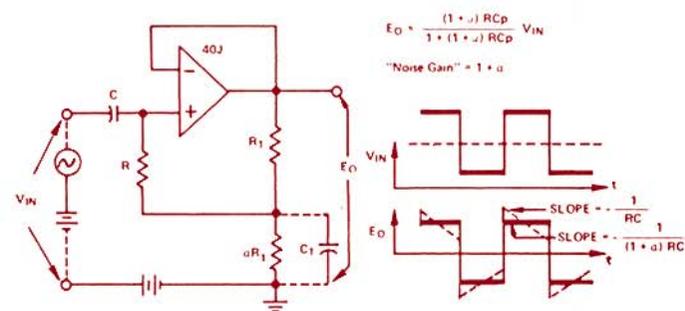


Bootstrapped AC Coupling

In this circuit, the coupling time constant is increased by $(1 + a)$. If $R = 10M\Omega$, $C = 1\mu F$, $a = 99$, $R_1 = 100\Omega$, the RC of 10 seconds is increased to 1000s. The magnification, $1 + a$, can be adjusted by a low-resistance pot. If the input is caused to "block" by a large transient, the recovery time to the linear range is governed by the shorter RC.

Disadvantages are higher "noise gain" (amplifying V_{OS} and $I_b R$) and reduced bandwidth (often unimportant). C_1 helps stability and reduces high-frequency noise gain. ($a' = a / [1 + aR_1C_1p]$)



Improved Products

MODEL 42 FET-INPUT ELECTROMETER: The popular Model 42 family† now has greatly-improved specifications. For example, the key parameters — voltage drift and bias current — for Model 42L are $25\mu V/^\circ C$ and $75fA$ (viz., $75 \times 10^{-15} A$). Undoubtedly among the best values for OEM designs, Model 42 has 110dB open-loop gain (3×10^5), 1MHz gain-bandwidth, and CMR of 66dB at $\pm 1V$ common-mode. Input specifications have also been improved for the 42J & K.

Members of the 42 family may be used in either single-ended or differential applications for performing measurements of low currents or of low voltage at high impedance. Examples include photo- or ion-current transducers, pH cells, and systems where high speed and low input capacitance are essential for accurate measurement at high-impedance levels (such as are found in automated testing). Prices (1-9) are: 42J, \$25; 42K, \$32; 42L, \$37.

MODEL 605 INSTRUMENTATION AMPLIFIER: Model 605§ has always provided good value, with its excellent linearity and low drift referred to the input (the important spec for drift at high gain). Now, the specification of "r.t.o. drift" (the important drift at low gain) has been reduced from $150\mu V/^\circ C$ to $100\mu V/^\circ C$ (605J), $75\mu V/^\circ C$ (605K), $50\mu V/^\circ C$ (605L). Other specs include CMR of 70dB with $1k\Omega$ source unbalance, non-linearity of 0.005%, and r.t.i. drift as low as $0.5\mu V/^\circ C$. For the relationship of "r.t.i." and "r.t.o." drift and gain, see *Dialogue*, Vol. 6, No. 2, page 14. Price is unchanged: for 605J, K, & L, \$59, \$65, \$80 (1-9).

†For a new data sheet on the 42 family, request K16.
§For a new data sheet on the 605 family, request K17.

LAST ISSUE OF ANALOG DIALOGUE Vol. 7 (1973), No. 1

If you haven't seen the last issue of *Dialogue**, here's what you've missed

- Design of a Slim, Low-Cost 3½ DPM (AD2010)*
- Synchro-Digital Conversion Devices
 - 14-Bit, 10-Bit, and 2-Speed Synchro/Digital Converters
 - 5-Digit Synchro-Angle Display Meter
- Fast, High-Resolution A/D Converters (ADC1103)
- Low-Cost A/D Converter with 3½ BCD Output (ADC1100)
- Four New IC Operational Amplifiers
 - AD509: Fast Op Amp ($2\mu s$ Settling Time to $<0.01\%$)
 - AD504M: Lowest Noise and Drift
 - AD506L: Economical Low-Drift FET-Input Op Amp
 - AD507S: Wide-Temperature-Range General-Purpose Op Amp

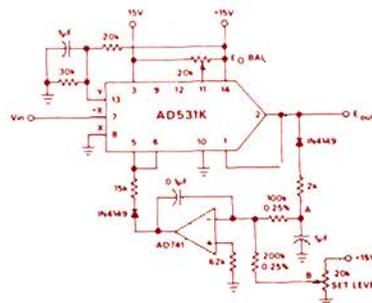
Not by Drift Alone... (Chapter 2. The 741 Op Amp Family)
The AD520: Not an Op Amp But an Instrumentation Amplifier

Application Briefs:

- True-RMS Measurement with the AD531*
- 30dB Automatic Gain Control (see also Erratum below)*
- Vector Difference $\sqrt{V_a^2 - V_b^2}$ with a Single AD531*
- Low-Noise, Low-Drift FET-Input Amplifier Design*
- Book Review: *Operational Amplifiers*, by G. B. Clayton
- Errata: *Analog-Digital Conversion Handbook*
- Editorial Comments: *The Two-Converter Fallacy*

If you missed the last issue, you were also a bit fortunate to have missed one of our more-devastating errors: the power-supply connections of the AGC circuit (page 13) were reversed. The correct circuit is shown below. If you have that issue, please scrawl the following changes on the figure now:

1. Exchange the polarities of +15V and -15V to pins 14 and 3
2. Reconnect the fixed 20k resistor to +15V



FREE CATALOG

The 208-page 1973 Analog Devices *Product Guide* is now available. It provides data on our entire product line, including more than 40 new products and 3 new product-areas.

Everyone on our mailing list *should* have received a copy. If you have not received a copy, but want one, request K19.



*For a copy of Vol. 7, No. 1, use the reply card. Request K18.