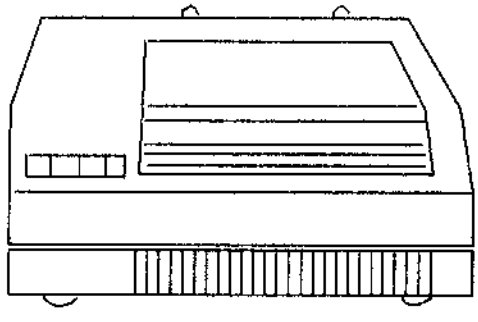
North American Response Centers

HP 3000 APPLICATION NOTE #4

HP 3000

Printer Configuration Guide



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PRINTER CONFIGURATION

This guide is intended to be a quick reference for printer configuration problems. Each printer, or series of printers, appears on a page in numerical order, with configuration information presented by interface type and MPE level.

GENERAL INFORMATION

This guide lists the TYPE, SUB-TYPE, TERM-TYPE (if applicable), DEVICE NAME (if one is available), and DRIVER for each printer. The following information is also needed in the configuration:

Configurator Dialogue	Suggested Values
LOGICAL DEVICE #?	The ldev number is up to the user. The system printer is usually ldev 6.
DEVICE NAME? (T-MIT and later)	A name used to look up default configuration values in the file DEFDATA.PUB.SYS.
DRT #?	The DRT is the hardware address of the device. It is calculated with the following formulas: Series 64, 68, 70: (IMB# * 128) + (CHAN# * 8) + (HP-IB address) All other HP-IB machines: (CHAN# * 8) + (HP-IB address) NOTE: Each ADCC port has its own DRT number. Ports on an ATP will have the same DRT number with different unit numbers.
UNIT #?	ADCC ports: The unit number is always 0. ATP ports: The unit number depends on the port on that ATP HP-IB: The unit number should be 0.
SOFTWARE CHANNEL#?	Always 0.
TYPE? SUB-TYPE? TERM-TYPE? (MPE IV & V/P) or ENTER [TERM TYPE#], [DESCRIPTOR FILENAME]? (MPE V/E or later)	Refer to this guide for these values.

SPEED IN CHARACTERS PER SECOND?	This question is only asked for device type 16 and 32. The most common values will be 120 and 960.
RECORD WIDTH?	Enter the record width in words; 66 will give 132 column output.
OUTPUT DEVICE?	For the 2635B printing terminal, enter its ldev number. For everything else, enter 0.
ACCEPT JOBS/SESSIONS? ACCEPT DATA? INTERACTIVE? DUPLICATIVE?	For the 2635B printing terminal, enter YES to each of these. For everything else, enter NO.
INITIALLY SPOOLED?	If the printer is to be spooled when the system is started, enter YES.
DRIVER NAME?	Refer to this guide.
DEVICE CLASSES?	Device classes are up to the user. It is suggested that LP be used for system line printers and PP be used for the 2680A Laser Printer. Some applications require specific device classes. Please refer to the individual printer configurations for more information.

256X series

The 256X series of printers are high-speed, dot-matrix line printers. They are replacements for the 2608A, 2608S and 261X printers. These printers are available with HP-IB, MTS, RS-422 and RS-232 interfaces. If you are configuring for MTS, please see the "HP 26067A System Interface Option 002, Multipoint Interface" manual, section 2-12. For additional information on the serial interface, please refer to the "26067A/B System Interface Option 003, Serial Interface Manual." This manual contains information that is not in the printer manual.

The 2563A prints 300 lines per minute, the 2564B and 2565A print 600 lines per minute, the 2566A and 2566B print 900 lines per minute, and the 2567B prints 1200 lines per minute.

HP-IB Interface Printers

These printers offer both TRANSPARENT and FEATURE access. Feature access means that the printer will recognize special control codes and escape sequences. If you don't know which you want, use FEATURE access.[1]

Configuration for feature access:
`Type 32, Sub-type 9, Driver HIOCIPRO; Device name: HP2563, HP2565 or HP2566`

Configuration for transparent access:
`Type 32, Sub-type 13, Driver HIOCIPRO`

Connected to an ATP Port

If the system is on MPE IV or V/P --
`Type 32, Sub-type 14, Term-type 19, Driver HIOASLPO`

If the system is on MPE V/E or later --
`Type 32, Sub-type 14, Term-type TTPCL19.PUB.SYS`[2]`, Driver HIOASLPO`

Connected to an ADCC Port

If the system is on MPE IV or V/P --
`Type 32, Sub-type 14, Term-type 19, Driver HIOTERMO`

If the system is on MPE V/E or later --
`Type 32, Sub-type 14, Term-type TTPCL19.PUB.SYS`[2]`, Driver HIOASLP2`

NOTE: The 256X series is not supported over a modem but should work with SUB-TYPE 15 for a dial-up modem, 14 for a leased line.

If you are using a 256X printer with RS-232 interface for graphics or native languages, you must configure the printer with a different term-type. Replace term-type 19 with term-type 22 (this will require a patch for ADCC's on MPE IV and V/P). Replace TTPCL19.PUB.SYS with TTPCL22.PUB.SYS. Change the printer settings to disable parity (function 23 = 00).

For graphics, configure the printer with device class "GLP".

KNOWN PROBLEMS:

The 256X printers use column 0 as the first column of a printout. The serial printer drivers send an escape sequence to start printing in column 1. This will cause the 132nd character to be lost. This is fixed in the term-type files TTPCL19.PUB.SYS and TTPCL22.PUB.SYS in MPE V/E. There are patches available for MPE V/P. Contact the Response Centers for assistance.

[1] Some spoolfiles that print correctly on the 2608A may print incorrectly on the 256X printers with FEATURE access. The 256X printers recognize control codes and escape sequences that the 2608A ignores. In this case, use TRANSPARENT access.

[2] TTPCL19.PUB.SYS is a term-type file shipped with T-MIT (and later). It takes care of the 132nd column problem mentioned above and will also let the user select 6 or 8 lines per inch, compressed print, etc., from the printer panel. This file will work with MPE V/E. If TTPCL19.PUB.SYS is not available, use term-type 19.

Printer settings

The settings for the 256X printers are set from the operator's panel on the printer. To change the settings, follow these instructions:

1. Take the printer off line.

2. Hold down the "CONFIG." key and press the "FINE ADJUST." key until the function number you want appears in the window.

3. Release the "CONFIG." key. The current value of that function will appear in the window. Use the "FINE ADJUST." key to change the value.

4. Press the "ENTER" key to save your changes.

5. Put the printer back on line.

SUGGESTED SETTINGS:

HP-IB:

For the HP-IB interface, function number 20 is the HP-IB address of the printer.

RS-232:

The following settings will work for a 256X printer configured with term-type 19 or TTPCL19.PUB.SYS at 9600 baud:

Function Number	Value	What it does
20	31	Strip nulls, deletes, XON/XOFF protocol
21	00	DTR always on
22	51	9600 baud, ignore modem signals
23	03	Odd parity

2601A

The 2601A printer is a letter-quality impact printer.

Connected to an ATP Port

If connected to a 3-pin ATP port --
`Type 16, Sub-type 0, Term-type 13, Driver HIOTERM1`

WARNING - The above configuration will require a special cable to provide the proper RS-232 signals to the printer. See the note below.

If connected to a 25 pin ATP modem port --
`Type 16, Sub-type 1, Term-type 13, Driver HIOTERM1`

Connected to an ADCC port

If the system is on MPE IV or V/P --
`Type 16, Sub-type 0, Term-type 13, Driver HIOTERM0`

If the system is on MPE V/E or later --
`Type 16, Sub-type 1, Term-type 13, Driver HIOTERM2`

NOTE: The 2601A can be spooled, but it is not supported as a spooled printer. If you wish to spool the 2601A, configure it as "Everything Else" later in this guide.

The 2601A printer requires the DSR (Data Set Ready) signal on pin 6 of the RS-232 connector. Without this signal, the printer will not print at all. On a three wire ATP port it will be necessary to jumper pin 20 to pin 6 on the printer side of the RS-232 cable. ADCC ports on MPE V/E only put out the DSR signal when the printer is configured as SUB-TYPE 1.

2602A

The 2602A printer is a letter-quality impact printer.

Connected to an ATP port

If connected to a three pin ATP port --
`Type 16, Sub-type 0, Term-type 13, Driver HIOTERM1`

WARNING - The above configuration will require a special cable to provide the proper RS-232 signals to the printer. See the note below.

If connected to a 25 pin ATP modem port --
`Type 16, Sub-type 1, Term-type 13, Driver HIOTERM1`

Connected to an ADCC port

If the system is on MPE IV or V/P --
`Type 16, Sub-type 0, Term-type 13, Driver HIOTERM0`

If the system is on MPE V/E or later --
`Type 16, Sub-type 1, Term-type 13, Driver HIOTERM2`

NOTE: The 2602A can be spooled, but it is not supported as a spooled printer. If you wish to spool the 2602A, configure it as "Everything Else" later in this guide.

The 2602A printer requires the DSR (Data Set Ready) signal on pin 6 of the RS-232 connector. Without this signal, the printer will not print at all. On a three wire ATP port it will be necessary to jumper pin 20 to pin 6 on the printer side of the RS-232 cable. ADCC ports on MPE V/E only put out the DSR signal when the printer is configured as SUB-TYPE 1.

2603A

The 2603A is a letter-quality impact printer which replaces the 2601A and 2602A printers.

Connected to an ATP port

```
Type 16, Sub-type 0, Term-type 13, Driver HIOTERM1
```

Connected to an ADCC port

If the system is on MPE IV or V/P --
```
Type 16, Sub-type 0, Term-type 13, Driver HIOTERM0
```

If the system is on MPE V/E or later --
```
Type 16, Sub-type 0, Term-type 13, Driver HIOTERM2
```

NOTE: The 2603A can be spooled, but it is not supported as a spooled printer. If you wish to spool the 2603A, configure it as "Everything Else" later in this guide.

Printer settings

The 2603A printer contains four banks of DIP switches on the printer's rear panel. To open the rear panel door, slide the door latch toward the bottom and rear of the printer. The switch settings are only read when the printer is initially powered on. The DIP switches should all be down except switches 6 and 7 of the third bank (see figure 1.)

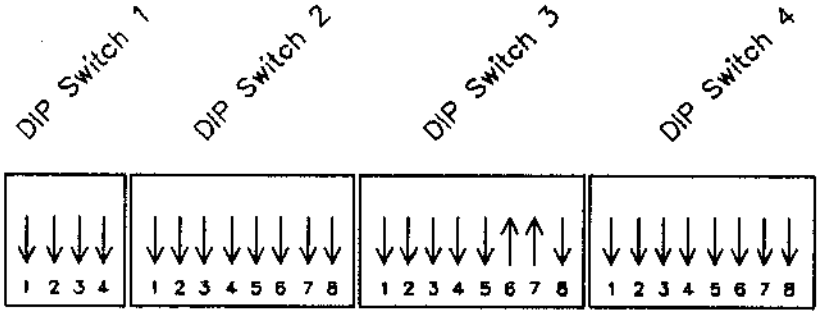

Figure 1. DIP Switch Settings for 2603A Printer

2608A

The 2608A printer is a 400-line-per-minute dot-matrix printer.

It is configured as follows:

```
Type 32, Sub-type 4, Driver HIOLPRT0; Device name: HP2608A
```

2608S

The 2608S is a 400-line-per-minute dot-matrix printer. It can be connected to a 3000 via HP-IB or MTS.

HP-IB Interface Printers

This printer offers both TRANSPARENT and FEATURE access. Feature access means that the printer will recognize special control codes and escape sequences. If you don't know which you want, use FEATURE access.[1]

Configuration for feature access --
`Type 32, Sub-type 9, Driver HIOCIPRO; Device name: HP2608S`

Configuration for transparent access --
`Type 32, Sub-type 13, Driver HIOCIPRO`

MTS Interface Printers

The DRT number for the 2608S on MTS should back-reference the ldev number of the MTS INP. Enter the "#" character followed by the INP ldev number, e.g., "#200". If you are using an MPCONFIG file, the unit number can be 0. Please see the "2608S Multipoint Serial Interface Manual" for more information.

`Type 32, Sub-type 9 (FEATURE access) or 13 (TRANSPARENT), Driver IOMPLPO`

NOTE: If you are using this printer for graphics, it must be configured with device class "GLP".

[1] Some spoolfiles that print correctly on the 2608A may print incorrectly on the 2608S with FEATURE access. The 2608S recognizes control codes and escape sequences that the 2608A ignores. In this case, use TRANSPARENT access.

261X series

The 261X series of printers are high-speed discreet-character line printers. They use a parallel differential interface. For HP-IB machines, a translator board is required. These printers also use a punched paper tape for vertical forms control (VFC).

These printers are configured as follows:
Type 32, Sub-type 2, Driver HIOLPRT2; Device name: HP2613, HP2617 or HP2619

KNOWN PROBLEMS:

Some installations that make their own VFC tapes only punch holes in the first three columns. On MPE V/E, the printing of $STDLIST requires that there be holes punched in the fourth column also. If these holes are not present, you may get "FORMAT FAULTS" or unwanted page feeds in the printout.

2631B

The 2631B is a dot-matrix printer. It comes with an HP-IB (not very common) or RS-232 interface.

HP-IB Interface Printers

`Type 32, Sub-type 5, Driver HIOLPRT1`

Connected to an ATP Port

`Type 32, Sub-type 14` [1]`, Term-type 19, Driver HIOASLP0; Device name: HPLPATP`

Connected to an ADCC Port

If the system is on MPE IV or V/P --

`Type 32, Sub-type 14` [1]`, Term-type 19, Driver HIOTERMO`

If the system is on MPE V/E or later --

`Type 32, Sub-type 14` [1]`, Term-type 19, Driver HIOASLP2; Device name: HPLPADCC`

[1] Use SUB-TYPE 15 for dial-up modems, SUB-TYPE 14 for leased lines or direct connect.

NOTE: The TTPCL files shipped with T-MIT (and later) are not intended to work with the 2631B printer. The VFC defined in the TTPCL files use an escape sequence to which the 2631B does not respond correctly (ESC 'E' - reset the printer to the panel settings).

Printer settings

RS-232 Interface

The operator panel on the 2631B printer has two banks of DIP switches. The left bank controls the RS-232 interface. The following will work for a 2631B printer configured at 2400 baud with term-type 19:

Bank 1 switch settings:

switch	setting	meaning
1	OFF (0)	full duplex
2, 3	ON (1), OFF (0)	odd parity
5, 6, 7, 8	OFF (0), ON (1), OFF(0), OFF (0)	2400 baud

2635B

The 2635B is a printing terminal. To use it only as a printer, configure it as a 2631B. For use as a terminal, configure it as follows.

Connected to an ATP Port

Type **16**, Sub-type **0**, Term-type **15**[1], Driver **HIOTERM1**

Connected to an ADCC Port

If the system is on MPE IV or V/P --
Type **16**, Sub-type **0**, Term-type **16**[1], Driver **HIOTERM0**

If the system is on MPE V/E or later --
Type **16**, Sub-type **0**, Term-type **16**[1], Driver **HIOTERM2**

[1] Use TERM-TYPE 16 for 7-bit data with zero parity or TERM-TYPE 15 for 8-bit data without parity. TERM-TYPEs 15 and 16 can prevent loss of data when the 2635B runs out of paper.

NOTE: If the 2635B is configured as a 2631B, XON/XOFF flow control must be enabled, using the first DIP switch in the bank next to the RS-232 connector.

2680A

The 2680A is a high volume laser printer which also prints graphics.

This printer is configured as follows:

```
Type 32, Sub-type 8, Driver HIOPPRTO; Device name: HP2680
```

NOTE: If you are using the 2680 for graphics, it must be configured with device class "**PP.**"

2686A

The 2686A is the Laserjet that was designed for use with personal computers.

Connected to an ATP port

If the system is on MPE IV or V/P --
`Type 32, Sub-type 14, Term-type 18, Driver HIOASLP0`

If the system is on MPE V/E or later --
`Type 32, Sub-type 14, Term-type TTPCL18.PUB.SYS`[1]`, Driver HIOASLP0`

Connected to an ADCC port

If the system is on MPE IV or V/P --
`Type 32, Sub-type 14, Term-type 18, Driver HIOTERM0`

WARNING: The above configuration will need a patch. Contact the Response Centers for more information.

If the system is on MPE V/E or later --
`Type 32, Sub-type 14, Term-type TTPCL18.PUB.SYS`[1]`, Driver HIOASLP2`

NOTE: The 2686A is shipped from the factory with the baud rate set to 9600 and 8 bit data, no parity.

[1] TTPCL18.PUB.SYS is a term-type file shipped with T-MIT (and later). This file will work with MPE V/E. If TTPCL18.PUB.SYS is not available, use term-type 18.

The above configuration will not work with HPWORD. HPWORD supports the 2686A only as an attended (hot) printer. Configure it into the system as a 2603A. With HPWORD V, the HPWORD configuration should be set to 2686A. With previous versions of HPWORD, the HPWORD configuration should be 2602A.

2687A

The 2687A is a desk-top laser printer with a serial RS-232 interface. It uses the same print engine as the 2688A, but a less intelligent controller. It does not print graphics.

Connected to an ATP port

If the system is on MPE IV or V/P --
`Type 32, Sub-type 14, Term-type 18, Driver HIOASLP0`

If the system is on MPE V/E or later --
`Type 32, Sub-type 14, Term-type TTPCL18.PUB.SYS`[1]`, Driver HIOASLP0`

Connected to an ADCC port

If the system is on MPE IV or V/P --
`Type 32, Sub-type 14, Term-type 18, Driver HIOTERM0`

WARNING: The above configuration will need a patch. Contact the Response Centers for more information.

If the system is on MPE V/E or later --
`Type 32, Sub-type 14, Term-type TTPCL18.PUB.SYS`[1]`, Driver HIOASLP2`

[1] TTPCL18.PUB.SYS is a term-type file shipped with T-MIT (and later). This file will work with MPE V/E. If TTPCL18.PUB.SYS is not available, use term-type 18.

NOTE: This printer is not supported as a spooled printer because it does not respond to status requests. The system has no way of telling if the printer is out of paper or if it is on line.

HPSLATE requires that this printer be configured with device class "BONSAIA".

2688A

The 2688A is a desk-top laser printer that has many of the same capabilities as the 2680A. It uses single-sheet instead of fan-fold paper.

This printer is configured as follows:

```
Type 32, Sub-type 8, Driver HIOPPRT0; Device name: HP2688
```

NOTE: If you are using this printer for HPSLATE, it must be configured with device class "BONSAIB". For graphics, it must be configured with device class "PP88".

293X series

The 293X series of printers are 200-characters-per-second, dot-matrix printers. They are replacements for the 2631B.

The 2932A is a basic dot-matrix printer. The interfaces available are: RS-232, RS-422, Centronics and HP-IB. On a 3000, this printer would not be connected via a Centronics interface except as a slaved printer off a 2392A terminal. HP-IB is not used on this printer with a 3000.

The 2933A and 2934A have all the features of the 2932A. In addition they can print bar codes, and have options for MTS and DSN/Data Link. The 2934A also has some limited word processing functions.

This guide contains configuration for RS-232 and RS-422 only.

Connected to an ATP port

If the system is on MPE IV or V/P --

```
Type 32, Sub-type 14 [1], Term-type 19, Driver HIOASLP0
```

If the system is on MPE V/E or later --

```
Type 32, Sub-type 14 [1], Term-type TTPCL19.PUB.SYS[2], Driver HIOASLP0
```

Connected to an ADCC port

If the system is on MPE IV or V/P --

```
Type 32, Sub-type 14 [1], Term-type 19, Driver HIOTERM0
```

If the system is on MPE V/E or later --

```
Type 32, Sub-type 14 [1], Term-type TTPCL19.PUB.SYS[2], Driver HIOASLP2
```

[1] Use SUB-TYPE 15 for a dial-up modem. On a leased line or hardwired, use SUB-TYPE 14.

[2] TTPCL19.PUB.SYS is a term-type file shipped with T-MIT (and later). It will let the user select 6 or 8 lines per inch, compressed print, etc., from the printer panel. This file will work with MPE V/E. If TTPCL19.PUB.SYS is not available, use term-type 19.

Printer settings

The settings for the 293X series are set from the operator's panel on the printer. To change the settings, follow these instructions:

1. Press the SELECT key and then the VIEW key. The printer will print a menu of choices.

2. Use the left and right arrow keys to move the print head underneath the desired selection on the menu.

3. Press the SELECT key.

4. Repeat steps 2 and 3 until you've made all your changes.

5. Press VIEW to save your changes.

SUGGESTED SETTINGS:

The following settings will work for a 293X printer configured with term-type 19 or **TTPCL19.PUB.SYS** at 2400 baud:

***** LIST INTERFACE *****

***** SERIAL *****

DATA SETTINGS CONTROL SETTINGS SET DEFAULTS

***** DATA SETTINGS *****

BAUD RATE	DATA BITS	PARITY	PARITY CHECK	STRIP NULL/DEL	ALL
2400	7	odd	on	off	

***** CONTROL SETTINGS *****

XON/XOFF	ENQ/ACK	BINARY ENQ/ACK	DTR/CD	(S)RTS/SCA	CTS/CB	RS/CH
on	off	off	High	Low	Ignore	Low

***** END OF SETTINGS *****

Figure 2. 293X Printer Settings

Everything Else

For any other SERIAL RS-232 printer, HP or another vendor, configure as follows.

Printers Connected to an ATP port

```
Type 32, Sub-type 14, Term-type 18, Driver HIOASLP0
```

Printers connected to an ADCC port

If the system is on MPE IV or V/P --
```
Type 32, Sub-type 14, Term-type 18, Driver HIOTERM0
```

If the system is on MPE V/E or later --
```
Type 32, Sub-type 14, Term-type 18, Driver HIOASLP2
```

NOTE: A printer configured with TERM-TYPE 18 is not supported as a spooled printer because the system cannot do any status checking. There is no way to tell if the printer is out of paper or if it is on line.

HP82905 printers and some foreign printers use a hardware handshake instead of an XON/XOFF protocol. These printers will not work on a 3000.

Troubleshooting

If you have trouble with a printer, especially a serial printer, follow these guidelines:

SYMPTOM	POSSIBLE CAUSES
Printer does not print anything and/or SP #ldev/STOPPED, SPOOLEE I/O ERROR	1. Check the configuration. 2. Check that the printer is powered up and on-line. 3. Check the cable. HP-IB cables should be firmly attached at both ends. For RS-232 cables: Direct connect cables must have at least pins 2,3 and 7 (HP cable 13242N is recommended). Modems will require more pins. The cable between the printer and modem should also be a 13242N. The cable between the 3000 and the other modem must have pins 2 and 3 crossed (HP cable 30062B). 4. Is the the paper out indicator lit? Check that the paper is loaded properly. 5. HP 2601A, 2602A and some foreign printers require other pins of the RS-232. Three-wire ATP ports cannot provide the signals needed. Note that ADCC ports on MPE V/E don't use pin 6. A custom cable can be made to jumper pins 4 and 5 together and pins 6, 8 and 20 together. 6. For term-types 19, 21 or TTPCL19.PUB.SYS the parity should be ODD. 7. The printer may be broken. Try the self test.
The printer is printing garbage. (This should not happen with term-types 19-22 or the TTPCL19, TTPCL22 files.)	1. Check that the baud rate on the printer matches the configuration. 2. The parity for term-type 18 and TTPCL18 should be 0's. 3. Check the configuration.
The printer stops in the middle of a printout with a SPOOLEE I/O ERROR.	1. If you are using term-type 19, try term-type 21 instead. If you are using TTPCL19.PUB.SYS, use TTPCL22.PUB.SYS and change the printer to 8 data bits, NONE parity.