

## MK14E Issues

Ref	Description	Source	Comments	Implemented ?	Change
1	EPROM link selectable so that e.g. either SCIOS 2 or SCIOS 3 can be placed at 0000-01FF by moving a link (while still leaving 0200-07FF as RAM)	SiriusHardware	Switching between two images can be achieved quite easily with the change to a 2732, see 21	Yes	see 21
2	INS8255 instead of the 8154	Phil_G	Breaks compatibility with original MK14	No	no change required
3	74HCT series instead of 74LS	Mark1960	It'll probably work but I have good stocks of parts in LS and not necessarily in HCT !	n/a	Builders can try using HCT ?
4	74HCT193 doesn't need NADS inverted. If you ground the up/down inputs this also gives you high and low page selects on the carry outputs. If you keep up input grounded then the down input can be used as an additional enable.	Mark1960	I guess you're suggesting using a 193 instead of a 93 to save an inverter ? But the inverter is still needed for IC3 ?		
5	Maybe check what happens with vdu if pages are decoded. Take care not to make sudden changes to the address lines when nenin is raised.	Mark1960	Will look at this when I have a working replica VDU		
6	74HCT573 could replace both 74LS157s and the two 7408s, which are also getting rare. You might need to add series resistors to limit display current.	Mark1960	Yes looks like a good replacement for four chips, I don't have any to try at the moment though. In general I was trying to retain the original circuit unless parts were unavailable and 157s and 08s are still around so what do others think ?	?	(need to buy 74HCT573 to try)
7	6116s could have battery backup to save losing programs on power off.	Mark1960	Already done via LK8	n/a	no change required
8	Links could allow battery backed ram to replace the eeprom for mods to the monitor.	Mark1960	Not easy to implement, the RAM would have to be moveable so it could be loaded ?		
9	Would the serial interface need inverters to work with NIBL ?	Mark1960	I've tried to figure this out from the Elektor BASIC computer article (RS232) and Introkit manual (20mA) but still not sure ! It looks like the BASIC computer inverts the Tx but not the Rx bearing in mind RS232 is inverted voltage levels ?	?	Unknown (still have two inverters spare)
10	74L86 or 74LS86	SiriusHardware	Will look at this when I have a working replica VDU		
11	6116 pinout compatible SRAMS with built in battery backup	SiriusHardware	As they are pin compatible then its still an option	n/a	no change required
12	If you really want to play with other peripheral ICs such as 8255s and maybe a 6402 UART and a counter/timer or real time clock it might be better to have those on a 'Multi-I/O' PCB which can be slotted into the backplane.	SiriusHardware	A future expansion board with 6522/8255 and UART, similar to Acorn System VIB ?	n/a	no change required
13	Currently to build a MK14 replica costs approximately £350, it would be great if the cost can be reduced by half.	coolsnaz2	I'll do my best to not use any exotic parts (except for the 8060)	n/a	no change required
14	I don't think the memory at the original locations should be battery backed up, should be the same as the original.	coolsnaz2	Battery backup is a link option, don't fit the link !	n/a	no change required
15	I think the main PCB should have a slot for the 8154, and the 8154 replacement should be on the expansion board.	coolsnaz2	I agree	n/a	no change required (though see 25)
16	All programs in the original MK14 Training Manual should run with no modifications.	coolsnaz2	I agree	n/a	no change required
17	Expansion board should allow for USB Keyboard or USB Numeric Keypad.	coolsnaz2	Noted	n/a	no change required (though see 25)
18	I think there needs to be a MK14 Rev VI memory map mode that still has the various mirrors of 8154 and KEYBD etc., but also makes space for the expansion RAM in 0x200 - 0x7FF. The reason being that some of the original programs don't always use 0x0800 for the 8154 base address and/or don't always use 0xD00 for the KBD/Display interface. Instead they use a mirror - perhaps just because they could or perhaps because it allows them to use relative addressing from one of the base areas in RAM (0xF00 / 0xB00). Whilst it's a bit of a niche situation the MK14E should make provision for it (IMHO). [In fact I think the MICOM Assembler is an example of putting the 8154 at a different address].	Realtime	New links allow removal of address lines from 8154 and Keyboard/Display address decode so that mirror images reappear as per V5 board	Yes	New links LK10, 11 and 12 added
19	And..... why not fit 32K E(2)PROM and 32K RAM on the base card and do away with the expansion card memory? Just seems it would then leave the backplane and expansion card free for more exciting options. I assume there is a GAL or CPLD being used for the memory decoding?	Realtime	The extra address decoding and links/switches would not fit on the board. Its implemented in discrete logic in keeping with the original - no GAL/SPLD here !	No	no change required
20	would like to see a separate graphics LCD interface (I2C, SPI or maybe even parallel) to allow one to be connected instead of a VDU module with a separate display. Would make for a very compact solution and also allows for a fairly simple colour display to be generated, especially as there's so much EPROM available - all sorts of graphics routines could be included at some point including the LCD driver. Perhaps that's one for the expansion card.	Realtime	One for a future expansion board	n/a	no change required (though see 25)
21	A further suggestion, pin out for a 27(C)32(A) rather than 2716, why? -	SiriusHardware	I'll make it accept 2716 or 2732 with a link to pin 21 that can be tied high or low	Yes	Link LK5 added to IC5 pin 21
22	Most will be aware that you can use a 2732 'as' a 2716 by programming the data into the upper half of the chip because when placed in a socket intended for a 2716, the high address pin of the 2732 is held permanently high. However, it might be less confusing just to lay the PCB out for the 2732, then the device (whether standard, A or C version) can be programmed with the code starting at address 0000 as per normal expectations.	SiriusHardware	See 21	Yes	see 21
23	While the removal of the various 'images' of the 8154 and keyboard hardware etc. is something that SOC could and should have done back in the day I agree with Realtime that there needs to be a mode in which those images are present for compatibility with legacy software.	SiriusHardware	Done, see 18	Yes	see 18
24	SOC did finally remove the ROM images occupying 0200-07FF on the issue V MK14 and published mods for how to do it on earlier issues, so the removal of those images and the provision of RAM or a mix of RAM and ROM in that space is 'canonical' and if you have a VDU, quite frankly, essential.	SiriusHardware	I agree	n/a	no change required
25	Another thing I'd like to see further down the line is a prototyping board which can plug into the backplane.	SiriusHardware	I've put a prototyping area on the memory expansion board. Otherwise you could use a Eurocard size prototyping card.	n/a	no change required
26	How would I/O on a future Expansion Board be addressed and not conflict with the Main Board ?	ChrisO		Yes	Added 'I/O' line to backplane which disables onboard memory or I/O when selected (pull low to disable)
27	Don't forget to rotate the display on the PCB !	ChrisO	No comment		To do
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29					
30					