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A Domicile Thermo-Detector

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A report on
the design and construction
of

A DOMICILE THERMO-DETECTOR

presented to the faculty of
The Department of Electrical Technology
Purdue University at Fort Wayne
by

Richard W. Poinsett

April 25, 1975

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ABSTRACT

The Domicile Thermo-detector is a digital indoor/outdoor thermometer for the home. It displays the ambient temperature in degrees Fahrenheit on a light-emitting diode readout. The sensors are silicon diodes which are remote from the case. When the current through a diode is constant, the forward voltage across the diode decreases linearly with temperature. This decreasing voltage is changed into a signal that increases with temperature by a difference amplifier. The increasing voltage is converted to a digital representation by a counter-ramp analog-to-digital converter. Display is for 10 seconds at 10 second intervals. Temperature range is 01-99 degrees Fahrenheit, and accuracy is ± 2 degrees Fahrenheit. Power is from 120 volt a-c 60 Hz house current.