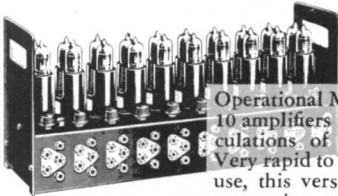# ELECTRONIC ANALOG COMPUTING COMPONENTS

FOR SYNTHESIS & ANALYSIS, PLANNING & PLOTTING, PROVING & IMPROVING
GAP/R Modular Components give remarkable flexibility of structure and application
They adapt winningly to every size of project and budget, and to all operating speeds

The Model HK

Operational Manifold offers 10 amplifiers for analog calculations of great variety. Very rapid to connect and to use, this versatile unit is a computing center in itself.

COMPARE MODEL MK
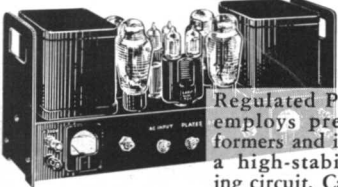
The Model RK

Regulated Power Supply employs premium transformers and inductors, plus a high-stability regulating circuit. Capacity of this Supply is sufficient for 4 of the above Model HK.

COMPARE MODEL RS

The Model K2-W Operational Amplifier is an octal-based plug-in unit which will serve as nucleus for accurate feedback functions. It has differential inputs, high DC gain, and useful bandwidth over 100 KC. Other models include the K2-X, which puts out ± 100 V and more power.

The Model K2-P Stabilizing Amplifier, used in tandem with the above, provides long term DC stability measured in microvolts. It installs directly in the HK Manifold or in other environments. We also manufacture dozens of other useful plug-in units in this unique package.

The Model CS Central Signal Component provides stimuli and programming commands for automatic repetitive computing. It sets initial conditions, and checks all calibrations.

SEE ALSO MODEL CR BELOW

% COMPUTING TIME
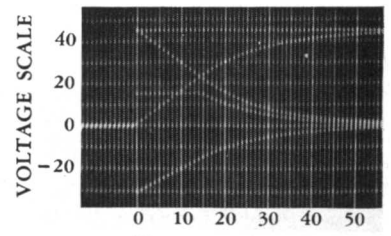
ELECTRONIC GRAPH PAPER

For repetitive Analog solutions, this method of display enables simultaneous plotting, to high precision, of many concurrent variables. Calibration is automatic for time and voltage, and is proof against all oscillographic errors.

For normal time-scale purposes, a variation of this method is directly applicable. Known best for High Speed, GAP/R methods are actually *Pan-celerative*.

THE K3 SERIES OF COMPUTING COMPONENTS

The Model K3-A Adding Component accepts from one to 4 input voltages, and supplies both plus and minus their instantaneous sum. An additive constant may be set in manually. All signal inputs and outputs are at the front, and power is simply plugged in at the rear. At the right is shown a utilizing system.
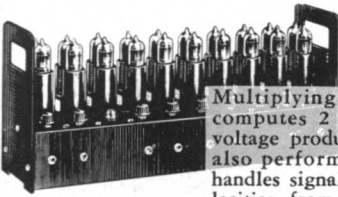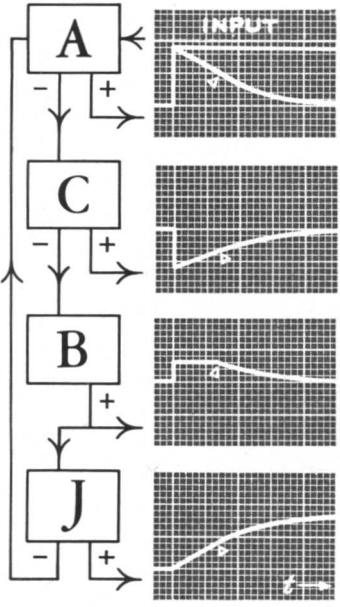
The Model K3-C Coefficient Component multiplies its input voltage by an adjustable constant, and gives outputs which are positive and negative versions of the instantaneous product. The scale shows unity (the most likely scale-factor) at the center, and sets readily down to zero and up to infinity.

The Model K3-B Limiting Component permits the input voltage to be passed on directly to the output whenever the input is within adjustable positive and negative bounds, but otherwise holds the output fixedly at the bound last exceeded. Such nonlinearities are readily analyzed with these handy tools.
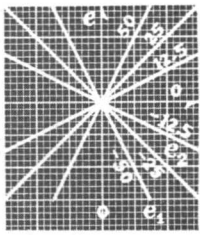
The Model K3-J Integrating Component computes plus and minus the time integral of the input, at selected rates. An input is available for clamping, to set the starting point. This unit serves, like our others, for fast or slow operation. In this same modular form, we offer 10 other fundamental types.

The Model CR Central Response Component accepts timing data from Model CS (above), and up to 8 signals for display; it generates the calibrated graphical display (as shown) for any 'scope.

Model MU

Multiplying Component computes 2 independent voltage products, and will also perform division. It handles signals of both polarities, from DC to above 50 KC, with accuracies to ½% or better.

Model FF

Functional Component produces an output voltage which follows an adjustable instantaneous function of the input voltage. The adjustment is simple and direct. Applications abound for nonlinear problems.

GAP/R

STANDARD products are too numerous for a single page. Included are accessories to fulfill all your analog needs.
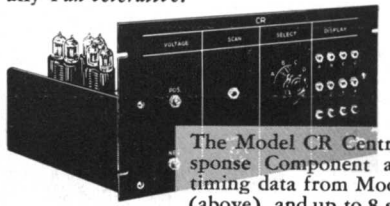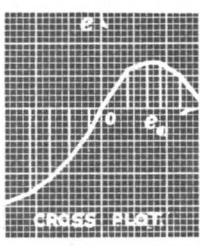
SPECIAL equipment may be engineered for new or unusual applications.

ADVICE is available on how our methods may be applied to your problems. Our staff is experienced and knowledgeable and cooperative.
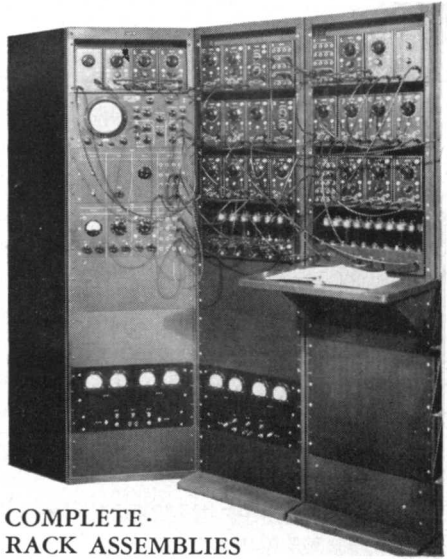

COMPLETE · RACK ASSEMBLIES

George A. Philbrick Researches, Inc., 230 Congress St., Boston 10, Mass.