MBA-RC Reader T.M.
Code Converter
by AEA

ADVANCED ELECTRONIC APPLICATIONS INC.

MORSE BAUDOT ASCII CONVERTER 32

INPUT
SPD 60 75 110   SPD 60 75 110
MOR 67 100 A   MOR 67 100 A
TRANSMIT   RECEIVE

OUTPUT
60 75 110 M   60 70 110 M
67 100 300 ID   67 100 300 ID
TRANSMIT   RECEIVE

FILTER   TUNE
VAR 170 CW

BUFFER FULL
MAN   NORM OFF
CR/LF AUTO I.D. REV ON

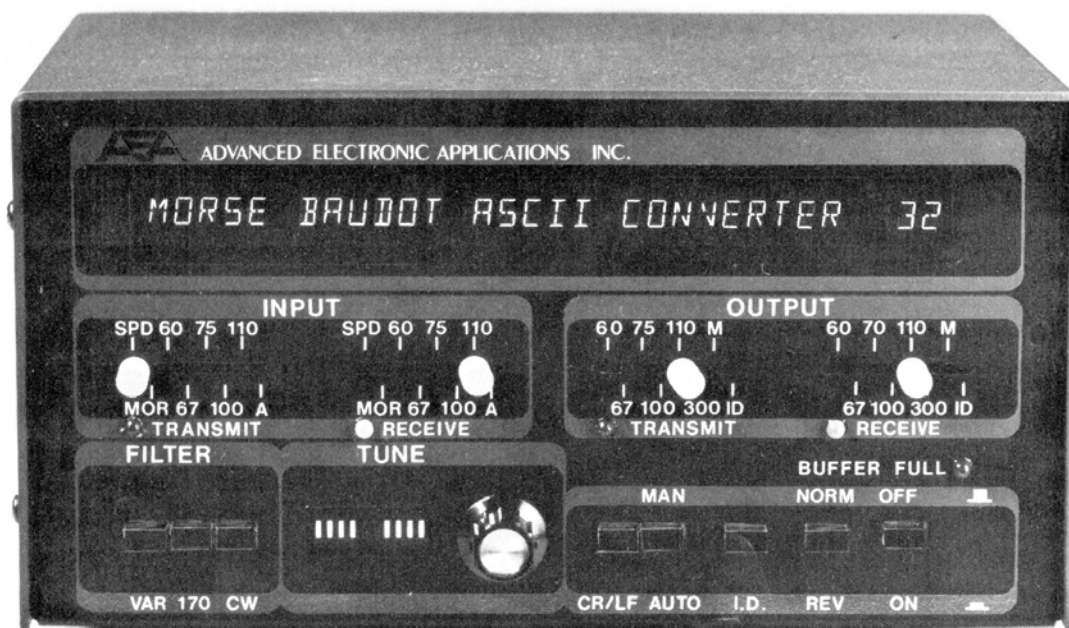## Morse, Baudot and ASCII Reader Features

The new model MBA-RC (Morse, Baudot, ASCII Reader/Code Converter) represents another significant breakthrough in data communications equipment from Advanced Electronic Applications, Inc. The MBA-RC is actually several sophisticated devices all wrapped up in one package.

The unit performs as a full function **decoder and display** unit for Morse, Baudot (teletype) and ASCII (teletype/computer) coded signals. The MBA-RC operates directly from the audio output of any stable communications receiver, with no other accessories necessary except a 12 VDC source. The MBA-RC also encompasses a feature-packed **Morse, Baudot and ASCII encoder and code converter.** The unit will perform **serial to parallel and parallel** to serial code conversions as well as cross-mode conversions. All the necessary analog processing and tone generation for two way contacts in any of the MBA codes is included in the standard unit.

Two powerful AEA microcomputers, 43 integrated circuits, and all the associated circuitry comprising the MBA-RC are contained within one compact and handsomely designed package. The package takes up little extra operating space and lends itself nicely to portable two-way RTTY operation from a 12 VDC source.

The MBA-RC incorporates very advanced analog signal processing circuitry for allowing maximum readability of weak or interfered with signals. The MBA-RC is compatible with all the standard HF, VHF and UHF Amateur RTTY modes (plus non-encrypted news or weather broadcasts). Separate receive filters are positioned ahead of and behind a special signal limiting circuit (pre and post limiting filters).

A four-pole two stage active CW filter can be front-panel tuned for any audio frequency between 300 Hz and 2KHz. RTTY (Baudot or ASCII) signals are processed by separate Mark and Space filters for maximum noise and interfering signal rejection. The RTTY filters are tuned for a fixed 170 Hz shift (2125 Hz Mark/2295 Hz Space) or a front panel selected variable shift from 100 to 1000 Hz (2125 Hz Mark/2225-3125 Hz Space). A normal/reverse switch is provided for receiving RTTY on the opposite sideband (upper). Separate Mark and Space tuning LED's are provided on the front panel. For operators having an oscilloscope handy, separate Mark and Space signal outputs are available for conventional scope tuning.

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Sufficient amplification is provided in the MBA-RC input circuitry to ensure good copy from low audio input signal levels. The MBA-RC also accepts TTL input voltage levels, contact closures (such as Morse hand key), a 60 mA or 20 mA keyboard loop, serial (ASCII or Baudot), or parallel ASCII inputs.

The MBA-RC comes with a 32 character alphanumeric vacuum fluorescent display. Each character is 0.29 inches high. No external CRT or TV is required. There are no noisy mechanical parts to wear out or break down during normal monitoring. However, Printer output is available for obtaining hard copy with an external printer when it is desired.

The MBA-RC has most of the features of the AEA model MBA-RO (reader only) including the exclusive AEA instant Morse automatic speed tracking capability from 3 to 80 + WPM. The speed of the received Morse signal is computed and can be displayed at the far right of the display at the completion of each word.

Baudot RTTY input speeds of 60, 67, 75 and 100 WPM are all accepted by the MBA-RC reader. ASCII RTTY input speed of 110 Baud is also copied by the MBA-RC.

Outputs from the MBA-RC can be used to drive popular serial Baudot Teletype printers such as models 15, 19, 28, and 32 or ASCII teletype machines such as the models 33 and 35. In addition, the MBA-RC will drive most of the popular parallel ASCII printers such as Epson and Centronics.

MBA-RC Encoder Features

Any standard Baudot or ASCII parallel keyboard, a current loop, even two-tone AFSK can be used to drive the MBA-RC. Regardless of the type of input, any of the three output codes can be generated at any of the MBA-RC available output speeds. Morse code input from a hand key, bug, keyer or memory keyer (even a Morse keyboard), can be instantly converted to Baudot or ASCII two-tone RTTY output for driving a SSB transmitter at the audio input jack. It will also drive FSK transmitters from a transistor keyed output port. When used with a Morse memory keyer, high speed RTTY transmissions can be made without the need of a keyboard.

Any Morse, Baudot or ASCII input code can be converted to any of the three ouput (Morse, Baudot or ASCII) codes. Also, any available specified MBA-RC input speed can be converted to any available specified MBA-RC output speed. A 1000 character dynamic storage buffer is particularly useful for code conversions from high speed inputs to low speed outputs (such as 110 Baud ASCII to 20 WPM Morse). A buffer limit LED will indicate when you are about to type too much into the buffer -For example, about five minutes of continuous 110 Baud ASCII can be fed into the MBA-RC for conversion to 60 WPM Baudot output before the buffer limit LED comes on.

The MBA-RC will transmit 1 to 99 WPM Morse code. The output speed for Morse can be set from an ASCII or Baudot keyboard by typing $NN, such as $25 for 25 WPM. A built-in CW sidetone monitor including a speaker is also standard equipment in the MBA-RC.

A built-in AFSK tone generator is also featured with 170 Hz or 850 Hz shift selected by a rear panel switch. Either of the shifts can be internally adjusted to any other shift between 100 and 1000 Hz. The AFSK generator uses a clean, stable function generator (not a 555 timer) that is factory tuned to 2125/2295 and 2125/2975 Hz.

An automatic CR/LF (carriage return/line feed) is generated in receive or transmit mode following the first word space after 64 characters on a line or after 72 characters if no space occurs. This feature is commonly referred to as word wrap-around. The feature is easily defeated with a front panel switch for such things as receiving RTTY pictures.

An anti-space (mark-hold) mode is automatically enabled after about a second of continuous space tone. This mode eliminates the undesired effect of having a printer running' 'open-loop' , .Another convenient feature is automatic down shift on space for Baudot reception or transmission. Otherwise known as USOS (unshift on space), it is independently selectable for transmit and/or receive on the rear panel.

An automatic station identification memory message is offered in the standard MBA-RC which can be activated by a front panel switch. The output generates less than a 50 Hz tone shift as well as a simultaneous CW keyed output. It can also be used for standard BAUDOT or ASCII message transmission.

An external contact closure applied to a rear panel jack will automatically change the selected input and output modes from receive to transmit.

General MBA Features

The MBA-RC is packaged in an attractive metal enclosure with a handsome front panel that is humanly engineered for easy operation. Operating status indications are provided for Morse speed, Mark and Space tune, and transmit and receive active modes in operation.

A bullt-in high and low voltage inverter power supply allows operation from an external 12 volt power source. The unit is diode protected against inadvertent reverse

polarization.

Radio frequency interference is a prime consideration in all AEA designs and the MBA-AC is no exception. This unit is designed for absolute minimum susceptibility to rf and for minimum rf radiation from its two microcomputers (far exceeding requirements outlined in part 15, subpart J of the FCC rules and regulations).

No point-to-point wiring is evident in the MBA-AC as a continuing effort to increase reliability. We also use high quality glass epoxy printed circuit boards. Like other AEA microcomputer-based products, the MBA-RC receives a full elevated temperature oven burn-in before a complete final test prior to shipping. All the measures taken to ensure the highest level of quality in our other successful product lines are likewise employed in the production of the MBA-RC.

MBA-RC Specifications

RECEIVE

Display: Blue 32 character vacuum fluorescent with 0.29 inch high, 14 segment characters.

Modes: Morse Code, Baudot RTTY, ASCII RTTY

Speed: Automatically tracks Morse Code from 3 to 80+ WPM, Baudot RTTY speeds: 60, 67,75,100 WPM, ASCII RTTY: 110 Baud.

Filtering: Four-pole variable CW filter front-panel tuned from 900 to 950 Hz. Can also be used for SPACE ONLY RTTY tuning.

RTTY 170 Hz Fixed (2125 Mark/2295 Space) Reverse/ Normal switch.

RTTY Variable 100 to 1000 Hz Shift (2125 Mark/2225-3125 Space).

Input Impedance: Approximately 5K Ohms. will work with virtually any receiver or audio amplifier output impedance.

Printer Outputs: Serial (current loop) Baudot such as teletype models 15, 19, 28, and 32.

Serial current loop ASCII such as teletype models 33 and 35. Parallel ASCII such as EPSON and CENTRONICS.

Automatic CR/LF: (defeatable) after first space following 64 characters or after 72 continuous characters (word wrap around).

USOS: Automatic down shift on space (defeatable).

Anti-Space: Mark-hold after continuous space tone.

TRANSMIT

Modes: Morse code, Baudot RTTY, ASCII RTTY.

Output Speed: Morse 3-99 WPM

Baudot RTTY 60, 67, 75, 100 WPM

ASCII RTTY 110 Baud

Keying Outputs: CW: Cathode Keyed (to 200 ma.) grid block (to -300 volts) or solid state transmitters.

RTTY: Photo-isolated contact closure, TTL level transistor switch, or two tone AFSK 170 Hz shift (2125 Mark/2295 Space), 850 Hz shift (2125 Mark/2975 Space).

Inputs: Morse: from hand key, bug, keyer, memory keyer, Morse keyboard.

RTTY: Two tone ASCII or Baudot AFSK, Parallel (TTL compatible) or serial ASCII or serial Baudot.

Automatic CR/LF: (switchable) after first space following 64 characters or after 72 continuous characters.

USOS: Down shift on space (switchable).

Auto I.D.: Less than 50 Hz Morse shift from programmable I.D. memory. Can also be used for standard Morse, BAUDOT or ASCII message transmissions.

GENERAL

Power Requirement: 13 VDC + 2 VDC at 1.2 AMPS.

Integrated Circuits: 43 IC's plus two custom AEA microcomputers with copywritten firmware.

Size: 83/4" W x 4V2" H, x 7" D

Weight: Approximately 5 lbs.