



KEYBOARD ENCODER 99 KEYS, 4 MODES

EA 2007A EA 2030

JULY 1975

GENERAL DESCRIPTION

The EA 2007A and EA2030 are preprogrammed versions of the EA 2000 99 key encoder. The EA 2000 encodes 99 discrete keys with four complete modes per key, allowing 396 different key codes. Each key code contains ten parallel outputs, each completely programmable.

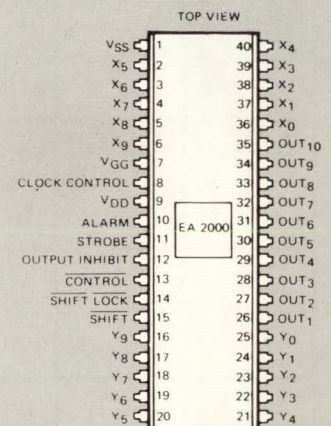
The EA 2007A is preprogrammed to provide commonly used output codes for three ASCII keyboards and one EBCDIC keyboard.

The EA 2030 is preprogrammed to allow easy interface with an external PROM thereby providing, in a very short time, custom encoded keyboards. Full electrical and operational characteristics are provided in the EA 2000 data sheet.

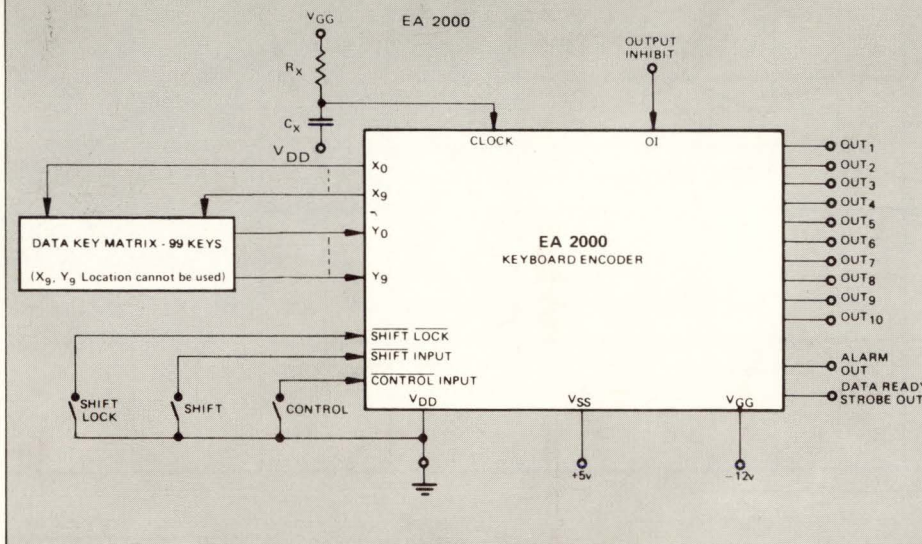
FEATURES

- PREPROGRAMMED
EA 2007A — 4 POPULAR KEYBOARD CONFIGURATIONS
EA 2030 — PROM INTERFACE
- 99 KEY FOUR-MODE OPERATION
- N-KEY ROLLOVER
- ERROR DETECTION FOR SIMULTANEOUS KEY DEPRESSIONS
- AUTOMATIC KEYBOUNCE PROTECTION
- INTERNAL CLOCK GENERATOR
- ELECTRONIC SHIFT LOCK
- TTL COMPATIBLE — 3-STATE OUTPUTS

CONNECTION DIAGRAM 40 LEAD DIP



SYSTEM DIAGRAM EA 2000



ORDERING INFORMATION

| | TEMP. RANGE | PACKAGE |
|-----------|--------------|------------------------|
| EA2007ADC | 0°C to +70°C | Hermetic 40 Pin DIP |
| EA2007APC | 0°C to +70°C | Molded 40 Pin DIP |
| EA2030DC | 0°C to +70°C | Hermetic 40 Pin DIP |
| EA2030PC | 0°C to +70°C | Molded 40 Pin DIP |

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EA2007/EA 2030 — KEYBOARD ENCODER — 99 KEYS — 4 MODES

DESCRIPTION

The EA 2007A is a preprogrammed version of the EA 2000 99 key encoder. The device is coded to implement three ASCII keyboards (including logical bit paired ASCII) and an EBCDIC keyboard. In addition to logical paired ASCII, the keyboards are Teletype Model 33 (ASCII), Teletype Model 37 (ASCII), and IBM 029 (EBCDIC).

| | Y0 | Y1 | Y2 | Y3 | Y4 | Y5 | Y6 | Y7 | Y8 | Y9 | | | | | | | | | | |
|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| X0 | HT | HT | ESC | ESC | * | \$ | R | ⌘ | F | : | V | = | < | . | T | | G | ⌞ | B | ! |
| | HT | HT | ESC | ESC | NUL | NUL | NUL | NUL | NUL | NUL | NUL | NUL | NUL | NUL | NUL | NUL | NUL | NUL | NUL | DS |
| X1 | 1 | ! | q | Q | a | A | z | Z | Y | | H | ' | N | (| U | 1 | J | 4 | M | 7 |
| | 1 | 1 | DC1 | DC1 | SOH | SOH | SUB | SUB | NUL | NUL | NUL | NUL | NUL | NUL | 1 | SOH | 4 | PF | 7 | NUL |
| X2 | SP | SP | 2 | " | w | W | s | S | x | X | - | - | I | 2 | K | 5 | , | 8 | DS | DS |
| | SP | NUL | 2 | 2 | ETB | ETB | DC3 | DC3 | CAN | CAN | - | NUL | 2 | STX | 5 | NUL | 8 | | DS | DS |
| X3 | 3 | # | e | E | d | D | c | C | NUL | NUL | / | ø | O | 3 | L | 6 | . | 9 | CR | CR |
| | 3 | 3 | ENQ | ENQ | EQT | EQT | ETX | ETX | NUL | NUL | ø | NUL | 3 | NUL | 6 | NUL | 9 | NUL | CR | CR |
| X4 | 4 | \$ | r | R | f | F | v | V | P | & | 5 | % | t | T | g | G | b | B | BS | BS |
| | 4 | 4 | DC2 | DC2 | ACK | ACK | SYN | SYN | NUL | NUL | 5 | 5 | DC4 | DC4 | BEL | BEL | STX | STX | BS | BS |
| X5 | 6 | & | y | Y | h | H | n | N | N | ↑ | 7 | ' | u | U | j | J | m | M | M |] |
| | 6 | 6 | EM | EM | BS | BS | SO | SO | SO | RS | 7 | 7 | NAK | NAK | LF | LF | CR | CR | CR | GS |
| X6 | 8 | (| i | I | k | K | , | < | k | [| ACK | ACK | % | , | E |) | D | : | C | " |
| | 8 | 8 | HT | HT | VT | VT | , | , | VT | ESC | ACK | ACK | NUL | NUL | NUL | NUL | | | | SP |
| X7 | 9 |) | o | O | 1 | L | . | > | O | ← | 1 | \ | @ | # | W | - | S | > | X | ? |
| | 9 | 9 | SI | SI | FF | FF | . | . | SI | US | FF | FS | NUL | NUL | NUL | NUL | NUL | NUL | NUL | NUL |
| X8 | ø | ø | p | P | : | + | / | ? | p | @ | [| { | Q | + | ← | ≡ | A | NUL | Z | NUL |
| | ø | ø | DLE | DLE | : | : | / | / | DLE | NUL | ESC | GS | NUL | NUL | US | US | NUL | DLE | NUL | NUL |
| X9 | - | = | @ | ' | : | * | ^ | ~ | DEL | DEL |] | } | \ | | ← | ← | LF | LF | | |
| | - | - | NUL | NUL | : | : | RS | RS | DEL | DEL | GS | GS | FS | FS | US | US | LF | LF | | |

NOTE: Shaded keys are EBCDIC.

SHIFT/CONTROL LOGIC STATES

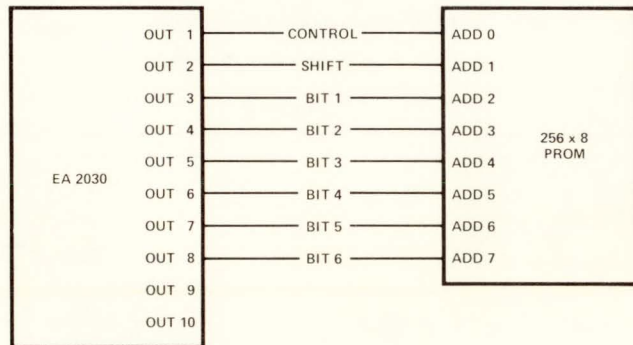
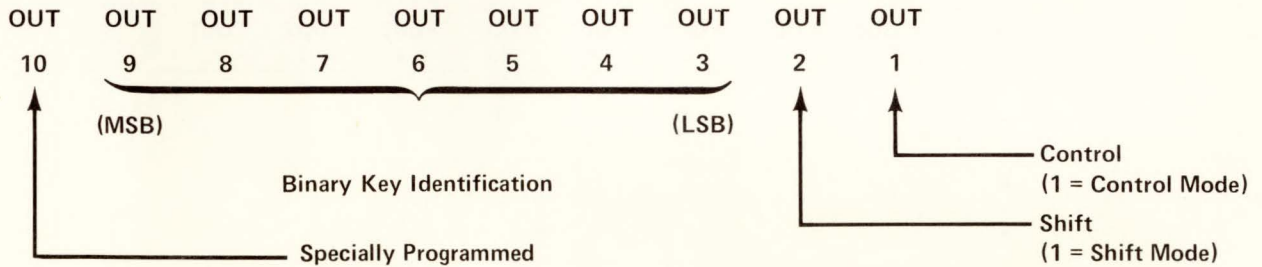
| | |
|-----|-----|
| 0/0 | 1/0 |
| 0/1 | 1/1 |

DESCRIPTION

The EA 2030 is a preprogrammed version of the EA 2000 99 key encoder. The device is coded to allow the user to simply program a PROM which is then used to modify the EA 2000 output words to the particular custom bit pattern required. A unique coding of the EA 2030's ten output data bits allows one 256 x 8 bit PROM to encode 64 keys/4 modes or 99 keys/2 modes or 32 keys/4 modes and 64 keys/2 modes. Electrical characteristics and a typical system operational description are contained in the EA 2000 data sheet.

CODING

The EA 2030 is coded such that Outputs 3 through 9 are a binary representation of the particular key location being depressed. Output 9 is the most significant binary bit; key location X0 Y0 is indicated by a binary zero, X0 Y1 by a binary one, etc. Output 1 indicates status of the control key input to the 2030. A logic one signifies a controlled mode. Output 2 is used to identify the status of the shift input. A logic one indicates a shift mode. Output 10 is specially programmed.

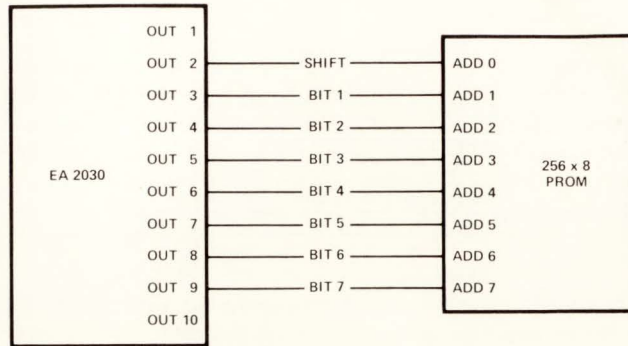


| Key Location X Y | | Binary Key Location | | | | | | Shift OUT 2 | Control OUT 1 |
|------------------------|---|---------------------|-------|-------|-------|-------|-------|----------------|------------------|
| | | OUT 8 | OUT 7 | OUT 6 | OUT 5 | OUT 4 | OUT 3 | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | * | * |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | * | * |
| 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | * | * |
| 0 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | * | * |
| | ⋮ | | | | | | | | |
| | ⋮ | | | | | | | | |
| | ⋮ | | | | | | | | |
| 6 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | * | * |

* Logic "1" or "0" depending on shift or control input.

64 KEYS, 4 MODES
(Keys 64 through 98 not used.)

Figure 1

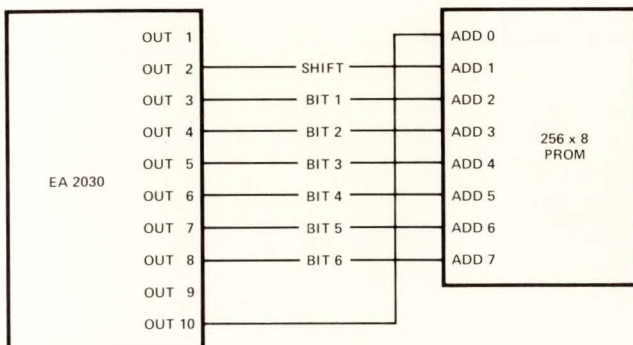


| Key Location | | Binary Key Location | | | | | | | Shift ↓ OUT 2 |
|--------------|---|---------------------|-------|-------|-------|-------|-------|-------|---------------------|
| | | OUT 9 | OUT 8 | OUT 7 | OUT 6 | OUT 5 | OUT 4 | OUT 3 | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | * |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | * |
| 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | * |
| | ⋮ | | | | | | | | |
| 9 | 7 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | * |
| 9 | 8 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | * |

* Logic "1" or "0" depending on shift input.

99 KEYS, 2 MODES

Figure 2



| Key Location | | OUT 10 | Binary Key Location | | | | | OUT 3 | Shift ↓ OUT 2 |
|--------------|---|--------|---------------------|-------|-------|-------|-------|-------|---------------------|
| | | | OUT 8 | OUT 7 | OUT 6 | OUT 5 | OUT 4 | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | * |
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | * |
| 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | * |
| | ⋮ | | | | | | | | |
| 3 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | * |
| 3 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | * |
| 3 | 2 | ** | 1 | 0 | 0 | 0 | 0 | 0 | * |
| 3 | 3 | ** | 1 | 0 | 0 | 0 | 0 | 1 | * |
| | ⋮ | | | | | | | | |
| 6 | 2 | ** | 1 | 1 | 1 | 1 | 1 | 0 | * |
| 6 | 3 | ** | 1 | 1 | 1 | 1 | 1 | 1 | * |
| 6 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | * |
| 6 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | * |
| | ⋮ | | | | | | | | |
| 9 | 5 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | * |

* Logic "1" or "0" depending on shift input.

** Logic "1" or "0" depending on control input.

32 KEYS, 4 MODES and 64 KEYS, 2 MODES
(Keys 96 through 98 not used)

Figure 3

