

RAM 320XE/576 - is a plug&play RAM card for ATARI 800XE, 130XE, and later 65XE (must be equipped with ECI port) that allows you to easily upgrade your computer up to 576kB of total RAM.

For installation just turn off the computer and firmly plug the card to the back side of the Atari.

The card supports 8 modes of operation which can be selected by three switches. The first two switches (1 and 2 ) select the particular RAM configuration and the third is the REMAP.

The REMAP has a special meaning. When enabled, the internal Atari RAM is completely disabled (including most internal RAM expansions, when present) and part of the SRAM in the RAM320XE/576 board serves as the base 64kB RAM. This is useful when your Atari has faulty or even missing RAM.

		REMAP switch	
MODE:	SWITCH:	0 (OFF)	1 (ON)
1	00	Card disabled	64kB
2	01	130XE	130XE
3	10	320XE	320XE
4	11	576kB RAMBO	320kB COMPY

### Explanation of the modes:

1. When REMAP switch is disabled, the card is completely disabled.

When REMAP switch is enabled, the basic 65XE/800XE 64kB mode is active even on 130XE or internally expanded machines. This mode is meant mainly for testing purposes.

### **2. Standard 130XE 128kB mode (64kB + 64kB)**

banks: E3, E7, EA, EF



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This mode supports separate CPU/ANTIC banking.

### 3. 320kB Rambo mode (64kB + 256kB) identical to RAM 320XL expansion

banks: 83, 87, 8B, 8F,  
A3, A7, AB, AF,  
C3, C7, CB, CF,  
E3, E7, EB, EF

```

    00, 01, 02, 03
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	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
\$0x	■	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$1x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$2x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$3x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$4x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$5x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$6x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$7x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$8x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$9x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$Ax	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$Bx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$Cx	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$Dx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
\$Ex	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$Fx	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

```

$D301: 76543210          16 banks = 0256 KB

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```

Bank: ----- $-- Test address:$----
↑↓←→=move RETURN=test A=all ESC=exit

```

### 4. Remap switch off: 576kB RAMBO (64kB + 512kB)

banks: 03, 07, 0B, 0F, 23, 27, 2B, 2F,  
43, 47, 4B, 4F, 63, 67, 6B, 6F,  
83, 87, 8B, 8F, A3, A7, AB, AF,  
C3, C7, CB, CF, E3, E7, EB, EF

```

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```

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
\$0x	■	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$1x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$2x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$3x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$4x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$5x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$6x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$7x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$8x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$9x	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$Ax	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$Bx	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$Cx	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$Dx	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$Ex	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●
\$Fx	-	-	-	●	-	-	-	●	-	-	-	●	-	-	-	●

```

$D301: 76543210      32 banks = 0512 KB

```

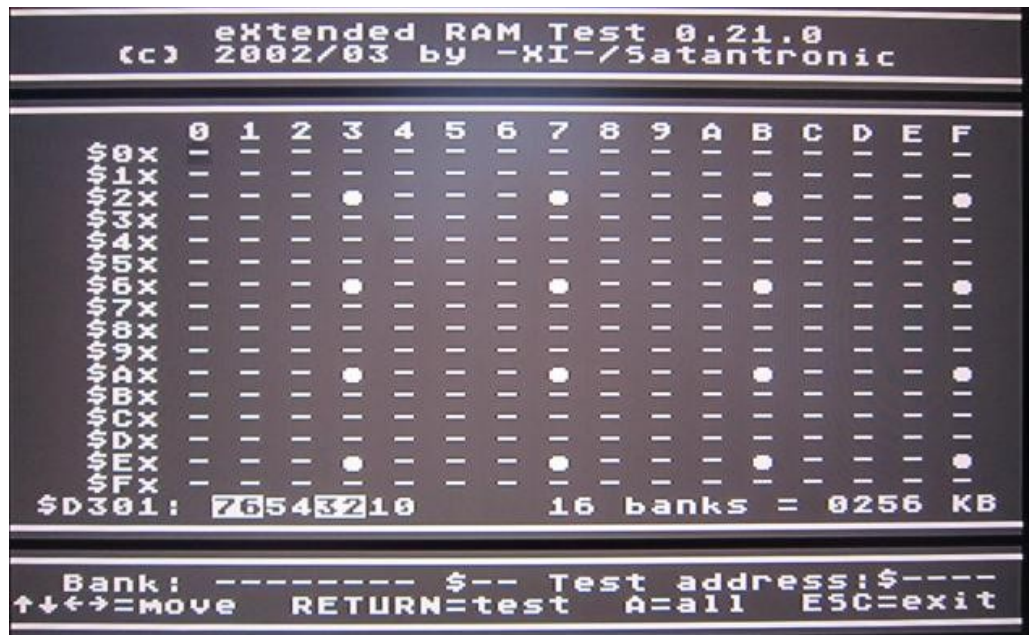
```

Bank: ----- $-- Test address:$----
↑↓←→=move RETURN=test A=all ESC=exit

```

Remap switch on: 320kB COMPY SHOP (64kB + 256kB)

Banks: 23, 27, 2B, 2F, 63, 67, 6B, 6F,  
A3, A7, AB, AF, E3, E7, EB, EF



This mode supports separate CPU/ANTIC banking.

Note: The early development and preproduction versions of the RAM320XE/576 require modification inside Atari to allow mode 4 (that is why the card was named RAM320XE and not RAM576XE after all). However, this is no longer true! The production versions have all modes fully functional and no modification is required. For the preproduction versions I can provide the firmware upgrade with 100% functionality of the production version.

## LEDs

There are three LEDs on the card, ROM, BASIC and ACTIVITY. The first one from the left (GREEN) lights when ROM is mapped. The middle LED (BLUE) lights when basic is mapped.

The most right one (RED) has two functions. At power on, it should light until first write to the \$D301 (PORTB) address space. This access is performed by ROM code early after the computer is powered on. When it happens, the LED is reconnected to the bit 4 of the PORTB register and lights when this bit is equal to 0. This bit is equal to 0 only when software maps any of the expanded RAM bank, thus under normal working conditions the RED LED should rapidly flash after the Atari is powered on then to light only when the extended RAM is used. This can be used for a troubleshooting.

## Covox audio (optional)

RAM320XE/576 can be optionally equipped with a stereo four channel DAC, mapped to base address \$D600. You can use it with a Covox enabled programs like Neotracker, Protracker, Inertia Player, some music demos, etc. These programs have to be set to the \$D600 address in order to hear the sound.

The stereo output is available on the standard 3.5mm headphone jack. The output signal is strong

enough to drive a headphones or it can be used as a line output as well. The Covox audio is also mixed with internal Pokey sound and you can hear it on the standard Atari sound output (mono).

Note that the Pokey audio is not available on the stereo headphone output on the RAM320XE/576 card itself.