



# **MSX Memory Mapper**

## Documentation

Version 2014-01-03

par GDX

Thanks to Ericb59

Index

Introduction..... 3

Registers description..... 4

    Registers accessible via I/O ports..... 4

    Memory Mapper's registers ports..... 4

Additional Informations..... 5

    Connected directly the PCB to an expansion BUS..... 5

    Compatibility list..... 7

# Introduction

The MSX Memory Mapper cartridge is a standard 1024KB memory extension for MSX1, MSX2, MSX2 + and MSX Turbo R.

However, it has the rare ability to initialize the pages on each memory bank of 0000h~3FFFh, 4000h~7FFFh, 8000h~BFFFh and C000h~FFFFh in the order 3, 2, 1, 0 at MSX startup to provide a full compatibility even on MSX1. A standard Memory Mapper does not initialize its pages. This is the BIOS or the MSX-DOS2 that does it during the system initialization. The MSX1 Bios does not take into account the Memory Mapper. This may cause a crash at launch of a program if a standard Memory Mapper was chosen as the main RAM.

Some Memory Mapper cartridges based DRAM, except on MSX turbo R, lose their data if you press PAUSE few seconds. MSX Memory Mapper does not have this problem.

## Registers description

The Memory Mapper pages are selectable via following I\*/O ports.

### Registers accessible via I/O ports

#### **Memory Mapper's registers ports :**

These registers are the standard Memory Mapper registers, and work at the same time and in the same way as all Memory Mapper on MSX.

| Bank        | Port | Read* / Write |   |             |   |   |   |   |   |
|-------------|------|---------------|---|-------------|---|---|---|---|---|
|             |      | 7             | 6 | 5           | 4 | 3 | 2 | 1 | 0 |
| 0000h~3FFFh | FCh  | -             | - | Page (0~31) |   |   |   |   |   |
| 4000h~7FFFh | FDh  | -             | - | Page (0~31) |   |   |   |   |   |
| 8000h~BFFFh | FEh  | -             | - | Page (0~31) |   |   |   |   |   |
| C000h~FFFFh | FFh  | -             | - | Page (0~31) |   |   |   |   |   |

Bits 6 and 7 are ignored.

\* To read these registers via I/O port it is necessary to solder the "INT" jumper on the PCB. This jumper is only useful if your MSX does not have an internal memory Mapper. This allows the support of a few programs that read Mapper I/O ports (although the MSX standard recommends not read these ports in a standard program).

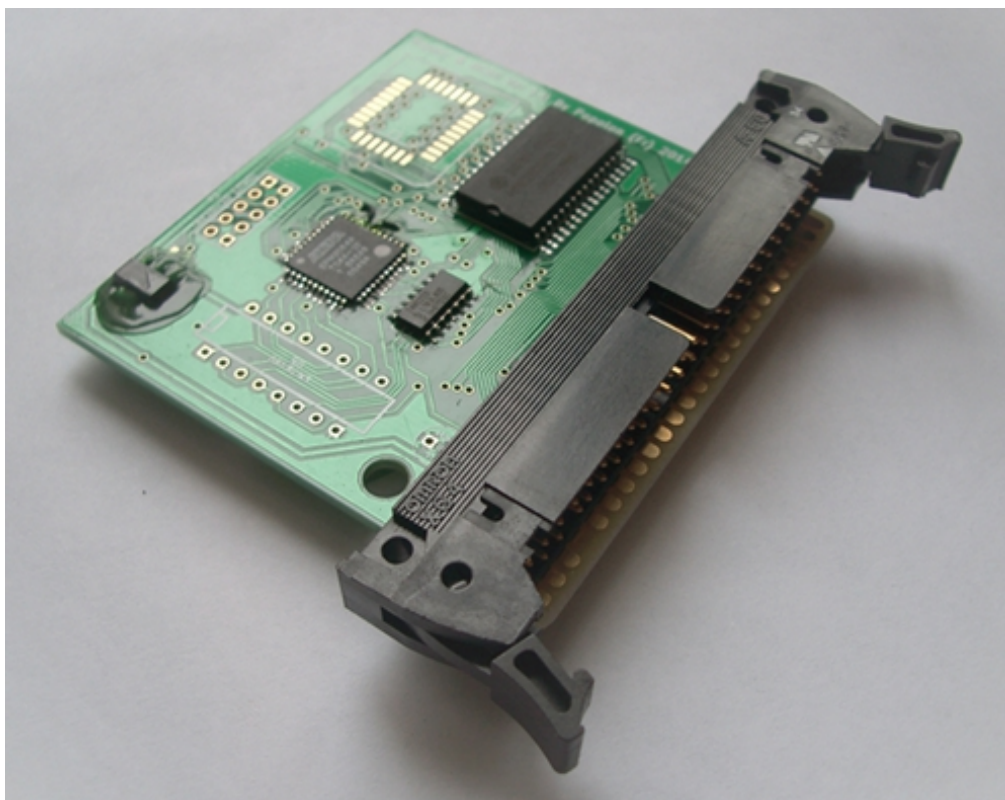


Note: Using the cartridge with INT strap soldered, while there has already an internal Memory Mapper, may falsify reading value of the registers. In the best case, the reading value will be the one given by the MSX Memory Mapper cartridge or the Internal Memory Mapper. Anyway, you should not rely on this values.

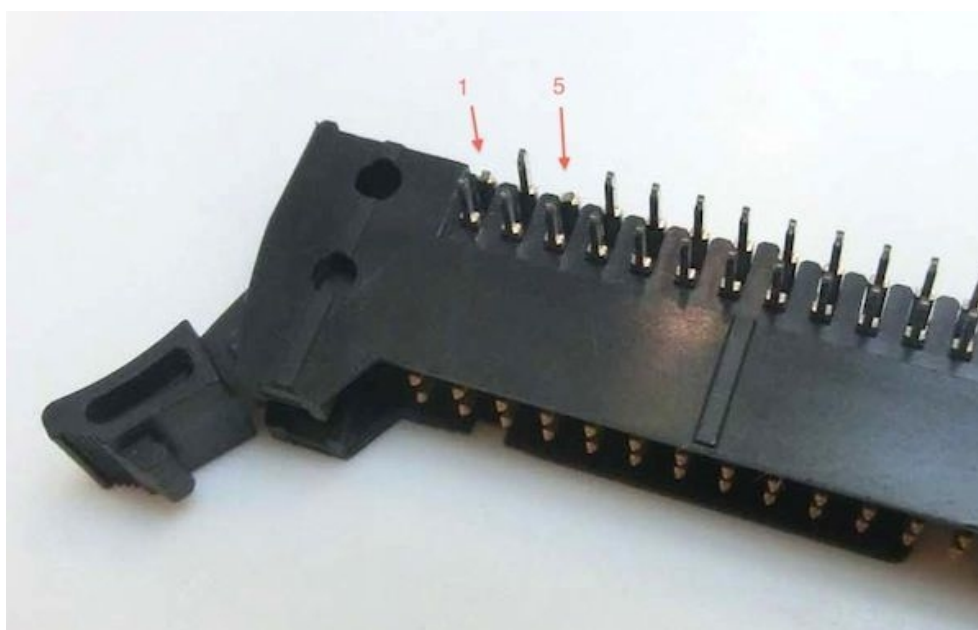
## Additional Informations

### Connected directly the PCB to an expansion BUS

The extension can connect directly to a MSX expansion Bus with a ribbon cable by soldering a connector to the slot as you can see in the picture below.



Use a narrow SCSI connector for ribbon cable. It will be necessary to cut the pins 1 and 5 because of the hole that keeps the PCB in the cartridge case.



The ribbon cable must not exceed twenty centimeters.

Notes:

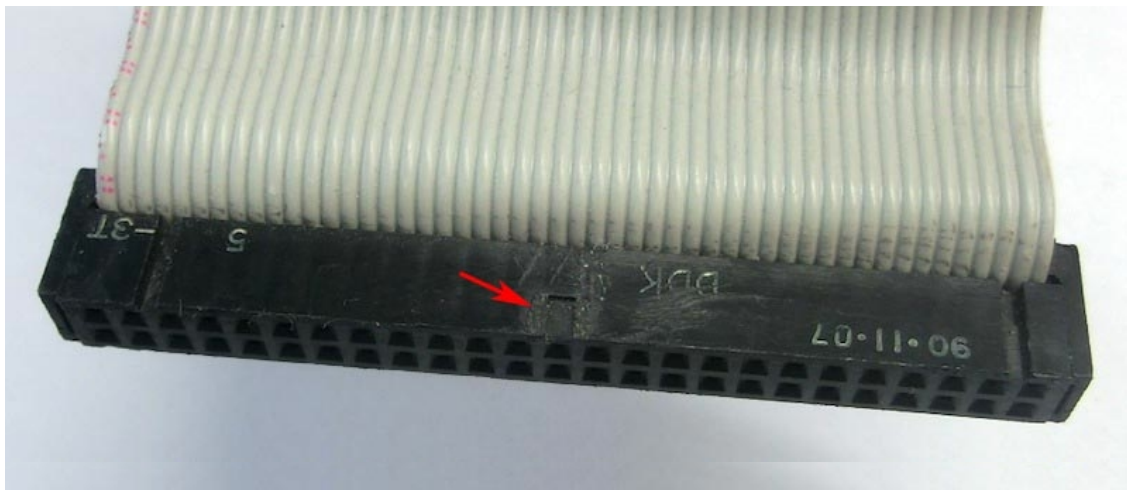
- It is also possible to order a ready made version in suitable casing. To do this, ask about site below.

<http://www.ebsoft.fr/shop/index.php>

- Some MSX has two polarizer on the Bus extension plug instead of one.



The ribbon cables with two polarizer bars are hard to find. The easiest solution would probably be to file down the bar on the cable connector.



## Compatibility list

MSX Memory Mapper cartridge was tested with the following MSX.

- MSX1 Canon V-20
- MSX1 Philips NMS-8020
- MSX1 National CF-2700
- MSX1 Sony HB-20P
- MSX1 Toshiba HX-10DP
- MSX1 Yashica YC-64
- MSX2 Mitsubishi ML-G1 (*We must press the "DEL" key at startup when a memory expansion is inserted in this MSX*)
- MSX2 Philips NMS-8220
- MSX2 Philips NMS-8235 (*Some models of this MSX display 1024KB at startup when "INT" strap is soldered*)
- MSX2 Philips NMS-8245 (*Some models of this MSX display 1024KB at startup when "INT" strap is soldered*)
- MSX2 Philips MNS-8250/8255
- MSX2 Philips NMS-8280
- MSX2 Sony HB-F700P
- MSX2 Sony HB-G900
- MSX2 Yamaha YIS-503 III KYBT-2
- MSX2+ Panasonic A1-WX
- MSX Turbo R FS-A1ST (*modes Z80 et R800*)
- MSX Turbo R FS-A1GT (*modes Z80 et R800*)

List of tested disk interfaces.

- CF/IDE Interface Sunrise
- CF/IDE Interface by MM (*Cartridge derived from Sunrise*)
- MegaFlashRom SCC+ SD
- MMC/SD Drive v.4.01 by Yeongman Seo (*The MSX-DOS2 does not boot on MSX1 with this interface*)

The incompatible hardware is listed in red.