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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 regional offices in New York (USA), Dubai (UAE), Kuala Lumpur (Malaysia) and Moscow (Russia).

During our 46 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.

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

Company Details:

Time Electronics Limited, Unit 11 Sovereign Way, Tonbridge, Kent TN9 1RH. United Kingdom.

Tel: +44 (0)1732 355993
Fax: +44 (0)1732 770312

E-mail: mail@timeelectronics.co.uk
Website: www.timeelectronics.com
1051 – 8 Decade Low Ohm Resistance Box

<table>
<thead>
<tr>
<th>Range / Resolution:</th>
<th>0 to 1MΩ / 0.01Ω steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decade</td>
<td>0.01Ω</td>
</tr>
<tr>
<td>Accuracy</td>
<td>± 10%</td>
</tr>
<tr>
<td>Max Current</td>
<td>1A</td>
</tr>
</tbody>
</table>

Residual Resistance: Less than 90mΩ
Power Rating: 1 watt per resistor
Voltage Rating: Maximum 250V DC/AC RMS
Temperature Coefficient: 50ppm/°C
Dimensions / Weight: 215 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

<table>
<thead>
<tr>
<th>Range / Resolution:</th>
<th>0 to 100MΩ / 1Ω steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decade</td>
<td>1Ω</td>
</tr>
<tr>
<td>Accuracy</td>
<td>± 1%</td>
</tr>
<tr>
<td>Max Current</td>
<td>0.5A</td>
</tr>
</tbody>
</table>

Residual Resistance: Less than 250mΩ
Power Rating: 1 watt per resistor
Voltage Rating: Maximum 250V DC/AC RMS
Temperature Coefficient: 50ppm/°C
Dimensions / Weight: 215 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

<table>
<thead>
<tr>
<th>Range / Resolution:</th>
<th>0 to 1kΩ / 0.01Ω steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decade</td>
<td>0.01Ω</td>
</tr>
<tr>
<td>Accuracy</td>
<td>± 10%</td>
</tr>
<tr>
<td>Max Current</td>
<td>1A</td>
</tr>
</tbody>
</table>

Residual Resistance: Less than 60mΩ
Power Rating: 1 watt per resistor
Voltage Rating: Maximum 100V DC/AC RMS
Temperature Coefficient: 50ppm/°C
Dimensions / Weight: 215 x H100 x D120mm / 1kg (incl. protective boot)
Features: Colour coded digits, safety terminals, and protective rubber boot

1061 – 6 Decade Resistance Box

<table>
<thead>
<tr>
<th>Range / Resolution:</th>
<th>0 to 1.2MΩ / 1Ω steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>± 1%</td>
</tr>
<tr>
<td>Residual Resistance:</td>
<td>Less than 150mΩ</td>
</tr>
<tr>
<td>Power Rating:</td>
<td>0.75 watt per resistor</td>
</tr>
<tr>
<td>Voltage Rating:</td>
<td>Maximum 300V DC/AC RMS</td>
</tr>
<tr>
<td>Dimensions / Weight:</td>
<td>w355 x h63 x d82mm / 0.75kg</td>
</tr>
<tr>
<td>Features:</td>
<td>Slim line design and front panel safety terminals</td>
</tr>
</tbody>
</table>
1067 – 6 Decade Precision Resistance Box
Range / Resolution: 0 to 12kΩ / 10mΩ steps
Accuracy: ± 0.01% of setting ± 2mΩ, after deduction of residual resistance
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/ºC (20ppm/ºC 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/ºC
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 to 100mA 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/°C 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 range
- 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 range
- 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 level indicator
- 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 70mV 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
Loop & Temperature Calibration Instruments

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

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

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
Pressure Calibration Instruments
Pressure Calibrators, Test Pumps and Digital Gauges

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 – Vacuum to -950mbar, pneumatic pressure to 40bar (600psi)
- 7095 – Hydraulic pressure to 700bar (10,000psi)
- Non-oil based lubricant used on all moving parts
- Both supplied as kits with carry case, hoses, and fittings
- 7090 – H200 x W125mm, weight 0.91kg
- 7095 – H240 x W125mm, weight 1.4kg
- Digital pressure gauges available (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 (600psi) pressure
- 7194 Pneumatic Pump – 0.95bar vacuum to 100bar (1500psi) pressure
- 7195 Hydraulic Pump – 0.9bar vacuum to 600bar (8700psi) pressure
- Easy to use with smooth pressure generation and high pressure stability
- Dual pressure source (double output manifold)
- 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 (600psi), accuracy 0.2% of FS (suitable for the 7090/7193)
- 7094 – 0 to 100bar (1500psi), accuracy 0.2% of FS (suitable for the 7194)
- 7096 – 0 to 700bar (10,000psi), accuracy 0.2% of FS (suitable for the 7095/7195)
- 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, inH20, Kg/cm², mmHg, mbar
- High accuracy silicone piezo resistive sensors
- Reads both gauge and absolute pressure
- Easy to read colour display with full 2 line alphanumeric
- Compact and robust with protective rubber housing
- H165 x W115 x D65mm, weight 0.88kg
7030 Automatic Pressure Calibrator

A high speed pressure controller/calibrator suitable for wide workload calibration of pressure devices such as transmitters, sensors and gauges. Models can be configured for ranges from -1 to 100bar, with a barometric reference option also available.

- Ranges from vacuum to 0.2, 2, 5, 10, 20, 35, 70, or 100bar
- Pressure/vacuum calibration, 0.025% full scale accuracy
- Control speed: < 3 seconds
- Control stability: 0.004% full scale
- Precision: 0.015% full scale
- Colour touch screen user interface
- EasyCal software compatible
- Barometric reference option
- H191 x W259 x D310mm (including handle), weight 7.1kg

7010 Single Channel Pressure Calibrator
7015 Dual Channel Pressure Calibrator

Portable battery or mains powered pressure calibrators designed for both lab and field applications. Models available from vacuum to 600bar (8700psi).

- 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, ideal for field calibration applications. Models available from vacuum to 10bar (145psi).

- 7016 – Regulated low pressure: Vacuum, 0.2, 2, 5, or 10bar versions
- 7018 – Differential pressure: 0.2, 2, 5, or 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 hose fittings for pushfit 4mm and 6mm external 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 with partitioned top section for hoses and extras
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 reading. 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 D410mm, weight 11kg

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
- Display of open circuit voltage (0 to 2kV or 0 to 9kV)
- Display of short circuit current (0 to 2mA or 0 to 20mA)
- W270 x H175 x D250mm, weight 2.1kg

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.

### Loop

<table>
<thead>
<tr>
<th>Function</th>
<th>Range / Values</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loop Impedance Resistor</td>
<td>1800, 330.0, 33.00, 180.0, 300.0, 1800, 0.330, 0.150 &amp; 0.050Ω</td>
<td>4 digit</td>
<td>±0.5% of displayed value ±30mΩ</td>
</tr>
<tr>
<td>Local Loop Compensation</td>
<td>0 to 9.999Ω</td>
<td>0.001Ω</td>
<td>±0.5% of value ±30mΩ</td>
</tr>
</tbody>
</table>

### RCD

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

### Insulation

<table>
<thead>
<tr>
<th>Function</th>
<th>Range / Values</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance</td>
<td>0.1Ω to 100.0Ω</td>
<td>0.1Ω</td>
<td>1% of value + 20mΩ</td>
</tr>
<tr>
<td>Test Voltage Measurement</td>
<td>250Ω, 500Ω, 1.0kΩ, 2.5kΩ, 5.0kΩ &amp; 10.0kΩ</td>
<td>3 digit</td>
<td>1% of value</td>
</tr>
<tr>
<td>(input resistance 10kΩ)</td>
<td></td>
<td>0.01V</td>
<td>0.5% of range</td>
</tr>
<tr>
<td>Test Current Measurement</td>
<td>0 to 400mA DC</td>
<td>0.1mA</td>
<td>0.5% of range</td>
</tr>
<tr>
<td>(between 1Ω and 2Ω)</td>
<td></td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

### Continuity

<table>
<thead>
<tr>
<th>Function</th>
<th>Range / Values</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Dissipation</td>
<td>1 watt maximum</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

### Voltage

<table>
<thead>
<tr>
<th>Function</th>
<th>Range / Values</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line Voltage Measurement</td>
<td>200.0 to 260.0V RMS</td>
<td>0.1V</td>
<td>0.5% of reading</td>
</tr>
<tr>
<td>Line Frequency Measurement</td>
<td>45.00 to 65.00Hz</td>
<td>0.01Hz</td>
<td>0.1% of reading</td>
</tr>
</tbody>
</table>
Multi Instrument Calibration

The 5025 series are high performance multi-product calibrators that provide the foundation for cost-effective calibration. Built for versatility and simplicity each model offers a solution to efficient calibration of a wide range of test and measurement equipment.

Each model features AC/DC voltage and current, digital frequency, decade and simulated resistance, capacitance, conductance, PT100 and thermocouple simulation. Options include power and oscilloscope calibration, and enhanced performance packs that provide full range variable resistance, extended capacitance, inductance and increased ACV frequency bandwidth. External adaptors are available for clamp meter calibration, optical tachometer calibration and more.

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 5025E or 5025C 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.
5025E and 5025C Specifications

<table>
<thead>
<tr>
<th>Function</th>
<th>Range / Values</th>
<th>Best 1 year Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage DC</td>
<td>0 to ± 1050V</td>
<td>± 40ppm of setting</td>
</tr>
<tr>
<td>Current DC</td>
<td>± 1050V / 20Hz</td>
<td>± 15ppm of setting</td>
</tr>
<tr>
<td>Voltage AC</td>
<td>1mV to 1050V / 20Hz</td>
<td>± 0.04% of setting</td>
</tr>
<tr>
<td>Current AC</td>
<td>± 1050V / 1kHz</td>
<td>± 0.05% of setting</td>
</tr>
<tr>
<td>Thermocouple Simulation</td>
<td>-210 to 1820°C. Type J, K, R, T, S, B, E, N</td>
<td>± 0.3°C</td>
</tr>
<tr>
<td>Digital Frequency/Period</td>
<td>0.1Hz to 10MHz / 100ns to 10s</td>
<td>± 20ppm of setting</td>
</tr>
<tr>
<td>Conductance</td>
<td>5025E: 100ms to 1ns</td>
<td>5025C: 1s to 1ns (decade values)</td>
</tr>
<tr>
<td>Decade Resistance</td>
<td>5025E: 1Ω to 1GΩ</td>
<td>5025C: 1Ω to 1GΩ (decade values)</td>
</tr>
<tr>
<td>Simulated Resistance</td>
<td>5025E: 40Ω to 40kΩ</td>
<td>5025C: 10Ω to 40MΩ (variable)</td>
</tr>
<tr>
<td>PT100 Simulation</td>
<td>5025E: -140°C to 850°C</td>
<td>5025C: -180°C to 850°C</td>
</tr>
<tr>
<td>Capacitance</td>
<td>1nF, 10nF, 20nF, 50nF, 100nF, 200nF, 500nF, 1μF</td>
<td>± 0.25% of setting</td>
</tr>
<tr>
<td>Option 9780: Clamp Meter Adaptor</td>
<td>AC/DC Current up to 1100A (DC, 45 to 90Hz)</td>
<td>± 0.5%</td>
</tr>
</tbody>
</table>

Option 9770: Oscilloscope Calibration

- **Amplitude**: 2mV to 20V and 1mV to 2V 50Ω (Square-wave or DC) ± 0.05%
- **Frequency/Period**: 0.1Hz to 100MHz / 10ns to 10s (fixed values 1, 2, 5 sequence) ± 20ppm
- **Duty Cycle**: 3 frequencies: 100Hz, 1kHz, 10kHz, settable from 0 to 100%
- **Fast-Rise**: < 400ps. Bandwidth checking up to 400MHz

Option 9783: Frequency Reference

- **Frequency Reference**: 0.1Hz to 10MHz enhanced frequency accuracy reference ± 0.1ppm (enhanced accuracy for timer/counters)

Option 9797: Power Calibration

- **ACV**: 0.03%, DCV: 0.01%, ACI: 0.1%, DCI: 0.03%

**Enhanced Performance Packs – 5025E option: 9702 / 5025C option: 9701**

- **Full Range Resistance**: 1Ω to 120MΩ (variable) ± 100ppm of setting
- **RTD Simulation**: -180 to 850°C. Type PT100, PT200, PT500, PT1000 ± 0.03°C
- **Extended Thermocouple Simulation**: -210 to 2315°C. Type J, K, R, T, S, B, E, N, L, U ± 0.05°C
- **Extended Capacitance**: 1nF, 10nF, 20nF, 50nF, 100nF, 200nF, 500nF, 1μF, 10μF, 20μF, 50μF, 100μF ± 0.2% of setting
- **Extended AC Voltage Frequency**: 5025E: 1mV to 200mV/100kHz, 200mV to 2V/100kHz, 2V to 20V/100kHz 5025C: 1mV to 20mV/300kHz, 20mV to 200mV/300kHz, 200mV to 2V/1MHz ± 0.05% of setting

**Additional Enhancements – 5025C only, included in option 9701**

- **Enhanced DC High Voltage**: 20 to 200V and 100 to 1020V additional ranges ± 15ppm
- **Inductance**: 1mH, 1.9mH, 5mH, 10mH, 19mH, 50mH, 100mH, 190mH, 500mH, 1H, 10H ± 0.1% of setting

5025E and 5025C External Options

- **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)**
- **9762: Rubidium High Stability Frequency Reference**
- **9764: Current Probe Calibration Adaptor**
- **9766: Low Noise Attenuator (1000:1)**
- **9767: Low Noise Attenuator (100:1)**

**Accessories and Calibration Certificates**

- **9085: Soft Carry Case**
- **9059: Hard Transit Case**
- **9728: 19" Universal Rack Mount Kit**
- **9768: Premium Test Lead Set**
- **C159 for 5025E / C220 for 5025C**
- **UKAS Certificates (ISO 17025)**
- **C103 for 5025E / C225 for 5025C**
- **ECFLA: EasyCal Full License**
- **9777: Bar Code Reader**
- **9796: Premium Test Lead Set**
- **EC2FL/EC2WL: Additional User Licenses**
- **EAD: EasyAdmin Add-On**
- **EWC: WebCerts**
- **CREP: Crystal Reports Software**
- **EC2FL/EC2WL: Additional User Licenses**

**General Specifications**

- **Supplied Accessories**: Basic Test Lead Set • PC Virtual Control Software • RS-232 Cable • RS-232 to USB Adaptor • User Manual
- **Warm up**: 30 minutes to full accuracy
- **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 on 5025C)
- **Dimensions / Weight**: 455mm, 155mm, 480mm. Weight: 16.5kg
5051 Plus Multifunction Calibration System

- Integral Calibrator, Multimeter, 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

Calibrates

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Range / Values</th>
<th>Best 1 year Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calibrator (source)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage DC</td>
<td>0 to ± 1050V</td>
<td>± 15ppm of setting</td>
</tr>
<tr>
<td>Current DC</td>
<td>0 to ± 22A</td>
<td>± 80ppm of setting</td>
</tr>
<tr>
<td>Voltage AC</td>
<td>1mV to 1050V (10Hz to 1MHz, sine-wave)</td>
<td>± 300ppm of setting</td>
</tr>
<tr>
<td>Current AC</td>
<td>1μA to 22A (20Hz to 1kHz, sine-wave)</td>
<td>± 0.05%</td>
</tr>
<tr>
<td>Clamp Meter Adaptor x50 turn</td>
<td>AC/DC Current up to 1100A (DC, 45 to 90Hz)</td>
<td>± 0.5%</td>
</tr>
<tr>
<td>Capacitance</td>
<td>1nF, 10nF, 100nF, 1μF, 10μF, 100μF (100V Max)</td>
<td>± 0.25%</td>
</tr>
<tr>
<td>Inductance</td>
<td>1mH, 1.9mH, 5mH, 10mH, 19mH, 50mH, 100mH, 190mH, 500mH, 1H, 10H</td>
<td>± 0.1%</td>
</tr>
<tr>
<td>Decade Resistance</td>
<td>1Ω to 1GD (decimal values)</td>
<td>± 20ppm of setting</td>
</tr>
<tr>
<td>Full Range Resistance</td>
<td>1Ω to 120MQ (variable)</td>
<td>± 100ppm of setting</td>
</tr>
<tr>
<td>Conductance</td>
<td>1s to 1ns (fixed values, decade steps)</td>
<td>± 20ppm of setting</td>
</tr>
<tr>
<td>Thermocouple Simulation</td>
<td>-270 to 1820°C (type J, K, R, T, S, B, E, N)</td>
<td>± 0.15°C</td>
</tr>
<tr>
<td>PT100 Simulation</td>
<td>-180 to 850°C</td>
<td>± 0.07°C</td>
</tr>
<tr>
<td><strong>Oscilloscope Calibration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amplitude</td>
<td>6mV to 200V and 6mV to 2V 50Q (Square-wave or DC)</td>
<td>± 0.05%</td>
</tr>
<tr>
<td>Frequency/Period</td>
<td>0.1Hz to 100MHz / 10ns to 10s (fixed values 1, 2, 5 sequence)</td>
<td>± 0.1ppm (0.1Hz to 10MHz / 10ns to 10s) ± 20ppm (20, 50, 100MHz / 50, 20, &amp; 10ns)</td>
</tr>
<tr>
<td>Duty Cycle</td>
<td>3 frequencies: 100Hz, 1kHz, 10kHz, settable from 0 to 100%</td>
<td></td>
</tr>
<tr>
<td>Fast-Rise</td>
<td>&lt; 400ps. Bandwidth checking up to 400MHz</td>
<td></td>
</tr>
<tr>
<td>Option 9769: Scope 2.2GHz Sweep</td>
<td>100MHz to 2.2GHz levelled sine-wave (0.5, 1, 1.5V pk-pk)</td>
<td>Amplitude ± 1%, Frequency ± 20ppm</td>
</tr>
<tr>
<td><strong>6.5 Digit Multimeter (measure)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage DC</td>
<td>0 to 1000V</td>
<td>35ppm of rdg + 6ppm of mg</td>
</tr>
<tr>
<td>Current DC</td>
<td>0 to 3A</td>
<td>500ppm of rdg + 50ppm of mg</td>
</tr>
<tr>
<td>Voltage AC</td>
<td>0 to 750V</td>
<td>0.06% of rdg + 0.04% of mg</td>
</tr>
<tr>
<td>Current AC</td>
<td>0 to 3A</td>
<td>0.1% of rdg + 0.04% of mg</td>
</tr>
<tr>
<td>Resistance</td>
<td>0 to 100MQ</td>
<td>100ppm of rdg + 50ppm of mg</td>
</tr>
<tr>
<td>Frequency</td>
<td>3Hz to 300kHz</td>
<td>0.01% of rdg</td>
</tr>
<tr>
<td>Thermocouple</td>
<td>-270 to 1800°C (type J, K, R, T, S, B, E, N)</td>
<td>± 0.5°C</td>
</tr>
<tr>
<td>PT100</td>
<td>-180 to 850°C</td>
<td>± 0.08°C</td>
</tr>
<tr>
<td><strong>PC Specifications/Details</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processor</td>
<td>64 bit, dual core (or equivalent)</td>
<td></td>
</tr>
<tr>
<td>RAM</td>
<td>4GB (or higher)</td>
<td></td>
</tr>
<tr>
<td>Hard Drive</td>
<td>60 GB Solid State (or higher)</td>
<td></td>
</tr>
<tr>
<td>Ports</td>
<td>4 x USB, 1 x Fast Ethernet</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>10.4” Touch Screen LCD</td>
<td></td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows 8.1</td>
<td></td>
</tr>
<tr>
<td>Included Software Programs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplied Hardware/Accessories</td>
<td>USB keyboard, Inkjet Printer, Cal and ID Label Printer, DVD-RW, 4 port USB hub, Numeric key pad, USB memory stick</td>
<td></td>
</tr>
<tr>
<td><strong>Options</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oscilloscope Calibration Options</td>
<td>9769: Internal Scope 2.2GHz Levelled Sine Generator • 9762: External Rubidium Frequency Reference • 9764: Current Probe Adaptor</td>
<td></td>
</tr>
<tr>
<td>External Adaptors/Instruments</td>
<td>9773: Optical Tacho Adaptor • 9790: 100 Amp AC Current Transformer • 9760: Power Amplifier (60V AC, 90V DC - 100mA) • TEG: Digital Pressure Gauges with RS-232 • 7085P: Temperature Distribution Unit • 7070/7071/7072: Dry Block Calibrators</td>
<td></td>
</tr>
<tr>
<td><strong>General Specifications</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplied Items</td>
<td>5051PLUS Calibration System • Clamp Meter Adaptor • Premium Test lead Set • Soft Carry Case • Printer and Connectivity Kit • Calibration and ID Label Printer • 5051 Manual Control Software • 5051 Calibration Software • Factory Calibration Certificate (NPL)</td>
<td></td>
</tr>
<tr>
<td>Warm up</td>
<td>30 minutes to full accuracy</td>
<td></td>
</tr>
<tr>
<td>Setting Time</td>
<td>Less than 5 seconds</td>
<td></td>
</tr>
<tr>
<td>Temperature Performance</td>
<td>Operating: 5 to 45°C. Calibration: 15 to 28°C. Storage: -10 to 50°C</td>
<td></td>
</tr>
<tr>
<td>Operating Humidity / Altitude</td>
<td>&lt; 80% non condensing. Altitude: 0 to 3km. Non operating: 3km to 12km</td>
<td></td>
</tr>
<tr>
<td>Line Power</td>
<td>100 to 260V AC 50/60Hz, 220W maximum</td>
<td></td>
</tr>
<tr>
<td>Dimensions / Weight</td>
<td>w430mm, h202mm, d538mm. Weight: 23kg</td>
<td></td>
</tr>
</tbody>
</table>
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 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 0.1ppm temperature controlled oscillator.

- 1mV 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, multimeters, 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.
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) multimeter modules.

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

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

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

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

### 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.

**Digital Multimeter**

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

**PC Control Centre**

The 7051 control centre is a PC with a 64 bit dual core processor, running Windows 8.1, with a 10.4” capacitive touch screen display. An optional PC upgrade with 12.1” display is also available. 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. 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.

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**Features**

- Integral multifunction calibrator, DMM, and PC
- Source and measure functions
- Easy to use touch screen
- Includes EasyCal calibration software
- AC/DC voltage and current
- Resistance, capacitance and inductance
- Frequency, period and duty cycle
- RTD and Thermocouple simulation/measurement
- HART and Foundation Fieldbus options
- Built-in procedure library for test devices and instruments
- Wizards for pressure and temperature devices
- Automate calibration jobs
- Manage and issue certificates, reports and labels
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(20A), 12V(10A), 24V(6A), 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: Vacuum and pressure calibrator - vacuum plus ranges to 10bar (145psi)
- 7062: Pressure calibrator - ranges from vacuum to 20bar (290psi)
- 7064: High pressure calibrator - ranges from 35 to 200bar (2900psi)
- 7066: Differential pressure calibrator - ranges from 0.2 to 10bar (145psi)
- 7030B: Automatic pressure calibrator - ranges from vacuum to 100bar (1450psi)
- 7032: Semi-automatic pressure calibrator - ranges from 0.2 to 10bar (145psi)
- 7065: Standard pressure indicator - ranges from vacuum to 600bar (8700psi)
- 7038: Multifunction pressure indicator - ranges from vacuum to 600bar (8700psi)
- 7084: Line pressure controller - ranges from 5 to 200bar (2900psi)
- TE Gauge Pressure Modules: Panel mounted precision digital pressure gauges

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/Electronic 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)
- 7033 High Precision LCR Meter Module, 12Hz to 200kHz
- 9758B: DC electronic load, 80A, 80V, 300W
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
- Dimensional and Mass: Gauge block sets (7151 shown) and test weight kits
- Line pressure: Compressors, vacuum pumps, air amplifiers and gas boosters
- Repair & maintenance: Solder stations, worktop vices, magnifiers 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.
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
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.

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
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 its 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, safeguarding 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.
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 as 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.

CAL
DATE

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.

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.

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 handwritten entry.

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

Site

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

A secure log-in feature allows access to 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.

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

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.

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

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

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.

Central Server

Central Server

The Calibration Lab

Central Server

Central Server

Central Server

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Decade Boxes

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<th>Code 1</th>
<th>Code 2</th>
<th>Option Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1040 Resistance Box (1Ω - 100MΩ)</td>
<td>C161</td>
<td>C114</td>
<td>opt 9026</td>
</tr>
<tr>
<td>1041 Resistance Box Low Ohm (0.01Ω - 1kΩ)</td>
<td>C161</td>
<td>C114</td>
<td>opt 9026</td>
</tr>
<tr>
<td>1051 Resistance Box Low Ohm (0.01Ω - 1MΩ)</td>
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<td>C114</td>
<td>opt 9026</td>
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<tr>
<td>1053 Inductance Box (1mH - 10H)</td>
<td>C170</td>
<td>C114</td>
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<td>1061 Resistance Box Low Cost (1Ω - 1.2MΩ)</td>
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<td>C114</td>
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<tr>
<td>1065 Resistance Box - Power 10W (0.1Ω - 120kΩ)</td>
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<td>C114</td>
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<tr>
<td>1067 Resistance Box Precision Low Ohm (10mΩ - 12KΩ)</td>
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<td>1068 Precision Fixed Resistance Box (1Ω - 10KΩ)</td>
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<td>1070 Capacitance Box (10pF - 1pF)</td>
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<td>1071 Capacitance Box (1pF - 10pF)</td>
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<td>opt 9026</td>
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Portable Voltage, Current, Loop & Temperature Instruments

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<thead>
<tr>
<th>Description</th>
<th>Code 1</th>
<th>Code 2</th>
<th>Option Code</th>
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</thead>
<tbody>
<tr>
<td>1006 DC Millivolt Source - 0.02% Accuracy</td>
<td>C150</td>
<td>C100</td>
<td>opt 9027</td>
</tr>
<tr>
<td>1007 DC Millivolt Potentiometer &amp; Calibrator - 0.02% Accuracy</td>
<td>C150</td>
<td>C101</td>
<td>opt 9027</td>
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<td>1010 DC Voltage Calibrator - 0.02% Accuracy</td>
<td>C151</td>
<td>C102</td>
<td>opt 9021</td>
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<tr>
<td>1017 DC Multifunction V/I/VR Calibrator - 0.005% Accuracy</td>
<td>C152</td>
<td>C109</td>
<td>internal</td>
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<td>1021 DC Current Source With Null Meter - 0.02% Accuracy</td>
<td>C153</td>
<td>C105</td>
<td>opt 9027</td>
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<tr>
<td>1024 DC Current Calibrator with Null Meter - 0.02% Accuracy</td>
<td>C154</td>
<td>C106</td>
<td>opt 9021</td>
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<tr>
<td>1030 Voltage &amp; Current Source (MicroCal) - 0.1% Accuracy</td>
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<td>C110</td>
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<td>1044 DC Voltage and Current Calibrator - 0.05% Accuracy</td>
<td>C156</td>
<td>C133</td>
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<td>1048 Voltage / Current / Loop Calibrator - 0.02% Accuracy</td>
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<td>C138</td>
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<td>1049 PT100 Simulator Handheld (Class A °C)</td>
<td>C161</td>
<td>C114</td>
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<td>1050 PT100 Simulator Handheld (Class A °C+)</td>
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<td>C114</td>
<td>✓</td>
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<tr>
<td>1077 Millamp Transducer/Line Simulator - 0.02% Accuracy</td>
<td>C158</td>
<td>C108</td>
<td>opt 9027</td>
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<tr>
<td>1090 Temperature and Process Calibrator</td>
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<td>C139</td>
<td>✓</td>
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<tr>
<td>7000 RTD Temperature Calibrator</td>
<td>C183</td>
<td>C194</td>
<td>✓</td>
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<tr>
<td>7005 Voltage / Current / Loop Calibrator - 0.01% Accuracy</td>
<td>C184</td>
<td>C195</td>
<td>✓</td>
</tr>
<tr>
<td>7006 Loop Simulator &amp; Source (Loop-Mate 1) - 0.1% Accuracy</td>
<td>C145</td>
<td>C145</td>
<td>✓</td>
</tr>
<tr>
<td>7007 Loop Signal Indicator (Loop-Mate 2) - 0.05% Accuracy</td>
<td>C145</td>
<td>C144</td>
<td>✓</td>
</tr>
<tr>
<td>7050 Process and Thermocouple Calibrator</td>
<td>C180</td>
<td>C192</td>
<td>field case</td>
</tr>
</tbody>
</table>

Electrical Test Calibrators

<table>
<thead>
<tr>
<th>Description</th>
<th>Code 1</th>
<th>Code 2</th>
<th>Option Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>5030 Electrical Tester Calibrator</td>
<td>C201</td>
<td>C137</td>
<td></td>
</tr>
<tr>
<td>5068 Insulation Tester System</td>
<td>C189</td>
<td>C112</td>
<td>field case</td>
</tr>
<tr>
<td>5099 Insulation Tester System</td>
<td>C189</td>
<td>C112</td>
<td>field case</td>
</tr>
<tr>
<td>5070 Micro-Ohmmeter and Docto Test Calibrator</td>
<td>C146</td>
<td>C107</td>
<td>field case</td>
</tr>
<tr>
<td>5080 Portable Appliance Tester Calibrator (PatCal)</td>
<td>C188</td>
<td>C135</td>
<td>field case</td>
</tr>
</tbody>
</table>

Portable Pressure Instruments

<table>
<thead>
<tr>
<th>Description</th>
<th>Code 1</th>
<th>Code 2</th>
<th>Option Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>7010 Pressure Calibrator (Vac to 600bar versions)</td>
<td>C178</td>
<td>C190</td>
<td>field case</td>
</tr>
<tr>
<td>7015 Pressure Calibrator (Vac to 600bar versions)</td>
<td>C178</td>
<td>C190</td>
<td>field case</td>
</tr>
<tr>
<td>7016 Regulated Pressure Calibrator (Vac to 10bar versions)</td>
<td>C178</td>
<td>C190</td>
<td>field case</td>
</tr>
<tr>
<td>7018 Differential Pressure Calibrator (0.2 to 10bar versions)</td>
<td>C178</td>
<td>C190</td>
<td>field case</td>
</tr>
<tr>
<td>7030 Automatic Pressure Calibrator (Vac to 100bar versions)</td>
<td>C228</td>
<td>C229</td>
<td>-</td>
</tr>
<tr>
<td>7090 Handheld Pneumatic Pump Kit (-950bar to 40bar)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>7095 Handheld Hydraulic Pump Kit (0 to 700bar) with hoses, fittings, case</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>7193 Benchtop Pneumatic Calibration Pump (0.95bar vac to 40bar)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7194 Benchtop Pneumatic Calibration Pump (0.95bar vac to 100bar)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7195 Benchtop Hydraulic Calibration Pump (0.9bar vac to 600bar)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7078 Auto Ranging Digital Gauge (Vacuum to 200bar, 0.1% accuracy of setting)</td>
<td>C204</td>
<td>C205</td>
<td>-</td>
</tr>
<tr>
<td>7089/91/94/96 Digital Gauges (7089: vac only / 7091: vac - 40bar / 7094: 100bar / 7096: 700b, 0.2% acc)</td>
<td>C202</td>
<td>C203</td>
<td>opt 9804</td>
</tr>
<tr>
<td>7198 Pressure Calibration Accessories Kit (Adaptors, fittings, connectors, hoses)</td>
<td>-</td>
<td>-</td>
<td>✓</td>
</tr>
</tbody>
</table>

Pressure Range Codes for 7010, 7015, 7016, 7018 and 7030

<table>
<thead>
<tr>
<th>Range (bar)</th>
<th>Vac</th>
<th>0.2</th>
<th>2</th>
<th>5</th>
<th>10</th>
<th>20</th>
<th>35</th>
<th>70</th>
<th>100</th>
<th>200</th>
<th>400</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option Code</td>
<td>7111</td>
<td>7100</td>
<td>7101</td>
<td>7102</td>
<td>7103</td>
<td>7104</td>
<td>7105</td>
<td>7106</td>
<td>7107</td>
<td>7108</td>
<td>7109</td>
<td>7110</td>
</tr>
</tbody>
</table>
### Digital Multimeters

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>5065</td>
<td>6.5 Digit Bench Multimeter</td>
<td>C173, C117 (Main options listed)</td>
</tr>
<tr>
<td>5075</td>
<td>Precision Digital Multimeter</td>
<td>C162, C130 (Main options listed)</td>
</tr>
</tbody>
</table>

### ATE / Bench Calibrators

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>5011</td>
<td>Resistance/Temperature Calibrator</td>
<td>C171, C115 (Main options listed)</td>
</tr>
<tr>
<td>5018</td>
<td>DC/AC Voltage/Current Calibrator</td>
<td>C142, C104 (Main options listed)</td>
</tr>
<tr>
<td>5045</td>
<td>Oscilloscope Calibrator</td>
<td>C147, C128 (Main options listed)</td>
</tr>
<tr>
<td>5077</td>
<td>Power Calibrator</td>
<td>C160, C124 (Main options listed)</td>
</tr>
</tbody>
</table>

### Multifunction Calibrators

#### (main options listed)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>5025E</td>
<td>Entry Level Multifunction Calibrator</td>
<td>C158, C103 (Main options listed)</td>
</tr>
<tr>
<td>5025C</td>
<td>Multifunction Calibrator</td>
<td>C220, C225 (Main options listed)</td>
</tr>
<tr>
<td>5051+</td>
<td>Multifunction Calibration System</td>
<td>C134, C134, C134 (Main options listed)</td>
</tr>
</tbody>
</table>

### Instrument to PC Communication Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>9588</td>
<td>RS-232 Cable</td>
<td>C99, C99 (Main options listed)</td>
</tr>
<tr>
<td>9597</td>
<td>GPIB Cable</td>
<td>C99, C99 (Main options listed)</td>
</tr>
<tr>
<td>9794</td>
<td>GPIB to USB Interface Adaptor</td>
<td>C99, C99 (Main options listed)</td>
</tr>
<tr>
<td>9763</td>
<td>USB to 4 x RS232 Interface Adaptor</td>
<td>C99, C99 (Main options listed)</td>
</tr>
<tr>
<td>9743</td>
<td>PCI to GPIB Interface Card for PC</td>
<td>C99, C99 (Main options listed)</td>
</tr>
</tbody>
</table>

### 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)

#### Extra User Licenses

- EC2FL: EasyCal Additional Full License (secondary user)
- EC2NL: 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 and access levels. For installations of 2 users or less.
- EAD5: EasyAdmin - 5 Users: Security add-on that enables setting of user rights and access levels. For installations of 5 users or less.
- EAD10: EasyAdmin - 10 Users: Security add-on that enables setting of user rights and access levels. For installations of 10 users or less.
- EAD10+: Additional users of EasyAdmin beyond 10 users
- EWC: WebCerts: Online application enabling upload and retrieval of certificates and reports
- EWCETE: WebCerts - Hosted by Time Electronics: Online application enabling upload and retrieval of certificates and reports.
- CREP: Crystal Reports Software: 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
Due to continuous development Time Electronics reserves the right to change specifications without prior notice.