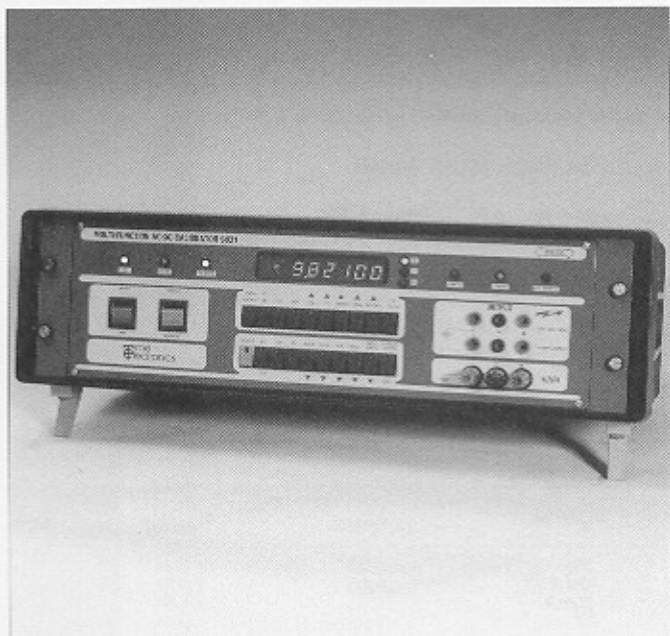




Data Sheet 9821 Programmable Multi-Function Calibrator

- 0 - 1kV AC/DC Voltage
- 0 - 10A AC/DC Current
- 10Ω - 10MΩ Resistance
- Autocal facility
- IEEE-488 interface
- 2 Year warranty



Introduction

The 9821 is a multi-function calibrator, with AC/DC voltage & current ranges and resistance and is suitable for calibration of digital and analogue multi-meters.

IEEE Interface supplied as Standard

The IEEE-488 interface allows automatic computer control needed for low cost calibration of a large number of multi-meters. The simple high level programming language gives full control of the 9821, enabling repetitive calibration work to be greatly speeded up.

Offset and Deviation

Offset store allows input of zero offset values. Digital deviation allows the output to be changed by up to 10%. The deviation can then be read directly from the display showing the percentage error in the reading of the meter under test.

Self-Test and Error Detection

The 9821 software constantly monitors the output and displays error messages on detection of a fault or overload condition. A 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

Sine, square, trapezoidal, triangular, ramp up and down waveforms are provided. This extends the capability of the 9821 to checking the 'RMS' performance of multi-meters, linearity of chart recorders, and amplitude checks on oscilloscopes. Additionally, a slow sweep function enables the movement of needles of an analogue meter to be checked for stiction.

Safe High Voltage Operation

Emphasis has been placed on safety features. Output voltages greater than 40 volts can only be selected after pressing a safety interlock key. On selection of an output greater than 40V, there is a programmed 3 second delay, an audio warning bleep and a continuous flashing warning light on the front panel.

Easy Recalibration

The 9821 can be recalibrated from the front panel or over the IEEE bus, ensuring fast and accurate recalibration in less than 20 minutes. Calibration constants are held in non-volatile memory, the removal of calibration trimmers giving improved reliability and repeatability. A simple 'cal key' provides calibration security.

19999 Full Scales with 5% Over-Range

For accurate calibration of DMM's, the ranges on the 9821 have been designed to match the full scales of most digital meters.

10 Amps

The built-in 10 amp range of the 9821 allows full calibration of the large numbers of meters with 10 amp full scales, without time consuming, bulky add-on amplifiers.

Portable

The 9821 weighs only 15 kg, and is supplied fitted in a standard 3U Eurocase, remarkably portable for a full function calibrator!



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Specifications

The accuracy specifications given below apply for a period of 1 year at a temperature of 20°C ± 2°C, after a minimum warmup period of 1 Hour, relative to calibration standards. Specifications describe maximum conditions and apply from 10%-100% of range.

D.C. VOLTAGE

RANGE	ACCURACY %		T.C. ppm/°C	OUTPUT RESISTANCE	DRIVE CURRENT	RESOLUTION
	SETTING	RANGE				
20mV	± 0.01	± 0.008	20	10Ω	S/C	2μV
200mV	± 0.01	± 0.008	20	10Ω	S/C	20μV
2V	± 0.01	± 0.008	20	0.1Ω	100mA	200μV
20V	± 0.01	± 0.008	20	0.1Ω	100mA	2mV
200V	± 0.01	± 0.008	20	10Ω	10mA	20mV
1kV	± 0.02	± 0.016	20	10Ω	10mA	200mV

Note : All specifications ± 4μV. 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	ACCURACY %		T.C. ppm/°C	OUTPUT RESISTANCE	OUTPUT CURRENT
		SETTING	RANGE			
20mV	40Hz-1kHz 1-20kHz	± 0.08 ± 0.5	± 0.02	30	10Ω	S/C
200mV			± 0.2		10Ω	S/C
2V					0.1Ω	100mA
20V					0.1Ω	100mA
200V	40-450Hz	± 0.1	± 0.03	30	10Ω	10mA
1kV						

Note : Frequency Accuracy ± 0.01%, T/C 20ppm/°C, Resolution 5Hz, range 15Hz to 20kHz. Drive Current shown as peak values. All A.C specifications ± 50μV.

D.C. CURRENT

RANGE	ACCURACY %		T.C. ppm/°C	OUTPUT RESISTANCE	DRIVE CURRENT	RESOLUTION
	SETTING	RANGE				
200μA	± 0.03	± 0.01	25	10GΩ	15V	20nA
2mA	± 0.03	± 0.01	25	1GΩ	15V	200nA
20mA	± 0.03	± 0.01	25	100MΩ	15V	2μA
200mA	± 0.03	± 0.01	25	10MΩ	15V	20μA
2A	± 0.03	± 0.01	35	1MΩ	5V	200μA
10A	± 0.15	± 0.05	40	100kΩ	1.2V	2mA

Note : All specifications ± 50nA.

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

RANGE	ACCURACY %		T.C. ppm/°C	OUTPUT RESISTANCE	DRIVE CURRENT	RESOLUTION
	SETTING	RANGE				
200μA	± 0.1	± 0.02	35	10GΩ	15V	20nA
2mA	± 0.1	± 0.02	35	1GΩ	15V	200nA
20mA	± 0.1	± 0.02	35	100MΩ	15V	2μA
200mA	± 0.1	± 0.02	35	10MΩ	15V	20μA
2A	± 0.1	± 0.02	45	1MΩ	5V	200μA
10A	± 0.15	± 0.05	55	100kΩ	1.2V	2m

Note : All specifications ± 80nA. 2 & 10 Amp specifications to 500Hz.

RESISTANCE

VALUE OHMS	ACCURACY %	T.C. ppm/°C
10	± 0.1	30
100	± 0.02	20
1k	± 0.01	10
10k	± 0.01	10
100k	± 0.01	10
1M	± 0.01	10
10M	± 0.05	10

Notes :

A.C. Specifications include the effects of noise and distortion in the 10Hz to 20kHz frequency range.

4% over-range available on all ranges.

Voltage and current limits are stated as Peak Values.

General Information

Power: 110V / 120V / 220V / 240V A.C. (± 5%) 50 / 60 Hz.
Dimensions / Weight 315 x 170 x 110 mm / 15kg

Ordering Information

Description	Order Code
100ppm Programmable Multi-Function Calibrator	9821
NAMAS Calibration Certificate	9125
NPL Traceable Calibration Certificate	1098