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KIM Clone Proto Board User Manual

All Revisions (so far)

Introduction

The 6502 architecture makes it a very easy system to add peripherals to, and the KIM Clone Proto Board makes it even simpler to build your own circuits and quickly access all the expansion pins.

Differences Between KIM Clone and KIM Clone Motherboard

When you design and build circuits on the proto board, or when designing your own boards, there are a few things to keep in mind about differences between the signals on the KIM Clone expansion connectors and the signals on the motherboard connectors.

Use of 5 Volts

The KIM Clone does not supply 5 volts on pins 5 and 6. On the motherboard, there is a limited amount of current available on those pins. The regulator on the motherboard supplies about 1.5 amps, some of which is used on the motherboard, the rest is available for add-on circuitry.

If your board needs a small amount of power and will always plug into the motherboard, then your designs can use the 5 volt supply.

For use with either the motherboard or without, your designs should use the 8 volt supply and have their own voltage regulator.

Driving the Data Bus

Besides respecting the R/W line (high on read, low on write), your designs also need to pull the /DATA_DRV line low in order to have the motherboard's drivers drive the data bus. Without this, your circuit won't have its data reach the KIM Clone's data bus. The circuitry on the motherboard will properly drive the buffer based on whether the operation is a read or a write. In general, pull this line low whenever your circuitry is selected.

Use of Unassigned Pins

Pins marked as RESERVED should not be used by any permanent board, as they might be used in a future version of the KIM Clone.

Pins marked as Available are free for any use.

Expansion Connectors

There aren't a whole lot of switches and connectors, but the few deserve some explanation.

Connector	**KIM Clone**	**Motherboard**	**Use**
EXPA Connector			
1 & 2	Ground	Ground	
3 & 4	+8 VDC	+8 VDC	
5 & 6	Not used	+5 VDC	
7	/RESET	/RESET	6502 RESET line, active low
8	PH2	PH2	6502 phase 2 clock
9	PH0	PH0	6502 phase 0 clock
10	SO	SO	6502 SO signal
11	R/W	R/W	High = read, low = write
12	PH1	PH1	6502 phase 1 clock
13	/RDY	/RDY	
14	/IRQ	/IRQ	
15	SYNC	SYNC	
16	/NMI	/NMI	
17	/RAM_SELECT	/RAM_SELECT	Pull low to select RAM on KIM Clone, or pulled low

			when KIM Clone RAM is selected.
18	Not used	/DISABLE_BUS	Pull low to disable bus drivers on A0-A15 and D0-D7 to/from the KIM Clone.
19	Not used	/R/W	This is low on read, high on write.
20	Not used	/DATA_DRV	Pull low on read from circuitry on proto board to enable the data buffers to drive the KIM data bus.
21 – 30	Not used	Available	User-defined functionality
EXPB Connector			
1 & 2	Ground	Ground	
3	A15	A15	
4	A14	A14	
5	A13	A13	
6	A12	A12	
7	A11	A11	
8	A10	A10	
9	A9	A9	
10	A8	A8	
11	A7	A7	
12	A6	A6	
13	A5	A5	
14	A4	A4	
15	A3	A3	
16	A2	A2	
17	A1	A1	
18	A0	A0	
19	Not used	RESERVED	
20	Not used	RESERVED	
21	Not used	RESERVED	
22	Not used	RESERVED	
23	Not used	RESERVED	
24	Not used	RESERVED	
25	D7	D7	
26	/0000-1FFF	/8K_0	
27	D6	D6	
28	/2000-3FFF	/8K_1	
29	D5	D5	
30	/4000-5FFF	/8K_2	
31	D4	D4	

32	/6000-7FFF	/8K_3	
33	D3	D3	
34	/8000-9FFF	/8K_4	
35	D2	D2	
36	/A000-BFFF	/8K_5	
37	D1	D1	
38	/C000-DFFF	/8K_6	
39	D0	D0	
40	/E000-FFFF	/8K_7	

Bob Applegate
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Revision History

Version	Changes
1A	Internal engineering version

Errata

None.

Parts List

Part	Number	Description
PCB	1	Printed Circuit Board (Corsham Tech)
JP3-JP11	9	1x10 female headers
J1, J2	2	Phoenix Contact 1985276 (Digikey 277-1630-ND)
EXPA	1	2x15 male right angle header (Digikey S2111EC-15-ND)
EXPB	1	2x20 male right angle header (Digikey S2111EC-20-ND)
	2	Breadboards with double sided tape (eBay, Amazon)