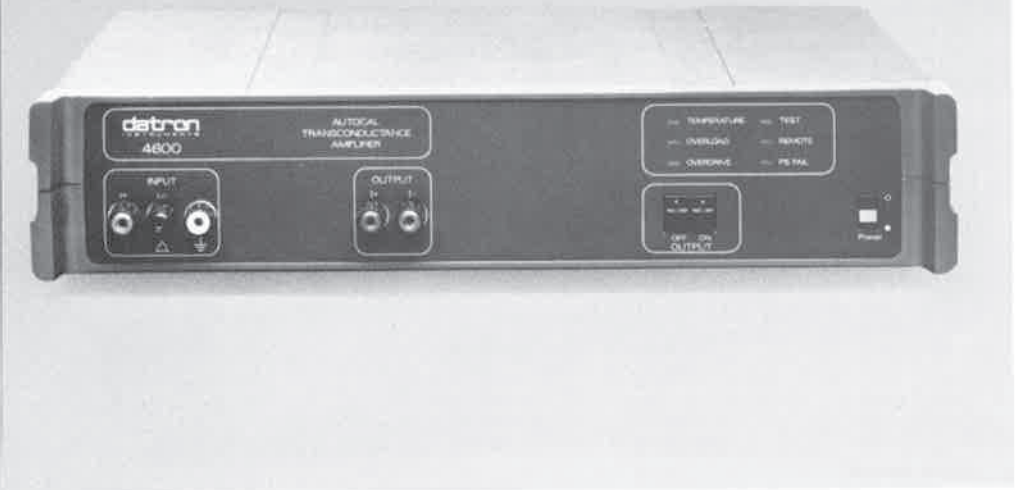

Transconductance Amplifier

- **Extends Calibrator Current to 11A DC & AC**
- **Programmable From 4707, 4700 & 4705**
- **Rugged & Compact**

A significant proportion of lower performance bench and handheld DMMs are capable of measuring currents of up to 10A or more. In the interests of traceability and operator safety, these instruments require calibration at these higher current levels. The model 4600 Transconductance Amplifier is an attractive, compact solution, extending the current sourcing capabilities of the Datron range of Multifunction Calibrators and Standards to 11A DC or rms AC. It is designed for, but not limited to, operation in conjunction with a model 4707, 4700 or 4705 multifunction unit forming a combination that offers a unique level of performance and functionality.

Solo Mode

Working on the principle of converting a voltage input to a current output, with a transfer characteristic of 1 Amp DC or AC output for 1V DC or AC input, it may be coupled to any convenient voltage source. With total 90 day, ±1°C accuracies to ±125 ppm (DC currents from 0 to 11A) and ±430 ppm (AC currents from 0.9 to 11A at frequencies from 10 Hz to 5 kHz), a sufficient margin of calibration accuracy is assured over the performance of bench and handheld DMMs.

Slave Mode

When used in conjunction with a compatible model 4707, 4700 or 4705, two cables connect the Transconductance Amplifier to the Calibrator. The first cable is fully shielded and carries the analog voltage from the rear panel of the Calibrator to the rear panel of the Amplifier. A digital cable carries control signals between the two rear panels enabling the Calibrator to automatically determine the presence of the Amplifier, and control it. The 10A range of the Calibrator is then enabled, and the user is able to program the required current output from the front panel or IEEE-488 interface of the Calibrator.

Calibration

For use in the solo mode, where the Calibrator has no control over the amplifier, there are a series of easily accessible trimpots that allow periodic re-calibration of the model 4600 circuitry. The slave mode, however, eliminates the need for any mechanical adjustments during the re-calibration process, as it utilizes the Autocal technique employed in the Calibrator. At calibration, the Calibrator is informed of the voltage output required for a given output current at the terminals of the model 4600 and the Calibrator, in effect, stores the transconductance characteristics of the Amplifier. During normal operation, the Calibrator calculates the voltage required for the requested current output and automatically makes the necessary corrections.

SPECIFICATIONS

DC Current

Total Uncertainty Relative to Voltage Source: 90 day, 23°±1°C, ±80 ppm output ±500μA.

Temperature Coefficient (23°±10°C): 7 ppm/°C.

Input Impedance: 300kΩ.

Compliance: >2V.

AC Current

Total Uncertainty Relative to Voltage Source: 90 day, 23°±1°C, ±(330 ppm output +1.1 mA) 10 Hz-1 kHz. ±(0.1% output + 1.4 mA) 1-5 kHz.

Temperature Coefficient (23°±10°C): 10 ppm/°C.

Distortion:
0.2% (10 Hz-1 kHz).
0.5% (1-5 kHz).

Input Impedance: 300kΩ in parallel with 100 pF.

Compliance: >2Vrms.

GENERAL

Compatibility: Slave Mode compatible with all 4700 series multifunction calibrators equipped with firmware of issue 5.0 and above.

Isolation: 100V pk I-to-Chassis.

Output Protection: Fully protected against open circuit outputs.

Input Protection: 1.1kV DC or rms AC (10 sec), 240V DC or rms AC (continuous).

Calibration: Trimpots (Solo mode), Autocal from front panel or IEEE-488 interface of calibrator (Slave mode).

Environmental:
Operating temp: 0° to +50°C.
Storage temp: −40° to +70°C.

Dimensions: 89 mm (3.5 in.) high; 455 mm (17.9 in.) wide; 420 mm (16.5 in.) deep.

Weight: 10 kg (22 lb).

Power: 100/120/220/240 Vac ±10%. 50 or 60 Hz. Consumption 200W.

OPTIONS & ACCESSORIES

80: 115V 60 Hz Line Operation.
81: 115V 50 Hz Line Operation.
90: Rack Mounting Kit.
440151: Slave Mode Lead Kit.
440154: Current Output Lead Kit.

FACTORY/FOB
Indianapolis, IN
Norwich, England