MOSTEK®
## MICROCOMPUTER SYSTEMS
Video Adaptor Board (VAB-2)

FEATURES

☐ Complete video interface system on one board

☐ Single supply (+5VDC or 12.6VAC) operation

☐ On board rectifier and regulator for 12.6VAC operation

☐ 16 lines of 64 characters

☐ Full ASCII character set - 128 symbols including upper/lower case letters

☐ Full cursor controls: ↑↓ ← → home, screen clear, carriage return, erase to end of line/screen; plus direct X-Y addressing

☐ 8 bit ASCII or 5 bit Baudot operation

DESCRIPTION

The VAB-2 is a single board video terminal based on the MOSTEK MK3870 single chip microcomputer. It functions as an interface between a 20mA full duplex serial data loop, an ASCII encoded keyboard, and an EIA standard video monitor. The only other external component required is a 12.6 volt transformer.

The P.C. board 'form factor' facilitates installation within most standard keyboard housings. Alternatively, the 2 inch power supply section may be cut off the P.C. board allowing the board to be inserted into a standard 12" card rack (such as Mostek's XAID-100 MK79034) for system use.
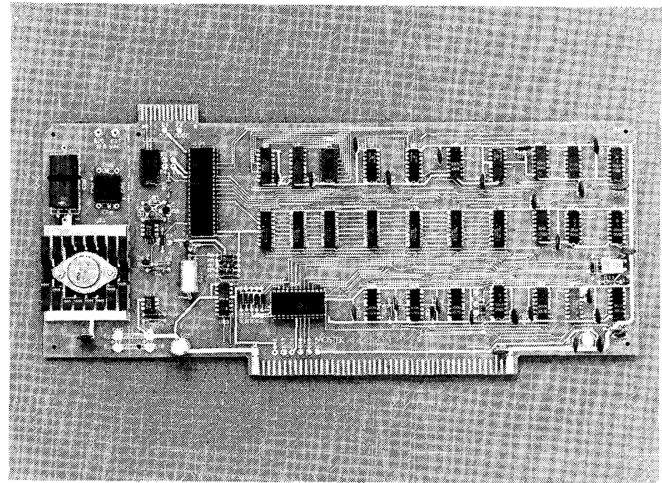
SPECIFICATIONS

Operating Temperature 0°C — 50°C

Power Supply Requirements
    5VDC±5% @ 0.75A max.
        or
    8 — 14 VAC rms @ 0.75A rms max.

Board size (with power supply) 14" x 6.5" x 1"
    (without power supply) 12" x 6.5" x 1"

Video output 1.5Vp-p into 75 Ω (EIA RS-170)

Current loop input/output 20mA nominal opto-isolated 240V max loop to ground

Keyboard inputs — standard TTL compatible

CUSTOMER SUPPLIED EQUIPMENT

Keyboard — Cherry B70-4753 or equivalent

Monitor — SC Electronics, Inc. 10M915 or equivalent

Transformer — Stancor P8384 or equivalent

MICROCOMPUTER BASED

The heart of the VAB-2 is the MK3870 single chip microcomputer. The MK3870 provides the following functions:

- Serial data link interface
- Control character decoding
- Cursor positioning
- Keyboard interface

ASCII OPERATION

In ASCII mode, the VAB-2 receives and transmits an 8 bit code (parity bit = 0 on transmit, ignored on receive). Two stop bits are transmitted by the VAB-2, but only one stop bit is required by the VAB-2 receiver. The VAB-2 works equally well with external systems transmitting one, two, or more stop bits. Available Baud rates for ASCII are 300 and 110.

See also Figure 1 — ASCII character set, and Table 1 — ASCII control characters.

BAUDOT OPERATION

In Baudot mode, the VAB-2 receives and transmits a 5 bit code (compatible with Model 15, Model 28, or similar Teletypes™). Two stop bits are transmitted, but only one stop bit is required by the VAB-2 receiver. The VAB-2 works equally well with external systems transmitting one, 1.5, or more stop bits. Available Baud rates for Baudot are 74.2 and 45.45. In Baudot mode, the only control codes available are carriage return and line feed. The Baudot "Letters" and "Figures" shift characters are generated automatically as required. Keys on the ASCII keyboard which generate codes having no equivalent Baudot code are ignored. ASCII code "Rubout" ($7F_{16}$ or 177_8) generates a "Letters" shift to facilitate synchronization of the distant end receiver.

ASCII CHARACTER SET

$\alpha\beta\gamma\delta\epsilon\theta\iota\lambda\mu\nu\pi\Sigma\phi\psi\omega\Omega$ 0123 ^{02} _÷≏√∫|← ↕
! " # $ % & ' ( ) * + , − ; / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?
@ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [\ ] ^
` a b c d e f g h i j k l m n o p q r s t u v w x y z { ¦ } ~ ░

Figure 1

BAUDOT CHARACTER SET

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
− ? : * 3 $ & # 8 ( ) . , 9 0 1 4 ! 5 7 ; 2 / 6 "
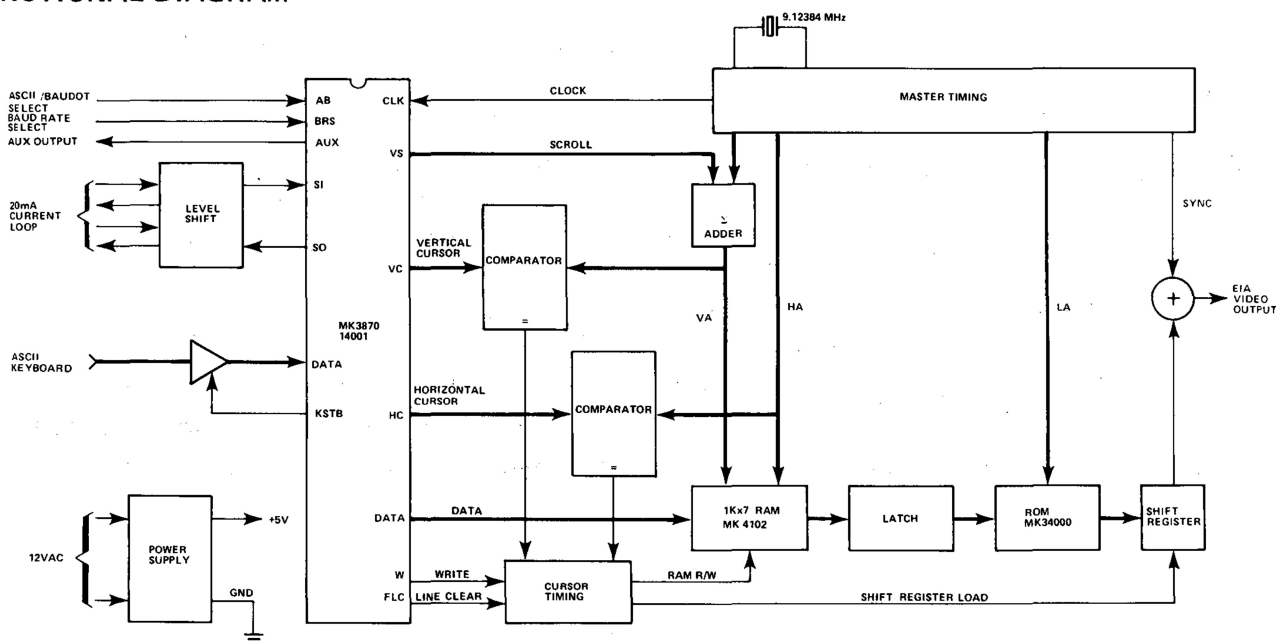
Figure 2

FUNCTIONAL DIAGRAM

Figure 3

OCTAL	HEX	CNTL	FUNCTION	
004	04	D	HOM	Home — moves cursor to upper left corner of screen
005	05	E	EOL	Erase end of line — erases current line from right margin to current cursor position (1600mS max)
006	06 1	F	EOS	Erase end of screen — erases lines from bottom of screen to, but not including, current line (400mS max)
010	08	H	BS	Back space — move cursor left one column unless already in left most column
011	09	I	HT	Horizontal tab — moves cursor right one column unless already in right most column
012	0A	J	LF	Line feed — moves cursor down one line, scrolls screen up if already on bottom line
013	0B	K	VT	Vertical tab — moves cursor up one line, scrolls screen down if already on top line
014	0C	L	FF	Form feed — clears screen and homes cursor (400mS)
015	0D	M	CR	Carriage return — moves cursor to left margin
020	10	P	DS	Down shift sequence — causes character following DS to be interpreted as printable rather than control. Required for lower 32 symbols (Greek and math), but may be used with any characters.
021	11	Q	DC1	Device control — sets AUX bit
023	13	S	DC3	Device control — clears AUX bit
033	1B		ESC	Start cursor sequence — ESC + ΔV ΔH adds ΔV modulo 16 to vertical cursor address ΔH modulo 64 to horizontal cursor address ESC = ΔV ΔH sets vertical cursor address to ΔV modulo 16 horizontal cursor address to ΔH modulo 64
177	7F		DEL	Delete — moves cursor left one column, unless cursor was already on leftmost column; erases new position

TABLE 1. — ASCII CONTROL CHARACTERS
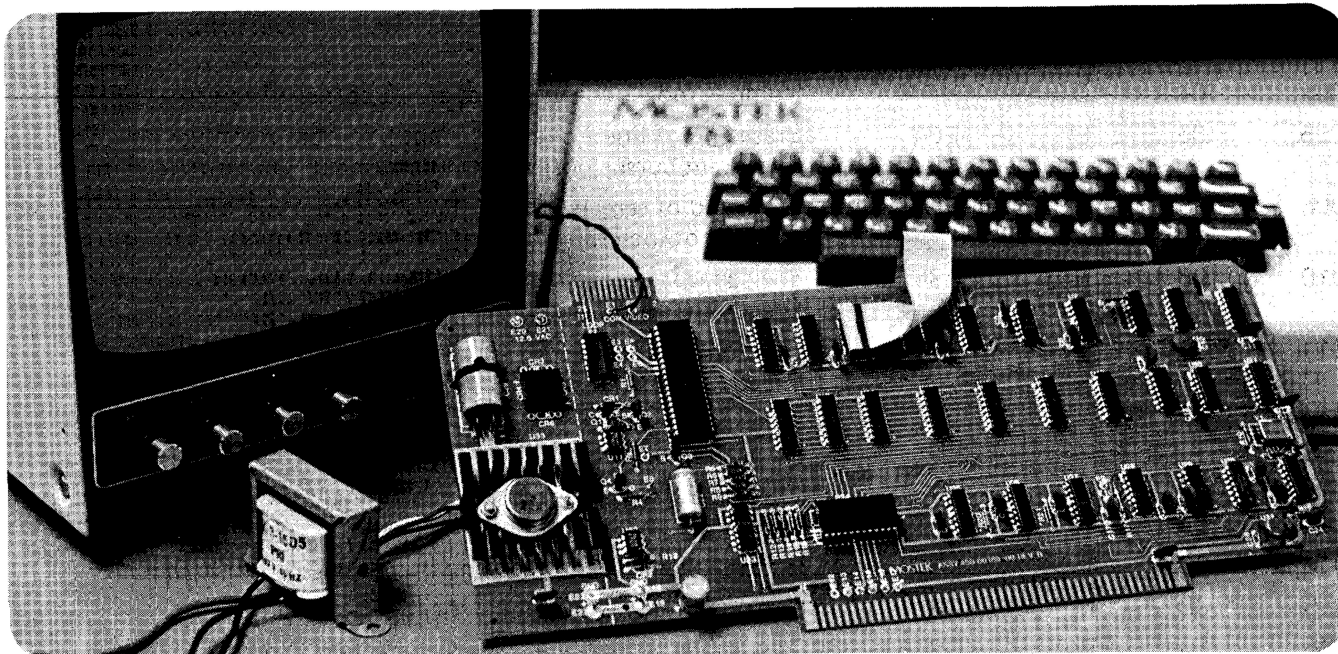
CHARACTER GENERATOR

The VAB-2 is shipped with an MK34073 (2K x 8) character generator ROM, providing 128 displayable characters (see Figure 1 — ASCII character set). For custom applications, the MK34073 ROM may be removed and an MK2708 type PROM (1K x 8) installed, programmed with the user's custom font (external +12V and –5V or –12V supplies required for some PROMs). Alternatively, for high volume applications, a new ROM mask may be ordered. The MK34000 series can provide two complete 128 character sets per ROM. Provision is made for wiring the AUX bit to the ROM for program-selectable character font.

AUXILLARY BIT OUTPUT

A special output (AUX) is provided for custom control applications. AUX is capable of driving one TTL load, and is brought out to the P.C. edge connector. AUX is cleared upon power up and each time a DC3 character is recieved. AUX is set upon receipt of a DC1 character.

KEYBOARD

The VAB-2 interfaces directly with standard ASCII encoded keyboards. Although normally used with active high data and strobe keyboards, provision is made for active low keyboards.

CUSTOMER SELECTABLE OPTIONS

□ 50/60 Hz (Strap option)

□ 110/300 Baud ASCII (strap option)

□ 74.2/45.45 Baud Baudot (strap option)

□ MK34000 series ROM or MK2708 type PROM character generator (strap and population option; MK34073 standard)

□ 5VDC or 12VAC operation (strap and population option; 12 VAC standard)

□ Serial loop connector — 16 pin DIP socket or 26 pin edge connector

□ Active high or active low keyboard input (population option; active high standard)

□ Custom features and/or character generator for high volume OEM applications (one-time mask charge applicable)

ORDER INFORMATION

NAME	DESCRIPTION	PART NO.	PRICE
VAB-2 Operations Manual	Detailed description of the use and operation of VAB-2	MK79560	$ 1.50
VAB-2 Source Listing	Source Listing of the 3870 Firmware used in VAB-2	MK79561	$ 15.00
MK3870/ 14001 Firmware Package	Pre-programmed 3870 used with VAB-2 plus the Operations Manual and Source Listing described above	MK79056	$ 50.00
VAB-2	Assembled and tested VAB-2 Circuit Board plus the Operations Manual and Program Source Listing	MK79052	$195.00

*Prices are subject to change without notice and apply only to U.S. and Canada.

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