MSX2 Video superimposition unit specification

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1.0 HARDWARE

1.1 I/O Port F5H Bit 3

The Bit 3 of I/O port address 0F5H enables/disables the built-in
video superimposer. When the bit is 1 (H level), you can read
the data of address 0F7H of the I/O port.

This is to avoid conflict of the I/O data bus, it is not
necessary if there is another method (for example : mechanical
switch) to avoid this problem.

1.2 A/V (Audio Visual) Control Port

        Address 0F7H of the I/O port controls A/V interface.

1.2.1 Bit Assignment Of 0F7H - -

Bit	I/O	Purpose
b7	O	(see 1.2.2 for detail)
b6	O	(see 1.2.2 for detail)
b5	O	Ym control
b4	O	A/V control
b3	I	Detects Video input
	O	Synchronize mode control
b2	O	Video input select
b1	O	Audio mixing control (left)
b0	O	Audio mixing control (right)

1.2.2 Detail - -
        The bit 7 and bit 6 of the I/O port 0F7H contains the
        complements of bit 4 and bit 5 of VDP Register 9. The
        values of the bit 7 and the bit 6 correspond to the
        following display modes.

b7	b6	Mode	Comment
0	0	Not used	
0	1	TV	Synchronize mode is NTSC Compatible. Ys is always active
1	0	Computer/Super -impose	Synchronize mode is NTSC compatible ***
1	1	Computer	Synchronize mode is 9918 compatible

NOTE   *** selected by TP bit of the VDP register 8 bit 5.
        When TP bit is 1, the Ys signal becomes active over
        the transparent colour.

Ym Control (bit 5) and AV control (bit 4)
        This controls the output from the multi-connector.
        When 0, it outputs EIAJ TTC-003 standard Logic level
        0 and when 1, logic level 1.

External Video Detector (bit 3, input)
        It detects the status of the external video input.
        When there is a video signal input from input pin
        selected by bit 2, it returns 1, if not then 0. It
        is not affected by the mode selected by bit 6 and 7.

Synchronization select. (bit 3 output.)
        0 = internal sync
        1 = external sync

Video input select (bit 2)
        Selects the input connector of audio and video.
        0 = RGB Multiconnecter
        1 = RCA connector

Audio Mixing control
        (bit 1 = left channel, bit 2 = right channel)
        0 = Mixes sound from computer to sound from outside
            source.
        1 = Mxing Off. Computer sound only.

1.2.3 Detection Of Existence Of I/O Port -
F7H port that is connected outside of the system (i.e. attached
to the system through the cartridge slot) should return 0 into
bit 7 when it is read. If there is no outside A/V controller
connected, the bit 7 of F7H port is expected to be read as
1 by pulled up register.

When initializing, system read the F7H port. If the port does
not return 0111x111, the system assume that there is no outside
F7H port and proceed to set port A5H bit 3 to on to enable
outside A/V controller.

```
        b7b6b5b4b3b2b1b0
   F7:   0 1 1 1 x 1 1 1
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1.2.4 Default Setting -
The MSX2 system software initializes the F7H so the initial
value of the hardware is not defined.

2.0 SOFTWARE

2.1 Initial Setting Of I/O Port F7H By The MSx2 System Software

bit	value	Meaning
7	1	displays computer screen 9918 compatible
6	1	
5	0	Displays full tone
4	1	Selects input from outside
3	0	internal Synchronization
2	0	RGB multiconnecter
1	0	No sound mixing
0	0	No sound mixing

These bits can be controlled by SET VIDEO statement, supported
by MSX BASIC 2.0 upwards.