

**MSX EXPANSION I/O PORT MANUAL**

5th December 1985

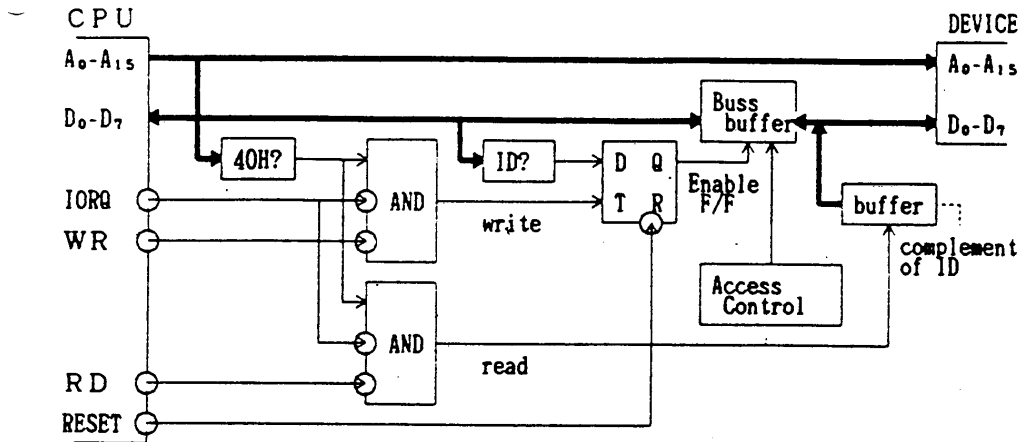
27th December 1985

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In the current MSX standard, the I/O port between 00H and 3FH are free for the end user to use while the I/O port address between 40H and FFH have been fixed for authorized peripheral devices. However due to the increase in the number of devices which requires allocation between 40H and FFH, it has become clear that not all peripherals can be catered for. Therefore I/O port address between 40H and 4FH is to be made usable by multiple devices. Devices are accessed only when it is selected. This expansion I/O port is used only when there is a special data written in address 40H to specify a device. When you write other data into address 40H the device will stop using the I/O port and shut the bus buffer from the CPU.

## HARDWARE



When the device number in the I/O address 40H matches the device ID of the device, the hardware connects the peripheral to the CPU. If different, it will cut off. Default (when power on) is shut. If the CPU reads the address 40H while the device is connected, it returns the complement of the device ID number. This is necessary for interrupt driven program to know which device is connected.

## DEVICE ID

It is possible to give numbers between 0 and 255 as a device number. However when reading the device number, the complement is given so 0 and 255 is not used. ID numbers between 1 and 127 are manufacturers ID number as in expanded BIOS call. 128 to 254 are device numbers. As a basic rule, those device which are designed specifically for one machine should contain the manufacturers company ID while peripheral device which can be used for all MSX should have device ID number. Also, Z80 CPU has 16 bit address in I/O space so it is recommended to access in 16 bit by decoding the upper 8 bit for those ID which might be expanded in future. Especially for device which are connected with maker ID can expand the address space by 256 times so it is future proofed.

Maker ID	Maker name	Maker ID	Maker name
1	ASCII/Microsoft	17	SONY
2	Canon	18	Spectravideo
3	Casio	19	Toshiba
4	Fujitsu	20	Mitsumi
5	Genera	21	
6	Hitachi		
7	Kyocera		
8	Matsushita		
9	Mitsubishi		
10	NEC		
11	Nippon Gakki		
12	JVC		
13	Philips		
14	Pioneer		
15	Sanyo		
16	Sharp		

Device ID	Device
128	Image scanner (Matsushita)
129... ...253	
254	MPS2 (ASCII)