

3.1. General

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3.2.1. General

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3.3. Software

3.1. General

The Q10MF is a character generator ROM card of 14 x 17 dots provided with six 128-bit mask ROMs, and is mountable on the option slot of QX-10. The characters mounted on this card are supported by the EPSON Multifont CP/M. The multifont characters mounted on Q10MF include the information for proportional printing, enabling proportional printing by choice.

3.2. Hardware

3.2.1 General

- a. The character generator ROM card is controlled by the 8-bit slave CPU8039, and the control program is contained in PROM2716.

The following three kinds of ROMs are mounted on the character generator ROM card.

ROM location	Multifont ROM card
#1 1A	KA10 (M12020A)
#2 2A	M12030CA
#3 1B	M12031CA
#4 2B	M12032CA
#5 3A	M12033CA
#6 3B	M12034CA
#7 1C	
#8 2C	

Table 3-1

(ROM in use: HITACHI HN43128)

- * The above ROM includes fonts of 512 characters each.

Three flags (IBF, OBF and ERR) are provided for data transfer with the main system, and the font codes and patterns are transferred by way of handshaking.

(For details, refer to the Software section.)

- b. The printed circuit board of the multifont character generator ROM card is the same and is discriminated by the mounted mask ROM and jumper switch setting. Jumper switch setting and I/O address are as shown below.

Multifont ROM card (Q10MF)	I/O address		Jumper J2		Jumper J1
		FC	FD		A
				B	
	R		Pattern data		
	W		Pattern code		
		R	STATUS		
		W	INTERRUPT		

Table 3-2

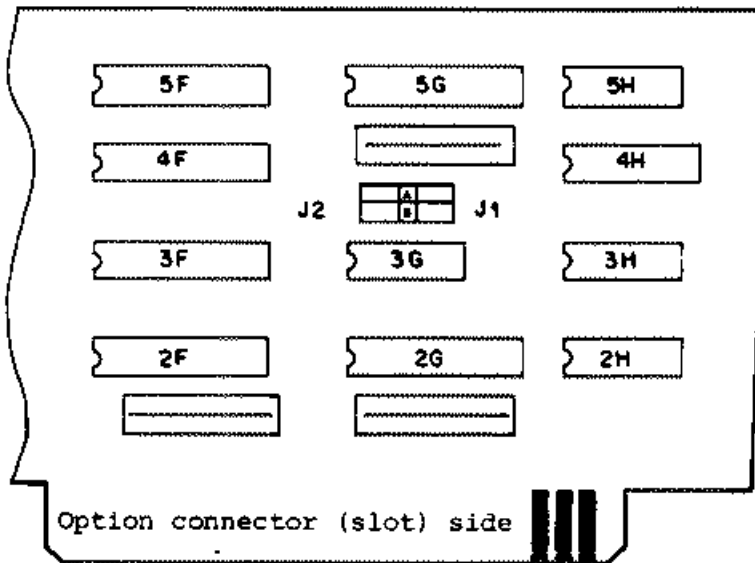


Fig. 3-1

3.2.2 Block diagram

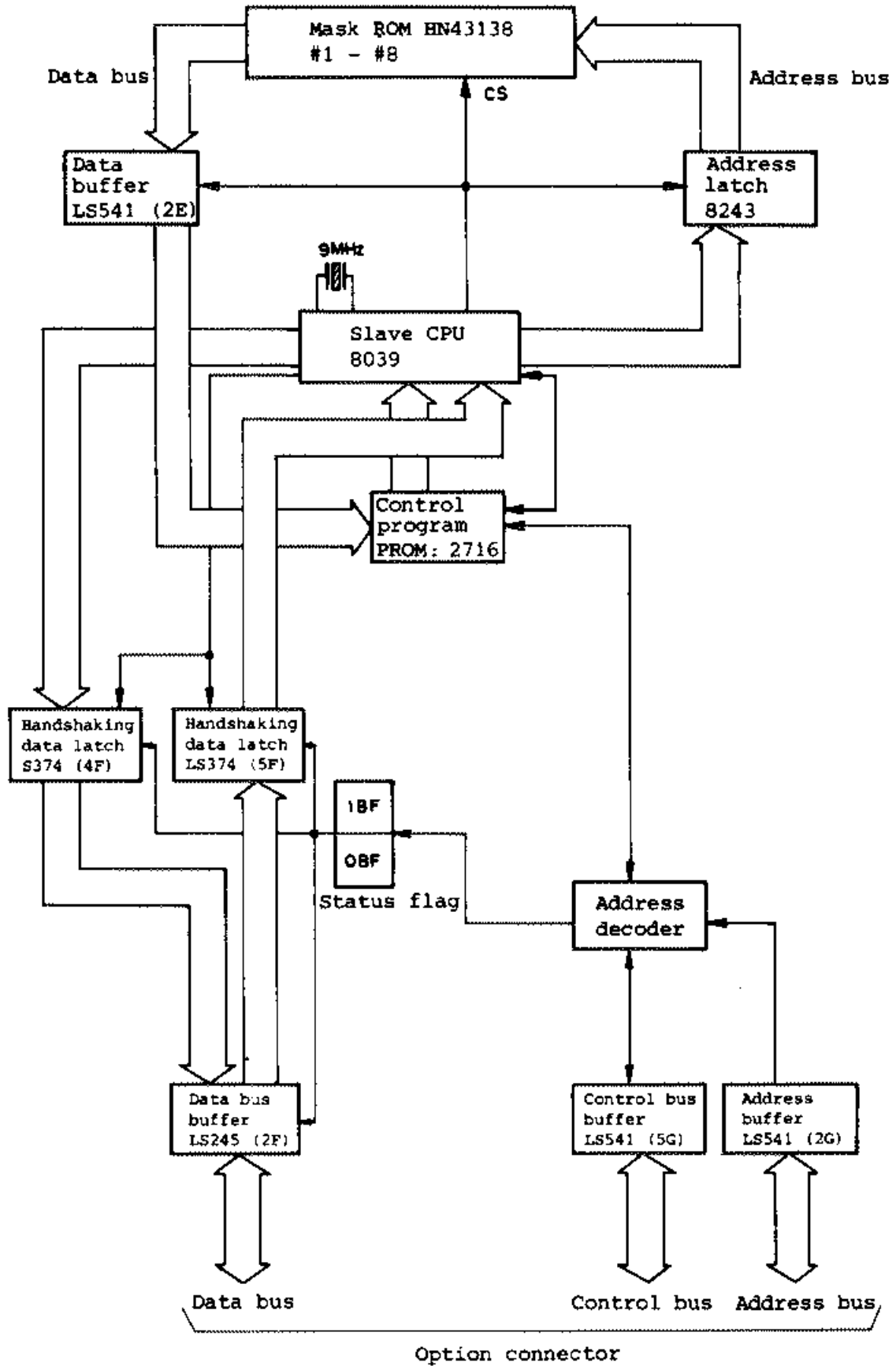


Fig. 3-2

3.2.3 Data flow

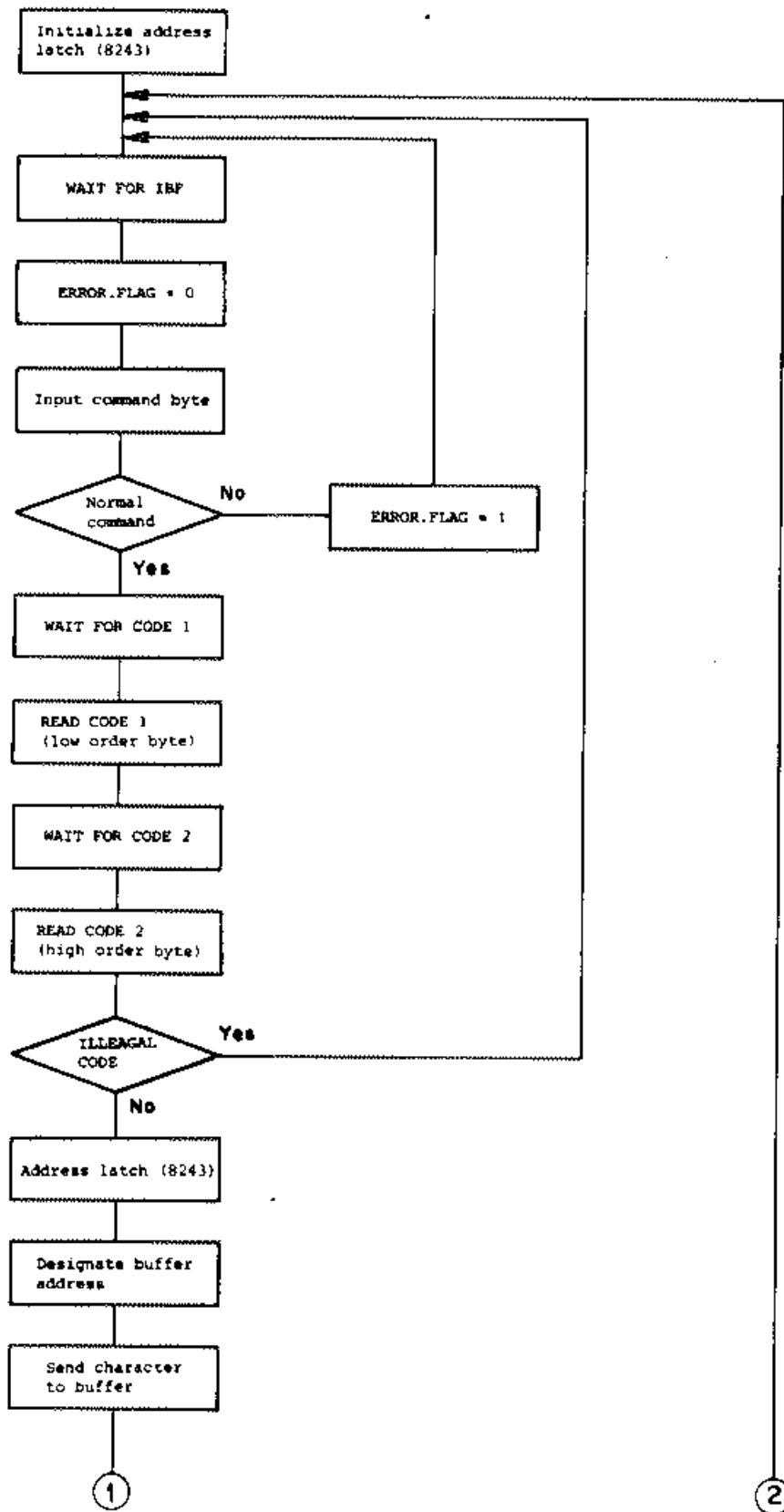
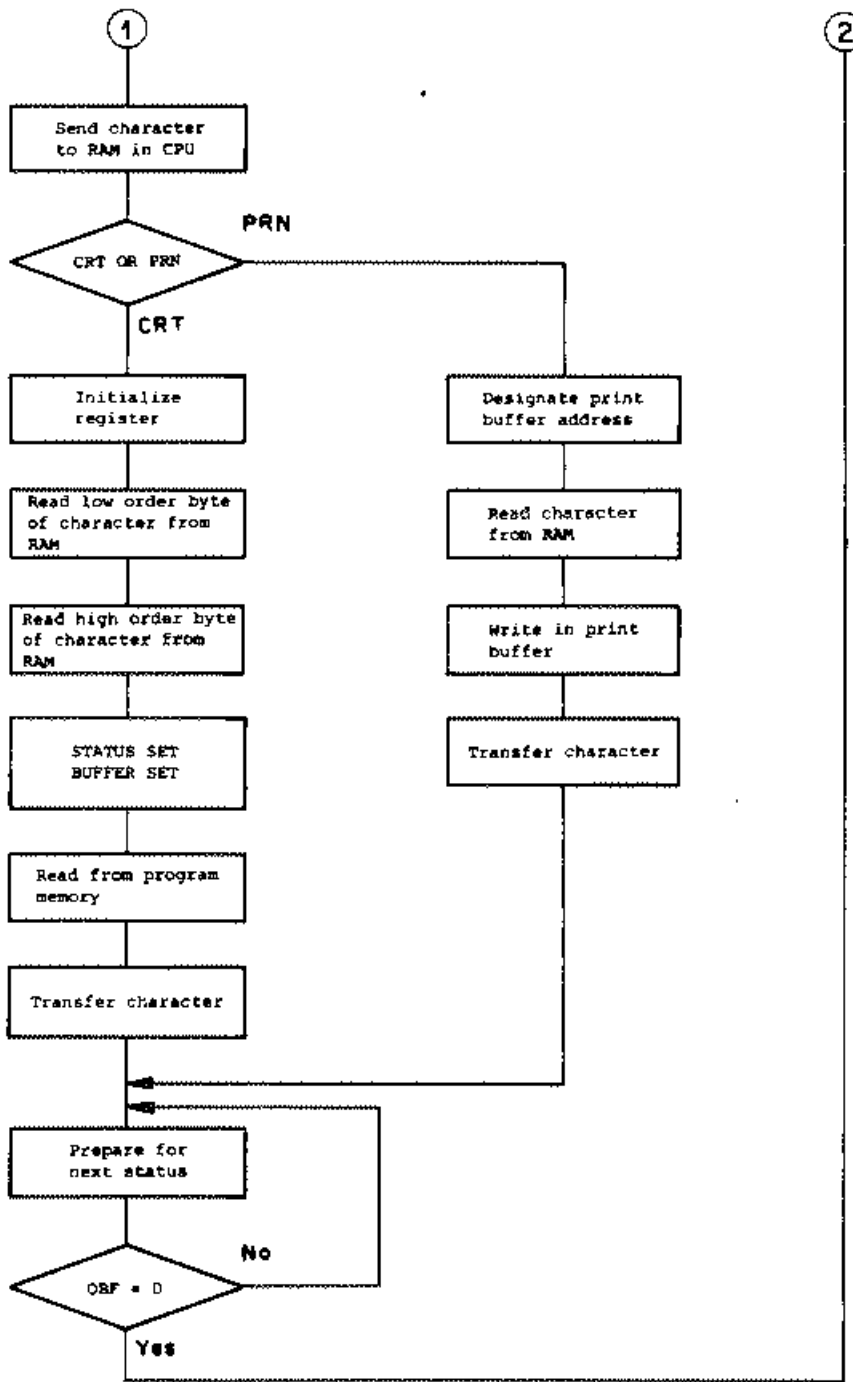


Fig. 3-3



3.3. Software

Two commands, status port and data port are input to the Q10MF option card.

(1) Status port (FDH: Set by the jumper wires.)

A. When this port is read, the following status can be read.

IBF	X	X	X	X	X	ERR	OBF
-----	---	---	---	---	---	-----	-----

IBF 0: Character pattern not readable
1: Character pattern readable

ERR 0: Normal
1: Error

OBF 0: Character code writable
1: Character code not writable

B. When data (contents are optional) is written into this port, the hardware interrupt is effected in INT (L).

As this interrupt signal line is assigned to separate interrupt addresses for each option slot, the slot in which the Q10MF is inserted can be discriminated.

To reset this interrupt, read the status port.

(2) Data port (FCH: Set by the jumper wires.)

A. Data to be written in this port consists of the following three bytes.

Command byte: A command to specify use of the pattern read from the character generator for CRT or printer.

1	MODE	0	0	0	0	0	bit
---	------	---	---	---	---	---	-----

MODE 0: Pattern mode for printer
1: Pattern mode for CRT

bit 0: Pattern for CRT (1) For NON-DMA
1: Pattern for CRT (2) For DMA

Character code byte: Sends the high order and low order codes of the character code in that order, following the command byte. However, the character code is in a range of 0000H - 0DFFH, and a code out of this range will be error.

Low order byte of character code

High order byte of character code

To write the above three bytes into the option card, they must be written one by one while confirming that the "OBF" bit becomes 0 in the status port. When the Q10MF option card receives and becomes ready for reading the character pattern, INT (L) is interrupted.

(To reset this interrupt, read the status post.)

B. Character pattern is read from the data port.

Status byte: Before the character pattern, the data indicating the status information of that character pattern is read.

VALID	MODE	0	0	UP	RIGHT	LEFT	DOWN
-------	------	---	---	----	-------	------	------

VALID 0: Character code is invalid.
1: Character code is valid.

MODE 0: Pattern for printer
1: Pattern for CRT

UP Extension in the up direction No (0) Yes (1)

RIGHT Extension in the right direction No (0) Yes (1)

LEFT Extension in the left direction No (0) Yes (1)

DOWN Extension in the down direction No (0) Yes (1)

Character pattern: Pattern information differs
as follows for CRT and printer.

Pattern for Printer

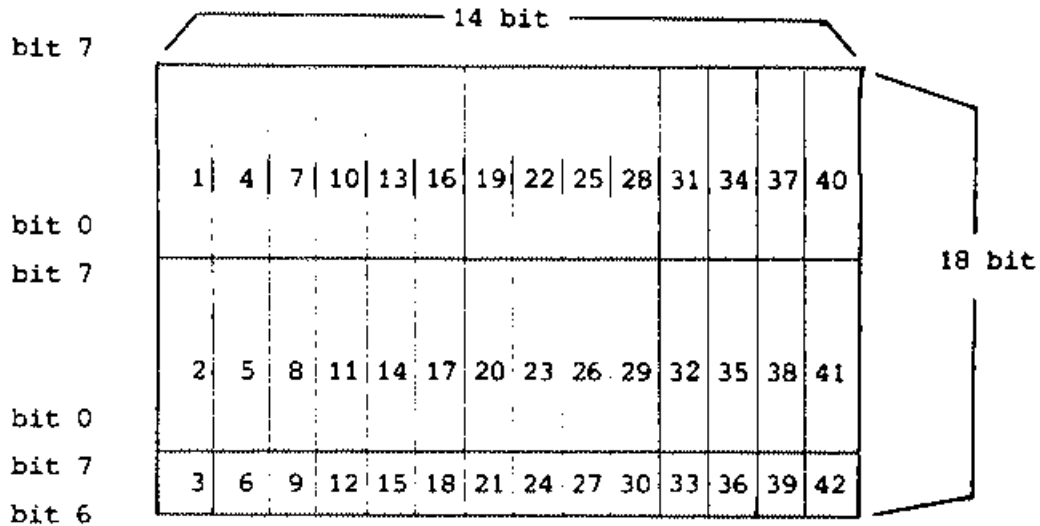


Fig. 3-4

Pattern for CRT (1)

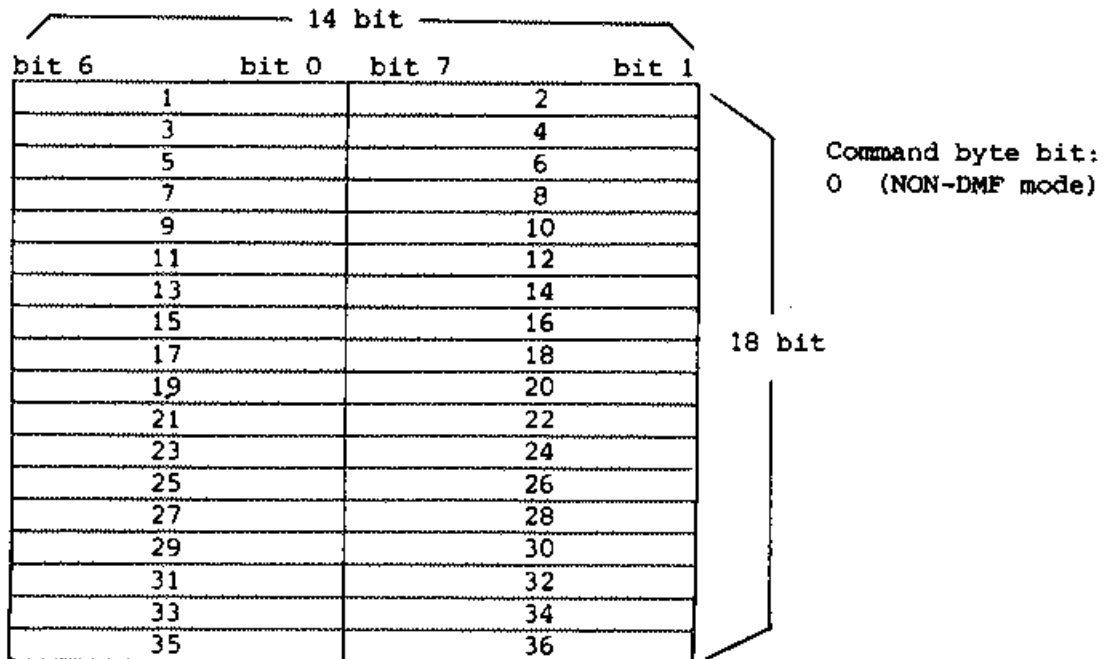


Fig. 3-5

Pattern for CRT (2)

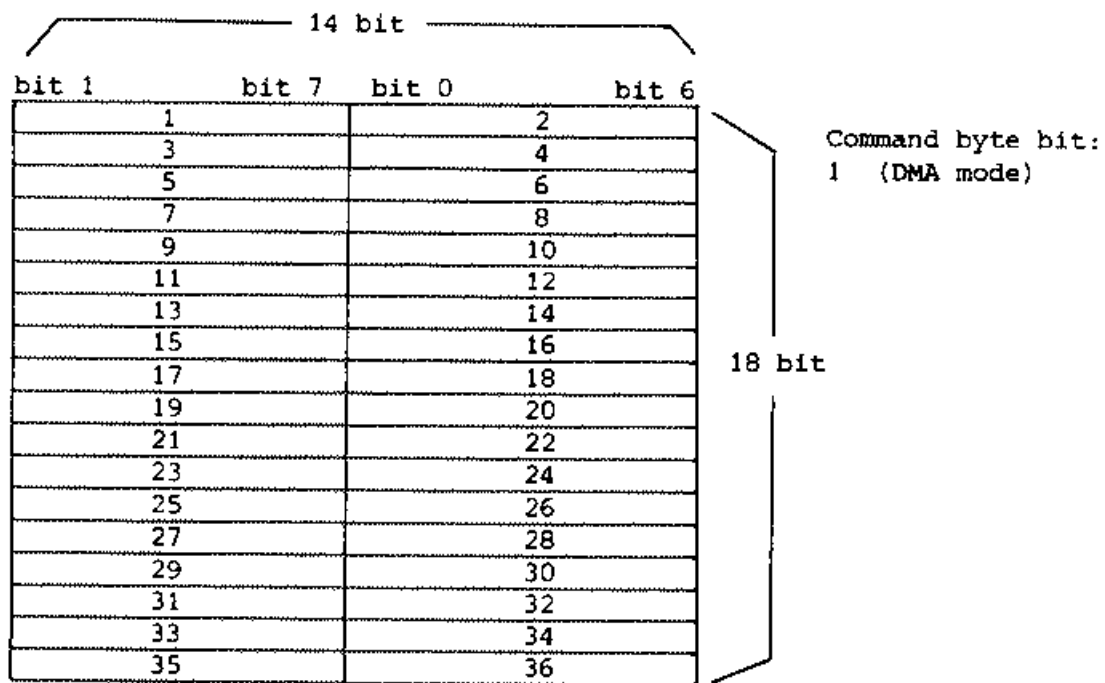


Fig. 3-6

To read these patterns, the bytes must be read one by one each time IBF becomes 1 while monitoring the IBF bit in the status port.