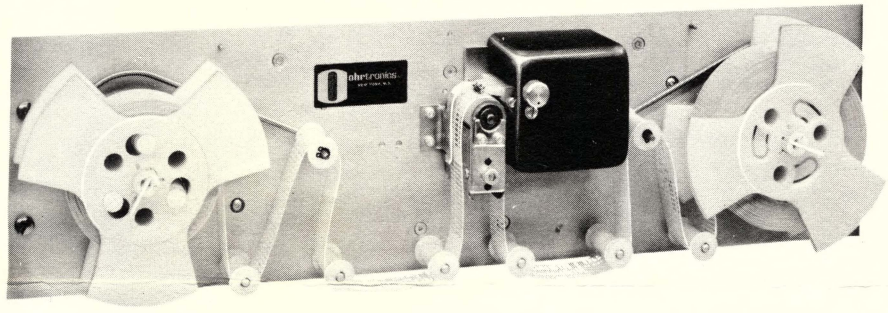
EEM 2000

ohr-tronics PRODUCT INFORMATION

paper tape reader



MODEL 119R TAPE READER WITH SPOOLING

SERIES 119

The Series 119 Paper Tape Reader is intended for use in extraction of data stored on punched paper tape and presenting this data, in the form of contact closures, to other equipment.

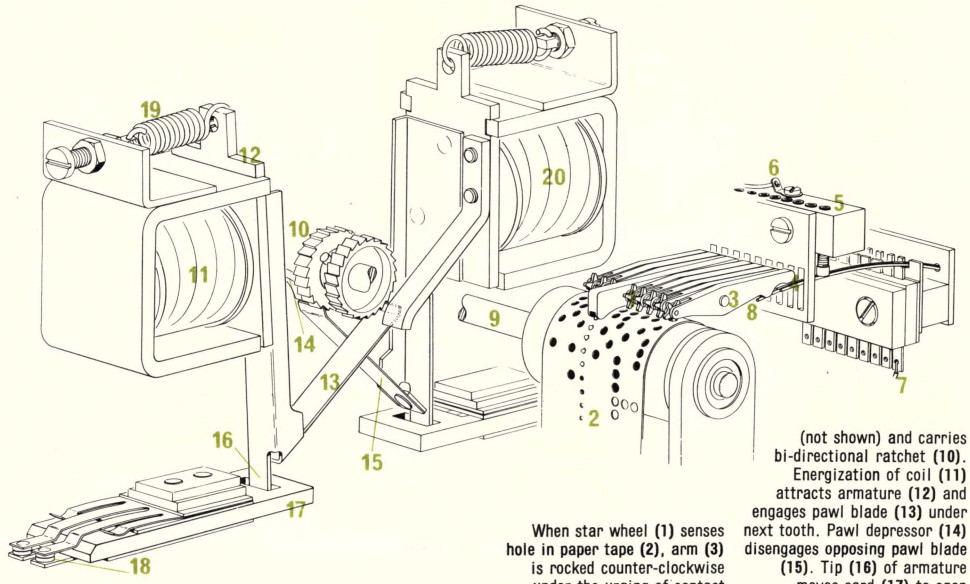
APPLICATIONS

- Control of automatic typewriters, printers, and punches
- Tape programs for automatic testing
- Machine tool control systems
- Automation of electro-mechanical equipment
- Programming digital-to-analog converters
- Tape input to low-priced computers
- Low-cost memory with bi-directional access

The Series 119 Paper Tape Reader reads up to 8 channel punched paper tape, bi-directionally, at speeds up to 30 c.p.s. The simplicity of design accounts for its high degree of reliability. The basic mechanism has been life tested for 125,000,000 characters (and error checked) without losing a single bit of data.

All readers are backed up by a full one year warranty on parts and labor.

TAPE FEED SYSTEM



When star wheel **(1)** senses hole in paper tape **(2)**, arm **(3)** is rocked counter-clockwise under the urging of contact wires **(4)** which limit on lower surface of contact screw **(5)**. Electrical circuit is thus completed from common lug **(6)** to lug **(7)**. Longer wire **(8)** urges arm **(3)** against mechanical limit (not shown) to reduce bounce. Drive shaft **(9)** extends rearward through panel (not shown) and carries bi-directional ratchet **(10)**. Energization of coil **(11)** attracts armature **(12)** and engages pawl blade **(13)** under next tooth. Pawl depressor **(14)** disengages opposing pawl blade **(15)**. Tip **(16)** of armature moves card **(17)** to open interrupter switch contacts **(18)**. Upon de-energization of coil **(11)**, pawl blade **(13)** steps shaft **(9)** under urging of spring **(19)**. Interrupter switch recloses near end of armature return. Pulsing of other coil **(20)** steps tape in reverse direction.

The unique dual cross-coupled electro-magnetically actuated pawl system (patent pending) which advances the tape bi-directionally offers the designer the simplest method of integrating the Tape Reader into a system. No critical pulse widths or rise times are required. The stepping of the tape occurs on the spring return stroke of the electro-magnet. When the coil is energized and the armature pulls in, the interrupter switch contact is opened and remains open until after the electro-magnet is fully de-energized and has advanced the tape. The function of the interrupter switch is three-fold; it can provide a means for continuous self-stepping of the tape if the circuit to the magnet coil is in series with the interrupter switch, it can protect the make and break of the star wheel sensing contacts, and it can provide an interlock signal to connected equipment.

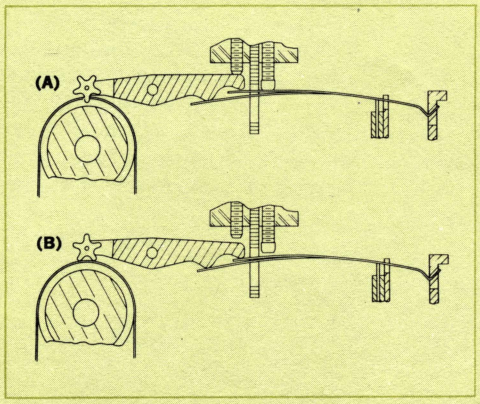
METHOD OF SENSING

Star wheel sensing offers the circuit designer advantages not found in any other type of sensing. Star wheel sensing is somewhat like pin sensing, except that the pin has become several pins on a wheel (a star wheel) which is free to rotate at the same time that it is sensing a hole.

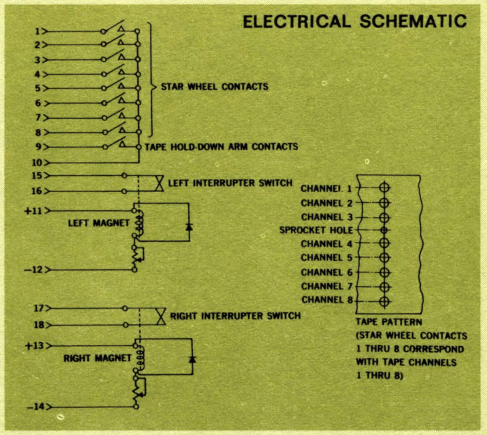
The star wheel can sense holes in a paper tape while the tape is in motion. As the star wheel enters a hole (see sketch), its axis is lowered, rocking the arm carrying the star wheel in a counterclockwise direction, and closing the associated switch (a). When a series of successive holes is sensed, the star wheel rotates in mesh with the holes, like a gear on a rack, with no resultant motion on the carrier arm and with the switch remaining closed. Only when the star wheel approaches a no-hole and moves up and over the top surface of the paper tape (b), is the switch opened. This feature makes star wheel sensing ideal for programming and control applications.

The sensing switch construction is similar to the switches in wire relays. Bounce time is well under a millisecond, normally in the order of 100 micro-seconds. Switch life is rated at 200,000,000 operations. The star wheels effect minimum wear on the tape. Tests conducted indicated an excess of 100,000 passes on paper-mylar-paper tape and an excess of 4,000 passes on standard paper tape.

Star wheel sensing can tolerate wide variations in tape punching, is capable of reading any type of tape, and is not effected by tape color, oil content, or material. Conductive and non-conductive tapes are sensed with equal facility.



ELECTRICAL SCHEMATIC



SPECIFICATIONS

GENERAL

Number of tape channels
Adjustable for 5, 6, 7, or 8

Data hole size
0.072″ diameter on 0.100″ centers (EIA Standard RS-227)

Feed hold size
0.046″ diameter

Reading speed
Variable from 0 to 30 characters per second bi-directionally

Tape widths
0.687, 0.875, and 1.000 inches

Connections
24 pin amphenol connector, with mating connector supplied. "C" models (with commutator) supplied with 36 pin connector.

CONTACTS

Star wheel sensing switches
8 Form "A" (normally open) bi-furcated contacts, one side common, each consisting of 2 eutectic silver wires, plus 1 stainless steel spring wire for minimizing bounce.

Contact bounce under a millisecond.

Contact rating 3 amps steady state.

For switching under load, current affects life as per table below:

CURRENT (amps)	LIFE (no. of switching operations)
.035	200,000,000
.100	100,000,000
.500	20,000,000
1.000	5,000,000

Tape hold down switch
1 Form "A" contact consisting of 1 eutectic silver wire and 1 stainless steel wire.

Interrupter switches
2 switches, each consisting of 1 Form "B" (normally closed) bi-furcated heavy duty contacts. Current rating 3 amps switching resistive loads. Switch bounce under a millisecond. Models with suffix "B" supplied with double throw interrupter switches.

ELECTRO-MAGNETIC DRIVE

Standard voltages
24, 48, or 90 V.D.C.

Power requirement
Function of pull-in-time. Nominally set at 17 watts.

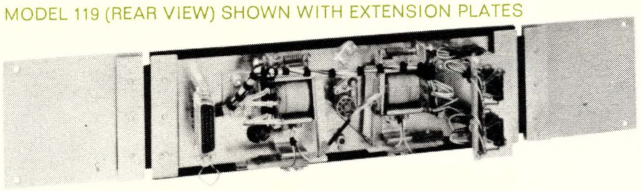
Pull-in-time
Nominally set at 17 milliseconds.

Drop-out-time
Nominally 15 milliseconds.

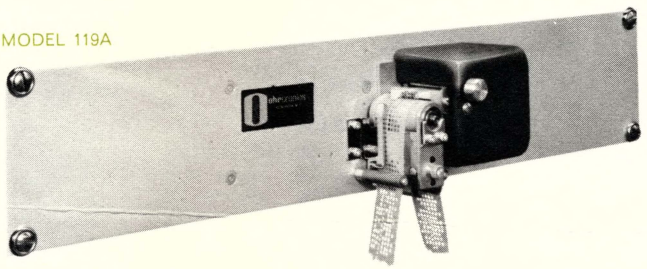
Arc suppression
Diode, resistor network across each electro-magnet.

Power dissipation
Electro-magnets can dissipate power continuously when operated at rated voltages.

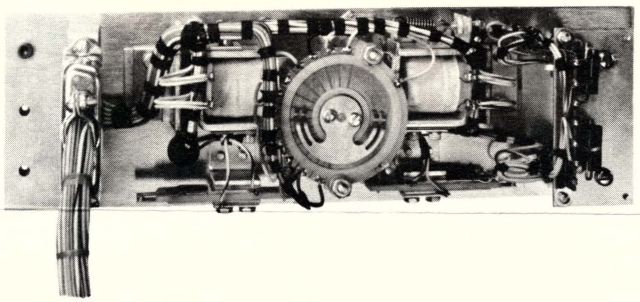
MODEL 119 (REAR VIEW) SHOWN WITH EXTENSION PLATES



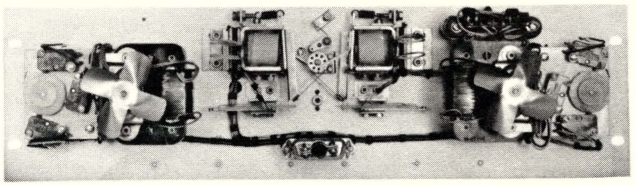
MODEL 119A



MODEL 119C (REAR VIEW)



MODEL 119R (REAR VIEW)



MODEL 119

Model 119 panel size 3½″ by 11″

MODEL 119A

Same as Model 119 but assembled on larger panel (3½″ by 19″) for standard rack mounting.

MODEL 119B

Model 119B has the same specifications as Model 119, supplied with Form "C" interrupter switches (single pole, double throw).

MODEL 119C

Model 119C has the same specifications as Model 119, with the addition of a twelve point commutator switch mounted on the rear extension of the sprocket wheel shaft. This provides a simple inexpensive means of sensing data a line at a time, and storing this data in a block memory. This method avoids the problems inherent in high contact density sensing (80 contacts within 1 square inch) employed by conventional block readers.

MODEL 119R

Model 119R has the same specifications as Model 119, with the addition of spooling mechanism for supply and take-up of tape in both directions. The spooling is accomplished through the use of two reversible motors controlled by dancer arms. The tape loop on each dancer arm commands its associated motor to either take up the slack in the tape, to feed tape to the reader, or to maintain its position. A switch output for tight tape and end-of-tape is provided. Separable 5″ reels facilitate tape handling and storing, and are capable of holding 250 feet of tape.

The Model 119R is the smallest size tape reader available complete with spooling mechanism in a panel mounted unit. Panel size is 5¼″ high by 19″ wide.

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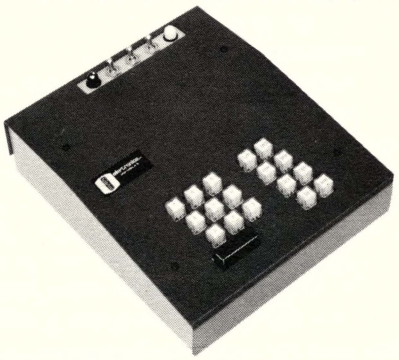
OTHER ohr-tronics PRODUCTS

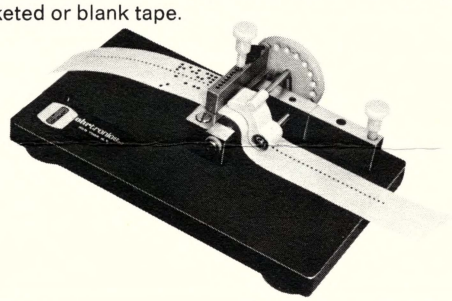
SERIES 117 ENCODING KEYBOARD

The series 117 Encoding Keyboard converts key depressions into coded (8 level) arrays of switch closures, and is designed to interface with tape punches, printers, plotters, computers, or other automatic machinery. Any code configuration can be supplied. The code is contained in the form of removable tabs on each key lever, and code changes can be made in the field. The keys are mechanically interlocked to prevent simultaneous depressions of two or more keys. The keyboard can also be electrically interlocked and slaved to the connected equipment.



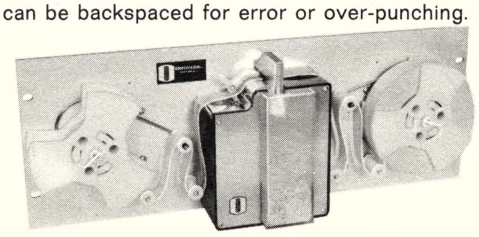
MODEL 124 FLEXI-BIT PUNCH

The Model 124 Flexi-bit Punch is designed for those applications that require the maximum flexibility of single hole bit punching. The unit punches tape conforming to the new E.I.A. Standard RS-227. The Flexi-bit Punch features a precision sprocket wheel mechanism for simplified tape loading and easy forward and reverse tape stepping. The device will punch paper or Mylar tape, and will accept presprocketed or blank tape.

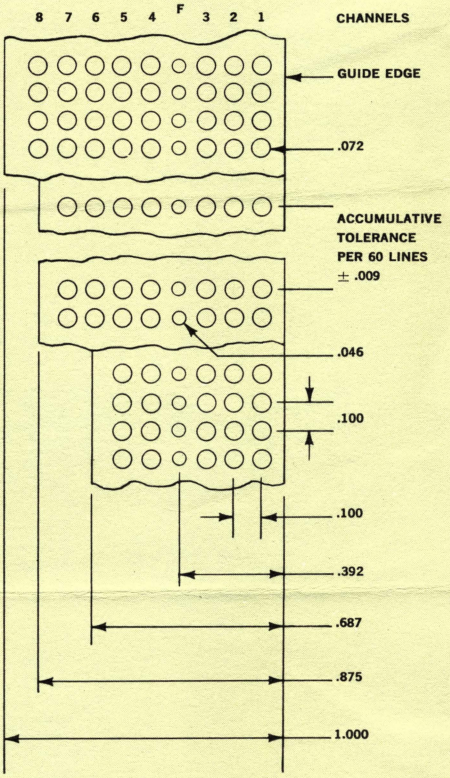


SERIES 110 PAPER TAPE PUNCH

The Series 110 Paper Tape Punch punches standard 5 to 8 channel paper tape, asynchronously at speeds up to 30 characters per second. The unit is powered from a continuously running induction motor. Holes are punched in the tape in response to input pulses into eight electromagnets which set up interposers for punch pin actuation. Error detection is accomplished by the use of parity checking switches driven by the punch pin interposers, and the tape can be backspaced for error or over-punching.



PUNCHED TAPE STANDARDS



ORDERING NOMENCLATURE

Prefix and suffix letters are used to designate desired features.

PREFIX UC designates a uni-directional tape reader, with clockwise rotation of the sprocket shaft (front view); Prefix UA designates a uni-directional tape reader with anti-clockwise rotation.

SUFFIX A designates a panel size of 3½″ high by 19″ wide.

SUFFIX B designates Form "C" (double throw) interrupter switches.

SUFFIX C designates the addition of a 12 point commutator on the sprocket shaft.

SUFFIX R designates the addition of tape spooling mechanism, 5″ diameter spools, 5¼″ by 19″ panel size.

EXAMPLE:

UA119BCR

- Bi-directional spooling, size 5¼″ x 19″
- Commutator (12 point)
- Form "C" interrupter switches
- Series 119 tape reader
- Uni-directional, anti-clockwise

NOTE: The DC voltage must be specified. 24, 48, and 90 V.D.C. are standard.

Preliminary Information

Series 110 Paper Tape Punch

March 22, 1965

ohrtronics INC

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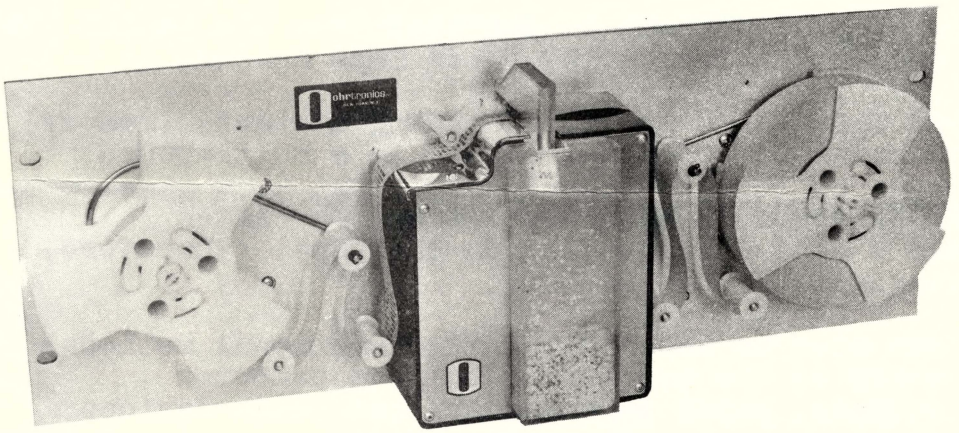
twx number
201 391-5118



The Model 110 Paper Tape Punch has been designed to accept coded electrical data (serially by character) and record this data in the form of holes in paper tape.

APPLICATIONS:

Tape preparation, duplication and verification systems.
Digital data recording devices.
Generating tape programs for automatic testing.
Preparation of tape for Machine Tool Control Systems.
Low cost data-phone tape systems.
Nuclear data gathering systems.

FEATURES:

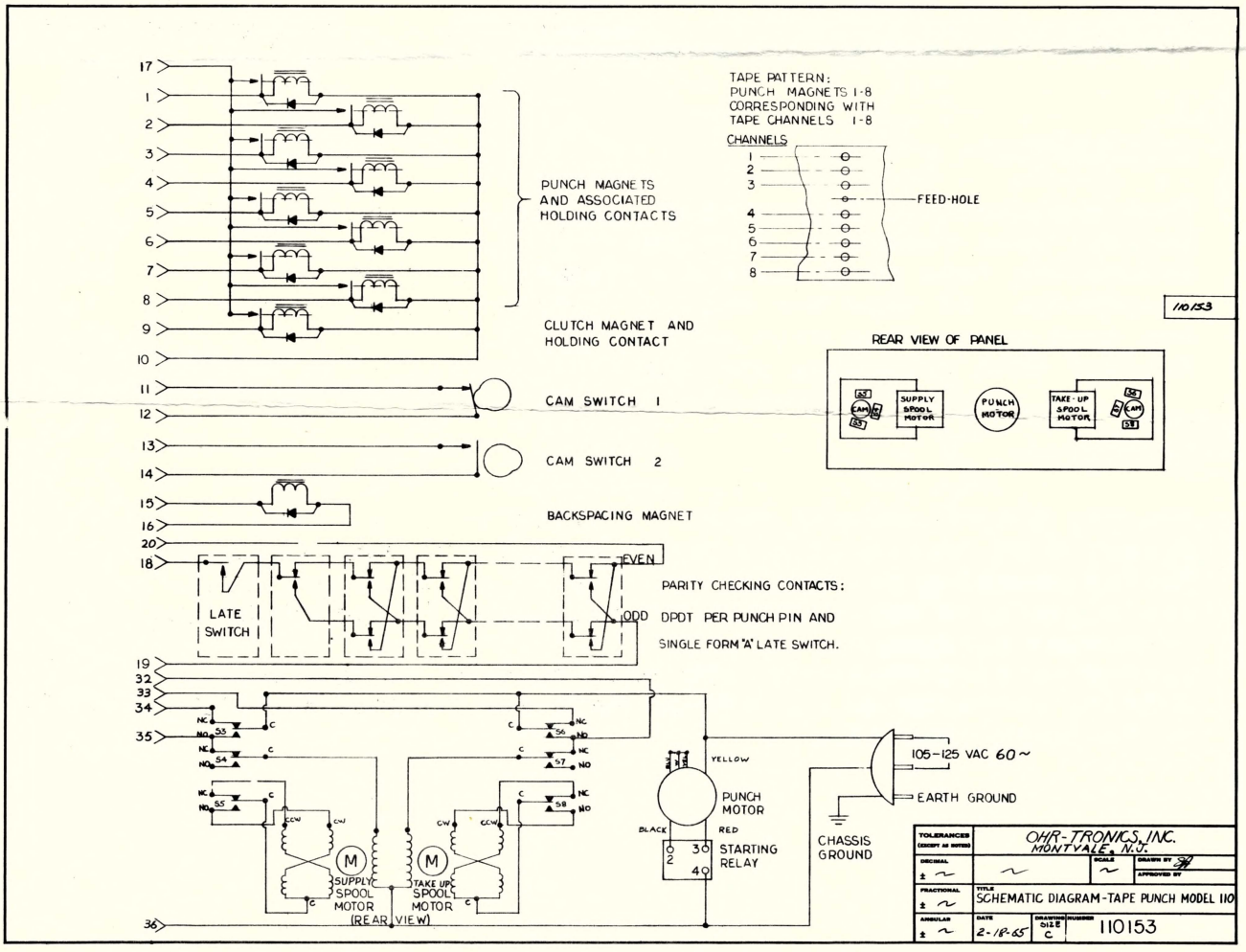
Punches 5 to 8 channel paper or mylar tape.
Speed, 0 to 30 characters per second asynchronously.
Parity checking pre-wired contacts (with late switch).
Two adjustable cam switches suitable for interlocking with connected equipment.
Reversing electro-magnet for back-spacing of tape.
Holding contacts on electro-magnets for pulse stretching and multi-punch operation.

The series 110 Paper Tape Punch punches standard 5 to 8 channels in paper or mylar tape, asynchronously at speeds up to 30 characters per second. The unit is powered from a continuously running induction motor. Holes are punched in tape in response to input pulses into 8 electro-magnets which set up interposers for punch pin actuation. Error detection is accomplished by the use of pre-wired parity checking switches driven by the punch pin interposers. Tape can be backspaced for error overpunching by energizing the backspacing electro-magnet.

The Series 110 Paper Tape Punch can be operated from the Series 117 Encoding Keyboard and/or the Series 119 Paper Tape Reader.

The Series 110 Paper Tape Punch provides holding contacts (memory) for storage of data prior to punching. Thus, in a multi-punch mode, data can be entered into the tape punch a bit at a time. Once the desired combination of bits are entered, a clutch command is given and a code is generated on the tape. Therefore, all 256 code combinations can be punched.

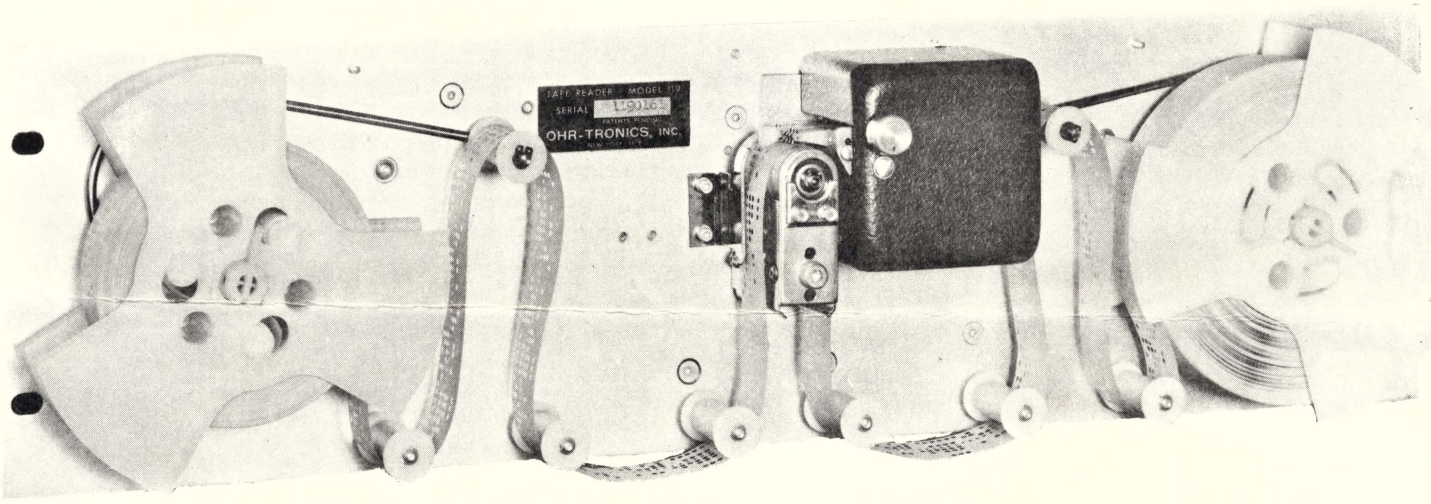
Data to the punch can also be entered using conventional methods; that is, parallel entry to the punch magnets from computer outputs, keyboard outputs, paper tape readers and other devices.



PRELIMINARY DATA BULLETIN (12-64)

NEW PRODUCT

ohrtronics INC



MODEL 119R PAPER TAPE READER WITH SPOOLERS

APPLICATIONS:

* Tape programming for automatic testing.
* Machine tool control systems.
* Tape input for low-priced computers.
* Low cost memory with bi-directional access.
* Tape-controlled typewriters and printers.
* Programming digital-to-analog converters.

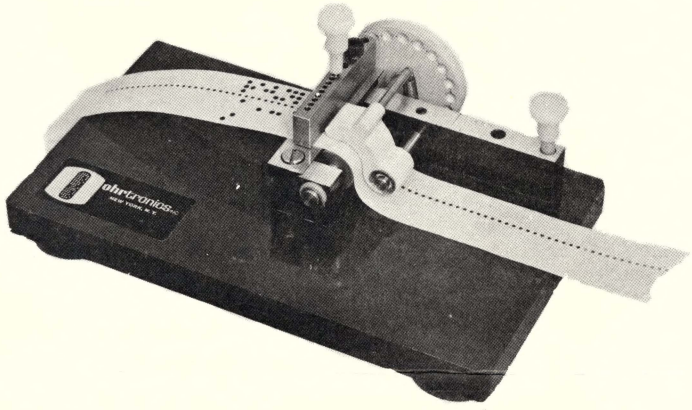
The Model 119R Bi-directional Paper Tape Reader, complete with its' 12 month warranty on parts and labor, is an outstanding value from a standpoint of reliability and cost. The spooling mechanism contains no belts, pulleys, differential, clutches or other devices which eventually cause down-time. The spooling is accomplished through the use of two reversible motors controlled by dancer arms. The tape loop on each dancer arm commands its' associated motor to either take up the slack in the tape, to feed tape to the reader or to maintain its' position. There is also available a switch output for tight-tape and end-of-tape.

FEATURES:

* Bi-directional tape reading and spooling at 30 characters/second.
* Proven reliability of star wheel hole sensing.
* Minimum tape wear (200,000 passes with paper-Mylar-paper tape).
* Smallest size available, $5\frac{1}{4}$" X 19" panel size.
* Take-apart reels for easy tape handling and storing.

119R unit price is $525.00 FOB Montvale, New Jersey
(Tape Reader prices begin at $350.00)

For design data basic to the Model 119 series, write to
OHR-TRONICS, INC., 305 West Grand Avenue, Montvale, New Jersey
Telephone (201) 391-7000, TWX (201) 391-5118



ohrtronics INC

PRELIMINARY DATA BULLETIN

NEW PRODUCT

MODEL 124 Flexi-Bit Punch

APPLICATIONS:

* Generating program tapes
* Inserting corrections in existing tapes
* Punching small tape loops
* Setting up tape instructions for test equipment
* Punching tapes to replace cams

The Model 124 Flexi-Bit Punch was designed for those applications that require the maximum flexibility of single hole bit punching. The unit punches tape conforming to the new E. I. A. Standard RS-227.

FEATURES:

* Easy tape loading.
* Can be used with either paper tape with pre-punched feed holes, or with blank tape.
* Punches paper or Mylar Tapes.
* Two punches provided for data holes and feed holes.
* All possible hole positions in each line of tape can be punched.
* Hole positions numbered for easy identification.
* Fast forward and reverse feeding of tape with precision sprocket wheel mechanism.
* Tape can be end loaded or edge loaded.

The design of the Model 124 Flexi-Bit Punch, with its precision feed sprocket mechanism, eliminates tedious manipulations of tape onto guide pins for each tape feed.

PRICE: $89.00 F.O.B. Montvale, New Jersey

OHR-TRONICS, INC., 305 West Grand Avenue, Montvale, New Jersey 07645
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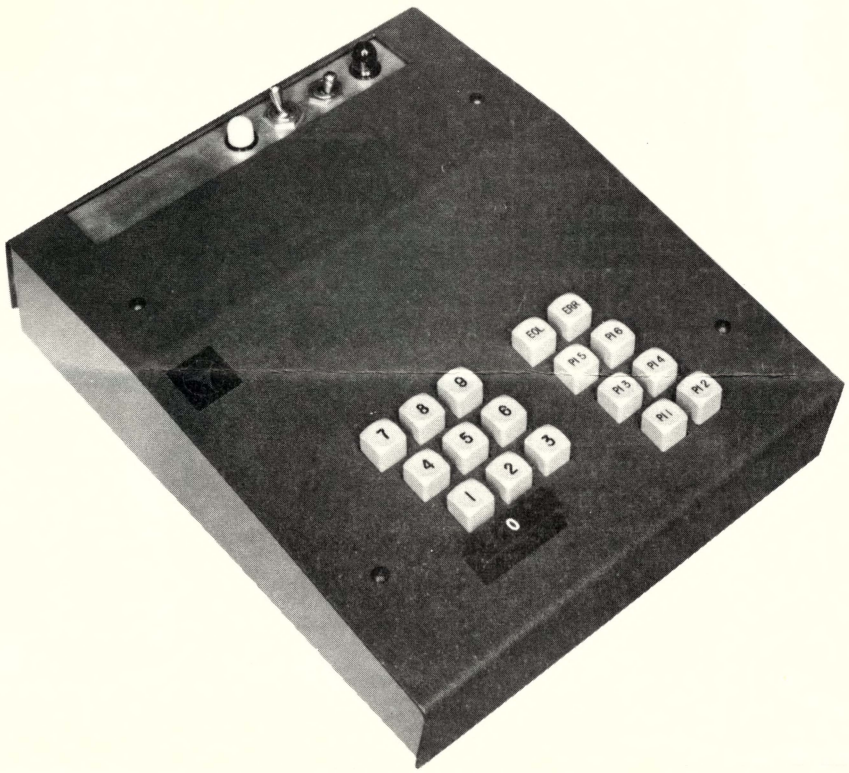

PRELIMINARY DATA BULLETIN

OHR-TRONICS ENCODING KEYBOARD

MODEL 117 .....$395.00
18 keys(10 numeric and
8 alpha or special)

* 8 level code output
* Any code configuration
* Code changes easily made
* Keys mechanically interlocked
* Additional switches under keys
* Electromagnet power assist
* 24, 48, or 90 VDC
* Jam-proof high speed mechanism

Introduction: The OHR-TRONICS ENCODING KEYBOARD emits an eight level code in the form of contact closures and is designed to interface with equipment such as a paper tape punch, magnetic tape recorder, printer, plotter or computer. The KEYBOARD is available with any code configuration. The code is contained in the form of removable tabs on the lower surface of each key lever and code changes can be readily made in the field.

Description: Depression of a key lever operates code bars which close encoding switches. An electromagnet assists in the final depression of a key lever after a partial depression is made by the operator. All keys are mechanically interlocked to inhibit simultaneous depression of two or more keys. An electrical interlock between the KEYBOARD and connected equipment may be used to regulate key entries. This control feature does not limit operating speed. An anti-repeat circuit permits only a single cycle of operation with each key entry. In addition to the eight encoding switches, a switch is available under each key lever for other control functions.