Worldwide Response Center

HP 3000 APPLICATION NOTE #51

TERMINAL TYPES

for HP3000 HPIB Computers
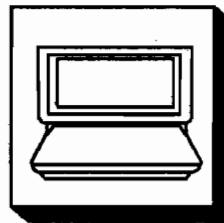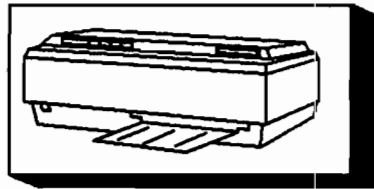
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HP 3000 APPLICATION NOTES *are published by the Worldwide Response Center twice a month and are distributed with the Software Status Bulletin. These notes address topics where the volume of calls received at the Center indicates a need for addition to or consolidation of information available through HP support services.*

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TERMINAL TYPES

for HP3000 HPIB Computers

Different types of devices use different terminal types when connected to the HP3000. If there is a question of which terminal type is best suited for your application, please contact Hewlett-Packard.

Sometimes peripherals that have not been tested are connected to the HP3000. Please refer to the *HP3000 Computer Systems Configuration Guide* (HP part number 5954-9354) to determine which devices are formally supported when connected to the HP3000.

The attributes listed for each of the terminal types may not apply to some peripherals. For example, block mode support, echo, and some special control characters are not appropriate for printers.

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Terminal Type 4

This terminal type is supported with device type 16 only on MPE IV MPE V/P and ATC ports. It is used for HP2600A or Datapoint 3300 keyboard display terminals at 10, 15, 30, 60. 120, and 240 cps.

Flow Control: XON/XOFF with timer disabled.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                           terminals are used. These include
                           control sequences for console attention,
                           backspace, cancel, end-of-record and
                           subsystem break.

Stripped Characters: XON/XOFF characters if handshake disabled,
                           subsystem break if disabled, NUL, DEL.

Terminal Control: Initial echo on, line feed accepted
                           during input data, line feed character
                           replaces form feed in output data, system
                           response to a backspace is an end-of-marker
                           character, 7 databits recognized.

Printer Control: None.

Considerations: This terminal type is rarely seen because
                           the devices requiring it are quite archaic.
                           If used on MPE V/E or later, there is a
                           delay protocol that has been added which
                           will cause the display output to pause
                           for .3 seconds at every linefeed.

Terminal Type 6

This terminal type is supported with device type 16 on MPE IV and MPE V ATC, ADCC and ATP ports. It is used for HP2762 A/B (General Electric terminet 300 or 1200 baud), or Data Communications terminal model B at 10, 15, 30, or 120 cps with paper tape reader/punch, option 2.

Note: This terminal must be equipped for echoplex.

Flow Control: XON/XOFF with timer disabled. On MPE V/E
                                 and later there is a delay protocol of
                                 .3 seconds for line feeds and form feeds.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                                 terminals are used. These include control
                                 sequences for console attention, backspace,
                                 cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                                 break if disabled, NUL, DEL.

Terminal Control: Initial echo on, line feed accepted
                                 during input data, form feed allowed in
                                 output data, system response to a backspace
                                 is a line feed character. 7 databits
                                 recognized. A DC3 character is output
                                 after each line feed.

Printer Control: None.

Considerations: Be aware of the delay protocol for this
                                 termtype. On termtype 6, the ADCC actually
                                 outputs 45 NULs after a carriage return
                                 or line feed at 240 cps.

Terminal Type 9

This terminal type is supported with device type 16 on MPE IV and MPE V ATC, ADCC and ATP ports. It is used for the old HP2615 Beehive Mini Bee. It is also widely used for foreign terminals which do not use ENQ/ACK flow control or block mode.

Flow Control: XON/XOFF with timer disabled. On MPE V/E
                       and later there is a delay protocol of
                       .3 seconds for line feeds and form feeds.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                       terminals are used. These include control
                       sequences for console attention, backspace,
                       cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                       break if disabled, NUL, DEL.

Terminal Control: Initial echo on, line feed accepted
                       during input data, form feed allowed in
                       output data, system response to a backspace
                       is a line feed character. 7 databits
                       recognized.

Printer Control: None.

Considerations: Because of the delay protocol used with
                       MPE V/E and later, this terminal type
                       is not feasible for foreign terminals.
                       The symptom is a very sluggish terminal
                       (.3 second delay per line feed). Terminal
                       type 18 does not use this delay protocol
                       and is generally recommended for foreign
                       terminal applications.

Terminal Type 10

This terminal type is supported with device type 16 on all versions of MPE for any asynchronous port. It is used for HP terminals and devices including the 264X, 262X and 239X families of terminals as well as the HP150, 700/92 and 700/94. This terminal type is also used on foreign terminals which emulate HPs ENQ/ACK protocol and block mode data transmission. These include the Direct 825 and 1025.

Flow Control: ENQ/ACK with time out transmission after
                                10 seconds. XON/XOFF with timer disabled.

Block Mode: Enabled for line and page block mode.
                                Alert character is a DC2, trigger character
                                is a DC1.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                                terminals are used. These include control
                                sequences for console attention, backspace,
                                cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                                break if disabled, NUL, DEL.

Terminal Control: Initial echo on, line feed accepted
                                as input data, no system response to
                                backspace, 7 databits recognized.

Printer Control: .   None.

Considerations: If a non-HP terminal is configured with
                                termtype 10, the computer will send an
                                ENQ character but the terminal will not
                                respond. Therefore, only 80 characters
                                are printed every 10 seconds.

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Terminal Type TT10NOEC

This terminal type is supported with device type 16 starting with MPE T-Delta 4 (G.01.04) and U-Mit (G.A2.00). It is used for HP terminals and devices including the 264X, 262X and 239X families of terminals.

This terminal type fixes problems with ADCC ports in regards to "ESC" character processing and echo. Some full screen applications, such as HPSLATE, which read a lot of escape sequences, can display garbage on the screen. With TT10NOEC, the escape character is not treated as a special character by the ADCC software. Character echo will be done by software instead of ADCC hardware. Since the escape character is no longer recognized by ADCC software, the "ESC;" and "ESC:" commands to turn echo off and on will no longer work. Two programs are supplied to perform these functions: ECHOON.PUB.SYS and ECHOOFF.PUBL.SYS.

This terminal type must not be used with ATP ports.

Flow Control: ENQ/ACK with time out transmission after
                         10 seconds. XON/XOFF with timer disabled.

Block Mode: Enabled for line and page block mode.
                         Alert character is a DC2, trigger character
                         is a DC1.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                         terminals are used. These include control
                         sequences for console attention, backspace,
                         cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                         break if disabled, NUL, DEL.

Terminal Control: Initial echo on, line feed accepted
                         as input data, no system response to
                         backspace, 7 databits recognized.

Printer Control: None.

Considerations: If a non-HP terminal is configured with
                         termtype 10, the computer will send an
                         ENQ character but the terminal will not
                         respond. Therefore, only 80 characters
                         are printed every 10 seconds.

Terminal Type 12

This terminal type is supported with device type 16 on all versions of MPE for any asynchronous port. It is used for native language extended character sets on HP terminals over ATC ports and for the HP2645 Katakana/Roman data terminal. The only difference between this terminal type and termtype 10 is that termtype 12 expects 8 data bits where termtype 10 expects 7.

Flow Control:	ENQ/ACK with time out transmission after 10 seconds. XON/XOFF with timer disabled.
Block Mode:	Enabled for line and page block mode. Alert character is a DC2, trigger character is a DC1.
Read Trigger:	DC1 character (XON character).
Special Characters:	Standard control characters for HP terminals are used. These include control sequences for console attention, backspace, cancel, end-of-record and subsystem break.
Stripped Characters:	XON/XOFF if handshake disabled, subsystem break if disabled, NUL, DEL.
Terminal Control:	Initial echo on, line feed accepted as input data, form feed allowed in output data, no system response to backspace, 8 data bits with no parity.
Printer Control:	None.
Considerations:	HP terminals on ATP ports or ADCC ports must be configured for parity=none, chk parity=no and data bits=8 when used for NLS/3000 on terminal type 12.

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Terminal Type 13

This terminal type is supported with device type 16 on all versions of MPE for any asynchronous port. It is used for message switching networks or communication with other computers where echo is not desired. It is also common on the HP2601A printer although termtype 18 is recommended.

Flow Control: XON/XOFF with timer disabled.

Block Mode: Enabled for line and page block mode, with
                           alert character DC2 and trigger character
                           DC1.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                           terminals are used. These include
                           control sequences for console attention,
                           backspace, cancel, end-of-record and
                           subsystem break.

Stripped Characters: XON/XOFF characters if handshake disabled,
                           subsystem break if disabled, NUL, DEL.

Terminal Control: Initial echo off, line feed accepted
                           as input data, form feed allowed in output
                           data, no system response to backspace, 7
                           data bits recognized.

Printer Control: None.

Considerations: HP2601A and 2602B printers frequently use
                           this termtype. However, the block mode
                           and echo are not needed and termtype 18
                           will work fine.

                           This terminal type is often used over
                           Telenet and Tymnet networks where the
                           user would be charged for those echoed
                           characters.

Terminal Type 14

This terminal type is used by HP MTS terminals which use synchronous data transmission over an INP. It will not work over any asynchronous controller although it does have the same characteristics as termtype 10.

Flow Control: ENQ/ACK with time out transmission after
                       10 seconds. XON/XOFF with timer disabled.

Block Mode: Enabled for line and page block mode.
                       Alert character is a DC2, trigger character
                       is a DC1.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                       terminals are used. These include control
                       sequences for console attention, backspace,
                       cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                       break if disabled, NUL, DEL.

Terminal Control: None.

Printer Control: None.

Considerations: Terminals running on MTS are the only
                       devices using this terminal type. MTS
                       terminals connected to a 2333A cluster
                       controller will use termtype 10 however.

Terminal Types 15 & 16

These terminal types are supported on MPE IV and MPE V over any asynchronous controller. They are grouped together because they are both used for the same single device, the HP2635 printing terminal. The difference being that terminal type 15 is used for 8 bit data transmission needed for NLS/3000 or other extended character sets.

Flow Control: ENQ/ACK, XON/XOFF with timer disabled.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                         terminals are used. These include control
                         sequences for console attention, backspace,
                         cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                         break if disabled, NUL, DEL.

Terminal Control: Initial echo on, line feed accepted
                         during input data, line feed replaces
                         form feed in output data, system response
                         to a backspace is a line feed character,
                         7 data bits for termtype 16 and 8 data
                         bits for termtype 15.

Printer Control: None.

Considerations: As of MPE V/E, Block Mode has been
                         removed from termtypes 15 & 16. Terminals
                         configured with these termtypes which use
                         block mode must be reconfigured to a
                         supported block mode termtype, such as
                         termtype 10 or termtype 12.

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Terminal Type 18

This terminal type is supported with device types 16 & 32 on all versions of MPE for any asynchronous port. It is used for all foreign terminals that do not use ENQ/ACK and printers with less intelligent controllers. It is not supported in a spooled mode.

Flow Control: XON/XOFF with timer disabled.

Block Mode: Not supported.

Read Trigger: NUL

Special Characters: Standard control characters for HP
                         terminals are used. These include control
                         sequences for console attention, backspace,
                         cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                         break if disabled, NUL, DEL.

Terminal Control: Initial echo on, line feed accepted
                         during input data, form feed allowed in
                         output data, no system response to a
                         backspace, 7 data bits recognized.

Printer Control: None.

Considerations: This terminal type is considered the
                         "plain vanilla" terminal type used with
                         foreign devices and some HP devices.
                         Terminal type 18 is not supported for
                         spooled printers because no status
                         checking is done for possible printer
                         problems. Status checking is the printer
                         control HP uses to stop and save an active
                         spoolfile when a condition such as "paper
                         out" occurs. Status checking will also
                         print a message at the console indicating
                         what the problem may be. Printers
                         requiring this terminal type do not
                         have the firmware to respond to status
                         checking.

Terminal Type TTPCL18

This terminal type is supported with device type 32 on MPE V/E, T-MIT and later operating system which allow user defined terminal types created with the Workstation Configurator. It is shipped on MPE V T-MIT and later installation tapes. It has been designed to provide enhanced control for printers that do not use termtype 19 or 21. This termtype can be used for extended character printing and over a multiplexer.

Flow Control:
XON/XOFF with 60 second time enabled upon receipt of each XOFF. If an XON is not received in 60 seconds, a message is displayed on the console and the CPU continues to wait for the XON.

Block Mode:
Not supported.

Read Trigger:
NUL

Special Characters:
Standard control characters for HP terminals are used. These include control sequences for console attention, backspace, cancel, end-of-record and subsystem break.

Stripped Characters:
XON/XOFF if handshake disabled, subsystem break if disabled, NUL, DEL.

Terminal Control:
Initial echo on, form feed allowed in output data, line feed accepted as input data, no system response to backspace, 8 data bits, no parity.

Printer Control:
Printer initialization to hard reset, disable display functions mode, enable auto perf-skip.

Considerations:
Because of the 60 second timer and the added printer initialization, this should be a desired terminal type for HP printers currently on termtype 18. This terminal type is also recommended for HP printers over a multiplexer when higher throughput is desired. Increased throughput is achieved by the elimination of printer status checking.

Terminal Type TT18NOEC

This terminal type is supported with device type 16 starting with MPE T-Delta 4(G.01.04) and U-MIT (G.A2.00). It is used for HP terminals and devices including the 264X, 262X and 239X families of terminals.

This terminal type fixes problems with ADCC ports in regards to "ESC" character processing and echo. Some full screen applications, such as HPSLATE, which read a lot of escape sequences, can display garbage on the screen. With TT18NOEC, the escape character is not treated as a special character by the ADCC software. Character echo will be done by software instead of ADCC hardware. Since the escape character is no longer recognized by ADCC software, the "ESC;" and "ESC:" commands to turn echo off and on will no longer work. Two programs are supplied to perform these functions: ECHOON.PUB.SYS and ECHOOFF.PUBL.SYS.

Flow Control:	XON/XOFF with timer disabled.
Block Mode:	Not supported.
Read Trigger:	NUL
Special Characters:	Standard control characters for HP terminals are used. These include control sequences for console attention, backspace, cancel, end-of-record and subsystem break.
Stripped Characters:	XON/XOFF if handshake disabled, subsystem break if disabled, NUL, DEL.
Terminal Control:	Initial echo on, line feed accepted during input data, form feed allowed in output data, no system response to a backspace, 7 data bits recognized.
Printer Control:	None.
Considerations:	This terminal type is considered the "plain vanilla" terminal type used with foreign devices and some HP devices.

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Terminal Type TT18PLUS

This terminal type is supported with device type 32 beginning with T-DELTA 4(G.01.04) and U-MIT (G.A2.00). It was not released with MPE but is available with an ATP/ADCC patch.

This terminal type fixes a problem with ATP firmware XON/XOFF processing with terminal type 18. If an XON follows an XOFF too closely, the ATP firmware may miss the XON, which will cause the port to hang. This scenario can occur when printers are connected to the HP3000 via multiplexers. TT18PLUS causes the XON/XOFF handshake to occur in software rather than in ATP firmware.

This terminal type must not be used with ADCC ports.

Flow Control:	XON/XOFF with timer disabled.
Block Mode:	Not supported.
Read Trigger:	NUL
Special Characters:	Standard control characters for HP terminals are used. These include control sequences for console attention, backspace, cancel, end-of-record and subsystem break.
Stripped Characters:	XON/XOFF if handshake disabled, subsystem break if disabled, NUL, DEL.
Terminal Control:	Initial echo on, line feed accepted during input data, form feed allowed in output data, no system response to a backspace, 7 data bits recognized.
Printer Control:	None.
Considerations:	This terminal type is considered the "plain vanilla" terminal type used with foreign devices and some HP devices. Terminal type TT18PLUS is not supported for spooled printers because no status checking is done for possible printer problems. Status checking is the printer control HP uses to stop and save an active spoolfile when a condition such as "paper out" occurs. Status checking will also print a message at the console indicating what the problem may be. Printers requiring this terminal type do not have the firmware to respond to status checking.

Terminal Type 19

This terminal type is supported with device type 32 on all versions of MPE for any asynchronous port. It is used for HP spooled printers that have more intelligent controllers including the 256X, 263X and 293X printer families.

Flow Control: XON/XOFF with timer disabled.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                           terminals are used. These include control
                           sequences for console attention, backspace,
                           cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                           break if disabled, NUL, DEL.

Terminal Control: Initial echo on, form feed allowed in
                           output data, line feed accepted in input
                           data, no system response to a backspace,
                           7 data bits, odd parity.

Printer Control: Printer initialization to disable display
                           functions, disable automatic underlining,
                           enable "permanently on" underline mode,
                           set secondary character set to Math, set
                           primary set to default, enable SI/SO mode,
                           Shift In, enable permanent SI/SO selection,
                           select character ROM 0 if ROM 1 is empty,
                           set pitch to 10.0, set line spacing to 6
                           lines per inch, enable perforation skip
                           mode, clear vertical tabs, slew 1 line at
                           line feed, clear horizontal tabs, enable
                           end-of-line wraparound mode, and set left
                           margin to column 1.

Considerations: Termtype 19 sends a status request to the
                           printer when the printer is opened, at the end
                           of every line and when the port receives an
                           XOFF character. This status request checks for
                           printer online, paper and transmission errors.
                           If the printer does not reply within 10 seconds,
                           a spoolee I/O error is encountered and the
                           printer will stop spooling.

                           If the printer is remote and a multiplexer
                           is used, the status request may not always
                           return within 10 seconds. Termtype 21 does not
                           generate a status request at the receipt of an
                           XOFF. Rather, a 60 second timer is started;
                           if an XON is not received in that time, a
                           "device not ready" message is displayed and the
                           spooler will continue to wait for the XON. In
                           this configuration, termtype 21 may be best.

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Terminal Type TTPCL19

This terminal type is supported with device type 32 on MPE V/E, T-MIT and later operating systems which allow user defined terminal types created with the workstation Configurator. It is shipped on MPE V T-MIT and later installation tapes. It is used for HP direct connect and remote spooled printers such as the 256X and 293X printers. The difference between this termtype and termtype 19 is that this one contains less printer initialization. This makes it simpler for the user or programmer to select desired printer settings.

Flow Control: XON/XOFF with timer disabled.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                       terminals are used. These include control
                       sequences for console attention, backspace,
                       cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                       break if disabled, NUL, DEL.

Terminal Control: Initial echo on, form feed allowed in
                       output data, line feed accepted in input
                       data, no system response to backspace,
                       7 data bits, odd parity.

Printer Control: Printer initialization to hard reset,
                       disable display functions mode, enable
                       auto perf-skip.

Considerations: TTPCL19 contains the same status checks
                       as termtype 19. Because there are no
                       controls sequences to tell the printer
                       what column to start in, what line spacing
                       to use, what slew should be used, what
                       pitch or character set the printer
                       should have, the printer can be set
                       directly, giving users more flexibility
                       and control.

Terminal Type 20

This terminal type is supported with device type 32 on MPE V/E, T-MIT and later operating systems using ADCC or ATP controllers. It is used for HP printers such at the 256X, 263X and 293X series printers where 8 data bits are required. It is not supported as a remote printer termtype.

Flow Control: XON/XOFF with timer disabled.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
terminals are used. These include control
sequences for console attention, backspace,
cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
break if disabled, NUL, DEL.

Terminal Control: Initial echo on, form feed allowed in
output data, line feed accepted in input
data, no system response to backspace,
8 data bits, no parity.

Printer Control: Printer initialization to disable display
functions mode, enable HP terminal mode,
turn off underlining, set ROM 1 to secondary
character set, set ROM 2 to primary
character set, set pitch to 10.0, set
line spacing to 6 lines per inch, clear
horizontal tabs, set right margin, set
left margin, hard reset, slew 1 line at
line feed, turn on auto perf-skip, enable
char set selection control.

Considerations: Termtype 20 is used primarily for NLS/3000
where 8 data bits are required. Other
than this, it is the same as termtype 19
with status requests sent after each line
feed and XOFF.

Terminal Type 21

This terminal type is supported with device type 32 on MPE V/E, T-MIT and later operating systems using ADCC or ATP controllers. It is used for HP printers such as the 256X, 263X and 293X series spooled printers. Its primary use is to allow the use of embedded printer control escape sequences in the data which may cause errors with termtype 19 because of status checks after each XOFF.

Flow Control:
XON/XOFF with 60 second timer enabled upon receipt of each XOFF. If an XON is not received in 60 seconds, a message is displayed on the console and the CPU continues to wait for the XON.

Block Mode:
Not supported.

Read Trigger:
DC1 character (XON character).

Special Characters:
Standard control characters for HP terminals are used. These include control sequences for console attention, backspace, cancel, end-of-record and subsystem break.

Stripped Characters:
XON/XOFF if handshake disabled, subsystem break if disabled, NUL, DEL.

Terminal Control:
Initial echo on, form feed allowed in output data, line feed accepted in input data, no system response to a backspace, 7 data bits, odd parity.

Printer Control:
Printer initialization to disable display functions, disable automatic underlining, enable "permanently on" underline mode, set secondary character set to Math, set primary set to default, enable SI/SO mode, Shift In, enable permanent SI/SO selection, select character ROM 0 if ROM 1 is empty, set pitch to 10.0, set line spacing to 6 lines per inch, enable perforation skip mode, clear vertical tabs, slew 1 line at line feed, clear horizontal tabs, enable end-of-line wraparound mode, and set left margin to column 1.

Considerations:
This terminal type enables you to insert printer control escape sequences into data. If this is done using terminal type 19, a printer error may occur is a status request, as a result of an XOFF, is sent in the middle of the embedded escape sequence. Terminal type 21 is also useful in remote applications where a status request may not be answered in less than 10 seconds, which causes a spoolee I/O error. This is typically seen when the printer is remote and passes through a statistical multiplexer. Termtype 21 does not send a status request after an XOFF.

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Terminal Type 22

This terminal type is supported with device type 32 on MPE V/E, T-MIT and later operating systems using ADCC or ATP controllers. It is used for HP direct connect printers such as the 256X, 263X and 293X series spooled printers where 8 data bits are required. It also allows embedded printer control escape sequences because it does not perform status checks after each XOFF.

Flow Control: XON/XOFF with 60 second timer enabled
                           upon receipt of each XOFF. If an XON
                           is not received in 60 seconds, a message
                           is displayed on the console and the CPU
                           continues to wait for the XON.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP
                           terminals are used. These include control
                           sequences for console attention, backspace,
                           cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                           break if disabled, NUL, DEL.

Terminal Control: Initial echo on, form feed allowed in
                           output data, line feed accepted in input
                           data, no system response to a backspace,
                           8 data bits, no parity.

Printer Control: Printer initialization to disable display
                           functions, disable automatic underlining,
                           enable "permanently on" underline mode,
                           set secondary character set to Math, set
                           primary set to default, enable 8-bit mode,
                           enable permanent SI/SO selection,
                           select character ROM 0 if ROM 1 is empty,
                           set pitch to 10.0, set line spacing to 6
                           lines per inch, enable perforation skip
                           mode, clear vertical tabs, slew 1 line at
                           line feed, clear horizontal tabs, enable
                           end-of-line wraparound mode, and set left
                           margin to column 1.

Considerations: This terminal type is used for NLS/3000
                           or extended character sets where embedded
                           printer control will be used. It is
                           also highly recommended for 2631B or
                           293X printers over a statistical
                           multiplexer.

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Terminal Type TTPCL22

This terminal type is supported with device type 32 on MPE V/E, T-MIT and later operating systems which allow user defined terminal types created with the workstation configurator. It is shipped on MPE V T-MIT and later installation tapes. It is used for HP direct connect printers that need termtype 20 or 22, but without any undesirable printer initialization.

Flow Control: XON/XOFF with 60 second time enabled
                       upon receipt of each XOFF. If an XON is
                       not received in 60 seconds, a message is
                       displayed on the console and the CPU
                       continues to wait for the XON.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character)

Special Characters: Standard control characters for HP
                       terminals are used. These include control
                       sequences for console attention, backspace,
                       cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                       break if disabled, NUL, DEL.

Terminal Control: Initial echo on, form feed allowed in
                       output data, line feed accepted as input
                       data, no system response to a backspace,
                       8 data bits, no parity.

Printer Control: Printer initialization to hard reset,
                       disable display functions mode, enable
                       auto perf-skip.

Considerations: TTPCL22 contains the same characteristics
                       as terminal type 22 except for printer
                       initialization. The printer control on
                       TTPCL22 allows users to set characteristics
                       directly, allowing them more flexibility
                       and control. This terminal type is also
                       recommended for HP serial printers
                       connected over a statistical multiplexer.

Terminal Type 24

This terminal type is used for X.25 PAD (Packet Assembler/Disassembler) access on versions of X.25 software beginning with B.01.00. It is used for VPLUS applications with 2622A, 2623A, 2624B (with the proper ROM versions), 2625A, 2627A, 2628A, 239X and 150 terminals.

Flow Control: Both the X.25 PAD and the HP terminal
                             should be set to XON/XOFF flow control.

Block Mode: VPLUS applications only. There is NO
                             DC2 alert or DC1 trigger.

Read Trigger: None.

Special Characters: Standard control characters for backspace,
                             cancel, end-of-record, and subsystem
                             break. Note that these characters may
                             have significance to the X.25 PAD.

Stripped Characters: None.

Terminal Control: Is controlled by the X.25 PAD. Echo
                             is done by the PAD and initially set
                             on by X.25 software.

Printer Control: None.

Considerations: Terminal type 24 is recognized only by
                             the IOPAD0 driver for X.25 PAD access.
                             If used on MPE V/E or later, there is a
                             delay protocol that has been added which
                             will cause the display output to pause
                             for .3 seconds at every linefeed.

Terminal Type 26

This terminal type is supported with device type 32 on MPE UB-Delta-3 and later operating systems using ADCC or ATP controllers. It was initially released with limited support for ATP controllers on MPE UB-Delta-1. It is used for HP direct-connect printers and HP printers connected over the HP2334A Plus Statistical Multiplexers. The *UB-Delta-1 MPE Communicator* (P/N 5958-3153) contains an article introducing terminal type 26 and explaining its operation in detail. This terminal type uses 8 data bits and allows embedded printer control escape sequences as it does not do status checks after each XOFF.

Flow Control: XON/XOFF with 60 second timer enabled upon receipt
of each XOFF. If an XON is not received in 60
seconds, a message is displayed on the console. This
process is repeated up to 10 times; then aborted and
the port is disconnected.

Block Mode: Not supported.

Read Trigger: DC1 character (XON character).

Special Characters: Standard control characters for HP terminals are
used. These include control sequences for console
attention, backspace, cancel, end-of-record and
subsystem break.

Stripped Characters: XON/XOFF characters if handshake disabled,
subsystem break if disabled, NUL, DEL.

Terminal Control: Initial echo on, form feed allowed in output data,
line feed accepted in input data, no system response
to a backspace, 8 data bits, no parity.

Printer Control: Printer initialization to disable display functions,
disable automatic underlining, enable "permanently on"
underline mode, set secondary character set to Math,
set primary set to default, enable 8-bit mode, enable
permanent SI/SO selection, select character ROM 0 if
ROM 1 is empty, set pitch to 10.0, set line spacing
to 6 lines per inch, enable perforation skip mode,
clear vertical tabs, slew 1 line at line feed, clear
horizontal tabs, enable end-of-line wraparound mode,
and set left margin to column 1.

Considerations: This terminal type provides increased throughput over
datacomm networks because of fewer status requests.
One status request is sent at the beginning of the
spoolfile and two at the end. TT26 is more forgiving
of delays in datacomm networks because the status
request timer has been increased from 10 to 60 seconds,
reducing the exposure to spoolee I/O error %53 caused
by the status request timing out.

Terminal Type TTPCL26

This terminal type is supported with device type 32 on MPE UB-Delta-3 and later operating systems using ADCC or ATP controllers. It was initially released with limited support for ATP controllers on MPE UB-Delta-1. It is used for HP printers connected over the HP2334A Multimux in a buffered network environment. The *UB-Delta-1 MPE Communicator* (P/N 5958-3153) contains an article introducing terminal type TTPCL26 and explaining its operation in detail. This terminal type uses 8 data bits and allows embedded printer control escape sequences as it does not do status check after each XOFF. This terminal type does not contain most of the printer initialization done by TT26.

```
Flow Control:           XON/XOFF with 60 second timer enabled upon receipt
                        of each XOFF.  If an XON is not received in 60
                        seconds, a message is displayed on the console.  This
                        process is repeated up to 10 times; then aborted and
                        the port is disconnected.

Block Mode:             Not supported.

Read Trigger:           DC1 character  (XON character).

Special Characters:     Standard control characters for HP terminals are
                        used.  These include control sequences for console
                        attention, backspace, cancel, end-of-record and
                        subsystem break.

Stripped Characters:    XON/XOFF characters if handshake disabled, subsystem
                        break if disabled, NUL, DEL.

Terminal Control:       Initial echo on, form feed allowed in output data,
                        line feed accepted in input data, no system response
                        to a backspace, 8 data bits, no parity.

Printer Control:        Printer initialization to disable display functions
                        mode, perform a hard reset, and enable perforation
                        skip mode.

Considerations:    -    This terminal type provides increased throughput over
                        datacomm networks because of fewer status requests.
                        One status request is sent at the beginning of the
                        spoolfile and two at the end.  TTPCL26 is more forgiving
                        of delays in datacomm networks because the status
                        request timer has been increased from 10 to 60 seconds,
                        reducing the exposure to spoolee I/O error %53 caused
                        by the status request timing out.  The LaserJet 2000
                        (2684A) and RuggedWriter 480 (2235A) printers use this
                        terminal type when connected directly to the system.
```

Terminal Type 31

This terminal type is supported with device type 16 on all versions of MPE for ADCC and ATP controllers. This is the default terminal type that is used if the I/O configuration contains an invalid terminal type name or file. It is the same as termtype 18 except for system response to a backspace, which is a slash character.

Flow Control: XON/XOFF with timer disabled.

Block Mode: Not supported.

Read Trigger: NUL

Special Characters: Standard control characters for HP
                           terminals are used. These include control
                           sequences for console attention, backspace,
                           cancel, end-of-record and subsystem break.

Stripped Characters: XON/XOFF if handshake disabled, subsystem
                           break if disabled, NUL, DEL.

Terminal Control: Initial echo on, line feed accepted
                           during input data, form feed allowed in
                           output data, system response to a backspace
                           is a backslash character. 7 databits
                           recognized.

Printer Control: None.

Considerations: If users ever complain of a backslash
                           appearing every time they hit the
                           backspace key, remember that you
                           probably have an invalid terminal type
                           name or file.

Terminal Type TT7550

This terminal type was developed to support the HP 7550A Plotter as a spooled device when configured as device type 32 on MPE V-Delta-1 and later operating systems using ADCC or ATP controllers. The *UB-Delta-2 MPE Communicator* (P/N 5958-3156) contains an article, "What's New in HP 3000 Graphics Products", that discusses the versions of the graphics products necessary to run the spooled plotter.

Flow Control: XON/XOFF with timer disabled.

Block Mode: Not supported.

Read Trigger: NUL

Special Characters: Standard control characters for HP terminals are
                         used. These include control sequences for console
                         attention, backspace, cancel, end-of-record and
                         subsystem break.

Stripped Characters: XON/XOFF characters if handshake disabled,
                         subsystem break if disabled, NUL, DEL.

Terminal Control: Initial echo on, form feed allowed in output data,
                         line feed accepted in input data, no system response
                         to a backspace, 7 data bits, no parity.

Plotter Control: Plotter initialization to enable the plotter to accept
                         data, select a 5 millisecond intercharacter delay,
                         select DC1/DC3 characters as XON/XOFF characters, set
                         80 byte XOFF threshold level, and perform a hard reset.

Considerations: The system manager can modify the SYSSTART file to
                         automatically issue the :HEADOFF ldev# command to
                         suppress the spooler banner page. As an alternative to
                         modifying SYSSTART, an OPTION LOGON UDC for the system
                         operator can issue the :HEADOFF ldev# command. The
                         HP7550 is supported only for direct connect at one data
                         transfer rate: 9600 baud. Modems, multiplexers, data
                         switches and PBXs cannot be connected between the
                         plotter and the HP3000.

                         If the system is on MPE UB-Delta-2 through V-MIT,
                         patch HP7550 can be installed to allow support of
                         the spooled HP7550. If you have an ATP port, the
                         firmware levels supporting the spooled HP7550 are
                         Pass 3 and later. Please contact Hewlett-Packard
                         if you need more information on this patch.

User Defined Terminal Types

User defined terminal types are supported on MPE V/E, T-MIT and later, operating systems on ADCC and ATP terminal controllers. They are created by a local area office or by purchasing the workstation configurator, (ttutil.pub.sys). This product is used to create any desired terminal type characteristic. This can be flow control, block mode support, read trigger, special characters etc. The most useful advantage however, is probable vertical forms control. Different VFC files can be set up to initialize printers in different ways.

With the workstation configurator, different VFC files can be used with any given output file using the ENV parameter of the file equation. This enables users to send any valid escape sequence to the device at spoolfile initialization. These escape sequences can position the cursor, define the character set, set up line spacing, pitch, slew, etc. It also allows the same port to be used in a number of different ways without reconfiguring.

With different devices coming out, the workstation configurator will allow users to easily modify termtype characteristics suited to a particular device. In the past, new devices were introduced with options that were not available because of the terminal type needed to make the device work. The workstation configurator has been helpful in instantly creating a terminal type that will allow all device characteristics to be used.

Considerations:

Workstation Configurator termtype files will show up with 2 question marks in the assigned termtype field of a sysdump listing. Make sure a record of the current termtype exists.

Problems may occur with Workstation Configurator files used with terminals running applications such as Deskmanager or Slate. These products do an fcontrol to find out the terminal type and are returned a 0 because a Workstation Configurator terminal type file is not expected. Because a 0 is returned, Slate and Desk think they are being run from a dumb terminal, and they may not work if the application is block mode.

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There are a variety of escape sequences that are sent to serial printers at the beginning of each spoolfile. The particular sequences that are sent depend on the terminal type file being used. The escape sequences that are sent with the standard Hewlett-Packard terminal type files are listed in the following charts.

ESCAPE SEQUENCE INITIALIZATION STRING SENT FROM TT19 AND TT21

File Name: VFC31B7.PUB.SYS

Escape Sequence	Definition	Printer Group*
ESC Z	Turn display functions mode off	A B C
ESC &d@	Disable automatic underlining	A B C
ESC &k1E	Enable "permanently on" underlining mode (terminal compatibility)	A B
ESC)A	Select Math Symbols as secondary character font	A B C
ESC (@	Select default primary character set	A B C
ESC &k0I	Enable Shift-In/Shift-Out mode for character set selection	A
SI	Shift-In (print from primary character set)	A B C
ESC &k1F	Enable permanent SI/SO selection (terminal compatibility)	A B
ESC &s1I	Default to ROM location "0" if ROM location "1" is empty	A
ESC &k0S	Select standard print pitch (10 cpi)	A B C
ESC &l6D	Set line spacing to 6 lines per inch	A B C
ESC &l1L	Enable perforation skip mode	A B C
ESC &l3M	Clear all vertical tabs	A B
ESC &l0N	Line feed character (LF) performs a single line slew (not vertical tab)	A
ESC 3	Clear all horizontal tabs	A B
ESC &s0C	Enable end-of-line wraparound mode	A B
ESC &a1L	Set left margin to column 1	A B C

* Printer Groups: A - 263X
                    B - 293X
                    C - 256X

These terminal types are not appropriate for the LaserJet series or RuggedWriter printers.

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File Name: VFC31B8.PUB.SYS

Escape Sequence	Definition	Printer Group*
ESC Z	Turn display functions mode off	A B C D E
ESC &d@	Disable automatic underlining	A B C D E
ESC &k1E	Enable "permanently on" underlining mode (terminal compatibility)	A B E
ESC)A	Select Math Symbols as secondary character font	A B C D
ESC (@	Select default primary character set	A B C D **
ESC &k1I	Enable 8-Bit mode for character set selection	A
ESC &k1F	Enable permanent SI/SO selection (for terminal compatibility)	A B E
ESC &s1I	Default to ROM location "0" if ROM location "1" is empty	A
ESC &k0S	Select standard print pitch (10 cpi)	A B C D E
ESC &l6D	Set line spacing to 6 lines/inch	A B C D E
ESC &l1L	Enable perforation skip mode	A B C D E
ESC &l3M	Clear all vertical tabs	A B
ESC &l0N	Line feed character (LF) performs a single line slew (not vertical tab)	A
ESC 3	Clear all horizontal tabs	A B
ESC &s0C	Enable end-of-line wraparound mode	A B D E
ESC &a1L	Set left margin to column 1	A B C D E

* Printer Groups: A - 263X
                            B - 293X
                            C - 256X
                            D - Laserjet Series (2686A/D, 2684A, 33440A)
                            E - RuggedWriter 480 (2235A)

**   This escape sequence is not documented for the LaserJet
     Series II (33440A) or the LaserJet 2000 (2684A) but it
     will work.

File Name: VFCPCL.PUB.SYS

Escape Sequence	Definition	Printer Group*
ESC Z	Turn display functions mode off	A B C D E
ESC E	Set all printer configurations to the default state (hard reset)	A B C D E **
ESC &11L	Enable perforation skip mode.	A B C D E

* Printer Groups: A - 263X
                                 B - 293X
                                 C - 256X
                                 D - LaserJet Series   (2686A/D, 2684A, 33440A)
                                 E - RuggedWriter 480   (2235A)

** Beware! The normal reaction of a 2631B to this escape sequence
is to go offline.

Glossary

Backspace Response:

When a backspace is entered, the previous character is deleted from the input stream. Different devices expect slightly different codes to perform this action and cause the desired effect. Most commonly, the system response to a backspace is nothing. With the Workstation Configurator, you may also erase the character you backspace to.

Some devices require the "end-of-medium" character to move the display cursor back. Hard copy terminals generally require a line feed to move the print head one space down, so data is not overprinted. For devices which can not physically move the print head backward, an option is available in which the driver responds to each backspace by sending a slash character, followed by the character deleted, which will then give the user some idea of how many characters have been deleted.

Block Mode:

Block Mode is a method of transferring data from the terminal to the computer. Instead of sending each character as it is typed, the terminal buffers a line or more of data and sends the entire block when the user has pressed ENTER. With the Workstation Configurator, you have the ability to specify the type of block mode supported, along with defining the alert and block trigger characters.

Delay Protocol:

The delay protocol is a method of control intended for printers where the print head must physically return when a line feed or form feed is encountered. The extra time required for this physical movement of the print head may result in data overrun or overprinting unless the delay protocol is added. With the Workstation Configurator, the delay flow control and delay time variable are optional.

Echo:

When the terminal is in remote mode, in character mode, and local mode is disabled, characters typed on the keyboard are not placed in the display by the terminal. The computer must echo (or send back to the terminal) each character as it is received. When it is desired that the characters typed not be displayed, such as when entering a password, each may be disabled.

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Enquiry/Acknowledge:	The ENQ/ACK protocol is a flow control method that is controlled by the driver. When writing data to the terminal, the driver breaks the data into blocks. After each block has been written, the driver sends an enquiry character to the device and waits for an acknowledgment character to come back to the computer. When the device sees the enquiry character, it responds with the acknowledge character if it can accept the next full block of data. If not, the device waits until it can accept the next block with an acknowledge. With the Workstation Configurator, the device can be configured so the CPU will send another block or another enquiry if no acknowledge is is received within the 10 second time out.
Flow Control:	Flow Control is the method by which the flow of data between the computer and the terminal device may be controlled so as to avoid sending data faster than the receiver can handle it. ENQ/ACK, XON/XOFF, delay, read trigger and block mode reads are various methods of handling flow control on an HP3000 asynchronous port.
Form Feed in Output:	Some devices do not recognize and act upon the form feed character in a useful manner. One of the terminal type characteristics available specifies that each form feed character in the outgoing data stream may be replaced with a different character. Usually this is the line feed character.
Line Feed in Input:	Some devices do not provide an automatic wraparound when typing characters beyond the end of a display line. Without the wraparound, typing at the end of the line places each character upon all previously typed characters in the last position of of the display line. To resolve this problem, the line feed character may be selected as a special character. Receipt of the line feed character causes the HP 3000 to echo the line feed, write a carriage return character to the terminal and remove the line feed character from the input data.
Parity:	Parity is a means of verifying that data is transmitted between the terminal and computer without error. These bits may all be used for the character code (with 256 possible character codes available), or 7 bits used for the character code (allowing 128 characters) and the eighth bit used as a parity bit.

If 7 data bits are used, there are 4 possible parity settings: force to 0 |

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where the parity bit is set to either 0 or 1 so that the total number of 1 bits in the 8 bit character is wither even or odd, depending on the parity type enabled.

Printer Control: When a printer is shared among users, each user may want to use the printer in a different way, and consequently alter the settings on the printer by direct changes or escape sequences. The user may change characteristics such as margins, tabs, print density and pitch, thus affecting the next user who does not necessarily want those characteristics.

To prevent one user from affecting the next user, the printer must be initialized to a default known state before printing the next job. When the device open occurs on a type 32 device, the port controller software writes an initialization character string to the device. This string is determined by the currently active terminal type.

Read Trigger: The read trigger is used to tell the terminal device when it should start to send characters to the HP3000. In other words, it is a method of preventing a device from sending input characters before the HP3000 is ready to accept them. Once the HP3000 sends the read trigger character, input can proceed.

Special Characters: There are several characters which have special significance to the terminal driver. These characters cause the driver to take special actions. With the Workstation Configurator, you are able to define the characters that cause each of the following special actions: console attention, backspace cancel, end-of-record and subsystem break.

Stripped Characters: With the Workstation Configurator, you are able to define a set of characters which have no special function other than to be removed from the input data. When these characters are typed, they are ignored and do not show up in the data read. For example, if the XON/XOFF flow control is not enabled, then one of the terminal type options allows you to specify that XON and XOFF be stripped from input. If a subsystem break character is entered when subsystem breaks are not enabled, the character may be removed from the input stream. If the console attention character is entered from a terminal which is not the console, it may be ignored or treated as a data character.

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Terminal Control: There are several characteristics which
                                    allow you to have some control over the
                                    terminal. With the Workstation
                                    Configurator you are able to control each
                                    of the following terminal type char
                                    Echo, line feed during input, form feed
                                    during output, backspace response and
                                    parity.

Vertical Formats: Many printers allow the use of Vertical
                                    Format Control (VFC). VFCs allow a
                                    programmer to instruct a printer to skip
                                    to predetermined lines on a page with
                                    certain carriage control directives rather
                                    than counting and outputing a number of
                                    of blank lines.

                                    With the Workstation Configurator, each
                                    VFC character sequence (up to a maximum
                                    of 16 characters each) may be defined.
                                    When one of the VFC carriage controls is
                                    used (%300 to %317), the driver generates
                                    the character sequence necessary to move
                                    the printer carriage to the proper channel.
                                    For further information on Vertical Format
                                    Control, refer to the "MPE V System
                                    Operation and REsource Management Manual".

XON/XOFF Protocol: In contrast to the other methods, this
                                    is controlled by the terminal device.
                                    The driver sends data to the device in a
                                    continuous stream. If the device can no
                                    longer accept data (because of being put
                                    offline, filling its buffer, running out
                                    of paper, etc), it sends the XOFF character
                                    to the driver. The driver then stops
                                    sending data to the device. When the
                                    device is able to accept data again, it
                                    sends the XON character to the driver and
                                    the driver resumes data transmission to
                                    the device.

                                    With the Workstation Configurator, you
                                    specify whether a timer should be started
                                    when the XOFF character is received. If
                                    a timer is started and the time expires
                                    before the XON character is received, a
                                    message is printed on the console stating
                                    that the device is offline. The timer
                                    duration can be specified from 1 to 255
                                    seconds.

BACK ISSUE INFORMATION

Following is a list of the Application Notes published to date. If you would like to order single copies of back issues please use the *Reader Comment Sheet* attached and indicate the number(s) of the note(s) you need.

Note #	Published	Topic
1	2/21/85	Printer Configuration Guide (superseded by note #4)
2	10/15/85	Terminal types for HP 3000 HPIB Computers (superseded by note #13)
3	4/01/86	Plotter Configuration Guide
4	4/15/86	Printer Configuration Guide - Revised
5	5/01/86	MPE System Logfile Record Formats
6	5/15/86	Stack Operation
7	6/01/86	COBOL II/3000 Programs: Tracing Illegal Data
8	6/15/86	KSAM Topics: COBOL's Index I/O; File Data Integrity
9	7/01/86	Port Failures, Terminal Hangs, TERMDSM
10	7/15/86	Serial Printers - Configuration, Cabling, Muxes
11	8/01/86	System Configuration or System Table Related Errors
12	8/15/86	Pascal/3000 - Using Dynamic Variables
13	9/01/86	Terminal Types for HP 3000 HPIB Computers - Revised
14	9/15/86	Laser Printers - A Software and Hardware Overview
15	10/01/86	FORTRAN Language Considerations - A Guide to Common Problems
16	10/15/86	IMAGE: Updating to TurboIMAGE & Improving Data Base Loads
17	11/01/86	Optimizing VPLUS Utilization
18	11/15/86	The Case of the Suspect Track for 792X Disc Drives
19	12/01/86	Stack Overflows: Causes & Cures for COBOL II Programs
20	1/01/87	Output Spooling
21	1/15/87	COBOLII and MPE Intrinsics
22	2/15/87	Asynchronous Modems
23	3/01/87	VFC Files
24	3/15/87	Private Volumes
25	4/01/87	TurboIMAGE: Transaction Logging
26	4/15/87	HP 2680A, 2688A Error Trailers
27	5/01/87	HPTrend: An Installation and Problem Solving Guide
28	5/15/87	The Startup State Configurator
29	6/01/87	A Programmer's Guide to VPLUS/3000
30	6/15/87	Disc Cache
31	7/01/87	Calling the CREATEPROCESS Intrinsic
32	7/15/87	Configuring Terminal Buffers
33	8/15/87	Printer Configuration Guide
34	9/01/87	RIN Management (Using COBOLII Examples) (A)
34	10/01/87	Process Handling (Using COBOLII Examples) (B)
35	10/15/87	HPDESK IV (Script files, FSC, and Installation Considerations)
34	11/01/87	Extra Data Segments (Using COBOLII Examples) (C)
36	12/01/87	Tips for the DESK IV Administrators
37	12/15/87	AUTOINST: Trouble-free Updates
38	1/01/88	Store/Restore Errors
39	1/15/88	MRJE Emulates a HASP Workstation
40	2/01/88	HP 250 / 260 to HP 3000 Communications Guidelines
41	4/01/88	MPE File Label Revealed - Revised 6/15/88
42	7/15/88	System Interrupts
43	7/15/88	Run Time Aborts
44	8/01/88	HPPA Pathing Conventions For HP3000 900 Series Processors
45	8/15/88	Vplus & Multiplexers
46	8/15/88	Setting Up An HPDesk/HPTelex For The First Time
47	9/15/88	Customizing Database Data Items & Changing Passwords in JCL Files
48	11/15/88	Printer Configuration (Revision #4)
49	12/01/88	Configuring DATACOMM Products Into MPE
50	12/15/88	VFC's For Serial Printers
51	1/01/89	Terminal Types for HP3000 HPIB Computers

READER COMMENT SHEET

Worldwide Response Center Support
HP 3000 Application Note #51: Terminal Types for HP3000 HPIB Computers
RC Questions & Answers (January 1, 1989)

We welcome your evaluation of this Application Note and attached RC Questions & Answers Sheet. Your comments and suggestions help us to improve our publications. Please explain your answers under Comments, below.

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[hp] HEWLETT PACKARD RESPONSE CENTER QUESTIONS & ANSWERS

HP 3000 Questions Commonly Received by the North American Response Centers

Q. I was shutting down my HP3000 when I received the following messages:

> **MEMORY LOGGING ERROR NUMBER 1**
> **LOGGING STOPPED**
> **MEMORY LOGGING ERROR NUMBER 72**
> **LOGGING STOPPED**

What do these error messages mean?

A. Memory logging is a process which is activated regularly to record error information detected by the HP3000's main memory. If the memory logging process is activated at the time a shutdown is in process, the files used for memory logging may be locked or the detection and retrieval processes may have terminated. If this happens, the memory logging process will issue the error messages above.

Problems are seldom associated with these error messages. After you restart the machine, run MEMLOGAN.PUB.SYS to examine the logged memory errors, if any. If you have more than 15 errors recorded against a single chip, you should contact your HP account representative.

* * * * * * *

Q. I am adding a new disc to my system, and have added it into the volume table in SYSDUMP. When I list the volume table in SYSDUMP, the LDEV for that disc shows as 0. The new disc is on another LDEV, and I do not have an LDEV 0. What is happening?

A. LDEV 0 is assigned to the volume name when you add it to the configuration in SYSDUMP because MPE does not yet know which LDEV that disc pack will be found on. When you restart the system from the tape you have created, be sure the disc is powered up and is online. During the startup, INITIAL will recognize the label on the pack and ask if you want to add it to the system. Answer YES. MPE will then associate this pack and label with the entry in the volume table and fill in the correct LDEV number.

* * * * * * *

Q. When I perform a ROLLBACK recovery via DBRECOV, the job aborts with no error message. A second attempt to recover produces the error IMAGE condition word 17 on DBGET mode 4. What has happened?

A. If the last record in the logfile is a delete to a master data set, a call is made to DBGET with an incorrect parameter. General release patch AV50 is available to resolve this problem.

[hp] HEWLETT PACKARD RESPONSE CENTER QUESTIONS & ANSWERS

HP 3000 Questions Commonly Received by the North American Response Centers

PC QUESTIONS AND ANSWERS

Q. How do you create a RAM disk through MSDOS?

A. To create a RAM disk through MSDOS, use the VDISK.SYS driver included with your operating system. You should add the VDISK.SYS driver to your CONFIG.SYS file. When you load the driver, you can specify the virtual disk size, sector size, directory entries and maximum number of data segments through VDISK parameters. You can also specify that you want to create the RAM disk in extended memory.

It is important to remember that any data located on a RAM disk will be lost when you power your PC down. For detailed information on VDISK.SYS and its parameters, refer to your *MSDOS USER'S MANUAL* (HP part number 45951-90077).

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Q. I am having intermittant problems with a parallel port timing out during printing. I am receiving the following error message:
>   WRITE FAULT ERROR WRITING DEVICE LPTX
>   ABORT, RETRY or IGNORE?

A. You can help to avoid time-out problems on parallel ports by issuing a mode statement for the port in your AUTOEXEC.BAT file:
>   MODE LPTX:,,P

The P option causes MODE to continually retry sending output to the printer if a time-out occurs. You need to replace the X in LPTX with the port number of the parallel port having problems.

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Q. How can I put an HP QuietJet printer in alternate (Epson) mode?

A. To put the QuietJet printer into alternate mode, you must set switch 5 on Switch Bank A to the "up" position. Switch Bank A is the bank of switches on your left as you look at the printer.

Remember to cycle power to the printer off/on after changing the switches.

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Q. How can I get an ASCII, BRW, or HPAccess Reportwriter file into Lotus when I need text and numbers to convert correctly into labels and values?

A. This can be a need particularly if you do not want to download all the Image records to the pc, but rather have a summary ASCII file, created by BRW or the HPAccess Reportwriter. You can use the Lotus /FILE IMPORT TEXT command, which first puts all records into one column as a label. In Lotus (version 2.01 only), you then invoke /DATA PARSE to convert the information into a standard Lotus worksheet or database. This breaks up the long labels into individual cells, useful if you need to perform any numeric calculations.