

SUPER JX FLASH MODULE

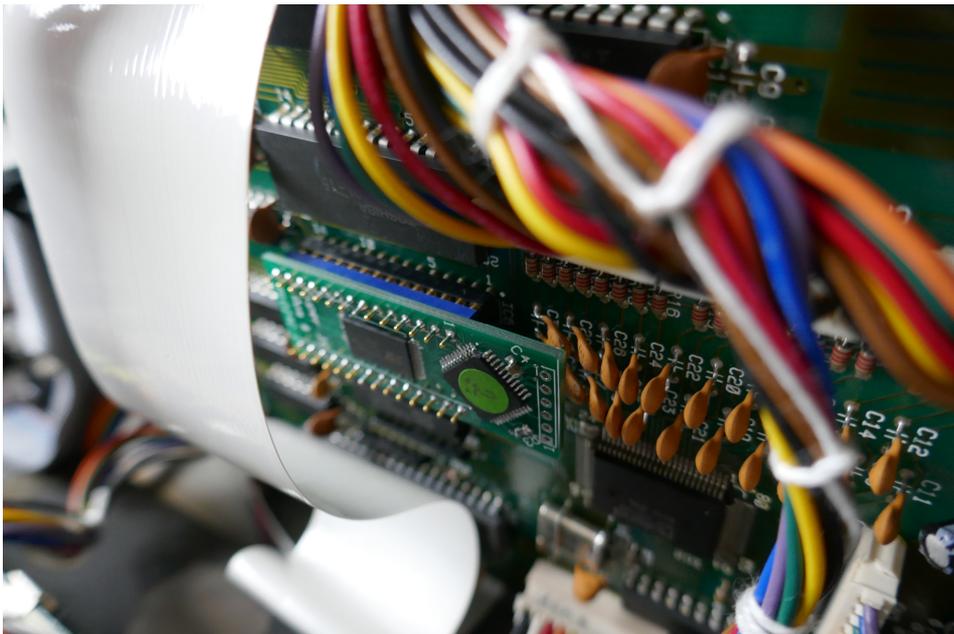
The flash module is a replacement for the assigner eprom (sometimes referred as “eprom A”). It brings the following enhancements :

- A bootloader, allowing firmware upgrades through midi
- 16 or 32 internal banks of patches/tones
- Space for new features

The JX synthesizers store patches/tones in internal memory or cartridge (one bank with M64C, 16 banks with M1024C). The flash module replaces internal memory and turns it into 16 or 32 banks.

Installation

The flash module goes into the assigner eprom slot. If you look underneath the module, the socket has a notch, which should match the notch of the socket on the assigner. On the top overlay, there is a “1” next to pin 1. The bottom of the board/socket matches the bottom of the eprom. Make sure that you plug the module with the correct orientation or damage can occur. Note: you may have to bend the capacitors above the socket to fit the module. Do this gently.



Selecting a bank

- Press “recall” (JX10) or “value” (MKS70)
- The “I” sign on the display will blink, indicating that a bank must be selected
- Press “A-H” or “1-8” to select a bank 1-16. If you have the 512K version, selecting upper banks 17-32 is done by pressing “right”. Pressing “left” goes back to selection of lower banks 1-16. (If upper banks select is active, the “-“ sign will be dotted. On GU280, “I.xx” is used instead of “I:xx”)
- After a bank is selected, the display will temporarily show the bank number. On the GU280, the bank is displayed directly as “I:xx”



Storing a bank

Writing to flash is done automatically. When internal memory is dirty, the data is written back to flash when a new flash bank is selected. Dirty internal memory is shown by a dotted “I” sign.

Doing manual write is possible : simply press “recall” (JX10) or “value” (MKS70) (bank will blink) and press the “write” button.

Firmware upgrade

Upgrading firmware is done by entering bootloader. To enter bootloader, hold “B” while powering on the JX. After a self-test, the display will show the bootloader menu.

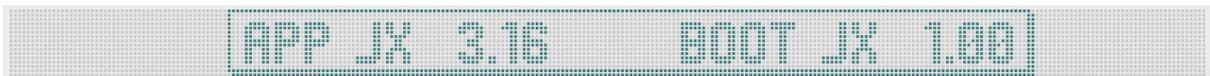


At this point, the JX accepts midi sysex upgrade. Simply upload the sysex file using your favorite program. It is recommended to use a 100ms delay between each sysex message (refer to your program’s documentation to find out how to set the delay).

In bootloader mode, the following buttons are active :

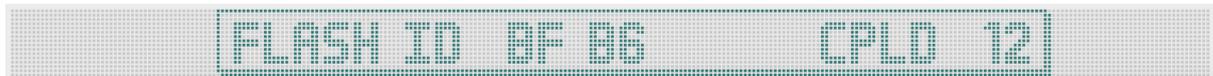
- “A” will exit bootloader and run the JX software (this only works if a valid firmware is flashed. If firmware is corrupted, the JX will stay in bootloader and you should resend the sysex file)
- “B” will display the bootloader and firmware versions.

APP JX 3,16 BOOT JX 1,00



- “C” will display the flash id and version

FLASH ID BF B6 CPLD 12



Technical details

The flash module uses a flash chip of 256K or 512K and a CPLD (Complex Programmable Logic Device). It plugs into the eprom socket of the assigner board. The CPLD is used to generate missing signals from the assigner CPU, mainly the upper address bits and the write signal.

A flash chip is different from a static ram (SRAM) as used in memory cartridges. The advantage of the flash chip is that it doesn’t require a battery, but this comes with a

price : the flash chip can wear out and bytes cannot be erased individually but by sector of 4KB. Writing to flash is also slower than writing to SRAM. The firmware uses the internal memory of the JX as a copy of a flash bank. Writes are first done in the internal memory (for example when saving a patch, a tone or doing bulk loads), leaving the flash untouched. When a new flash bank is selected, the current bank is erased and written from internal memory. Internal memory is then overwritten by the new flash bank content.