

# Toshiba HX-MU900 Music Module Expander Version 2

## 256 kB Sample RAM, MSX-Audio Basic, original software

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### **Warning:**

The most important part in the Music Module is the printed circuit board (PCB). Parts can be replaced, but not the PCB. Do not try to unsolder the parts, but cut them loose and then remove the solder pins. The use of IC sockets is recommended.

### **Background:**

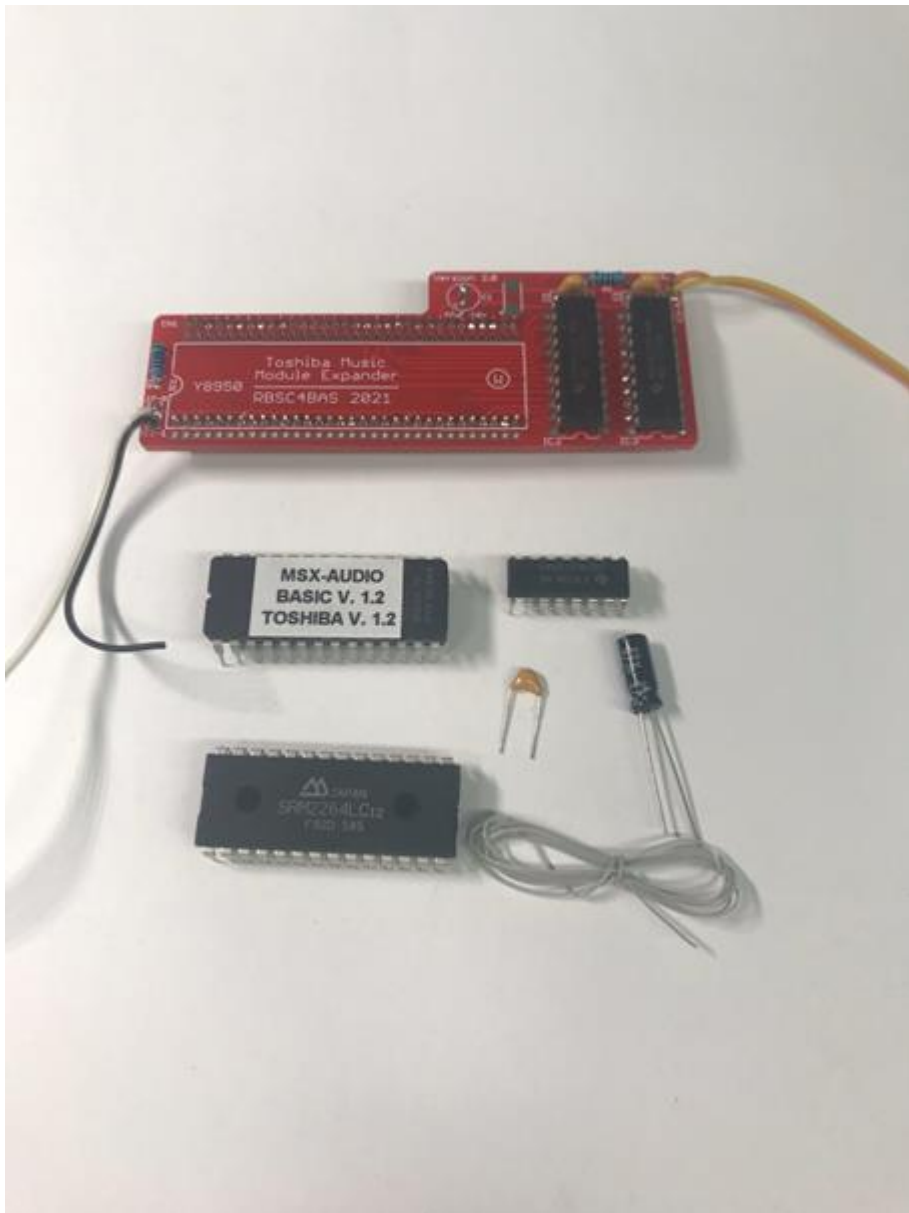
Back in 2005 Brazilian MSX users Fábio Ricardo Schmidlin (FRS) and Luciano Sturaro (MSXPró) released an expander PCB for the Philips Music Module. This board came with an adjusted Panasonic MSX-Audio ROM and with 256KB sample memory. A while ago FRS published his schematics so other MSX users could recreate his upgrade PCB. The First Toshiba Music Module Expander is based on a modified Philips Music Module Expander. This Second version was the idea of Repair Bas and designed by Alexey Wierzbowsky (RBSC). This version is much easier and faster to install. We would thank FRS and MSXpró for their great work. We hope you have great fun with this upgrade.

### **Upgrade package contents:**

- Completely pre-assembled expansion board with 256 kB Sample RAM
- EPROM containing MSX-Audio Basic and adjusted original software
- SRAM memory chip (SRM2264C)
- 74LS139
- 47  $\mu$ F capacitor
- 100 nF capacitor
- Wire



Standard Toshiba HX-MU900 PCB.



The contents of the upgrade package.

## Preparation:

- Remove IC1 (Y8950 Music Chip in IC-socket).
- Remove IC2 (EPROM in IC socket).
- Remove the solder tin from the pin holes at the empty place of IC3.
- Remove the solder tin from the pin holes at the empty place of IC6.
- Remove the solder tin from the pin holes at the empty place of C21.
- Remove wire bridge J2.
- Remove wire bridge J8.



Toshiba HX-MU900 PCB prepared for installation of the expansion PCB.

## Installation (upper side PCB):

- Shorten pin 1 of the new EPROM.
- Place the new EPROM with the remaining pins in the empty IC socket (IC2).
- Place the SRAM memory chip (SRM2264C) in the empty place of IC3.
- 74LS139, shorten pins 1, 2, 3, 13, 14 and 15.
- Place the 74LS139 with the remaining pins in the empty place of IC6.
- Place the 47  $\mu$ F capacitor in the empty place of C21.
- Place the 100 nF capacitor between pin 8 of IC6 (74LS139) and the right side of R1.
- Connect the right side of J6 to the right side of J9.
- Connect pin 1 of IC6 (74LS139) to pin 14 of the slot connector.
- Connect pin 2 of IC6 (74LS139) to pin 3 of IC6 (74LS139) and the left side of J3.
- Connect pin 4 of IC6 (74LS139) to the right side of J4.
- Connect pin 7 of IC6 (74LS139) to the left side of J1.
- Connect pin 13 of IC6 (74LS139) to pin 26 of IC3 (SRM2264C).
- Connect pin 14 of IC6 (74LS139) to pin 2 of IC3 (SRM2264C).
- Connect pin 15 of IC6 (74LS139) to pin 1 of IC2 (EPROM).



MSX-Audio Basic with the accessory components.

## Installation of expansion board with 256 kB Sample RAM:

- Solder the Y8950 onto the expander PCB.
- Connect the orange wire from the Expander PCB to pin 3 of IC8 (74LS08).
- Connect the yellow wire from the Expander PCB to pin 4 of IC8 (74LS08).
- Insert the Expander PCB in the empty socket of IC1.
- Connect the white wire from the Expander PCB to the right side of J7.
- Connect the black wire from the Expander PCB to pin 1 of IC2 (EPROM).



The completed conversion.

### → Important keys (hold during boot):

ESC = Start original software

TAB = Disable MSX-Audio Basic