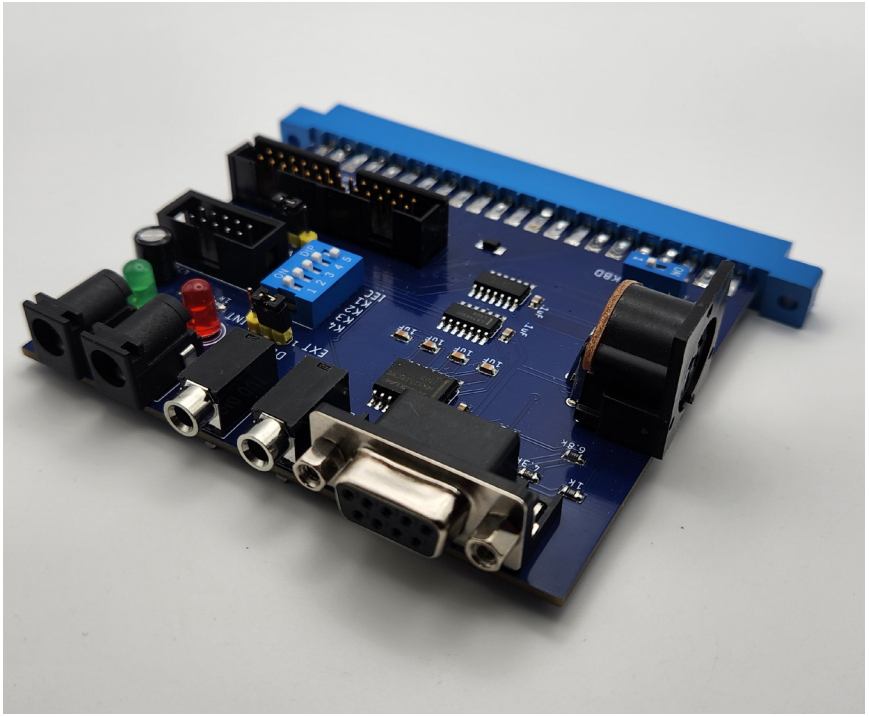
RetroSpy
Technologies

KIM-1 I/O Board



Last Updated: 06/22/2024

The KIM-1 I/O Board

This KIM-1 I/O board connects to the Application connector on the KIM-1.

Features

- TTY over RS-232 communication via a DB-9 connector
- Cassette audio out (jumper configurable HI or LOW) a mono 3.5mm jack
- Cassette audio in via a mono 3.5mm jack
- Cassette remote control via two mono 2.5mm jacks
- Commodore floppy disk drive, or an SD2IEC, access via KIM-1 assembly routines
- 2×5 header and INT/EXT DECODE jumper, allowing for connection to RetroSpy's or Corsham Technologies' RAM/ROM boards
- 2×13 header exposes all PA and PB signals, as well as passing 12v and GND. This header is directly compatible with the RetroSpy & Corsham Technologies SD Card System.

Connecting the I/O Board

The I/O board connects to the Application connector, which is the one at the bottom of the KIM-1's left side Never plug or unplug the I/O board while the KIM-1 is powered on. Also connect the I/O board's RESET pin to pin 7 of the Expansion connector. This connection can also be made by connecting the RESET pin on the KIM-1 I/O board to the RESET pin on a RetroSpy KIM-1 RAM/ROM Board installed on the Expansion connector.

To power on the KIM-1 plug a 5V DC power supply with 5.5mm OD and 2.1mm ID into the top (labeled +5V) barrel connector. A 12V supply is only required if you will be using the audio tape routines of the KIM-1 or want 12V to be passed through the 2x13 header on the I/O board.

Using the I/O Board

1. TTY to RS-232 over the DB-9 Connector

Connect the DB-9 serial connector to your PC with the appropriate cable and ensure TTY is selected via the TTY/KBD switch. Power on your KIM-1, hit the RS key on the KIM-1 and connect to the KIM-1 at 2400 bps, 8 data bits, no parity, 2 stop bits and no flow control. You will also likely need to add a transmit delay of at least 25 ms/char and 50 ms/line. In your terminal press either the “Enter” key and you should be presented with a monitor prompt. Section 2.6 in the KIM-1 User Manual discusses making a TTY connection to the KIM-1.

2. Cassette Audio In

Connect a 3.5mm mono cable between the audio out (EAR) of your cassette player to the jack labeled AUDIO IN on the I/O board. A stereo cable can be used but cassette audio will only be used from one channel.

3. Cassette Audio Out

First, we need to set the LEVEL jumper on the I/O board. Most of the time LO is sufficient for proper operation. To put the audio out into LO mode jumper the pins next to LO. If needed, you can put the audio out in HI mode by jumpering the pins next to HI. Once properly jumpered connect a 3.5mm mono cable between the audio in (MIC) of your cassette player to the jack labeled AUDIO OUT on the I/O board. Again, a stereo cable can be used but the audio will only be outputted on one channel.

4. Commodore Floppy Drive Usage

Always ensure the DIP switch labeled IEC is in the ON position if you are using the IEC port. The IEC circuitry inteferes with some data lines on the 2x13 header, so there are times you may want to turn the IEC circuitry off. In particular this is necessary if using a RetroSpy or Corsham Technologies' SD Card System plugged into the 2x13 header.

With a Commodore IEC floppy drive plugged into the IEC port on the bottom of the I/O card it can be used with several different pieces of software. The best option is to use Eduardo Casino's version of Corsham Technolgies' xKIM Monitor (github.com/eduardocasino/xkim1541). RetroSpy's version of xKIM also has support for IEC drives, but its very rudimentary compared to Eduardo's version. Both of these versions of the xKIM monitor are included with RetroSpy's KIM-1 RAM/ROM board. You can also use the raw asm routines avaiable at github.com/netzherpes/KIM1541.

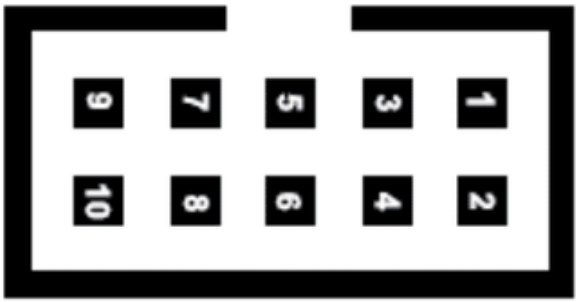
5. 2x5 Header & DECODE Jumper

If you do not have a RAM/ROM board attached to the Expansion connector of your KIM-1 then you want to ensure the DECODE jumper set to INT. In this case the 2x5 header is not needed and the K1-K4 DIP switches serve no purpose.

However if you have a RAM/ROM board attached to the Expansion connector you will want to connect it to the 2x5 header to enable the RAM/ROM board to controller memory addressing of the KIM-1. In this case you will want the DECODE jumper set to EXT. With the RetroSpy or Corsham Technologies RAM/ROM boards the K1-K4 DIP switches will enable address blocks K1-K4 (0x0400-0x13FF).

2x5 Header Pinout

1. GND
2. K0
3. K1
4. K2
5. K3
6. K4
7. K5
8. K7
9. SELECT
10. DECODE_ENABLE

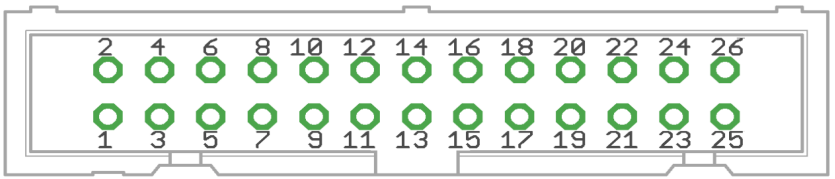


6. 2x13 Header

The primary use of this header is to support the RetroSpy SD Card System, but it can be used for just about any purpose where you need easy access to the KIM-1's IO lines.

2x13 Header Pinout

1. PA0	2. PB0
3. PA1	4. PB1
5. PA2	6. PB2
7. PA3	8. PB3
9. PA4	10. PB4
11. PA5	12. PB5
13. PA6	14.
15. PA7	16.
17.	18. PB7
19.	20.
21.	22.
23. +12v	24. +12v
25. GND	26. GND



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