Software Manual

Digi AccelePort EPC/X, C/X, Xem, Xr and Xr 920

OpenVMS AXP Device Driver

92000233 Rev C

Table of Contents

Introduction

This manual contains instructions for installing and configuring the Digi device driver software for OpenVMS AXP V6.1, 6.2 and 7.x.

This manual also contains documentation for the following features:

- **DIGITERM**, a utility to support Digi port management options (page 24)

- **DOWNLD**, a utility program to transmit code images to adapters and concentrators (page 23)

- Digi Port Authority™, a port monitoring and diagnostic tool (page 30)

Supported Products

The OpenVMS device driver supports the Digi AccelePort® EPC/X™, C/X™, Xem™ Xr™, and Xr 920™ intelligent asynchronous serial communications products.

Note: Be sure to read the *Release Notes* that may be included with this software device driver. The *Release Notes* contain information not available at this manual's press time.

Hardware Installation Notes

The hardware installation procedure is different depending on the system bus architecture and the type of adapter you are installing. For complete information, refer to the *Installation Guide* for your adapter. This section deals with hardware installation issues that relate particularly to OpenVMS AXP installations.

PCI Adapters

PCI adapter installation is the simplest, because the machine can do much of the configuration work for you. Simply choose an empty PCI slot and insert the adapter into this slot. The system will detect the adapter and assign it the necessary memory. You will be able to choose the appropriate adapter from a menu during the configuration procedure.

ISA Adapters in ISA Machines

Installing an ISA adapter in an ISA based machine requires much more care than does the PCI installation. The system will not negotiate parameters for you, so you must first select values for three parameters which will not conflict with those chosen for other adapters installed in the system:

- I/O port address (set by DIP switches on the adapter— see the adapter's *Installation Guide*): the **isacfg** (see below) parameter for I/O port is **-iobase0**.

- Dual ported memory address (see the adapter's *Installation Guide*): there are two **isacfg** (see below) parameters associated with the dual ported memory address: **-membase0** is used to specify the base address of the memory region; **-memlen0** specifies the size of the region and should *always* be set to **8000**.

- Slot number (since ISA systems don't address adapters by slot, the slot number doesn't have to match the physical slot in the machine, but the **isacfg** utility still requires each adapter to be assigned a unique slot

number, which will also be used by the device driver): the **isacfg** (see below) parameter for slot number is "**-slot**".

- Device handle (in order for the VMS autoconfiguration procedures to correctly detect your Digi adapter, you must supply a text string beginning with "DIGI" for the handle): the **isacfg** (see below) parameter for the device handle is **-handle**.

To determine existing parameters and to set the parameters for the new adapter, use the **isacfg** utility, available at the SRM console prompt (**>>>**). This console command is used to maintain ISA information for the system. For more information on this utility, see the user information and hardware manuals for your system.

Note: All numeric values supplied to the **isacfg** utility are interpreted as hexadecimal digits, and should be entered as such.

Examples:

To view all existing ISA configuration information:

```
>>>isacfg -all
```

To delete the entry for "slot 1", "dev 0":

```
>>>isacfg -rm -slot 1 -dev 0
```

To add an entry for an AccelePort Xr adapter for "slot 5" with an I/O port address of 0x104 and a memory address of 0x90000:

```
>>>isacfg -slot 5 -dev 0 -mk -handle DIGIXR -iobase0 104
   -etyp 1 -enadev 1 -membase0 90000 -memlen0 8000
```

Note that the above must be entered on a single command line.

Note: **show config** is an SRM command which will attempt to display information about adapters installed in all of the system buses. It can be a useful tool for finding conflicts in the dual ported memory or I/O address.

Important! Before rebooting, be sure to use the **init** command at the console prompt to save any changes you have made to the ISA configuration.

EISA or ISA Adapters in EISA Machines

Installation of Digi adapters in EISA machines is aided by the EISA Configuration Utility (ECU) provided by DEC with your computer. To access the ECU, load your working copy of the EISA Configuration Utility diskette in the diskette drive and enter **ecu** at the console prompt.

Important! Be sure that the appropriate Digi configuration files have been copied to this disk before use; these files all have names of the form: "**!DBI*.CFG**"

The ECU allows you to add, remove or configure adapters via a menu driven user interface.

Important! When adding a new adapter, be sure to write down the relevant information for each adapter: slot number, memory address, and (for ISA adapters) I/O port address. You will be prompted for this information during the device driver installation and configuration.

Important! Be sure that none of the chosen I/O port and memory addresses conflict with other devices installed in your system. Use the **View or edit details** option in the ECU to verify this.

Software Installation

Note: Software changes more rapidly than printed documentation can keep up. For this reason, some of the screens or prompts may not appear exactly as shown.

Installing the Driver Package

1. Log in using the **SYSTEM** account. You will need a terminal with a minimum of VT100 capabilities to run the setup procedures.

    Use the **POLYCENTER** software installation utility to install the necessary files on the target machine. By default, this will create a **DGDRIVER** directory in **SYS$COMMON**. Here is an example of this installation from the DCL prompt:

    ```
    $ MOUNT DVA0:/OVER=ID
    $ DEFINE PCSI$SOURCE DVA0:[DGDRIVER]
    $ PRODUCT INSTALL DGDRIVER/HELP
    ```

Note: This driver requires that certain process and system parameters be appropriately set. These parameters affect the functioning of the **DOWNLD** program (see 28). These parameters are:

MAXBUF	(a dynamic **SYSGEN** parameter) which should be $\geq$ 45000;
BYTLM	(an **AUTHORIZE** parameter) which should be $\geq$ 45000 for the account which runs the **DOWNLD** process.

3. The installation program creates the system logical **DIGI$DRIVER**, which defines the location of the installed driver software. To ensure that the logical is available after each reboot, place the contents of the file **DIGI$DRIVER:MAKE_DIGI_LOGICAL.COM** in the system file **SYS$STARTUP:SYLOGICALS.COM**.

4. To begin configuration of the driver, execute the following command:

> **$ @DIGI$DRIVER:DG_SETUP.COM**

This runs a command procedure which automates the configuration process. If the **DIGI$DRIVER** logical is improperly defined, or if some of the necessary installation files are missing, you will see the following (or something similar):

> **File DGDRIVER.OLB was not found in the current directory. The installation is assumed to be corrupt and has been aborted.**

If you get an error message such as the one above, you should verify that the installation of the files in step 2 was completed without error. If not, make sure that the **PCSI$SOURCE** logical indicates the directory in which the installation kit is located, and return to step 2.

5. The first step in the configuration process is to let the driver know certain information about the adapters you have installed. After seeing a brief copyright message you will see the following screen:

```
This script configures the Digi Async Host Adapter driver on:

                    OpenVMS AXP Version 6.2

This driver supports up to seven asynchronous serial adapters, each with a
number of terminal ports with names prefixed by the letters TX and an
identification code which is determined by the configuration.

The configured device names for the ports will be similar to " TXA12: "
where 'TX' is the Digi prefix, 'A' is an ID letter which is different for
each card, and '12' is the port number. Note that the port numbers begin at
0, stop at N-1, and the port numbered 'N' is the control port for a card with
N total ports. Different concentrators on the same adapter will differ in
port numbers, not in their letter. The system will dynamically choose the ID
letters at startup time. Use the DPA utility to determine which adapters have
which letter.
```

6. Now the system will ask:

```
How many adapters do you wish to install?
Please enter a number between 1 and 7:
```

Enter the number of adapters you have installed in your computer.

Steps 7-9 will be repeated for each AccelePort EPC/X, C/X, Xem, Xr or Xr 920 adapter installed in your system.

7. You will now be asked:

```
Configuring adapter 1.

        Adapters supported:

        ISA Adapters
         1) AccelePort Xr ISA        2) AccelePort Xr 920 ISA
         3) AccelePort Xem ISA       4) AccelePort C/X ISA
         5) AccelePort EPC/X ISA
        EISA Adapters
         6) AccelePort Xem EISA      7) AccelePort C/X EISA
         8) AccelePort EPC/X EISA
        PCI Adapters
         9) AccelePort Xr PCI        A) AccelePort Xr 920 PCI
         B) AccelePort Xem PCI       C) AccelePort EPC/X PCI
         D) AccelePort EPC/X PCI

        What type is adapter 1?
```

Choose the applicable adapter type. If you have chosen an ISA adapter, you will then be asked to select the appropriate I/O port address.

If you have chosen an ISA or EISA adapter, you will be asked to select the starting memory address for the dual ported memory on that adapter.

Finally, you will be asked to supply the slot number in which you have installed the adapter. If you have installed a PCI adapter, you will be given the opportunity to select the adapter from a menu.

| **Important!** | PCI adapters must be installed in the system *before* the device driver installation and configuration. |

8. This step is different depending on whether you are installing an Xem, EPC/X or C/X host adapter. Follow the appropriate procedure for your adapter. If you are installing an Xr or Xr 920 adapter, skip this step and go to step 9.

Xem—for EPC/X and C/X, follow the procedure on the next page.

If you are installing an Xem host adapter, you will now be asked for the number of PORTS™ modules to be connected to the adapter:

```
 Configuring board 1.
 Adapter type is AccelePort Xem ISA.
 I/O port is 114. Memory Address is 0x00088000.

 Please select a slot number of this adapter (1-8): 2

PORTS modules:
 This board can have 1 to 4 PORTS modules connected, for 8 to 64 ports.

    How many PORTS modules are connected to this adapter (1 - 4)?
```

Select the appropriate number for your installation.

You will also be asked for the number of ports (8 or 16) on each PORTS module. Answer "**8**" for PORTS/8em modules or "**16**" for PORTS/16em modules.

Now proceed to Step 9, on page 16.

EPC/X and C/X host adapters—for Xem host adapters, follow the procedure on the previous page.

If you are installing an EPC/X or C/X host adapter, you will be asked for configuration information for the two synchronous lines. This determines how the host adapter will communicate with the attached concentrator(s).

There are two methods for setting the line configuration: *basic* and *custom*. In the basic configuration, the sync lines are set to 8-wire direct and either 1228K bps or 10M bps (10M bps is applicable only to the EPC/X host adapter). The custom configuration allows you to select the wiring method and data rate for each sync line. You will see:

```
 Configuring adapter 1.
 Adapter type is AccelePort EPC/X ISA Host Adapter.
 I/O Port is 304. Memory Address is 0x000D0000.

Line Configuration:
 The sync lines may be configured two ways. The basic method has all
 connections wired "8 wire direct" at a speed of either 1228K bps or
 10M bps, and can be used for quick set-up for most situations. The
 custom method allows you to choose speeds and wiring methods
 individually.

        Do you want to use the basic installation method (y/n)?
```

Basic Configuration (*for Custom Configuration, see page 15*)

8a. If you are installing an EPC/X host adapter, you will see the following screen (if you are installing a C/X host adapter, skip to step **8b**):

```
 Configuring adapter 2.
 Adapter type is AccelePort EPC/X ISA Host Adapter.
 I/O Port is 114. Memory Address is 0x0080000.

Basic Configuration:

 One of two line speeds must be chosen for the basic configuration
 method. The choices are 1228K bps and 10M bps. Running the sync
 lines at 1228K bps maintains compatibility with C/CON-16
 concentrators. Running the sync lines at 10M bps allows higher
 performance, but is not compatible with C-CON/16 concentrators and
 restricts the length of the sync cable. For more information, see
 the manual.

        1) 1228K bps
        2) 10M bps

 Which speed do you wish to run the sync lines at?
```

Important!

Select 10M bps *only* if:

- all attached concentrators are EPC/CON-16 concentrators, and

- the *cumulative* length of all daisy chain cables on either sync line is 30 feet or less.

See the EPC/CON-16 *Installation Guide* for more detailed information about data rates versus cable lengths.

8b. Now you will be asked how many concentrators are attached to each sync line. For EPC/X host adapters, you will also be asked how many PORTS modules are attached to each concentrator (this refers to PORTS/16em or PORTS/8em modules connected to the "EBI Out" port of EPC/CON-16 concentrators), and how many ports (8 or 16) are on each PORTS module (answer "**8**" for PORTS/8em modules or "**16**" for PORTS/16em modules).

[Important!]

EPC/CON-16 and newer C/CON-16 Concentrators

EPC/CON-16 and newer C/CON-16 concentrators (which have a plastic case) must have their node numbers set manually at installation (see the concentrator *Installation Guide* for instructions). When asked for the number of concentrators, enter the *node number* of the last concentrator in each sync line (which may be different from the actual number of concentrators). Normally concentrator node numbers are assigned sequentially, beginning with 1; however, if you are planning to add more concentrators later, and want to configure the driver and create the devices to support the future concentrators, you may skip node numbers to allow for later insertion of concentrators. For example, if you have three concentrators attached to a sync line, but are planning to add three more, the node number of the last concentrator in the chain should be set to "6", and you should enter "6" for the number of concentrators (it is important that these numbers match, because the driver uses them to set the communication mode of the last concentrator to enable it to return data to the host adapter).

Older C/CON-16 Concentrators

Older C/CON-16 concentrators (which have a metal case) are always assigned node numbers sequentially, beginning with 1. If all of the concentrators on a sync line are older models, enter the actual number of concentrators (which will correspond to the node number of the last concentrator in the chain).

Mixed Older and Newer Concentrators

When mixing older and newer concentrators on a sync line, the older concentrators must be attached closest to the host adapter, and newer concentrators must be at the end of the chain. In this case, use the *node number* that has been set in the last concentrator in the chain (which may be different from the actual number of concentrators).

Now proceed to Step 9, on page 16.

Custom Configuration

The custom configuration requires you to specify the wiring method and the data rate for each sync line. The wiring options are:

1) 4-wire direct
2) 8-wire direct
3) 8-wire synchronous modem
4) EIA-232 synchronous modem

The supported data rates are:

4-wire direct

1) 230K	2) 460K	3) 921K*	4) 1843K*

8-wire direct

1) 2400	5) 38.4K	9) 230K	13) 1843K*	17)10M*
2) 4800	6) 57.6K	10) 460K	14) 2458K*	
3) 9600	7) 76.8K	11) 921K	15) 3686K*	
4) 19.2K	8) 115K	12) 1228K	16) 7373K*	

8-wire synchronous modem

1) 2400	6) 38.4K	10) 460K
2) 4800	7) 57.6K	11) 921K
3) 9600	8) 76.8K	12) 1228K
4) 14.4K	9) 115K	
5) 19.2K	10) 230K	

8-wire EIA-232 synchronous modem

1) 2400	4) 14.4K	7) 57.6K
2) 4800	5) 19.2K	8) 64.1K
3) 9600	6) 38.4K	9) 76.8K

* Rates with an asterisk are incompatible with C/CON-16 concentrators. These data rates can only be used if *all* concentrators on a given sync line are EPC/CON-16 concentrators. Also, see *Restrictions on Cable Lengths* in the EPC/CON-16 *Installation Guide*.

9. You will now be asked to confirm the configuration for the adapter:

If you have installed an AccelePort Xem ISA with four PORTS/16em modules (sixteen ports each), you will see something like this:

```
You have selected the following configuration for adapter 1:
        Adapter Type:  AccelePort Xem ISA.
        I/O Address: 114. Memory Address: 0x00088000

        Module  Port Numbers
        -------------------------
          1       0   -   15
          2      16   -   31
          3      32   -   47
          4      48   -   63

 Is this configuration acceptable (y or n)?
```

If you installed an EPC/X host adapter, you might see something like this:

```
You have selected the following configuration for adapter 1:
      Adapter Type: AccelePort EPC/X ISA Host Adapter.
      I/O Address: 328. Memory Addresses: 0x00090000.

      Connections           Speed   Cabling        Port Numbers
     ------------------------------------------------------------------
      Line 1
         Concentrator 1    10M     8 wire direct   0   -   15
             PORTS Module 1                         16  -   31
         Concentrator 2    10M     8 wire direct   32  -   47
      Line 2
         Concentrator 1    10M     8 wire direct   48  -   63
             PORTS Module 1                         64  -   71
             PORTS Module 2                         72  -   87

 Is this configuration acceptable (y or n)?
```

Note that the configuration procedure gives you the port numbers of the various components attached to an adapter, but does not assign device names. The VMS system dynamically allocates these device names when the autoconfiguration image is executed. To determine which names have been assigned to which adapters on a running system, use the **dpa** utility (see page 30).

If you accept the configuration, Steps 7-9 will be repeated for each additional adapter specified in Step 6. Otherwise, you will be returned to Step 7 (page 10) to re-enter the configuration for the current adapter.

10. Next, you need to select the **altpin** setting. This allows alternate wiring of the RJ-45 modular connectors. The default for **altpin** is OFF, giving you the standard Digi RJ-45 pinouts. Setting **altpin** to ON enables the alternate RJ-45 pinouts. This is useful for 8-pin RJ-45 connectors. See the *Installation Guide* for your adapter for more details.

You will see the following message when setting up adapter number 1:

```
Altpin is provided to allow the DCD input signal to be exchanged with the DSR
input. This is useful on products with RJ-45 connectors as these products
have DCD on pin 10. Choosing altpin will allow the use of 8-pin connectors
while still having the benefit of full modem control. The use of altpin on
products with DB-25 connectors is not normally recommended.
```

The software then asks:

```
Do you want altpin to swap the DCD and DSR signals (y or n)?
```

Answer **y** or **n** as appropriate.

Note that answering "**y**" here activates the **altpin** configuration for *all* ports on this adapter.

11. Once all adapters are configured, the command procedure takes over to complete the installation. During this process, the procedure uses the C macro compiler to create an object module containing configuration information which is linked into the driver. Once complete, a number of important files will be located in the **DIGI$DRIVER** directory, including:

DGDRIVER.EXE	: The driver image
DIGI_INSTALL_EPCA.COM	: Command procedure which will create the devices and link them to the driver image
DOWNLD.EXE	: Program which transfers the appropriate control images to adapters and concentrators when necessary
DPA.EXE	: Digi Port Authority diagnostic tool
DG$ICBM.EXE	: The autoconfiguration image
DIGITERM.EXE	: Digi-specific port management tool

For autoconfiguration purposes, a copy of **DG$ICBM.EXE** will be placed in the **SYS$SHARE** directory, and a copy of **DGDRIVER.EXE** will be placed in the **SYS$LOADABLE_IMAGES** directory.

Creating New Devices

The devices will be created by the **DIGI_INSTALL_EPCA.COM** procedure in the **DIGI$DRIVER** directory. If you wish these ports to be available at system startup, you should add the following line to an appropriate command file such as **SYSTARTUP_VMS.COM** *after* you have added the necessary line to **SYS$STARTUP:SYLOGICALS.COM** (see installation procedure for details):

```
$ @DIGI$DRIVER:DIGI_INSTALL_EPCA.COM
```

During the execution of the **DIGI_INSTALL_EPCA** command procedure, the program **DOWNLD** will be run in order to transfer appropriate control programs to the hardware in the installed adapters and concentrators. For more information regarding the **DOWNLD** program, see page 28.

The device driver will support up to seven AccelePort EPC/X, C/X, Xem, Xr and/or Xr 920 host adapters.

C/X host adapters can have up to eight concentrators attached.

EPC/X host adapters can each have up to fourteen concentrators and/or PORTS/em modules attached. The maximum number of concentrators per synchronous line is eight. PORTS/em modules may be attached to the concentrators, as long as the total number of boxes (concentrators and PORTS modules) does not exceed fourteen.

Xem host adapters can each have four PORTS/16em modules attached.

The devices are named according to the following convention:

TX*abbb*

where TX is the Digi driver prefix, *a* is the adapter's ID letter, and *bbb* is the number of the port. Note that port numbering starts at 0.

The autoconfiguration procedure dynamically allocates the ID letters when executed. Run the DPA utility (see page 30) to determine which letter has been assigned to each adapter.

The autoconfiguration procedure creates enough devices to handle the maximum number of ports possible under the current user configuration. If, at initialization time, a port does not physically exist, it will be marked OFFLINE. For example, if you configure the system for an Xr adapter, the procedure will always create eight devices. If your Xr happens to be a four-port adapter, four of the devices will be marked OFFLINE. Similarly, if you configure an Xem adapter for three EBI (PORTS) modules, but only connect one, the ports on the remaining two modules will be marked OFFLINE.

Control Ports

The last port for each adapter (the one whose number is equal to the total number of ports on that adapter) is not actually a data port, but rather a control port for the device driver. Utilities such as Digi Port Authority use a control port to talk directly to the device driver. These ports cannot be used as serial connection ports, and care should be taken not to do so. Example:

> An Xem adapter with an ID letter of B has two PORTS modules connected to it: one 8 port module and one 16 port module. Since the adapter has 24 ports, its data ports are named TXB0-TXB23, and the control port is TXB24.

Testing the New Ports

First, connect terminals to the ports (using a null modem, if necessary) and test the connections to each terminal by entering the following command for *each* port to be tested:

```
$ DEFINE SYS$OUTPUT TXA0:
$ WRITE SYS$OUTPUT "Testing TXA0: " + f$time()
$ DEASSIGN SYS$OUTPUT
```

(Assuming the terminal is connected to **TXA0**.)

Note: The default settings for terminals are 9600 baud, 8 data bits, no parity and 1 stop bit.

- If the date and time appear on the terminal's screen, the device is properly connected.

- If the date and time *do not* appear on the terminal's screen, then that terminal is not receiving data; check the power, cables, connections, etc.

- If nonsense characters are printed on the terminal's screen, check the baud rates, data bits, stop bits, and parity setting on your terminal (default parameters are 9600 baud, 8 data bits, 1 stop bit, and no parity).

To simplify this test, the command procedure **TESTPORT.COM** is included in the installation kit. To use it, simply enter the following:

```
$ @DIGI$DRIVER:TESTPORT TXA0
```

Replace **TXA0** with the name of any port you wish to test.

Uninstalling the Device Driver

To uninstall the device driver software (completely remove all traces of the driver software from the system), follow the steps below:

1. Log onto the system via the **SYSTEM** account.

2. Execute the following command:

    ```
    $ PRODUCT REMOVE DGDRIVER
    ```

3. Delete the definition of the **DIGI$DRIVER** logical and the line in which you execute the **DIGI_INSTALL_EPCA** command procedure from your startup files (if you have added them).

The driver image will remain loaded in memory and the ports will remain available until the machine is rebooted.

Setting Terminal Options

There are two methods of displaying and setting terminal options for the ports on an AccelePort adapter (or concentrator/PORTS module): the VMS **SHOW TERM** and **SET TERM** commands, and Digi's **DIGITERM** tool. Each will be described in this section.

SHOW TERM and SET TERM

To get or set terminal options for the ports on an AccelePort adapter (or concentrator/PORTS module), you may use the **SHOW TERM** and **SET TERM** commands at a DCL prompt. For instance, entering **SHOW TERM TXA0** might display:

```
Terminal: _TXA0:      Device_Type: Unknown      Owner: No Owner

  Input:    9600    LFfill:  0     Width:  80      Parity: None
  Output:   9600    CRfill:  0     Page:   24

Terminal Characteristics:
  Interactive       Echo              Type_ahead        No Escape
  No Hostsync       TTsync            Lowercase         No Tab
  Wrap              Scope             No Remote         No Eightbit
  Broadcast         No Readsync       No Form           Fulldup
  No Modem          No Local_echo     Autobaud          No Hangup
  No Brdcstmbx      No DMA            No Altypeahd      Set_speed
  No Commsync       Line Editing      Overstrike editing No Fallback
  No Dialup         No Secure server  No Disconnect     No Pasthru
  No Syspassword    No SIXEL Graphics No Soft Characters No Printer Port
  Numeric Keypad    No ANSI_CRT       No Regis          No Block_mode
  No Advanced_video No Edit_mode      No DEC_CRT        No DEC_CRT2
  No DEC_CRT3       No DEC_CRT4       No DEC_CRT5       No Ansi_Color
  VMS Style Input
```

The options can be changed with **SET TERM**, as in:

```
$ SET TERM/PERM/SPEED=38400 TXA0
```

which changes the speed to 38,400 bps.

For more information about **SET TERM** and **SHOW TERM**, see the VMS online HELP text, as well as the *I/O User's Reference Manual* in the VMS documentation set.

The DIGITERM Software Tool

The **DIGITERM** tool is provided as an alternate means to get and set individual port configuration parameters for Digi terminal devices. It features a subset of the functionality of the **SET TERM** and **SHOW TERM** commands of VMS, along with a few extra options for Digi-specific port manipulation. The **DIGITERM** executable is found at **DIGI$DRIVER:DIGITERM.EXE** for an installed device driver.

Displaying the Port Configuration

To display the terminal parameters for a Digi terminal device, execute the following:

$ MCR DIGI$DRIVER:DIGITERM SHOW *<terminal> <qualifiers>*

where *<terminal>* is replaced with the name of the Digi device, and *<qualifiers>* are optional parameters described below:

/OUTPUT=*<file>*   Redirect output to the named file.

/PERMANENT   If this qualifier is omitted, the *current* terminal settings are displayed. Adding this qualifier causes the *default* settings to be displayed.

Sample output of the **DIGITERM** tool is shown on the following page.

```
Terminal: _TXB0:        Device_Type: Unknown        Owner: No Owner

  Input:       115200   Byte Size: 8    Width:  80      Parity: None
  Output:      115200                   Page:   24
  Port Speed: 115200

Digital Terminal Characteristics:
  No Hostsync       TTsync            No Eightbit        No Readsync
  Fulldup           No Modem          No Hangup          Set_speed
  No Commsync       No Dialup         No Disconnect

Digi Terminal Characteristics:
  No Altpin         No Fastbaud       No CTSflow
```

Note that this display is a pared down version of the **SHOW TERM** display, with the following additions:

Byte Size: The current number of data bits per output character

Port Speed: The actual bit rate used by the hardware for this port. This number might not match the input/output speeds if the Digi **FASTBAUD** qualifier is used (see below).

Digi Terminal Characteristics:

These are terminal qualifiers added by Digi, and are described on the following page.

Modifying the Port Configuration

To set any number of terminal parameters, execute the following:

`$ MCR DIGI$DRIVER:DIGITERM SET` *`<terminal>`* *`<qualifiers>`*

where *<terminal>* is replaced with the name of the Digi device, and *<qualifiers>* are optional parameters described below:

`/[NO]DISMISS_PARITY`
`/[NO]EIGHT_BIT`
`/[NO]HOSTSYNC`
`/FRAME=`*`<frame size>`*
`/SPEED=`*`<speed>`*
`/[NO]TTSYNC`
`/[NO]PARITY=`*`<parity>`*
`/[NO]READSYNC`
`/PERMANENT`
`/[NO]FULLDUP`
`/[NO]HALFDUP`
`/[NO]HANGUP`
`/[NO]MODEM`
`/[NO]SET_SPEED`
`/[NO]DISCONNECT`
`/[NO]DIALUP`
`/[NO]COMMSYNC`
	Each of these qualifiers are defined in the same way as in **`SET TERM`**. See the VMS system documentation for **`SET TERM`**.

`/[NO]CTSFLOW`	Same as the standard **`COMMSYNC`** qualifier
`/[NO]RTSFLOW`	*VMS 7.x only*. Enables [disables] RTS-based input flow control for the selected port
`/[NO]ALTPIN`	Switches the function of the DSR and DCD inputs on the interface connector, so that DCD is available when using an 8-pin RJ-45 connector instead of a 10-pin connector.
`/[NO]FASTBAUD`	Alters the adapter's baud rate tables in accordance with the table on the following page. The first column shows a VMS speed value, the second column shows the actual adapter port data rate if **`NOFASTBAUD`** is selected, and the third column shows the actual adapter port data rate if **`FASTBAUD`** is selected

Baud Rate Mapping with `FASTBAUD`

VMS Speed	Adapter Rate `NOFASTBAUD`	Adapter Rate `FASTBAUD`
50	50	57600
75	75	76800*
110	110	115200
134	134	14400
150	150	57600
300	300	76800*
600	600	115200
1200	1200	230400**
1800	1800	28800
2000	unsupported	unsupported
2400	2400	460800**
3600	unsupported	unsupported
4800	4800	921600**
7200	unsupported	unsupported
9600	9600	9600
19200	19200	19200
38400	38400	38400
57600	57600	57600
76800	76800*	76800*
115200	115200	115200

* C/X systems do not support 76800 bits/second. A VMS speed of 75 or 76800 will always result in 75 bps, and a speed of 300 will always result in 300 bps, regardless of the **FASTBAUD** or **NOFASTBAUD** condition.

** Speeds higher than 115200 are supported only by the Xr 920 adapter. Attempting to use these baud rates on other adapters will yield undefined results.

The DOWNLD Software Tool

In order to operate, each host adapter must have its own control software. The EPC/CON intelligent concentrator must also be able to dynamically load its control software. The **DOWNLD** program is a software tool which provides the means for the host system to serve the BIOS and Front End Processor/Operating System (FEP/OS) software to its host adapters, and the concentrator images to its intelligent concentrators.

The **DOWNLD** program communicates with one of the control ports for the adapters associated with a particular driver. After startup, the **DOWNLD** program listens to the control port, waiting for the driver to request an image on behalf of any adapter or concentrator. It must continue running in any configurations which include EPC/CON-16 concentrators even after the FEP/OS is online because if any of these concentrators is reset they will request a fresh image before coming back online.

The **DOWNLD** program can be run from any terminal on the system, and supports the following Digi hardware and device drivers:

    Hardware: Digi AccelePort EPC/X, C/X, Xem, Xr and Xr 920
    Software: OpenVMS AXP AccelePort device driver

The **DOWNLD** program is installed automatically when you install this device driver. It is also set up to run automatically after the driver has been loaded in the installation script provided during configuration.

Note:
Be sure to read the *Release Notes* that may be included with this software device driver. The *Release Notes* contain information not available at this manual's press time.

Using the DOWNLD Program

To run the **DOWNLD** program (assuming that the **DIGI$DRIVER** logical has been properly assigned), enter the following command from any terminal:

    $ @DIGI$DRIVER:DOWNLD$SERVER TXA32

Replace "**TXA32**" with the device specification for any of the control ports for the adapters you have installed. This control port establishes a connection with the device driver through which information is passed about all of the adapters of which the driver is aware. For more information on control ports, see page 20.

This will run the **DOWNLD** program as a process named **DIGIDLDAEMON**. The program creates log files in the **DIGI$DRIVER** directory with the name **DIGIDLDAEMON.LOG**. By default, only five versions will be maintained by the procedure. To kill this process (which stops the **DOWNLD** program and relinquishes control of the control port), enter the following command:

    $ @DIGI$DRIVER:DOWNLD$SERVER TXA32 STOP

As before, replace "**TXA32**" with the device specification for one of the control ports for the adapters you have installed.

Note: No two pieces of Digi control and diagnostic software may be used with the same control port at the same time.

Note: Only one **DOWNLD** process may be running at any time.

Digi Port Authority

The Digi Port Authority™ (DPA™) program is a software tool which provides a means to monitor the status of the Front End Processor/Operating System (FEP/OS), which is the on-board software run by Digi intelligent serial communications products.

The DPA software also shows the status of the individual asynchronous ports by displaying a simulated concentrator front panel. Each of the eight supported EIA-232 signals is displayed, along with input and output flow control status and the status of the host adapter to concentrator connection status.

The DPA program can be run from any terminal on the system, and supports the following Digi hardware and device drivers:

> Hardware: Digi AccelePort EPC/X, C/X, Xem, Xr and Xr 920
> Software: OpenVMS AXP AccelePort device driver

The DPA software is installed automatically when you install this device driver.

Note:
Be sure to read the *Release Notes* that may be included with this software. The *Release Notes* contain information not available at this manual's press time.

Using the DPA Program

To run the Digi Port Authority program (assuming that the **DIGI$DRIVER** logical has been properly assigned), enter the following command from any terminal:

```
$ MCR DIGI$DRIVER:DPA TXA32
```

Replace "**TXA32**" with the device specification for any of the control ports for the adapters you have installed. This control port establishes a connection with the device driver through which information is passed about all of the adapters of which the driver is aware. For more information on control ports, see page 20.

Digi Port Authority is fully documented in context-sensitive help screens.

Using DPA in Conjunction with DOWNLD

Since only one process may use a control port at one time, if you have only one control port on your system (one adapter installed), you must be sure that the control port that you intend to use for DPA is not currently in use by another piece of software. In the case of the **DOWNLD** procedure, it is suggested that you shut down the **DOWNLD** process before running DPA. You may restart the **DOWNLD** process when you have completed your work in DPA. For instructions on starting and stopping the **DOWNLD** procedure, see page 28.

Driver Messages

The following is an abridged list of driver messages which may appear in the driver message portion of DPA:

WARNING: Slot 4 not found in epca config. <0>

What it means:

The configuration information is corrupt.

Action to take:

Re-run the configuration utility.

WARNING: epca: Couldn't read config memory from PCI node 48. <35>

What it means:

The system could not find the configuration information resident on a PCI adapter.

Action to take:

Check to make sure that the PCI adapter is correctly seated in its slot and that you have selected the correct adapter during the configuration process.

WARNING: epca: Incorrect PCI mcode/revision. <37>

What it means:

The PCI adapter that you selected during the configuration process is not actually a Digi PCI adapter.

Action to take:

Check to make sure that you have selected the correct adapter during the configuration process.

```
WARNING: epca: Mem bus 0x80000 doesn't match configured port
0x98000. <2>
```

What it means:

In EISA machines, the information supplied to the ECU hardware
configuration does not match the software configuration supplied at driver
installation.

Action to take:

Either run the ECU or the driver configuration software to change the
memory address such that the values match for a given adapter in a given
slot.

```
WARNING: epca: Port 0x104 doesn't match configured port 0x320. <3>
```

What it means:

In EISA machines, the information supplied to the ECU hardware
configuration does not match the software configuration supplied at driver
installation.

Action to take:

Either run the ECU or the driver configuration software to change the I/O
port such that the values match for a given adapter in a given slot.

```
WARNING: epca: Incorrect EISA mcode/revision. <6>
WARNING: ISA Xem has incorrect id register. <11>
```

What they mean:

The adapter at a given slot does not match the configured type.

Action to take:

Make sure that the configuration information exactly matches the installed
adapters. Potential hardware problem.

```
WARNING: epca: PC/Xr: port 0x324 not resetting. <7>
```

What it means:

The adapter doesn't respond to reset.

Action to take:

Make sure that the adapter is fully seated in the slot. Potential hardware
problem.

```
WARNING: epca: EISA EPC/X: memory allocation error at port 0x108.
<15>
```

What it means:

The operating system would not allocate memory to the driver.

Action to take:

Check process quotas and system memory usage.

```
WARNING: epca: ISA EPC/X: No memory at 0x90000. <16>
```

What it means:

The driver cannot read the adapter's dual ported memory.

Action to take:

Make sure the adapter is fully seated in the slot. Potential hardware problem.