

TERMINAL FUNCTIONS

This section concerns the possibilities of software manipulation of the CRT display. CP/M-86 recognizes a number of codes up to three bytes in length which are applicable to cursor movement, partial or whole screen clearance, variation of CRT intensity, and activating the loudspeaker. One or more functions are possibly not implemented on some machines. Figure 5.6 summarizes the function codes. With reference to this figure, it must be appreciated that functions cannot be attributed to specific keys on the keyboard. This is because there is a wide variety of keyboards available for different parts of the world. By checking in the relevant column for a particular keyboard in the chapter "Keyboard Codes" in the Hardware Description, it is, however, possible to find the key for a particular function.

The function codes are the same as those used by the Lear Siegler ADM-31™ terminal, with the following exceptions: 17H (Clear to End of Line) and 1BH 4DH (Play Music) are implemented in your NCR DECISION MATE V. The Lear Siegler ADM-3A™ terminal uses the functions which do not commence with 1BH (exception: 17H — Clear to End of Line).

The frequencies produced by the Play Music function are shown in Figure 5.7.

It is not possible to set color by means of a terminal function code. However, you can set color by means of the CRT attribute byte at the memory address 44DC. This address must, of course, be understood as an offset to the paragraph value 40H.

Foreground and background colors are determined by the six most significant bits of the attribute byte (see Figure 5.8). Bit 1 set activates video blinking.

TERMINAL FUNCTION CODES (1)	
Function	Hexadecimal Code
POSITION CURSOR ROW + Offset COL + Offset	1B 3D followed by ROW + 20 followed by COL + 20
CURSOR LEFT (non-destructive backspace)	08
CURSOR DOWN (line feed)	0A
CURSOR RIGHT (non-destructive forward space)	0C
CURSOR UP (reverse line feed)	0B
CURSOR HOME (top left corner)	1E
CLEAR SCREEN and CURSOR HOME	1A or 1B 2A or 1B 3A
CLEAR TO END OF LINE	17 or 1B 54 or 1B 74
CLEAR TO END OF SCREEN	1B 59 or 1B 79
CARRIAGE RETURN	0D
ESCAPE	1B
INSERT LINE	1B 45
INSERT CHARACTER	1B 51
DELETE LINE	1B 52
DELETE CHARACTER	1B 57
HALF INTENSITY OFF	1B 28
HALF INTENSITY ON (Red on color CRT)	1B 29
RESET INVERSE AND BLINKING	1B 47 30
VIDEO INVERSE ON	1B 47 34
BLINKING ON	1B 47 32
RING THE BELL	07
MUSIC	1B 4D followed by Frequency in the range 21 to 4A, or 20 = no tone followed by Length in the range 20 to FF (steps of 20ms)

Figure 5.6 (1 of 2)

TERMINAL FUNCTION CODES (2)

Function

Program function key ESC, F, FN, STRING, FN

where:

ESC	=	ESCAPE character	(hex value 1B)
F	=	Function code	(hex value 46)
FN	=	Function number	(hex values between E0 for function key 1 and F3 for function key 20)
STRING	=	Character string	(a string of ASCII characters including control characters* hex values between 0 and 7F)

Example: The following string programs function key F2 with DIR (all values in hex): 1B 46 E1 44 49 52 0D E1

* control character 09 (Horizontal Tabulation) not allowed.

The advantage to the programmer of this method is that there is no need to return to CP/M-86 system level in order to program a Function Key via the CONFIG utility.

Figure 5.6 (2 of 2)