

"Electrontype" Speeds Communication

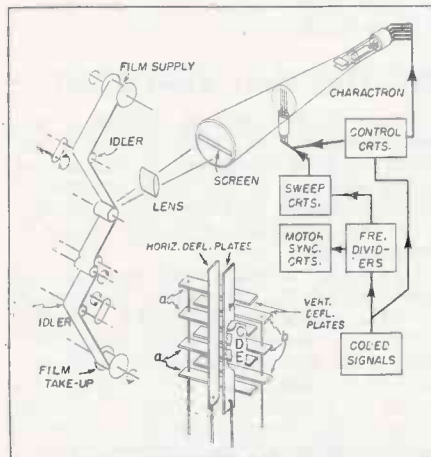
"Charactron," new type cathode ray tube, can reproduce printed messages at a million word per minute rate

AN ultra-high-speed electronic unit for use in the transfer of messages and data has reached the development stage and is expected to replace many current methods of sending and recording printed material. Equipment can be designed to produce messages in printed form at the rate of one million words per minute, according to J. T. Meaney of Consolidated Vultee Aircraft Corporation, its designer.

The operating principles of one type of Charactron can be represented as a type of cathode ray tube equipped with means by which the ray is converted into shapes of predetermined characters, by a character-shadowing disc in the path of the beam. The cross section of the electron beam conforms to shapes of aperture configurations in this disc when directed through the individual openings. Electron shadows of these characters can then be selectively focused on fluorescent viewing screens.

The individual character openings in the disc, arranged vertically in a line, each have respective shapes and quantity depending on the intended application. Any character is selected for presentation by means of a voltage applied to a pair of selector plates. After the beam is directed through an opening in the disc, its cross section will be representative of a message character, which by the H. and V. deflection plates can be directed to any part of the screen.

In the enlarged portion of the deflector assembly shown, characters "C, D, and E" represent typical openings in the shadow disc. Each vertical plate is common to two individual characters, while the horizontal plates are common to all characters. Thus a series of input signal potentials will produce lines of information on the viewing screen. Such a screen, 8-in. in diameter, could accommodate 60 or more lines, or approximately 150 words. Presentations of this type are in-



One version of a complete electrontype recorder which displays single line of symbols with space provisions for 70 symbols per line

tended for either projection on larger screens or for recording purposes but increasing the size of characters (and reducing the lines) permits messages to be read directly from the fluorescent screen. The application will determine if other types of displays are more suitable. The size of characters to be used, and the persistence of the screen can also be modified.

70 Symbols per Line

One version of a complete Electrontype recorder is shown which displays a single line of symbols, with space provisions for 70 per line. A short persistence fluorescent screen is provided 7½-in. in length and 3/16-in. in height.

Provisions within the tube allow for a selection from 40 different characters the letters of the alphabet, digits 1 to 9, and various punctuation marks. Introducing other characters does not necessarily present a problem. Several hundred may be incorporated in a tube, and it is not necessary that they be arranged in a single straight line as indicated. Viewing the apertures in

the shadowing disc from the face of the present tube, they are lined up at right angles to the rectangular-shaped screen.

Other major units of the complete recorder include: servo-controlled film supply and film take-up mechanisms, film synchronizing circuits and control mechanisms, lens system, input selector and sweep control circuits and the usual power supplies.

Information is taken from the coded signals unit and coupled to control circuits and frequency divider units. The coded signals unit can represent a data memory device, or a radio receiver of coded intelligence. Output from control circuits is coupled to selector plates and vertical deflection plates. Signals from frequency dividers are coupled to sweep circuits and motor synchronizing circuits. Potentials from the sweep circuits control the start and completion of each line in accordance with the rate of received characters.

For the purpose of keeping inertia effects of large rolls of film isolated from film synchronizing mechanisms, servos are employed in film supply and film take-up systems. The lens system between the film and Charactron screen gives (for 35-mm film) a 5 to 1 reduction in the optical system. Exposures do not exceed 1 mm in height, nor 0.5 mm in width.

With 70 exposures per line, when using 35-mm film, it is possible to expose 10,000 characters on 150 mm of film. At input signal speeds of 20,000 characters per second, for instance, the film will only be traveling through the printer at approximately 300 mm per second.

Electrontype recorders can be standard for application of many different varieties. Details of the unit identified as coded signals, however, will vary somewhat. It is well within the realm of sound reasoning to assume that if it is possible to put information into code form, equipment designed around the Charactron may be able to print faster than any other conceivable method.

The Charactron and its application to high-speed signaling was invented by the author, who has obtained United States patents on important features. Until recently, the invention was ahead of certain arts in cathode ray tube development and photography. There no longer appears to be any real obstacles in the way of broad applications of these principles.