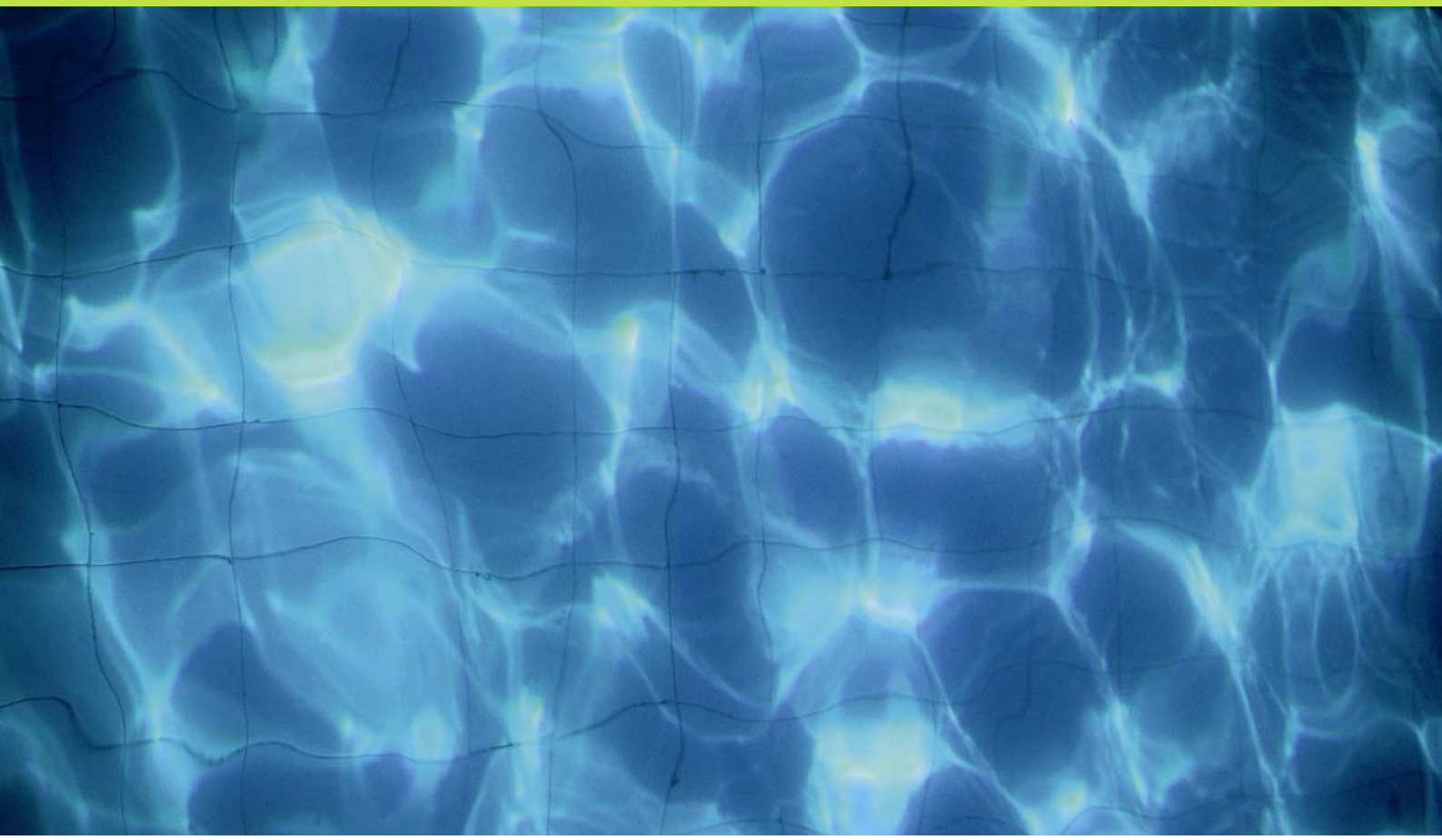
eyeheight



# NS-2I

2xI SDI video/AES audio switch

## user manual

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# 1 System Overview

This manual describes the function of the NS-21. This unit is an electronic SDI Video switcher. The input video is simply switched and reclocked to the output. A mechanical relay bypass is enabled if the power is removed and provides connection between input 1 and the output.

The NS-21 is a unit that will accept two SDI video inputs and has one SDI output.

The main features are :-

- 2 input, 1 output SDI video switch.
- A mechanical relay bypass, from input 1 to the output.
- Control by FP-9 control panel. 2 LCD legendable pushbutton switches for control.

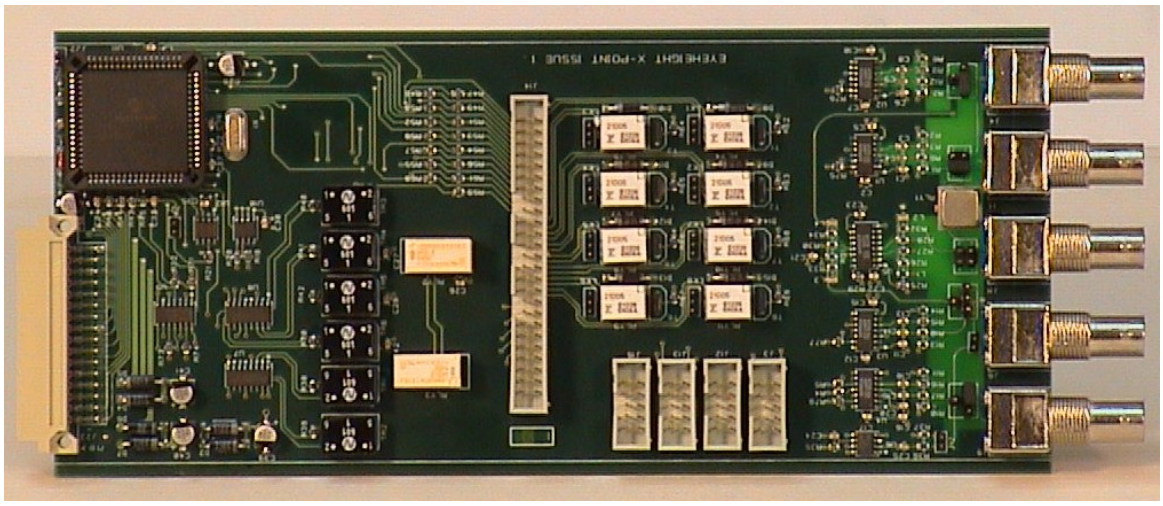

**Figure 1-1 The NS-21 Module (The bottom two BNC's are usually fitted as a 9W D-type)**

## 1.1 Applications for the NS-21

Applications for the NS-21 include the following:-

- A preview switcher .
- Emergency bypass switching.

## 1.2 Associated Equipment for the NS-21

The NS-21 is a module and requires both a chassis and a control surface to function.



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## 1.2.1 Chassis Types

- **flexiBox** is a 1RU chassis. The order code is FB-9. This will hold a maximum of 6 NS-21 Modules with “Hot Swap” redundant PSU option and “Hot Swap” NS-21 modules.
- **maxiBox** is an alternative low cost 1RU chassis. The order code is MX-9. This also will hold a maximum of 6 NS-21 modules but it has no redundant PSU option and the NS-21 units must be factory fitted.

**Figure 1-2 flexiBox with flexiPanel fitted**

## 1.2.2 Control Surfaces

- **flexiPanel** is a IRU control surface that fits on the Front of a 1RU flexiBox. The order code is FP-9. A FlexiPanel can also be used in conjunction with a miniBox, in this case the extra accessory (Order code RR-9) will be required
- **FP-10** is a desk mounting control surface (Order code FP-10). This unit is a modular unit which can be used in conjunction with the units below.


**Figure 1-3 FP-10 desktop modular panel**


**Figure 1-4 FP-9 1RU modular panel**



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# 2 Installation

## 2.1 Installation of the NS-21 product

If this unit is already pre-installed in a flexiBox (FB-9), or a maxiBox, with either a local or a remote panel from the factory then refer to the "Hardware Installation Guide" which will be enclosed with the system. If this unit is pre-installed in a miniBox (MB-9), then also refer to the "Hardware Installation Guide" which will be enclosed with the system

If this unit has been ordered separately, we assume here that you already have a flexiBox system with a Flexipanel and that the flexiBox has at least two spare slots above each other for the NS-21 card.

## 2.2 Installing the NS-21 into a flexiBox

To install the NS-21 into a flexiBox it is desirable (but not necessary) to power down the flexiBox. Follow these instructions.

On the rear of the flexiBox are 6 slots for Products. Remove any spare blanking plate. There are 2 off M2.5 Screws, which require unfastening for each blanking plate.

Slide the Product PCB into the spare slot and firmly push it "home".

Use the two thumbscrews to fasten the unit in place.

Now refer to the "GeNETics User Guide". If your system consists of a single flexiBox with a single flexiPanel then refer to the section titled "flexiPanel Auto Set-up". If your system is part of a network with more than one flexiPanel then refer to the section titled "flexiPanel Manual Set-up". This will guide you through acquiring your product as a device on the flexiPanel.

## 2.3 Connecting Video to an NS-21

A Typical Connection diagram for the NS-21 is shown below. All signals are SDI:


**Figure 2-1 Rear view of the NS-21 module.**

Above are the rear connectors for the NS-21 module. The BNC Inpus and output are clearly shown. Below is a pin-out for the 9 Way D-Type.



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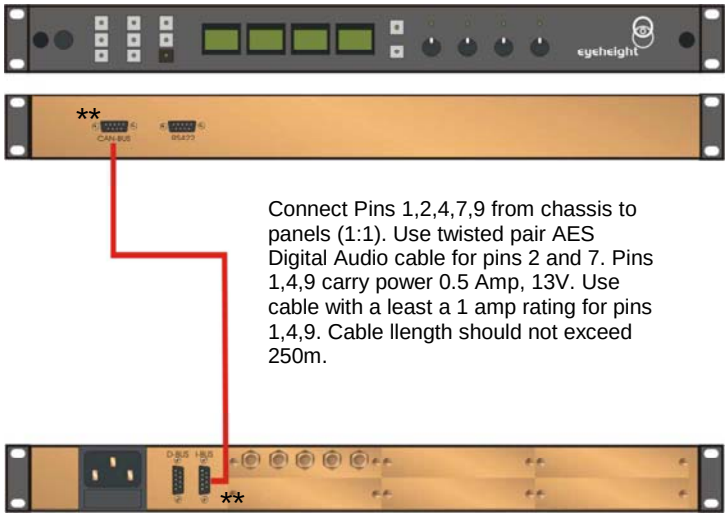
| PIN NUMBER | FUNCTION |
|---|---|
| 1 | Ground |
| 6 | AESOP+1, Audio output |
| 2 | AESOP-1, Audio output |
| 7 | AESA+, Audio input#1 |
| 3 | AESA-, Audio input#1 |
| 8 | AESB+, Audio input#2 |
| 4 | AESB-, Audio input#2 |
| 9 | GPI 1, Input Select, GND=Input2, open=Input1 |
| 5 | Not used |

## 2.4 Connecting Panels to the NS-21

The NS-21 may be operated using a FP-9 Flexipanel locally mounted. For a more operational environment the NS-21 may be supplied with a desk mounting FP-10 unit and also possible a VP-10 Desk mounting Video T-Bar manual transition unit. For detailed information on connecting remote panels refer to the section “Connection of Remote Panels to a flexiBox” in the geNETics Hardware Installation Guide.

Below is shown a typical system consisting of an NS-21 in a flexiBox controlled by a remote FP-9.




I-Bus pins 2 & 7

** The I-BUS Network requires terminating with 100 Ohms at each extreme end of the network. Ensure that this is done either by an external 100 ohm resistor OR ONE Panel/Product at each end has the termination set. See the "Genetics User Guide" Under the sections "Flexipanel Power/I-BUS Jumpers".For the 4RU Panels see “4RU Panel (FP-10) Jumpers for I-BUS” and “4RU Panel (VP-10, SW-10, AP-10) Jumpers for I-BUS” . Alternatively The termination can be set on a Product (ie the MW-2 module). Information about this is given in this manual.

**Figure 2-2 I-Bus Connections and Termination**

N.B. From 1/10/02 Eyeheight introduced a change in the flexiBox Chassis. Most versions now have two 9 way connectors on the rear labelled “I-Bus” and “D-



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Bus". The "I-Bus" connector is the same as the previously labelled "Can-B" connector. Although a maxiBox is shown in this diagram the same arrangement applies for a flexiBox chassis.



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# 3 Operation

## 3.1 Manual control of the NS-21

Manual Control of the NS-21 is done using one or more of the following control surfaces:

- The 1RU FP-9 Flexipanel.
- The FP10 Desk mounting Panel

The FP-9 and the FP-10 have identical manual control systems. (The FP-10 is simply a desktop version of the FP-9). The NS-21 is, as are all genetics modules, controlled using a set of MENUS. Each of these menus contains up to 3 parameters that are adjusted using the rotary digipots. The Menus define all of the adjustable operational parameters in the NS-21. Pressing the rotary digipots brings the parameter to its default value. Device selection is done using the device select switches which, when pressed, will offer the name of the device in the LCD Window. Modules can be acquired and then de-acquired using the set-up switch. For a full description of the operation philosophy of the geNETics system refer to the “geNETics User Guide” (section “Operation of the flexiPanel”)

A full list of the Menus and their functions are given in section 3 of this chapter.

## 3.2 Automation Control of the NS-21

Automation of the geNETics products is achieved via an RS422 port.** This port is marked RS422 on the rear of a flexiBox. For the port to work a flexiPanel MUST be connected locally on the front of the flexiBox.

Automation control of the NS-21 can be done using two protocol methods:

- geNETics Automation Protocol.
- PresTX Automation Protocol.

Genetics protocol is described in detail in the “GeNETics User Guide” section titled “Automation Protocol on the geNETics Platform”. The menu list in section 3 of this chapter contains the data information for the protocol.

PresTX Automation Protocol is used only for the PresTX Presentation Mixer and channel branding system. In this case an AU-2 Automation card is also required. Refer to the PresTX Product manual

**On most flexiBoxes later than 1/10/02 the RS422 port has been replaced by a “D-Bus” Port. The D-Bus port is for High Speed data transfer and is not used for serial control. In order to achieve serial control of any products on an I-Bus network Eyeheight Ltd have developed a RS232→I-bus converter “dongle”, (DG-9) which enables greater flexibility of products on the I-Bus network whilst using the same protocols as the RS422 port. Please refer to the “User guide for the DG-9 eyeheight dongle and set-up software.



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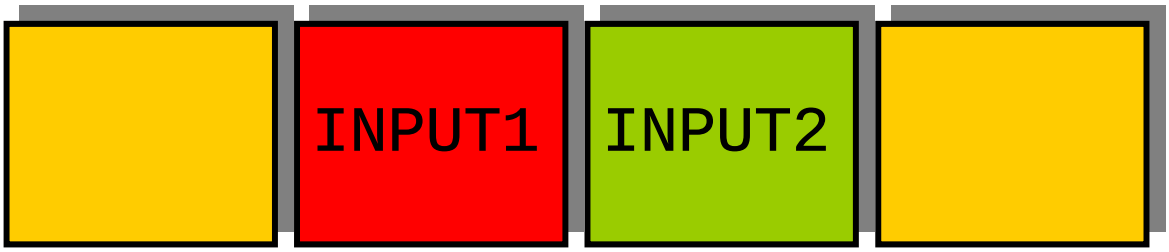
## 3.3 Operational Menus for the NS-21

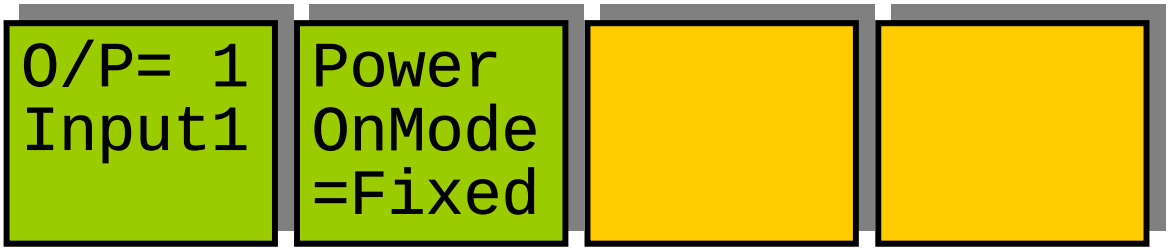
The following set of menus defines the operation of the NS-21.

### 3.3.1 Menu 00-03: Top level controls




| Menu Num. | Heading | Automation | Function |
|---|---|---|---|
| 0 | | | |
| 1 | INPUT 1 (user defined) | 1=switch output to this input. | Pressing this button switches the output to this input. The switch lights up red to indicate when selected. |
| 2 | INPUT 2 (user defined) | 1=switch output to this input. | Pressing this button switches the output to this input. The switch lights up red to indicate when selected. |
| 3 | | | |

### 3.3.2 Menu 04-07: Set up Controls




| Menu Num. | Heading | Automation | Function |
|---|---|---|---|
| 4 | O/P= 1<br><br>INPUT 1<br><br>(user defined) | 1 to 2 | This button will select which input is routed to the output. Pressing return will bring up a cursor enabling the user to type their required label for the currently selected input. Pressing return again will store the new label and return to |



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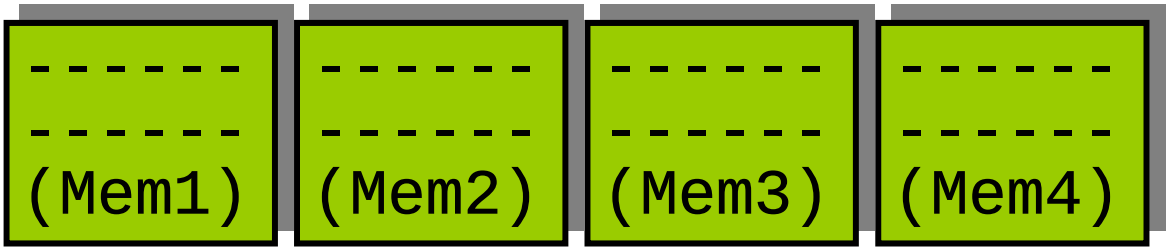
| | | | |
|---|---|---|---|
| | | | normal operation. |
| 5 | Power On Mode | 0=Last<br><br>1=Fixed<br><br>2=GPI | This menu decides which action is taken on power-up. After adjusting this the user MUST set this as the Power on default. (See menu 16)<br><br>Last, means that the unit will power up selecting the Last input before power down.<br><br>Fixed means that the unit will power up selecting whichever input is set as the power on default (See menu 16)<br><br>GPI, means that the unit will power up and set itself to the value coming in on the GPI Input |
| 6 | No menu | | |
| 7 | No menu | | |

### 3.3.3 Menu 08-II: Memory Controls




| Menu Num. | Heading | Automation | Function |
|---|---|---|---|
| 08 | MEM1 | 1=Recall | Pressing this will recall Memory number 1. |
| 09 | MEM2 | 1=Recall | Pressing this will recall Memory number 2. |
| 10 | MEM3 | 1=Recall | Pressing this will recall Memory number 3. |
| 11 | MEM4 | 1=Recall | Pressing this will recall Memory number 4. |



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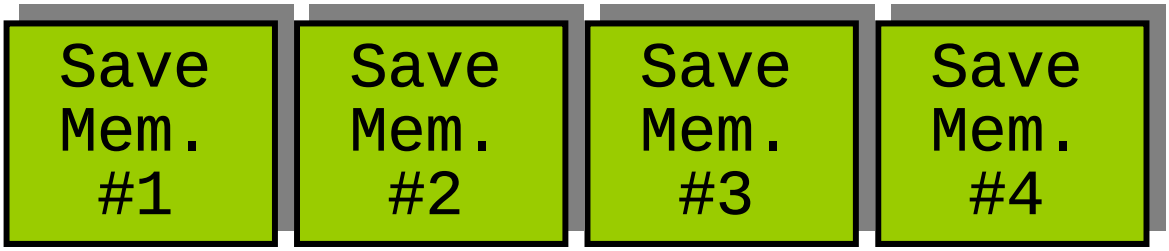
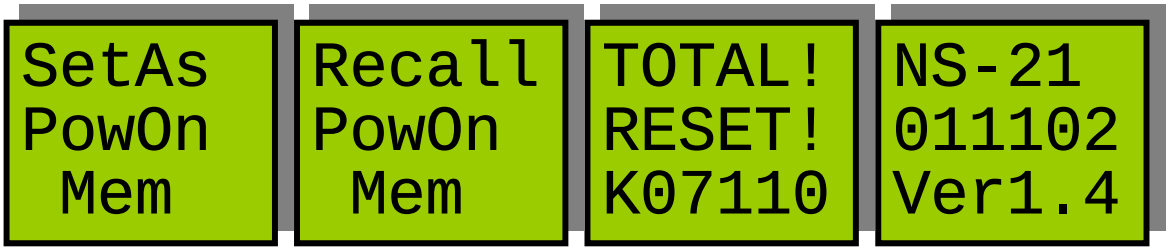
### 3.3.4 Menu 12-15: Memory Controls continued




| Menu Num. | Heading | Automation | Function |
|---|---|---|---|
| 12 | Save Mem. 1 | 1= Save | Pressing this will Save Memory number 1. |
| 13 | Save Mem. 2 | 1= Save | Pressing this will Save Memory number 2. |
| 14 | Save Mem. 3 | 1= Save | Pressing this will Save Memory number 3. |
| 15 | Save Mem. 4 | 1= Save | Pressing this will Save Memory number 4. |

### 3.3.5 Menu 16-20: Reset options




| Menu Num. | Heading | Automation | Function |
|---|---|---|---|
| 16 | Set As Pow On Memory | 1=save | Pressing this will save the current set up as the power on default. (See also menu 5) |
| 17 | Recall Pow On Memory | 1=Recall | Pressing this will recall the power on default settings. |
| 18 | TOTAL RESET | 1=Reset | Pressing this will reset the system. |
| 19 | NS-21 | N/A | Information about the current issue |



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| | | | |
|---|---|---|---|
| | 040302 | | of software. |



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# 4 Technical Appendix

## 4.1 Technical Specification for the NS-21

| | |
|---|---|
| Number of Inputs | 2 Input BNCs |
| Type of Inputs | 1 off 270Mbit Serial Digital Video Inputs 75Ohm, and one BNC acts as a video input to enable synchronised switching. |
| Line Length | At least 200 Meters of PSF1/3 (Typically 275 Meters) |
| Number of Outputs | 1 Output BNCs |
| Type Of Outputs | 270Mbit Serial Digital Video Outputs, 75 Ohm, 800mV |
| Total Number Of BNC Connections | 3, consisting of 2 Inputs, and 1 outputs. |
| SDI Output Jitter | The system will add less than 0.2UI to the input Jitter. (This is only guaranteed on issue 2 or later cards) |
| Current Consumption | <800mA at +5V |
| Size | 215mm by 100mm |

## 4.2 Jumpering the I-BUS (CAN-BUS) Termination

The I-BUS Network is the "control system" under which all Products and Panels are networked together. Under certain circumstances it is necessary to terminate the network. This can be done on a Panel or a "Product". To terminate this product, locate J6 on the NS-21 Processor Card supplied which is between U1 (The large square "chip") and the Edge connector. (This is on the half of the card labelled "CHP-100 Spartan2 Processor"). Jumper this with a 2mm link.

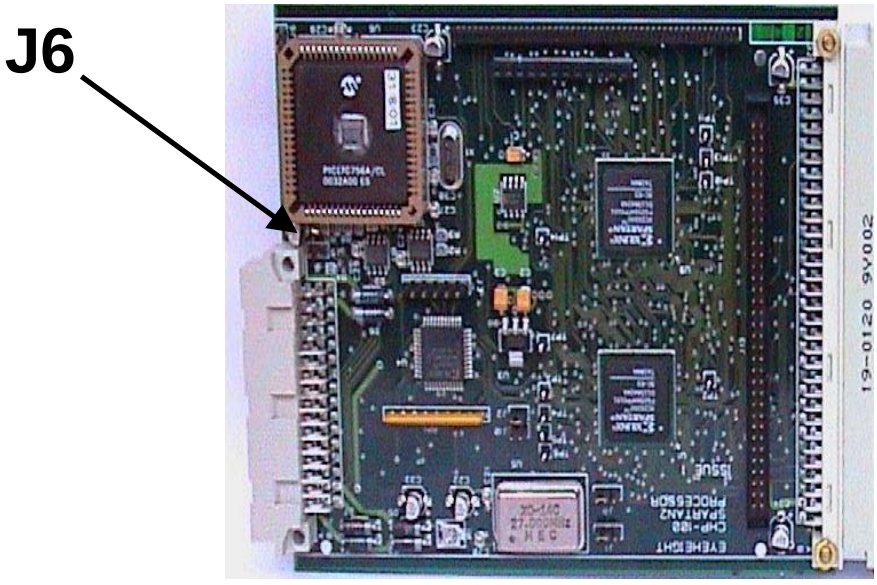


**Figure 4-1 Location Of I-Bus Termination Link**



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