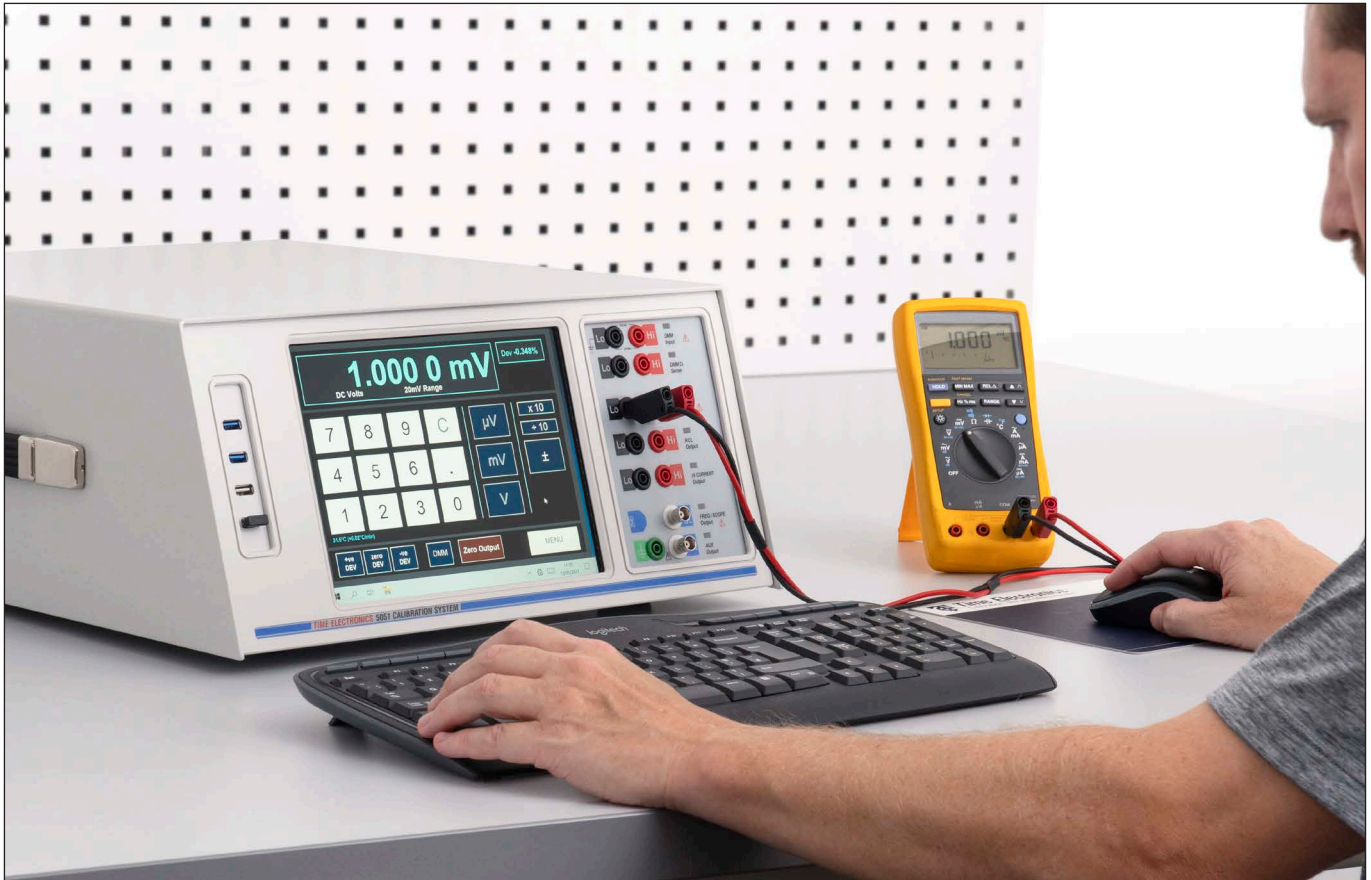
Calibrator / Multimeter / Touch Screen PC

A system that combines a high accuracy calibration source with a precision digital multimeter. The 5051Plus incorporates a wide range of functions to provide users with a multi product calibration solution. It is suitable for rapid calibration with automated test runs using EasyCal software, covering electrical test tools, process instrumentation, oscilloscopes and more. Adaptors and accessories are included for applications such as clamp meter and optical tachometer calibration. Supplied test leads enable the necessary connections for nearly all applications.

Calibrator: Provides a wide range of calibrated outputs for AC/DC voltage and current, resistance, capacitance, inductance, RTD and thermocouple simulation.

Multimeter: The integral 6.5 digit multimeter measures DC voltage to 1000 V, AC voltage to 750 V, resistance to 100 MΩ, and frequency to 300 kHz.

Computer: A intuitive user interface with large 10.4" touch screen display. The 5051Plus has an in-built PC with a 64 bit dual core processor, running Windows 10. For manual operation it features the calibrator and multimeter control applications, with the wide range of functions easily selectable using mouse, keyboard or touch screen.

EasyCal Software: Loaded as standard, EasyCal enables automatic calibration to increase speed and efficiency of work. It features applications to manage and administrate both inventory and quality control. To complement the system a printer and connectivity kit is supplied, for generation of certificates and reports. Further supplied accessories include a bar code reader for quick identification of devices in EasyCal, and label printer for creating stickers and labels to be placed on instruments. With EasyCal the operator can communicate with compatible test instruments via the 5051Plus system, creating a multi-parameter calibration workstation.

Features

- Integral multifunction calibrator and 6.5 digit multimeter
- Source up to 1050 V AC/DC voltage
- Source up to 22 A AC/DC current
- Source resistance (up to 1 GΩ), capacitance and inductance
- Oscilloscope calibration
- Measure voltage, current, resistance, frequency
- Thermocouple and Pt100 simulation and measurement
- EasyCal software, adaptors and accessories included
- Communicate with EasyCal compatible instruments

Calibration Capabilities

- Multimeters, clamp meters, ohmmeters, AC/DC signal sources
- Decade boxes, data loggers, RCL meters
- Tachometers, oscilloscopes, frequency meters
- Temperature indicators, meters, simulators
- Loop and process calibrators
- Additional calibration capabilities using compatible instruments

Calibrator (Source)

Function	Range / Values	Best 1 Year Specification
Voltage DC	0 to ± 1050 V	± 15 ppm of setting
Current DC	0 to ± 22 A	± 80 ppm of setting
Voltage AC	1 mV to 1050V (10 Hz to 1 MHz, sine-wave)	± 300 ppm of setting
Current AC	10 μA to 22 A (20 Hz to 1 kHz, sine-wave)	± 0.05 %
Clamp Meter Adaptor x50 turn	AC/DC Current up to 1000 A (DC, 45 to 90 Hz)	± 0.5 %
Capacitance	1 nF, 10 nF, 100 nF, 1 μF, 10 μF, 100 μF (100 V Max)	± 0.25 %
Inductance	1mH, 1.9mH, 5mH, 10mH, 19mH, 50mH, 100mH, 190mH, 500mH, 1H, 10H	± 0.1 %
Decade Resistance	1 Ω to 1 GΩ (decade values)	± 20 ppm of setting
Full Range Resistance	1 Ω to 120 MΩ (variable)	± 100 ppm of setting
Conductance	1 s to 1 ns (fixed values, decade steps)	± 20 ppm of setting
Thermocouple Simulation	-270 to 1820 °C (type J, K, R, T, S, B, E, N)	± 0.15 °C
Pt100 Simulation	-180 to 850 °C	± 0.07 °C
Oscilloscope Calibration		
Amplitude	6 mV to 200 V and 6 mV to 2 V 50 Ω (Square-wave or DC)	± 0.05 %
Frequency/Period	0.1 Hz to 100 MHz / 10ns to 10s (fixed values 1, 2, 5 sequence)	± 0.1 ppm (0.1 Hz to 10 MHz / 100 ns to 10 s) ± 20 ppm (20, 50, 100 MHz / 50, 20, & 10 ns)
Duty Cycle	3 frequencies: 100 Hz, 1 kHz, 10 kHz, settable from 0 to 100 %	–
Fast-Rise	< 400 ps. Bandwidth checking up to 400 MHz	–
Opt 9769: Scope 2.2 GHz Sweep	100 MHz to 2.2 GHz levelled sine-wave (0.5, 1, 1.5 V pk-pk)	Amplitude ± 1%, Frequency ± 20ppm

6.5 Digit Multimeter (measure)

Function	Range / Values	Best 1 Year Specification
Voltage DC	0 to 1000 V	35 ppm of rdg + 6 ppm of rng
Current DC	0 to 3 A	500 ppm of rdg + 50 ppm of rng
Voltage AC	0 to 750 V	0.06 % of rdg + 0.04 % of rng
Current AC	0 to 3 A	0.1 % of rdg + 0.04 % of rng
Resistance	0 to 100 MΩ	100 ppm of rdg + 50 ppm of rng
Frequency	3 Hz to 300 kHz	0.01 % of rdg
Thermocouple	-270 to 1800 °C (Type J, K, R, T, S, B, E, N)	± 0.5 °C
Pt100	-180 to 850 °C	± 0.08 °C

PC Information / General Specifications / Options

Feature	Specification / Details
PC Information	Processor: 64 bit, dual core (or equivalent) / RAM: 4 GB (or higher) / Hard Drive: 120 GB solid state. Operating System: Windows 10 / Display: 10.4" Touch Screen LCD / Ports: 4 x USB, 1 x Fast Ethernet. Included Software Programs: Calibrator and DMM control programs, EasyCal calibration software suite. Supplied Accessories: Keyboard, Printer, Cal & ID Label Printer, 4 port USB hub, Numeric keypad, USB memory stick.
General Specifications	Warm up: 30 minutes to full accuracy / Settling Time: Less than 5 seconds. Temperature Performance: Operating: 5 to 45°C. Calibration: 15 to 28 °C. Storage: -10 to 50 °C. Operating Humidity / Altitude: < 80 % non condensing. Altitude: 0 to 3 km. Non operating: 3 km to 12 km. Line Power: 100 to 230V AC 50/60 Hz. 200 W maximum. Dimensions / Weight: W 430mm, H 202mm, D 538 mm / 23 kg.
Supplied Items	5051Plus Calibration System / Clamp Meter Adaptor / Optical Tacho Adaptor / Premium Test lead Set / Soft Carry Case. Printer & Connectivity Kit / Cal & ID Label Printer / Bar Code Reader / Manual Control Software / EasyCal Software / Factory Cal Cert.
Options	9769: Internal Scope 2.2 GHz Levelled Sine Generator / 9762: External Rubidium Frequency Reference / 9764: Current Probe Adaptor 9790: 100 Amp AC Current Transformer / 9760: Power Amplifier (60 V AC, 90 V DC - 100 mA) / 5077: Power Calibrator. Digital Pressure Gauges / Dry Block Calibrators / IR Calibrators / C134: UKAS Calibration Certificate (ISO 17025).
EasyCal Software Extras	9779: Job & Address Label Printer / EC2FL Additional EasyCal User License / EAD: EasyAdmin Add-On. EWC: WebCerts Add-On / CREP: Crystal Reports Software.

ATE/Bench Calibrators and Digital Multimeters
Programmable Calibrators and Benchtop DMMs

5011 Resistance/Temperature Calibrator

A versatile, high accuracy calibrator that is primarily a programmable resistance/RTD source. Internal options such as DC voltage and thermocouple simulation, DC current, and 10 MHz frequency can be added to increase capabilities.

- 1 Ω to 120 MΩ, 100 ppm basic accuracy
- RTD simulation
- Optional thermocouple simulation
- 0 to 22 V DC voltage option
- 0 to 220 mA DC current option
- 10 MHz frequency option
- RS-232, GPIB, and USB interfaces
- Front panel operation
- PC/laptop control via EasyCal software
- Rack mount kit option
- W 451 x H 152 x D 272 mm, weight 7 kg

5018 Programmable DC/AC V/I Calibrator

A high precision calibration instrument that can be configured as a simple benchtop DC voltage calibrator or advanced AC/DC voltage and current source controlled via PC, performing any number of tasks as part of a complex ATE test rig.

- 15 ppm accuracy, 0.5 ppm resolution
- 0 to 22 V DC
- Optional 0 to 22 V AC, 220 V DC and 1 kV DC
- Optional 0 to 220 mA AC/DC
- 1999999 full scale +10 % over-range
- Deviation control -9.999 % to +9.999 %
- Ramping feature
- RS-232, GPIB, and USB interfaces, EasyCal software compatible
- Ideal for ATE applications
- Front panel operation
- Rack mount kit option
- W 451 x H 152 x D 272 mm, weight 8.2 kg

5045 Oscilloscope and Timer/Counter Calibrator

A high performance benchtop instrument for calibrating a wide range of oscilloscopes, frequency meters and timer counters. It provides outputs for amplitude, frequency, period, duty cycle, and bandwidth. Frequencies are generated from an internal 0.1 ppm temperature controlled oscillator.

- 1 mV to 220 V square wave/DC
- Frequency 0.1 Hz to 100 MHz
- Time marker/period 10 s to 10 ns
- Fast rise < 300 ps
- Bandwidth check up to 600MHz
- Optional 2.2 GHz levelled sweep
- Rubidium frequency reference option
- Front panel operation
- Virtual PC calibrator control software supplied as standard
- PC/laptop control via EasyCal software
- W 451 x H 152 x D 272 mm, weight 8.2 kg

5077 Multifunction Power Calibrator

A high accuracy calibrator for sourcing AC/DC voltage and current, and single-phase power. It can be used as a workload calibrator for verification of electrical measurement devices, or as a programmable source in an automated test rig for meter testing.

- 0 to 1050 V AC/DC voltage
- 0 to 22 A AC/DC current
- Single-phase power simulation
- Up to 23 kVA or 23 kW
- Phase angle ± 90.0°
- Power factor 0.00 to 1.00
- 40 to 500 Hz adjustable frequency
- 100 A AC current transformer option
- Single/50-turn current clamp adaptor option
- Operation via EasyCal or virtual control software
- W 455 x H 155 x D 480 mm, weight 16.5 kg

5065 Bench Digital Multimeter

A versatile 6.5 digit bench multimeter with 19 measurement functions. Low cost, easy to use, stability, and high accuracy make the 5065 an ideal DMM for a variety of applications. With a comprehensive range of features the 5065 is suitable for test engineers, R&D, service, and calibration technicians.

- 6.5 digit resolution
- Accuracy 0.005 % DC voltage
- RS-232 and USB interfaces
- Optional GPIB interface
- Temperature measurements
- SCPI command set
- High sample rate
- 10 channel scanner card option
- PC/laptop control via EasyCal software
- W 210 x H 85 x D 350 mm, weight 4.4 kg

5075 Precision Digital Multimeter

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

- 7 digit resolution
- 10 nV to 10 kV, 10 pA to 30 A
- Resistance, capacitance, frequency
- 18 ppm accuracy/best 1 year
- 10 channel low thermal emf scanner option
- PC/laptop control via EasyCal software
- GPIB interface (USB adaptor available)
- Rack mount kit option
- W 423 x H 89 x D 415 mm, weight 8.5 kg
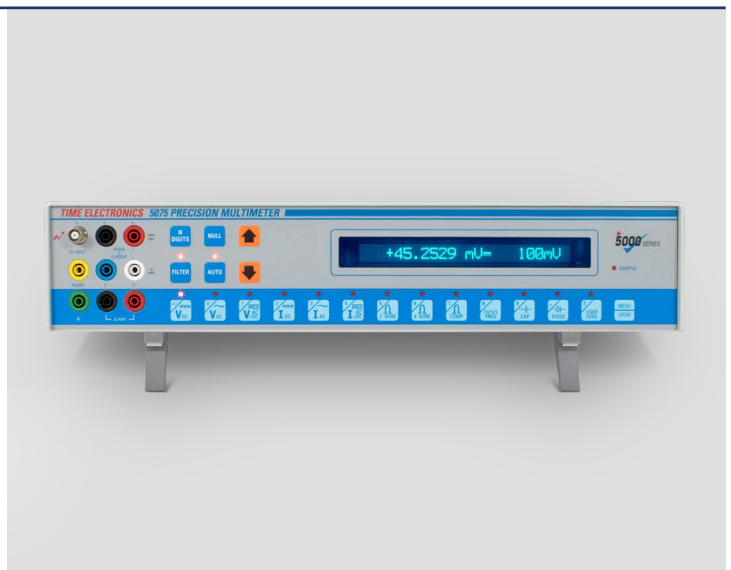
Calibration Software
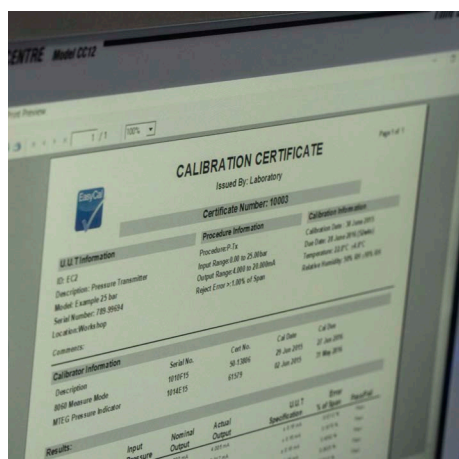
EasyCal is a complete software package with features covering all aspects of calibration work and management. It is designed to reduce workload, improve efficiency, and provide the essential platform for companies looking to create and sustain an effective calibration program.

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.   .

Manage, Automate and Optimise the Calibration Process

Communication and Control

EasyCal automates calibration runs by allowing the user to remotely control and communicate with test instruments such as calibrators and multimeters. User friendly features and controls aid the process to decrease calibration times and increase throughput. EasyCal driven calibration can be performed with compatible Time Electronics process instruments including dry block calibrators, temperature baths, digital pressure gauges, pressure controllers, and process calibrators. EasyCal is also utilised on CalBench systems where integrated modules communicate with a central control centre for a unified solution.

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.

EasyCal Calibration Software
The comprehensive solution to calibration work and management
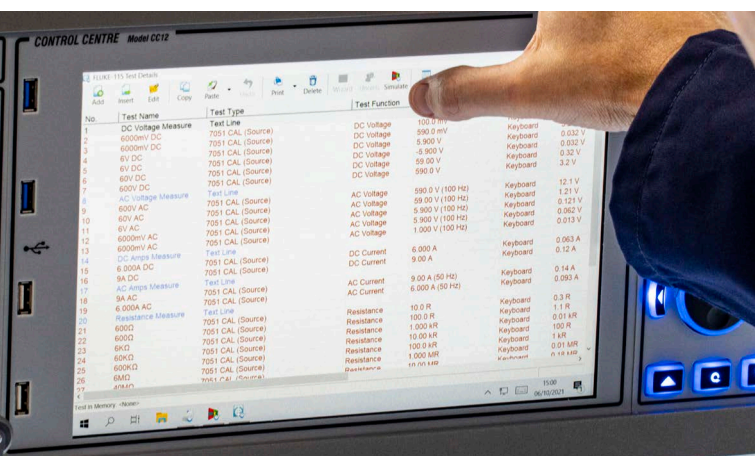
Automating the Calibration Process with EasyCal

Reminder letters and emails are sent to owner	Unit for test is received and booked in	Unit is checked and workload is scheduled	Testing is done using TE calibrator and EasyCal	Results/reports are stored and printed	Certificate is issued and unit is returned

Pre-Cal	Cal	Post-Cal
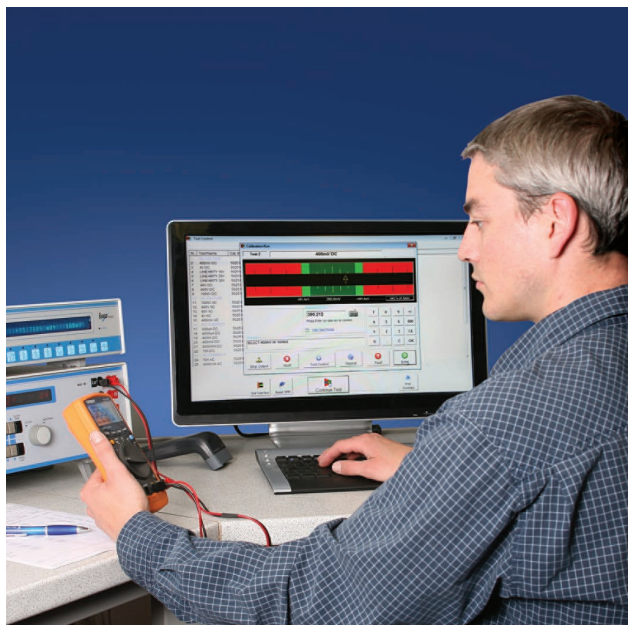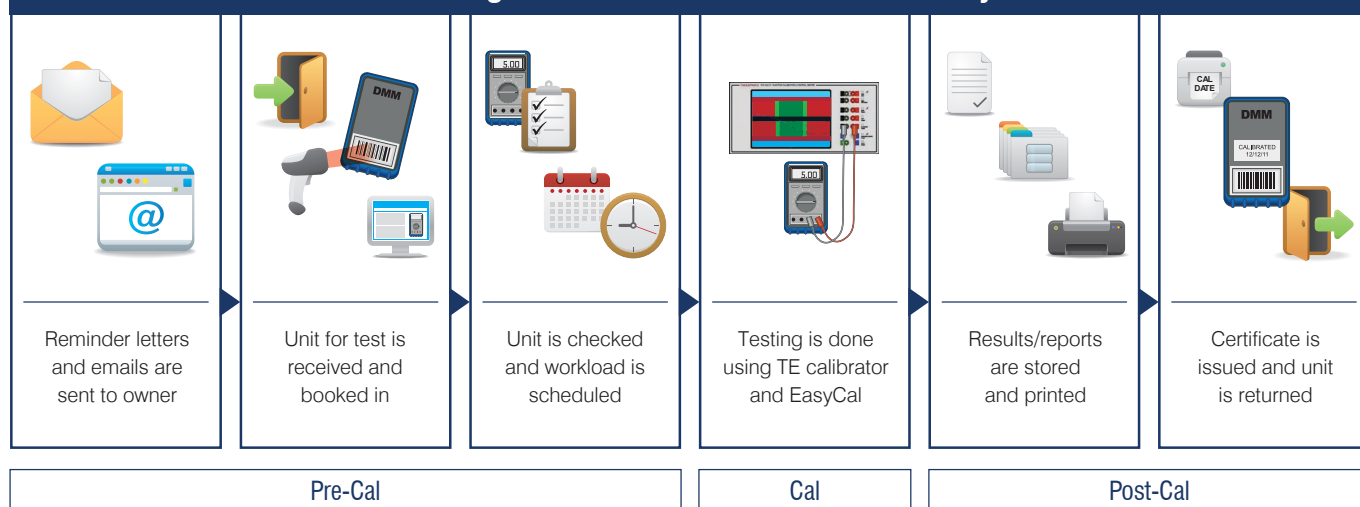
EasyCal: For the Calibration Process

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 organization 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

Produce traceable calibration certificates and test reports for quality standards. These can be printed, stored, or emailed as PDFs. EasyCal has a selection of pre-formatted certificate templates that are 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
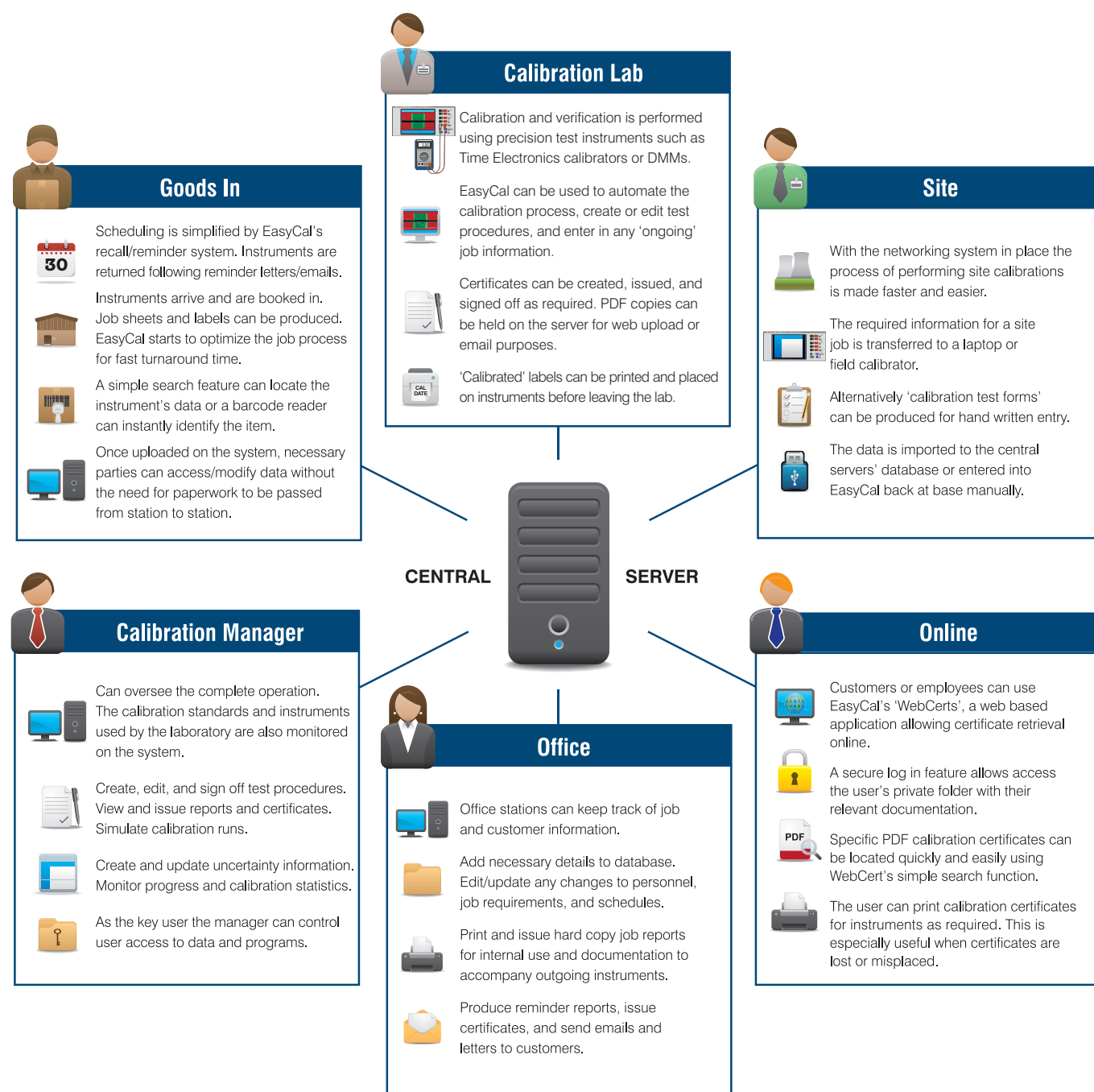- On demand networked review of certificates and reports

Networking with EasyCal

For multi-user systems EasyCal can be implemented as the universal software for administration, management, and control. With designated features for use in different workstations, EasyCal can provide a solution to calibration businesses with customers as well calibration departments within industrial plants.

Data can be shared and accessed on a central server, creating an organised and efficient networking set-up. EasyCal's pre-calibration features enable automated scheduling and also speed up the booking in process with quick instrument identification.

Calibration runs can be automated by using a compatible Time Electronics calibrator with EasyCal. Once calibration has been performed the data can be made available on the server to the necessary parties. Hard copy certificates and reports can be issued by authorised staff.

Enhanced security features can be added for increased protection, allowing a master user to control access rights to data and applications. Also available is an online application enabling users to upload and retrieve certificates.

Calibration Lab

Calibration and verification is performed using precision test instruments such as Time Electronics calibrators or DMMs.

EasyCal can be used to automate the calibration process, create or edit test procedures, and enter in any 'ongoing' job information.

Certificates can be created, issued, and signed off as required. PDF copies can be held on the server for web upload or email purposes.

'Calibrated' labels can be printed and placed on instruments before leaving the lab.

Goods In

Scheduling is simplified by EasyCal's recall/reminder system. Instruments are returned following reminder letters/emails.

Instruments arrive and are booked in. Job sheets and labels can be produced. EasyCal starts to optimize the job process for fast turnaround time.

A simple search feature can locate the instrument's data or a barcode reader can instantly identify the item.

Once uploaded on the system, necessary parties can access/modify data without the need for paperwork to be passed from station to station.

Site

With the networking system in place the process of performing site calibrations is made faster and easier.

The required information for a site job is transferred to a laptop or field calibrator.

Alternatively 'calibration test forms' can be produced for hand written entry.

The data is imported to the central servers' database or entered into EasyCal back at base manually.

CENTRAL SERVER

Calibration Manager

Can oversee the complete operation. The calibration standards and instruments used by the laboratory are also monitored on the system.

Create, edit, and sign off test procedures. View and issue reports and certificates. Simulate calibration runs.

Create and update uncertainty information. Monitor progress and calibration statistics.

As the key user the manager can control user access to data and programs.

Office

Office stations can keep track of job and customer information.

Add necessary details to database. Edit/update any changes to personnel, job requirements, and schedules.

Print and issue hard copy job reports for internal use and documentation to accompany outgoing instruments.

Produce reminder reports, issue certificates, and send emails and letters to customers.

Online

Customers or employees can use EasyCal's 'WebCerts', a web based application allowing certificate retrieval online.

A secure log in feature allows access the user's private folder with their relevant documentation.

Specific PDF calibration certificates can be located quickly and easily using WebCert's simple search function.

The user can print calibration certificates for instruments as required. This is especially useful when certificates are lost or misplaced.

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.
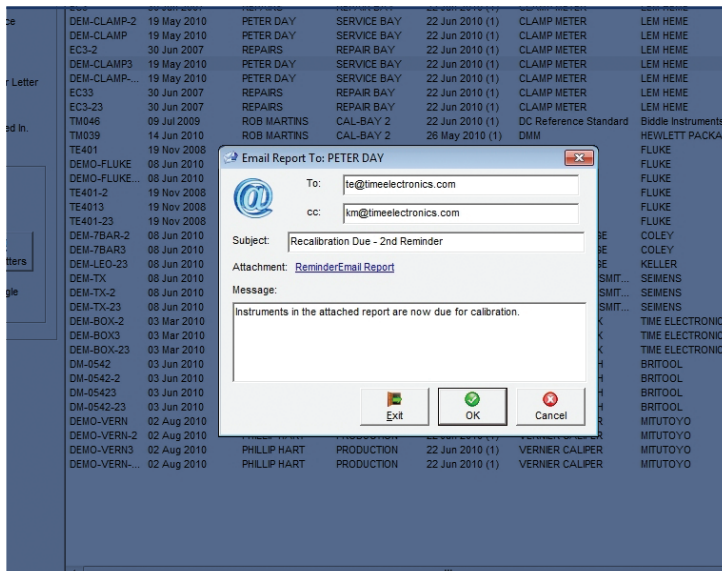
Instrument Recall and Reminder System

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'.
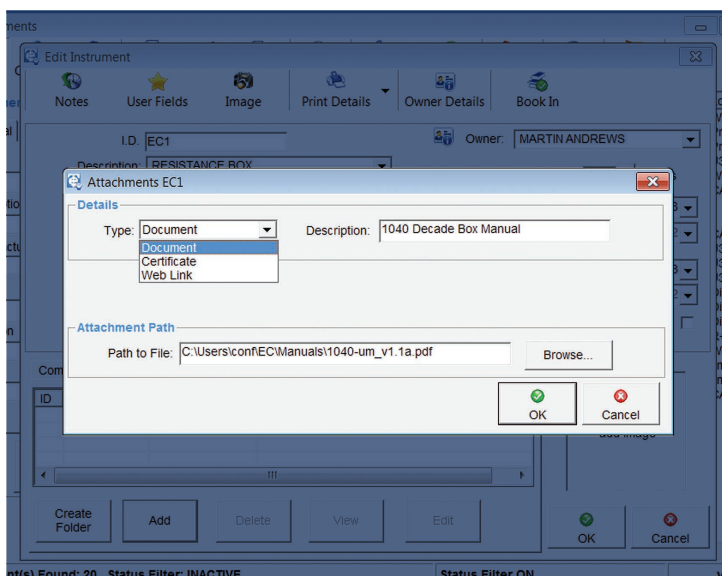
Document Links and Attachments

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.
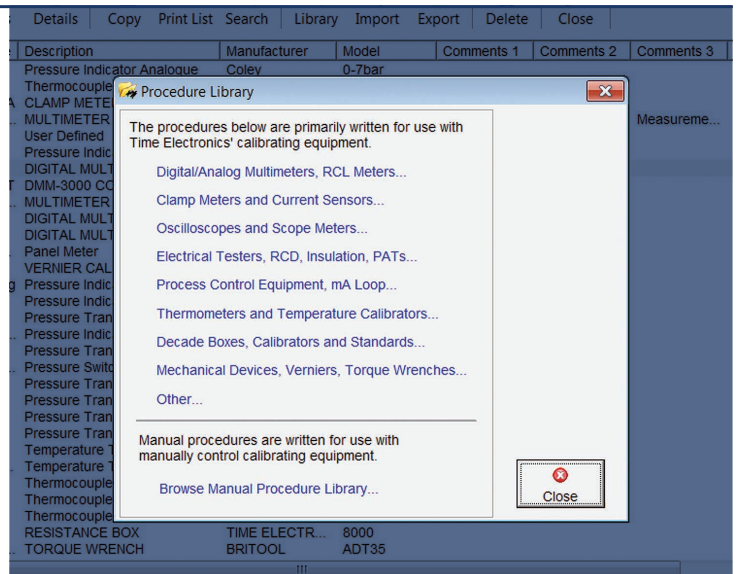
Fast Procedure Creation and Editing

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

Test Wizards

EasyCal features intuitive wizards for calibrating typical process devices such as transmitters, sensors, and pressure gauges. They provide users with a fast method to create procedures. Basic criteria about a device is entered, then the wizard creates a set of tests based on this information.

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.
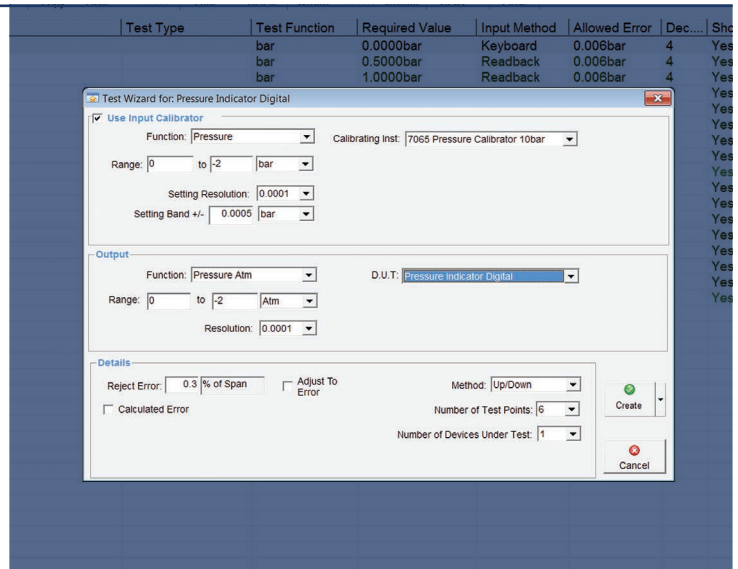
Format Certificates

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.

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.
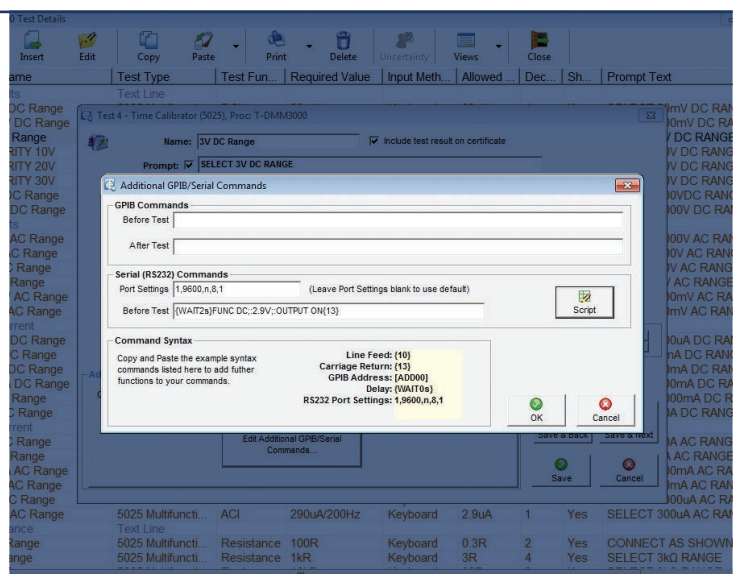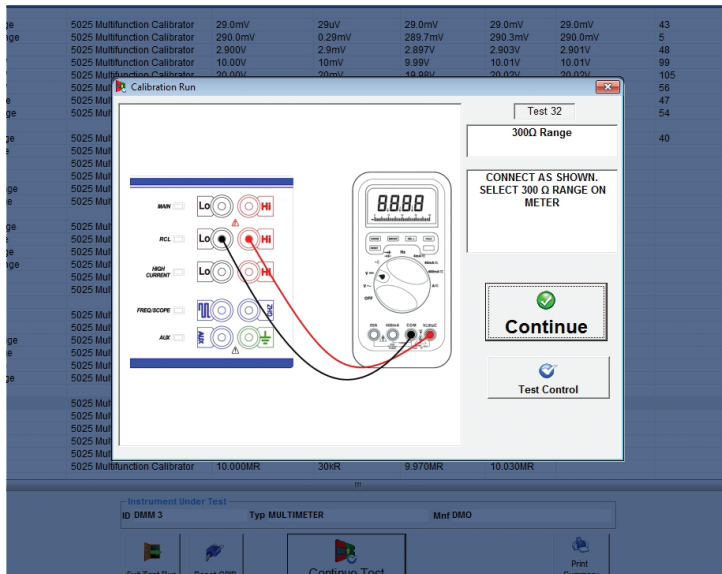
Instrument and Device Calibration

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.
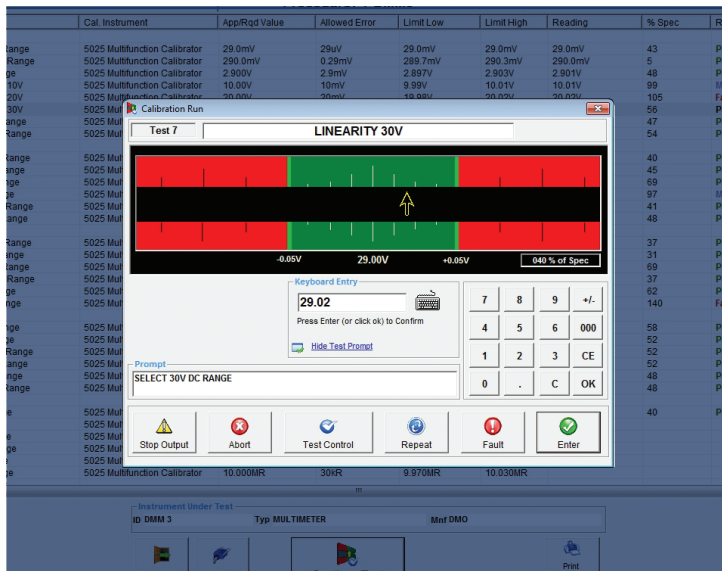
Graphical Test Screen

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.
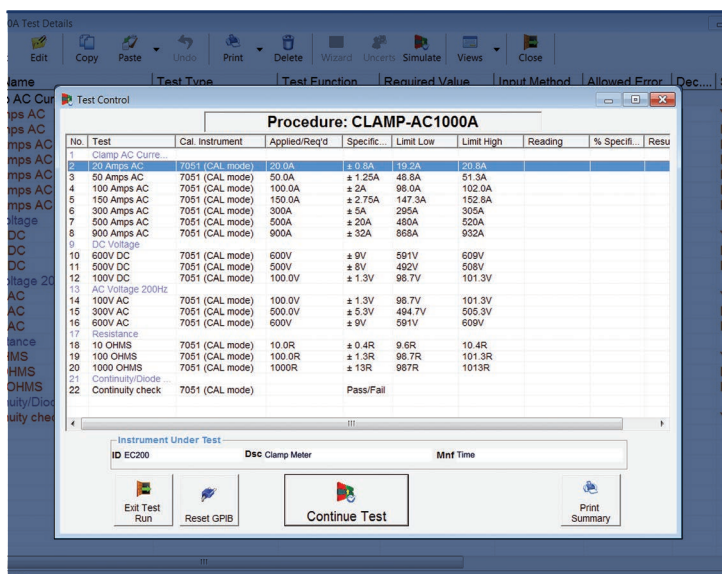
End of Calibration Run

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 feature 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.
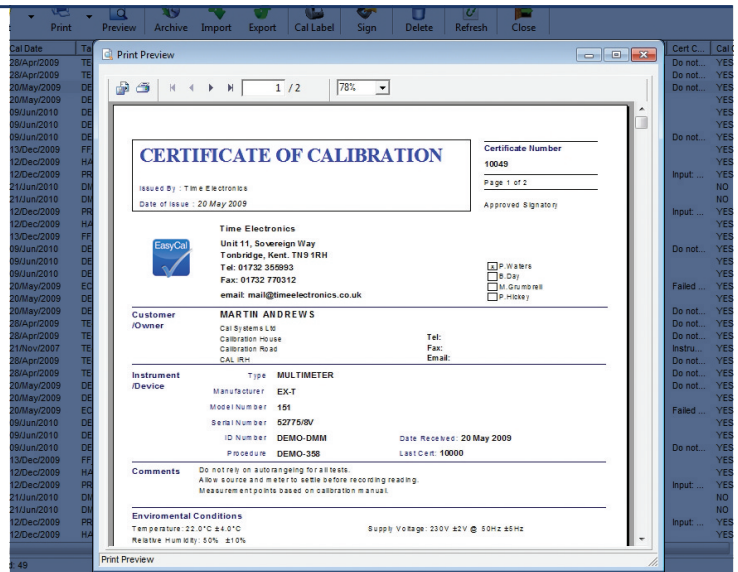
Built-in PDF Engine

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.
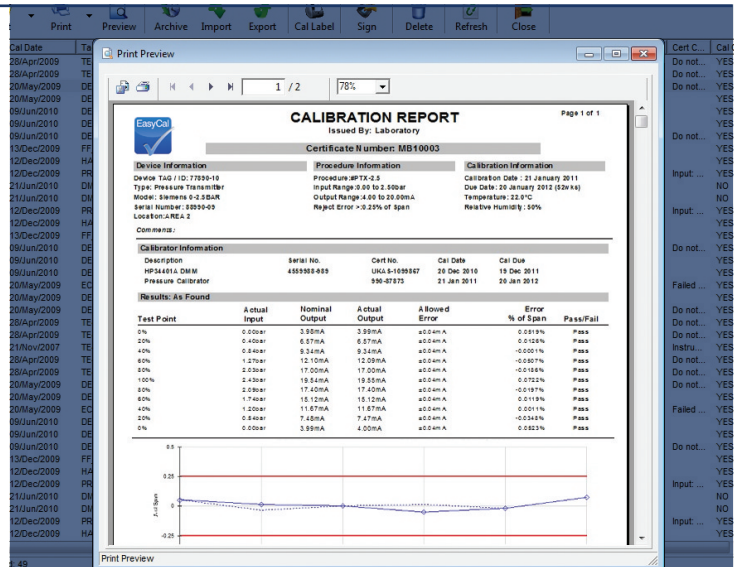
Import and Export

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: 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: A web based application that enables users to upload & retrieve certificates and reports online. A secure log in feature allows access the user's private folder, storing their relevant documentation.
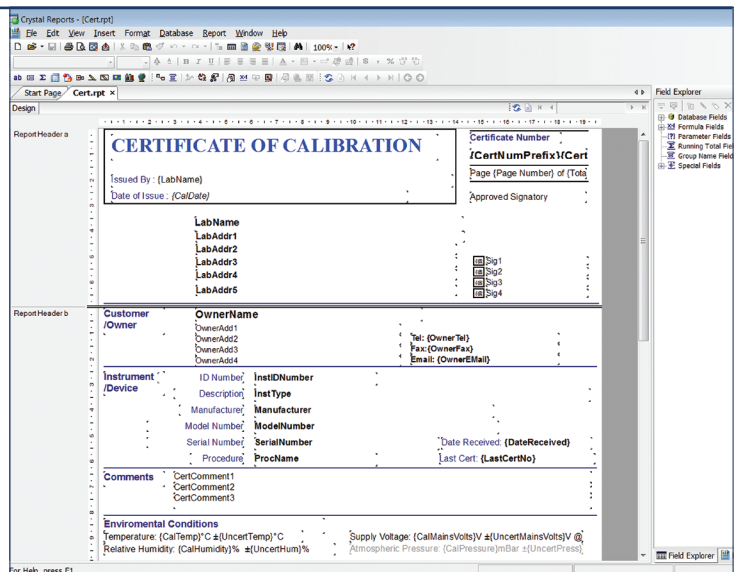
Calibration Benches

CalBenches provide an ergonomic workstation for a comprehensive calibration program. They are designed for flexibility and wide workload. The modules deliver precision and performance for their dedicated use, and accompanying products complete the solution to ensure coverage of all end user requirements.

Automating test applications is a core benefit of CalBench. Control & readback functionality enables rapid calibration work to be performed. Software driven calibration allows users to control the process from start to finish, from scheduling to certificate issuance.

CalBench

The Ultimate Calibration Workstation

CalBench is a system that provides users with a compact working environment to cover multiple applications in test and measurement. It is ideal for companies looking to implement an ergonomic and organised calibration process, with a primary workstation covering the bulk of the testing workload. When utilised in workshops within industrial plants, CalBench provides a turnkey solution to enable users to achieve compliance with quality standards.

CalBench provides an integrated approach to housing master instruments as modules into a console mounted above the work bench. The system is a unified solution that replaces the requirement for multiple benchtop and portable test instruments. CalBenches are built to cover the parameters common to industrial sectors, primarily electrical, pressure, temperature, process and frequency.

Modules are the key components of CalBench, they fit into the consoles to cover required applications. Time Electronics have a comprehensive module range that features electrical and process calibrators, pressure controllers and digital gauges, power supplies, oscilloscopes and more. They are designed to optimise calibration work and increase output. This is possible by seamless integration of hardware and software to enable users to automate testing. With CalBench automation users can perform rapid calibration runs and achieve fast turnarounds of instruments and devices coming through the lab. To complement CalBench, a wide range of accompanying instruments and equipment is available.
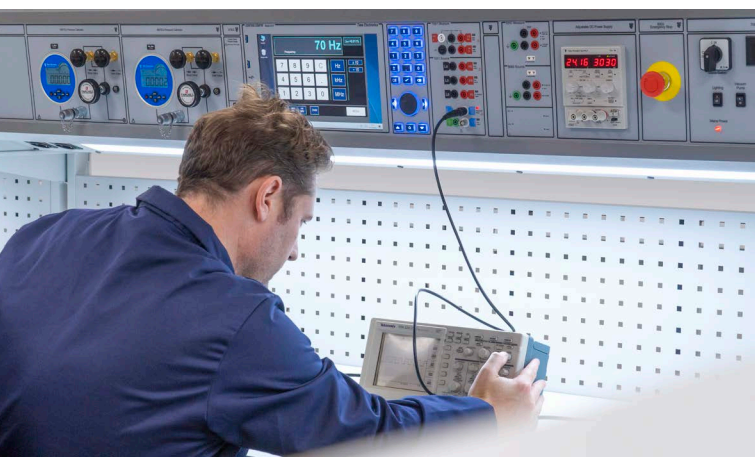
CalBench Calibration Capabilities

Pressure
Gauges, calibrators, transducers, transmitters, indicators, switches, valves, controllers, manometers, chart recorders.

Temperature
Sensors, transmitters, indicators, RTDs, thermocouples, recorders, controllers, thermometers, process calibrators, PRTs, thermistors.

Electrical and Electronic
Multimeters, AC/DC signal sources, clamp meters, data loggers, tachometers, continuity testers, decade boxes, RCL meters, power meters, conductance meters, insulation testers, installation testers, micro ohm meters, portable appliance testers, power supplies.

Frequency
Oscilloscopes, frequency meters, frequency counters, timer counters, current probes.

Dimensional and Mechanical
Torque wrenches, pulse tools, power tools, verniers, calipers, micrometers, depth gauges, plug gauges, analytical balances, scales.

Providing a Complete Solution

CalBench utilises the modules for the main calibration and testing workload. Accompanying products are used to supplement applications or perform specific tasks. Software compatibility of both modules and test instruments ensures a unified system, enabling users to automate calibration on CalBench or externally.

Modules

- Process Calibrators
- Electrical Calibrators
- Pressure Controllers
- Digital Pressure Gauges
- Digital Multimeters
- Function Generators
- Decade Boxes
- Frequency Counters
- Oscilloscopes
- Power Supplies

Accompanying Products

- Dry Block Calibrators
- Compressors
- Pressure Pumps
- UUT stands
- Soldering Stations
- Workshop Furniture
- Tools and Service Kits
- Adaptors, Accessories
- Field Calibrators
- Calibration Software

Process Instrumentation CalBenches

The CBP-PROC series of CalBench packages are our most popular solutions used in instrument workshops in oil & gas, mining, power and processing industries. They provide users with a single workstation for the testing, commissioning and periodic calibration of plant devices and instrumentation. They are also used for fault-finding, troubleshooting and diagnostics, as well as engineer and technician training.

- CBP-PROC1, CBP-PROC2, CBP-PROC3 packages
- Dedicated process instrumentation calibration benches
- Process calibrator module with multimeter & PC control centre
- Source & measure voltage, current, resistance, frequency and more
- RTD & thermocouple simulation/measurement, HART communication
- Pressure calibration modules for pneumatic and hydraulic work
- Fixed and variable DC power supply modules
- Dry block calibrators, pressure pumps, adaptors, test stands
- Automated calibration using EasyCal software, peripherals included
- Bench fittings and storage solutions included

Pressure Calibration CalBenches

Our pressure CalBench packages feature modules and accompanying products for testing and verifying instrumentation such as transmitters, gauges and switches. These packages are similar to the CBP-PROC process CalBench packages but have more focus on pressure work than temperature calibration coverage. Additionally, the pressure modules and extras in each package can be customised to end user requirements, meaning we can modify the ranges to match your instrumentation at site.

- CBP-PRES1, CBP-PRES2, CBP-PRES3 packages
- Pneumatic and hydraulic pressure calibration modules
- Automatic pressure controllers (CBP-PRES1 & 2)
- Process calibrator module with multimeter & PC control centre
- Electrical vacuum and pressure pumps, manual hand pumps
- Complete with adaptors, fittings, manifolds, test stands
- Fixed and variable DC power supply modules
- Automated calibration using EasyCal software, peripherals included
- Bench fittings and storage solutions included

Wide Workload CalBenches

The wide workload CalBench packages have been designed for companies requiring a single workstation to cover multiple calibration disciplines and functions. Each package features modules and extras for electrical, electronic, pressure and temperature calibration. These multi-parameter systems all run EasyCal calibration software on PC control centre modules situated centrally in their consoles.

- CBP-WW1, CBP-WW2, CBP-WW3 packages
- Multi-instrument calibration for electrical, temperature, pressure
- Multifunction electrical calibrator and control centre modules
- Source/measure voltage, current, resistance, frequency and more
- RTD & thermocouple simulation and measurement
- Automatic pressure controllers (CBP-WW1 & 2)
- Precision pressure measurement modules
- Benchtop pumps, adaptor kit and electrical vacuum pumps
- Fixed and variable DC power supply modules
- Oscilloscopes, function generator and frequency counter modules
- Dry block calibrators and various accessories supplied

Electrical Calibration CalBenches

Our electrical calibration bench packages are multifunction systems for calibrating engineers test tools and electronic devices. They incorporate modules and accompanying products that enable users to perform electrical calibration of products like multimeters, clamp meters, insulation and installation testers. Each package has precision electrical source and measurement capabilities to perform the necessary calibration applications.

- CBP-ELEC1, CBP-ELEC2, CBP-ELEC3 packages
- Calibrate electrical & electronic test tools
- Source/measure V, I , Ω, frequency & more
- Electrical multifunction calibrator module
- Simulate & measure RTDs, thermocouples
- Electrical test modules, scopes, function generators
- Variable AC and DC power supply modules
- Products for service work like soldering and repairs
- Antistatic workstation kit with matting included

Repair & Maintenance CalBenches

Repair and maintenance CalBench packages are systems for service work in labs and workshops. They are also popular in educational environments where students need to learn the usage of various types of test equipment. The CBP-RM packages are configured based on commonly performed R&M applications, including electrical fault finding and component repairs.

- CBP-RM1, CBP-RM2, CBP-RM3 packages
- CalBenches for R&M, diagnostics, fault finding and analysis
- Suitable for E&I workshops in process and power plants
- Oscilloscope and digital multimeter modules
- Variable AC and DC power supply modules
- Function generator and frequency counter modules
- Solder and re-work module with accompanying benchtop extras
- Antistatic mats included, with bonding plugs, wrist strap & leads
- Comprehensive kits with electronics service tools

Instrumentation Trainer CalBenches

CalBenches designed for training purposes in the process and oil & gas industries. These packages contain a selection of modules and extras to enable different methods of running testing applications, making them ideal for teaching the practicals of calibration and instrumentation. Additionally the CalBench is the optimal workspace to teach engineers about the importance of calibration, quality control and management.

- CBP-TRN1, CBP-TRN2, CBP-TRN3 packages
- For educational facilities teaching process instrumentation courses
- Process calibrator module with multimeter & PC control centre
- RTD & thermocouple simulation and measurement
- Regulated low pressure pneumatic modules
- Dual user CalBench for 2 students (CBP-TRN2)
- Fixed and variable DC power supply modules
- Accessories including adaptors, fittings, manifolds, test stands
- Storage solutions, document holders and tool kits

Custom Build CalBenches
A step by step guide to configure a CalBench for your applications

Step 1: Preliminary Consultation

Get in contact with us to discuss your requirements. We have a team of experts who will be able to run through the available options and explain the features and functions available.

1. Email or call Time Electronics, or an authorised distributor.
2. Let us know your location, industry, and any relevant background information regarding your site operations.
3. Tell us about your existing setup and what you want to achieve with your CalBench.
4. Look at the example CalBench packages for a quick guide to common configurations.
5. If applicable to your requirement we can base the configuration on an example CalBench and modify if needed.
6. Provide the information based on steps 2 to 4.

Step 2: The CalBench Type, Fittings and Extras

Review the various options available. The sales team can advise on suitable solutions based on your industry and type of work you will be using the CalBench to perform.

1. Choose the type of CalBench required, based on size, workspace and applications to cover.
2. If it is a multiple CalBench requirement then decide if the 7080-CNR or TL20 corner bench is an option to bridge the two main CalBenches. This forms an L-shaped workstation.
3. Select the under worktop fittings that are appropriate based on your storage needs.
4. Choose the perforated panel options best suited, for your quick access storage.
5. If a complete workshop or lab design requirement, then send us the dimensions of the area, window locations etc.

Step 3: Module Requirements

Selecting the correct modules for your applications is the most critical part of the process. There are various available modules, or we will advise you based on the criteria below.

1. What are the general requirements for the CalBench, i.e. calibration, training, R&M etc.

2. Do you want to automate calibration and testing applications.

3. What are the parameters you want to cover, i.e. electrical, temperature, pressure etc.

4. What instruments and devices do you want to calibrate.

5. Range coverage: For parameters like pressure and temperature what are the minimum & maximum ranges, plus the most common range. For pressure what types are required.

6. If available, the models or detailed information on the UUTs you plan to calibrate.

Step 4: Accompanying Products Requirements

Accompanying products are required to supplement applications. Typically these would be for pressure and temperature, or items used for service work in the laboratory/workshop, and for field applications.

1. Line pressure: What is required and what is readily available on-site.

2. Manual pressure generation: Pumps and extras for inputting pressure to modules.

3. Dry block calibrators: A typical requirement, selecting the models needed based on temperature range coverage, commonly for RTDs and thermocouples.

4. Repair and maintenance products such as soldering stations and extras that may be needed.

5. Determine what other products and equipment is needed for lab and/or field applications, storage etc.

Lab & Workshop Design and Supply

Time Electronics provide a turnkey design and supply service for customers requiring an efficient and ergonomic on-site calibration laboratory. Each solution is configured and created virtually, then supplied complete including all specified test instruments, tools, and furniture.

CalBenches typically feature as the primary workstations of the laboratory or workshop. They cover the main testing and verification workload, R&M and service applications.

Turnkey laboratories and workshops for industrial calibration and maintenance

When designing a facility the process starts by understanding end user requirements and applications.From this information the design team will firstly configure the suitable CalBench package including supporting instruments for customer specific needs. Once the technical details are finalised we look at the optimal layout for performing the required workload. We consider all aspects, including workflow, types of applications, number of engineers, and storage requirements.

Following this we take the workspace dimensions and the virtual design stage begins. Using custom software we create a detailed overview of the laboratory or workshop. This includes the necessary calibration equipment, work benches, storage units, and extras. We then generate 3D images and videos to allow the end users to visualise the concept and experience their new working environment.

Each facility we design has a core focus on optimising the calibration process. This is accomplished by a dual approach using hardware and software. CalBench modules and accompanying test instruments provide the functions to perform calibration, whilst EasyCal software is the controlling platform for all work and management.
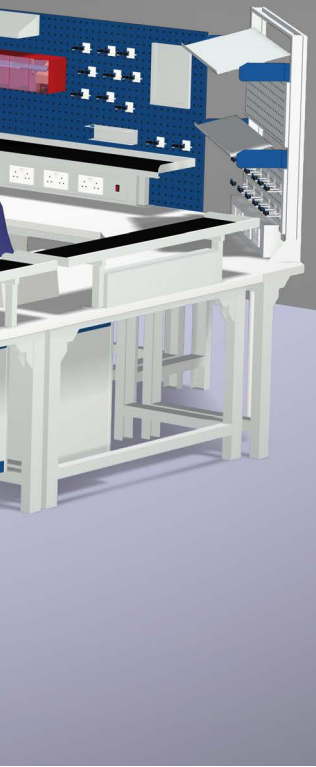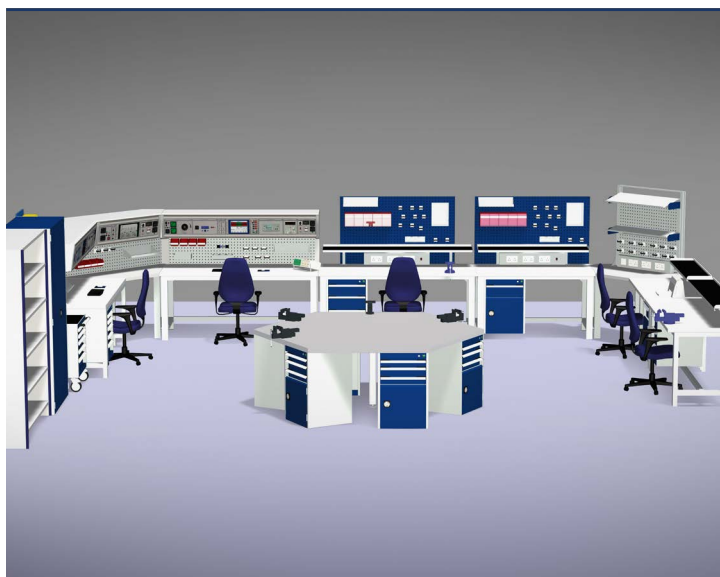
Workshops and Laboratories

State-of-the-art, premium grade instrument and electrical workshops for industrial plants and facilities. Design layouts are fully customised to end user requirements and incorporate high performance CalBenches for calibration, testing, R&M and other applications. Each workshop is designed to be a durable, long lasting solution, built to withstand arduous use in demanding environments.

- Instrument and electrical workshops for industrial plants
- CalBenches provide the focal point for test and measurement
- Turnkey design to optimise workflow and streamline applications
- Heavy duty solutions and workshop furniture, built to last
- Fully customisable based on end user requirements
- Incorporate task specific furniture, tools and machinery
- Smart storage solutions for tools and equipment
- Versatile and flexible for various applications
- Installation, commissioning and training available

Classrooms and Training Institutes

Time Electronics work with educational institutes worldwide to provide multi purpose calibration benches and classrooms for engineer training. CalBenches are the optimal solution for teaching environments where students can learn about calibration methods and principles. They are also utilised in schools and universities for electronics and electrical engineering.

- Design and supply of classrooms for engineer training
- Integration of technical and educational solutions
- Multi CalBench layouts, custom consoles and work benches
- CalBenches for process training, electrical engineering & more
- Teach the practicals and principles of calibration
- Teach the importance of calibration, quality control & management
- Practice different methods of calibration, manual & software driven
- Teach the processes involved in both lab and field calibration
- CalBench modules provide a simple user interface, with easy to use controls and functions
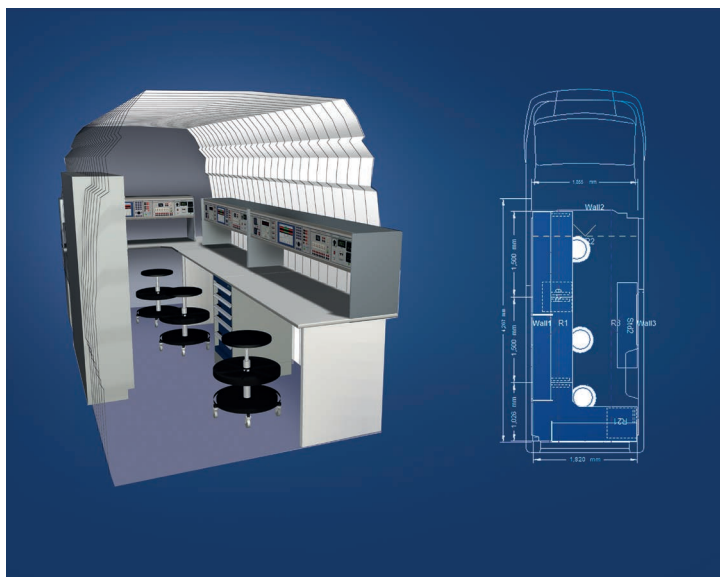
Mobile Calibration Solutions

Time Electronics provide innovative solutions for mobile calibration. The concept is a turnkey approach that enables users to perform on-site calibration services in a fully equipped mobile laboratory, featuring automated master calibration systems. The interior of each vehicle is designed as a comprehensive workspace, utilising custom built consoles, accompanying instruments and smart storage units.

- Mobile calibration in vans and expanding trailers
- Complete design and supply of vehicles, or interior solutions supplied for customer fitting
- Full in-vehicle calibration capabilities for electrical, temperature, pressure, torque etc
- Custom consoles for van fitting with reinforcement features and fixings for transport
- Large scale expanding trailers with up to eight 2m CalBenches
- Vehicles fully equipped, including professional storage solutions

CalBench Systems

CalBenches are commonly the initial requirement for industrial and technical workspaces. They provide a focal point for the test and measurement applications, as well as service work.

We assess your calibration coverage plus other applications to be performed. From this we establish the systems to incorporate in the design, from modules in CalBenches to equipment required for use in the field. We look at how to the facility will be used, to configure the most efficient and ergonomic layout and maximum functionality.

• Fully customised solutions for end user requirements
• Wide selection of modules and extras to choose from
• Instant organisation of master instruments as modules
• Creates a compact working environment
• Calibrate and maintain a wide range of instruments and devices
• High performance system offering versatility and precision
• Automated calibration and testing
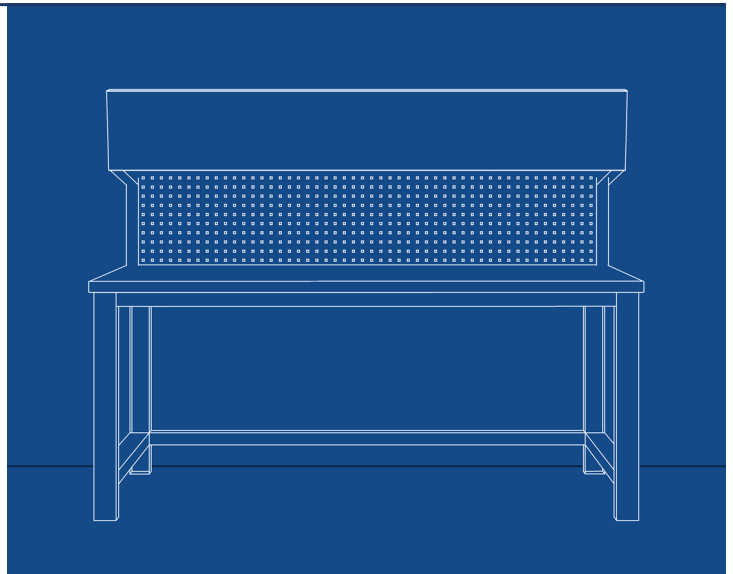
Industrial Work Benches and Options

A range of industrial grade work benches for additional applications in the workshop and laboratory. They can be used to accompany CalBenches and create an organised workspace as per user requirements. When we consult on CalBench systems we consider the full workload coverage and offer these extra benches if necessary. They can be used for service work or calibration that is not performed on the CalBench. For example these benches can situate mechanical loaders used for torque calibration.

• 7080-HD-MFS heavy duty shelf CalBenches
• Framework benches, corner benches
• Under bench suspended drawers, cabinets and holders
• Adjustable height benchtop shelves
• Multi-socket power ducts, regional socket types
• Various seating options, chairs, stools, foot rests
• Hexagonal communal workstations (TL250)
• ESD options, worktops and matting kits
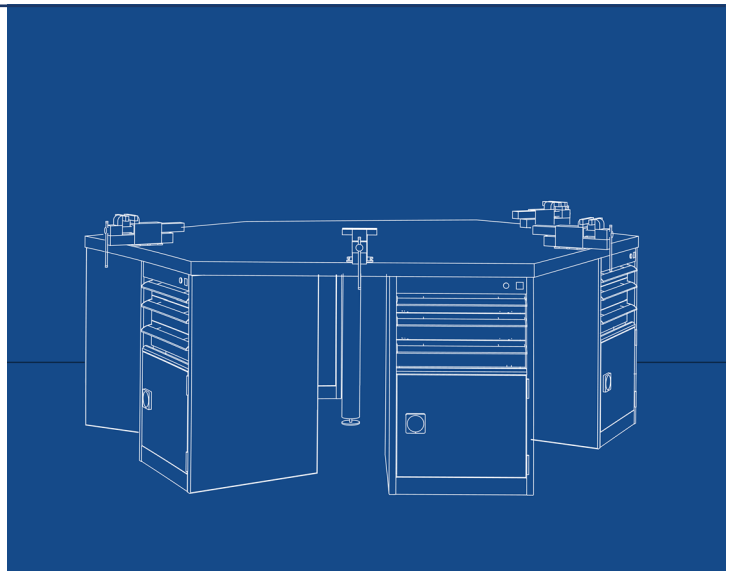
Storage Solutions

Storage solutions that include cupboards, cabinets, racking, mobile units, and wall mount perforated panels. They are industrial grade for use in workshops and engineering environments. This range is ideal to accompany CalBenches to provide both long-term and quick access storage of tools, equipment, parts and accessories.

• Storage cupboards, various sizes and internal configurations
• Heavy duty racking systems, various widths, shelves
• Mobile storage units, drawers, cabinets and shelf trolleys
• Floor standing cabinets and drawers
• Wall mount perfo and louvre panels for quick access storage
• Storage bin kits for inside cupboards, wall mounting
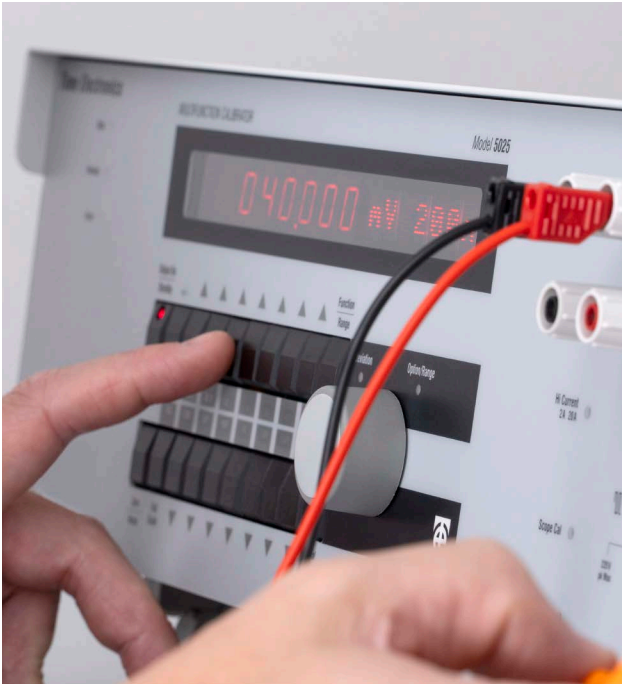• Custom built storage systems
• Tool cases, kits and holders

Professional Services

Services

Time Electronics offer a range of professional services for customers worldwide. We can design and supply turnkey test facilities, calibration labs, instrumentation and electrical workshops.

We provide metrology and product training, and consult on all aspects of industrial calibration and measurements. We have helped companies implement new calibration programs, and enhance existing setups with modern systems and automated testing solutions.

Our after-sales services include traceable and accredited re-calibration for our wide range of instruments. Our service technicians and engineers also perform repairs and maintenance for all our models.

Routine factory servicing of our test instruments helps maintain their optimal performance to conform to technical specifications. Re-calibration and servicing is often combined, and we aim to provide priority customer service and minimise downtime of your calibration equipment.
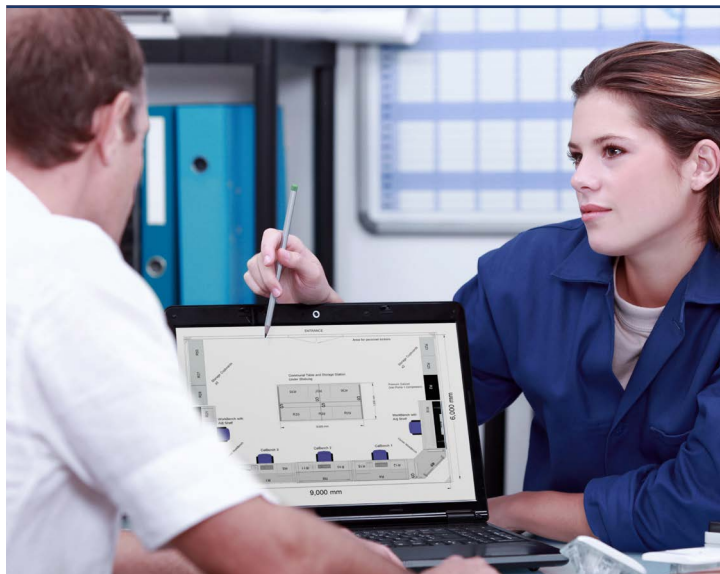
Technical Consultation

We provide technical consultation for customers looking to improve their calibration processes, implement a new calibration program, or establish a test facility.

We can also help clients with calibration workload analysis, cost justification, product selection and training requirements.

- Consultation for setting up a calibration lab or workshop
- Analysis of calibration workload, required test instruments
- Integration of automated calibration, EasyCal software
- Custom-made test systems and calibration benches
- Lab and workshop design and supply
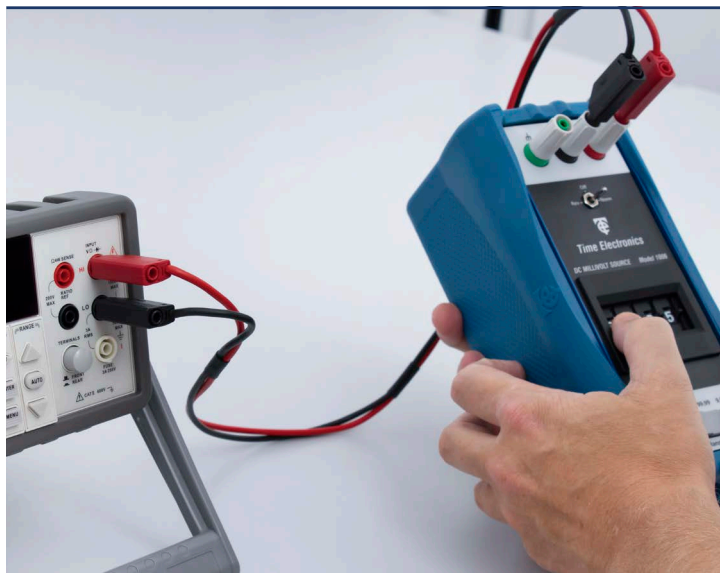
Calibration and Repairs

We service, repair and calibrate all our manufactured instruments. Servicing your TE product in our UK factory provides the benefit of having our experienced team perform comprehensive inspections and diagnostics. We then service and calibrate to ensure optimal working condition and functional performance.

- Accredited or traceable calibration of your TE products
- Routine instrument maintenance and servicing
- Product repairs, functional upgrades, firmware updates
- Retrospective fitting of internal product options
- Product replacements or repair by exchange

Training at Time Electronics UK

Customers can visit Time Electronics UK and receive training on their ordered systems prior to shipment. For international customers we can schedule and arrange all aspects of the visit, including local transport and accommodation.

We also provide metrology and calibration training courses for customers of different experience levels. Each course is customised and focused on client requirements.

- UK training on products at the Time Electronics factory
- Bespoke courses for various technical levels and skillsets
- Metrology and calibration training courses
- Pre-shipment product and software training
- Can accommodate up to 20 students
- Local logistics, accommodation and amenities can be arranged

Remote Training and Support

Online EasyCal Training

Using remote desktop sharing we can help customers understand and utilise EasyCal software for calibration work and management. We can provide basic tutorials or troubleshoot specific applications relative to end user requirements.

EasySupport - Technical Support

EasySupport is an application enables users to communicate directly with the factory, allowing our technical support team to log in and control a customer's system remotely.

This is an extremely useful tool for both support and training. The UK based team can run diagnostics and functional checks as required, and help customers resolve software issues. Customers can contact the support team by phone or via the Time Electronics website to schedule sessions.

Project Management

We work with EPC contractors as part of large-scale turnkey projects, to provide necessary data for products, systems and services within our scope of supply.

Documentation and Drawings

Depending on the project we can issue the various documentation required under the contract. These include schedules, general arrangement drawings, diagrams, utilities information, inspection test plans/reports, packing and storage procedures.

Project Services

To ensure successful completion of projects we provide a range of services including FAT, SAT, commissioning, and training on-site or in the UK. We also work with client's third party inspection companies when required.
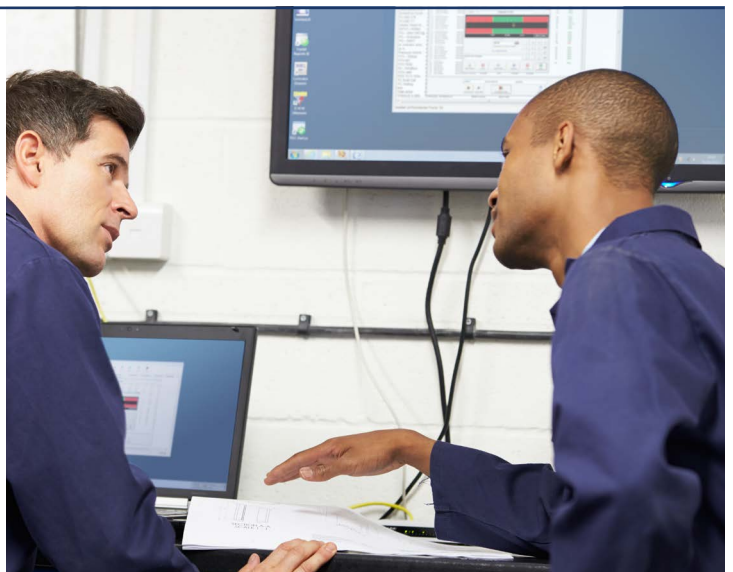
On-site Services

We can perform various on-site services, and our travel teams visit customers all over the world. Common services include test system installation and implementation, commissioning and end user training.

On-site calibration is available for CalBench and TE Lab customers. We mobilise our calibration standards and travel internationally to end user locations.

- After-sales system installation, commissioning and training
- Supporting implementation of in-house calibration facilities
- Bespoke on-site training for end user specified applications
- On-site calibration of CalBenches and accompanying products
- Servicing and repairs at customer locations

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Time Electronics
Calibration, Test and Measurement