Time Electronics

7051Plus Multifunction Calibrator and Control Centre

About The 7051Plus

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

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

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

Control Centre: A intuitive user interface with large 12.1" touch screen display. The control centre is a PC with a 64 bit dual core processor, running Windows 10. As standard it features the calibrator and multimeter control applications, with the wide range of functions easily selectable using mouse, keyboard or touch screen.

EasyCal: Enables automatic calibration to increase speed and efficiency of work. In addition EasyCal has features to manage and administrate both inventory and quality control. To complement the system a printer and connectivity kit is supplied as standard, for generation of certificates and reports. Further supplied accessories include a bar code reader for quick identification of devices in EasyCal, and label printer for creating stickers and labels to be placed on instruments.

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

Features

- Integral multifunction calibrator and 6.5 digit multimeter
- Touch screen PC control centre with 12.1" display
- Source up to 1050 V AC/DC voltage
- Source up to 22 A AC/DC current
- Source resistance (up to 1 GΩ), capacitance and inductance
- Oscilloscope calibration and optional power calibration
- Measure voltage, current, resistance, frequency
- Thermocouple and PT100 simulation and measurement
- EasyCal software, adaptors and accessories included
- Communicate with EasyCal compatible modules

Calibration Capabilities

- Multimeters, clamp meters, ohmmeters, AC/DC signal sources
- Decade boxes, data loggers, RCL meters
- Tachometers, oscilloscopes, frequency counters, timer counters
- Frequency meters, watt meters, power meters, current probes
- Thermocouples, RTDs, Thermometers, PRTs, thermistors
- Temperature indicators, recorders, controllers, switches
- Loop and process calibrators
- Pressure instruments using additional modules

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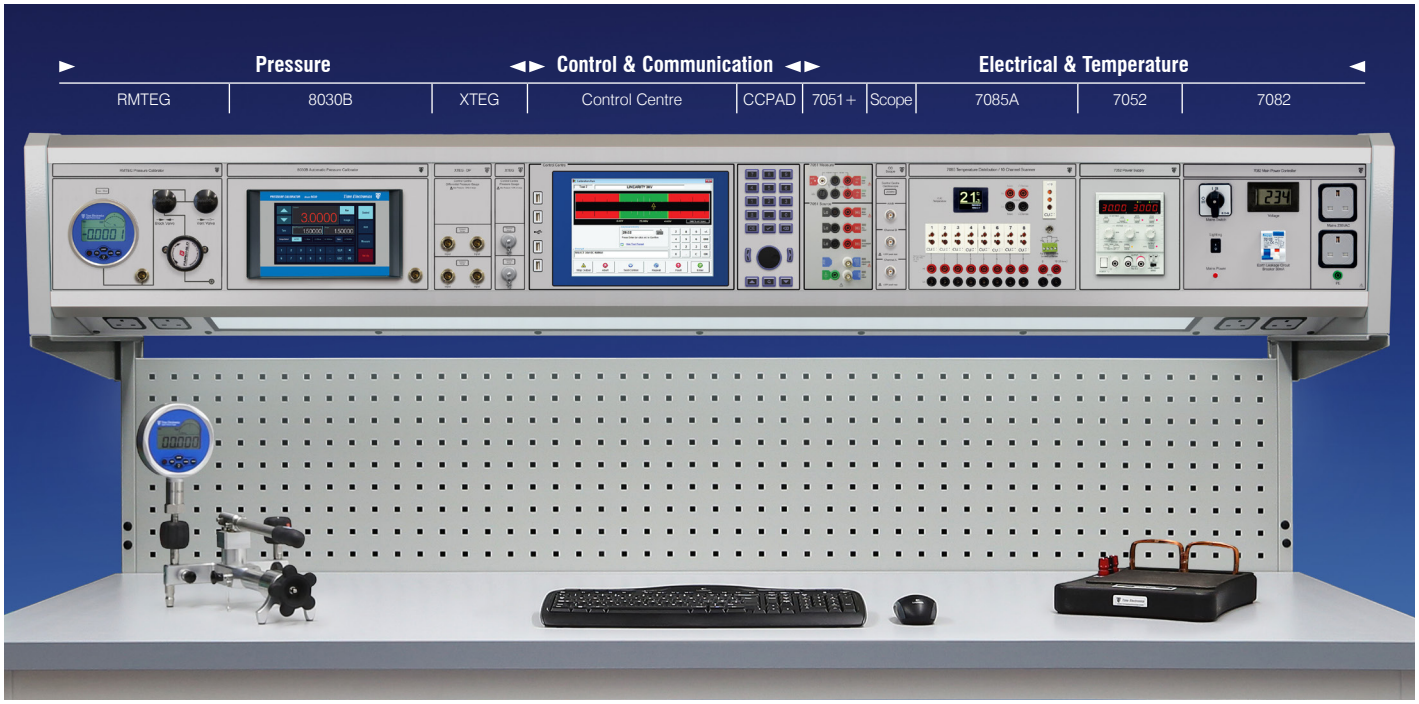
Using the 7051Plus on the CalBench



Control and Communication

The control centre provides users with a large 12.1" touch screen interface for manual operation or EasyCal driven calibration work. The CCPAD option enables a convenient method of data entry, deviation and navigation when using EasyCal. Operators can also use the supplied wireless keyboard and mouse on the desktop.

- 12.1" Touch screen control centre PC
- Manually operate the 7051 calibrator and multimeter functions
- EasyCal software for automation and management
- Control and readback from compatible modules
- Software applications for control centre operated modules like CCSCOPE oscilloscopes and CC-FRQ frequency counters
- CCPAD keypad & jog dial module for EasyCal input and operation

Electrical and Temperature

The 7051Plus provides the source and measure capabilities for electrical, electronic, temperature and frequency calibration work. EasyCal software communicates with the 7085A module to enable multi-channel measurement applications, allowing users to batch test temperature devices like thermocouples.

- 7051Plus used to source/measure electrical and process signals
- EasyCal driven calibration and communication
- 7085A interfaces with EasyCal for batch testing of thermocouples
- Power supply modules like 7052 supplement testing applications
- Control centre operated modules like CCSCOPE oscilloscopes come with dedicated software applications on the control centre
- Adaptors and accessories supplied for use with 7051Plus

Pressure

The control centre section of the 7051Plus communicates with pressure modules. EasyCal can drive pressure controllers and read back from regulated calibrators. XTEG modules are integrated pressure sensors, solely operated by the control centre via a virtual control software application or EasyCal software.

- EasyCal software drives pressure controller modules like 8030B
- Read back from RMTEG and MTEG pressure gauge modules
- XTEG sensor only modules with control centre user interface
- The 7051Plus provides precision mA measure for transmitters etc.
- Read back and control external instruments like digital pressure gauges, via RS-232 communication with the control centre

Adaptors and Accompanying Instruments

The 7051Plus is supplied with a selection of adaptors and accessories to aid usability and enable operators to perform specific applications. EasyCal peripherals such as printer kits are supplied for certificate printing and administration. Accompanying products include dry block calibrators that communicate with EasyCal on the control centre.

- 9780 clamp meter calibration adaptor (shown) supplied
- 9773 optical tacho adaptor included
- 7112 patch box for simple connection to transmitters under test
- EasyCal extras include printer kit, label printer and bar code reader
- Read back and control TE dry block calibrators using EasyCal, via RS-232 or USB communication with the control centre

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7051Plus: Basic Specifications

Calibrator (Source)

Function	Range / Values	Best 1 Year Specification
Voltage DC	0 to ± 1050 V	± 15 ppm of setting
Current DC	0 to ± 22 A	± 80 ppm of setting
Voltage AC	1 mV to 1050 V (10 Hz to 1 MHz, sine-wave)	± 300 ppm of setting
Current AC	10 µA to 22 A (20 Hz to 1 kHz, sine-wave)	± 0.05 %
Clamp Meter Adaptor x50 turn	AC/DC Current up to 1100 A (DC, 45 to 90 Hz)	± 0.5 %
Capacitance	1 nF, 10 nF, 100 nF, 1 µF, 10 µF, 100 µF (100 V max)	± 0.25 %
Inductance	1 mH, 1.9 mH, 5 mH, 10 mH, 19 mH, 50 mH, 100 mH, 190 mH, 500 mH, 1 H, 10 H	± 0.1 %
Decade Resistance	1 Ω to 1 GΩ (decade values)	± 20 ppm of setting
Full Range Resistance	1 Ω to 120 MΩ (variable)	± 100 ppm of setting
Conductance	1 s to 1 ns (fixed values, decade steps)	± 20 ppm of setting
Thermocouple Simulation	-270 to 1820 °C (type J, K, R, T, S, B, E, N)	± 0.15 °C
PT100 Simulation	-180 to 850 °C	± 0.07 °C
Oscilloscope Calibration		
Amplitude	6 mV to 200 V and 6 mV to 2 V 50 Ω (Square-wave or DC)	± 0.05%
Frequency/Period	0.1 Hz to 100 MHz / 10 ns to 10 s (fixed values 1, 2, 5 sequence)	± 0.1 ppm (0.1 Hz to 10MHz / 100 ns to 10 s) ± 20 ppm (20, 50, 100 MHz / 50, 20, & 10 ns)
Duty Cycle	3 frequencies: 100 Hz, 1 kHz, 10 kHz, settable from 0 to 100 %	–
Fast-Rise	< 400 ps. Bandwidth checking up to 400 MHz	–
Option 9769: Scope 2.2 GHz Sweep	100 MHz to 2.2 GHz levelled sine-wave (0.5, 1, 1.5 V pk-pk)	Amplitude ± 1 %, Frequency ± 20 ppm
Option 9797: Power Calibration		
Power	22 A, 1050 V, 23 kW, 45 to 400 Hz	ACV: 0.03 %, DCV: 0.01 %. ACI: 0.1 %, DCI: 0.03 %
Phase/Power Factor	± 90°/ 0.00 to 1.00 PF	± 0.3°

6.5 Digit Multimeter (measure)

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

7051Plus: Basic Specifications (continued)

Control Centre Specifications and Details

Feature	Specifications
Processor	64 bit, dual core (or equivalent).
RAM	16 GB.
Hard Drive	240 GB solid state.
Ports	Front of module: 4 x USB / Under console (LPAC section): 3 x USB, 2 x RS-232, 1 x HDMI.
Display	12.1" touch screen LCD.
Operating System	Windows 10 Pro.
Pre loaded Software Programs	7051 manual control applications (calibrator and multimeter), EasyCal software.
Keypad Module Option	CCPAD: Control centre numeric keypad module with jog dial. For input/control of manual calibration applications & EasyCal software on the control centre.
Supplied Hardware/Accessories	USB keyboard and mouse, inkjet printer, cal and ID label printer, DVD-RW, 4 port USB hub, Numeric key pad, USB memory stick, bar code reader, USB port blocker kit.
Control Centre Operated Module Options	Pressure: 8030B, XTEG, RMTEG, MTEG modules (Pressure control apps and EasyCal software compatible). Signal Analysis: CCSCOPE oscilloscopes / CC-FRQC frequency counter / CC-AFG function generators. Environmental Control: 8002 data logger (logging software application).
Modules with EasyCal Communication	Pressure: 8030B and 8030B-H controller / 8020B indicator / MTEG and RMTEG calibrators Process: 7085A and 8085 temperature distribution modules / 7002, 7003 and 7004 process communicators Electrical: 5065B and 5075B multimeters / 5030B electrical tester calibrator / 8029 electronic load
External Products with EasyCal Communication	TEG digital pressure gauges, dry block calibrators, benchtop calibrators, multimeters, torque analysers.
EasyCal Software Add-ons and Options	9779: Job and address label printer / EC2FL/EC2WL: Additional EasyCal user licenses for separate PCs EAD: EasyAdmin add-on / CREP: Crystal Reports software

General Specifications

Environmental	Specifications/Details
Warm up	30 minutes to full accuracy.
Settling Time	Less than 5 seconds.
Temperature Performance	Operating: 5 to 45 °C. Full Spec: 22 °C ± 3 °C. Storage: -10 °C to 50 °C.
Operating Humidity/Altitude	< 80 % non condensing. Altitude: 0 to 3km. Non operating: 3 km to 12 km.
Line Power	100 to 230 V AC 50/60 Hz. 200 W maximum.
Dimensions	W 425 mm (507 mm with CCPAD option), H 201 mm (primary console fitting only).

Supplied Adaptors and Test leads

Model Code	Details
9780	Clamp meter adaptor x50 turn, AC/DC current up to 1100 A (DC, 45 to 90 Hz).
9773	Optical tacho adaptor – 6 rpm (0.1 Hz) - 600,000 rpm (10 kHz).
7112	Transducer patch box - Provides convenient connection for transducers under test, with 250 Ω resistor.
9796	Premium test lead set General purpose 4 mm test leads / 4 wire screened, 4 mm test leads / BNC test lead / BNC to 4 mm plug 4 mm test lead couplers / Low thermal 4 mm test leads & clips / 4 mm to mini thermocouple / 4 mm to spade adaptors Thermocouple male to male CU / Pair of 4 mm test clips / Wall mount/perfo panel lead holder / Carry case

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EasyCal Software on the 7051Plus - 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 control and communicate with modules and test instruments used on the CalBench. User friendly features and controls aid the calibration process to decrease testing times. EasyCal can also read back values and data from compatible pressure, process and electrical modules, and can be used with external instruments such as dry block calibrators.

For Multiple Industries and Disciplines

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

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

Features

- Supplied as standard with the 7051Plus module
- Communicate with compatible CalBench modules
- Control dry block calibrators, pressure gauges, and more
- Communicate with third party instruments for control & readback
- Automated planning and scheduling
- Print/email/store certificates and reports
- Network compatible
- Produce calibration labels
- Quickly generate procedures using templates and wizards
- 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
- Optional HART and Foundation Fieldbus communication
- Secure user log in and electronic signatures
- Create uncertainty tables for laboratory and site

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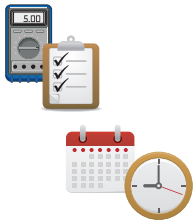
EasyCal Software on the 7051Plus

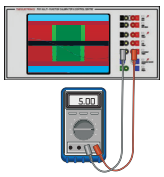
Automating the Calibration Process with EasyCal

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 7051Plus and EasyCal

Results/reports are stored and printed

Certificate is issued and unit is returned

Pre-Cal | Cal | Post-Cal

EasyCal: For the Calibration Process

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

Pre-Calibration

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

Calibration

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

Post Calibration

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

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