Time Electronics
Calibration, Test and Measurement

Product Brochure

Contents

About Time Electronics

Established in 1967 Time Electronics Ltd is an international company that designs and manufactures calibration and metrology instrumentation. We have a comprehensive range of test equipment for use in applications across various industries. Products include decade boxes, portable and benchtop calibrators, DMMs, and custom-made test benches.

Time Electronics' headquarters is based in Tonbridge, Kent, in the United Kingdom, situated 30 miles south of London and occupies 10,000 sq ft of factory and office space. Time Electronics also has sales offices in New York (USA), Dubai (UAE), and Moscow (Russia).

During our 45 years of continuous development we have built strong business relationships and a wealth of engineering experience. We have a global distribution network, and are represented by companies with strong technical work staffs and highly skilled engineers.

Quality is an integral part of our company philosophy. In addition to building accurate and durable products we provide extensive customer support. This has given us a valuable reputation with organisations worldwide and is one reason for our continued success in the trading market. Time Electronics is accredited to ISO 9001:2008.

Delivering precision test and measurement instruments to industries worldwide since 1967

Examples of Time Electronics' Industry Coverage:

Aerospace	Power Generation	Transport	Refineries
Petrochemical	Manufacturing	Chemical	Military/Defence
Pharmaceuticals	Nuclear	Aeronautics	Shipping
Telecommunications	Automotive	Metrology	Education
Medical	Research/Development	Process Control	Automation

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Decade Boxes

Resistance, Capacitance, and Inductance

1051 − 8 Decade Low Ohm Resistance Box

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

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

Residual Resistance: ....Less than 90mΩ
Power Rating: ....1 watt per resistor
Voltage Rating: ....Maximum 250V DC/AC RMS
Temperature Coefficient: ....50ppm/°C
Dimensions / Weight: ....W215 x H100 x D120mm / 1kg (incl. protective boot)
Features: ....Colour coded digits, safety terminals, and protective rubber boot

1040 − 8 Decade Wide Range Resistance Box

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

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

Residual Resistance: .... Less than 250mΩ
Power Rating: ....1 watt per resistor
Voltage Rating: ....Maximum 250V DC/AC RMS
Temperature Coefficient: ....50ppm/°C
Dimensions / Weight: ....W215 x H100 x D120mm / 1kg (incl. protective boot)
Features: ....Colour coded digits, safety terminals, and protective rubber boot

1041 − 5 Decade Low Ohm Resistance Box

Range / Resolution: ....0 to 1kΩ / 0.01Ω steps

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

Residual Resistance: ....Less than 60mΩ
Power Rating: ....1 watt per resistor
Voltage Rating: ....Maximum 100V DC/AC RMS
Temperature Coefficient: ....50ppm/°C
Dimensions / Weight: ....W215 x H100 x D120mm / 1kg (incl. protective boot)
Features: ....Colour coded digits, safety terminals, and protective rubber boot

1061 − 6 Decade Resistance Box

Range / Resolution: ....0 to 1.2MΩ / 1Ω steps
Accuracy: .... ± 1%
Residual Resistance: .... Less than 150mΩ
Power Rating: .... 0.75 watt per resistor
Voltage Rating: ....Maximum 300V DC/AC RMS
Dimensions / Weight: ....W355 x H63 x D82mm / 0.75kg
Features: ....Slim line design and front panel safety terminals

1067 – 6 Decade Precision Resistance Box

Range / Resolution:.. 0 to 12kΩ / 10mΩ steps
Accuracy:.. ± 0.01%
Residual Resistance:............................. Less than 10mΩ. Less than 1mΩ variation
Power Rating:... 0.35 watt per resistor
Stability:..20ppm/year (>1Ω), 100ppm/year (<1Ω)
Voltage Rating:.. Maximum 200V DC/AC RMS
Insulation:................................. Case to resistance terminals 2kV / 50Hz maximum
Temperature Coefficient:...................................10ppm/°C (20ppm/°C below 1Ω)
Dimensions / Weight:...W355 x H63 x D89mm / 1.1kg
Contacts:.. Make before break – silver alloy

1065 – 6 Decade Power Resistance Box

Range / Resolution:... 0 to 120kΩ / 0.1Ω steps
Accuracy:.. ± 5% (0.1Ω), ± 1% (1Ω to 120kΩ)
Residual Resistance:..Less than 20mΩ
Power Rating:... 10 watt per resistor
Voltage Rating:..Maximum 500V DC/AC RMS
Temperature Coefficient:...200ppm/°C
Dimensions / Weight:..W390 x H80 x D150mm / 2kg
Features:..Ventilated robust metal case and multi-wafer
switches for low switch contact resistance

1070 – 5 Decade Capacitance Box
1071 – 7 Decade Capacitance Box

1070 Range / Resolution:...0 to 10μF / 100pF steps
1070 Residual Capacitance:.. Less than 38pF

1071 Range / Resolution:...0 to 100μF / 10pF steps
1071 Residual Capacitance:.. Less than 50pF

Accuracy:.. 1% (5% above 10μF – 1071)
Voltage Rating:...Maximum 300V DC, 200V AC
Dimensions / Weight:............W215 x H100 x D120mm / 1kg (incl. protective boot)
Features:... Bi-polar working, colour coded digits,
safety terminals, and protective rubber boot

1053 – 4 Decade Inductance Box

Range / Resolution:...0 to 10H / 1mH steps
Accuracy at 1kHz:.. 3% of setting
Voltage Rating:... Maximum 30V AC
Maximum Current:... 150mA
Residual Resistance:..Less than 0.2Ω
Residual Inductance:..Less than 1μH
Dimensions / Weight:...W248 x H62 x D102mm / 0.8kg
Features:................................. Robust metal case and front panel safety terminals

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 1V
- Accuracy 0.02% of setting + 0.02% of rng
- 20mA output current
- Best resolution 1μV
- 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 D120mm, weight 1.2kg

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.

- 0.01μV to 10V in 5 ranges
- Accuracy 0.02% of setting
- 10ppm/hr stability
- 30mA output current
- Safety terminals
- Battery or mains operation
- 40 hours typical use between charges
- Battery level indicator
- Optional carry case
- W217 x H160 x D193mm, weight 3.3kg

1024 DC Current Calibrator

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

- 0 to100mA output in 5 ranges
- Accuracy 0.02% of setting
- 10ppm/hr stability
- 30ppm/°C temperature coefficient
- Up to 15V output drive
- Null meter measures to 1μA resolution
- Safety terminals
- Battery or mains operation
- 12 hours typical use between charges
- Battery level indicator
- Optional carry case
- W217 x H160 x D193mm, weight 3.3kg

1021 Milliamp Source with Null Indicator

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

- 0 to 100mA output in 3 ranges
- Accuracy 0.02% of setting + 0.02% of rng
- 25ppm/hr stability
- Up to 40V output drive
- LED null measuring facility
- Short circuit overload protected
- Safety terminals
- Removable protective boot
- 10 hours typical use between charges
- Battery charger supplied
- Optional carry case
- H215 x W100 x D120mm, weight 1.4kg

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
- 100mA source and load in 3 ranges
- 24V line mode
- Variable drive source 14 to 40V
- Short circuit and overload protected

- Safety terminals
- Removable protective boot
- 10 hours typical use between charges
- Battery charger supplied
- Optional carry case
- H215 x W100 x D120mm, weight 1.5kg

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 10nV to 100V
- DC Current 100nA to 100mA
- Resistance 10mΩ to 10kΩ
- Accuracy 0.005% of setting + 0.002% of rng
- 1ppm setting resolution
- Noise <2ppm (0.1 to 1Hz)

- Stability <5ppm/day, <25ppm/yr
- Residual resistance <200mΩ
- Deviation control – Voltage and Current
- Battery or mains operation
- 12 hours typical use between charges
- W250 x H119 x D314mm, weight 2.4kg

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.

- 10mV, 100mV, 1V ranges
- 10mA, 100mA ranges
- Accuracy 0.1% of range
- Linearity 0.15%
- Up to 8V output (using 1kΩ resistor)
- Precision 10-turn dial

- 1kΩ resistor supplied

- Battery powered 9V PP3
- 60 hours typical battery life
- Supplied with carry case
- H115 x W62 x D55mm, weight 0.24kg

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 20V
- 3 current ranges 0 to 20mA
- Accuracy 0.05% of range
- 4.5 digit LCD display

- Battery powered 9V PP3
- 28 hours typical battery life
- Optional mains power supply
- Supplied with carry case
- H142 x W78 x D50mm, weight 0.30kg
- 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 22mA and 0 to 22V
- 3 measure ranges: 0 to 70mA and 0 to 50V
- Accuracy 0.02% of range
- Transmitter simulator/sink loop control
- Output steps and ramps
- Fine adjustment (inching)
- Battery powered 9V PP3, 20 hours typical use
- H142 x W78 x D50mm, weight 0.34kg

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: 125mA, source 50mA. Resolution 1μA
- Voltage measurement: 25V, source 21V. Resolution 1mV
- Accuracy: Source 0.01% of setting. Measure 0.01% of reading
- Transmitter and square root functions
- Auto-ranging feature
- Programmable steps and ramp
- 9 hours typical use between charges
- Supplied with battery charger and carry case
- H165 x W90 x D45mm, weight 0.42kg

7006 Loop-Mate 1: Loop Simulator and Source

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

- 4 to 20mA or 0 to 10V ranges
- Set-points: 0, 10, 25, 50, 75, 90, 100% of range
- Accuracy 0.1% of range
- TxSim or RxTest modes
- Internal loop supply, 25mA maximum
- Auto-stepping mode: up/down/up, 0.5, 1, 2, 4, or 8 sec/step
- Battery powered 9V PP3, 40 hours typical use
- Supplied with carry case
- H140 x W65 x D30mm, weight 0.18kg

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 20mA, 0 to 10V, 0 to 50V ranges
- LCD 4 digit display, mA, V, or % of range
- Accuracy 0.05% of reading
- RxSim, TxTest, or 50mA/50V measure modes
- Internal loop supply, 25mA maximum
- Battery powered 9V PP3, 40 hours typical use
- Supplied with carry case
- H140 x W65 x D30mm, weight 0.20kg

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 with 23 set points
- Accuracy ± 0.3°C
- Less than 30ppm/°C temperature coefficient
- ITS-90 IEC60751
- Exceeds class A
- Passive resistance source
- Supplied with carry case
- H112 x W61 x D55mm, weight 0.17kg
- °F version available – 1050 (-100°F to 1000°F, ± 0.5°F accuracy)

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 0.03Ω. Resolution 0.01Ω
- 2, 3, and 4 wire connections
- Measure and simulate °C, °F, °K, and ohms
- Ramp and step
- PT100 plus 7 other RTD types
- User programmable
- 24 hours typical use between charges
- Supplied with battery charger and carry case
- H165 x W90 x D45mm, weight 0.42kg

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 values.

- 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 20mA and 0 to 50mA
- Mains or battery operation, 60 hours typical use between charges
- Supplied with battery charger and carry case
- H235 x W150 x D75mm, weight 1.2kg

7050 Process and Thermocouple Calibrator

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

- Measure (3 ranges) up to 40V, 400mA, 40kΩ
- Output voltage (3 ranges) up to 10V, 1μV resolution
- Output current (3 ranges) up to 20mA, 1μA resolution
- Output Resistance (3 ranges) up to 40kΩ, 0.01Ω resolution
- Accuracy: Source and measure 0.03% of range
- Thermocouple measure and simulate: J, K, T, E, R, S, B, N
- RTD measure and simulate: PT100
- Battery or mains operation
- W270 x H175 x D250mm, weight 4.5kg

7090 Pneumatic Calibration Pump
7095 Hydraulic Calibration Pump

Pneumatic and hydraulic calibration pumps that combine high performance with durability. Features include contoured cushioned handles for comfort and dual o-rings on all pistons to ensure zero leakage.

- 7090 – Pneumatic pressure to 40bar, Vacuum to -950mbar
- 7095 – Hydraulic pressure to 700bar
- Non-oil based lubricant used on all moving parts
- Both supplied as kits with carry case, hoses, and fittings
- 7090 – H200 x W125mm, weight 0.91kg
- 7095 – H240 x W125mm, weight 1.4kg
- Digital pressure gauges available (7091 and 7096)

7193 / 7194 / 7195 Benchtop Pressure Calibration Pumps

Benchtop pumps that are a comfortable and simple operation, providing an easy way to generate pressure in the lab. Each pump is a dual pressure source enabling them to be used as comparators for calibration with accompanying reference gauge.

- 7193 Pneumatic Pump – 0.95bar vacuum to 40bar pressure
- 7194 Pneumatic Pump – 0.95bar vacuum to 100bar pressure
- 7195 Hydraulic Pump – 0.9bar vacuum to 600bar pressure
- Easy to use with smooth pressure generation and high pressure stability
- Dual pressure source (double output manifold)
- Fine pressure adjustment
- 7193 – W198 x H140 x D315mm, weight 2.7kg
- 7194 – W270 x H178 x D450mm, weight 7.5kg
- 7195 – W198 x H135 x D290mm, weight 3.2kg

7089 / 7091 / 7094 / 7096 Digital Pressure Gauges

Digital pressure gauges that provide high accuracy, resolution and stability. Robust design and simple operation make these gauges ideal for a wide range of applications.

- 7089 – Vacuum only, accuracy 0.2% of FS
- 7091 – Vacuum to 40bar, accuracy 0.2% of FS (suitable for the 7090 and 7193)
- 7094 – 0 to 100bar, accuracy 0.2% of FS (suitable for the 7194)
- 7096 – 0 to 700bar, accuracy 0.2% of FS (suitable for the 7095 and 7195)
- Easy-to-read display with 5 digit resolution
- Unique self-protection capability technology
- 3 times per second measure speed
- Fully temperature compensated accuracy
- RS-232 connection on rear of gauge, EasyCal compatible
- H178 x W112 x D45mm, weight 0.6kg

7078 Auto-Ranging Digital Pressure Gauge

A high performance digital pressure gauge that has the ability to auto-range and maintain a 0.1% of reading accuracy from vacuum to 200bar. The 7078 eliminates the need for multiple gauges to span many different ranges, solving the problem of over ranging errors.

- Vacuum to 200bar (3000psi)
- 0.1% of reading accuracy
- 9 engineering units – bar, psi, Hg, kPa, inHg, inH_2O, Kg/cm^2, mmHg, mbar
- High accuracy silicone piezo resistive sensors
- Reads both gauge and absolute pressure
- Easy to read colour display with full 2 line alphanumerics
- Compact and robust with protective rubber housing
- H165 x W115 x D55mm, weight 0.88kg

7040 Digital Pressure/Current Calibrator

A versatile calibrator that combines a digital pressure gauge and current indicator. Suitable for pressure testing and maintenance as well as process loop applications.

- 0.2, 2, 5, 10, or 20bar versions (vacuum available on 2bar model)
- Pressure/vacuum calibration, 0.04% accuracy
- Loop current calibration (displayed in mA, or % of range, 4 to 20mA)
- 9 engineering units – bar, psi, KPa, inWg, cmWg, inHg, mmHg, Kg/cm², Atm
- Minimum/Maximum logging and leak rate functions
- 4.5 digit display
- RS-232 serial interface and EasyCal software compatible
- Battery powered 9V PP3, 50 hours typical use
- Supplied with carry case, fittings kit and hose, test lead, and RS-232 cable
- H157 x W90 x D33mm, weight 0.29kg

7010 Single Channel Pressure Calibrator
7015 Dual Channel Pressure Calibrator

Portable battery or mains powered pressure calibrators designed for both lab and field applications.

- Vacuum, 0.2, 2, 5, 10, 20, 35, 70, 100, 200, 400, or 600bar versions
- Best accuracy 0.04% of full scale
- Pneumatic or hydraulic
- 4 selectable pressure units (4 per channel on 7015) and mA
- Loop current measure
- 24/36V loop power
- Over-pressure alarm
- RS-232 serial interface and EasyCal software compatible
- W270 x H175 x D250mm, weight 3kg

7016 Regulated Low Pressure Calibrator
7018 Differential Pressure Calibrator

Portable pressure calibrators that are rugged design and simple operation. Suitable for pneumatic field instrumentation.

- 7016 – Regulated low pressure: Vacuum, 0.2, 2, 5, 10, or 20bar versions
- 7018 – Differential pressure: Vacuum, 0.2, 2, 5, 10bar versions

- Pneumatic with 0.04% of full scale best accuracy
- 4 selectable pressure units and mA
- Loop current measure
- 24/36V loop power
- Over-pressure alarm
- RS-232 serial interface and EasyCal software compatible
- W270 x H175 x D250mm, weight 3kg

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 and female)
- Coupling connectors included allow any two adaptors to be connected together
- ¼ BSP G hose fittings for pushfit 4mm and 6mm external diameter hose
- Quick release couplings and barbed 6mm and 8mm internal diameter hose
- Nylon hose set with quick release connectors for low pressure connections
- Additional 4mm and 6mm nylon hoses to build up custom lengths as required
- Minimess 1620 test point adaptors and micro bore hose for high pressure
- 10" adjustable spanner and PTFE tape
- Kit supplied in adaptor case and hose bag

5068 Insulation Tester/Megohmmeter Calibrator

A precision instrument for calibrating general purpose insulation testers and megohmmeters with test voltages up to 2.5kV. Rugged, compact, and portable it is ideal for site calibration.

- Insulation resistance from 100kΩ to 10GΩ
- Low ohm verification at 1Ω, 10Ω, 100Ω, 1kΩ
- Accuracy: Resistance 1% of setting. Voltage and Current to 1% of reading
- Up to 2.5kV operation
- Battery operation (over 150 hours between charges)
- Continuous connection – no arcing
- Fully shrouded safety connectors
- Display of open circuit voltage (0 to 1.999kV or 0 to 2.50kV)
- Display of short circuit current (0 to 2mA or 0 to 20mA)
- W270 x H175 x D250mm, weight 2.1kg

5069 Insulation Tester/Megohmmeter Calibrator

A high accuracy calibrator for insulation testers and megohmmeters with test voltages up to 10kV. Sturdy and transportable it is suitable for both lab and site calibration.

- Insulation resistance from 100kΩ to 100GΩ
- Accuracy: Resistance 1% of setting. Voltage and Current to 1% of reading
- Up to 10kV operation
- Battery operation (over 150 hours between charges)
- Continuous connection – no arcing
- Fully shrouded safety connectors
- Display of open circuit voltage (0 to 2kV or 0 to 9kV)
- Display of short circuit current (0 to 2mA or 0 to 20mA)
- W406 x H175 x D330mm, weight 4.4kg

5070 Ductor Tester/Micro-Ohmmeter Calibrator

The DuctorCal is a portable instrument suitable for calibrating high current ductor testers and micro-ohmmeters. It contains 5 sets of high current rating standard resistors that simulate the resistance being measured.

- Calibrate ductor testers and micro-ohmmeters
- 0.2, 2, 20, 200, 2000mΩ ranges
- Accuracy/rng: 0.2mΩ (0.8%), 2mΩ (0.5%), 20mΩ (0.2%), 200 & 2000mΩ (0.1%)
- 5 point calibration: 0, 25, 50, 75, 100%
- Gold plated terminals
- Low thermal EMF connection
- Portable robust carrying case
- W540 x H210 x D410mm, weight 11kg

5080 Portable Appliance Tester 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.

- Earth bond range 18Ω to 20mΩ
- Earth bond currents up to 50A AC
- Load test currents up to 13A AC
- Accuracy: Resistance 1% of setting. Voltage and Current to 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)
- W406 x H175 x D330mm, weight 5.5kg

5030 Electrical Tester Calibrator

- **RCD 3mA to 2500mA, 10ms to 2000ms**
- **Loop 50mΩ to 1.8kΩ**
- **Insulation up to 2GΩ / 1kV**
- **Continuity 0.1Ω to 10kΩ**
- **RS-232 / USB Control**
- **Fast and intuitive user interface**
- **PC/laptop control via EasyCal software**
- **W430 x H155 x D255mm, weight 8kg**

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.

EasyCal

Function	Range / Values	Resolution	Accuracy
Loop			
Loop Impedance Resistor Values	1800, 330.0, 180.0, 33.00, 18.00, 3.300, 1.800, 0.330, 0.150 & 0.050Ω	4 digit	±0.5% of displayed value ± 10mΩ Test Current 40A max (200ms) / 50W max
Local Loop Compensation	0 to 9.99Ω	0.001Ω	±0.5% of value ± 10mΩ
RCD			
Trip Time	10, 20, 30, 40, 50, 60, 80, 100, 300, 500, 1000, 1500, 2000ms (Fully variable from via remote commands - EasyCal software)	1ms	±0.1ms
Current	6.000, 10.00, 30.00, 100.0, 300.0, 500.0, 1000mA	4 digit	±0.5% of rdg, ±1% of rdg with x5 multiplier
Additional Specifications	Current Multipliers: x0.5, x1, x2, x5 • Maximum Current: 2500mA • Waveforms: AC, DC & half wave rectified Phase detection: 0° or 180° • Pre Trigger Delay: 0 to 2000ms • Pre Trigger Threshold: 0 to 100% of nominal current		
Insulation			
Resistance	1MΩ to 2000MΩ	1MΩ	1% of value
	50kΩ to 1990kΩ	50kΩ	1% of value
Test Voltage Measurement @ 0.5mA or 1.0mA Load	50.0 to 99.9V DC	0.1V	1% of reading
	1000 to 1200V DC	1V	1% of reading
Short Circuit Current	0.00 to 300.00mA DC	0.01mA	1% of range
Continuity			
Resistance	0.1Ω to 100.0Ω	0.1Ω	1% of value
	250Ω, 500Ω, 1.00kΩ, 2.50kΩ, 5.00kΩ & 10.0kΩ	3 digit	1% of value
Test Voltage Measurement (input resistance 10MΩ)	0.0 to 50.0V DC	0.1V	0.5% of range
Test Current Measurement (between 0.1Ω and 100Ω)	0 to 400mA DC	1mA	0.5% of range
Power Dissipation	1 watt maximum	–	–
Voltage			
Line Voltage Measurement	200 to 260V RMS	0.1V	0.5% of reading
Line Frequency Measurement	45 to 65Hz	0.01Hz	0.1% of reading

5025 Multifunction Calibrator

- **0 to 1050V AC/DC voltage**
- **0 to 22A AC/DC current**
- **1Ω to 1GΩ resistance**
- **Thermocouple simulation**
- **Digital frequency**
- **Oscilloscope calibration**
- **PT100 simulation**
- **Capacitance and inductance**
- **Power calibration**
- **Clamp meter calibration**
- **GPIB / RS-232 / USB Interfaces**

EasyCal

Calibrates

Digital/Analog Multimeters	Ohmmeters	Clamp Meters	Oscilloscopes
Handheld/Bench DMMs	AC/DC Millivoltmeters	Temperature Indicators	Resistance Boxes
Frequency Meters	Thermocouple Indicators	Timer Counters	Data Loggers

And more

Multi Instrument Calibration

The 5025 is a high performance multi-product calibrator that provides the foundation for cost-effective calibration. Built for versatility and simplicity it offers a solution to efficient calibration of a wide range of test and measurement equipment.

Standard features include AC/DC voltage and current, digital frequency, decade resistance, conductance, and thermocouple simulation. Options include capacitance and inductance, wideband AC voltage, full range resistance (incorporating PT100 simulation), power calibration, and oscilloscope calibration. External adaptors are available for clamp meter and optical tachometer calibration, and a power amplifier for demanding analogue instruments.

Simple Operation

Functions and ranges are easily accessed from the front panel. Increase and decrease keys per digit, are used to quickly set the output value. Deviation control then enables the user to finely adjust the output value as a percentage (+/-9.999%). All this information is shown on a clear, easy to read LED display.

Calibration Made Easy

Connect the 5025 to a PC/Laptop installed with Time Electronics' EasyCal software and automate the calibration process. Increase speed of calibration and consistency of results, produce calibration certificates and reports to industry quality standards.

5025 Specifications

Function	Range / Values	Best 1 year Specification
Voltage DC	0 to ± 1050V	± 15ppm of setting
Current DC	0 to ± 22A	± 80ppm of setting
Voltage AC	1mV to 1050V (10Hz to 20kHz, sine-wave)	± 300ppm of setting
Option 9771: Wideband AC Voltage	20 to 200mV/300kHz. 0.2 to 2V/1MHz. 2 to 20V/100kHz	± 0.05% of setting
Current AC	10μA to 22A (20Hz to 1kHz, sine-wave)	± 0.05% of setting
Option 9780: Clamp Meter Adaptor	AC/DC Current up to 1100A (DC, 45 to 90Hz)	± 0.5%
Option 9798: Capacitance	1nF, 10nF, 100nF, 1μF, 10μF, 100μF (100V max)	± 0.25% of setting
Option 9798: Inductance	1mH, 1.9mH, 5mH, 10mH, 19mH, 50mH, 100mH, 190mH, 500mH, 1H, 10H	± 0.1% of setting
Resistance	1Ω to 1GΩ (Fixed values, decade steps)	± 20ppm of setting
Option 9774: Simulated Resistance	10Ω to 40MΩ (variable)	±0.02% of setting
Option 9787: Full Range Resistance PT100 Simulation	1Ω to 120MΩ (variable) -180 to 850°C	± 100ppm of setting ± 0.2°C
Conductance	1s to 1ns (fixed values, decade steps)	± 20ppm of setting
Thermocouple Simulation	-270 to 1800°C. Type J, K, R, T, S, B, E, N	± 0.15°C
Digital Frequency/Period	0.1Hz to 10MHz / 100ns to 10s	± 20ppm of setting
Option 9770: Oscilloscope Calibration		
Amplitude	0mV to 200V and 0mV to 2V 50Ω (Square-wave or DC)	± 0.05%
Frequency/Period	0.1Hz to 100MHz / 100ns to 10s	± 20ppm (± 0.1ppm with option 9783)
Duty Cycle	3 frequencies: 100Hz, 1kHz, 10kHz, settable from 0 to 100%	–
Fast-Rise	< 850ps. Bandwidth checking up to 400MHz	–
Option 9769: 2.2GHz Sweep	100MHz to 2.2GHz levelled sine-wave (0.5, 1, 1.5V pk-pk)	Amplitude ± 1%, Frequency ± 20ppm
Option 9797: Power Calibration		
Power	22A, 1050V, 23kW, 45 to 400Hz	ACV: 0.03%, DCV: 0.01%. ACI: 0.1%, DCI: 0.03%
Phase/Power Factor	± 90°/ 0.00 to 1.00PF	± 0.3°

Options (specifications for 9771 / 9774 / 9780 / 9798 / 9787 / 9770 / 9769 / 9783 / 9797 shown above)

Internal Calibrator Options	9771: Wideband AC Voltage • 9774: Simulated Resistance • 9787: Full Range Resistance 9798: Capacitance and Inductance • 9770: Oscilloscope Calibration • 9797: Power Calibration
Oscilloscope Calibration Options (option 9770 must be fitted)	9769: Internal Scope 2.2GHz Levelled Sine Generator • 9783: Internal Oven-Controlled High Stability Frequency Reference 9762: External Rubidium High Stability Frequency Reference • 9764: External Current Probe Calibration Adaptor
External Adaptors/Instruments	9780: Clamp Meter Adaptor (1 & 50 turn coil) • 9773: Optical Tacho Adaptor • 9790: 100 Amp AC Current Transformer 9760: Power Amplifier (60V AC, 90V DC - 100mA) • 9766: Low Noise Attenuator (1000:1) • 9767: Low Noise Attenuator (100:1)
Accessories and Calibration Certificates	9085: Soft Carry Case • 9728: 19" Universal Rack Mount Kit • 9796: Premium Test Lead Set C159: Factory Certificate (NPL traceable) • C103: UKAS Certificate • C113: Extended UKAS Certificate
EasyCal Software	ECFLA: EasyCal Full License • 9777: Bar Code Reader • 9779: Job and Address Label Printer EC2FL/EC2CL/EC2WL: Additional User Licenses • EAD: EasyAdmin Add-On • EWC: WebCerts • CREP: Crystal Reports Software

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 3km. Non operating: 3km to 12km
Line Power	100 to 230V AC 50/60Hz. 200W maximum
Interfaces	RS-232, USB, and GPIB
Dimensions / Weight	w455mm, h155mm, d480mm. Weight: 16.5kg

Multifunction Calibrators

Precision calibration for wide workload coverage

5051 Plus Multifunction Calibration System

- **Integral Calibrator, DMM, and PC**
- **Source up to 1050V AC/DC voltage**
- **Source up to 22A AC/DC current**
- **Source up to 1GΩ resistance**
- **Thermocouple simulate and measure**
- **PT100 simulate and measure**
- **Source capacitance and inductance**
- **Oscilloscope calibration**
- **Clamp meter adaptor included**
- **EasyCal calibration software included**

EasyCal

Calibrates

Digital/Analog Multimeters	R-C-L meters	Clamp Meters	Oscilloscopes
Transducers & Transmitters	Process Calibrators	Temperature Simulators	Decade Boxes
Frequency Meters	Temperature Indicators	Voltage & Current Sources	Data Loggers

And more

Calibrator / DMM / Touch Screen PC

The 5051 Plus Calibration System combines a high accuracy calibration source with a precision digital multimeter. Designed for a wide workload the 5051 calibrates both traditional and new test equipment quickly and accurately. The 5051 control software allows the operator to easily select the wide range of functions using mouse, keyboard, or touch screen.

Standard internal features include AC/DC voltage/current, resistance, frequency, thermocouple/PT100 simulation and measure, capacitance/inductance calibration, and oscilloscope calibration. Also supplied is a clamp meter adaptor for clamp calibration up to 1100A, and test lead set to provide the neccessary connections for nearly all applications.

Compact System For The Calibration Process

The 5051 Plus is an inclusive package with features to cover and optimise the entire calibration process. By integrating the calibrator, DMM and PC in one unit minimal bench space is used. This also makes the 5051 ideal for site work with carry case supplied as standard.

The internal PC is preloaded with the EasyCal software suite, enabling automatic calibration to increase speed and efficiency of work. In addition EasyCal has features to manage and administrate both inventory and quality control. As a complete workstation the 5051 Plus is supplied with printer and connectivity kit for producing certificates and reports.

5051Plus Specifications

Function	Range / Values	Best 1 year Specification
Calibrator (source)		
Voltage DC	0 to ± 1050V	± 15ppm of setting
Current DC	0 to ± 22A	± 80ppm of setting
Voltage AC – Wideband AC Voltage	1mV to 1050V (10Hz to 20kHz, sine-wave) 20 to 200mV/300kHz. 0.2 to 2V/1MHz. 2 to 20V/100kHz	± 300ppm of setting ± 0.05%
Current AC	10μA to 22A (20Hz to 1kHz, sine-wave)	± 0.05%
Clamp Meter Adaptor x50 turn	AC/DC Current up to 1100A (DC, 45 to 90Hz)	± 0.5%
Capacitance	1nF, 10nF, 100nF, 1μF, 10μF, 100μF (100V Max)	± 0.25%
Inductance	1mH, 1.9mH, 5mH, 10mH, 19mH, 50mH, 100mH, 190mH, 500mH, 1H, 10H	± 0.1%
Resistance	1Ω to 120MΩ Variable (plus 1GΩ fixed value)	± 100ppm of setting
Conductance	1s to 1ns (fixed values, decade steps)	± 20ppm of setting
Thermocouple Simulation	-270 to 1800°C (type J, K, R, T, S, B, E, N)	± 0.15°C
PT100 Simulation	-180 to 850°C	± 0.2°C
Oscilloscope Calibration		
Amplitude	0mV to 200V and 0mV to 2V 50Ω (Square-wave or DC)	± 0.05%
Frequency/Period	0.1Hz to 100MHz / 100ns to 10s	± 20ppm (± 0.1ppm with option 9783)
Duty Cycle	3 frequencies: 100Hz, 1kHz, 10kHz, settable from 0 to 100%	–
Fast-Rise	< 850ps. Bandwidth checking up to 400MHz	–
Option 9769: 2.2GHz Sweep	100MHz to 2.2GHz levelled sine-wave (0.5, 1, 1.5V pk-pk)	Amplitude ± 1%, Frequency ± 20ppm
6.5 Digit DMM (measure)		
Voltage DC	0 to 1000V	35ppm of rdg + 6ppm of rng
Current DC	0 to 3A	500ppm of rdg + 50ppm of rng
Voltage AC	0 to 750V	0.06% of rdg + 0.04% of rng
Current AC	0 to 3A	0.1% of rdg + 0.04% of rng
Resistance	0 to 100MΩ	100ppm of rdg + 50ppm of rng
Frequency	3Hz to 300kHz	0.01% of rdg
Thermocouple	-270 to 1800°C (Type J, K, R, T, S, B, E, N)	± 0.5°C
PT100	-180 to 850°C	± 0.08°C

PC Specifications/Details

Processor	2GHz
RAM	512MB
Hard Drive	60GB solid state
Ports	4 x USB, 1 x Fast Ethernet
Display	10.5" Touch Screen LCD
Operating System	Windows XP Embedded
Included Software Programs	Calibrator and DMM control programs, EasyCal calibration software suite
Supplied Hardware/Accessories	USB keyboard, Inkjet Printer, Cal and ID Label Printer, DVD-RW, 4 port USB hub, Numeric key pad, USB memory stick

Options

Oscilloscope Calibration Options	9769: Internal Scope 2.2GHz Levelled Sine Generator • 9783: Internal Oven-Controlled High Stability Frequency Reference 9762: External Rubidium High Stability Frequency Reference • 9764: External Current Probe Calibration Adaptor
External Adaptors/Instruments	9773: Optical Tacho Adaptor • 9790: 100 Amp AC Current Transformer • 9760: Power Amplifier (60V AC, 90V DC - 100mA) 7042: Remote Pressure Module (Vac to 20 bar versions) • 5077: Power Calibrator • 7070/7071/7072: Dry Block Calibrators
EasyCal Software Accessories and Calibration Certificates	9777: Bar Code Reader • 9779: Job and Address Label Printer • EC2FL/EC2CL/EC2WL: Additional User Licenses for separate PCs EAD: EasyAdmin Add-On • EWC: WebCerts Add-On • CREP: Crystal Reports Software • C134: UKAS Calibration Certificate

General Specifications

Supplied Items	5051PLUS Calibration System • Clamp Meter Adaptor • Premium Test lead Set • Soft Carry Case • Printer and Connectivity Kit Cal and ID Label Printer • 5051 Manual Control Software • EasyCal Calibration Software • Factory Calibration Certificate (NPL)
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 3km. Non operating: 3km to 12km
Line Power	100 to 230V AC 50/60Hz. 200W maximum
Dimensions / Weight	W430mm, H202mm, D538mm. Weight: 23kg
Supplied Test Lead Set	High voltage (pair). High current (pair). Low thermal (pair). Shielded 4 wire. BNC test lead. BNC/thermocouple/spade adaptors. Test clips/couplers (pair). Wall mount lead holder. Carry case.

Multi-purpose 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 10MHz frequency can be added to increase capabilities.

- 1Ω to 120MΩ, 100ppm basic accuracy
- RTD simulation
- Optional thermocouple simulation
- 0 to 22V DC voltage option
- 0 to 220mA DC current option
- 10MHz frequency option
- RS-232, GPIB, and USB interfaces
- Front panel operation
- PC/laptop control via EasyCal software
- Rack mount kit option
- W451 x H152 x D272mm, weight 7kg

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.

- 15ppm accuracy, 0.5ppm resolution
- 1999999 full scale +10% over-range
- 20mV-200mV-2V-20V DC voltage
- Deviation control -9.999% to +9.999%
- Ramping feature
- RS-232, GPIB, and USB interfaces
- Ideal for ATE applications
- Front panel operation
- PC/laptop control via EasyCal software
- Rack mount kit option
- W451 x H152 x D272mm, weight 8.2kg

5045 Oscilloscope Calibrator

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

- 10mV to 220V square wave/DC
- Frequency 0.1Hz to 100MHz
- Time marker/period 10s to 10ns
- Fast rise <300ps
- Bandwidth check up to 600MHz
- Optional 2.2GHz levelled sweep
- Rubidium frequency reference option
- Front panel operation
- Virtual PC calibrator control software supplied as standard
- PC/laptop control via EasyCal software
- W451 x H152 x D272mm, weight 8.2kg

5077 Power Calibrator

A high accuracy power calibrator suitable for calibrating watt-meters, power meters, and kW-Hr meters. Supplied with "Virtual Front Panel" software the user can control the 5077 remotely via laptop or PC.

- Phase angle ± 90°, power factor 0.00 to 1.00
- 1mV to 1050V AC/DC
- 0.02 to 22A AC/DC
- 0 to 22kVA or 0 to 22kW
- 100A AC current transformer option
- 45 to 400Hz in 0.1Hz steps
- Clamp meter adaptor option
- RS-232, GPIB, and USB interfaces
- Virtual PC calibrator control software supplied as standard
- W455 x H155 x D480mm, weight 16.5kg

5065 Bench Digital Multimeter

A versatile 6½ 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.

- 6½ 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
- W210 x H85 x D350mm, weight 4.4kg

5075 Precision Digital Multimeter

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

- 7 digit resolution
- 10nV to 10kV, 10pA to 30A
- Resistance, capacitance, frequency
- 18ppm accuracy/best 1 year
- 10 channel low thermal emf scanner option
- PC/laptop control via EasyCal software
- GPIB interface (USB adaptor available)
- Rack mount kit option
- W423 x H89 x D415mm, weight 8.5kg

About CalBench

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

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

Calibration modules cover electronic signal, temperature, loop, and pressure applications. Power supplies, DMMs, oscilloscopes and generator modules can also be fitted into the bench consoles.

Functions are clearly defined on each module and a competent technician will quickly master the operation of the system without training or constant reference to manuals. Various fittings, functions, and additional devices can be added to CalBench to create a comprehensive work environment.

Calibrates

Multimeters	Loop Signal Indicators	Temperature Indicators	Pressure Transducers
AC/DC Signal Sources	Pressure Gauges	Temperature Sensors	Frequency Meters
Signal Generators	Clamp Meters	RTD Transmitters	Decade Boxes
Oscilloscopes	Tachometers	Timer Counters	Pressure Transmitters
AC/DC Millivoltmeters	Power Supplies	Thermocouple Transmitters	Ohmmeters

And more

Module Options and Extras

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

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

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

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

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

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

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

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

7051 Multifunction Calibrator and Control Centre

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

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

DMM
The integral 6½ digit multimeter can measure DC voltages to 1000V, AC voltages to 750V, resistance to 100MΩ, and frequency to 300kHz.

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

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

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

7051Plus Package
A comprehensive package including specific options to cover the calibration requirements for electrical and process applications. As a package it incorporates the full internal capabilities of the 7051, and is complemented by external adaptors for increased functionality.

Features
- **0 to 22V AC/DC, 0 to 220mA AC/DC**
- **0 to 1GΩ – decade steps**
- **10MHz frequency**
- **Thermocouple simulation/measure 10 types**
- **RTD simulation/measure**
- **Internal 6½ digit multimeter**
- **Simulated resistance 10Ω to 40MΩ**
- **High voltage/current option – 1kV/22A AC/DC**
- **Pressure calibration control software**
- **HART/Fieldbus compatible**
- **EasyCal calibration software**
- **Touch screen**

Power Supply Modules

CalBench can be fitted with a number of power supply modules depending on user requirements. Modules include simple operation fixed DC and AC supplies and precision adjustable supplies.

- 7083: Dual 24V DC power supply - 2 x 24v (2A)
- 7087: Quad DC power supply - 6V(8A), 12V(8A), 24V(4A), 48V(3A)
- 7052: 30V DC 3A adjustable power supply - Digital
- 7053: 56V DC 4A precision Adjustable power supply - Digital
- 7054: 120V DC 0.75A adjustable power supply - Digital
- 7055: 250V DC 0.375A adjustable power supply - Digital
- 7056: Dual adjustable power supply (2 x 30V DC 3A) - Digital
- 7088: Adjustable AC power supply - 0 to 270V/10A (110% above line voltage)
- 7047: Variable AC/DC power supply - AC 1000VA, DC 800W, Freq 40 - 500Hz

Pressure Modules

The Time Electronics range of pressure modules for CalBench include low and high pressure calibrators, indicators, and line controllers.

- 7059: Combined vacuum and pressure calibrator (vacuum plus ranges to 20bar)
- 7062: Pressure calibrator (ranges from vacuum to 20bar)
- 7064: High pressure calibrator (ranges from 35 to 200bar)
- 7066: Differential pressure calibrator (ranges from 0.2 to 10bar)
- 7032: Semi-automatic pressure calibrator (ranges from 0.2 to 10bar)
- 7065: Standard pressure indicator (ranges from vacuum to 600bar)
- 7038: Multifunction pressure calibrator (ranges from vacuum to 600bar)
- 7084: Line pressure controller (ranges from 5 to 200bar)

Loop and Temperature Modules

For process control applications a range of simulators, loop and temperature calibration modules are available. The 7051 can also be used as an automatic process calibrator.

- 7001: PT100 simulator - °C and °F versions available (based on 1049)
- 7068: RTD temperature calibrator (based on 7000)
- 7077: Temperature and process calibrator (based on 1090)
- 7061: Process calibrator Module (based on 7050)
- 7085: Temperature distribution Module (Thermocouple and RTD)
- 7067: Precision loop calibrator (based on 7005)
- 7069: V-I loop calibrator (based on 1048)
- 7079: Loop ancillaries module

DMM and Electrical Test Modules

CalBench can be fitted with digital multimeters from the Time Electronics range. These include the 5065 6.5 digit dmm and the 5075 precision multimeter. The 7051 multifunction module also incorporates a 6.5 digit multimeter, housed internally. For electrical test applications the 5068B can be bench fitted for the calibration of insulation testers up to 2.5kV. Also available is the 5030B electrical tester calibrator.

- 5065B: 6.5 digit multimeter (see 5065 benchtop version)
- 5075B: Precision digital multimeter (see 5075 benchtop version)
- 7051: Integral 6.5 digit multimeter equivalent to 5065B
- 5068B: Insulation Tester Calibrator (see 5068 benchtop version)
- 5030B: Electrical Tester Calibrator (see 5030 benchtop version)

Signal Generation and Analysis Modules

CalBench can be fitted with various frequency counters, function generators, RF signal generators and EMC test modules. Each module offers high accuracy and excellent resolution.

- 7027: 3GHz universal frequency counter
- 7028: 10MHz DDS function generator
- 7029: 25MHz function/arbitrary/pulse generator
- 7031: 50MHz function/arbitrary/pulse generator
- 7048: 2GHz synthesised signal generator (AM, FM, phase modulation)
- 7058: 6GHz signal generator
- 7170: Mains/Harmonics analyser including flicker
- 7171: 1kW low distortion power source (accompanying module for 7170)

Oscilloscope Modules

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

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

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

Additional and Custom Design Modules

CalBench is fully customisable and Time Electronics can fit customer-specific modules or extras. Users can request instruments and devices be fitted in the bench consoles, modifications and additions to our current modules, or bench and console modifications.

- 9758B: DC Electronic Load, 80A, 80V, 300W - for power supply calibration
- 7043: 3 phase mains controller module
- 7063: Isolated mains output sockets for 7082 mains Power module
- Customer specific modules
- Modules from Time Electronics portable and benchtop instruments range
- Additional sockets, fittings, and connections on modules
- Touch screen PC only module - 10.5" LCD display
- Optional secondary console shelf unit (7081S)

Supporting Instruments and Extras

In addition to bench modules a selection of instruments and accessories can be provided to complement the system and enhance functionality.

- Pressure: Handheld and tabletop pumps, gauges, and dead weight testers
- Process: Field calibrators, dry block calibrators, and flow controllers
- Mechanical: Gauge block sets and test weight kits
- Line pressure: Compressors, vacuum pumps, air amplifiers and gas boosters
- Repair & maintenance: Solder stations, worktop vices, magnifyers and more
- Multi-purpose: Electronics service cases and tool kits
- ESD: Anti-static worktops, grounding products, wrist wraps, and more
- Lab Furniture: Accompanying work benches, cabinets, trollies (see page 23)
- Bench fittings: Under worktop drawers, back panel tool kits and holders

The Design Process

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

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

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

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

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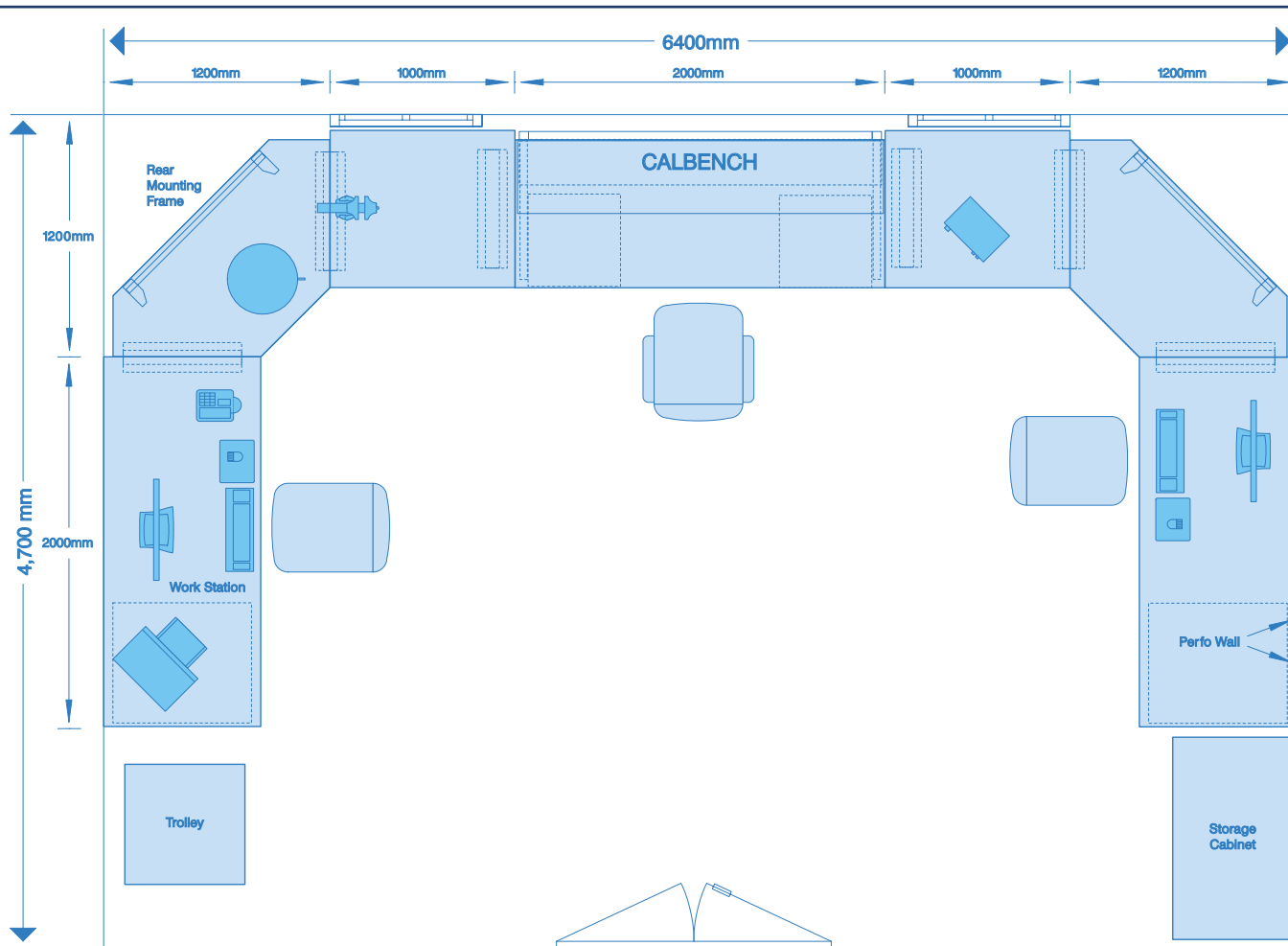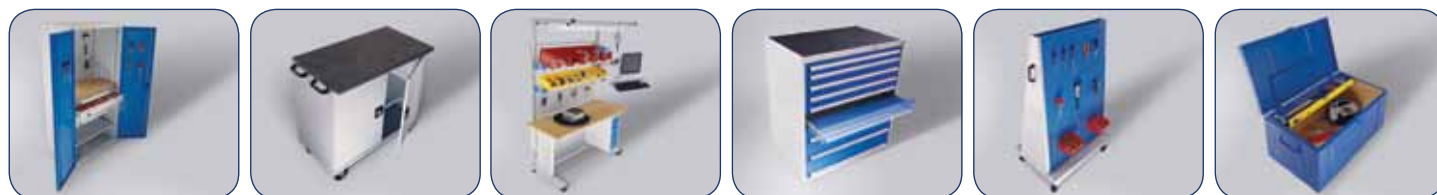
On-site Bench Installation, Training, & Calibration

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

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

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

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

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

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

EasyCal Calibration Software

The comprehensive solution to calibration work and management

Manage, Automate and Optimise the Calibration Process
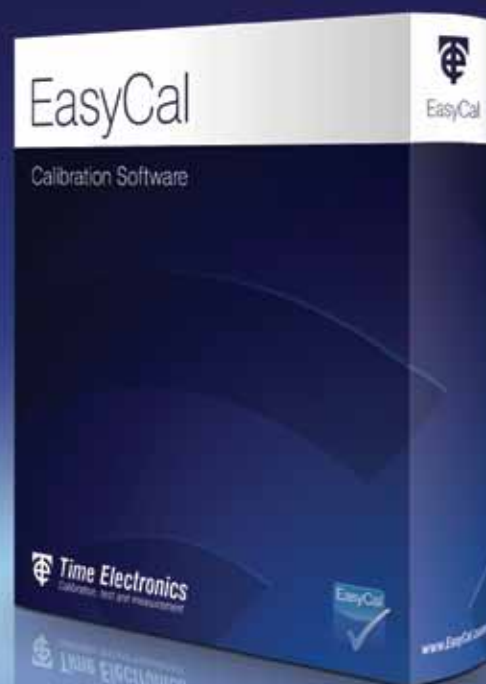
About Easycal

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

Communication and Control

EasyCal automates calibration runs by allowing the user to remotely control and communicate with compatible calibrators and DMMs. User friendly features and controls aid the process to further decrease calibration times. EasyCal can also read back values and data from compatible Time Electronics pressure and process instruments, and can be used with external instruments such as dry block calibrators.

For Multiple Industries and Disciplines

EasyCal is a versatile solution to multi-device calibration with the comprehensive functionality that is required across industries. It is globally used as the principal software in both calibration businesses and companies with on-site test facilities.
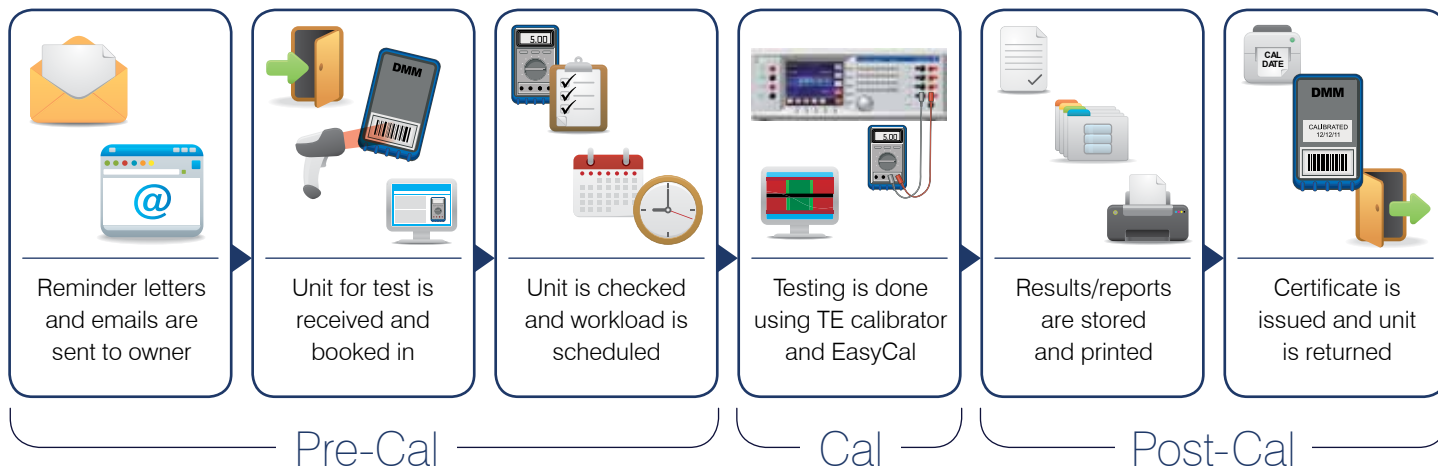
EasyCal is also designed for universal testing applications and can cover a wide range of disciplines. Users can calibrate and verify various instruments and devices: electrical and electronic; level, pressure, and flow; temperature and loop; mechanical and dimensional.

Features

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

Automating the Calibration Process with EasyCal

| 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 organisation of instrumentation calibration simple. A recall/reminder system informs the user of upcoming jobs, and search functions allow the user to quickly identify a unit for test.

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

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

The Core Benefits of using EasyCal

Achieve compliance with quality standards

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

### Create an efficient control and management system

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

EasyCal Calibration Software

Overview of applications and features
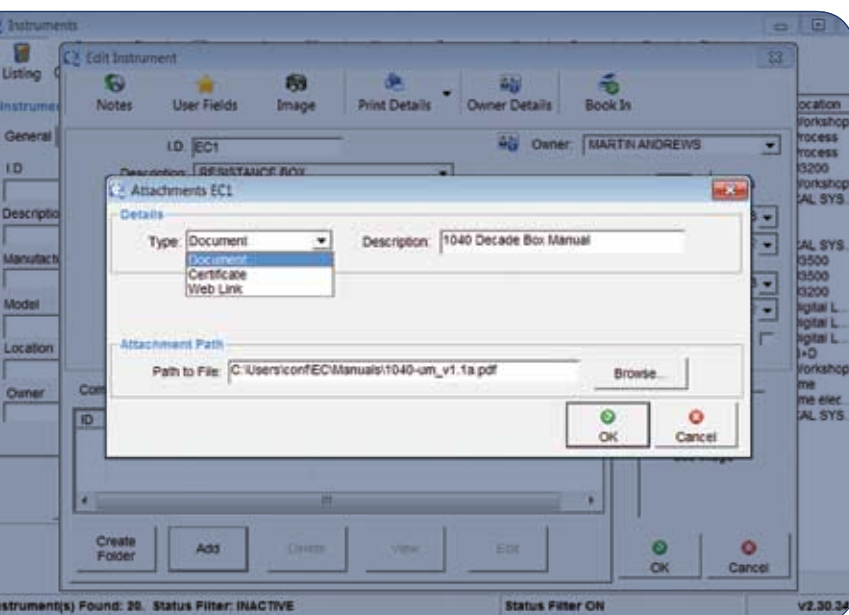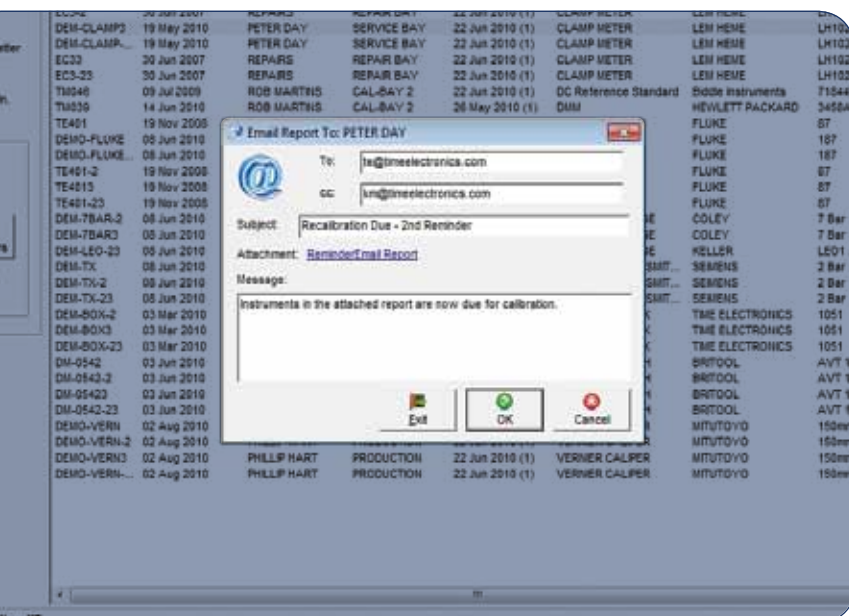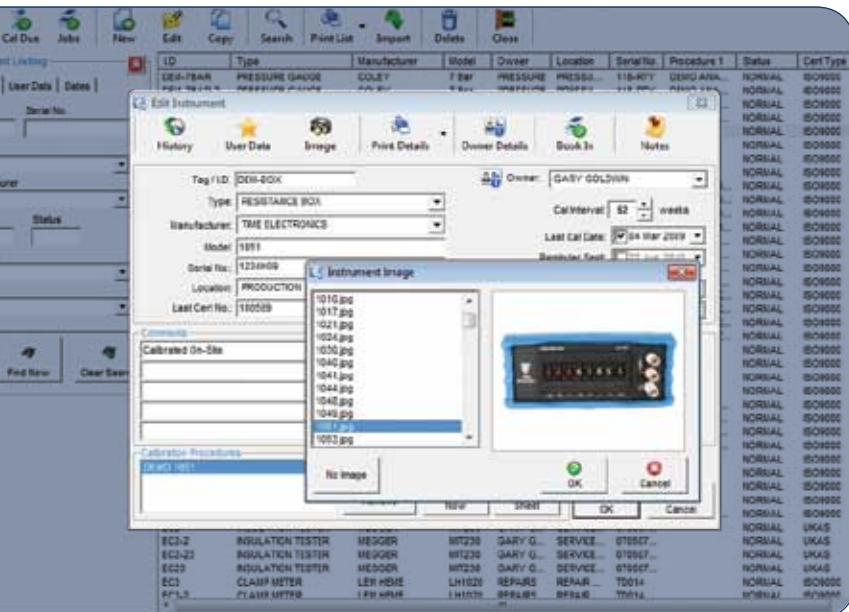
Inventory, Reminders, and Jobs

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

Search

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

Input Fields

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

Instrument Recall and Reminder System

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

Job Management

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

Attachments

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

Devices and Standards used for Calibration

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

Uncertainties

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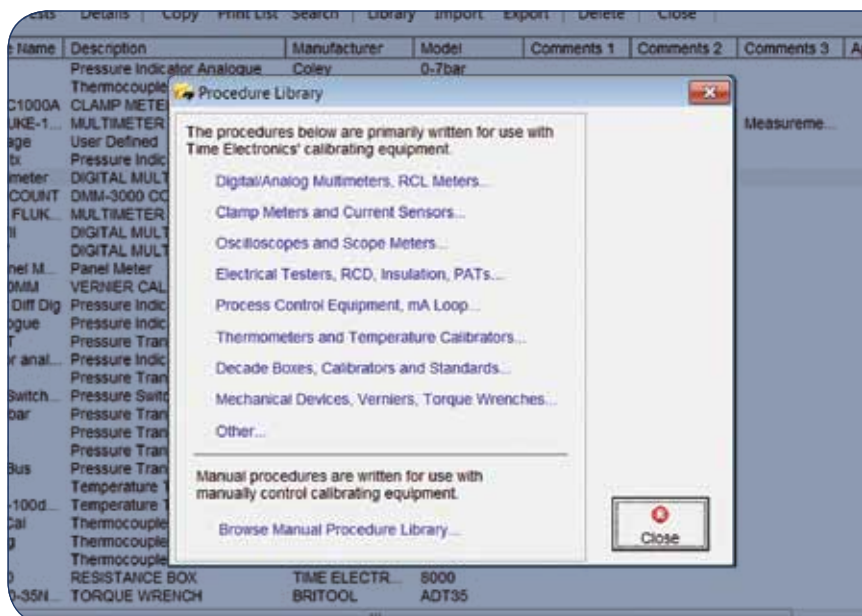
Procedure Writing and Editing

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

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

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

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

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

Format Certificates
Colour code and add borders to test group titles. Add column headers where a change of layout is required. A preview feature allows the user to check the certificate layout to determine if formatting is correct.
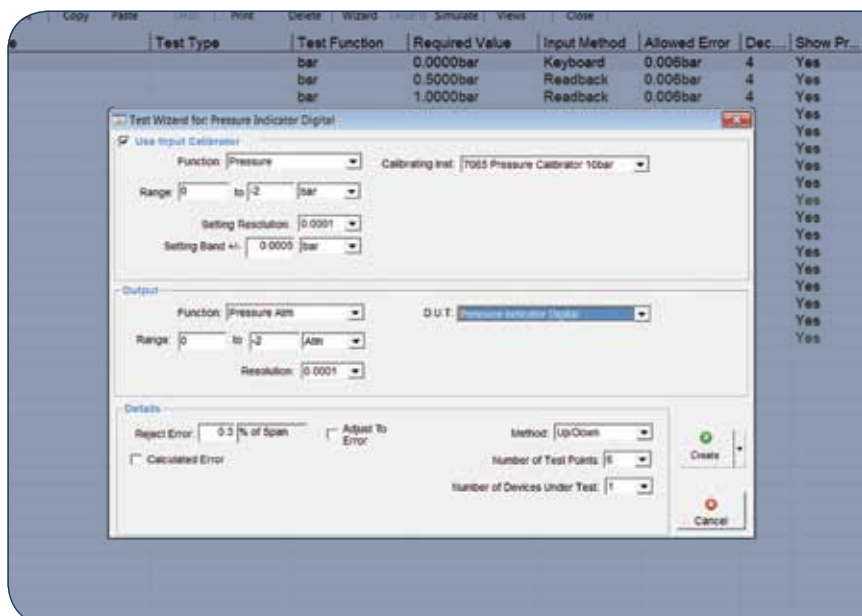
Conversion Tables
Conversion tables for thermocouples, RTDs, current transformers, and clamp meter adaptors are included. Alternatively user-defined tables can be created.

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.
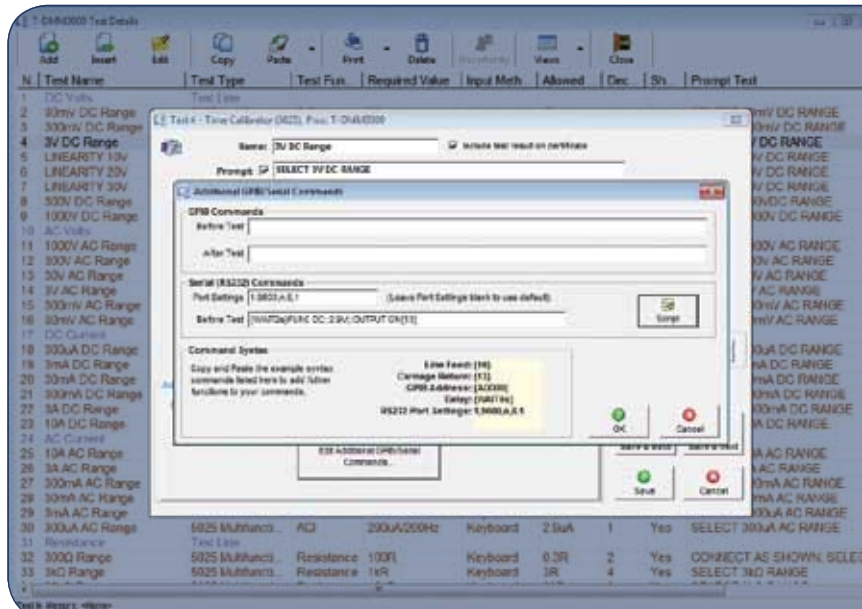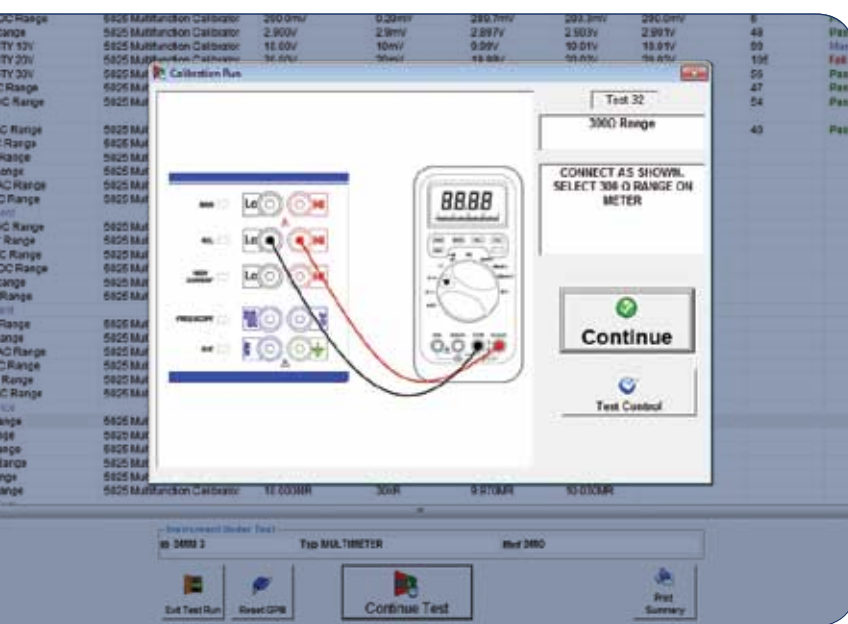
Instrument and Device Calibration

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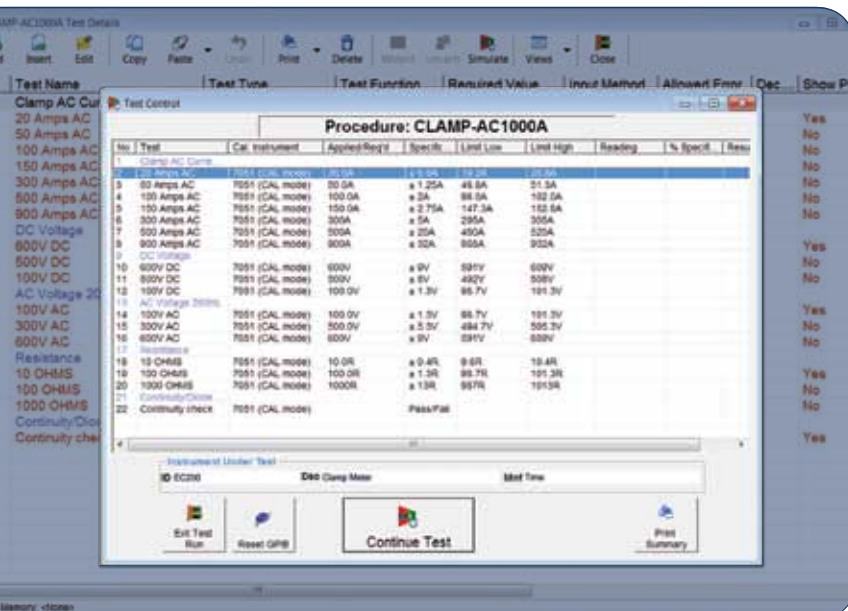
End of Calibration Run
Data for every test is stored, including a snap shot of the procedure used. If required calibration comments and service history can be updated. The operator is able to print the certificate, produce a calibration label and/or store the results to be issued as required.

Recovery Mode
If for any reason a calibration run is interrupted, recovery mode allows the user resume 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.
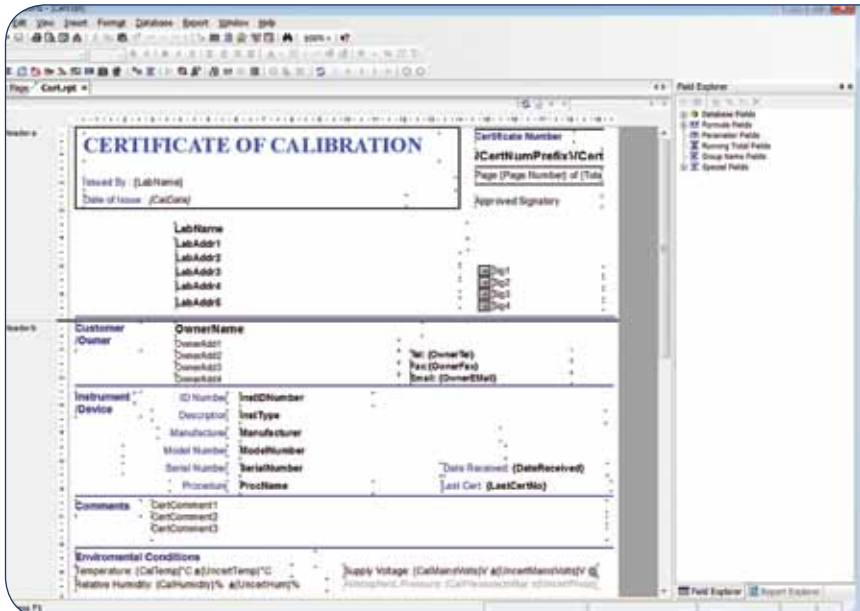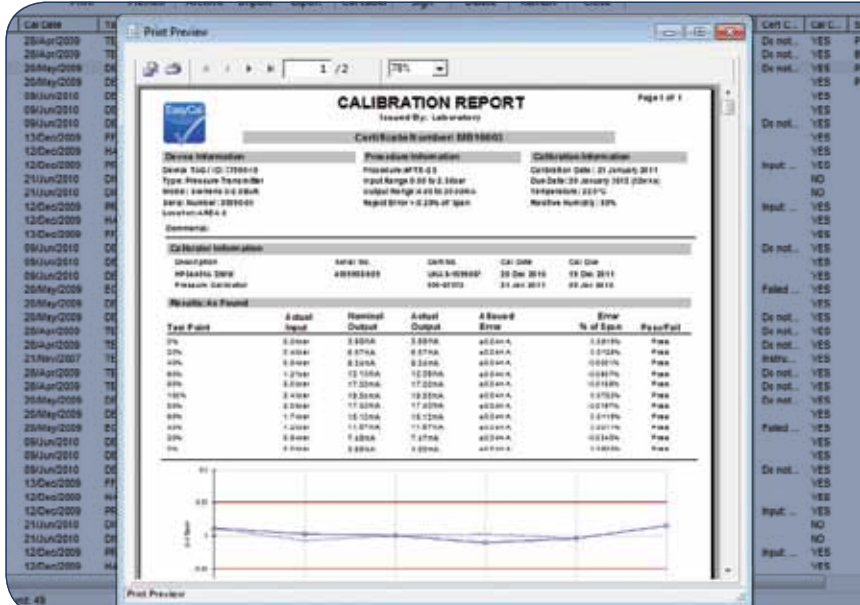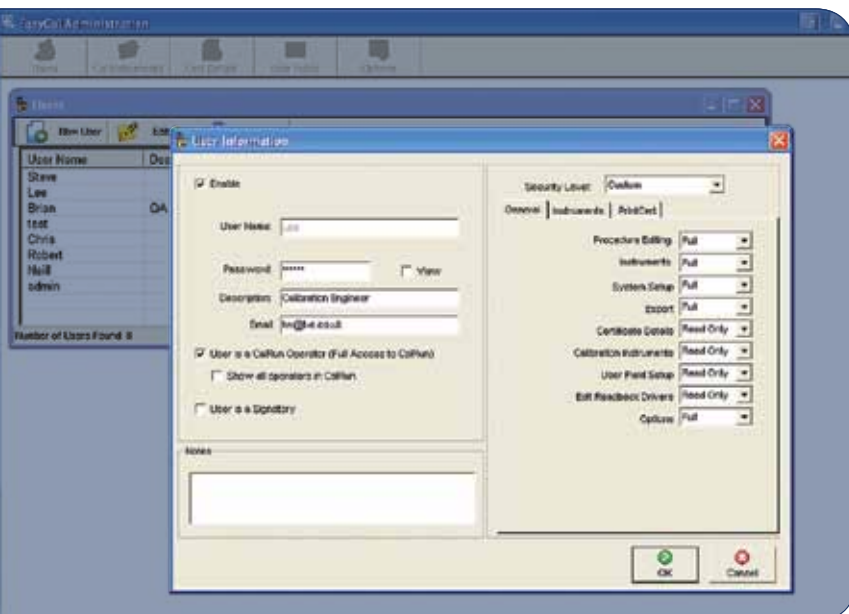
EasyAdmin

EasyAdmin is an add-on that provides increased security for EasyCal and it's users.

User Rights: A master user sets the user rights for the relative staff and defines log in criteria.

Access Levels: Setting access levels within EasyCal to limit secondary users can be done, safe guarding sensitive information.

Administration: EasyAdmin provides an administration point for calibration instruments, certificate information and user fields.

Predefined Pick-Up Lists: For instrument manufacturers, sub contractors, customer details and other information. These can be created to make EasyCal data entry quick, easy and uniformed.
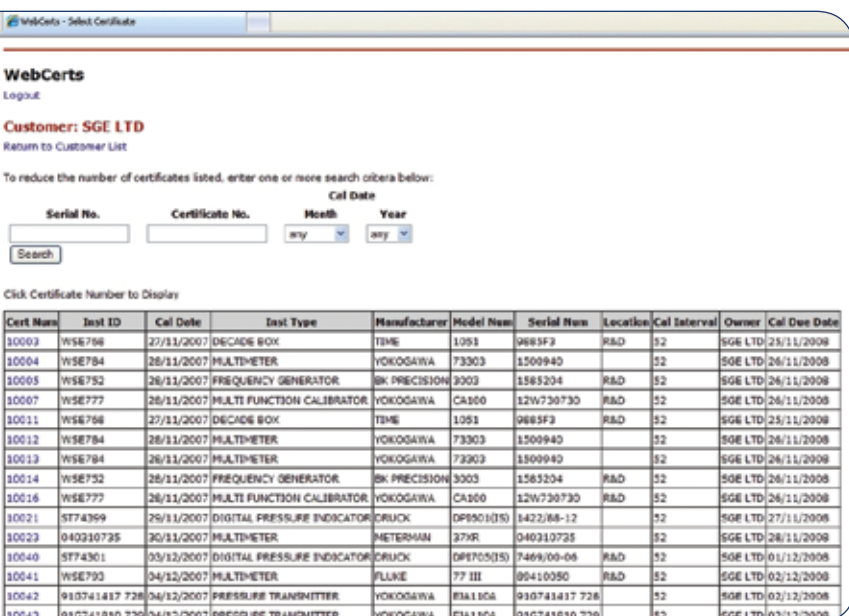
WebCerts

WebCerts is a web based application that enables EasyCal users to upload and retrieve certificates and reports online.

Simple Upload/Download: Uploading is incorporated into EasyCal by allowing the user to quickly and directly upload to their WebCert folders via FTP.

Secure User Log In: A security feature that allows users to access private folders with their relevant documentation. Ideal for companies with different sites or locations.

Search and Filter: Users can easily locate required data by using the filter tabs or the straightforward search fields.

Hosted Package: Time Electronics also offer a hosted WebCerts package where data is uploaded and stored on one of our designated WebCert servers. Retrieval and viewing of certificates is via the web based interface.
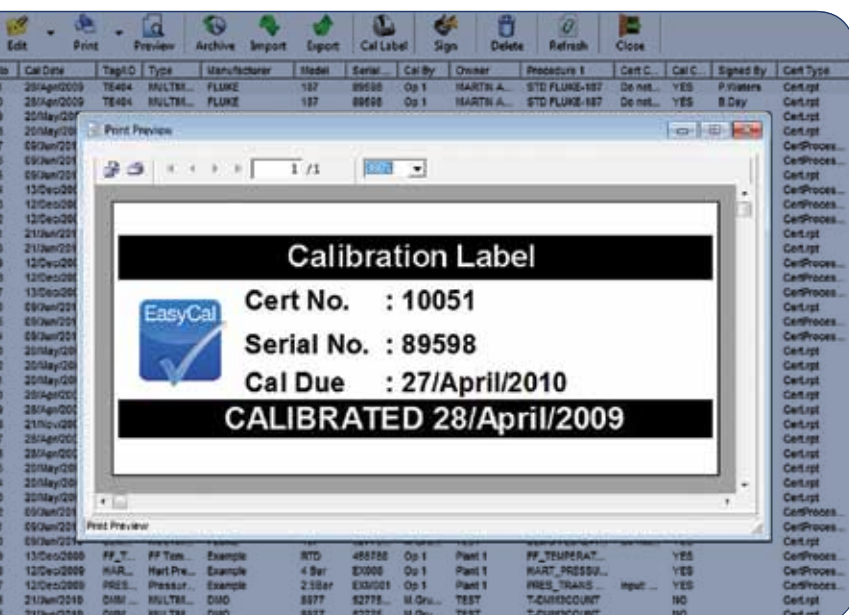
EasyCal Accessories

To complement and further optimise the calibration process Time Electronics offer a range of external options.

Printer and Connectivity Kit: Inkjet printer for calibration certificates and reports. Also includes a DVD-RW, 4 port USB hub, numeric key pad and USB memory stick.

Calibration and ID Label Printer: For printing labels to be placed on calibrated units. EasyCal has different layouts for required information to be shown.

Job and Address Label Printer: For printing information that accompanies a unit under test through the calibration process. Also for user tagging instruments.

Bar Code Reader: Enables fast identification of devices in the pre-calibration stage.

EasyCal to PC Communication Options: Interface cables and adaptors providing PC connectivity to Time Electronics calibrators or external instruments.

EasyCal Networking

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 a 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 indentification.

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 a 5025 multifunction calibrator or similar unit.

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 5051 calibration system.

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.

		Factory Calibration Certificate (NPL)	UKAS Calibration Certificate (ISO 17025)	Carry Case	Rechargeable Battery Pack	Mains Power Supply	EasyCal Software
Decade Boxes							
1040	Resistance Box (1Ω - 100MΩ)	C161	C114	opt 9026	–	–	–
1041	Resistance Box Low Ohm (0.01Ω - 1kΩ)	C161	C114	opt 9026	–	–	–
1051	Resistance Box Low Ohm (0.01Ω - 1MΩ)	C161	C114	opt 9026	–	–	–
1053	Inductance Box (1mH - 10H)	C170	C114	–	–	–	–
1061	Resistance Box Low Cost (1Ω - 1.2MΩ)	C161	C114	–	–	–	–
1065	Resistance Box - Power 10W (0.1Ω - 120kΩ)	C161	C114	–	–	–	–
1067	Resistance Box Precision Low Ohm (10mΩ - 12KΩ)	C161	C114	–	–	–	–
1068	Precision Fixed Resistance Box (1Ω - 10KΩ)	C164	C114	–	–	–	–
1070	Capacitance Box (100pF - 10µF)	C161	C114	opt 9026	–	–	–
1071	Capacitance Box (10pF - 100µF)	C161	C114	opt 9026	–	–	–
Portable Voltage, Current, Loop & Temperature Instruments							
1006	DC Millivolt Source - 0.02% Accuracy	C150	C100	opt 9027	opt 9529	–	–
1007	DC Millivolt Potentiometer & Calibrator - 0.02% Accuracy	C150	C101	opt 9027	opt 9529	–	–
1010	DC Voltage Calibrator - 0.02% Accuracy	C151	C102	opt 9021	internal	✓	–
1017	DC Multifunction V/I/R Calibrator - 0.005% Accuracy	C152	C109	–	internal	✓	–
1021	DC Current Source With Null Meter - 0.02% Accuracy	C153	C105	opt 9027	opt 9529	–	–
1024	DC Current Calibrator with Null Meter - 0.02% Accuracy	C154	C106	opt 9021	internal	✓	–
1030	Voltage & Current Source (MicroCal) - 0.1% Accuracy	C155	C110	✓	opt 1031	–	–
1044	DC Voltage and Current Calibrator - 0.05% Accuracy	C156	C133	✓	–	opt 7643	–
1048	Voltage / Current / Loop Calibrator - 0.02% Accuracy	C176	C138	✓	–	opt 7643	–
1049	PT100 Simulator Handheld (Class A °C)	C161	C114	✓	–	–	–
1050	PT100 Simulator Handheld (Class A °F)	C161	C114	✓	–	–	–
1077	Milliamp Transducer/Line Simulator - 0.02% Accuracy	C158	C108	opt 9027	opt 9529	–	–
1090	Temperature and Process Calibrator	C177	C139	✓	internal	✓	–
7000	RTD Temperature Calibrator	C183	C194	✓	internal	opt 7633	–
7005	Voltage / Current / Loop Calibrator - 0.01% Accuracy	C184	C195	✓	internal	opt 7633	–
7006	Loop Simulator & Source (Loop-Mate 1) - 0.1% Accuracy	C145	C145	✓	–	–	
7007	Loop Signal Indicator (Loop-Mate 2) - 0.05% Accuracy	C145	C144	✓	–	–	–
7050	Process and Thermocouple Calibrator	C180	C192	field case	internal	–	–
Electrical Test Calibrators							
5030	Electrical Tester Calibrator	C201	C137	–	–	✓	ECFLA
5068	Insulation Tester Calibration System	C189	C112	field case	internal	✓	–
5069	Insulation Tester Calibration System	C189	C112	field case	internal	✓	–
5070	Micro-Ohmmeter and Ductor Tester Calibrator	C146	C107	field case	–	–	–
5080	Portable Appliance Tester Calibrator (PatCal)	C188	C135	field case	internal	✓	–
Portable Pressure Instruments							
7010	Pressure Calibrator (Vac to 600bar versions)	C178	C190	field case	internal	✓	ECFLA
7015	Pressure Calibrator (Vac to 600bar versions)	C178	C190	field case	internal	✓	ECFLA
7016	Regulated Pressure Calibrator (Vac to 20bar versions)	C178	C190	field case	internal	✓	ECFLA
7018	Differential Pressure Calibrator (Vac to 10bar versions)	C178	C190	field case	internal	✓	ECFLA
7040	Pressure/Current Calibrator (Vac to 20bar versions)	C185	C196	✓	–	–	ECFLA
7090	Handheld Pneumatic Pump Kit (-950mbar to 40bar)	–	–	–	–	–	–
7095	Handheld Hydraulic Pump Kit (0 to 700bar) with hoses, fittings, case	–	–	–	–	–	–
7193	Benchtop Pneumatic Calibration Pump (0.95bar vac to 40bar)	–	–	–	–	–	–
7194	Benchtop Pneumatic Calibration Pump (0.95bar vac to 100bar)	–	–	–	–	–	–
7195	Benchtop Hydraulic Calibration Pump (0.9bar vac to 600bar)	–	–	–	–	–	–
7078	Auto Ranging Digital Gauge (Vacuum to 200bar, 0.1% accuracy of setting)	C204	C205	–	–	–	–
7089/91/94/96	Digital Gauges (7089: Vac / 7091: Vac - 40bar / 7094: 100bar / 7096: 700bar, 0.2% acc)	C202	C203				ECFLA
7198	Pressure Calibration Accessories Kit (Adaptors, fittings, connectors, hoses)	–	–	–	–	–	–

Pressure Range Codes for 7010, 7015, 7016, 7018 and 7040

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

Digital Multimeters

		Factory Calibration Certificate (NPL)	UKAS Calibration Certificate	9713 Carry Case	9728 Rack Mount Kit	ECFLA EasyCal Software	9714 10 Ch Scanner card	9726 10 Ch Scanner card	9715 GPIB Interface	9717 RTD Probe Adaptor
5065	6.5 Digit Bench Multimeter	C173	C117	o	–	o	o	–	o	o
5075	Precision Digital Multimeter	C162	C130	–	o	o	–	o	–	–

ATE / Bench Calibrators

		Factory Calibration Certificate (NPL)	UKAS Calibration Certificate (ISO 17025)	9728 Rack Mount Kit	Test Leads Order code by product	ECFLA EasyCal Software	9733 Rear Terminals	9711 DCV / Thermocouple Option	9718 Current Option (220mA max)	9729 Frequency Option (10MHz digital)	9719 AC Option (22V max)	9721 200V DC Option	9724 30V DC Option	9720 1KV DC Option (includes 9721)	9790 100 Amp AC Current Transformer	9780 Clamp Meter Adaptor	9769 2.2GHz Levelled Sine Generator	9762 Rubidium Frequency Reference	9764 Current Probe Calibration Adaptor
5011	Resistance/Temperature Calibrator	C171	C115	o	o	o	o	o	o	o	o	–	–	–	–	–	–	–	–
5018	DC/AC Voltage/Current Calibrator	C142	C104	o	o	o	o	–	o	–	o	o	o	o	o	–	–	–	–
5045	Oscilloscope Calibrator	C147	C128	o	o	o	–	–	–	–	–	–	–	–	–	–	o	o	o
5077	Power Calibrator	C160	C124	–	o	o	–	–	–	–	–	–	–	–	o	o	–	–	–

Multifunction Calibrators
(main options listed)

		Factory Calibration Certificate (NPL)	UKAS Calibration Certificate (ISO 17025)	9085 Carry Case (9082 for 5051)	9728 Rack Mount Kit	9796 Test Leads	ECFLA EasyCal Software	9798 Capacitance and Inductance	9787 Full Range Resistance	9771 Wideband AC V	9797 Power Calibration	9770 Oscilloscope Calibration	9769 Scope 2.2GHz Levelled Sine Generator	9783 Oven-Controlled Frequency Reference	9762 Rubidium Frequency Reference	9764 Current Probe Calibration Adaptor	9790 100 Amp AC Current Transformer	9760 Power Amplifier	9780 Clamp Meter Adaptor	9773 Optical Tacho Adaptor
5025	Multifunction Calibrator	C159	C103	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o	o
5051+	Multifunction Calibration System	✓	C134	✓	–	✓	✓	✓	✓	✓	–	✓	o	o	o	o	o	o	✓	o

Instrument to PC Communication Accessories

		5011 RS232/GPIB	5018 RS232/GPIB	5025 RS232/GPIB	5030 RS232	5045 RS232/GPIB	5051+ USB/LAN	5065 RS232/USB	5075 GPIB	5077 RS232/GPIB	7010 RS232	7015 RS232	7016 RS232	7018 RS232	7040 RS232	7091 RS232	7096 RS232
9588	RS-232 Cable	✓	✓	✓	✓	✓	–	✓	–	✓	o	o	o	o	o	o	o
9597	GPIB Cable	✓	✓	✓	–	✓	–	–	✓	✓	–	–	–	–	–	–	–
9794	GPIB to USB Interface Adaptor	o	o	o	–	o	–	o	o	o	–	–	–	–	–	–	–
9765	RS-232 to USB Interface Adaptor	✓	✓	✓	✓	✓	–	–	–	✓	o	o	o	o	o	o	o
9763	USB to 4x RS232 Interface Adaptor	o	o	o	o	–	o	–	o	o	o	o	o	o	o	o	o
9743	PCI to GPIB Interface Card for PC	o	o	o	o	o	–	o	o	o	–	–	–	–	–	–	–

EasyCal Licenses, Add-Ons, and Accessories

Primary Licenses	
ECFL	EasyCal Full License (stand alone, when purchased individually)
ECFLA	EasyCal Full License (when purchased with compatible calibrator/DMM)
Secondary Licenses	
EC2FL	EasyCal Additional Full License (secondary user)
EC2CL	EasyCal Calibration Station License (limited work station features)
EC2WL	EasyCal Work Station License (full management/scheduling, no calibration run)
EasyCal Add-Ons	
EAD2	EasyAdmin - 2 Users: Security add-on that enables setting of user rights, access levels, and more.
EAD5	EasyAdmin - 5 Users: Security add-on that enables setting of user rights, access levels, and more.
EAD10	EasyAdmin - 10 Users: Security add-on that enables setting of user rights, access levels, and more.
EWC	WebCerts: Online application enabling upload and retrieval of certificates and reports
EWCTE	WebCerts - Hosted by Time Electronics: Online application enabling upload and retrieval of certificates and reports.
CREP	Crystal Reports Sofware: Edit and format certificate styles
EasyCal Accessories	
9795	Printer and Connectivity Kit
9777	Bar Code Reader
9778	Cal and ID Label Printer
9779	Job and Address Label Printer

For full listings on calibration benches and options please visit www.timeelectronics.com

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