

CPC 512K Ram Expansion RC-1-Albatross Release Notes

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Summary

This is a universal 512K RAM expansion card for all Amstrad CPC models.

The board has an 'M4' connector so requires a suitable motherboard or adapter to mount on the CPC.

On the 6128 and later computers the board provides a full 512K RAM expansion following the DK'Tronics/Amstrad specification.

On 464 and 664 computers the board will provide either a full 512K RAM expansion but with the same limitations on mode C3 which the DK'Tronics cards have, or a small 448K expansion which removes those limitations. In the latter case one 64K bank is given up and used to shadow internal RAM

Current status is that the card is fully working for the 6128/Plus computers, but the 464/664 modes are still in development. Release notes follow with more detail.

Release Notes

RC-1-Albatross is the first release candidate for alpha testing.

In this release the ability to run in overdrive mode without shadow memory is disabled.

In fact the board can happily run in overdrive mode only (like all other cards) but when the code to enable both options is included a timing problem means that running Future OS in shadow mode has a strong voltage dependency: unless Vdd can be kept above 5V the Future OS pointer is not clearly visible. The pointer gets progressively less visible (white pixels missing) as the voltage decreases. Adding an additional term into the A15 overdriving code resolves this so that FutureOS runs fine with Vdd down as far as 4.5V but this term breaks the overdrive-without-shadow memory operation.

So, currently the DIP Switches work as follows

DIP	Function
1	selects 464 mode which overdrives RD_B and ADR15 as required AND turns on shadow memory
2	turns on shadow memory if not already turned on by DIP1 above
3	selects partial shadow memory for mode3 only (OFF) or full shadow memory (ON) using SRAM instead of CPC base RAM for all addresses.
4	selects shadow memory bank as low bank 3 (OFF) or high bank 7 (ON).

When setting DIP4 be careful because the DK'Tronics Silicon Disk software does not do a good check of the memory available. SDISC will declare banks 4-7 available for the disk even if DIP4 is set ON which effectively means that bank7 is not available.

Recommended DIP settings in this release candidate are

Configuration	DIP1	DIP2	DIP3	DIP4	Application	Comment
1	OFF	OFF	OFF	OFF	6128 or Plus computers	Disable overdrive and shadow memory and provide a full 512K expansion for these machines
2	ON	DON'T CARE	OFF	OFF	464 or 664 computer using DK'Tronics silicon disk	Provides a 448KB extension which can be used as a 256K silicon disk + a 192K RAM expansion
3	ON	DON'T CARE	OFF	ON	464 or 664 computer not using DK'T silicon	Provides a 448KB extension

Other configurations are possible, but not currently recommended.

Testing Results

Test conditions

- 6128 BASIC ROM + Firmware installed on SixROM card in 464 during testing
- RAM Card powered by bench PSU @ 4.8V (unless indicated otherwise) independently of CPC power

	CPC464	CPC6128	CPC6128	Notes
Machine ID	Revaldinho 46xxxx K32-5x	Revaldinho 133977 K32-57	RobC 115286 K32-56	
Board Connection	Via DDI-3 on Revaldinho Backplane	Revaldinho Backplane	Revaldinho Backplane	
CRTC Type	2	2	1	Note different CRTC in 2nd 6128
DIP SWITCHES	Config. 3	Config 1.	Config 1.	
DIP1: Overdrive	ON	OFF	OFF	Select ON only for 464/664 computers
DIP2: Shadow Mode	X	OFF	OFF	Don't care if DIP1 is ON - option is disabled in that case by the CPC464 _SHADOW_ONLY_OPERATION conditional clause in the Verilog
DIP3: Full Shadow Mode	OFF	OFF	OFF	
DIP4: Shadow Bank High (ON) or Low (OFF)	ON	OFF	OFF	
DAM Test				

RAM TEST Programs				
Ramtest.bas	PASS	PASS	PASS	Quick test to identify available blocks and check DIP settings
TEST.BIN	PASS	PASS	PASS	Full RAM test
RAMTEST.BIN	PASS	PASS	PASS	Alternative test (BCPL) for modes 4-7 only
RAM512KB.BIN (Duke)	PASS	PASS	PASS	Correctly shows 448KB on 464 with shadow mode on and passing on all banks
Applications				
FutureOS GUI	PASS	PASS	todo	
CP/M Plus	PASS	PASS	todo	Boot to OS, run basic utilities etc
CP/M Plus Turbo Pascal	PASS	todo	todo	Load, edit, compile, run Hello World program
DK'Tronics Silicon Disk	PASS	PASS	PASS	
DK'Tronics Bank Manager	PASS	PASS	todo	
Demos				
Phortem	PASS	PASS	PASS	
Batman Forever	NA	NA	PASS	Cannot run on CRTC Type 2
Games				
Zaptball	PASS	NA	NA	Doesn't run from Gotek on drive B on CPC6128
R-Type	PASS	todo		
Double Dragon	PASS	PASS	PASS	Loading screen corrupt, but game play and intermediate screens perfect. Same behaviour on the 464 and 6128, both with type 2 CRTC. Only the tvne 1 CRTC has clean

				Only the type 1 CRTs has clean loading screens (blank blue screen)
Prehistorik II	PASS	todo		
ChaseHQ	PASS	todo		
Hard Drivin'	PASS	todo		
P-47	FAIL	FAIL !	FAIL	On 464 loading screen ok, game screen blank - may not be a RAM issue as on 6128 game starts but screen is totally corrupt. All machines fail in slightly different ways, ie not even the 2 6128's match.
Robocop	PASS	NA	NA	Doesn't run from Gotek on drive B on CPC6128
Gryzor	PASS	todo	PASS	
Alien8	NA	NA	PASS	Cannot run on CRTC Type 2

Power Consumption

Supply Voltage	Current
4.5V	90mA
4.75V	100mA
5.0V	115mA
5.25V	130mA

