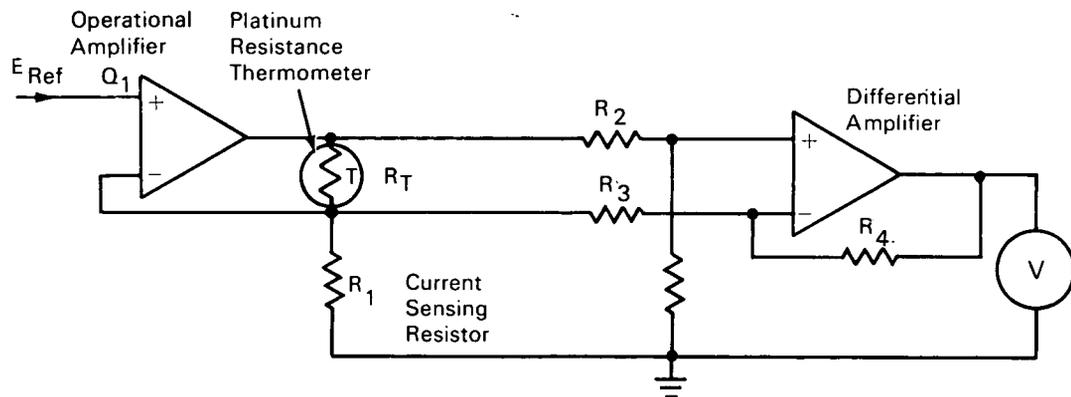


# NASA TECH BRIEF



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## Simple, Accurate Temperature-Measuring Instrument



A simple, compact instrument, composed of integrated circuits and a temperature-sensitive platinum resistor,  $R_T$ , measures temperature over a wide dynamic range. The platinum resistor is placed in a feedback loop of the operational amplifier,  $Q_1$ , shown in the figure. Current through the resistor is sensed by  $Q_1$  which varies the voltage drop across  $R_T$  in order to maintain a constant voltage across  $R_1$ . The voltage variation of the temperature sensor, which is proportional to the temperature change, is amplified by a differential amplifier and displayed on a digital voltmeter. Ultimate accuracy of the instrument is limited by the nonlinearity of the platinum resistor. With proper calibration and current regulation to within 0.01%, a measurement accuracy of 0.05% can be achieved.

### Note:

Requests for further information may be directed to:

Technology Utilization Officer  
Manned Spacecraft Center, Code BM7  
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Reference: B70-10303

### Patent status:

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