**highspeedpapertapereader**

**High Speed Paper Tape Reader**

**A Data Communication Historical Series**

**1960s High Speed Paper Tape Reader (AUTODIN):**

This particular Paper Tape Reader, Model MI-37104, was installed with the first AUTODIN (Automatic Digital Network) systems during the early 1960’s.

The paper tape reader stood about the same height as the Operators console and was placed at the opposite end of the console from the console printer. It had a flat surface and the tape spools (supply and take up) were flat on the surface (horizontally). A paper tape 5 bits or 7 bits wide would be loaded on the supply spool, looped around the various wheels and tension control mechanism, fed through the reading head mechanism, then wrapped around the center of the take up spool. This required a leader with blank tape (or non- important data) long enough to perform this load task. The spools looked similar to magnetic tape spools. A command would be input to the CDP to read the tape. The RCA 501 seven bit code set, which also used an 8th bit for parity, was used in the AUTODIN system. Since the punched paper tape only had seven punched positions the parity bit was added electronically during data transfer to the computer.

The tape reader is an electro-mechanical computer input device and is used for reading information from perforated paper tape and then transmitting the information (via a cable) to the connected computer. The Reader is basically used for transcribing data to magnetic tape, for entering data during program testing, and transcribing and modifying programs. The Reader is capable of reading and transferring information at speeds up to 1000 characters per second (CPS).

The paper tape used for the 7-level code set is one inch wide and it has a packing density of ten characters per inch. The seven bits (holes) plus the feed hole were punched across the tape, with four holes on one side of the feed hole and three holes on the other side. The five-bit code set used an 11/16 inch wide tape. The sprocket holes were used to feed the tape and to initiate timing pulses.

Reading of the tape is accomplished through the use of a light source and photoelectric device using a bank of photo-diodes. In operation the holes in the moving tape allowed the light to be read by the photoelectric cells, which created electrical pulses, digital, corresponding to the pattern of holes. This information, coded bit pattern, is then read into the computer. A rewind feature allowed the operator to rewind from the left reel to the right reel, enabling the operator to re-read a section of tape or to replace the entire tape back on supply reel, properly oriented.

The reader uses reel servo systems much like those used in magnetic tape station operation. The supply and take-up reels are independently driven so the tape can be started without undue stress on the tape. The rollers, sensors, tension controls (loop arm) and springs, control all slack tape or the amount of loose tape. Short tapes can be read through the use of a special canister. End of tape is sensed when the End Tape Sensor (Metallic Conductive Strip) makes contact with the End Tape Post, which stops the tape drive mechanism. This keeps the actual physical end of the tape from winding off the reel, thus not requiring the operator to re-thread the tape on the reel.

A control panel contains the following switches and indicators: Power on, Servo on, Start, Stop, Read, Load, Rewind and Limit TP advance. The Load switch and indicator is used to position the tape loop arms (tension) for loading the tape. The Limit TP advance switch allows the operator to manually advance the tape. The tape will advance as long as the switch is held down. The other switches are self-explanatory.







