



A COST-EFFECTIVE AND ACCURATE ELECTRICAL IMPEDANCE MEASUREMENT CIRCUIT DESIGN FOR SENSORS

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Abstract- A circuit design with bespoke control software is described which has delivered precision in electrical impedance measurements of ~ 10ppm, after calibration. It is low-cost and applicable to jobs such as direct measurement using a sensor whose resistance changes with some physical quantity of interest; calibration at end of line in the production of such sensors; or calibration of equipment which may be out of warranty. It was developed using resistance temperature detectors (RTDs).

Index terms: bias; calibration; accuracy; precision; drift; Kelvin 4-wire circuit; Anderson loop.