

I/O DRIVER REFERENCE

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DRTW01

Recovery at
power on

: At power on the following actions are taken:
If the order was /01, /02 or /03 the read request is completed with -2 in the control word.
If no read request is current a power up flag is set, causing the first read request after power on to be completed with the control word set to -2, or to zero if the application is written in CREDIT.
An alternative, chosen during Monitor generation, is for the read request to be completed at power on.
If the order was /05, the request is completed with bit 14 set in the return code.
If the order was /06, the print head is sent to the position it was in before the write request, and the line is printed again. No indication is given in the return code.

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2.28 DISPLAY ON VCCU 1/4

DRVU01

General information : This driver handles output to Video Display PTS8042, connected to the CPU via control unit VCCU1/4.

The driver is also a line driver for the VCCU 1/4 screen section for output to a PTS 8042 only, and line driver for the VCCU 1/4 peripheral section, handling input and output for any other device connected via VCCU 1/4, which may be a keyboard, badge card reader, keyboard lamps, hardcopy printer, magnetic stripe unit, etc.

Only the device driver part functions are described in this manual.

The driver includes functions which make it possible to use the display as an echo device to any keyboard running under the general keyboard driver DRKB04.

The screen capacity is 24 lines of 80 characters.

If a Memory Management Unit is included in the system, an MMU buffer is included in the driver, and the size of this buffer must be specified during Monitor generation.

Calling sequence	:	Normal I/O:	I/O and Activate:
		LDK A7,code	LDKL A1,parameter
		LDKL A8,ecb-address	LDK A7,code
		LKM	LDKL A8,ecb-address
		DATA 1	LKM
			DATA -1
			DATA start-address

Order codes : The following order codes may be used:

- /00 - test status
- /05 - basic write
- /06 - standard write
- /0B - set cursor and write
- /31 - erase

Buffer address	: }	Significant for orders /05, /06 and /0B.
Requested length		For orders /06 and /0B the first word in the buffer is
Effective length		used for a control code. This word is included in the requested length. For order /05 the first word in the buffer is used for normal data.

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Return code : When errors occur, the following bits may be set by this driver:

bit	Meaning	Order in which bit set				
		/00	/05	/06	/0B	/31
0	Illegal request	x	x	x	x	x
13	Code check error			x	x	
15	Not operable	x	x	x	x	x

Control word : For order /0B the control word contains the cursor position. For order /31 it contains the number of characters to be erased. For all orders, the cursor position is returned in the control word on completion of the request. The left byte contains the line number and the right byte contains the column number, as a binary value.

If the cursor position is the last column of a row, and if the last column is written into, and if the cursor has not been positioned since the writing of the last column, the column number in the control word is incremented by 1. The cursor will remain in the last position.

Requested length : For orders /06, Standard Write, and order /0B, Set Cursor and Write, the requested length must include the first word in the buffer containing the control code.

Order : /00 - test status
A dummy character is sent to the display and if the VCCU1/4 is not operable, the request is completed with bit 15 set in the return code.

The cursor position is returned in the control word of the ECB, with the line number in the left byte and the column number in the right byte.

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Order

: /05 - basic write

This order can not be used by CREDIT applications. The requested number of characters are sent to the display. Trailing spaces are suppressed unless they are requested during Monitor generation. All alphanumeric characters (/20-/7F) are accepted and sent to the display. Roomless point (/AE) is displayed as a point (/2E). Command characters (/00-/1F) are ignored, without any indication of their occurrence in the return code, except for Line Feed (/0A) and Carriage Return (/0D) which are normally executed. The cursor position after the request is returned in the control word of the ECB. This is the first free position on the current line.

Last column handling:

When the last column of a row has been written into on the screen, the cursor remains in that position, and the following characters are written into that same position.

Bottom line handling:

When the current cursor position is on the bottom line and a Line Feed must be executed, scroll mode is entered and

- the top line of the screen is erased
- the second line is erased
- the current write position on the screen will now be on the top line of the screen, and in the same column as when the line feed was issued.

When scroll mode has been entered already, subsequent line feeds will have the following result:

If the current write position is on the bottom line of the screen, the same actions are taken as described above.

Else, Line Feed is normally executed, and the line following the new current line is erased.

Order

: /06 - standard write

If the requested length is equal to or greater than 2, the first word in the user buffer must contain a right-adjusted control character. It may contain any of the following codes:

- /2B - Display from current cursor position. The cursor is not moved before the text is displayed.
- /30 - The cursor is sent to the leftmost position and advanced two lines before the text is displayed.
- /31 - The display is erased and the cursor sent to the home position before the text is displayed.

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Any other character in the control code, or a requested length of less than 2, causes the cursor to be sent to the left most position and advanced one line before the text is displayed. Trailing spaces are suppressed, unless requested otherwise during Monitor generation. All alphanumeric characters within the range /20-/7F are sent from the buffer to the display. Roomless point (/AE) is displayed as a point (/2E).

In addition, six special codes are recognised by the driver, and actions performed as follows:

- /11 - Tabulation character: this must be followed by two ISO-7 digits specifying the tabulation position required on the current line (positions 1 up to 80). If column 0 is specified, the cursor is positioned in column 1, and if the value is greater than 80, in column 80. The code and the digits must be included in the requested length.
- /14 - Fast output: the character following this code will be transmitted repeatedly in fast output mode up to the requested length. The cursor position will remain at the begin of the fast output string.
- /12 - start underline: all output characters that follow this code will be underlined on the display, until a stop underline code is read.
- /13 - Stop underlining: output characters that follow this code are not underlined on the display. Underlining is also stopped automatically when the request is completed.
- /1E - Low intensity: output of characters which follow this code is at low intensity, until a stop low intensity code is encountered.
- /1F - Stop low intensity: all characters following this code are displayed at normal intensity. The stop low intensity is also automatically executed at the completion of the request.

All special characters must be included in the requested length. Illegal characters are ignored and when the request is completed bit 13 is set in the return code.

At completion of the write request the actual cursor position is returned in the control word, with the line number in the left byte and the column number in the right byte.

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Order

: /0B - set cursor and write

By means of this order the cursor may be sent to any position on the screen before the text is displayed. No data which is already on the display is erased. The control word must contain two binary values, in the left byte the linenumber and in the right byte the column number at which the display must start. If the line number is zero, display will start at line 1, if the line number is greater than 24 it will start at line 24. If the column number is zero, display will start at column number 1, if it is greater than 80 display will start at column 80. The 'cursor home' position is /0101 for all displays.

After the cursor is positioned, the text in the user buffer is displayed according to the rules described for order /06 above. The first word in the buffer is not significant, but must be included in the requested length. If the requested length is 0 or 2, the cursor is positioned, but no text is displayed. After the request is completed, the new cursor position is returned in the control word.

Order

: /31 - erase

This order causes a specified number of characters to be erased from one line of the display. The erasure starts from the position of the cursor at the time the order is set up, and the cursor remains in that position. The control word in the ECB must contain the number of characters to be erased in binary form (0 to 80).

Echo function

: The display may be attached to a keyboard as an echo device. All alphanumeric characters in the range /20 to /7F are echoed. Echo of end-of-record key, if required, must be specified during Monitor generation. The End of Record key is echoed as the character corresponding with the EOR code if this is within the range /20 - /7F. Characters outside this range are not echoed on the display. The backspace key (/08 from the keyboard driver) will move the cursor one space to the left. The cursor cannot be moved further to the left than the position it was in before the read-with-echo request was set up. The character in the new cursor position is erased. If during an echo request the cursor is in the last position on the line (column 80), that position is erased and the cursor is not moved. Clear key (/18 from the keyboard driver) will erase the information that has been echoed for the current read request, and the cursor is sent to the position it was in before the read-with-echo was set up.