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## 6521 64 X 64 HD SERIES MACHINE CONTROL ROUTER

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**MODULE HANDBOOKS INCLUDED**

1124	Power Supply Module
1537	PSU/Control Connector Assembly
1636	Input/Output Connector Assembly
2161	16 x 16 HD RS422 Crosspoint Module
2414	HD Series Switcher Control Module
H050	HD Series Local Control Card User Manual

# 1 INTRODUCTION

The 6521 is a self-contained mains powered 64 input, 64 output RS422 switcher in a 6U rack frame

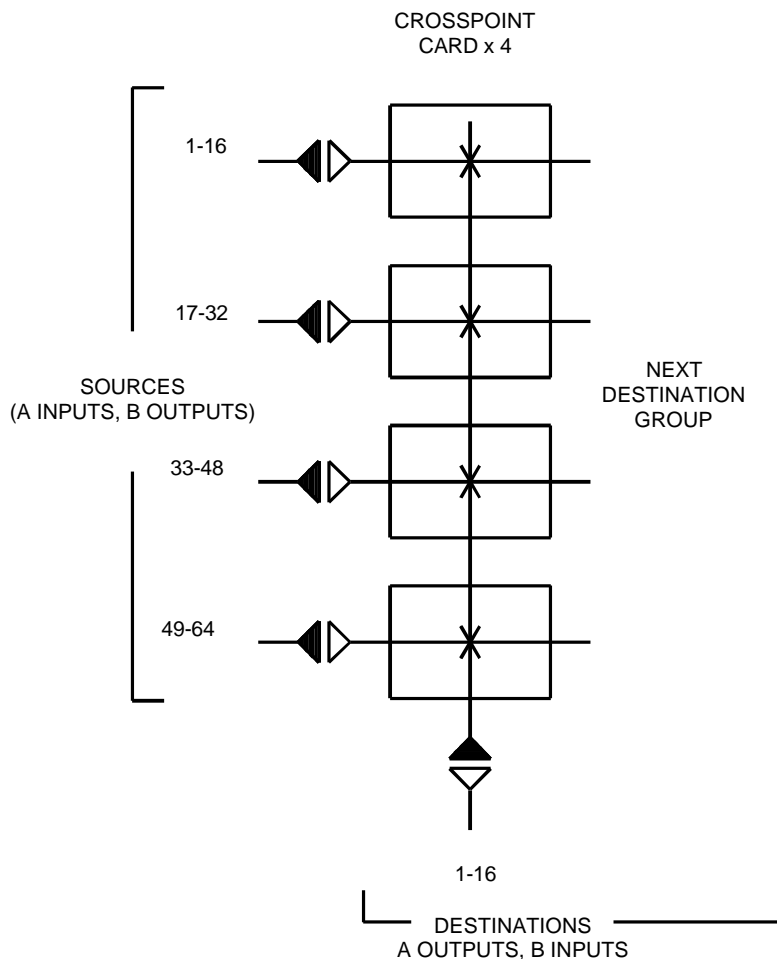


FIG. 1 ROUTER ARCHITECTURE

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## 2 SPECIFICATION

### 2.1 Inputs

2.1.1	1636 Module	Number and Type:	64 balanced, 4 wire (bi-directional) to EIA standard RS422A
		Impedance:	3k $\Omega$ min
		Sensitivity:	$\pm 200$ mV
		Input Common Mode Rejection:	$\pm 12$ v max

### 2.2 Outputs

2.2.1	1636 Module	Number and Type:	64 balanced, 4 wire (bi-directional) to EIA standard RS422A
		Maximum Output Current:	40mA

### 2.3 Control

Basic Control:	2 ports 4 wire serial RS422/RS485 or RS232 with CTS, RTS, DTR and DSR Standard protocol Pro-Bel General
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### 2.4 Power Requirement

Fully equipped 64 x 64:	110/220/240V ac $\pm 10\%$ 50/60Hz at 130 VA; (internal dual power supplies)
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### 2.5 Mechanical

Frame:	6U 19" rack frame
Width:	483mm
Depth:	400mm
Height:	267mm
Weight:	20kg (including dual power supplies)

### 2.6 Operating Temperature

Range:	0 °C to 40 °C
Cooling:	Natural convection

### 2.7 Connectors

Input/Output:	'D' type with screwlock
Control:	'D' type with screwlock
Power:	Mains IEC (with latch)
PSU Monitor:	3 pin DIN socket

### 3 GENERAL DESCRIPTION

The 6521 consists of a standard 6U, 19" rack frame containing a 6511 motherboard which is powered via dual redundant PSUs and software controlled (via serial interface type RS422 or RS232). A number of additional plug in modules are fitted which together form the switcher these are:-

- 2161 Crosspoint Module
- 2414 Local Control Module
- 1124 Power Supply Module

## 4 ROUTER DESCRIPTION

The switcher has a minimum of 16 inputs and 16 outputs expandable in increments of 16 sources and/or 16 destinations.

Switching cards type 2161 house the RS422 crosspoints and local control latches. The crosspoints are arranged in two blocks of 16 x 16, one block providing the forward (source to destination) path and the other block forming the reverse (destination to source) path. The cards also contain RS422 receivers to buffer balanced data into crosspoints and RS422 drivers to output data from the crosspoints. The crosspoint control, source and destination address lines are bussed across the 2161 cards to the local control card.

The switching cards contain local on board latches which suits them to a control system using serial data distribution. This technique reduces non serial control wiring to individual card handshakes which provide card presence and power rail status. The remaining control signal bussing comprise serial source and destination addresses. The local control card is a 6802 microprocessor based card designed to control routing switchers. It provides for communication with external microprocessor based control systems/panels. A battery powered RAM prevents loss of crosspoint selection information in the event of a power failure.

## 5 INSTALLATION



**WARNING:** For safety reasons the system must not be operated until the three earthing terminals have been connected correctly.

### 5.1 Mechanical

The switcher is housed in a 19", 6U high rack mounted frame. All modules plug into the frame to allow easy access for servicing and are normally protected behind a hinged front panel. The 6U high cards each have three DIN 41612C plugs that connect into the motherboard which carries power, signal and control wiring between cards. Input and output connections are made by ribbon cables connected to rear plug shells of the motherboard's DIN 41612C connectors. Extender board type 1336 can be used to gain access to the 6U cards.

### 5.2 Earthing

Three system earths wired in the frame are accessible on a three-way terminal block mounted on the rear of the power supplies. The three earths are:



Mains Earth-wired to the earth pin of the mains input connector.



Signal Earth-wired to the system 0V supply and then to the signal cable screens.



Chassis Earth-wired to the metalwork of the frame and cable connector metalwork.

These three earths are left entirely separate within the switching system and can be joined on the terminal block or wired to separate earthing points as dictated by the nature of the installation.

### 5.3 Modules

Confirm the correct sub-modules are fitted and pushed fully home with reference to the label inside the front panel. Check the mains voltage is set correctly and that the retaining screws and washers are in place. Check the setting of links on the control card is appropriate for the system.

## 5.4 Removal and Replacement Of Sub-Units

### 5.4.1 Cards

Single card type modules may be removed and replaced with the system powered or unpowered using card ejectors. When replacing cards, care should be taken to push them fully home. All cards will work on the 1336 extender board.

### 5.4.2 PSUs

Module type 1124, a mains powered switch mode power supply, housed within the frame provides +5V for the switcher cards and control card. It may be supplied configured for 110 Vac or 220/240 Vac, selected by a link internal to the PSU.

A 'power on' LED is housed on the power supply front panel in addition to a socket at the rear which allows external monitoring of both power supply modules.

Outputs of the 1124 power supply are via diodes, allowing the inclusion of a second power supply within the frame to provide back up power.

### 5.4.3 Sub-Assemblies

Sub-assemblies are secured at the rear of the frame by screws and care should be taken during removal and replacement to support the boards and not to stress leads. Remove cable connections from the motherboard by holding the connector shell, not pulling the wires.

## 5.5 Installation Note

On this unit all 'destination' connectors must be wired to the controller equipment, and all 'source' to the tributary equipment. The pinouts of these connectors are such that for direct point-to-point connection between the router and other equipment a pin to pin cable may be used (e.g. IDC ribbon).



## 6 CONNECTOR DETAILS

### 6.1 Mains

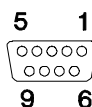
IEC 6 Amp

### 6.2 Switcher Source Connectors (1636 Module)

9 way 'D' screwlock socket.

Wired as Controller, connect to Tributary equipment.

Pin	Function
1	Chassis
2	Rx-
3	Tx+
4	Tx Common
5	N/C
6	Rx Common
7	Rx+
8	Tx-
9	Chassis



### 6.3 Switcher Destination Connectors (1636 Module)

9 way 'D' screwlock socket.

Wired as Tributary, connect to Controller equipment

Pin	Function
1	Chassis
2	Tx-
3	Rx+
4	Rx Common
5	N/C
6	Tx Common
7	Tx+
8	Rx-
9	Chassis

## 6.4 Local Control Connector Pinouts On 1537 Termination Panel

### 6.4.1 RS422/RS485 Serial Control

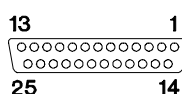
Cannon 9 way 'D' screwlock socket. Wired as 'Tributary'

Pin	Function
1	Chassis
2	Tx-
3	Rx+
4	Rx Common
5	N/C
6	Tx Common
7	Tx+
8	Rx-
9	Chassis

### 6.4.2 RS232 Serial Control

Cannon 25 way 'D' screwlock socket

Pin	Function
1	Chassis
2	Rx
3	Tx
4	DTR
5	RTS
6	DSR
7	0V
8	N/C
9	N/C
10	N/C
11	N/C
12	N/C
13	N/C
14	N/C
15	N/C
16	N/C
17	N/C
18	N/C
19	N/C
20	CTS
21	N/C
22	N/C
23	N/C
24	N/C
25	N/C



## 6.5 PSU Output Monitor (1537)

Pin	Function
1	PSU 1
2	PSU 2
3	0V

## 7 MAINTENANCE AND WARRANTY

### 7.1 General

No regular maintenance is required on this product or any of its sub-units. In the case of faults, first check the regulated power supplies using the PSU monitor points.

### 7.2 Warranty



#### WARRANTY PERIOD Hardware Products

Hardware Products are warranted for a period of two years from the date of shipment. During this period Pro-Bel, at its discretion, will repair or exchange products proved to be defective providing that the products are returned to Pro-Bel, carriage pre-paid. The Company will use its best efforts to ensure that returned items are repaired and despatched within ten working days of receipt. Third party items, including PC hardware or any outsourced equipment is limited to the original manufacturers warranty, typically one year.

#### Software Products

Software Products are warranted for a period of ninety days from the date of shipment. During this period Pro-Bel undertakes to rectify products proved not to conform to the published specification provided with the product, when used in accordance with PC hardware and operating systems approved by Pro-Bel.

#### Loans

Within the warranty period, the Company will, at its discretion and subject to availability, provide loan units pending the repair of returned items. Loans are offered on a no charge basis providing that the loan units are returned to Pro-Bel within a period of twenty one days following the date of despatch of the repaired items. In the event that the loan units are not returned within this period, the loan units will be subject to a monthly overdue charge, details of which are available on request. Carriage charges apply to all loans.

## NON WARRANTY PERIOD

Outside the stated warranty period, the Company will use it's best endeavours to rectify equipment failures through the provision of spare parts or in house repair services.

Loan units may also be provided subject to availability. All services and carriage costs are subject to a scale of charges, details of which are available on request.



**WARNING: Ensure that any returned unit is adequately and appropriately packed; for example, do not pack static sensitive product in common polythene.**

### 7.2.1 UK Customers

UK customers should return modules for repair marked as follows:

Customer Support  
Pro-Bel Limited  
Danehill  
Lower Earley  
Reading  
Berkshire  
RG6 4PB  
England

Telephone: +44(0)118 986 6123

### 7.2.2 US Customers

US customers should return modules marked as follows:

Service Department  
Pro-Bel America  
5 Hub Drive  
Melvilly  
NY 11747

Telephone: 516 845 2132

### 7.2.3 Other Customers

Other customers should send the unit to their local agent, with the same information attached.