nm/PRELIMINARY NOTE

A DEVICE FOR ENSURING IDENTICAL ORIENTATION

OF THE IMAGES ON A PHO/GAMMA III CAMERA

AND AN ATTACHED STORAGE OSCILLOSCOPE

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The addition of a storage oscilloscope to a Pho/Gamma camera increases its versatility by allowing the operator to observe the image as it is accumulated during the study. However, the commercial storage oscilloscopes often used have the disadvantage that it is impossible to rotate and orientate their images by the gamma-camera controls. There is therefore no correspondence between the orientation of the storage scope's image and that being recorded by the camera; this leads to further confusion in setting the controls correctly.

This problem is overcome by the circuit shown in Fig. 1 which acts as an interface between the camera's standard output terminals and the oscilloscope. Only the x-signal processor is shown because the y-channel is identical. Each channel uses an integrated circuit differential amplifier which performs the subtraction of the voltage signals given by:

$$V(x) = K[V(\beta^+x \text{ OUT}) - V(\gamma x \text{ OUT})]$$

where K is a constant and $V(\beta^+x$ OUT) and $V(\gamma x$ OUT) are the voltage pulses on the output terminals "β^+x OUT" and "γx OUT". Similarly the y-channel performs the function:

$$V(y) = K[V(\beta^+y \text{ OUT}) - V(\gamma y \text{ OUT})].$$

The power required (20 mA at +10 volts) was taken from the camera's own power supply. The purpose of potentiometer R_1 (500 ohms) is to balance the two halves of the amplifier when no input signals are present. The 150 kΩ series input resistors, in conjunction with the biasing resistors (R_2 and R_3) attenuate the signal and therefore prevent the amplifier output from exceeding about 0.5 volts when it becomes nonlinear. The interface produces net attenuation by a factor of about 10 which is easily compensated by the oscilloscope's gain controls. The 150 kΩ resistors give the amplifiers high input impedance and so prevent loading of the camera circuits.

All the components fitted onto a single circuit card (3 × 4½-in.) inside a small aluminum box. The total cost of the device was about $30.00.
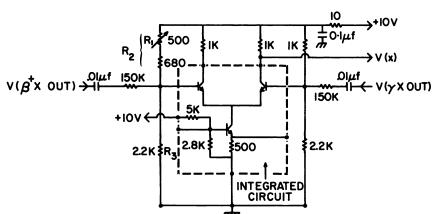
FIG. 1. X-channel signal processor. Signals from the Pho/Gamma III output terminals "γx OUT" and "β⁺x OUT" are subtracted to produce signal V(x) suitable for x-input to storage oscilloscope. The y input is produced by an identical circuit.