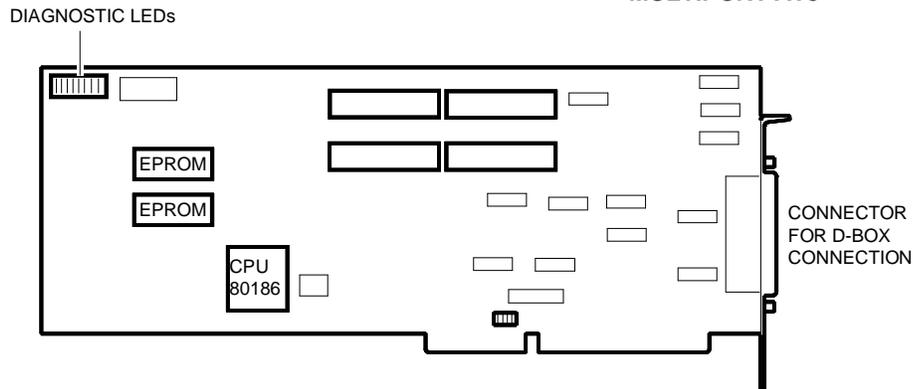# MULTIPORT CONTROLLERS

AT8, AT16 MULTIPORT BOARDS (8/16 RS232 PORTS)

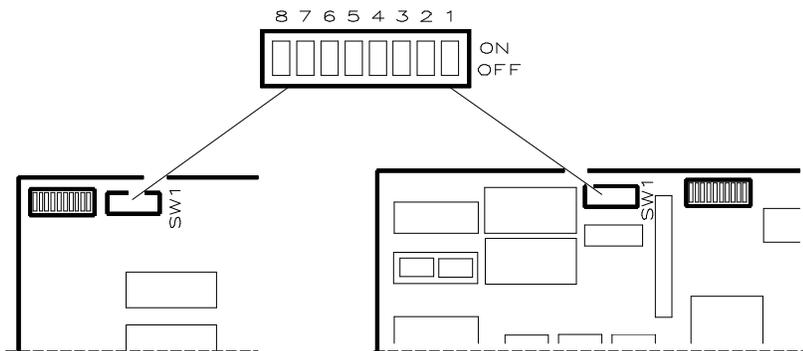**MULTIPORT AT8**

DIAGNOSTIC LEDs

EPROM

EPROM

CPU
80186

CONNECTOR
FOR D-BOX
CONNECTION

D

MULTIPORT AT16

DIAGNOSTIC LEDs

EPROM

EPROM

80186
CPU

CONNECTOR
FOR D-BOX
CONNECTION

BOARD ADDRESS DIP-SWITCHES

8 7 6 5 4 3 2 1

ON
OFF

SW1

SW1
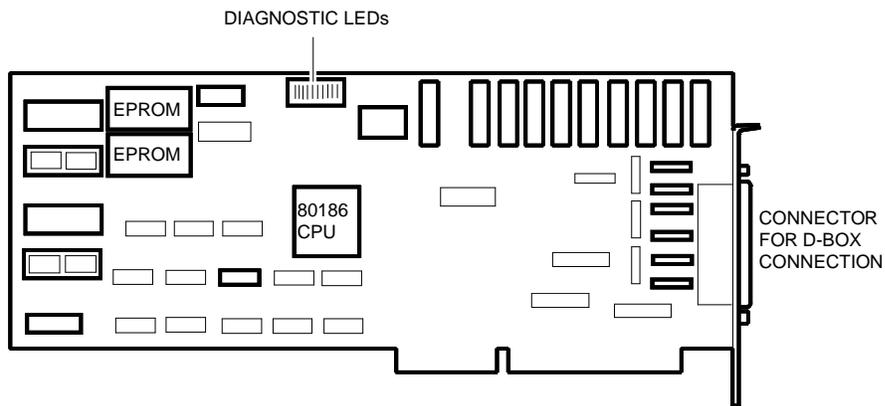
| DIP-SWITCH BLOCK SW1 | | | | | | | | ADDRESS | |
1	2	3	4	5	6	7	8	Megabyte	Segment
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0	8000:0
ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	0	8400:0
OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	0	8800:0
ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	0	8C00:0
ON	OFF	OFF	ON	ON	ON	OFF	OFF	F	0800:0
OFF	ON	OFF	ON	ON	ON	OFF	OFF	F	2400:0
ON	ON	OFF	ON	ON	ON	OFF	OFF	F	5000:0
OFF	OFF	ON	ON	ON	ON	OFF	OFF	F	8C00:0
ON	OFF	ON	ON	ON	ON	OFF	OFF	F	A800:0
OFF	ON	ON	ON	ON	ON	OFF	OFF	F	6400:0
ON	ON	ON	ON	ON	ON	OFF	OFF	F	CC00:0

Notes:

- *All other combinations are not used.*

- *The following restrictions are encountered on SNX 1xx /R/E/RS systems with AT8/16 boards:*
  - The system crashes during the POD following a hardware reset if the AT8/16 board is mapped
    at address FCC00:0 (error 07: BIOS E000/F000 shadow checksum error).
  - The MUX _DIA diagnostic does not recognize the board mapped at F6400:0.
  - With two Dagger boards and a 64 MB RAM, the AT8/16 boards cannot be configured in Mega F.
    This restriction will be cleared from Configurator releases later than 1.12.

- *Each board installed in the system must have a different and contiguous address, and in particular*
  the following addresses are to be assigned to the board in case the memory is mapped within the
  first megabyte:
  8000:0 1st board
  8400:0 2nd board
  8800:0 3rd board
  8C00:0 4th board

CHANNEL INTERRUPT SELECTION JUMPERS
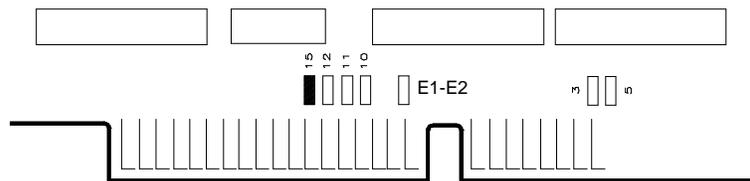
JUMPERS	INTERRUPT CHANNEL
3	IRQ3
5	IRQ5
10	IRQ10 (default)
11	IRQ11
12	IRQ12
15	IRQ15

Notes:

- *If one or more AT8 or AT16 boards are installed in the system, they all must share the same interrupt level.*

- *When installing more than one Multiport AT8/AT16 board within megabyte 0, the first board installed must always have its jumper E1-E2 inserted (ON) while this jumper must be removed from all the others. With this configuration all the multiport boards installed can perform 16-bit data transfers. When more than one board is installed within megabyte F, jumper E1-E2 must be inserted on all other boards.*
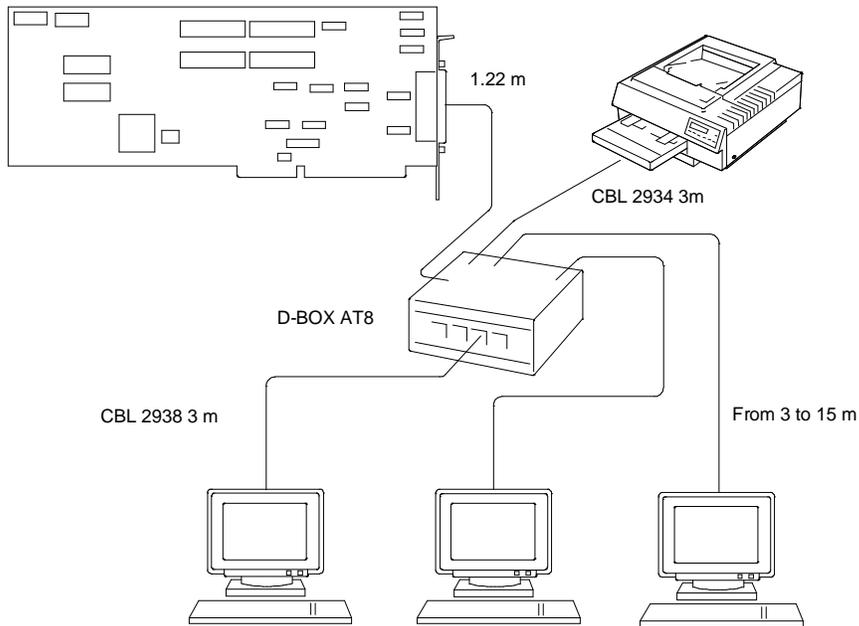
MULTIPORT CONTROLLERS

DIAGNOSTICS

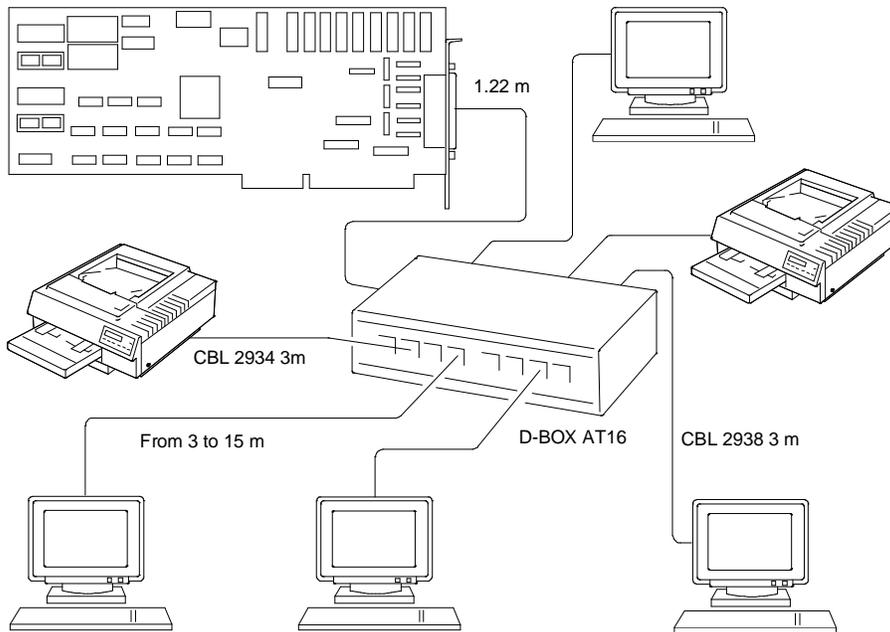| DIP-SWITCH BLOCK SW1								AT8 BOARD TEST
1	2	3	4	5	6	7	8	
OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	**Test on bits**: The LEDs light up in binary sequence. If there is an error, LED2 blinks.
ON	OFF	OFF	OFF	OFF	OFF	ON	ON	**Memory random test:** The LEDs light up in binary sequence. If there is an error, LEDs 7 and 8 blink.
OFF	OFF	ON	OFF	OFF	OFF	ON	ON	**View number of UART found test:** The LEDs light up in sequence. If a LED does not light up, this indicates the UART is not working.
ON	OFF	ON	OFF	OFF	OFF	ON	ON	**View board memory capacity test**: LED 5 blinking = 16 KB LED 7 blinking = 64 KB LED 8 blinking = 128 KB LEDs off = 256 KB Any differents result indicates an error
ON	ON	ON	ON	OFF	OFF	ON	ON	**Send data to all 9600 baud channels test:** To run this test the WS connected to AT8 must be set as follows: 9600 baud, 7 bit, even parity, 2 bit stop. The LEDs light up in quick succession while a series of alphanumeric characters are displayed on terminal. If the output on the terminals does not take place there is an error.
OFF	OFF	OFF	OFF	ON	OFF	ON	ON	**Remove keyboard echo on terminal test:** Setup the terminals as described for the previous test. Typing a character from the keyboard should give the echo on the video. If this does not happen there is an error.
OFF	ON	OFF	ON	ON	OFF	ON	ON	**UART signals closing test:** Setup the terminals as described in the previous test. The LEDs light up in sequence if everything is correct. If there is an error LED 3 blinks and indicates the timeout of a character sent but not received.
ON	OFF	ON	ON	ON	OFF	ON	ON	**Send data to all 2400 baud channels test:** To run this test the WS connected to AT8 must be set as follows: 2400 baud, 7 bit, even parity, 2 bit stop. The LEDs light up in quick succession while a series of alphanumeric characters are displayed on terminal. If the output on the terminals does not take place there is an error.

Note: *During the loopback test on the UART signals, certain signals must be looped back on each channel. The loopback plu is a male RJ45 connector which loops back the following signals:*
PIN 6 (TX) with PIN 3 (RX)
PIN 2 (RTS) with PIN 8 (CTS) and PIN 4 (CD).

AT8 BOARD CONNECTIONS

1.22 m

CBL 2934 3m

D-BOX AT8

CBL 2938 3 m

From 3 to 15 m

AT16 BOARD CONNECTIONS

1.22 m

CBL 2934 3m

From 3 to 15 m

D-BOX AT16

CBL 2938 3 m

AT8/16 BOARDS CONFIGURATION

Note: *- For information on the configuration on the different systems, turn to the section "Notes on the Configuration of AT Line Boards".*
- The following software configuration procedure must be carried out before physically installing the board in the system.

1   Insert the SYSTEM CONFIGURATION User Disk in the system drive A and bootstrap.

2   From the main menu select CONFIGURE COMPUTER, then STEP 2: ADD OR REMOVE BOARDS, the page is displayed showing the boards installed in the system.

3   Press INS followed by ENTER, the list of the CFG files contained in the SYSTEM CONFIGURATION diskette is shown. To copy the option file !OLIF211.CFG, contained in diskette Ver. 2.00 MUX 1708/1716 supplied with the board, onto the SYSTEM CONFIGURATION disk. Press F7 to change directory, F5 to select Change Diskette, then insert the diskette containing file !OLIF211.CFG into the drive and press ENTER. The file will be copied into the system memory.

4   Insert the SYSTEM CONFIGURATION disk again and type ENTER, the option file will be copied onto the disk.

5   Select the OLIF211.CFG file that has just been copied from the CFG list and press ENTER. The manufacturer's remarks will be displayed, press ENTER.

6   Select the slot to install the board and press ENTER, then F10 to return to the SYSTEM CONFIGURATION menu.

7   Select STEP 3: VIEW OR EDIT DETAILS, with the cursor keys, point on the MUX 1708/1716 Multiport serial card, the default MEMORY ADDRESS RANGE and INTER-RUPT will be shown.

8   To change the interrupt default value (IRQ15) point on INTERRUPT and press ENTER, select the desired value from the list then press F10 to confirm the choice.

Note: *If one or more AT8/16 Multiport boards have already been installed, set the same IRQ value.*

9   To change the default value (MULTIPLE BOARDS IN MEGA 0) of MEMORY ADDRESS RANGE, point on MEMORY ADDRESS RANGE and press ENTER, the following selections will be displayed:

–   FIRST OR SINGLE BOARD IN MEGA 0 (for 1° or only board installed in MB 0). Possible address: 8000:0.

–   MULTIPLE BOARDS IN MEGA 0 (for subsequent boards installed in MB 0). Possible addresses: 8400:0 for the second board, 8800:0 for the third and 8C00:0 for the fourth.

–   15th MEGABYTE (WITH IN F00000-FFFFFF) (for boards installed in MB F). Possible addresses: F0800:0, F2400:0, F5000:0, F8C00:0, FA800:0, F6400:0, FCC00:0.

Note: *Following limitations are present on these systems with the AT8/16 board:*
- If the board is mapped to the memory address range FCC00:0, the system will encounter a fatal error during execution of the Power-On Diagnostic.
- If the board is mapped to the memory address range F6400:0, the diagnostic test program MUX_DIA, will not be able to recognise the presence of the board.

Note: *If FIRST OR SINGLE BOARD IN MEGA 0 is selected, the system base memory will automatically pass from 640 KB to 512 KB.*

10   Use the cursor keys to make the selection, then press F6 to establish the board addresses. The configuration file only allows the selection of addresses included in megabyte F and the first four addresses between 512 KB and 640 KB in the first megabyte. If the board to be installed is the first or only one in mega 0, the assigned address is 8000:0 and cannot be modified, in the other cases the address can be changed by pressing the +/- keys. Press F10 to confirm.

Note: *In UNIX environment, with AT8 and AT16 boards, the AT16 must be mapped to higher addresses than the AT8 board.*

11   If the board to be installed is the first or the only one, the configuration values must be locked so that they are not changed by the addition of other boards to the system. Press F7 to access the advanced menu, select LOCK/UNLOCK BOARDS, select the board to be locked and press ENTER.

12   To see the correct board jumpering on the screen, return to the SYSTEM CONFIGU-RATION menu, select STEP 4: EXAMINE REQUIRED SWITCHES, select the board and press ENTER.

13   Press F10 twice then select STEP 5: SAVE AND EXIT to save the system configuration.

Note: *It must be remembered that the terminals connected to the AT8/16 Multiport controller must be configured as MODEM DEVICE with the line parameter -CLOCAL.*

INTELLIPORT AT8 (GO576) EVOLUTION

DATE	LEV.	REV.	FW	VIMO CODE	REASON FOR CHANGE	APPLIC.
03/91	Nasc	D	3.17	932679 G	First series FW. This board level (Nasc) was never manufactured.	-
05/92	01	D	3.19		Solves the incorrect display of the message "Unexpected irq: -- board=(xxxx), type=(yyyy)" under SCO UNIX: firmware replaced (on the two IC4 and IC5 EPROMs). This message may be generated by justified purposes such as HW failures, etc.	Factory

INTELLIPORT AT16 (GO577) EVOLUTION

| DATE	LEV.	REV.	FW	VIMO CODE	REASON FOR CHANGE	APPLIC.
03/91	Nasc	C	3.17	932682 L	First series FW. This board level (Nasc) was never manufactured.	-
05/92	01	C	3.19		Solves the incorrect display of the message "Unexpected irq: -- board=(xxxx), type=(yyyy)" under SCO UNIX: firmware replaced (on the two IC4 and IC5 EPROMs). This message may be generated by justified purposes such as HW failures, etc.	Factory

SOFTWARE DRIVER EVOLUTION

| DATE	USER DISK	SCO DRIVER	UNIX 4.0 DRIVER	REASON FOR CHANGE	APPLIC.
7/92	2.00	4.62	1.03	New software release.	Factory
11/94	3.00	4.62	1.04	New UNIX 4.0 driver software release to solve possible system panic conditions.	Factory

D

ALC MULTIPORT BOARD GO584 (48 RS232 PORTS)
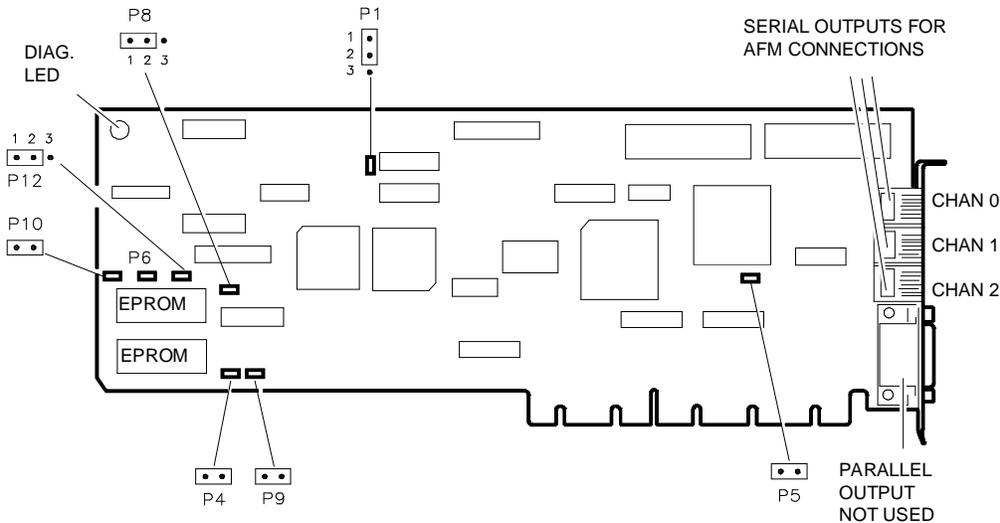
The only setting to be made on this board is the interrupt channel selection. This is made via software with a diskette provided in the Starter Kit, so there are no jumper settings to be made. The other jumper blocks on the boards must not be modified and are set as follows:

JUMPER	SETTING
P1	Jumper pin 1 with pin 2
P4	OFF
P5	OFF
P6	ON
P8	Jumper pin 1 with pin 2
P9	OFF
P10	ON
P12	Jumper pin 1 with pin 2

DIAGNOSTICS

There is a diagnostic LED that blinks regularly when the system is working, indicating that the board is functioning correctly. A red LED, with the same function, is situated on the external AFM box. Whenever the AFM is connected to the power supply the LED blinks quickly for a few seconds indicating the positive result of the internal diagnostics. After the AFM has been connected to the ALC, the same LED should blink continuously at a regular frequency. If this does not happen, there are problems with the board, the AFM or with the wiring.

ALC BOARD CONNECTIONS
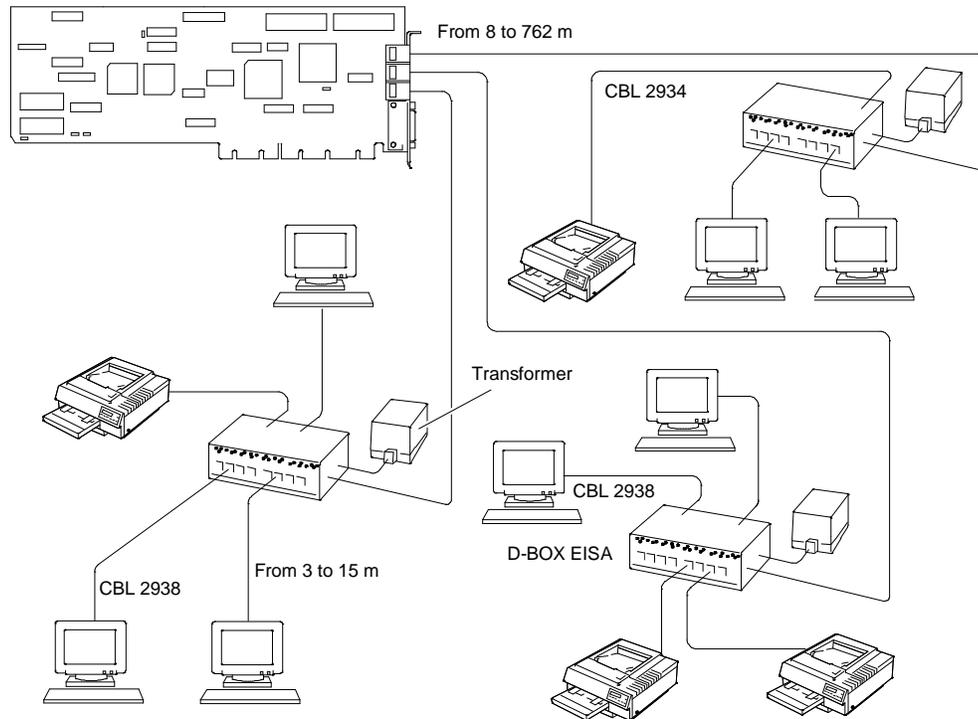
ALC BOARD CONFIGURATION

1   Insert the User Disk SYSTEM CONFIGURATION diskette in the system drive A and bootstrap.

2   From the main menu select CONFIGURE COMPUTER, then STEP 2: ADD OR REMOVE BOARDS, the page will be displayed with the boards installed in the system.

3   Press INS then ENTER, the list of the CFG files contained in the SYSTEM CONFIGU-RATION diskette will be shown. To copy the option file !CTN0110.CFG, contained in the User diskette Ver. 3.00 MUX 1717 supplied with the board, onto the SYSTEM CONFIGURATION diskette, press F7 to change directory, F5 to select Change Diskette, then insert the diskette containing the !CTN0110.CFG file into the drive and type ENTER. The file will be copied into the system memory.

4   Insert the SYSTEM CONFIGURATION diskette again and type ENTER, the option will be copied onto the diskette.

5   Select the newly copied file CTN0110.CFG from the CFG file list and press ENTER. The manufacturer's remarks will be displayed, press ENTER.

6   Select the bus master slot to install the board and press ENTER, then F10 to return to the SYSTEM CONFIGURATION menu.

7   Select STEP 3: VIEW OR EDIT DETAILS, use the cursor keys to point the MUX 1717 board, the default INTERRUPT IRQ10 will be shown.

8   To change the default value, should IRQ10 already be occupied, point on INTERRUPT and press ENTER, select the desired value from the list then press F10 to confirm the choice.

9   Select STEP 5: SAVE AND EXIT to save the system configuration.

MULTIPORT ALC (GO584) EVOLUTION

| DATE	LEV.	FW	VIMO CODE	REASON FOR CHANGE	APPLIC.
03/92	Nasc	2.0	932939 M	GO584 board in compliance with VDE norms. Possibility of handling interrupt levels via SW and no longer via jumpers, by using the Configuration Diskette provided in the Starter Kit. This board level (Nasc) was never manufactured.	-
06/92	01	2.0		IRQ5 signal incorrectly driven on the EISA bus due to the incorrect equation on the GAL 16V8. When one or more boards are installed in the system, a conflict on the EISA bus prevents the interrupt channel from being shared. The GAL ALC11A0 component is replaced by the ALC11B0 component.	Factory
04/93	02	2.1		Preventive measure to clear potential BMIC failures: FW replaced.	Factory
05/93	03	2.1		The supplier has replaced the IC40 PAL16R8DCN component with the equivalent GAL16V8B-10LP component.	Factory

AFM CONNECTION BOX (DI020) EVOLUTION

DATE	LEV.	FW	VIMO CODE	REASON FOR CHANGE	APPLIC.
03/92	Nasc	1.6	932940 S	DI020 box in compliance with VDE norms.	Factory

SOFTWARE DRIVER EVOLUTION

DATE	USER DISK	SCO DRIVER	UNIX 4.0 DRIVER	REASON FOR CHANGE	APPLIC.
05/92	3.00			New software release for the GO584 board.	Factory
09/93	4.00	1.45	1.04	New User Disk Customer Test program and new software driver release for SCO 3.2.4.	Factory
11/94	5.00	1.45	1.05	New UNIX 4.0 driver software release to solve possible system panic conditions.	Factory

RS232 MULTIPORT BOARD SIC 2832
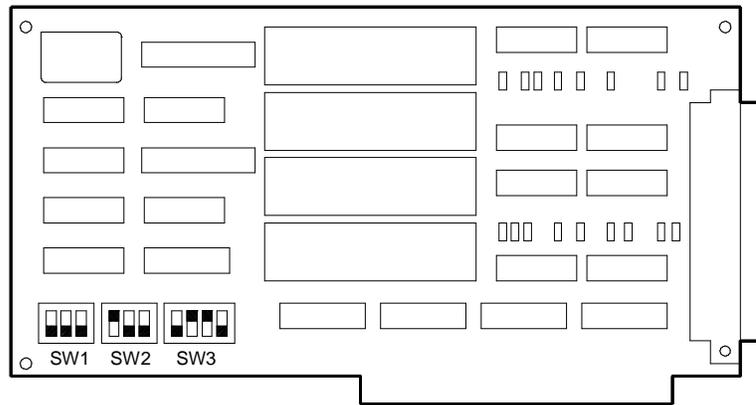
DIP-SWITCH BLOCKS SW1 - SW2
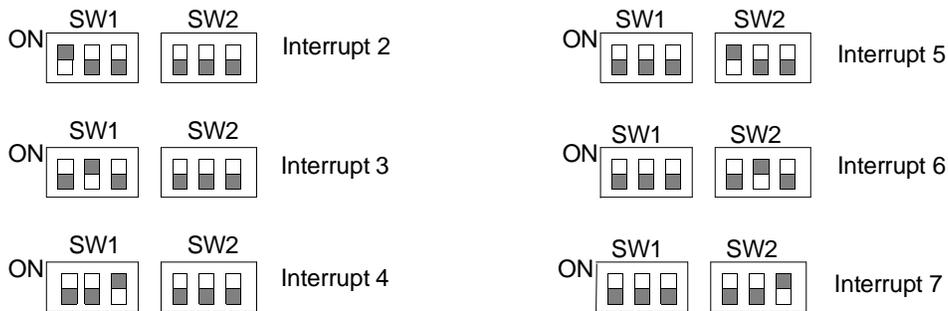
DIP-SWITCH BLOCK SW3

SWITCH	SETTING	DESCRIPTION
1	OFF	Port set to compatible mode. Ports 1 and 2 respond to MS-DOS compatible addresses COM1 and COM2. Ports 3 and 4 respond to the addresses set using switch 2.
	ON	Port set to expanded mode. Ports 1, 2, 3, 4 respond to the addresses set using switch 2.
2	OFF	Port 1 1A0, port 2 1A8, port 3 1B0, port 4 1B8.
	ON	Port 1 2A0, port 2 2A8, port 3 2B0, port 4 2B8.
3	OFF	Two boards are installed in the system, This switch must also be set to OFF on other board.
	ON	One board is installed in the system.
4	OFF	Not used.

PORT ADDRESSES

MODE	PORT	ADDRESS
COMPATIBLE	Port 0 Port 1	3F8 - 3FF 2F8 - 2FF
EXPANDED	Port 2 Port 3 Port 4 Port 5 Port 6 Port 7 Port 8 Port 9	2A0 - 2A7 2A8 - 2AF 2B0 - 2B7 2B8 - 2BF 1A0 - 1A7 1A8 - 1AF 1B0 - 1B7 1B8 - 1BF

INSTALLATION WITH SCO XENIX

COM1: IRQ4 Channels 2 - 5. Channels; tty 1a, tty 1b, tty 1c, tty 1d
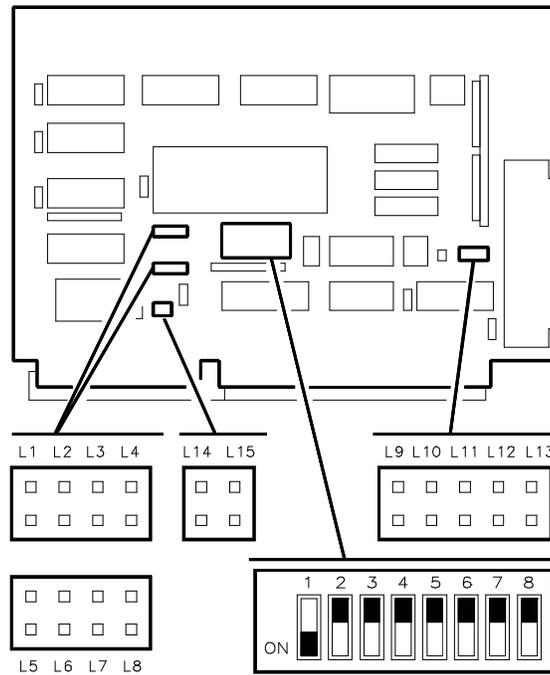**COM 2:** IRQ3 Channels 6 - 9. Channels; tty 2a, tty 2b, tty 2c, tty 2d

The board must be configured as COM2; when set as COM1 it will eliminate the serial port on the motherboard.

EXAMPLE for SCO XENIX
COM1: SW1-3 ON all others OFF; SW2 all OFF; SW3-2 and 3 ON all others OFF
COM2: SW1-2 ON all others OFF; SW2 all OFF; SW3-3 ON all others OFF.

RS232 / C.L. SERIAL BOARD SIC 2635

DIP-SWITCH BLOCK B04BU

This DIP-Switch block allows the I/O address space, reserved for the board, to be mapped. The I/O address is made up of three digits in hexadecimal code. The I/O address field ranges between 000H to 3F8H. DIP-Switches 1 to 7 set the value of the three digits of the address according to the following rules:

- DIP-Switches 7 to 8 set the most significant digit of the board address.
- DIP-Switches 3 to 6 set the intermediate digit of the board address.
- DIP-Switch 2 sets the least significant digit of the board address.
- DIP-Switch 1 is unimportant.

The following table lists all possible DIP-Switch settings with regard to the three address digits.

LEAST SIGNIFICANT DIGIT			INTERMEDIATE DIGIT					MOST SIGNIFICANT DIGIT		
Value	DIP-Switch		Value	DIP-Switch				Value	DIP-Switch	
	1	2		3	4	5	6		7	8
0	-	ON	0	ON	ON	ON	ON	0	ON	ON
8	-	OFF	1	ON	ON	ON	OFF	1	ON	OFF
			2	ON	ON	OFF	ON	2	OFF	ON
			3	ON	ON	OFF	OFF	3	OFF	OFF
			4	ON	OFF	ON	ON			
			5	ON	OFF	ON	OFF			
			6	ON	OFF	OFF	ON			
			7	ON	OFF	OFF	OFF			
			8	OFF	ON	ON	ON			
			9	OFF	ON	ON	OFF			
			A	OFF	ON	OFF	ON			
			B	OFF	ON	OFF	OFF			
			C	OFF	OFF	ON	ON			
			D	OFF	OFF	ON	OFF			
			E	OFF	OFF	OFF	ON			
			F	OFF	OFF	OFF	OFF			

EXAMPLES

3F8 address that corresponds to the I/O primary address for the COM1 serial communication module.

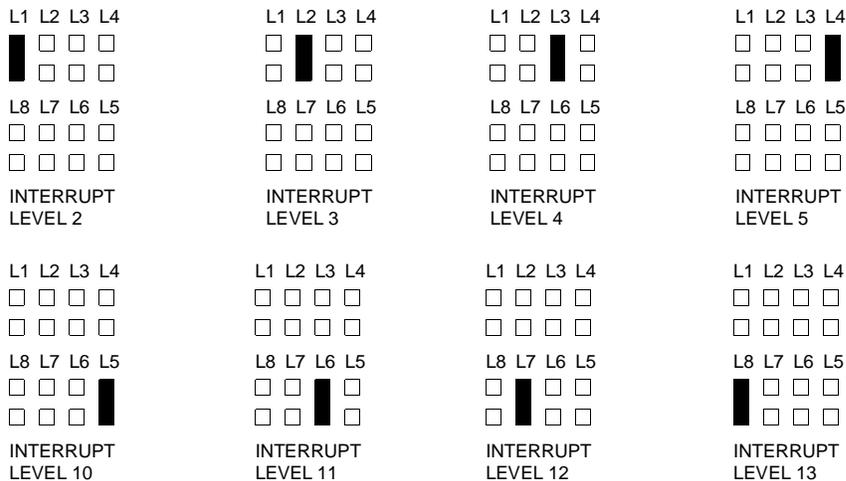| ADDRESS	DIGIT	DIP-SWITCH						
		2	3	4	5	6	7	8
Most significant digit	3	X	X	X	X	X	OFF	OFF
Intermediate digit	F	X	OFF	OFF	OFF	OFF	X	X
Least significant digit	8	OFF	X	X	X	X	X	X
		8	F				3	

2F8 address that corresponds to the I/O primary address for the COM2 serial communication module.

ADDRESS	DIGIT	DIP-SWITCH						
		2	3	4	5	6	7	8
Most significant digit	2	X	X	X	X	X	OFF	ON
Intermediate digit	F	X	OFF	OFF	OFF	OFF	X	X
Least significant digit	8	OFF	X	X	X	X	X	X
		8	F				2	

JUMPERS L1, L2, L3, L4, L5, L6, L7, L8

INTERRUPT LEVEL 2   INTERRUPT LEVEL 3   INTERRUPT LEVEL 4   INTERRUPT LEVEL 5

INTERRUPT LEVEL 10   INTERRUPT LEVEL 11   INTERRUPT LEVEL 12   INTERRUPT LEVEL 13

JUMPERS L14 E L15
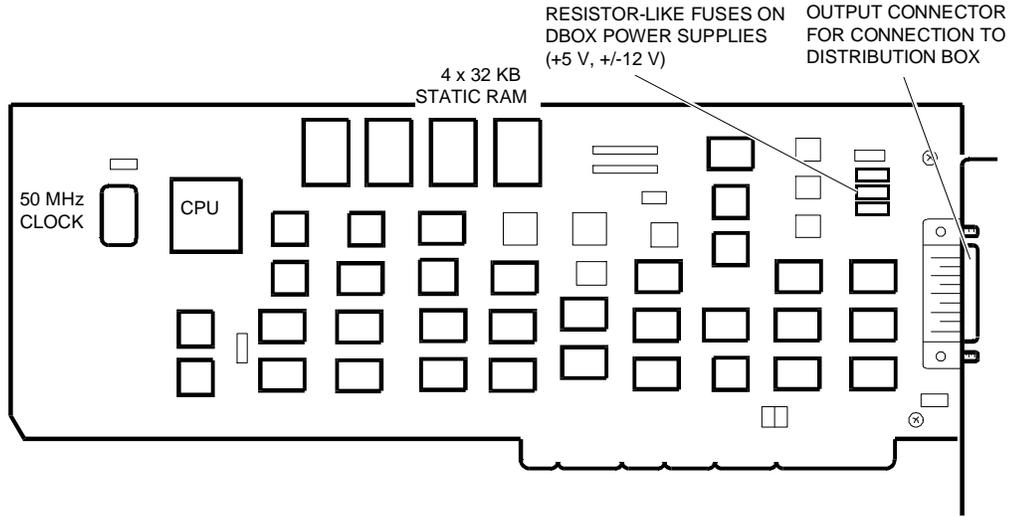
To ensure the correct handling of the interrupt mode (exclusive), these two jumpers **must not be inserted**.

JUMPERS L9, L10, L11, L12, L13

CURRENT LOOP INTERFACE

RS 232 INTERFACE
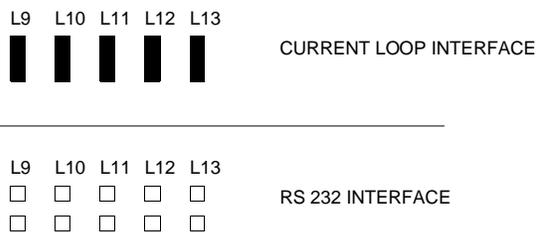
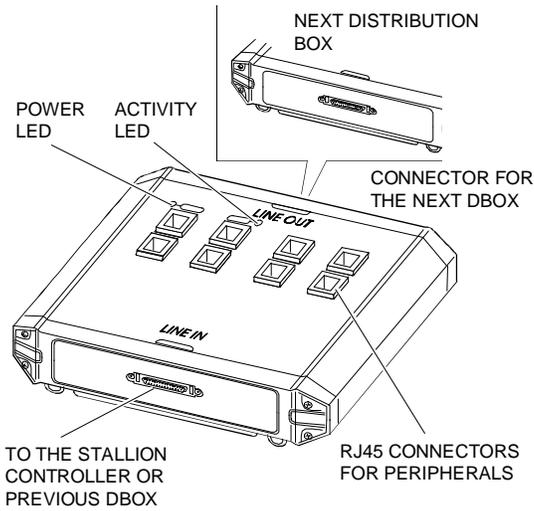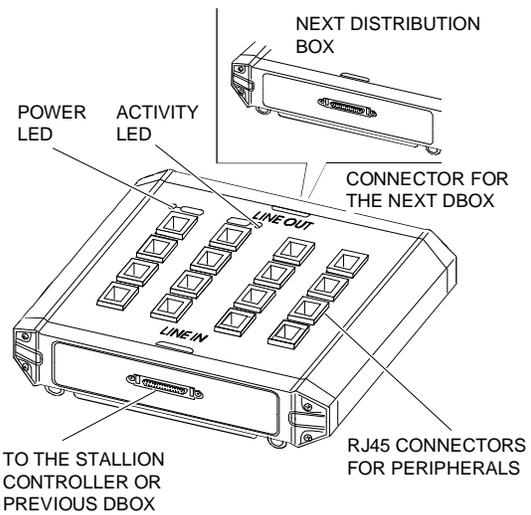# STALLION, GO2057 MULTIPORT BOARD (32 RS232D PORTS)

BOARD GO2057

Note: *This board is configured via software with the diskette provided in the Starter Kit and therefore there are no jumper settings to be made.*

DBOX 800 (8 RS232D PORTS), DBOX 1600 (16 RS232D PORTS)

Notes:

- *Up to 4 DBOXes can be connected to the Stallion controller but the maximum number of ports managed is 32 (four DBOX 800 or two DBOX 1600). Both DBOX 800 and DBOX 1600 cannot be connected to the same board even though within the limits of the number of ports managed. The maximum transfer rate depends on the number of ports used: with 16 ports the maximum rate is 81.2 Kbps, while with 32 ports the maximum rate is 40.6 Kbps.*

- *There are two LEDs on the distribution box: the green Power LED to the left indicates when the board is being powered by the system while the green Activity LED indicates when data are transmitted or received.*

CONNECTIONS
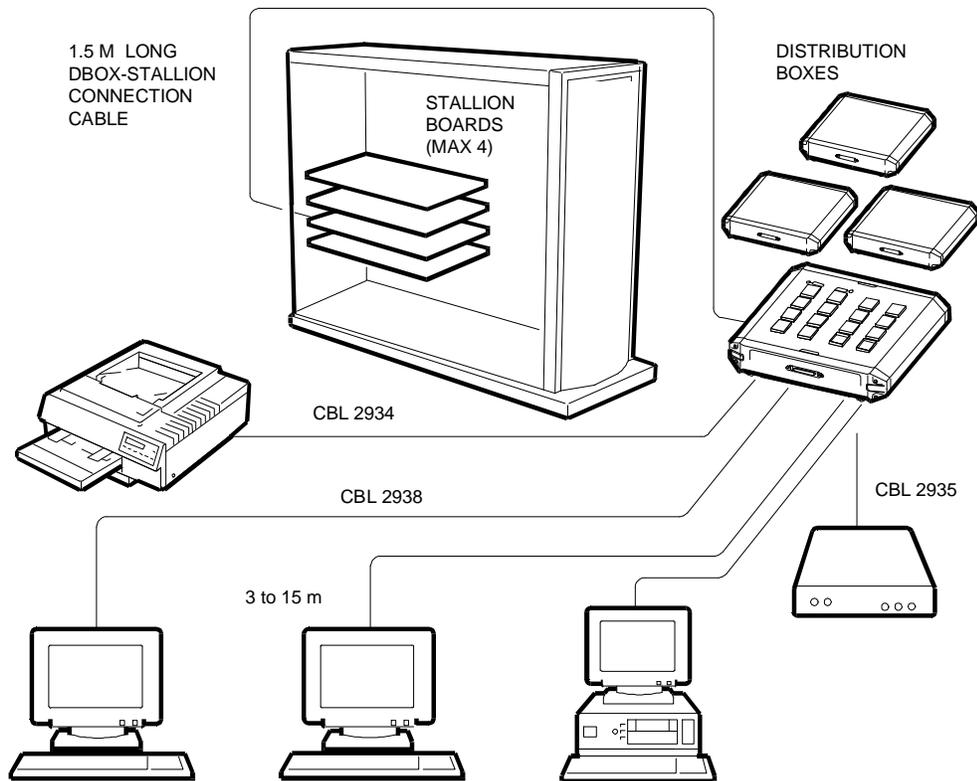
The DBOX-STALLION connection cable is equipped with 50-pin DB-50 miniature connectors, and is supplied with the board. Through this cable the DBOX also receives a low voltage from the board.

The connection between DBOXes is not made using an external cable but by directly attaching the LINE-OUT connector of the existing DBOX with the LINE-IN connector of the DBOX to be installed. The two DBOXes are physically held together by means of a bracket located underneath the boxes.

If the distribution box is connected to a peripheral via the RS-232D interface, the cable used for the connection between the box and peripheral can be up to 30 meters long if using a low capacity cable, or up to 150 meters long if using a very low capacity cable (5 picofarads every 30 centimeters).

Note: *Power off the system before connecting (or disconnecting) the DBOX to/from the board.*

BOARD CONFIGURATION PROCEDURES

Board configuration is divided into two parts:

- A system-level configuration must be carried out first (C-MUX 8-32E board - EISA bus interface) where the resources assigned to the board are specified.

- After the system-level configuration, the drivers can be installed and the I/Os configured (interface towards the different peripherals; printers, terminals, modems).

CONFIGURING THE BOARD AT SYSTEM LEVEL

D

Note: *This procedure must be carried out whenever a board is installed or removed. When installing a board, carry out this procedure before physically installing it in the system.*

- Insert the SYSTEM CONFIGURATION User Disk into drive A and wait for the system bootstap routine to finish.

- Select CONFIGURE COMPUTER from the main menu followed by STEP 2: ADD OR REMOVE BOARDS. A screen page showing the boards installed in the system is displayed.

- Press INS followed by Enter; a list of the .CFG files contained on the SYSTEM CONFIGURATION diskette is displayed. To copy onto the SYSTEM CONFIGURATION diskette the !STL0400.CFG option file stored in the C-MUX 8-32E User Disk supplied with the board, press F7 to change directory and press F5 to select the Change Diskette option. Insert then the diskette containing the !STL0400.CFG file into the drive and press Enter. The file is now copied into system memory.

- Insert the SYSTEM CONFIGURATION diskette back into the drive and press Enter. The option file is now copied onto diskette.

- Select the newly copied !STL0400.CFG file from the list of .CFG files and press Enter. The manufacturer's comments are displayed, press Enter to continue.

- Select a slot (even a non-bus master slot) in which you wish to install the board (the available slots are indicated by an arrow) and then press Enter. Press F10 to return to the SYSTEM CONFIGURATION menu.

- Select STEP 3: VIEW OR EDIT DETAILS. Using the cursor movement keys, move the cursor to the STALLION TECNOLOGIES - C-MUX 8-32E board. The Dual Port Memory default address and the default interrupt are displayed.

Note: *It is suggested that you keep the default values.*

- To change the Dual Port Memory default address, move the cursor to DUAL PORT MEMORY and press Enter, select the new address from the ones listed and press F10 to confirm. Dual Port RAM can be addresses within the range below the 1st MB, in MB F (16th) or in the 3rd GB (from 0X80000000 to 0XBFFF0000).

Note: *More than one board can share the same 64 KB memory.*

- To change the default interrupt, move the cursor to INTERRUPT and press Enter, select the new interrupt from the ones listed and then press F10 to confirm. The interrupt level can be selected among the following values: IRQ 3-4-5-7-10-11-12-15.

Note: *If more than one board is installed, the interrupt can be shared among these boards if it is selected as a Level-Triggered Interrupt. If only one board is installed, however, the interrupt can be selected as an Edge Interrupt, in which case it will not be shared.*

- Select STEP 5: SAVE AND EXIT to store the system configuration and exit.

INSTALLING DRIVERS AND CONFIGURING THE BOARD - I/O PORT INTERFACE

The board packing includes the driver diskettes for the supported operating systems.

Proceed as follows during the configuration phase:

- Boot from the operating system.
- Install the operating system driver.

Note: *The driver is only installed when the first C-MUX board is installed.*

- At this point Easyadm is automatically activated, allowing the driver to be configured. The following parameters are to be defined:
    - The type of EISA EC 8/64 board which corresponds to the C-MUX 8-32E
    - The EISA bus slot in which the board is installed
    - The memory address which was specified during the system-level board configuration phase
    - The interrupt level, also specified during the system-level board configuration phase.

Note: *The driver configuration procedure must be repeated for each C-MUX board installed in the system.*

- Re-link the Kernel so that the system can detect the new configuration.

Note: *The kernel must be re-linked whenever a driver parameter is changed or whenever C-MUX boards are installed or removed.*

- Shutdown the system.
- Bootstrap from the operating system.
- Configure the ports using the user-launched Easyadm program (/etc/easyadm).

Note: *The configuration procedure for the ports does not require the operating system to be re-linked. You can install or remove a distribution box at any time and change the number of ports handled without having to reinstall the software driver on the system. When a distribution box is connected to the board, the software will display the additional module and the ports are enabled as soon as they are configured, without needing to bootstrap the system again.*

A port's communication parameters must match the ones of the device (printer, terminal, modem) connected to it. You need to know the device's serial interface parameters and set the port accordingly with the same values. The following parameters are available in the device configuration environment:

- Terminal.
- Printer.
- Modem.
- UUCP Communications Links (Unix to Unix copy), allowing to:
    - Connect two systems so that file transfers can take place
    - Connect a modem to a dedicated line
    - Connect a modem using a dial-up line.
- Session, so that a terminal can be installed in multiple sessions.
- Attached printers, so that a local printer can be connected to one of the terminal's auxiliary ports.
- Other, which can be used however the configuration is not made by Easyadm but is carried out by a user process.

ADDITIONAL INSTALLATION PROCEDURES

These utilities are designed to help the field engineer when servicing the board and different ports. Easyadm grants access to a number of different environments:

- Options allowing you to modify board paramaters.
- Options allowing you to modify port parameters.
- Autosetup.

The board parameters modification options allow you to change the I/O, memory and interrupt addresses; with another option you can remove the board.

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Note: *Modifying some of these parameters may cause conflicts with the resources assigned to other boards. It is therefore suggested to first run the configuration program stored on the User Disk which clearly indicates whether conflicts will occur or not.*

Autosetup stores the configuration of the board and ports on diskette so that the configuration may be restored if necessary.

DIAGNOSTICS

The diagnostic program contained in the System Test and Customer Test diskettes runs under MS-DOS and carries out the following tests:

- Single or multiple check-outs, testing: board presence in the system, the EISA ROM, memory, downloading capabilities, internal loopbacks, host interrupts.
- Single loopback or for all the ports: displays the correct loopback of all signals. If a terminal is connected to the port, this test issues the 01234 Port x pattern, where x represents the number of the port being tested, to indicate that the test is being performed correctly.

The diagnostic program will carry out the following tests under UNIX and indicate their outcome (pass or fail):

- Board presence.
- Interrupt out.
- Internal loopback.

During the loopback test of UART signals, certain signals need to be loopbacked on each channel. The loopback plug is a male RJ45 connector which loopbacks the following signals:

- PIN 6 (TX) with PIN 3 (RX).
- PIN 2 (RTS) with PIN 8 (CTS).
- PIN 1 (DSR) with PIN 4 (DCD) and with PIN 7 (DTR).

TROUBLESHOOTING

This section indicates some of the possible failures which may occur and indicates the corresponding corrective action. This troubleshooting section deals with the bootstrap phase, the terminal and printer.

PROBLEMS DURING BOOTSTRAP

The system does not boot.

- Make sure that the power supply is actually providing power to the system by checking whether the fans or the motors of the peripherals work, or if the system power LED is ON.

- Does the system boot without the C-MUX board installed?

    - If yes, make sure that the board is not in short circuit with the board in the adjacent slot, and that there are no signs of short circuits or burns on the C-MUX board.

    - If no, refer to the system manual.

The system begins to bootstrap but crashes when loading UNIX.

- Make sure there are no diskettes in drive A.

- Does the boot HDU controller work?

    - If the controller is installed on the bus, make sure it is correctly plugged in

    - Make sure that the cables are properly connected and are not interrupted.

The system bootstraps, begins to load UNIX but then crashes.

- See where the bootstrap crashes and refer to the system manual.

- Does the system bootstrap if the C-MUX board is removed?

    - If yes, a message similar to the following is displayed: "C-MUX 8-32E Not Found: nr=1 type=21 io=00000204 mem-000D0000 irq=0"?

    - Try bootstrapping the system again with a kernel stored before the system was newly configured. Chances are that the configuration of the board is in conflict with other peripherals.

New installation or upgrade - the board bootstraps under UNIX but the banner displays a message similar to the following: "C-MUX 8-32E Not Found: nr=1 type=21 io=00000204 mem=000D0000 irq=0"

- Check the configuration: there may be I/O address conflicts with other boards.

The system works for a while, but when booted the banner displays a message similar to the following: "C-MUX 8-32E Not Found: nr=1 type=21 io=00000204 mem=000D0000 irq=0"

- Look for the cause in the software:

    - Check whether other changes have been made to the system.

    - Check if a new kernel has been created.

    - Boot the system with the old kernel, if this kernel was stored before the current configuration.

- If nothing is wrong with the software, the board may be damaged or not inserted properly in its slot.

Problems arise when other C-MUX boards are installed.

Proceed as if the problems had arisen with only one board.

- Make sure that each individual board works correctly in the system.

Other peripherals no longer work or are faulty once the C-MUX board is installed.

Chances are that the configuration of the C-MUX board uses some parameters which are already being used by other boards.

- Does the peripheral work on a kernel previous to the installation of the C-MUX board?

- Make sure that there are no physical contacts with other controllers.

- Make sure that the cables are not broken.

- Try removing the board. Do the other peripherals now work?

- Reconfigure the board using different interrupts or I/O addresses.

PROBLEMS WITH THE TERMINAL

The system bootstraps correctly but the Login prompt is not displayed on the terminal.

- Make sure that the DBOX power on LED is on. If it isn't, check the cable connection between the C-MUX board and D-BOX, then check the fuses on the C-MUX board.

- If the green activity LED is on, there may be an interrupt conflict with some other board. Use a different interrupt.

- Make sure that the port is enabled.

- Make sure that the port and terminal have the same data exchange parameters.

- Make sure the terminal works with a working port.

- In new installations, make sure that the distribution boxes are properly connected to the C-MUX board and that the cables are securely attached.

- Check whether the CTS signal is enabled for the port being tested.

- Run a single port loopback on the port being tested to check whether the cable or the port is damaged (DOS diagnosis).

- If the single port loopback test fails, attach the terminal to a free port.

- If the port worked correctly for a while but the single port loopback test performed with a loopback plug on the distribution box has failed, the DBOX is damaged.

- Monitor the single port using Easyadm and check the status of the port.

- Make sure that the port has not been set for a controlled data flow.
  Type ^Q.

Incorrect characters are displayed on the terminal or no character arrives at all.

- Make sure that the C-MUX board and terminal have the same data exchange parameters: baud rate, number of bits, parity (even, odd, none), stop bits (1 or 2), handshaking (software, hardware, both, none).

- Does the failure only occur with certain applications and with certain files?
  If so there is a problem with data flow control.

- Is the port set for software flow control? If it is, list a large file (for example */etc/termcap*) and type ^S. The output is stopped. Typing ^Q restarts the output.

- If software flow control has been set, run the Easyadm Utility to display whether the Xon and Xoff characters are being sent to the port.

- Are you using the right cable for hardware handshaking? Replace this cable with another one taken from a working port.

- If hardware flow control has been set, run the Easyadm Utility to display the status of the port's CTS pin.

- Try again by enabling AutoCTS. This requires a hardware handshake cable.

There are problems with keyboard inputs.

- Make sure that the board and terminal have the same data exchange parameters.

- Use Easyadm to check the characters received. This utility indicates whether characters are being received by the board.

- Using the software flow control, check whether the port controls the data flow. Type ^Q on the terminal keyboard.

- Check whether this problem occurs always or only with certain programs.

- Type *cat < /dev/ttybbppx* on the console. where */dev/ttybbppx* is the faulty port. Type other characters on the port. These characters should arrive to the console.

- Check the cable. Replace the cable with one taken from a working port.

- Use the Flush option of the Easyadm Single Port Monitor Admin to empty the port's buffer.

- If this does not work, try resetting the port using easyadm.

The output to the terminal crashes when an error is detected.

- If using software flow control, type ^Q on the terminal to check whether there is a controlled data flow to the port.

- Use Easyadm to check if the output is blocked by the flow control.

- Type *echo 1234567890 > /dev/ttybbppx*, where */dev/ttybbppx* is the port being tested. Run Easyadm to check whether the queue of characters to be transmitted increases.

- Use Easyadm to empty the port. If this port does not work, try again this time using Easyadm to reset the port.

Some keys on the terminal do not work correctly with certain applications.

There is a problem with the terminal.

- Make sure that the TERM variable is correct.

- Make sure that *terminfo* or */etc/termcap* is correct for this terminal.

- Does the application require the terminal to switch to scan-code mode?

- Does the terminal support scan-code mode?

- If it doesn't, make sure that also the application cannot go into scan-code mode.

- Does the application reprogram the keyboard?

Flow control problems only occur with certain applications.

- Run the application on the standard serial port.

- Try again using hardware flow control only.

- Try again by enabling AutoCTS. This will require a specific hardware handshake cable.

Some keys cause the terminal to crash.

- Some applications switch the terminal into the PC/TERM mode. Hotkey sequences can be generated in this mode.

- Is the terminal in the scan-code mode (PC-TERM)?

- If it is, switch the terminal back to its initial mode, type the specific hotkey sequence to recall the PC/TERM mode session and then switch the terminal to the PC/TERM mode.

PROBLEMS WITH THE PRINTER

All the printers do not work.

- Check whether the printer scheduler is working.

- Type *lpstat -t* and look for the message "Scheduler is running".

- If not, use the system administration shell to enable the scheduler.

Only one printer does not work.

- If only one printer doesn't work, use the system administrator shell to check whether the printer is:

  - Enabled

  - Capable of accepting requests.

- Make sure the cables are working and replace them if necessary.

- Check the printer port data exchange parameters.

- On the console, type *stty -a < /dev/ttybbpp* where */dev/ttybbpp* is the print port device.

- Check the printer's data exchange parameters.

- Send a string of characters to the port connected to the printer, by typing:
  echo 0123456789 > /dev/prnbbpp.

The printer is enabled, it accepts print requests but does not print.

- Make sure that the printer port and terminal have the same data exchange parameters: baud rate, bits per character, parity (even, odd, none), stop bits (1 or 2), flow control (software, hardware, both, none).

- Send a large file to print. Check the process with the easyadm single port display. When the port is open, type the following from another terminal or screen console: *stty -a < /dev/ttybbpp* where */dev/ttybbpp* is the print port device

- If the print out is not correct, check the script intrface for *stty* commands

- Check the script interface for *stty* commands.

- Check the system adm shell for the printer port configuration parameters.

- Follow the procedures to perform in the case of problems with the terminal, described previously.

Incorrect characters are printed, and others are missing.

- Make sure that the printer port and terminal have the same data exchange parameters: baud rate, bits per character, parity (even, odd, none), stop bits (1 or 2), flow control (software, hardware, both, none).

- Send a large file to print. Check the print process via the Easyadm single port display. When the port is open, type the following string from another terminal or console screen: *stty -a < /dev/ttybbpp* where */dev/ttybbpp* is the device connected to the printer port.

- If the print out is not correct, check the script intrface for *stty* commands

- Check the system adm shell for the printer port configuration parameters.

- Does data corruption occur with some files and not with others? If so, there is a flow control problem.

- Using the software flow control:

  – Connect a terminal to the port, print a large file (for example */etc/termcap*) and type ^S.
    The output is blocked.
    Type ^Q and the output is resumed.

  – Use the Easyadm single port monitoring screen to check whether the Xon and Xoff characters are sent to the port.

- Using the hardware flow control:

  – Check whether the CTS line has been disabled when the printer was involved in flow control.

  – If possible, replace the cable with one known to be working.

The printer crashes.

- Use the single port monitor screen to check whether the port is not controlled by the flow.

- Try to flush the port using the Admin Single Port Monitor Screen option.

- Make sure that the cables are not interrupted.

The printer connected to the port does not carry out line feed nor carriage return.

This problem is usually linked with the stty setting used by the script interface.

- Try a different script interface.
- Check the port's *stty* setting during a print job.
- Make sure that the *onlcr* and *ocrnl* values are set as requested.
- Check the DIP-switch settings by referring to the printer manual.

STALLION MULTIPORT BOARD (GO2057) EVOLUTION

DATE	LEV.	FW	VIMO CODE	REASON FOR CHANGE	APPLIC.
01/95	Nasc	1.0.2	562211 Y	The board is introduced.	Factory
12/95	01	1.0.2		The C-MUX 8/32 generated a panic condition on the SNX 160 running the Open Server operating system: this was due to problems in the synchronization of this board with the EISA bus when reading data from the C-MUX dual-port RAM. Cut the track between U39 pin 8 and U38 pin 3, next to U39; wire U37 pin 3 to U39 pin 8.	Factory
02/96	02	1.0.2		Solved the problems encounted as result of the previous modification (random diagnostic and functional errors). Cut the track between U39 pin 3 and its path, wire the path to U38 pin 5. This modification must be made on level 01 boards.	Factory

BOX 800 EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
01/95	Nasc	562844 T	The 8-way RS232D distribution box is introduced.	Factory

BOX 1600 EVOLUTION

DATE	LEV.	VIMO CODE	REASON FOR CHANGE	APPLIC.
01/95	Nasc	562843 S	The 16-way RS232D distribution box is introduced.	Factory

SOFTWARE DRIVER EVOLUTION

DATE	USER DISK	SCO 3.2.4.2 and SCO ODT 3.0 (mono) DRIVERS	UNIX SVR4.0 V2.4 (mono/multi) DRIVERS	REASON FOR CHANGE
03/95	1.03	ATA 5.1.1	ATA 5.1.1	The User Disk is introduced.

Note: *The following SW must be added to multiprocessor systems operating in the SCO environment:*
- LSX 50xx; SCO MPX ver 3.0, OLI MPX 4.0, OLI 0002 (lock timeout patch)
- SNX 1xx /R/E/RS; SCO MPX ver 3.0, SCO AHS 3.4, OLI 0002 (lock timeout patch)
- SNX 200/400/RS; SCO MPX ver 3.0, Corollary SLS, Corollary EFS.

Note: *The Stallion board supports the UnixWare 2.0x, SCO 3.2.4.2 and SCO Open System V operating systems.*

STALLION, ISA, GO2175, CMUX 8-32I (32 RS232D PORTS) MULTIPORT BOARD
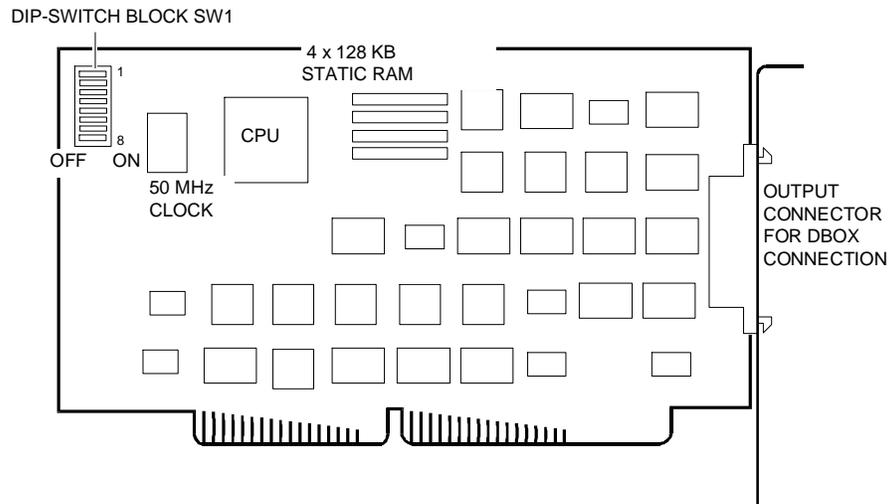
Note: *This board can only be installed in the first megabyte and occupies 4 KB ranging from 0C0000 to 0EFFFF.*

Note: *This board is connected to the same DBOXes as the GO2057 EISA Stallion controller: DBOX 800 (8 RS232D ports) and DBOX 1600 (16 RS232D ports). The number of DBOXes that can be connected, the rules to follow and connections are identical to those described for the GO2057 controller.*

Note: *The EC8/64AT board type corresponds to the CMUX 8-32I.*

BOARD JUMPER SETTINGS

DIP-Switch block SW1 on the board is used to set the I/O address. The value to set must correspond to the one indicated during the SCU configuration phase.

DIP-SWITCH BLOCK SW1								I/O ADDRESS
1	2	3	4	5	6	7	8	
		ON	ON	ON	ON	ON	OFF	20x
		OFF	ON	ON	ON	ON	OFF	21x
		ON	OFF	ON	ON	ON	OFF	22x
		OFF	OFF	ON	ON	ON	OFF	23x
		ON	ON	OFF	ON	ON	OFF	24x
		OFF	ON	OFF	ON	ON	OFF	25x
		ON	OFF	OFF	ON	ON	OFF	26x
		OFF	OFF	OFF	ON	ON	OFF	27x
		ON	ON	ON	OFF	ON	OFF	28x
		OFF	ON	ON	OFF	ON	OFF	29x
		ON	OFF	ON	OFF	ON	OFF	2Ax
		OFF	OFF	ON	OFF	ON	OFF	2Bx
		ON	ON	OFF	OFF	ON	OFF	2Cx
		OFF	ON	OFF	OFF	ON	OFF	2Dx
		ON	OFF	OFF	OFF	ON	OFF	2Ex
		OFF	OFF	OFF	OFF	ON	OFF	2Fx
		ON	ON	ON	ON	OFF	OFF	30x
		OFF	ON	ON	ON	OFF	OFF	31x
		ON	OFF	ON	ON	OFF	OFF	32x
		OFF	OFF	ON	ON	OFF	OFF	33x
		ON	ON	OFF	ON	OFF	OFF	34x
		OFF	ON	OFF	ON	OFF	OFF	35x
		ON	OFF	OFF	ON	OFF	OFF	36x
		OFF	OFF	OFF	ON	OFF	OFF	37x
		ON	ON	ON	OFF	OFF	OFF	38x
		OFF	ON	ON	OFF	OFF	OFF	39x
		ON	OFF	ON	OFF	OFF	OFF	3Ax
		OFF	OFF	ON	OFF	OFF	OFF	3Bx
		ON	ON	OFF	OFF	OFF	OFF	3Cx
		OFF	ON	OFF	OFF	OFF	OFF	3Dx
		ON	OFF	OFF	OFF	OFF	OFF	3Ex
		OFF	OFF	OFF	OFF	OFF	OFF	3Fx
ON	ON							xx0
OFF	ON							xx4
ON	OFF							xx8
OFF	OFF							xxC

In the above table, the first two switches indicate the last digit of the I/O address while the remaining switches indicate the first two digits. For example, address 2A0 will be set in the following way:

ON, ON, ON, OFF, ON, OFF, ON, OFF   2A0

Note: *The DIP-Switch is set to ON when it is lowered towards the writing ON on the board layout; it is OFF when it is lowered towards the writing OFF.*

BOARD CONFIGURATION PROCEDURES

Board configuration is divided into two parts:

- A system-level configuration must be carried out first (C-MUX 8-32I board - ISA bus interface) where the resources assigned to the board are specified.

- After the system-level configuration, the drivers can be installed and the I/Os configured (interface towards the different peripherals; printers, terminals, modems). For a description of this procedure, refer to the section "Driver Installation and Board-I/O Port Interface Configuration" of the GO2057 board.

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CONFIGURING THE BOARD AT SYSTEM LEVEL

Before physically installing the board, reconfigure the system as indicated.

- Activate the System Configuration Utility (SCU) from diskette.

- Select STEP 2: ADD AND REMOVE BOARDS from the main menu. A screen is displayed indicating the boards installed in the system.

- Remove the SCU diskette from drive A: and insert the User Disk Easy Utilities diskette supplied with the board. Press the INS key.

- From the Select the Board to Add screen, select the Stallion board file !STL0420.CFG and press ENTER. The file will be copied to system memory.

- Insert the SCU diskette back into the drive and press ENTER. The .CFG file will be copied to the SCU diskette.

Note: *Configuration can also be performed from the SCU residing on the Orchestra CD-ROM, in which case the board configuration file on the CD will be used.*

- A screen is displayed indicating the configuration of the slots on the ISA bus: select a free slot and press ENTER; the following caption is displayed on the selected line: "Stallion Technologies - C-MUX 8/32 Olivetti version x.x".

Note: *On the NetStrada 3000, it is suggested to install the board in ISA slot 2.*

- Return to the configuration program menu, activate STEP 3: CHANGE CONFIGURATION SETTINGS and look for the following caption in the next screen: "Stallion Tecnologies - C-MUX 8-32 Olivetti version x.x". The board is configured through the Dual Port Memory, Interrupt Request and I/O Port options, described in the next three points.

- To set the Dual Port memory range, select the corresponding option and press ENTER to display all the possible ranges; select the address required and confirm. This 4 KB segment must be chosen within the 1st MB, in the 0C0000 - 0FF000 address range.

Note: *The same 4 KB Dual Port memory range cannot be shared between boards. If more than one board is installed, different address ranges need to be selected.*

- To set the Interrupt value, select the corresponding option and press ENTER. A screen with the options Enabled and Disabled is displayed. Select Enabled, then select the required IRQ value from the list and confirm. The interrupt level can be selected from the following values: IRQ 3-4-5-7-10-11-12-15.

Note: *The IRQ cannot be shared among boards. If more than one board is installed, different IRQ values need to be selected.*

- To set I/O Port addresses, select the corresponding option and press ENTER. Set the required value and confirm. The 4-byte I/O addresses used for this board can be selected within the 200h - 3FF range. The value that is set in this field must be physically set on the board by means of the DIP-Switch block SW1.

Note: *The I/O address cannot be shared among boards. If more than one board is installed, different I/O addresses need to be selected.*

- Return to the configuration program menu and activate STEP 5: VIEW SWITCH/JUMPER SETTINGS that displays the correct DIP-Switch settings that must be physically made on the board's DIP-Switch block SW1 according to the I/O addresses set in the previous point.

- Return to the configuration program menu and, if there no other boards to be configured, activate STEP 4: SAVE CONFIGURATION to save the new configuration, then activate STEP 6: EXIT to exit from the configuration utility.

Note: *To avoid conflicts, configure the software drivers with the same values of the C-MUX boards.*

Note: *The Diagnostics and Troublesooting sections are identical to the ones described for the GO2057 board, so refer to these sections if related information is needed.*

STALLION (GO2175) MULTIPORT BOARD EVOLUTION

DATE	LEV.	FW	VIMO CODE	REASON FOR CHANGE	APPLIC.
11/96	Nasc			New board. Assembly rev. 1.2	Factory

SOFTWARE DRIVER EVOLUTION

DATE	SCO 3.2.4.2, SVR4.0, UnixWare, DOS Drivers	Windows NT Drivers	OS/2 Drivers	Novell NetWare Drivers
11/96	V 5.2.0	V 5.1.3	V 5.0.7	V 5.0.8

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