Vintage Synth MRAM Card – Instructions

This memory card is a replacement for Roland's M-128, M-256 and M-512 cards, as well as the electrically compatible Akai BR-16 and BR-32 cards. Compared to the original cards, this card has two advantages:

- ✔ It does not require a backup battery. It uses magnetoresistive RAM for storage rather than regular static RAM, which is a type of RAM that can typically keep its data for twenty years before it needs to be refreshed.
- ✔ A single card actually stores **16** M-128 / M-256 cards or **8** M-512 cards, which can be accessed by a pair of convenient **switch sliders at the rear end of the card**.
- ✔ Like the original card, it also comes with a **write protect switch**.

To insert the card into the card slot, the side with the electronic components should face upwards (the same way the side with the arrow would go on an original card).

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Frequently Asked Questions

My card came with a piece of wire under the switch sliders, can I remove it?
Better don't. That wire is a support for the sliders, which are delicate and like to break off if pushed on too roughly (for example when pulling the card out of a slot). Removing the wire will not damage the card, but the increased risk of breaking off the switch sliders eventually will. ;-)

How do I switch banks?
There are two switches for bank switching, one labeled A..D and one labeled 1..4. Each combination of letter and number is one bank, from A1 through D4, giving you sixteen banks.

Can I switch banks while the card is plugged and the synth is turned on?
Yes. The synth only accesses the card during actual data transfer. It will also re-read the patch whenever you push the "CARD" button or select a new (or the same) patch, so switching the bank will have the same effect as plugging in a different card.
Some synths access the card in between too, and I've seen a bank switch occasionally cause a GC-8 to report a card error, but that can be easily corrected by removing and re-inserting the card.

I have the M-512 variant, which only has eight banks of 64KB each, but the switches have 16 positions. How does this work?
In the M-512 configuration, banks 1+2 and 3+4 are merged, so the "1" and "2" switch positions will select the same bank, as will the "3" and "4" positions.

Can I switch the card between synths and use different banks for different synths?
Yes – the card behaves like sixteen (or eight) completely independent original cards, so formatting one bank for a given synth will not harm the data on any other bank.

Help, I inserted the card and my synth says “Invalid card”! Is my card broken?
No, the synth is just telling you that you need to initialize / format the card for that synth first. Please consult your synth manual for the necessary steps. Keep in mind that you have to repeat this initialization for each of the sixteen (or eight) banks.

My synth complains about a low card battery. Is this a problem?
No, the card does not have nor need a battery. It’s trying to pretend to the synth that it’s got a fully charged battery but some devices like the JV-1080, JV-2080 or U-20 won’t have it.

How can I tell if my card is an M-256 or M-512?
The card type is noted on the anti-static bag. If you ordered more than one card and already removed them from the bag, you can still tell by their solder jumper configuration, see below.

Can I use the M-512 variant in a synth that needs M-256 or M-128 cards?
Can I use the M-256 variant in a synth that needs M-128 cards?
Yes – if you use a larger bank in a synth that only needs a smaller card, the extra space will be unused but the card will work just fine.

My card slot is pretty deep and the card vanishes completely inside. How do I get it out?
You can grab it by the top and bottom, just like the original card, and use the slide switch as a handle. The switch is anchored to the circuit board via two plastic nubs, so it should safely handle the strain. Be gentle, though.

How should I handle the card, especially regarding electrostatic discharge?
Handle the card with care, only grab it by the edges and be extra careful not to touch the contacts. Human sweat is slightly corrosive, so even though the contacts are gold-plated, touching them might degrade them over time. While the card is unused, keep it in the static protection bag it came in. That should keep you out of trouble.

How do I upload data from my computer or synth to the card?
We probably don’t know! The exact process differs between synths, and is documented in your synth’s user manual. We do not have access to all the different devices that can use the card, so please refer to your manual if you’re stuck.

Can the card be re-configured to be an M-512 instead of M-256 (or vice versa)?
This is possible, but requires some soldering skills, see below.

Compatibility List

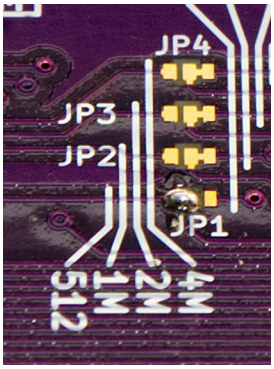
While the card design is as close to the original cards as possible, there is a small number of devices that is not yet compatible with our replacement cards.

- **Tested and fully compatible:** Roland A-90, D-5, D-50, D-550, D-10, D-110, D-70, U-20, JD-800, JD-990, JV-880, JV-1000, JV-1080, JV-2080, R-880 (GC-8), R-8M, GR-1, GR-50, PM-16, TR-626, Akai MX-1000, VX600.
- **Mostly compatible:** Roland TD-10, TD-20. The card reportedly has errors when inserted all the way, but pulled back 1/8th of an inch it works fine.
- **Not compatible:** Roland VG-8, Peavey Tubefex.
- Some units like the Roland U-110 and U-220 only accept ROM cards, not RAM cards. Naturally, this RAM card replacement does not work in those, either.

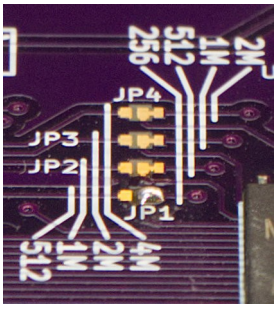
Other devices may work as well (in particular if they are similar to the tested ones), but are not tested. Please let us know about the results if you tested the card with a device not mentioned on this list!

Card configuration

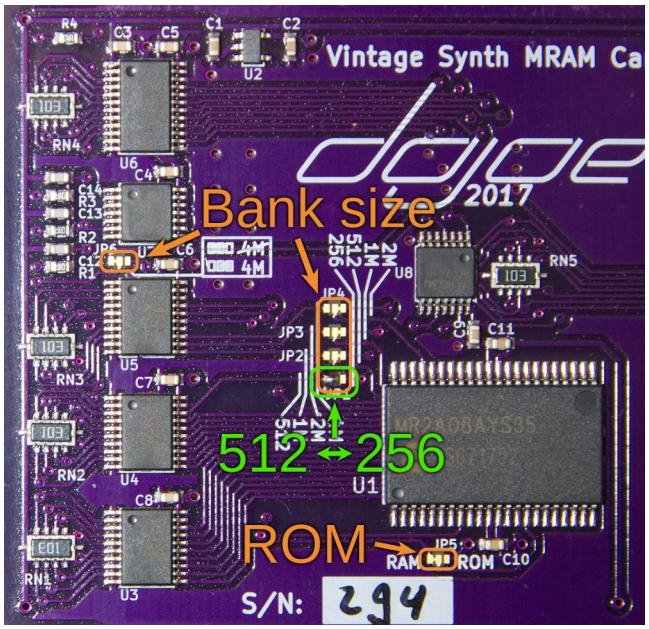
Whether your card is a 16x256 or 8x512 card is determined by a solder jumper on the card, marked JP1 on the circuit board. It‘s the one circled in green in the image to the right.



8x512



16x256



The jumper consists of three gold pads, two of which are connected by a small blob of solder. If the left two pads are connected, the card is an 8x512 card, if the right two pads are connected the card is a 16x256 card. There might be solder on all three pads so no pad is obviously golden – just look whether the big solder blob sits to the left or to the right.

Changing the card configuration

Warning: This will involve soldering. If you‘re not familiar with fine pitch soldering, please ask someone who is. **We will refuse support** for cards that have apparently been clumsily modified.

If you decide you need the other type of card instead, there‘s no need to send your card in if you can solder. All you need to do is move the solder blob to the other side. The best way is to clean your iron‘s tip, then heat and pick up the existing solder blob, then clean the tip again, put it in between the two pads you‘d like to connect and add plenty of fresh solder wire to form a new connection.

Special card configurations

Warning again: This will totally void your warranty. The below modifications can break your card. You‘re on your own, soldier ;)

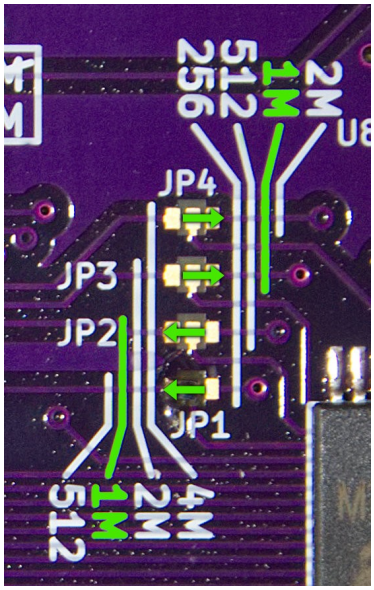
There are a total of six jumpers on the card, JP1 through JP6. Using JP1..JP4 and JP6, you can configure the card to be anything from 16x256 to 1x4096. With JP5 you can switch the card into a pure ROM card. More on that later.

All jumpers except JP1 have a default setting – there‘s a tiny connection from the center pad to one of the outside pads. If you want to change a jumper away from this default position, you will have to cut this connection using a scalpel or another sharp, hard knife. It‘s best to put the blade onto the connection and then press down towards the card, then repeat this at a different place of the connection and scrape away all the metal in between the two cuts. **There are traces running close to the jumper, so be careful that you only cut in between the pads!**

Changing the bank size beyond 512 KBit

If you‘d like the MRAM card to emulate PCM ROM cards or a GC-8 system ROM, you can do that by increasing the bank size. The card supports the following bank configurations:

- 16x256: The ABCD and 1234 switches work as usual.
- 8x512: ABCD works as usual, 1+2 and 3+4 select the same bank.
- 4x1024: ABCD selects between four banks, 1234 is unused.
- 2x2048: A+B and C+D select the same bank, 1234 is unused.
- 1x4096: One bank of 4 MBits only, the switches have no effect.



There are markings around JP1..JP4 on the card, showing how to set the jumpers for a given bank size. Find the line(s) corresponding to your desired bank size and set all jumpers touched by the line to the side that line is on. For example, to make a 4x1M card, JP1 and JP2 would go to the left position, JP3 and JP4 would go to the right position, as shown in the image to the right.

JP6 usually does not need to be changed, except if you‘d like a 1x4096 card, in which case it must be changed to the left position.

Making the card a ROM card

The „write protect“ switch does not really make the card read-only, it is just an indication to the synthesizer that it should prevent writing to the card. The synthesizer might still ignore it and write data to the card – or a logic problem may still cause accidental writes.

If you want to make the card a real ROM card, you can flip JP5 to the right position. This will disconnect the MRAM chip‘s write signal and make the card a true read-only card.