SPECIFICATIONS

DC VOLTAGE RANGES	1.2V 12V 120V 1200V
RESOLUTION	1μV 10μV 100μV 1mV
ACCURACY (25°C ±3°C)	± 10ppm of setting ± 4 ppm of range ± 2μV
TEMPERATURE COEFFICIENT	1 ppm/°C.
STABILITY	5 ppm/30 days.
RIPPLE AND NOISE	4 ppm of range ± 2μV pk to pk (.1Hz to 10Hz)
LOAD REGULATION	10 ppm from no load to full load.
CURRENT	20mA
SETTLING TIME	3ms/V of change ascending (and descending for changes < 100V) plus 300ms. 10ms/V for descending changes greater than 100V.
WARM UP TIME	Within 30 ppm of final value within 15 seconds, 30 minutes to rated accuracy
ISOLATION	Optical: Output may float up to 500 volts from chassis potential.
SHORT CIRCUIT PROTECTION	Current limits at 25 milliamperes and automatically switches to standby after 100 milliseconds overload.
OPERATIONAL ENVIRONMENT	0 to 50°C, 0 to 80% relative humidity, to 10,000 ft.
STORAGE ENVIRONMENT	−20 to +85°C, 0 to 95% relative humidity, 30,000 ft.
FULL SCALE VOLTAGE	1222221 (Decimal point ignored).
POWER REQUIREMENTS	40 watts at 115 or 230 VAC, ±10%, 50 to 60 Hz.
WEIGHT	18 pounds net; 25 pounds shipping weight.
SIZE	17 inches W, 3-1/2 inches H, 14 inches deep.

SECTION I - GENERAL INFORMATION

1.1 DESCRIPTION

1.2 Valhalla Scientific's Model 2701B Programmable Precision DC Calibrator is a highly stable precision DC voltage source. Front panel switches permit selection of output voltages from 1 microvolt through 1,222.221 volts in four ranges, with a resolution of one part in one million.

1.3 The instrument uses a precision reference for output control. The voltage level of this reference is dependent on the duty cycle of a digital pulse generator which, in turn, is controlled by the front panel voltage selection switches. Since this technique eliminates the shortcomings of conventional resistive voltage dividers, the accuracy and stability of the instrument are independent of switch control resistance. Digital control of the pulse generator greatly simplifies remote voltage selection through an optional IEEE-488 interface.

1.5 OPTIONAL EQUIPMENT

1.6 A number of optional equipment items are available to increase the utility of the Model 2701B Programmable Precision DC Calibrator. These are described in the following paragraphs.

1.7 OPTION "TL-3" IEEE-488

1.8 Option IEEE-488 permits control of the Model 2701B through the IEEE-488 General Purpose Interface Bus. The bus coupler is mounted inside the instrument and a 24-pin IEEE-488 connector and address switch are mounted on the rear panel. This option may be installed at the time the instrument is purchased or may be incorporated as a factory retrofit. Installation and operating instructions are contained in Section VI.

1.9 OPTION C

1.10 Option C is a 48 inch shielded cable with a dual banana plug on one end, and alligator clips on the other.

1.11 OPTION BBC

1.12 Option BBC is a 48 inch shielded cable with dual banana plugs on both ends.

1.13 OPTION PRM

1.14 Option PRM enables the output polarity of the Model 2701B to be reversed via the IEEE-488 interface.

1.15 MODEL 2704

1.16 The Model 2704 is a precision 100:1 resistive voltage divider. When used with the Model 2704, the 2701B will provide 0.12 volts full scale with 0.1 microvolt resolution on its 12 volt range, and 12 millivolt full-scale with 10 nanovolt resolution on its 1.2 volt range.