

PRINTER UTILITIES INSTRUCTION MANUAL

PRINTER UTILITIES

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INTRODUCTION

Printer Utilities was written to overcome two major problems encountered when using a printer on the Enterprise. One, the inability to send printer control codes from within the WP and secondly whilst printing the computer is hung until the printer has finished. This means valuable time is wasted.

The solution to these problems was to write a new Printer Driver. With this new Printer Driver we overcame the problems by giving it:

- 1) Full character interpretation, enabling ALT characters to signal the sending of a string of pre-set or user-defined codes to the printer.
- 2) A spooler buffer able to store up to 13K of text etc ready to be transferred out every 1/50th of a second when the printer becomes free.

LOADING AND FILE FORMATS.

There are two main differences between the various files on the tape. The first is the size of the inbuilt spooler buffer and the other is the way in which it is loaded and stored in memory.

SIDE 1

PDO6K.XR : PDO8K.XR : PD 10K.XR

On side one the three files have different size spooler buffers; 6, 8 and 10K. These can all be loaded into memory in the normal fashion with:-

LOAD "PD?.XR"

Or from within the WP by pressing F1 then entering PD?.XR ('?' is the size of spooler buffer required)

All these files are relocatable. This means that they are relocated by EXOS to a free space within a segment, thus enabling them to reside alongside SCRUMP say without taking another segment.

Side 2. PD13K.EXT. : DEMO.DOC

On side two there are two files. The first is a Printer Driver with a 13K buffer and the second a demo file. The 13K Printer Driver has been written as a non-relocatable system extension, the reason being that there is no more space in the segment once loaded. You will also note it will load quicker. The second is the demo document. To load this, enter the WP. Key F1 then DEMO.DOC and (Enter). Once loaded KEY F3 and Enter.

HOW PRINTER UTILITIES WORKS AND HOW TO USE IT.

Once a Printer Driver has been loaded, all EXOS write operations normally sent to the in-built Printer Driver will be re-directed to the new Printer Driver. There are three ways to activate the in-built commands. One is by writing an ALT character to it. Another is to pass an extension string, the third is to use special key combinations.

CHARACTER COMMANDS AND THEIR ACTIONS.

The new Printer Driver looks at every character sent to it if it is in the range of 81h to 9Ah plus a few others (obtained by pressing ALT + a key) it will ignore the character and instead send a series of pre-defined printer codes. The exception to this being ALT B,H,V,Y,I,ô and 0 where a combination of pre-defined and user defined codes are sent.

Below is a list of ALT characters and their actions.

NOTE. All codes to the best of our knowledge are based on standard EPSOM Control codes. It cannot be guaranteed that they will do all the functions listed below on all printers. Check appendix 1 with your printer manual to match codes.

ALT	EFFECT
@	Reset printer to power-on state.
A	Selects British ASCII font.
B	Selects new font. FORMAT = Bn B = ALT + B n = Character font number in decimal. Check your printer for correct code.
C	Sets printer to Condensed mode.
D	Sets printer to Double Strike mode.
E	Returns printer to ELETE style.
F	Sends <FORM FEED> character.
G	Switches Double Strike Off.
H	Sets printers Horizontal Tabs. FORMAT Hn1,n2,n3 H = ALT + H n1,n2,n3 = Decimal values for Tab positions. (Check your printer manual for correct operation). NOTE. A comma, or a space may be used between numbers.
I	Italic mode select.
J	Proportional Print ON.
K	Proportional Print OFF.
L	Enlarged printing ON.
M	Enlarged printing OFF.

N Emphasised printing ON.
O Emphasised printing OFF.
P Selects Pica size print.
Q Quits printing in Super/Sub script modes
R Sets printing to Super script print mode
S Sets printing to Sub script Print mode.
T Sends horizontal TAB character.
U Switches underling ON.
V Sets printers Vertical spacing tabs.
Format as H.
W Switches underlining OFF.
X Cancels Condensed print mode.
Y Sets up page length by no of lines
(used with F).
FORMAT Yn
Y = ALT + Y
n = Decimal number; see your printer
manual for correct number.
Z Sends Vertical TAB character.
[Suspends printing until next ALT + \rightarrow .
/ Sets perforation skip (in lines).
FORMAT; /n
/ = ALT + /
N = Decimal number. See your printer
manual for correct operation.
] Resumes sending text to printer after
last ALT + [
^ Selects styles of print.
FORMAT: ^n
^ = ALT + ^
n = Decimal number.

- \emptyset Facility to send user codes to printer. Automatically inserts Esc (Chr\$(27)) at start.
 FORMAT: $\emptyset n, n, n$
 $\emptyset = \text{ALT} + \emptyset$
 n = Decimal number. See 'H' for more information on entering decimal numbers.
- ALT + $\emptyset + /$ This special function has been added to enable full width printing in condense mode. When toggled, the Printer Driver will intercept all chr\$(13) and chr\$(10) codes and print a chr\$(\emptyset) instead. Has the effect of ignoring all Carriage returns and Line feeds.
- ALT + $\emptyset +$ Print phantom spaces in place of ALT characters. Added to enable screen justification to be kept in print out. Action is toggled.

EXTENSION STRING COMMANDS

All these commands have been made available only by passing an extension string. They can be accessed in various ways. From BASIC they can be sent in direct mode by typing ':' followed by the command and 'ENTER.' From within a BASIC program use the EXT command i.e. EXT "nodecode." To activate a command from within the WP press FKEY 8 and then enter the command. For use in other programs or languages see manual for that program or language.

COMMAND	EFFECT
WAIT	Suspends spooler from printing. When activated, puts "WAITING" sign on right of status line.
CONT	Resumes printing from spooler. Removes "WAITING" sign from status line.
CLEAR	Clears the spooler buffer.
DECODE	Turns on character interpretation. This being the setting when first loaded.
NODECODE	Turns off character interpretation. Needed when doing a scrdump.
PFONT	Sets up special ALT character font. This not being set when first loaded. See Appendix 2.
CFONT	Restores normal ALT character font.
SPEED n	Selects spooler transmission rate to printer. n in the range of 1 to 9 (Needs to be set to 9 when scrdumping).
PRINT file	Prints a specified file to printer.

SPECIAL KEYS

KEYS	EFFECT
ESC + 1	Equivalent to sending WAIT command.
ESC + 2	Equivalent to sending CONT command.
STOP	This command is only active in special circumstances. As printing may continue for over ten minutes after Printer Driver has returned control, it would be inconvenient for the printing

to stop every time STOP were pressed. However, should the Spooler buffer become full the Printer Driver will hang waiting for the printer to accept data. When this occurs the STOP interrupt flag will be checked and if set will return with the stop key error code. Thus, in most cases, stopping the calling program.

TECHNICAL INFORMATION.

The new Printer Drivers have been written to contain two types of EXOS programs. Two Device Drivers and a System Extension. The System Extension is called PD: and responds to HELP: as do all the commands contained within it, i.e. HELP: SPEED.

The Device drivers are called:

SPOOL	Only supports OPEN + CLOSE functions. Used for interrupts (PD sets spool automatically). NOTE. Spool uses channel 245.
PRINTER	A replacement device for the in-built device. Accepts OPEN, CLOSE, WRITE CHARACTER and WRITE BLOCK calls.

APPENDIX 1

	CODES SENT	
	HEX	DECIMAL
@	1B, 40	27, 64
A	1B, 52, 03	27, 82,3

B	1B, 52, *N*	27, 82, *N*
C	OF	15
D	1B, 47	27, 71
E	1B, 35	27, 53
F	OC	12
G	1B, 48	27, 42
H	1B, 44, *N*	27, 68, *N*
I	1B, 34	27, 52
J	1B, 70, 01	27, 112, 1
K	1B, 70, 00	27, 112, 0
L	1B, 57, 01	27, 87, 1
M	1B, 57, 00	27, 87, 0
N	1B, 45	27, 69
O	1B, 46	27, 70
P	1B, 50	27, 80
Q	1B, 54	27, 84
R	1B, 53, 00	27, 83, 0
S	1B, 53, 01	27, 83, 1
T	09	9
U	1B, 2D, 01	27, 45, 1
V	1B, 42, *N*	27, 66, *N*
W	1B, 2B, 00	27, 43, 0
X	12	18
Y	1B, 43, *N*	27, 67, *N*
Z	0B	11
/	1B, 4E, *N*	27, 78, *N*
ó	1B, 21, *N*	27, 33, *N*
0	1B, *N*	27, *N*

NOTE. *N* is user inputed number or numbers.

APPENDIX 2.

ALT

@

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

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