USER'S MANUAL

SYNC/570i
and
SYNC/570

Synchronous Expansion Boards

90500018C

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A Note Concerning Radio and Telephone Network **Interference**

FCC **Information for** the **ISA SYNC/570, the MicroChannel SYNC/570, and the MicroChannel SYNC/570i**

This **equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications.**

The ISA **SYNC/570, the MicroChannel SYNC/570, and the MicroChannel SYNC/570i have been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference; in which case, the user at his own expense will be required to take whatever measures may be required to correct the interference.**

SHIELDED **CABLE** MUST BE USED TO **REMAIN IN COMPLIANCE WITH FCC CLASS A.**

FCC Information for the ISA SYNC/570i

The ISA SYNC/570i has been tested and found to comply with the limits for a Qass B computing device pursuant to Subpart J of Part 15 of FCC rules.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for comphance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful Interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

However, there is no guarantee that radio interference will not occur in a particular installation. If this equipment does cause harmful Interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

SHIELDED CABLES MUST BE USED TO REMAIN IN COMPLIANCE WITH PART 15 OF THE FCC RULES.

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

LIST OF FIGURES

CHAPTER ONE

Introduction

The **Digi SYNC/570** and the **SYNC/570i** are high-performance expansion boards for ISA or Micro Channel computers. The SYNC/570 adds two synchronous/asynchronous serial ports while the **SYNC/570i** adds two or four synchronous/ asynchronous ports. They are designed for applications requiring cost-effective communications. Each board and connector package is supplied with all the hardware and software needed for a complete board installation.

The Hitachi HD64570 Serial Communications Adapter **(SCA)** provides a highly-integrated advanced communications subsystem for the SYNC/570 and the **SYNC/570i.** It further maximizes synchronous communications performance by using protocol-specific features to minimize driver overhead.

The **onboard** memory of both the SYNC/570 and the **SYNC/570i** is directly addressable by both the system and the **SCA's** DMA. Program-initiated DMA transfers operate at **DMA/memory** speed independently of other system activity. This architecture provides low system overhead and high performance.

The optional OEM software lock ensures that OEM software will operate only with OEM-supplied boards.

SYNC/570i (and SYNC/570 optionally) includes **SurgeBlock™**, which is designed to protect the board and the computer in which it is installed against damage from data line surges.

SYNC/570

Multiple SYNC/570 boards may share a common memory window. Micro Channel boards may also share a common interrupt request line.

The two ports of the **SYNC/570** each have a high density DB-15 connector to connect any device with an EIA-232-D interface to your computer. The board operates at line speeds from 4800 baud to over **115K.**

A complete list of SYNC/570 features and specifications is located in the appendices.

SYNC/570i

The SYNC/570i communicates at T1/E1 line speeds up to 5 Mbps. Each HD64570 chip supports two synchronous/asynchronous ports and four channels of DMA as well as interrupt and timer logic.

Digi SYNC/570i is available with several interface options. Interface specific information (interface setting instructions, cables, connector information) can be found in the interface appendices.

Multiple SYNC/570i boards may share a common memory window. Micro Channel boards may also share a common interrupt request line.

A complete list of SYNC/570i features and specifications is located in the appendices.

CHAPTER **TWO**

Protecting Your Equipment and Data

Electrical Surge and Power Protection

Lightning, electrical surges, and power fluctuations can damage your equipment and/or data through the power lines and/or the serial data lines. When electrical storms occur, the most effective method of protecting your computer system is to unplug your computer and peripherals, and disconnect all data and telephone lines.

To protect against lightning, electrical surges, and power fluctuations, **Digi** recommends uninterruptible power supplies **(UPS),** power line filters, and surge protectors for every installation.

A UPS can provide protection from electrical surges and fluctuations in the power supplied to the computer. However, it does little good to protect the main console if you have no protection on the other devices attached to the system. Power line filters protect against electrical surges and transient spikes. Some filters even have a shutdown feature that drops power to the device if voltage drops below a preset level. This prevents the spikes and surges caused by the typical "off and on" electrical problems that occur during a thunderstorm. AC line filters should be used with all electrical devices connected to a computer system, no matter how small or simple.

The interface cables themselves present another potential danger. Nearby lightning strikes can induce high-voltage surges into the cables. Machinery, especially commercial machines with electric motors, often generates electrical noise that can be picked up by cables and cause data errors or equipment damage. **Digi** includes **SurgeBlock** on every **SYNC/570i** and optionally on the **SYNC/570. SurgeBlock** clips fast-rising peak voltages to help protect against spikes over twenty-five volts caused by lightning, static, or induced voltage. For maximum protection we recommend surge suppressors on the peripheral end of all serial cables.

Cables running long distances and/or through electrically noisy areas are subject to noise pickup that can cause data errors or equipment damage. Destructive power surges can also enter through modems via telephone connections. Filters made specifically for this purpose should be included on all telephone line connections.

Using a receptacle for only the computer and terminal also protects against data errors or equipment damage. Sharing the receptacle with noise-producing devices such as fax machines, printers, calculators, and heaters may allow noise pickup.

Grounding Techniques

Many terminals and computers are dependent on earth ground to set a reference for signal ground. Improper grounding or differences in ground potential between your computer and terminals can damage your equipment or even create a safety hazard. Consequently, you should make sure that every component in your system is properly grounded.

Connect your computer and all terminals and other peripherals to three-pronged grounded receptacles, making sure that the receptacles are wired properly. If you must use three-prong to two-prong adapters, make sure that the adapter ground tabs are properly grounded.

A proper chassis ground guarantees that no dangerous voltages exist on terminal frames. Proper grounding also helps cancel noise that can otherwise be induced on the frame or equipment.

Local electrical codes may also dictate special grounding arrangements. Your electrician can make sure that your installation complies with all applicable codes. If you have any doubt about the integrity of the grounding system in your location, have the system checked by a licensed electrician.

Static **Protection**

Your computer's case not only houses its family of computer components, but it also protects these sensitive electronic components from stray magnetic (EMI) and electrical (RFI, static) fields.

WARNING

Using *proper static control methods is essential whenever you use, move, or open your computerfor modifications.*

Make sure that you are working in a static-controlled area which includes at least a conductive benchtop mat or chair mat that is electrically connected to earth ground. Conductive wrist straps in conjunction with ground cords provide extra protection for handling electronic components. Always store and/or move individual printed circuit boards in a conductive bag. Consult your local electronics or office supply distributor for static control products.

If you would like an overview of grounding and static protection theories and techniques, you can obtain a copy of Federal Information Processing Standards Publication 94: *Guideline on Electrical Power of ADP Installations. This* booklet is available from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161 703/487-4650.

Checking Your Package Contents

After opening the shipping box, check the contents.

WARNING

Leave the board in its protective anti-static bag until installation. When installing or removing boards, always use adequate precautions (such as a grounding strap) to prevent electrostatic damage.

SYNC/570 Contents:

- SYNC/570 board
- Two, g-foot, DB-15 to DE25 cables
- Loopback connector
- Information packet, including
  - -User's manual
  - -Diagnostic diskette
  - -Customer Information Packet

SYNC/570i Contents:

- SYNC/570i board
- One duo-cable for two-port boards or one quad-cable for four port boards
- Loopback connector
- Information packet, including
  - -User's manual
  - -Diagnostic diskette
  - -Customer Information Packet

CHAPTER FOUR

Installing the SYNC/570 and SYNC/570i

Turn off power to your computer and disconnect the power cord. Inserting a board into the system with power applied could damage the system, the board, or both. Such abuse will void your warranty.

1. Remove the cover of the computer (see computer manufacturer's instructions).

2. Determine which 16-bit slot your SYNC/570 or SYNC/570i will occupy. Loosen the thumb screw (Micro Channel) or remove the hold-down screw at the top of: the blank card bracket of the slot and remove the blank card bracket (ISA).

If you are installing a SYNC/570i with a jumper selectable interface, set the jumpers on the board for the correct interface. Refer to the appendix pertaining to your version of SYNC/570i for instructions.

Jumper JP1 controls the Fast Select circuitry on board. Botb the SYNC/570 and ***the SYNC/570i are shipped with a jumper*** connecting ***pin*** 2 ***and pin 3 of JP1. This setting allows the boards to work with any combination of 8 or*** 16 ***bit video and/or network cards supporting Fast Select. When pins 1*** and 2 ***are jumpered, the board must be installed in a 128KB paragraph which contains only 16 bit cards. The default setting (pins 2 and 3 jumpered) works in most computers and should not be changed without verification from Digi Technical Support.***

3. If you are installing a SYNC/570 or SYNC/570i in an ISA computer, you must configure the I/O address by setting the switch on the

board before you install the board. Refer to Section 5 for switch settings. When you have set the switch, continue with the board installation below.

If you are installing a SYNC/570 or SYNC/570i in a Micro Channel computer, proceed with the board installation. When the board is installed, configure it as described in Section 6.

4. Insert the SYNC/570 or SYNC/570i board into the mating motherboard socket. Push the board firmly into place.

5. Secure the board by tightening the thumb screw or replacing the board hold-down screw that was removed in Step 2.

6. Replace the computer cover and reconnect the power cord

7. Complete the software configuration of the board.

Setting the ISA SYNC/570 and SYNC/570i Switch

Before installing the SYNC/570 or SYNC/570i in an ISA system, set the multi-segment switch on the board The setting of the switch selects the starting address of the block of I/O locations which the SYNC/570 or SYNC/570i uses. The board is shipped with a setting of 300H. Diagrams of commonly used I/O address switch settings begin on the following page.

The memory address and interrupt line (IRQ) are software configurable (either your operating system or an installable driver). You will be asked to specify a 16KB memory window location.

All I/O addresses mentioned in this manual are in hexadecimal format.

If you are installing a SYNC/570i that is interface configurable, set the jumper on *the daughterboard before continuing the installation process. Refer to the appendix pertaining to your version of SYNC/570i for more information.*

commonly Used I/O Address Switch Settings

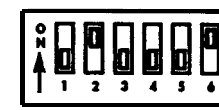
100H

160H

1C0H

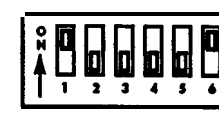
110H

170H



120H

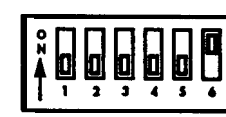
180H



1E0H

130H

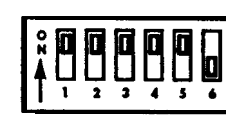
190H



1F0H

140H

1A0H



200H

150H

1B0H

210H

220H

280H

2E0H

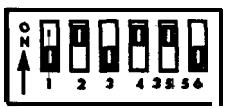
230H

290H

240H

2A0H

300H



250H

2B0H

310H

260H

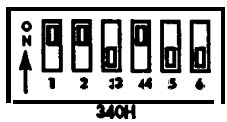
2C0H

320H

270H

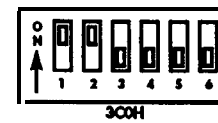
2D0H

330H

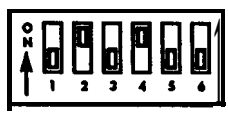


340H

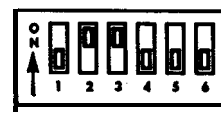
380H



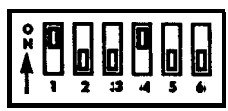
3C0H



350H

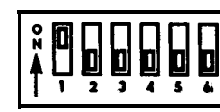


3D0H



360H

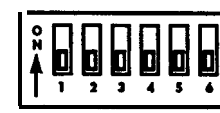
3A0H



3E0H

370H

380H



3F0H

CHAPTER SIX

Configuring the Micro Channel SYNC/570 and SYNC/570i

Configure the SYNC/570 and SYNC/570i through your computers Micro Channel Programmable Options Select (POS) system, using data from the Digi Adapter Definition File (ADF) on the diagnostic diskette. This system uses hardware registers, selected and loaded through software, to assign system resources to an expansion board. Each type of expansion board has its own unique code number, assigned in conjunction with the computer manufacturer, which identifies it to the system. (If you cannot determine the proper setup information, check with an operating system vendor or Digi Customer Support.)

Refer to your computer system documentation for information on the Programmable Option Select.

1. Install the board as described in Section 4.

2. Determine which .ADF file on the Digi Diagnostics Diskette you need for configuration. Refer to the note below for an explanation of the files. If necessary, copy and rename the file you need.

The diagnostics diskette actually contains three ADF files: @6163.ADF, @6163.AD1, and @6163.AD2. The files @6163.ADF and @6163.AD1 are identical. (This ADF file is the one that is copied to your reference diskette.)

The .ADF and .AD1 files contain the most commonly used configurations. The @6163.AD2 file contains every possible option for configuration.

If you wish to use the .AD2 file, you must copy the file to the reference diskette as @6163.ADF. Since the reference diskette will copy only the .ADF fire, copy the file to another diskette and rename it .ADF.

3. Reboot the computer with the backup copy of your computer system's reference diskette. The computer will show error 165 and beep twice. Continue as instructed.

4. Follow the instructions shown on the screen to select the mode necessary to **manually** set the configuration--do **not use the automatic configuration**. **(The instructions** for manual configuration will vary for computers ma& by different manufacturers.)

5. When you are prompted to copy the new adapter files, insert the **Digi** Diagnostics Diskette.

6. Press ENTER. The computer will read the **@6163.ADF file.**

7. **At** the prompt, remove the diagnostics disk and reinsert the reference diskette.

8. Press ENTER. The file **@6163.ADF** copies to the reference disk.

9. Follow the instructions shown on the screen to set or change the configuration for the **Digi** SYNC/570 or **SYNC/570i.**

10. Select the I/O address, memory address, and IRQ from the list of addresses and interrupt lines shown.

11. Follow the instructions to save the configuration you have chosen and to exit the program.

12. Remove the copy of the reference diskette.

CHAPTER SEVEN

Connecting Peripherals

Your application may specify the cable configuration required for connecting modems to a computer. If so, you should follow their recommendations. If cable configuration is not specified, you can use the cable type described in the appendix pertaining to your version of SYNC/570 or SYNC/570i.

If you supply your own cables for SYNC/570 or SYNC/570i, Digi recommends shielded cables (15 pF or less capacitance per foot) for all installations. The FCC requires the use of shielded cables to comply with EMI/RFI emission limits. In addition, cables that run long distances or through electrically noisy areas are subject to voltage surges that can cause data errors or equipment damage.

EIA-232-D specifies a maximum cable length of 50 feet. If you run cables farther than 50 feet, you increase the risk of surge damage and data loss. (However, using shielded cable of 10-15 pF capacitance per foot somewhat lessens the risk of data errors.>

When muting ***your cables, do not run them parallel to AC wiring or on top of fluorescent light ballasts. Bundling several EIA-232-D cables together is acceptable.***

Refer to the appendix pertaining to your version of SYNC/570 or SYNC/570i for cable and connector information.

CHAPTER EIGHT

Using the Diagnostics Disk

The diagnostics diskette in conjunction with the loopback connector is designed to verify correct installation. Make a copy of this disk and store the **original.** Should a problem develop in the future, you can run the diagnostics to locate the problem.

Your system must be running DOS in order to use the diagnostics program.

The diagnostics tests **one board at a time. Although the active** board by default is the ISA board at the highest I/O address or the Micro Channel board at the highest slot number, you may change the active board. The screen header indicates the active board and its address.

The tests will fail if there is an address or interrupt conflict If the diagnostics cannot determine your switch settings, there is probably a conflict. In this case, try other address and/or interrupt settings.

For an ISA system, the diagnostics program displays IRQ, the base memory address, and the base I/O address. You may modify the address and IRQ selections from the diagnostics. The IRQ must be active, and you must select a non-zero address. If you cannot determine a setting, call Digi Customer Support for assistance.

For a Micro Channel system, the diagnostics program displays the current POS registers which identify the IRQ, the base memory address, and the base I/O address. If any of these parameters need to be **changed, repeat the procedure in Section** 6 **beginning with Step 3 on Page 16.** If you cannot determine a setting, call Digi Customer Support for assistance.

1. Insert the diagnostic disk into Drive A.
2. Type **A:SYNC570** to start the diagnostics.
3. Follow the instructions on the screen.

When IRQ and address selection are acceptable, the adapter memory is tested. The test does write/verify at every location with word accesses only. Each 16K memory window is selected and tested independently. Address and data buses are tested separately.

The program then runs a window uniqueness test. A different, single word is written to each of the eight 16K windows; then the test reads each window to verify that the windows are indeed unique.

When prompted, install the single channel loopback connector onto line 1 (the lower connector for Micro Channel). The wiring diagram for the loopback connector is in the appendix pertaining to your version of SYNC/570 or SYNC/570i. The diagnostics program tests the control and data lines. The control line loopback tests RTS to CTS, and DTR to DSR to DCD. The data loopback test is the default single channel chained-block DMA transfer mode test. When the line 1 tests are complete, install the loopback connector on line 2 (the upper connector for Micro Channel). The tests will be repeated for line 2.

The diagnostics program also tests the ability of the card to generate interrupts by way of internal data loopbacks. It tests all found ports. For example, a 4 port board will prompt you to move the loopback connector when performing the external data and control signal tests.

The internal and external tests are run at the maximum supported bit rates for their respective interfaces. On the internal tests, all available channels are run simultaneously at the maximum bit rate to help resolve arbitration and memory bandwidth issues.

In Case of Trouble

WARNING

Make sure your computer is turned off before installing or removing boards. When installing or removing boards, always use adequate precautions (such as a grounding strap) to prevent electrostatic damage.

Test your SYNC/570 ***or*** SYNC/570i using the diagnostics disk provided If the SYNC/570 or SYNC/570i passes all the tests, the problem is probably elsewhere. The symptoms of particular problems may vary between operating systems. Common problems are listed below.

Address/Interrupt conflicts

All devices in your system must have unique addresses that must not overlap. The memory location must be outside the caching memory range. If you think you have a conflict problem, try alternate settings.

Inconsistent Baud Rate

The baud rate and other parameters chosen via the operating system must be the same for the SYNC/570 or SYNC/570i and the peripherals connected to it.

No Handshaking Signals

Some peripheral devices may need some or all of the handshaking signals that SYNC/570 or SYNC/570i supports.

Incomplete or Incorrect Installation

Some operating systems require that an installation procedure be run before SYNC/570 or SYNC/570i is recognized Refer to your operating system user's manual. Verify correct SYNC/570 or SYNC/570i hardware installation.

Improper Grounding

Make sure that every component in your system is properly grounded. Differences in ground potential between your computer and terminals can damage equipment.

If your board fails the diagnostics or you are unable to isolate the problem, call Digi Technical Support (800-344-4273) anytime between 8 a.m. and 6 p.m. Central Time (Monday through Friday). We can give you suggestions for things to try. Please have the following information ready when you call:

Fill in information here

- Computer make _____
- Computer model number _____
- Operating system _____
- Which Digi board you are using _____
  - Serial number _____
  - Revision number _____
- Type of hard drive in your system _____
- Type of video card in your system _____
- Type of tape backup in your system _____
- Failure symptoms
- Results of diagnostics
- Whether the board has worked before (was it installed successfully?) _____
- Dealer/store where you purchased your Digi board _____

If You Have to Return a Board

Sometimes our boards do have problems and have to be returned for service. In this case, you'll need to call us for an RMA number. You must have an RMA number to return a board to Digi. The RMA number must appear on the outside of the package. Before calling for the number, make sure you can answer the following questions:

1. Where did you buy your board? If you bought from a dealer, you should go through the dealer to return the board. If you bought it from Digi, you can deal directly with us for repair.

2. What is your boards serial number, revision level number, and date of purchase?

3. Have you followed the checklist at the beginning of this section and tried all of the steps? We've found that these procedures eliminate most problems encountered during installation.

4. Have you contacted the dealer from whom you originally purchased the board for his advice and assistance?

Your Digi board is one of the most reliable parts of your multiuser system. As a matter of fact, if you purchase a board from us and it doesn't work in your application, or if you decide not to keep it for any reason during the first 30 days, we will refund your money. But remember, we're here to help in any case—because our ultimate goal is to keep your system up and running, and to keep you a satisfied customer.

APPENDIX A

SYNC/570 Host Adapter EIA 232D Interface

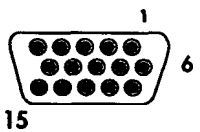
The SYNC/570 has two high density 15-pin D-subminiature female port connectors. The connectors provide an EIA 232D interface and serial data transmission and reception.

Your application may specify the cable configuration required for connecting modems to a computer. If so, you should follow their recommendations. If cable configuration is not specified, you can use the cable types discussed below. Cables for use with synchronous modems need a minimum of eleven wires plus a shield.

DB-15 Connectors and Cabling

The DB-15 connectors are compatible with HA-232-D devices. Figure 1 shows the pinout and pin assignments for the DB-15 connectors on the SYNC/570.

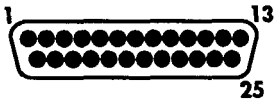
Figure 1, SYNC/570 DB-15 female connector and connector pin assignments



1	Not connected	
2	Transmitted Data (TXD)	Output
3	Received Data (RXD)	Input
4	Request to Send (RTS)	Output
5	Clear to Send (CTS)	Input
6	Data Set Ready (DSR)	Input
7	Signal Ground	
8	Data Carrier Detect (DCD)	Input
12	Receive Clock (RXC)	Input
13	Transmit Clock (TXC)	Output Input
15	Data Terminal Ready (DTR)	Output
shell	CGND	

The cables included in the SYNC/570 package have a DB-15 male connector on the board end, and a DE25 male connector on the peripheral end. The pinout and pin assignments for the DB-25 connector are shown in Figure 2.

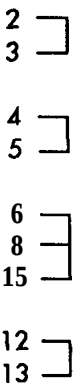
Figure 2, Cab& DB-25 male connector and connector pin assignments



1	Not connected	
2	Transmitted Data (TXD)	Output
3	Received Data (RXD)	Input
4	Request to Send (RTS)	Output
5	Clear to Send (CTS)	Input
6	Data Set Ready (DSR)	Input
7	Signal Ground	
8	Data Carrier Detect (DCD)	Input
17	Receive Clock (RXC)	Input
24	Transmit Clock (TXC)	Output
15	Transmit Clock (TXC)	Input
20	Data Terminal Ready (DTR)	Output
shell	CGND	

When prompted by the diagnostics, insert the male loopback connector into the female DB-15 connector on the SYNC/570.

Figure 3, SYNC/570 DB-15 male bopbak connector wiring diimm



V.35/EIA-232-D Daughterboard (SYNC/570i)

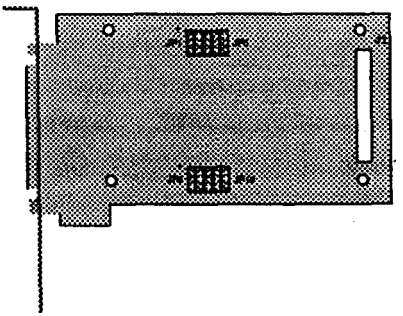
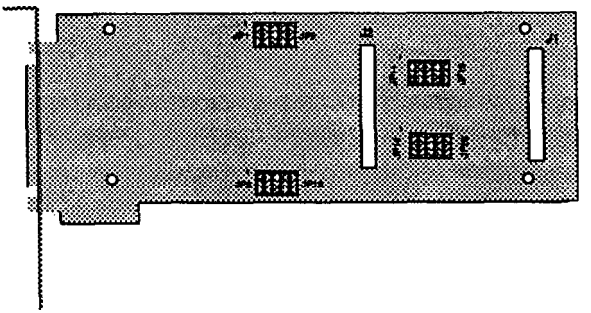


Figure 4, SYNC/570i 2-Port, V.35 daughterboard



Fiium 5, SYNC/570i 4-Port, v.35 daughterboard

Jumper Setting for Interface Selection

Before installing the SYNC/570i in your system, make sure the jumper block on the board is set for the correct interface – EIA-232-D or V.35.

WARNING

When *disconnecting the daughterboard in order to set the jumper, use adequate precautions (such as a grounding wrist strap that is connected to earth ground) to prevent electrostatic damage.*

Set the jumpers for the correct interface as described below.

1. Remove the screws securing the daughterboard to the SYNC/570i.

2. Pull the daughterboard from the SYNC/570i. (There are two connectors holding the daughterboard. Do not use a twisting motion.)

3. Install the jumper for the correct interface for each port. The positions of the jumpers are shown in Figures 4 and 5. The jumpers control the lines as follows:

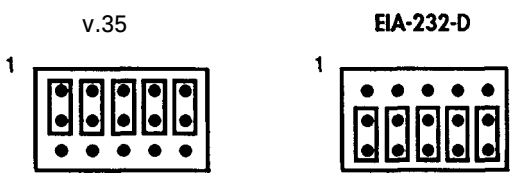
JP1-JP5	line 1
JP6-JP 10	line 2
JP11-JP15	line 3 (4 port board only)
JP16-JP20	line 4 (4 port board only)

The jumper block on the daughterboard has 3 rows of 5 pins.

v.35	When the jumpers are on the top 2 rows of pins, the connectors interface with V.35 devices.
EIA-232-D	When the jumpers are on the bottom 2 rows of pins, the connectors interface with EIA-232-D devices.

The position of the jumper block shown in Figure 6 is upright with the small 1 at the upper left comer.

Figure 6, lumper positions for V.35 and EIA-232-D



4. Reconnect the daughterboard to the SYNC/570i by matching the connectors and screw wells. Push the daughterboard onto the SYNC/570i and replace the screws. Continue with board installation as described in Section 4.

Connectors and Cabling

The cable included in the SYNC/570i V.35 package has a DB-37 (two port cable) or a DB-62 (four port cable) male connector on the board end, and DE25 male connectors on the peripheral end. The connectors provide a V.35 or an EIA-232-D interface and serial data transmission and reception. The pinout is shown in Figure 7 and the pin assignments for the DB-25 connector are shown in Figure 8.

Figure 7, Cable DB-25 male connector pinout

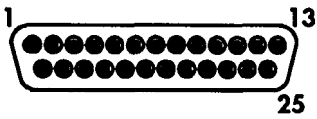


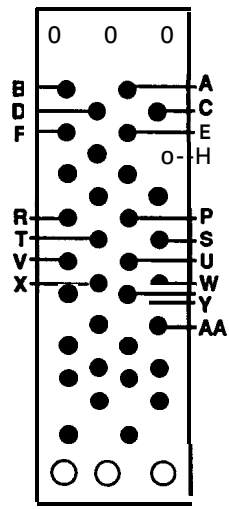
Figure 8, V.35 and EIA-232-D DE25 male connector pin assignments

Pin Number	V.35 Signals	EIA-232-D Signals
2	TXD(A)	TXD
14	TXD(B)	reserved *
3	RXD(A)	RXD
16	RXD(B)	reserved *
15	TXCLKIN(A)	TXCIN
12	TXCLKIN(B)	reserved *
17	RXCLK(A)	RXC
9	RXCLK(B)	reserved *
4	RTS	RTS
5	CTS	CTS
20	DTR	DTR
6	DSR	DSR
8	DCD	DCD
24	TXCLKOUT(A)	TXCOUT
11	TXCLKOUT(B)	reserved *
7	GND	GND
1 and shell	CGND	CGND

* These pins must be 'no connect' in EIA-232-D mode.

An optional DB-25 to V.35 converter cable is available. The cable has a female DB-25 connector to connect to the cable described above and a male V.35 connector on the peripheral end. The pinout and the pin assignments for the male V.35 connector are shown in Figure 9.

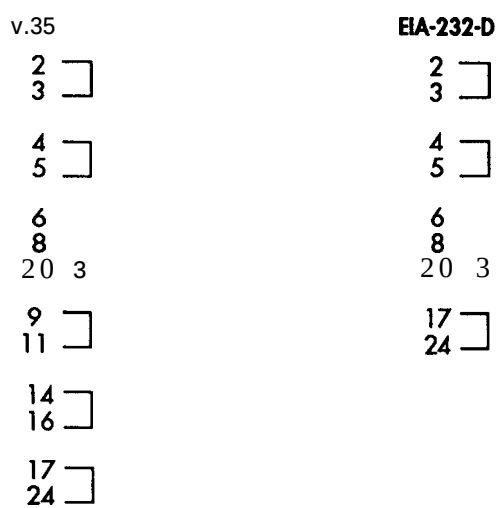
Figure 9, **C nverter cable** V.35 male **connector pinout** and pin **assignments**



A	CGND
B	**GND**
C	**RTS**
D	CTS
E	DSR
F	DCD
H	**DTR**
P	**TXD(A)**
R	**RXD(A)**
S	**TXD(B)**
T	**RXD(B)**
U	**TXCLKOUT(A)**
V	**RXCLK(A)**
W	**TXCLKOUT(B)**
X	**RXCLK(B)**
Y	**TXCLKIN(A)**
AA	**TXCLKIN(B)**

When prompted by the diagnosics, insert the female loopback connector into the male DB-25 connector on the SYNC/570i cable.

Figure 10, V.35 and **EIA-232-D** DE25 **female loopback** connector **wiringdiagrams**



X.2 1 /EIA-530 (EIA-422) Daughterboard (SYNC/570i)

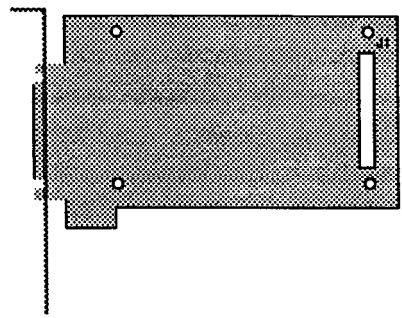
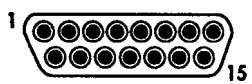


Figure 11, SYNC/570i X.21 daughterboard

x.21 Connectors and Cabling

The cable included in the SYNC/570i X.21 package has a DB-44 male connector on the board end, and two DB-15 male connectors on the peripheral end. The connectors provide a X21 interface and serial data transmission and reception. The pinout is shown in Figure 12 and the pin assignments for the DB-15 connector are shown in Figure 13.

Figure 12, Cable DB-15 male connector pinout

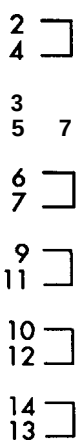


Fiiun 13, X.21 DB-15 male connector pin assignments

Pin Number	X21 Signals
2	TXD(A)
9	TXD(B)
3	Control(A)
10	Control(B)
4	RXD(A)
11	RXD(B)
5	Indicator(A)
12	Indicator(B)
6	Signal Element Timing In (A)
7	Signal Element Timing Gut (A)
13	Signal Element Timing In (B)
1 4	Signal Element Timing Gut(B)
8	Signal Ground
1 and shell	CGND

When prompted by the diagnosics, insert the female loopback connector into the male DB-15 connector on the SYNC/570i cable.

Figure 14, X.21 DB-15 female bopback connector wiring diimm



EIA-530 (EIA-422) Connectors and Cabling

The cable included in the SYNC/570i EIA-530 package has a DB-44 male connector on the board end, and two DB-25 male connectors on the peripheral end. The connectors provide a EIA-530/422 interface and serial data transmission and reception. The pinout is shown in Figure 15, and the pin assignments for the DB-25 connector are shown in Figure 16.

Figure 15, Cable DB-25 male connector pinout

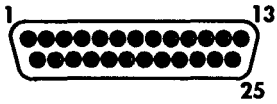
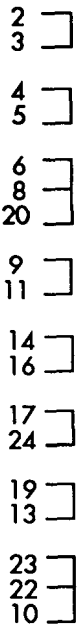


Figure 16, EIA-530/EIA-422 DE-25 male connector pin assignments

Pin Number	EIA-530/422 Signals	Pin Number	EIA-530/422 Signals
2	TXD(A)	13	CTS(B)
14	TXD(B)	20	DTE Ready (A)
3	RXD(A)	23	DTE Ready (B)
16	RXD(B)	6	DCE Ready (A)
15	TXCLKIN(A)	22	DCE Ready (B)
12	TXCLKIN(B)	B	Received Line Signal Detector (A)
17	RXCLK(A)	10	Received Line Signal Detector (B)
9	RXCLK(B)	24	TXCLKOUT(A)
19	RTS(B)	11	TXCLKOUT(B)
4	RTS(A)	7	Signal Ground
5	CTS(A)	1 and shell	CGND

When prompted by the diagnosics, insert the female loopback connector into the male DB-25 connector on the SYNC/570i cable.

Figure 17, EIA-530/422 DB-25 female loopback connector wiring diimm



APPENDIX D

SYNC/570 Features and Specifications

Features:

- Hitachi HD64570 Serial Communications Adapter (SCA)
- Two EIA-232-DC serial ports
- Line speeds to 150Kb/second
- Full modem control
- Four DMA channels for full duplex operation
- 128KB onboard shared memory (tri-stated)
- 16KB shared memory window
- Software configurable
- Tri-state IRQ logic for Micro Channel
- 16-bit ISA and Micro Channel @S/2 and RS/6000)
- OEM software lock
- Optional SurgeBlock surge protection

Specifications:

USART:	Hitachi I-ID64570 Serial Communications Adapter 10Mhz
Memory:	128KB Dual-Ported (tri-stated)
Shared Memory Window:	16KB (assignable within first 16MB of system memory)
Serial Ports:	Two EIA-232-D
Cabling:	Two DB-15 (male) to DB25 (male) 8 ft. cables
EIA-232-D Modem Signals:	TXD, RXD, CTS, RTS, DSR, DTR, TXC, RXC, DCD
Connectors:	Two DB-15 Female (High Density)
USART:	Hitachi HD64570 Serial Communications Adapter (SCA)
Baud Rate:	Up to 5 Mb/second each line
DMA:	Four channels (Hitachi HD64570)
Programmable Timers:	Hitachi HD64570
VO Address:	ISA - hardware switch configurable Micro Channel - software configurable
PC Interrupts:	3, 5, 7, 10, 12, 15 (software configurable>
Diagnostics:	DOS-based
Power Requirements:	750mA @ +5 VDC 40mA @ +/- 12 VDC
Operating Temperature:	10-55° c
Relative Humidity:	5-90%, noncondensing
Certifications:	FCC Class A
SurgeBlock:	Optional

APPENDIX E

SYNC/570i Features and Specifications

Features:

- Hitachi HD64570 Serial Communications Adapter (SCA)
- Four interface options (all with two or four ports):
  V.35/EIA-232-D
  x.21
  EIA-530/422
- Line speeds to 5Mb/second
- Full modem control
- Four (2 port) or eight (4 port) DMA channels for full duplex operation
- 128KB or 256KB onboard shared memory (u-i-stated)
- 16KB shared memory window (assignable within first 16MB of system memory
- Software configurable
- Tri-state IRQ logic for Micro Channel
- 16-bit ISA and Micro Channel (PS/2 and RS/6000)
- OEM software lock
- SurgeBlock surge protection

Specifications:

USART:	Hitachi I-ID64570 Serial Communications Adapter 10Mhz
Memory:	128KB or 256KB Dual-Ported (tri-stated)
Shared Memory Window:	16KB (assignable within first 16MB of system memory)
V.35 Interface:	Two or four ports (DB-25 male connectors)
V.35 Cabling:	DE37 (male) to two DB-25 (male) duo-cable, or DB-62 (male) to four DE25 (male) quad-cable
V.35 Modem Signals:	TXD±, RXD±, CTS, RTS, DSR, DTR, TXC±, RXC±, DCD
EIA-232-D Interface:	Two or four ports (DE25 male connectors)
EIA-232-D Cabling:	DE37 (male) to two DE25 (male) duo-cable, or DB-62 (male) to four DE25 (male) quad-cable
X.21 Interface:	Two ports (DB-15 male connectors)
X.21 Cabling:	DB-44 (male) to two DB-15 (male) duo-cable
EIA-530/422 Interface:	Two ports (DE25 male connectors)
EIA-530/422 Cabling:	DB-44 (male) to two DB-25 (male) duo-cable
Baud Rate:	Up to 5 Mb/second each line
DMA:	Four (2 port) or eight (4 port) channels (Hitachi HD64570)
Programmable Timers:	Hitachi HD64570
I/O Address:	ISA - hardware switch configurable Micro Channel - software configurable
PC Interrupts:	3, 5, 7, **10, 11, 12, 15** (software configurable)
Diagnostics:	DOS-based
Power Requirements:	1.5A @ +5 VDC, 125mA @ -5VDC 40mA @ +/- 12VDC
Operating Temperature:	10-55° c
Relative Humidity:	5-90%, noncondensing
Certifications:	ISA SYNC/570i – FCC Class B MicroChannel SYNC/570i – FCC Class A
SurgeBlock:	Optional