



DNSES EISA Synchronous Communication Controller Installation Guide

EK-DNSES-OP. A01

June 1994

This document explains how to install the DNSES EISA synchronous communication controller.

Digital Equipment Corporation
Maynard, Massachusetts

June 1994

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S2458

Preface

Purpose of this Guide

This guide describes how to install the DNSES EISA Synchronous Communication Controller.

Who Should Use This Guide

This guide is intended for Digital service representatives or system administrators. A system administrator should be an experienced user who is familiar with OpenVMS AXP and OpenVMS VAX operating systems.

Structure of this Guide

This guide is divided into one chapter and two appendices.

- Chapter 1 describes how to install the DNSES option.
- Appendix A provides the United Kingdom Specifications
- Appendix B lists the communication cables that can be connected to the DNSES controller option.

Chapter 1

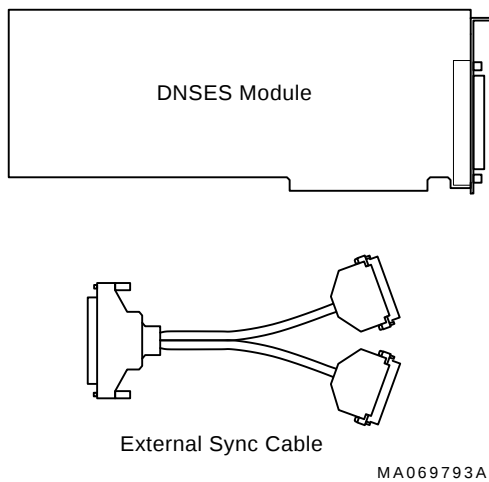
DNSES Installation

Description

The DNSES controller is a two-line synchronous communication interface that connects to the EISA bus and enables the system to connect to a wide area network (WAN).

Figure 1 shows the DNSES controller module and associated cables.

Figure 1: DNSES Option Hardware



Specifications

Operating Environment	Class B
Protocol	HDLC and SDLC
Speed (maximum)	2.048 Megabits/second
Packet size (maximum)	4096 bytes
Diagnostics	Power-on self-test

Ordering Information

The DNSES-AA option kit contains the following components:

DNSES controller module	54-23279-01
External sync cable	17-03504-01
ECU configuration diskette (!DEC2F00.CFG)	AK-Q766A-CA
Documentation	EK-DNSES-OP. A01

A pair of adapter cables (ordered separately) are also required. Appendix B lists the cables supported by the DNSES controller.

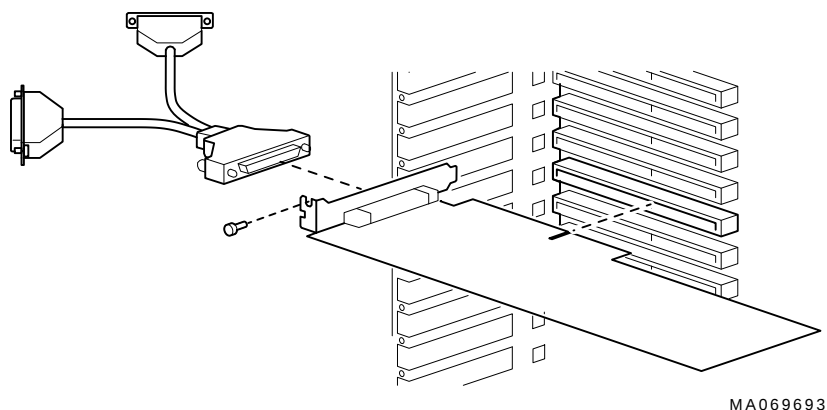
Installing the DNSES Controller

You can install the DNSES controller module in any available EISA slot. Before you install the DNSES controller in your system, you must power down the system enclosure. See your system maintenance manual for instructions.

Install the DNSES-AA option as shown in Figure 2:

1. Place the DNSES module in the EISA option slot.
2. Press the DNSES module until the connectors fully engage with the motherboard.
4. Attach the single end of the external sync cable to J1 on the DNSES controller module (Figure 2).
5. Attach the adapter cables to the external sync cable.
6. Connect the communication lines to the adapter cables.
7. Power up the system enclosure.
8. Run the EISA Configuration Utility (ECU). The next section contains device-specific information about the ECU.

Figure 2: Installing the DNSES Controller



Running ECU

Whenever you add, remove, or move an EISA option, run the ECU to ensure a conflict-free configuration. The ECU uses a corresponding configuration (CFG) file for the option to allocate system resources. The ECU also allows you to change certain parameters for the option. The user-selectable parameters are described later in this section.

Note

In most cases, the CFG file for the DNSES is provided with the ECU diskette that was shipped with your system. If the file is not found, the ECU program prompts you to insert the !DEC2F00.CFG diskette (AK-Q766A-CA) that was shipped with the DNSES controller.

Run the ECU as follows:

1. Start the ECU according to the instructions provided with your system documentation.
2. Following the ECU copyright screen, the ECU loads the configuration file for the DNSES.

If the file is not found on the ECU diskette:

- The ECU program prompts you to insert the DNSES configuration diskette (!DEC2F00.CFG) in the floppy drive.

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- The system copies the DNSES configuration file to main memory.
- The system prompts you to insert the system ECU diskette.
- The DNSES configuration file is copied from main memory to the system ECU diskette.
- After the configuration files are read (this may take a few minutes), an information screen appears, prompting you to press Enter to load the configuration files.

While the configuration files are loading, the ECU displays the following:

Loading configuration files

Please wait...

When the files have finished loading, a menu similar to the following is displayed:

EISA Configuration Utility

Steps in configuring your computer

STEP 1: Important EISA configuration information

STEP 2: Add or remove boards

STEP 3: View or edit details

STEP 4: Examine required details

STEP 5: Save and exit

>Select=ENTER< <Cancel=ESC>

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3. Select the **View or edit details** option and press the Enter key.

Use the up and down arrows to scroll through the list until you find the DNSES controller and its slot number. A display similar to the following example lists the option's current parameter settings:

```
Slot 5 - Digital WANcontroller/EISA (DNSES)      Auto Added
DNSES Interrupt Mode.....Edge TRIGGERED INTERRUPT
DNSES Interrupt Request Level....IRQ 10
Enable/Disable DNSES Interrupts..Enable DNSES Interrupts
DNSES MEMORY ADDRESS SPACE.....000080000H—00008FFFFH
                                      ( 64KB)
```

To change any of the settings (edit details), use the up and down arrows to select the parameter you want to change, and press Return. The following table lists the user-changeable parameters and their settings.

Note

If you select configuration information that conflicts with another device, for instance a duplicate IRQ level, the utility informs you that in order to accommodate your selection, certain parameters will need to be changed. If you press Enter when prompted, the utility will automatically make the required changes.

When you have finished with the option settings, press F10 to return to the previous menu.

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Parameter	Settings*	
DNSES Interrupt Mode	EDGE TRIGGERED Interrupt LEVEL Interrupt	*
DNSES Interrupt Request Level	IRQ 10 IRQ 11 IRQ 12 IRQ 14 IRQ 15	*
Enable/Disable DNSES Interrupts	Enable DNSES Interrupts Disable DNSES Interrupts	*
DNSES 64 KB Memory Address Space	000080000H — 00008FFFFH (64KB) 000090000H — 00009FFFFH (64KB) 0000A0000H — 0000AFFFFH (64KB) 0000B0000H — 0000BFFFFH (64KB) 0000C0000H — 0000CFFFFH (64KB) 0000D0000H — 0000DFFFFH (64KB) 0000E0000H — 0000EFFFFH (64KB) 0000F0000H — 0000FFFFFH (64KB)	*

* Shows default setting

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4. Select **Save and exit** and press Enter. You will be prompted to verify that you want to save the configuration before a screen similar to the following is displayed:

Reboot

Your configuration file has been saved, and if possible a backup SYSTEM.SCI file has been made on the current drive.

To complete your configuration, you must do one of the following:

If you need to install boards or change switches and jumpers on boards already installed, turn off your computer and do so.

If you want to test your system or install an operating system, press ENTER to restart your computer, run the configuration utility again and select the appropriate main menu item.

If you are finished configuring, remove the SYSTEM CONFIGURATION diskette if it is in drive A and press ENTER to restart your system.

>Ok=ENTER<

Follow the directions on the screen display until you have saved and exited the ECU.

5. Refer to your system documentation for instructions on returning to the operating system console.

Appendix A

United Kingdom Specifications

Safety Status

The host connector is Safety Extra Low Voltage (SELV).

Service Category Specifications

Table A-1 lists the service categories (SC) and their specifications.

Table A-1: Specifications for Service Categories (SC) 1 and 2

SC	Interface Type	Data Rate (bytes/sec)	Service Requirements		Public Telecommunications Operators		
			Physical	Electrical	BT ¹	Hull ²	MCL ³
1	CCITT recommend X.21bis	2400	ISO 2110	V.24 ⁴ /V.28	Yes	Yes	Yes
		4800	BS.6623:	Cables:	Yes	Yes	Yes
		9600	Part 1 1985	BS19D-02,	Yes	Yes	Yes
		19200		BS19V-02	No	No	Yes
2	CCITT recommend X.21bis	48000	ISO 2593	V.35 ⁵	Yes	Yes	Yes
		56000	BS.6623:	Cable:	Yes	No	Yes
		64000	Part 4 1986	BC19F-02	No	No	Yes

¹BT - British Telecommunications plc

²Hull - Kingston Communications (Hull) plc

³MCL - Mercury Communications Limited

⁴2 ft (0.6 m) for adapter cable BS19D-02 and BC19V-02; 25 ft (7.62 m) for extension BC22F-25

⁵2 ft (0.6 m) for adapter cable BS19F-02; 25 ft (7.62 m) for extension BC19L-25

Note

The total length of cable (adapter cable and extension) must not exceed 27 feet (8.23 m).

Supported Cables

Appendix B contains a list of adapter cables supported by the DNSES controller. These cables connect to the external sync cable and not to the module itself.

Module Isolation

Except at the connector, which plugs into the host expansion slot, clearance and creepage distances (Xmm and Ymm in Table A-2) must be maintained between the DNSES module and other parts of the host, including any expansion cards fitted. Clearance is the shortest distance in space between two points. Creepage is the shortest distance along a continuous surface between those same two points.

Table A-2: Module Clearance and Creepage

Clearance Xmm	Creepage Ymm ¹	V rms or V dc ²
2.0	2.4 (3.8)	Up to 50
2.6	3.0 (4.8)	Up to 125
4.0	5.0 (8.0)	Up to 250
4.0	6.4 (10.0)	Up to 300

If in doubt, seek advice from a telecommunications safety engineer. Failure to install the DNSES module in accordance with these instructions will invalidate the British Approvals Board for Telecommunications (BABT) approval.

Apparatus Between the Approved Host System and Digital Circuit (PTT)

If any other apparatus, including cable or wiring, is to be connected between the approved module and the point connection to any particular digital circuit, then all the other apparatuses shall conform as follows.

¹ The creepage distance applies when the installation is in a typical office environment. The creepage distance shown in parentheses applies when the host computer is subjected to conductive pollution or dry nonconductive pollution, which could become conductive due to condensation.

² Voltage used or generated by other parts of the host or expansion card.

1. The overall transmission characteristics of all other apparatuses shall introduce no material effect upon the electrical conditions presented to one another by an apparatus and a digital circuit.
2. All the other apparatuses shall comprise only:
 - Apparatuses approved (such apparatuses may be subject to limitations on their use) for the purpose of connection between the apparatus and a particular digital circuit.
 - Cable or wiring that complies with code of practice for installation of apparatuses covered by this standard or other applicable requirements.

Host Power Rating

You must ensure that the total power drawn by the approved module, the host, and other auxiliary equipment drawing power from the host is within the rating of the host power supply.

Digital has designed all permutations of the host configuration to operate within the limits of the host power rating. The module power ratings are:

+5 V at +4.0 A

+12 V at +0.5 A

The permissible power supply variation to the module is:

+5 V $\pm 5\%$

+12 V $\pm 5\%$

Cable Approval

The module is approved for direct connection to a particular digital circuit. This approval includes an interconnecting cable with mating connectors that conform to the British Standard BS6623 parts 1 and 4. If the module is connected to the service with anything other than its own approved cables, those cables must benefit from the relevant General Approval NS/G/1235/100009 and/or conform to any other applicable requirements.

Appendix B

DNSES Adapter Cables

A pair of adapter cables is needed to bring signals from the 50-pin connectors of the DNSES external sync cable out to standard interface connectors. Table B-1 lists information about the available adapter cables.

The H3199 50-pin loopback connector is also available as a troubleshooting aid.

DNSES Adapter Cables

Table B-1: Supported Cables

Cable	Part Number	Maximum Data Speed¹	Loopback
BC19B-02 EIA 422-A /V.11/V.36	17-01118-01	1.544 Mb/s or 2.048 Mb/s	H3198
BC19U-02 EIA 422-A /V.11/V.36	17-01871-01	1.544 Mb/s or 2.048 Mb/s	H3198
BS19D-02 EIA 232-A /V.24	17-01110-01	19.2 kb/s	H3248
BC19V-02 EIA 232-A /V.24	17-01872-01	19.2 kb/s	H3248
BC19D-02 EIA 562-E	17-01110-01	64 kb/s	H3248
BC19V-02 EIA 562-E	17-01872-01	64 kb/s	H3248
BC19E-02 EIA 423-A /V.10	17-01111-01	64 kb/s	H3198
BC19W-02 EIA 423-A /V.10	17-01873-01	64 kb/s	H3198

¹Only one cable with a maximum data speed faster than 1 Mb/s can be connected to a single DNSES module.

Table B-1 Supported Cables (continued)

Cable	Part Number	Maximum Data Speed²	Loopback
BC19Q-02 EIA 530-A	17-03091-01	1.544 Mb/s	Not available
BC19F-02 V.35	17-01112-01	64 kb/s	Not available
BC19X-02 V.35	17-01874-01	64 kb/s	Not available
BC22X-02 BT KiloStream	17-02239-01	64 kb/s	Not available
BC55D-50 ³ EIA 422-A /V.11 /V.36	17-00372-04	1.544 Mb/s or 2.048 Mb/s	H3198
BC22F-10 ⁴ EIA 232-E /V.24	17-00323-01	19.2 kb/s	H3248
BC22F-25 ⁵ EIA 232-E /V.24	17-00323-02	19.2 kb/s	H3248
BC19L-25 ⁶ V.35	17-01204-01	64 kb/s	Not available

²Only one cable with a maximum data speed faster than 1 Mb/s can be connected to a single DNSES module.

³Extension cable for BC19B-02 and BC19U-02.

⁴Extension cable for BS19D-02 and BC19V-02.

⁵Extension cable for BS19D-02 and BC19V-02.

⁶Extension cable for BC19F-02 and BC19X-02

DNSES Adapter Cables

Table B-2 identifies the pinouts of the 50-pin D-sub connectors of the DNSES external sync cable according to pin number and standards: V.35, V.24/V.28 (232-E), V.11/V.36 (422-A), V.10 (423-A), and 530-A.

Table B-2: D-Sub Full-Function Connector Pinouts¹

50-Way Pin	Signal Name	V.35 Pin	V.24/V.28 (232-E) Pin	V.11/V.36 (422-A) Pin	V.10 (423-A) Pin	530-A Pin
1	Code Ground	♣	♣	♣	♣	♣
2	Code 0	♣				
3	Code 1		♣		♣	
4	Code 2			♣		♣
5	Code 3					
6	TX Data A			4		2
7	TX Data B			22		14
8	TX Data		2		4	
9	RTX/CA			7		4
10	RTS/CB			25		19
11	RX Data A		3	6	6	3
12	RX Data B		♦	24	24	16
13	Local Loop		18	10	10	18
14	Speed Indicate					
15	Test I		25	18	18	25
16	Remote Loop		21	14	14	21
17	RI	J	22	15	15	22
18	RX Clock A		17	8	8	17
19	RX Clock B		♦	26	26	9

¹ **Table Key:** ♣ indicates a connection to DCE ground (pin 41), ♦ indicates a connection to code ground (pin 1). Code ground does not run down the cable.

Table B-2: Sub Full-Function Connector Pinouts (continued)

50-Way Pin	Signal Name	V.35 Pin	V.24/V.28 (232-E) Pin	V.11/V.36 (422-A) Pin	V.10 (423-A) Pin	530-A Pin
20	TX Clock A		15	5	5	15
21	TX Clock B		◆	23	23	12
22	Clock		24		17	
23	V.35 TX Clock A	Y				
24	V.35 TX Clock B	a				
25	V.35 Clock A	U				
26	V.35 Clock B	W				
27	V.35 RX Clock A	R				
28	V.35 RX Clock B	T				
29	V.35 TX Clock A	P				
30	V.35 TX Clock B	S				
31	V.35 RX Clock A	V				
32	V.35 RX Clock B	X				
33	DTR	H	20		12	20
34	DSR A	E	6	11	11	6
35	DSR B	◆	◆	29	29	7
36	RTS	C	4		7	
37	DCD/I A	F	8	13	13	8
38	DCD/I B	◆	◆	31	31	10
39	CTS A	D	5	9	9	5
40	CTS B	◆	◆	27	27	13
41	DCE Ground	◆	7◆	20	20	23

DNSES Adapter Cables

Table B-2: Sub Full-Function Connector Pinouts (continued)

50-Way Pin	Signal Name	V.35 Pin	V.24/V.28 (232-E) Pin	V.11/V.36 (422-A) Pin	V.10 (423-A) Pin	530-A Pin
42	TEST1					
43	TEST2					
44	DTE Ground	B ♦	♦	19, 37	19, 22, 25, 30, 35, 37	7
45	DTR A			12		
46	DTR B			30		
47	Clock A			17		24
48	Clock B			35		11
49	TEST3					
50	Speed Select		23	16	16	