



Ballantine Laboratories, Inc.

Model 1398



Product Specifications

Frequency Ranges

The useable frequency range is from 5 Hz to more than 10 times higher than that listed in the table below, e.g. T2.5-1 volt and T5-2 volt can be used beyond 10 MHz.

Certified Ranges

Range Resistors (Ohms)	TVC	Rated Voltage (V)	Frequency Range (kHz)
None	T2.5	1	0.02 – 1000
None	T5	2	0.02 – 1000
RM-1-800	T2.5	3	0.02 – 1000
RM-1-800	T5	6	0.02 – 1000
RM-2-3600	T2.5	10	0.02 – 1000
RM-2-3600	T5	20	0.02 – 1000
RM-3-11.6k	T2.5	30	0.02 – 1000
RM-3-11.6k	T5	60	0.02 – 1000
RM-4-39.6k	T2.5	100	0.02 – 1000
RM-4-39.6k	T5	200	0.02 – 100
RM-5-120k	T2.5	300	0.02 – 100
RM-5-120k	T5	600	0.02 – 100
RM-6-200k	T2.5	500	0.02 – 100
RM-6-200k	T5	1000	0.02 – 100

Calibration Uncertainty

The ac-dc difference at each frequency is measured with a standard TVC traceable to NIST by Ballantine's automatic measurement system.

Frequency (kHz)	Uncertainty		(PPM)	
	1 to 20V	20 to 100V	100 to 600V	1000V
0.2 to < 0.05	40	40	40	50
0.05 to 20	15	20	30	45
> 20 to 50	30	30	40	65
>50 to 100	50	20	60	90
>100 to 1000	80	100	-	-

The total measurement uncertainties include NIST uncertainties and Ballantine uncertainties.

Input Resistance

400 ohms +/- 20 ohms per nominal volt when using T2.5;
200 ohm +/- 10 ohm per nominal volt when using T5.

Input Capacitance

20 pF.

Thermocouple

(23 +/- 2C)

Nominal Heater Current

2.5 mA for T2.5, 5 mA for T5

Max. Safe Heater Current

130% of nominal current.

Nominal Couple Output at Nominal Heater Current

7 mV for T2.5

9 mV for T5

Couple Resistance

8 ohm for T2.5

25 ohm for T5

Voltage from Heater to Couple

Normally should not exceed 10 V, absolute maximum 50V peak.

Operational Environment

Temperature: +4°C to +40°C with stable temperature

Relative Humidity: 0 to 90%.

Altitude: Sea level to 10,000 ft.

Mechanical Specifications

2" diameter for TVC's

3" diameter for range resistors

Connectors

Input-Type N

Output - 3 pin Male MS3102A-10SL-3P

The 1398A incorporates a 3 pin output connector. Grounding of the output system to the 1398A Series enclosure through one pin of the output connector Tee avoids danger of exceeding voltage breakdown between heater and couples.