



5022 Programmable Multi-Function Calibrator

- 0 - 1 kV AC/DC Voltage
- 0-10A AC/DC Current
- 10Ω – 10MΩ Resistance
- GPIB interface
- Autocal facility
- EasyCal Calibration Software compatible

The 5022 is a multi-function calibrator, with AC/DC voltage and current ranges plus resistance. It is suitable for calibration of digital and analogue multi-meters and a variety of general purpose measuring instruments.

General Purpose Interface Bus (GPIB)

The interface allows operation remotely from a PC or GPIB controller. Simple high level programming commands provide easy setting of range and value. Error condition readback is also provided.

Offset and Deviation

Offset is used to back off initial zero values on the unit under test and Deviation allows the output to be changed incrementally by up to +/-10%. The display then reads directly in % error which simplifies the calibration process.

Error Detection and Self Test

The internal software constantly monitors the output and displays and transmits (over the GPIB), error messages on detection of a fault or overload condition. A built in self-test program can also be run to check that key internal functions are operating correctly and help with fault diagnosis.

Six Wave Forms from 15 Hz to 20 kHz in 5 Hz Steps

In addition to DC and AC Sine output, square, trapezoidal, triangular, ramp up and down waveforms are available. This enables checking the true 'RMS' performance of multi-meters, linearity of chart recorders, and amplitude checks on oscilloscopes. Additionally, a slow sweep function allows analogue meters to be checked for sticking of the pointer.

Safe High Voltage Operation

Emphasis has been placed on safety. Output voltages greater than 50 volts can only be selected after pressing a safety interlock key. On selection of an output greater than 40V, a programmed 3 second delay, audio bleep and flashing led, warns the user.



Easy Recalibration

Recalibration is from the front panel or over the GPIB bus and takes less than 20 minutes. The Calibration constants are held in non-volatile memory so that no trimmer settings are required. A 'cal key' provides calibration security.

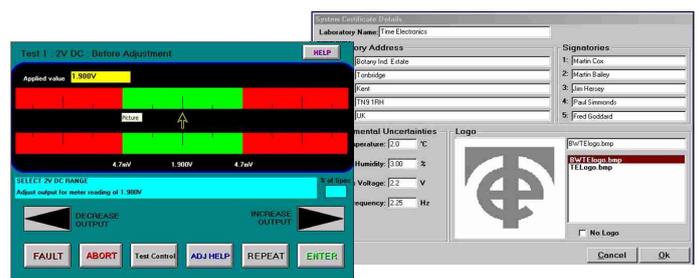
EasyCal Calibration Software

A fully automatic calibration station can be configured using Time Electronics PC based EasyCal software package. The user's Instrument/Equipment data base is set up along with a calibration Procedure data base. Contained in the procedures are sets of pre-defined calibration tests for each type of instrument. When an instrument is ready for re-calibration the system automatically recalls the information and the PC automatically steps through the tests.. It sets up the calibrator over the GPIB bus and prompts the user to select the required range on the unit under test. On completion of the tests the results (which are calculated using the spec figures held in the Procedure) are written away to a Results database on the PC's hard disk. Calibration certificates to ISO 9000 or Namas standard can be printed out on demand.

EasyCal software is an optional extra and comes ready to run on a PC (Pentium + Windows 95 or better) . A GPIB interface card and cable are also required in the PC – available from Time Electronics or elsewhere.

Inventory Management

An optional add-on for EasyCal is Inventory Management. This allows the user to maintain his instrument/equipment database and keep track of where all the items are, additionally printed reminders can be sent out when re-calibrations are due. It is possible to keep records for a variety of equipment on the database – not only that which is calibrated by the system.



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SPECIFICATIONS

Stability and Accuracy specifications are show as (ppm of setting + ppm of range) and apply for settings between 10% - 100% of range. Specifications given below apply at ambient temp of 20 °C +/- 2°C and after the calibrator has warmed up for at least 1 hour. All values are relative to calibration standards.

D.C. VOLTAGE

RANGE	24 HOUR STABILITY PPM	ACCURACY PPM			T.C ppm/°C	OUTPUT RESISTANCE	DRIVE CURRENT	RESOLUTION
		90DAY	180DAY	1YEAR				
20mV	10+5	20+5	25+5	30+5	5	10Ω	S/C	20nV
200mV	7+5	20+5	25+5	30+5	4	10Ω	S/C	200nV
2V	3+2	20+5	25+5	30+5	3	0.1Ω	100mA	2uV
20V	3+2	20+5	25+5	30+5	3	0.1Ω	100mA	20uV
200V	15+10	35+10	40+10	50+10	5	10Ω	10mA	200uV
1kV	15+10	35+20	40+20	50+20	5	10Ω	10mA	2mV

Note: All specs +/- 4 uV - thermal emf effects. Noise: 20mV to 20V ranges = 20ppm of range, 200V to 1kV ranges = 40ppm of range (0.1Hz to 1Hz RMS)

A.C. VOLTAGE (Sine Wave)

RANGE	FREQUENCY	24 HOUR STABILITY %	ACCURACY %			T.C ppm/°C	OUTPUT RES.	DRIVE CURRENT	RESOLUTION
			90DAY	180DAY	1 YEAR				
20mV	40Hz – 1kHz 1-2kHz 2-20kHz	0.01+0.005 0.03+0.02 0.05+0.03	0.03+0.008	0.04+0.008	0.05+0.008	15	10Ω	S/C	20nV
200mV			0.07+0.05	0.08+0.05	0.1+0.05		10Ω	S/C	200nV
2V			0.35+0.1	0.4+0.1	0.5+0.1		0.1Ω	100mA	2uV
20V			0.4+0.1	0.5+0.1	0.5+0.1		0.1Ω	100mA	20uV
200V	40Hz – 450Hz	0.02+0.005	0.045+0.01	0.05+0.01	0.06+0.01	15	10Ω	10mA	200uv/2mV
1kV			0.045+0.01	0.05+0.01	0.06+0.01		10Ω	10mA	200uv/2mV

Note: Frequency Accuracy +/- 0.01%, T/C 20 ppm/°C, Resolution 5Hz, range 15Hz to 20kHz. Drive current shown as peak values. All A.C specifications +/- 30uV

D.C. CURRENT

RANGE	24 HOUR STABILITY PPM	ACCURACY PPM			T.C ppm/°C	OUTPUT RESISTANCE	DRIVE VOLTAGE	RESOLUTION
		90DAY	180DAY	1 YEAR				
200uA	30+10	50+30	70+30	100+30	10	10GΩ	15V	200pA
2mA	25+10	50+30	70+30	100+30	10	1GΩ	15V	2nA
20mA	20+10	50+30	70+30	100+30	10	100MΩ	15V	20nA
200mA	20+10	50+30	70+30	100+30	10	10MΩ	15V	200nA
2A	50+20	100+60	140+60	200+60	15	1MΩ	5V	2uA
10A	0.03%+0.02%	0.07%+0.03%	0.08%+0.03%	0.1%+0.03%	30	100kΩ	1.2V	20uA

Note: All specifications +/- 30 nA

A.C. CURRENT (20Hz to 1kHz Sine Wave)

RANGE	24 HOUR STABILITY %	ACCURACY %			T.C ppm/°C	OUTPUT RESISTANCE	DRIVE VOLTAGE	RESOLUTION
		90DAY	180DAY	1YEAR				
200uA	0.01+0.008	0.04+0.01	0.045+0.01	0.05+0.01	20	10GΩ	15V	200pA
2mA	0.01+0.008	0.04+0.01	0.045+0.01	0.05+0.01	20	1GΩ	15V	2nA
20mA	0.01+0.008	0.04+0.01	0.045+0.01	0.05+0.01	20	100MΩ	15V	20nA
200mA	0.01+0.008	0.04+0.01	0.045+0.01	0.05+0.01	20	10MΩ	15V	200nA
2A	0.02+0.008	0.05+0.01	0.06+0.01	0.07+0.01	30	1MΩ	5V	2uA
10A	0.04%+0.02%	0.07+0.03	0.08+0.03	0.10+0.03	50	100kΩ	1.2V	20uA

Note: All specifications +/- 50 nA. 2 & 10 Amp specifications apply up to 500 Hz only.

RESISTANCE

VALUE	24 HOUR STAB. PPM	ACCURACY PPM			T.C ppm/°C
		90DAY	180DAY	1YEAR	
10Ω	200	700	750	800	10
100Ω	25	50	60	70	5
1kΩ	10	25	40	50	5
10kΩ	6	25	40	50	5
100kΩ	6	25	40	50	5
1MΩ	15	60	70	80	5
10MΩ	60	200	250	300	10

GENERAL INFORMATION

Power: 110V/120V/220V/240V A.C (+/-5%) 50/60Hz
Dimensions: 440 x 150 x 415 mm (17x6x16 ins)
Weight: 15Kg (34 lbs)

Notes:

A.C Specifications include the effects of noise and distortion in the 10Hz to 20KHz range. 4% over-range available on all ranges. Voltage and current limits are stated as Peak Values.

ORDERING INFORMATION

Description	Order Code
30ppm Programmable Multi-function Calibrator	5022
UKAS Calibration Certificate	9126
NPL Traceable Calibration Certificate	9167
EasyCal Software	9747
GPIB Interface Card	9343

Due to continuous development Time Electronics reserves the right to change specifications without prior notice.