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Software Manual

Digi ClassicBoard

Windows 95, Windows 3.x, OS/2 and FOSSIL

Device Drivers

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Microsoft Windows 95

Introduction

This Microsoft Windows® 95 device driver provides full communication support for a Digi ClassicBoard 4, a Digi ClassicBoard 8, or a Digi ClassicBoard 16 if the board is programmed in Plug and Play mode and if the board is installed in a system that is operating under Windows 95. (Digi ClassicBoards are shipped from the factory in Plug and Play mode). If a Digi ClassicBoard is installed in a non-Windows 95 system, the board must be operated in the legacy mode, and one of the other device drivers described in this manual that is applicable to your operating environment must be installed.

Installation



The Digi ClassicBoard Windows 95 device driver does not support the legacy mode. If a ClassicBoard is in the legacy mode, you must use the configuration utility to switch the board to Plug and Play mode before the Windows 95 device driver can be installed.

1. Follow the instructions in the *Installation Guide* shipped with the Digi ClassicBoard to install the board into your computer; power up the computer.
2. The Windows 95 system will detect the new Plug and Play board and prompt you for a driver. Insert the driver disk into the disk drive.
3. Select the option entitled “Driver from disk provided by hardware manufacturer” and click OK.
4. When the “Install From Disk” window appears, enter the drive and directory (usually A:\WIN95) where the driver is located. Click OK.
5. When the first communications port is found, a window entitled “New Hardware Found” appears displaying the text “Communications Port.” Since the first port can emulate a standard communications port, Windows 95 allows the installation of the Windows default driver. Since the Windows default driver will not support enhanced features, it is recommended that the option entitled “Driver from disk provided by hardware manufacturer” be selected. Then click OK.
6. Repeat step 4. The driver will now be copied.
7. Repeat steps 3 and 4. This step enumerates the first Quad UART. Digi ClassicBoards have either 16554 Quad UARTs or 16654 Quad UARTs. These UARTs provide enhanced features that are not normally available on standard non-intelligent serial port adapters:
 - additional baud rates of 460.8k, 230.4k, 153.8k, 92.16k, 76.8k and 65.829k baud
 - automatic flow control with the 16654 UART option
 - 64 byte transmit and receive FIFOs with the 16654 UART option

- 16 byte transmit and receive FIFOs with the 16554 UART option

After driver installation is completed, you may configure any of these enhanced features by following the instructions in “Selecting Enhanced Features” on page 5.

8. Another “New Hardware Found” window appears with text displaying “Unknown Device.” This is the first non-standard communications port found. Select the option entitled “Driver from disk provided by hardware manufacturer” and click OK. Repeat step 4.
9. Windows 95 now knows the drivers to use for the Quad UARTs present on the Digi ClassicBoard and how to generate communications ports from each of the Quad UARTs. Thus, you will see various windows displayed as Windows 95 automatically enumerates the remaining ClassicBoard components.

Selecting Enhanced Features

1. Start the **System** wizard from the Windows 95 Control Panel and select the “Device Manager” page.
2. Select “View devices by type.”
3. Expand the “Ports (COM & LPT)” types.
4. Highlight any Digi ClassicBoard entry and click the “Properties” button.
5. Select the “Port Settings” property page and click the “Advanced” button.



Baud rate mapping operates at a global level for all Digi ClassicBoard ports. Thus, changing the baud mapping for one port affects all other ports.

Configuration

The default serial port communications parameters are configured by the System Properties page of the Control Panel applet, just like standard serial ports are.

1. Double-click the System icon in the Control Panel and then select the Device Manager tab to display the hierarchical list of classes in your system.
2. Double-click on the appropriate port, and the Properties dialog box for that device will be displayed. Further clicking on the Port Settings tab displays the configuration dialog box.
3. The port's Board ID and UART Type are displayed.

It is possible to set the port's Bits per second, Data bits, Parity, Stop bits and Flow control settings, which can tell an application how to configure a port. However, some applications ignore these settings. Instead, they use their own port settings. In any case, it is usually possible to configure these port settings directly from the application.

Troubleshooting

- If you suspect that your adapter is not working correctly, verify the presence of Classic Ports entries from the System Properties dialog box. If Classic Ports entries are not present, it could be because the adapters are faulty or are not in PnP mode, as required by the Windows 95 driver. Run the DOS-based diagnostic utility **CDIAG.EXE** to diagnose the problem.
- If your system employs a PnP BIOS, you may experience resource conflicts in Windows 95, particularly with Standard COM Ports and PS/2 mice using IRQ12. It is sometimes helpful to disable the PnP BIOS by setting “PnP O/S=YES” in the CMOS setup, if provided. This allows Windows 95 to assign all resources.
- Sometimes Windows 95 names the COM Ports in a non-contiguous order. Use the **DIGICLAS.EXE** utility to view the COM Port names or rename as required.
- Setting Port 1 to use a driver other than the Digi-supplied driver (a mouse driver for instance) prevents Ports 2, 3 and 4 from supporting the maximum baud rate of 460.8k baud. Instead, the maximum baud rate supported is 115.2k baud.
- The Digi ClassicBoard 16 with the 16654 UART option displays the UART Type as a 16554 UART until an application opens the port. Although this may initially mislead the user, this does not prevent the driver from taking full advantage of the 16654 features.
- The terminal program **TTY.EXE** is included in the distribution disk. Use this program to verify operation of the Classic Port COM ports, either on a single port with a loopback cable or between two ports with a null modem cable.
- Online help is available, viewable from the “Port Settings” tab in the Properties dialog box.

Uninstalling the Windows 95 Device Driver

There are two ways to remove the Windows 95 driver:

Run the DIGICLAS.EXE utility in the c:\Windows\System directory. (The utility is also on the bootable disk shipped with the Digi ClassicBoard).

1. Highlight the appropriate ClassicBoard adapter.
2. Double-click the Remove push button.

or

Use the System Device Manager wizard.

1. Remove:
 - the adapter's Classic Port 1 entry under the Ports (COM & LPT) group
 - all the adapter's Classic Quad UART entries under the Multi-function adapters group
 - the adapter's Classic TClock/IRQ status entry under the System devices group
2. Shut down Windows 95 and power down the system when shut down has completed.
3. Remove the Digi ClassicBoard from the system.



Using the System Device Manager wizard is the Windows 95 mechanism for uninstalling a driver. It has the disadvantage that the uninstall will be incomplete. In particular, driver files are not removed, and the COM port names are not always available for subsequent adapter installations.

Microsoft Windows 3.x

Introduction

Overview

This Microsoft Windows 3.x device driver package provides full Windows communication support for the Digi ClassicBoard 4 and the Digi ClassicBoard 8 serial communications boards under Microsoft Windows versions 3.0 and 3.1, and Windows for Workgroups version 3.1. The driver will also work with the Digi ClassicBoard 16, but will not support all sixteen ports due to the limitations of the Microsoft Windows 3.x COMM API (Application Programming Interface), which only provides support for nine ports, COM1-COM9.

See the `WINDOWS\README.WRI` file on the driver diskette for other information not available at this manual's press time.

Hardware and Software Requirements

1. One or more application programs, such as the Windows Terminal program or PROCOMM PLUS for Windows 3.x, which support Windows 3.x COMM API calls; you may also need a special **.DLL** file to enable support for more than four ports. If available, this can be obtained from your software publisher.
2. The DigiWARE DOS device driver **COMS.SYS** must *not* be loaded concurrently with the Microsoft Windows 3.x device driver.
3. Limitations: The Microsoft Windows 3.x COMM API supports a maximum of nine serial ports, COM1-COM9. These ports may reside on one or more Digi ClassicBoard adapters and can include existing COM ports included with your machine. Each board must have its own IRQ.

Examples: One serial port on the motherboard set for COM1 (I/O address 3F8h, IRQ4), and eight ports, COM2-COM9, on a ClassicBoard 8 set for IRQ3.

One serial port on the motherboard set for COM1 (I/O address 3F8h, IRQ4), four ports, COM2-COM5, on a ClassicBoard 4 set for IRQ3, and four ports, COM6-COM9, on another ClassicBoard 4 set for IRQ5.

4. A serial mouse, if used, must be installed on either COM1 (3F8h, IRQ4) or COM2 (2F8h, IRQ3), and must have its own dedicated IRQ.

Installation

Hardware Installation

Follow these steps before installing the Windows 3.x device driver:

1. Install the Digi ClassicBoard in the computer by following the instructions in the *Installation Guide* that was shipped with the board.
2. Configure the Digi ClassicBoard by following the instructions in the *Installation Guide* that was shipped with the board.



The Digi ClassicBoard must be in legacy mode in order to be configured and operated under Windows 3.x. Since the ClassicBoard is shipped from the factory in Plug and Play (PnP) mode, you must run the Digi configuration utility from the bootable disk in order to change the operating mode to legacy mode and then to configure the board.

The legacy mode allows you to customize the Digi ClassicBoard or to configure it for strict legacy product compatibility. Legacy products include:

DigiBoard PC/4, PC/8, and PC/16

Star Gate Plus 8 and Optum

Arnet Multiport

Standard COM Ports

Most PCs are shipped with one or more COM ports already installed, either on the motherboard itself, or on a separate board plugged into the I/O bus. (A typical add-in card might have two COM ports, a printer port and a joystick port). The addresses and IRQs used by standard COM ports are:

Port	Address	IRQ
COM1	3F8h	4
COM2	2F8h	3
COM3	3E8h	4
COM4	2E8h	3

Nearly all PCs come with COM1, and most also have a COM2 port installed.

When configuring your board and the Windows 3.x device driver, you need to work around (or disable) the existing COM ports. The main point of conflict when installing a Digi ClassicBoard is the IRQ. A Digi ClassicBoard can use IRQs 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15. Many of these IRQs will already be in use by other devices, such as disk and tape drives, printers, network cards, etc. Each board must be assigned an IRQ that is not used by any other device in the system. Check your system documentation to determine what IRQs are already in use. Furthermore, each individual port on the board must be assigned a unique I/O address.

Software Installation

1. Start Windows.
2. Place the device driver diskette in drive A. Select **File**, then **Run**. In the dialog box, type **A:\WINDOWS\SETUP** and click on the **OK** button. (If you install from a drive other than drive A, substitute the appropriate drive designation for **A:** in the **Run** dialog box.)
3. Follow the instructions in the dialog boxes. Help buttons have been provided.

You will see the following dialog box:

	I/O (hex)	IRQ
COM1:	<input type="text"/>	<input type="text"/>
COM2:	<input type="text"/>	<input type="text"/>
COM3:	<input type="text"/>	<input type="text"/>
COM4:	<input type="text"/>	<input type="text"/>
COM5:	<input type="text"/>	<input type="text"/>
COM6:	<input type="text"/>	<input type="text"/>
COM7:	<input type="text"/>	<input type="text"/>
COM8:	<input type="text"/>	<input type="text"/>
COM9:	<input type="text"/>	<input type="text"/>

Continue Exit Help

Fill in the boxes according to the way you configured the board.



The Digi device driver replaces the Microsoft Windows device driver, so you must configure the non-Digi COM ports first (e.g. COM1 I/O 3F8, IRQ4; COM2 I/O 2F8, IRQ3) and then the Digi ports.

After installing the device driver, if you wish to change your serial configuration, rerun **setup.exe** from the DigiWARE diskette, as above. (The Microsoft Windows Control Panel Ports program does not provide a method to configure ports 5 through 9).

See the file **README.WRI** in the **\WINDOWS** directory of the driver diskette for more configuration information.

Please note that not all Windows 3.x communications programs are aware of COM5 through COM9. (Microsoft's Terminal program, for example, only supports four COM ports). Please read your software manual to determine if your application can access COM5 through COM9.

Following are some examples of ways to configure Digi ClassicBoards with or without existing COM ports. In each example, the Configuration dialog box is shown as it should appear after you have filled in the I/O addresses and IRQ for each port.

EXAMPLE 1:

COM1 on motherboard (or separate add-in card), COM2 through COM9 on a Digi ClassicBoard 8.

The screenshot shows a dialog box titled "Digi Configuration". It contains a table with two columns: "I/O (hex)" and "IRQ". The rows are labeled COM1 through COM9. The values are as follows:

	I/O (hex)	IRQ
COM1:	3F8	4
COM2:	100	3
COM3:	108	3
COM4:	110	3
COM5:	118	3
COM6:	120	3
COM7:	128	3
COM8:	130	3
COM9:	138	3

At the bottom of the dialog box, there are three buttons: "Continue", "Exit", and "Help".

EXAMPLE 2:

No standard COM ports (COM1-COM4) on motherboard or other add in card, Digi ClassicBoard 8 configured so that port 1 looks like standard COM1:

	I/O (hex)	IRQ
COM1:	3F8	4
COM2:	100	3
COM3:	108	3
COM4:	110	3
COM5:	118	3
COM6:	120	3
COM7:	128	3
COM8:	130	3
COM9:		

Continue Exit Help

EXAMPLE 3:

COM1 and COM2 on motherboard or add-in card, COM3 through COM9 on a Digi ClassicBoard 8:

Note that because the Microsoft Windows 3.x API only supports COM1 through COM9, only seven ports of the Digi ClassicBoard 8 are supported in this configuration.

	I/O (hex)	IRQ
COM1:	3F8	4
COM2:	2F8	3
COM3:	100	5
COM4:	108	5
COM5:	110	5
COM6:	118	5
COM7:	120	5
COM8:	128	5
COM9:	130	5

Continue Exit Help

EXAMPLE 4:

COM1 on motherboard or add-in card, COM2 through COM5 on a Digi ClassicBoard 4, COM6 through COM9 on another Digi ClassicBoard 4:

Note that the two boards must have different IRQs.

	I/O (hex)	IRQ
COM1:	<input type="text" value="3F8"/>	<input type="text" value="4"/>
COM2:	<input type="text" value="148"/>	<input type="text" value="3"/>
COM3:	<input type="text" value="150"/>	<input type="text" value="3"/>
COM4:	<input type="text" value="158"/>	<input type="text" value="3"/>
COM5:	<input type="text" value="160"/>	<input type="text" value="3"/>
COM6:	<input type="text" value="168"/>	<input type="text" value="5"/>
COM7:	<input type="text" value="170"/>	<input type="text" value="5"/>
COM8:	<input type="text" value="178"/>	<input type="text" value="5"/>
COM9:	<input type="text" value="180"/>	<input type="text" value="5"/>

EXAMPLE 5:

COM1 through COM4 on motherboard or add-in card, COM5 through COM8 on a Digi ClassicBoard 4:

	I/O (hex)	IRQ
COM1:	<input type="text" value="3F8"/>	<input type="text" value="4"/>
COM2:	<input type="text" value="2F8"/>	<input type="text" value="3"/>
COM3:	<input type="text" value="3E8"/>	<input type="text" value="4"/>
COM4:	<input type="text" value="2E8"/>	<input type="text" value="3"/>
COM5:	<input type="text" value="100"/>	<input type="text" value="5"/>
COM6:	<input type="text" value="108"/>	<input type="text" value="5"/>
COM7:	<input type="text" value="110"/>	<input type="text" value="5"/>
COM8:	<input type="text" value="118"/>	<input type="text" value="5"/>
COM9:	<input type="text"/>	<input type="text"/>

Troubleshooting

Most installation problems are caused by IRQ conflicts, I/O port address conflicts and I/O cabling problems. Additionally, the COM ports must be configured properly within the user's application program. Consult the application program documentation for the correct configuration setup.

A diagnostic utility for the Digi ClassicBoard can be run by powering up your system with the bootable disk in the floppy disk drive, and then typing **CDIAG**<Enter> at the DOS prompt. Please run the diagnostics prior to calling Digi technical support.

OS/2

Introduction

This OS/2 device driver software documentation is for all of the communication boards in the Digi ClassicBoard series. The software is a fully interrupt-driven, OS/2 API call compatible device driver, and will support up to 32 serial communication channels.

Hardware Installation

Legacy Mode

Before installing the device driver, you must first install and then configure the Digi ClassicBoard(s) by following the instructions in the *Installation Guide* that was shipped with the board.



- If you are also planning to install Digi PC/4, PC/8, or PC/16 boards in your system, do *not* install them at this time.
- The Digi ClassicBoard must be in legacy mode in order to be configured and operated under OS/2. Since the ClassicBoard is shipped from the factory in Plug and Play (PnP) mode, you must run the Digi configuration utility from the bootable disk in order to change the operating mode to legacy mode and then to configure the board.

The legacy mode allows you to customize the configuration of the Digi ClassicBoard or to configure it for strict legacy product compatibility. The legacy products supported by the OS/2 driver include the DigiBoard PC/4, PC/8, and PC/16.

Legacy product compatibility is achieved by selecting an applicable legacy profile of pre-configured addresses and interrupts for a single board in the system. A particular legacy profile can not be assigned to more than one board in a system. See a listing of the pre-configured addresses and IRQ lines for the PC/8 legacy profile on page 49, the PC/4 legacy profile on page 50, or the PC/16 profile on page 51.

Custom Installation

If you are installing multiple ClassicBoard adapters, or if you wish to use address parameters and/or IRQ lines other than the default selections of a legacy profile, you can custom-configure your board(s) with parameters of your choice. See the *Installation Guide* for information on selecting I/O addresses and IRQs.



- While the ClassicBoard can support two separate IRQ lines on one board, the OS/2 driver supports only *one* IRQ per board.
- Record which addresses and interrupts you choose for each board. You will have to supply this information when loading the device driver.

If you have completed board configuration with the configuration utility, you may proceed to the “Software Installation” instructions on page 23.

Software Installation

ClassicBoards Only

If you do not plan to install any legacy boards in your system, follow these steps:

To install the OS/2 device driver, simply copy the file **DGX.SYS** from the OS2 directory of the device driver diskette onto your hard drive. Then use a text editor to add the line

```
DEVICE=DGX.SYS [global parameters]
```

to the **CONFIG.SYS** file. (Do *not* use any per-card parameter values in the line because the values you set with the configuration utility will be automatically used by the driver). Note that if **DGX.SYS** is not in the root directory, you will have to give its full pathname (e.g., **DEVICE=C:\BIN\DGX.SYS**).



If you are installing a single ClassicBoard 8 with the default global parameters, the *global parameters* portion of the above line may be omitted. The default names for the devices would be COM3, COM4, COM5, COM6, COM7, COM8, COM9, COM10. The default modes for each of the channels would follow the OS/2 standards of 1200 Baud, 7 data bits, 1 stop bit, even parity, and RTS control-mode.

See "Global Parameters" on page 26 for descriptions of the global parameters. Reboot your system to install the driver after you have saved the changes in the **CONFIG.SYS** file.

ClassicBoards and Legacy Boards

If you are going to have both ClassicBoards and legacy boards (PC/4, PC/8, or PC/16) installed in your system, then follow these instructions to install the OS/2 device driver:

1. Make sure the ClassicBoard(s) are installed in your system. Do *not* install any legacy boards at this time.
2. Copy the file **DGX.SYS** from the OS2 directory of the device driver diskette onto your hard drive.
3. Use a text editor to add the line

```
DEVICE=DGX.SYS [global parameters]
```

to the **CONFIG.SYS** file. Do *not* use any per-card parameter values in the line. See “Global Parameters” on page 26 for descriptions of the global parameters. Note that if **DGX.SYS** is not in the root directory, you will have to give its full pathname (e.g., **DEVICE=C:\BIN\DGX.SYS**).

4. After booting your system, delete the entire **DEVICE=DGX.SYS** line from the **CONFIG.SYS** file.
5. Open an OS/2 window and execute the following command:

```
type [drive:\path]dgx_cfg.txt >> [drive:\path]config.sys
```

The **DGX_CFG.TXT** file is in the directory on your hard drive where you installed the **DGX.SYS** file.

6. Edit **CONFIG.SYS** to add the per-card parameter values to the **DEVICE=DGX.SYS** line for the PC/4, PC/8, or PC/16 board(s) that you wish to add to your system. (You will not need to add per-card parameter values for the Digi ClassicBoard(s) because they were already added automatically). See “Per-Card Parameters” on page 28 for descriptions of the per-card parameters.



Be certain that the per-card parameter values you add for the PC/4, PC/8, or PC/16 board(s) will cause no address or IRQ conflicts.

When you have saved the changes in the **CONFIG.SYS** file, power down the system.

7. Install the legacy board(s) by following the directions in the *DigiBoard PC/X and MC/X Non-Intelligent Asynchronous Serial Communications Boards Installation Guide*, and then power up the system.
8. If you wish to change the configuration of the ClassicBoard(s), you must (1) delete the **DCBX.BIN** files and the **DGX_CFG.TXT** file from the directory on your hard drive where you installed the driver and (2) remove the legacy boards. Then follow again the series of instructions beginning with “Hardware Installation” on page 21.

Command Line Parameters

There are both global as well as per-card parameters that can be specified on the device driver command line. If *any* parameters are given, the defaults in the data segment of the driver will be ignored. Use a comma (,) to separate sets of parameters for each card in your system. *Each card in your system must be fully described by these parameters.*

Global Parameters

The following *Global Parameters* set parameters for *all channels on all boards* controlled by the device driver. To change parameters for individual ports, use the utility **DMODE.EXE** provided on the distribution diskette with the driver. **DMODE.EXE** is discussed beginning on page 31 of this manual.

/n:device_names

Sets up the naming algorithm to be used to generate device names. This consists of an optional new stem followed by the starting device number. Without the new stem, the stem name "COM" will be used. Quotes are mandatory to set a new stem. Without a number, "3" is assumed.

Examples:

```
/n:"digi"0 DIGI0, DIGI1, DIGI2 ...  
/n:4 COM4, COM5, COM6 ...  
/n:"digi" DIGI3, DIGI4, DIGI5 ...
```

/b:baud_rate

OS/2 sets all serial devices to 1200 baud at initialization time. Use this option to set a different baud rate.

Example:

```
/b:9600 Set all channels to 9600 baud.
```

/d:data_type

OS/2 sets all serial devices to even parity, 7 data bits and 1 stop bit at initialization time. Use this option to override those values. The syntax is *Parity Data Stop* (without spaces), where *Parity* is **E**, **O** or **N** for "Even", "Odd" or "None"; *Data* is **8**, **7**, **6** or **5**; and *Stop* is **1**, **1.5**, or **2**. All three values **MUST** be provided.

Example:

/d:N81 Set all channels to no parity, 8 data bits, 1 stop bit.

/s:sigs_off

Forces modem control output signals “OFF” on port open.

/s:d DTR remains low or OFF on port open

/s:r RTS remains low or OFF on port open

/s:dr DTR & RTS remain low or OFF on port open

Note: Since DTR is not available on ClassicBoard 422 panels, forcing DTR “OFF” will have no effect.

/a:q

Disables “quick writes”. The use of this switch causes the driver to mimic the IBM **COM.SYS** device driver, where DosWrites will not return until the transmit data has left the card or a timeout occurs. The driver defaults to “quick writes” ENABLED to enhance performance by returning as soon as the transmit data is copied to the driver’s buffers. Thus, an application can perform other functions while the driver is transmitting the data and can also keep the transmit buffers topped off with subsequent DosWrites for better throughput.

Generally, this switch should not be used unless the “quick write” nature of the driver causes difficulties for a particular application.

Per-Card Parameters

Per-Card parameters must be in complete sets identifying the Control Register address, the I/O Port addresses, and the IRQ number. The preceding global parameters may be given without interfering with the default Per-Card settings in the driver file.



- Each board in your system must be fully described by these Per-Card parameters. Use a comma to separate the board sets from one another.
- These parameters must correspond to the values you assigned with the configuration utility.

Also note that the channel numbers (COM3, COM4, etc.) will be assigned to the boards *in the same order in which the per-card parameters are given*.

/p:Control Register Address

Sets the Control Register address.

Example:

/p:280 (set Control Register address to 280h)

/i:IRQ

Sets the IRQ line number to one of the legal options for the ClassicBoard.

Example:

/i:5 (set card to IRQ 5 decimal)

/c:channels {I/O Port addresses}

Sets the number of channels (either 4, 8 or 16) and the I/O Port addresses. This parameter is required for four and sixteen-port boards. If this parameter is omitted entirely, the driver assumes that this is an eight-port board configured with the default I/O Port addresses. See the DigiBoard PC/8 legacy profile listing on page 49 for the default I/O Port addresses.

Examples:

/c:4 {100, 110, 120, 128} (4-port example)

/c:8 {148, 160, 170, 178, 218, 220, 230, 238}
(8-port example)

*/c:16 {100, 110, 120, 130, 148, 158, 168, 170,
178, 180, 210, 218, 220, 228, 230, 238}*
(16-port example)

Command Line Example

This two-board example uses the preceding GLOBAL examples and sets the two eight-channel boards to:

Board 1: Control Register=148
I/O Ports=150, 158, 160, 168, 178, 220, 238, 240
IRQ 4

Board 2: DigiBoard PC/8 legacy profile
Control Register=140
IRQ 5

A command line for the above parameters would read:

```
device=dgx.sys /n:"digi"0 /b:9600 /d:N81 /p:148 /c:8{150,158,160,  
168,178,220,238,240} /i:4, /p:140 /i:5
```

Note that the command line indicates that the **DGX.SYS** file is in the root directory. If you had copied the file to another directory, you would have to specify the full pathname.

Troubleshooting

If the device driver software comes up with a problem message after installation, first check that your configuration matches the configuration utility settings for the board. Next, try powering down the system and then bringing it back up. Finally, make sure you deleted the **.BIN** files and the **DGX_CFG.TXT** file and removed the legacy boards before you changed the configuration on a system which contains both ClassicBoards and legacy boards. If the driver still fails, call Digi Technical Support.

In general, a good way to test the basic functionality of the driver is to hook up a terminal to one of the ports (COM3 for example), set it up for the correct Baud rate, Handshake, and Data type characteristics, and then simply try to re-direct output to it from the command prompt. For example:

```
C:\dir > com3
```

If the terminal is set up correctly (the above defaults are typical), you should get the directory listing coming out on it. If there is no output, or if the above command hangs, then you may need some technical support. It is possible that the board is not functioning properly.

DMODE I/O Port Configuration Utility

DMODE is Digi's I/O channel configuration utility. DMODE functions like the OS/2 MODE command, but is more flexible, and provides some added features.



The DMODE I/O port configuration utility is different from the board configuration utility, whose functionality is described in the *Installation Guide*.

- Supports communications device names other than COM1-COM8 (e.g., COM9, DIGI2, etc).
- Timeout, handshake modes, etc. can be specified without affecting baud rate, data type, etc.
- Any single parameter may be changed without causing all others to be reset to default values.
- Maintains the familiar MODE syntax.

DMODE parameters may be entered in any order, and in many cases may be abbreviated. For example, a baud rate of 19,200 may be entered simply as "19", since within the context of the DMODE command, "19" cannot be interpreted as anything else. Parameters may be separated by spaces or commas, and unspecified parameters are left unchanged. DMODE returns the settings of all parameters *after* any requested changes have been made. If no parameters are given, DMODE simply returns the current settings.

The syntax of DMODE is:

```
dmode port_name [parameters]
```

Port names and parameters are *not* case sensitive, so upper and lower case letters may be freely mixed without effect on the operation of the DMODE command.

The following parameters are accepted:

Baud Rate Baud rates can be specified with 2 to 5 digit designations, according to the following table:

Accepted Values					Baud Rate
50					50
75					75
11	110				110
	134				134
15	150				150
	200				200
30	300				300
60	600				600
12	120	1200			1200
18	180	1800			1800
24	240	2400			2400
36	360	3600			3600
48	480	4800			4800
72	720	7200			7200
96	960	9600			9600
19	192	1920	19200		19200
	384	3840	38400		38400
	576	5760	57600		57600
		1152	11520	115200	115200
		2304	23040	230400	230400
		4608	46080	460800	460800

Character Length

Characters may be **5**, **6**, **7** or **8** bits long. Enter the appropriate number in the DMODE parameters.

Parity Enter the desired parity checking method with a single letter **E**, **O**, **N**, **M** or **S** for Even, Odd, None, Mark or Space.

Stop Bits Enter the desired number of stop bits. Recognized values are **1**, **2** and **1.5**.

Flags DMODE supports the following flags in the same way as the OS/2 MODE command. Refer to your OS/2 documentation for explanations of the flags. To set a flag, enter the mnemonic for the flag, followed by an equals sign (=), and the desired value (**ON**, **OFF**, etc.).

Read Timeout Flag

TO=ON Read timeout in effect
TO=OFF No timeout

XON/XOFF Handshake Flag

XON=ON XON/XOFF handshaking enabled
XON=OFF XON/XOFF handshaking disabled

Input DSR Sensitivity

IDSR=ON Enables Input DSR Sensitivity
IDSR=OFF Disables Input DSR Sensitivity

Note: Since DSR is not available on ClassicBoard 422 panels, DSR Sensitivity commands will have no effect.

Output DSR Sensitivity

ODSR=ON Enables Output DSR Sensitivity
ODSR=OFF Disables Output DSR Sensitivity

Note: Since DSR is not available on ClassicBoard 422 panels, DSR Sensitivity commands will have no effect.

Output Handshake on CTS

OCTS=ON Enables CTS output flow control
OCTS=OFF Disables CTS output flow control

DTR Signal Control

DTR=ON Sets DTR to "ON" or HIGH
DTR=OFF Sets DTR to "OFF" or LOW
DTR=HS DTR used for output flow control

Note: Since DTR is not available on ClassicBoard 422 panels, DTR commands will have no effect.

"Quick Write" Control

QW=ON Return before DosWrite is complete (default)
QW=OFF IBM COM.SYS DosWrite functionality

RTS Signal Control

RTS=ON Sets RTS to "ON" or HIGH
RTS=OFF Sets RTS to "OFF" or LOW
RTS=HS RTS used for output flow control
RTS=TOG Toggles RTS from LOW to HIGH, or from HIGH to LOW

Alt-Pin Processing

ALT=ON Internally “swaps” DSR and DCD signals (see explanation below)

ALT=OFF DSR and DCD are not swapped

Digi products use 10-pin RJ-45 connectors in order to support all of the signals normally available on a 9-wire RS-232 connection. However, many commercially available RJ-45 connectors have only 8 pins. 8-pin RJ-45 plugs will fit in a 10-pin jack, but the first and last pins (numbers 1 and 10) are not connected. Digi uses these pins for the modem control signals RI (Ring Indicator, pin 1) and DCD (Data Carrier Detect, pin 10). While Ring Indicator is rarely a concern (since most modems have auto-answer capability), Data Carrier Detect is often monitored to insure that the modem has established, and is maintaining, a valid connection with a remote modem.

To facilitate the use of 8-pin RJ-45 connectors in modem applications, a special DMODE flag, **ALT**, has been provided. ALT instructs the device driver to monitor pin 2 for DCD instead of pin 10. The DSR (Data Set Ready) signal, normally on pin 2 is switched to pin 10. Since most programs don't monitor DSR, this signal can be safely ignored.

See the *Installation Guide* for cabling diagrams and pin assignment charts for DB-25 and RJ-45 connectors.

Note: Since DSR and DCD are not available on ClassicBoard 422 panels, Alt-Pin Processing will have no effect.

Examples

dmode digi12

Returns the current settings of device **digi12**. No changes are made.

dmode com5:,2

Configures COM5 for 2 stop bits. All other parameters remain unaffected.

dmode com5:19 rts=ON

Configures COM5 for a baud rate of 19,200 and sets RTS to “ON” or HIGH.

dmode com5:,8

Configures COM5 for 8 data bits. No other parameters are affected.

dmode comdev83:,,IDSR=OFF, TO=off e 7 12

Sets COMDEV83 to disable Input DSR Sensitivity, disable input timeout, select even parity, 7 data bits and a baud rate of 1200.

Note: Since DSR is not available on ClassicBoard 422 panels, DSR Sensitivity commands will have no effect.

dmode com5 19 ALT=ON

Sets up COM5 for a baud rate of 19,200, and enables Alt-Pin Processing.

dmode com5:,e alt=off

Sets COM5 for even parity checking and disables Alt-Pin processing.

FOSSIL

Introduction

The Digi FOSSIL provides a generic Interrupt 14h interface between many popular bulletin board systems and the Digi ClassicBoard. The Digi FOSSIL supports up to eight channels on the Digi ClassicBoard.

FOSSIL is an acronym for Fido/Opus/SEAdog Standard Interface Layer. For technical and programming information, download **FOSSIL.DOC** from the Digi BBS or our anonymous FTP server. (See “Digi Support Services” on page 56 for details). **FOSSIL.DOC** is also freely available on other BBS systems around the world, and the Internet.

Digi’s FOSSIL is a terminate and stay resident (TSR) program which intercepts Interrupt 14h calls from applications and processes them for use with ClassicBoard adapters. If the FOSSIL determines that the call is not for a Digi device, the call is passed back to the operating system for processing.



Digi support for FOSSIL is limited to the device driver for the ClassicBoard. If you have problems with software that is known to work on other FOSSIL implementations, please call Digi Technical Support for assistance. We cannot, however, provide programming support for new implementations. For programming information, refer to **FOSSIL.DOC**.

Hardware Installation

Before installing the device driver, you must first install and then configure the Digi ClassicBoard by following the instructions in the *Installation Guide* that was shipped with the board.



The legacy mode allows you to customize the Digi ClassicBoard or to configure it for strict legacy product compatibility. Since the ClassicBoard is shipped from the factory in Plug and Play (PnP) mode, you must run the Digi configuration utility from the bootable disk in order to change the operating mode to legacy mode and then to configure the board.

Legacy products include:

DigiBoard PC/4, PC/8, and PC/16

Star Gate Plus 8 and Optum

Arnet Multiport

Legacy product compatibility is achieved by selecting an applicable legacy profile of pre-configured addresses and interrupts for a single board in the system. A particular legacy profile can not be assigned to more than one board in a system.

Software Installation

The FOSSIL configuration software **DGCONFS.EXE** provides configuration support for Digi's implementation of FOSSIL. **DGCONFS** creates and maintains a standard ASCII text file describing the characteristics of your machine that are important to the FOSSIL. The configuration file can be modified with a standard text editor, but we strongly recommend that modifications be done only with **DGCONFS.EXE**.

Before You Start

Before running **DGCONFS.EXE**, you will need to be able to provide the following information:

For Each Board:

Control Register Address

For Each Channel:

Base I/O address

IRQ

Alt pin configuration (see the *Installation Guide*)

Initial Data Rate

Initial XON/XOFF configuration for transmitter

Initial CTS/RTS configuration for transmitter and receiver

Initial XON/XOFF configuration for receiver

Parity

Stop bits

Data bits

Configuring the FOSSIL

Before loading the FOSSIL, you must create a configuration file by running the configuration utility, **DGCONFS.EXE**.



The DGCONFS.EXE configuration utility is different from the board configuration utility, whose functionality is described in the *Installation Guide*.

The syntax for this command is:

DGCONFS.EXE [*config_file*]

where *config_file* specifies the name of the configuration file. (If not specified, the default filename **FOSSIL.INI** is used).

To start the configuration utility, copy the file **DGCONFS.EXE** from the FOSSIL directory of the driver diskette to a directory on your hard drive. Then go to the hard drive directory to which you copied **DGCONFS.EXE** and type **DGCONFS**, followed by a filename for the configuration file. A display with default information will appear, showing a fully configured Digi ClassicBoard 8 and a command prompt. The default board configuration matches the DigiBoard PC/8 legacy profile.

Adding Boards

To add a board, press “**A**” for Add, then “**B**” for Board. You will be prompted for the status register address for the new board. The new board will be added to the configuration screen with no channels. Use the following procedure to add channels.

Adding Channels

To add a channel, position the pointer by the board containing the channel and press “**A**”, for Add, then “**C**” for Channel. You will be asked:

Please enter the new channel number?

Enter the number of the channel (0 to 7) you wish to add.

Please enter the Base Port Address:

Enter the I/O address set by the board configuration utility for the Digi ClassicBoard containing this channel.

Please enter the IRQ for this port:

Enter the IRQ that is selected by the board configuration utility for the Digi ClassicBoard containing this channel.

The remainder of the channel parameters will be automatically filled in with default values. Verify that these values are correct for your application. If you wish to modify any of these parameters, follow the next procedure.

Modifying Parameters

To modify the parameters for a specific channel, position the selection pointer next to the desired channel and select “M” (for Modify). You will be asked:

Please enter the Base Port Address (hex):

Press <Enter> to keep the current I/O address or enter a new I/O address. The I/O address selected must match the address set by the board configuration utility for the Digi ClassicBoard containing this channel.

Please enter the IRQ for this port:

3) IRQ3 4) IRQ4 5) IRQ5 6) IRQ6 7) IRQ7 9) IRQ9 10) IRQ10
11) IRQ11 12) IRQ12 14) IRQ14 15) IRQ15

Press <Enter> to keep the current IRQ, or enter a new IRQ. The IRQ selected must match the IRQ set by the board configuration utility for the Digi ClassicBoard containing this channel.

Enable ALTPIN on the port (Y/N)?

Press <Enter> to keep the current ALTPIN configuration, or press “Y” for “yes” or “N” for “no”.

This is for connecting RJ-45 equipped boards to modems. ALTPIN swaps the DSR and DCD signals to make DCD available on 8-pin RJ-45 connectors (normally, a 10-pin connector is required to get DCD). *ALTPIN should only be used for boards equipped with RJ-45 connectors!* See the *Installation Guide* for cable diagrams and a complete description of ALTPIN.

Note: Since DSR and DCD are not available on ClassicBoard 422 panels, the ALTPIN configuration will have no effect.

Please select a valid data rate:

1) 300 2) 600 3) 1200 4) 2400 5) 4800 6) 9600 7) 19200 8) 38400

Press <Enter> to keep the current data rate, or type the number corresponding to the data rate you wish to select.

Use XON/XOFF on Transmit (Y/N)?

Press <Enter> to keep the current selection, or press “Y” for “yes” or “N” for “no”.

Use CTS on Transmit, RTS on Receive (Y/N)?

Press <Enter> to keep the current selection, or press “Y” for “yes” or “N” for “no”.

Use XON/XOFF on Receive (Y/N)?

Press <Enter> to keep the current selection, or press “Y” for “yes” or “N” for “no”.

Please select parity:

1) None 2) Odd 3) Even

Select 1, 2, or 3 for None, Odd or Even, respectively. FOSSILs typically use None.

Please select stop bits:

1) One 2) Two

FOSSILs typically use 1.

Please enter character length (5-8):

The FOSSIL standard is 8 bits per character.

Repeat the modifications for each channel, as necessary.

Setting the Start Port Number

By default, channels will be mapped to COM1-COM8. If this conflicts with other devices (e.g., standard COM1 and COM2 devices), channels may be remapped. To set a new start port number, press “S”. You will be asked:

Please enter the start port number (1-92):

Enter the number you wish to assign to the first port of the first board. Ports will be renumbered sequentially, beginning with the specified number (e.g., if the start port number is 5, ports will be named COM5-COM12).

Deleting Channels

To delete a channel from the configuration, position the selection pointer next to the channel to be deleted, and press “D”.

Deleting Boards

To delete a board from the configuration, position the selection pointer next to the board to be deleted, and press “D”. All channels must be deleted from a board configuration before the board itself can be deleted.

Loading the FOSSIL

To load the FOSSIL, copy the file **DGFSTD.EXE** from the FOSSIL directory of the driver diskette to the directory on your hard drive which contains the FOSSIL and its configuration file. From this directory on your hard drive, enter the following command at the DOS prompt:

```
DGFSTD [config_file] [/cfirst_port]
```

config_file is the optional filename that may have been specified in the **DGCONFS** command line during FOSSIL configuration. (See page 41). If no filename is specified, the configuration file is expected to be named **FOSSIL.INI**.



You can run the FOSSIL from any directory, as long as you supply complete pathnames for the FOSSIL and the configuration file (*even if it is the default filename*). For example, if the program and configuration file are in the directory **C:\FOSSIL**, enter:

```
C:\FOSSIL\DGFSTD C:\FOSSIL\FOSSIL.INI
```

/cfirst_port is an optional parameter that overrides the Start Port parameter in the FOSSIL configuration file (see page 44).

When the FOSSIL is successfully loaded, a message will indicate the version number and the port mapping information. The FOSSIL is now loaded and ready for use.

Legacy Profiles

Star Gate Plus 8 (8 port)

PnP Mode No

Control Register

Interrupt Mode: Star Gate

I/O Address: 07F8

IRQ: 4

Port	IO Base	IRQ
1	03F8	
2	02F8	
3	0280	
4	0288	
5	0290	
6	0298	
7	02A0	
8	02A8	

Star Gate Plus 8 (4 port)

PnP Mode No

Control Register

Interrupt Mode: Star Gate

I/O Address: 07F8

IRQ: 4

Port	IO Base	IRQ
1	03F8	
2	02F8	
3	0280	
4	0288	

DigiBoard PC/8

PnP Mode No

Control Register

Interrupt Mode: Digi

I/O Address: 0140

IRQ: 5

Port	IO Base	IRQ
1	0100	
2	0108	
3	0110	
4	0118	
5	0120	
6	0128	
7	0130	
8	0138	

DigiBoard PC/4

PnP Mode No

Control Register

Interrupt Mode: Digi

I/O Address: 0140

IRQ: 5

Port	IO Base	IRQ
1	0100	
2	0108	
3	0110	
4	0118	

DigiBoard PC/16

PnP Mode No

Control Register

Interrupt Mode: Digi

I/O Address: 0140

IRQ: 5

Port	IO Base	IRQ
1	0100	
2	0108	
3	0110	
4	0118	
5	0120	
6	0128	
7	0130	
8	0138	
9	0148	
10	0150	
11	0158	
12	0160	
13	0168	
14	0170	
15	0178	
16	0180	

Star Gate Optum/8

PnP Mode No

Control Register

Interrupt Mode: Star Gate

I/O Address: 07F8

IRQ: 4

Port	IO Base	IRQ
1	03F8	
2	02F8	
3	0280	
4	0288	
5	0290	
6	0298	
7	02A0	
8	02A8	

Star Gate Optum/4

PnP Mode No

Control Register

Interrupt Mode: Star Gate

I/O Address: 07F8

IRQ: 4

Port	IO Base	IRQ
1	03F8	
2	02F8	
3	0280	
4	0288	

Arnet Multiport/8

PnP Mode No

Control Register

Interrupt Mode: Arnet

I/O Address: 0300

IRQ: 9

Port	IO Base	IRQ
1	0280	
2	0288	
3	0290	
4	0298	
5	02A0	
6	02A8	
7	02B0	
8	02B8	

Arnet Multiport/4

PnP Mode No

Control Register

Interrupt Mode: Arnet

I/O Address: 0300

IRQ: 9

Port	IO Base	IRQ
1	0280	
2	0288	
3	0290	
4	0298	

Digi Support Services

The Digi Bulletin Board System

Digi provides an electronic bulletin board service (BBS) for our customers. This bulletin board provides general and technical information about Digi's products.

The Digi BBS allows users to download software drivers as soon as they become available. There is also a feature to allow users with problems or questions about Digi products to leave messages to Digi Technical Support.

Using the Digi BBS is easy. Simply dial **(612) 912-4800**. In Europe, dial **+49 221 9205211**; in Asia, dial **+65 735 2460**.

The recommended modem communications parameters are 8 bits, no parity and one stop bit (**8 N 1**). Other settings may also work.

Download protocols include Zmodem, Xmodem, Ymodem, Kermit and others.

Internet FTP Server

Digi has set up an Anonymous FTP server for those with access to the Internet network. The address is **ftp.dgii.com**. Log in as **anonymous**, and enter your E-mail address when asked for a password. Drivers and installation tips are located in the **/drivers** directory. A text file, **download.doc**, gives information on uncompressing the files after downloading. Tip: Be sure to enter **"bin"** before downloading, to ensure binary transfer of files.

World Wide Web Server

Product information, manuals, new product announcements, programs, application stories and more can be obtained through the World Wide Web. Our address is **http://www.dgii.com**.

DigiFACTs FaxBack Server

Manuals and technical information can also be obtained by FAX. To use the FaxBack server, simply call (612) 912-4990 on a touch tone phone.

Information About Your System

Serial number of your Digi product: _____

Make, model and clock speed of your
computer: _____

How much RAM does your
computer have? _____

BIOS make and version: _____

Plug and Play? Yes No

**Hard disk
controller:** Type: _____ Memory addressed at: _____

I/O port used: IRQ: _____

LAN card: Type: _____ Memory addressed at: _____

I/O port used: IRQ: _____

Other: Type: _____ Memory addressed at: _____

I/O port used: IRQ: _____

Operating system: _____ Version: _____

Digi device driver version: _____

Technical Support

At Digi, we are proud of our products, and support them. Our dealers and distributors are fully trained on our product line, so that they can help you on a technical level should assistance be needed.

Your first level of support is your Digi dealer, the place where you purchased your Digi product. Your dealer has the training to help you with any installation questions or difficulties you might have.

If you still experience difficulties (after contacting your first level of support), Digi has a staff of Technical Support Specialists that can assist you. They can be reached at **(612) 912-3456**. In Europe, call **+49 221 920520**, and in Asia, call **+65 732 1318**. FAX numbers are: (612) 912-4958 (USA), +49 221 9205210 (Europe) and +65 732 1312 (Asia).

When you call Digi Technical Support, please call from a position where you can operate your system. Also, please fill out the form on the preceding page before calling, so your Technical Support representative can have a clear picture of your system and any potential conflicts between devices.

Digi Technical Support can also be reached via Internet E-mail. Please send correspondences to **support@dgii.com**, and include your voice and FAX phone numbers.

Customer Service

Digi also has a staff of Customer Service representatives to help you with software and documentation update requests, as well as Returned Merchandise Authorizations (RMAs) in case you need to return your Digi product for repair (see page 61). They may be reached at **(612) 912-3456**. Digi Customer Service may be contacted by FAX at (612) 912-4959.

Digi Customer Service can also be reached via Internet E-mail. Please send correspondences to **cust_serv@dgii.com**, and include your voice and FAX phone numbers.

Return Procedures

All Digi products have a five-year parts and labor warranty, and we are ultimately responsible for any defective parts, according to the limits specified in the warranty. However, many of the reported problems are due to factors other than defects in the product itself. To save you time and possibly additional cost, Digi asks that you *first* try to resolve any difficulties by contacting our Technical Support representatives at **(612) 912-3456**.



Be sure to have the serial number of your Digi product at hand before calling Technical Support.

Returns should be directed to the dealer or distributor from whom you purchased the product. If you need to return your Digi product for repair, it is first necessary to obtain an RMA (Returned Merchandise Authorization) number from Digi, by speaking to a Digi Customer Service representative. Authorized returns should be shipped to Digi International, 10000 West 76th Street, Eden Prairie, MN 55344. The RMA number should appear on the shipping carton, on or near the address label.



Products received without an RMA number clearly marked on the outside of the package will be returned, unopened, to the sender.