

PS/2 MOUSE to TOWNS MOUSE Converter Version 1.11c

All rights reserved, the Copyright (C) 2000 Anikun.

1. This converter converts the PS/2 mouse which is widely used to the TOWNS mouse of the FM TOWNS series /FM TOWNSII series. You can also use the optical PS/2 mouse. In addition this also supports TOWNS pad emulation.

Because micro controller PIC16F84-10/P is used, a PIC writer also is necessary.

Furthermore, whilst the FM TOWNS /FM TOWNSII is designated as the object, it is also compatible with MSX and the PC-8801.

2. How to build:

- (1) For the schematic please refer to the bundled PS2M2TMC.TIF or the PS2M2TMC.BMP or the PS2M2TMC.GIF.

For reference the part list is shown below.

Part list:

IC	PIC16F84-10/P	(Note 1)	x 1
Diode	MA723	(Note 2)	x 4
ceramic resonators	10 [MHz]	(Note 3)	x 1
Resistor	4.7 K ohm Carbon Film 1/8W ±5% Yellow purple red gold	(Note 4)	x 2
	100 K ohm Carbon Film 1/8W ±5% Brown black gold	(Note 5)	x 1
Capacitor	0.1 uF (ceramic 50v; 104)	(Note 6)	x 1
	10 uF (electrolytic 16v)		x 1
Connector	IC socket (the for DIP18 pin)	(Note 7)	x 1
	D sub 9 pin (the female)	(Note 8)	x 1
	mini- DIN6 pin (the female)	(Note 9)	x 1
	header pin	(Note 7)	x 1
	jumper pin	(Note 7)	x 1
Baseplate, wiring, Case		(Note 7)	

(Note 1) Can be replaced with a PIC16F83-10/P or a PIC16F84A-20/P or a PIC16C84-10/P and similar ones, but it must run at 10MHz.

(Note 2) Can be replaced with a general-purpose diode. 1N4148 works on msx.

(Note 3) 10MHz or it will not work! With a crystal oscillator, 2x 47pF capacitors is necessary, (please follow to the data sheet of the part which is used).

(Note 4) Can be replaced with 1K - 4.7K Ohm. 1/4 W is fine.

(Note 5) ICSP (the In-Circuit Serial Programming) resistor is needed. Can be replaced with 10K - 100K Ohm. 1/4 W is fine.

(Note 6) It does not need to be small, it can substituted with a normal ceramic capacitor.

(Note 7) According to need.

(Note 8) as is needed.

(Note 9) the mini- DIN6 pin (female) as for pin layout please refer to CONNECT.TIF or CONNECT.JPG.

- (2) The program for the PIC micro-computer is in Intel HEX Format (INHX8M)
PS2M2TMC.HEX - make sure the code is not locked so that the pic can be programmed again!!!!
Program memory 358 words (0165h)
General purpose register (SRAM) 19 bytes (1eh)
With the PIC Writer for FM TOWNS use the settings below (in case of the PIC16F84-10/P, becomes 3FF2).

PIC micro-computer (0:PIC16C84,1:PIC16F84 (A)):	1
oscilloscope (0:LP,1:XT,2:HS,3:RC):	2
watch dog timers (0: Invalid,1: Valid):	0
power rise timers (0: Invalid,1: Valid):	1
code protection (0: Set,1: not set):	1
ID number (ID:0000-FFFF):	0111

3. Connect everything!

PLEASE MAKE SURE THERE ARE NO SHORTS IN THE CIRCUIT!!!

Usage:

- (1) As mouse:
 - * Do not push any button on the mouse when turning on power to the computer.
 - * If computer is already on DO NOT push the left button of the bus mouse when connecting.
- (2) As Joystick: (NOT IMPLEMENTED YET!!!!)
 - * Push the left button of the mouse when turning on power to the computer.
 - * If computer is already on, push the left button of the mouse when connecting.
- (3) Concerning jumper setting it is possible to change the resolution of the mouse with the jumper setting. 400 counts/Inch or 200 counts/inch.
 - * When jumper setting is open, resolution of the mouse is 400 counts/inch.
 - * When jumper setting is short, resolution of the mouse is 200 counts/inch.Because jumper setting is always watched, modifying it when power has been turned on is recognised.

Enjoy