PESA Switching Systems

Ocelot™

Routing Switcher System

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FCC Statement

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.

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: PESA SWITCHING SYSTEMS, INC.

Manufacturer's Address: 330A Wynn Drive
Huntsville, AL. 35805
USA

The manufacturer hereby declares that the product(s)

Product Name: Ocelot Analog Routing Switchers

Model Number(s): 8x8 Analog Video; 8x8 Analog Audio; 8x8 Analog High-Level; 8x8 Remote Panel; 8x2 Dual Remote Panel; 16x16 Analog Video; 8x8 Analog Audio; 16x16 Analog Sync; 16x16 Remote Panel; 16x1 Remote Panel

conforms to the following standards or other normative documents:

Electromagnetic Emissions:
EN 50081-1:1992
EN 55022:1993

Electromagnetic Immunity:
EN 50082-1:1997
EN 61000-4-2:1995
EN 61000-4-3:1995
EN 61000-4-4:1995
EN 61000-4-5:1995
EN 61000-4-6:1996
EN 61000-4-8:1994
EN 61000-4-11:1994
ENV 50204:1996

The product herewith complies with the requirements of: **EMC Directive 89/336/EEC**

Supplementary Information:

Test reports and compliance documents are on file at the corporate office of PESA Switching Systems, Inc. in Huntsville, Alabama, USA.

Huntsville, March 11,1999
Place and Date

Paul Ethridge
Quality Control Engineer

81905904240 REV. A

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: PESA SWITCHING SYSTEMS, INC.

Manufacturer's Address: 330A Wynn Drive
Huntsville, AL. 35805
USA

The manufacturer hereby declares that the product(s)

Product Name: Ocelot Digital Routing Switchers

Model Number(s): 8x8 Digital Video; 8x8 Digital Audio; 8x8 X/Y Local Panel; 8x1 Remote Panel

conforms to the following standards or other normative documents:

Electromagnetic Emissions:
EN 50081-1:1992
EN 55022:1993

Electromagnetic Immunity:
EN 50082-1:1997
EN 61000-4-2:1995
EN 61000-4-3:1995
EN 61000-4-4:1995
EN 61000-4-5:1995
EN 61000-4-6:1996
EN 61000-4-8:1994
EN 61000-4-11:1994
ENV 50204:1996

The product herewith complies with the requirements of: **EMC Directive 89/336/EEC**

Supplementary Information:

Test reports and compliance documents are on file at the corporate office of PESA Switching Systems, Inc. in Huntsville, Alabama, USA.

Huntsville, August 9,1999
Place and Date

Paul Ethridge
Quality Control Engineer

81905904430 REV. A 8/99

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: PESA SWITCHING SYSTEMS, INC.

Manufacturer's Address: 330A Wynn Drive
Huntsville, AL. 35805
USA

The manufacturer hereby declares that the product(s)

Product Name: Ocelot Digital Routing Switchers

Model Number(s): 16x16 Digital Video; 16x16 Digital Audio; 16x16 X/Y Local Panel; 16x2 Dual Remote Panel

conforms to the following standards or other normative documents:

Electromagnetic Emissions:
EN 50081-1:1992
EN 55022:1993

Electromagnetic Immunity:
EN 50082-1:1997
EN 61000-4-2:1995
EN 61000-4-3:1995
EN 61000-4-4:1995
EN 61000-4-5:1995
EN 61000-4-6:1996
EN 61000-4-8:1994
EN 61000-4-11:1994
ENV 50204:1996

The product herewith complies with the requirements of: **EMC Directive 89/336/EEC**

Supplementary Information:

Test reports and compliance documents are on file at the corporate office of PESA Switching Systems, Inc. in Huntsville, Alabama, USA.

Huntsville, July 28,1999
Place and Date

Paul Ethridge
Quality Control Engineer

81905904460 7/99 REV. A

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Tables

Chapter 1 – Introduction

General

This manual provides instructions for the installation, operation, and maintenance of the PESA™ Ocelot™ Routing Switcher System.

Safety Warnings

Safety warnings, and other important information, are emphasized in three ways:

WARNING

Warning statements identify conditions or practices that could result in personal injury or loss of life.

CAUTION

Caution statements identify conditions or practices that could result in damage to equipment.

NOTE

Notes add emphasis to information that is important for the correct installation, operation, or maintenance of the equipment.

Product Description

The PESA Ocelot is a modular routing switcher system available in 8-input and 16-input versions. Modules are available for both audio and video signals, in both analog and digital formats. The modules may be assembled into systems capable of controlling up to four levels with up to 16 control panels. Although many systems can be configured in a single chassis, multiple mainframes and remote control panels may be interconnected to create larger and more complex systems.

While an Ocelot system may be utilized as a stand-alone unit, the system controller module also allows it to be integrated into any routing switcher system that uses the PRC™ protocol.

An Ocelot system may also be controlled with a PC through the CPU Link™ on the system controller module, by using control system software such as Virtual Panel™.

Ocelot System Design Constraints

When specifying or upgrading an Ocelot system, the following constraints must be observed:

- **Mainframe Interface Connectors:** Every Ocelot system shall have one, and only one, system controller module. The system controller module may be installed in any of the mainframes. One connector interface module shall be installed in all remaining mainframes.
- **System Topology:** All mainframes and remote control panels (RCPs) in an Ocelot system shall be connected in a bus topology using the RJ-45 connector pairs located on the rear of each panel assembly (see Figure 1 on page 3). Jack splitters shall not be used. All mainframes shall be contiguous along the bus, and shall be located in close proximity to each other. A BURP Bus Terminator shall be installed in every unused external RJ-45 connector.
- **Remote Control Panels:** An Ocelot system shall not have more than two RCP buses. The total amount of cable per RCP bus shall not exceed 300 feet. The total number of control panels in an Ocelot system, mainframe and remote combined, shall not exceed 16.
- **Modules:** An Ocelot system may control up to four levels, and each level may contain multiple modules. The modules plug into connectors located on the mainframe mid-plane, which is seven interface units in width (i.e., has seven interface connectors). Modules vary in width from one to six interface units depending on module type (see Table 1 on page 3). Each mainframe may contain multiple modules as long as the sum of all module widths does not exceed seven interface units.
- **Power Supply, Mainframe, Standard Definition, ≤24 W:** If the total power required by the modules installed in a standard definition mainframe is 24 Watts or less, the standard 24 W power supply shall be used. Power requirements may be determined by consulting "Power Consumption by Module Type" on Page 7. Power connectors are provided in pairs on system controller modules, and connector interface modules. However, no more than one 24 W power supply shall be connected to a mainframe. The power supply may be connected to either of the power connectors. A mainframe that requires more than 24 W of power, or requires a backup power source, shall use the PS100 power supply.
- **Power Supply, Mainframe, Standard Definition, >24 W or Backup Power Source Required:** If the total power required by the modules installed in a standard definition mainframe is greater than 24 Watts, or if a backup power source is required, the PS100 power supply shall be used. Power requirements may be determined by consulting "Power Consumption by Module Type" on Page 7. Power connectors are provided in pairs on system controller modules, and connector interface modules. A single PS100 power supply may be connected to either of the power connectors. A second PS100 power supply may be connected to the remaining power connector in order to provide a backup power source.
- **Power Supply, Mainframe, High Definition:** All high definition mainframes shall only use the high definition power supply. Power connectors are provided in pairs on the rear of the high definition input board. A single high definition power supply may be connected to either of the power connectors. A second high definition power supply may be connected to the remaining power connector in order to provide a backup power source.
- **Power Supply, Remote Control Panel:** Every RCP shall be powered by one dedicated power supply.
- **Power Regulator, Mainframe, Standard Definition:** Two types of mainframe power regulators exist: audio and video. Either or both may be installed in a standard definition mainframe. Consult Table 1 on page 3 to determine the power regulator required for each module type.

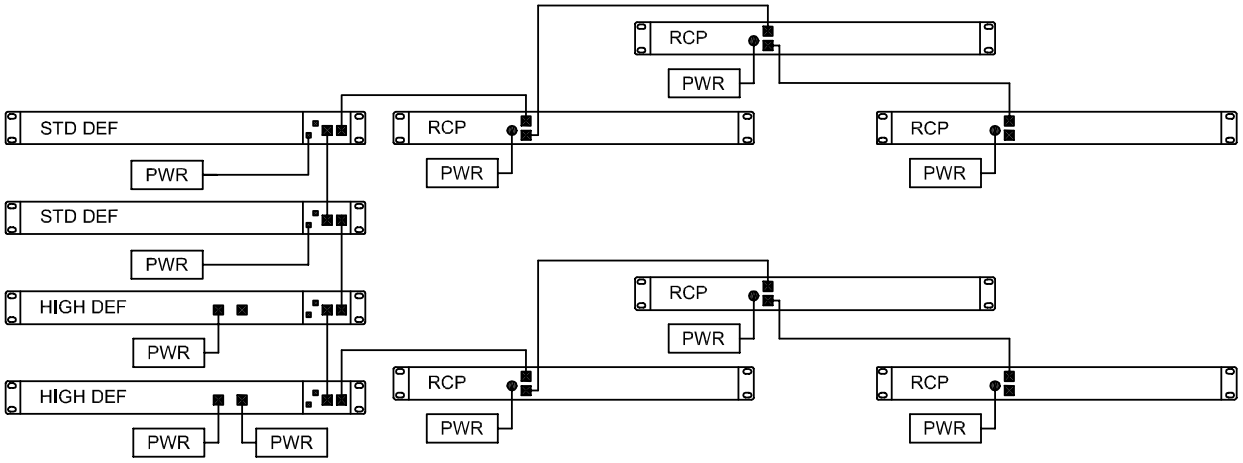


Figure 1. Sample Ocelot System Rear View

Table 1. Module Width and Internal Power Regulator Requirements

Module Type	Mid-Plane Interface Units Required	Internal Power Regulator Required
System Controller Module	1	Either
Connector Interface Module	1	None
8x8 Analog Audio Module	1	Audio
8x8 Digital Audio Module	1	Either
16x16 Analog Audio Module	2	Audio
16x16 Digital Audio Module	2	Either
8x8 Analog Video Module	2	Video
8x8 Analog Video Module, High Level/Sync	2	Audio
8x8 Digital Video Module	2	Either
16x16 Analog Video Module	4	Video
16x16 Analog Video Module, Wideband	4	Either
16x16 Analog Video Module, High Level/Sync	4	Either
16x16 Digital Video Module	4	Either
16x8 Digital Video, High Definition	6	None
16x16 Digital Video, High Definition	6	None

Figure 2. Mainframe without Control Panel

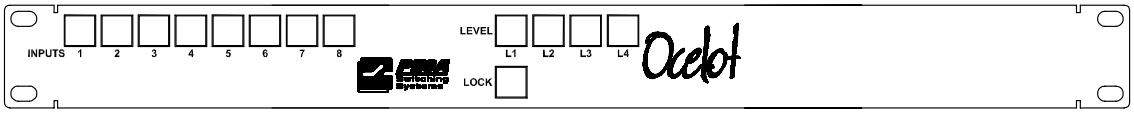


Figure 3. 8x1 Control Panel (Remote Only)

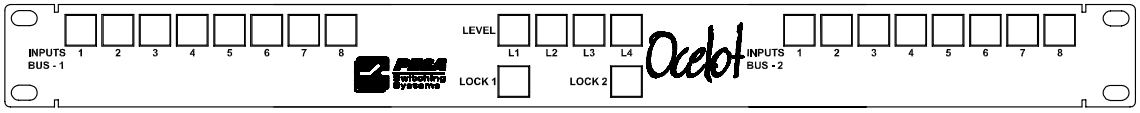


Figure 4. 8x1 Dual Control Panel (Remote Only)

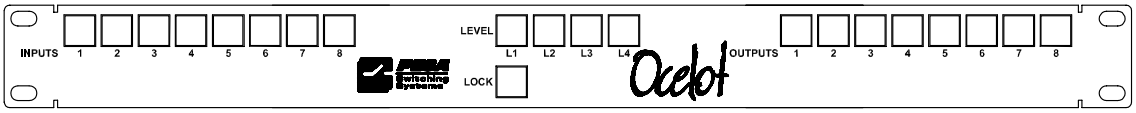


Figure 5. 8x8 Control Panel (Mainframe or Remote)

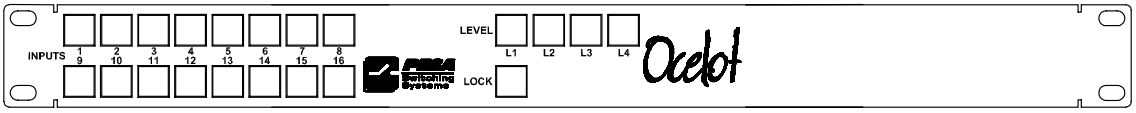


Figure 6. 16x1 Control Panel (Remote Only)

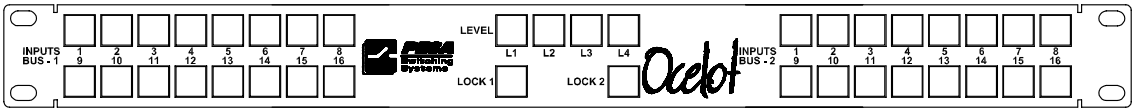


Figure 7. 16x1 Dual Control Panel (Remote Only)

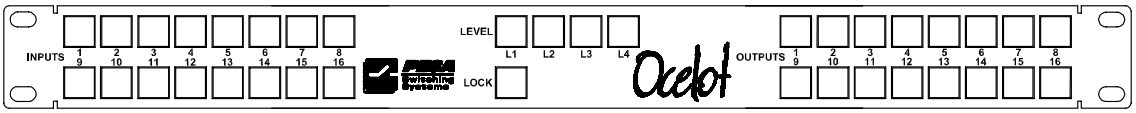


Figure 8. 16x16 Control Panel (Mainframe or Remote)

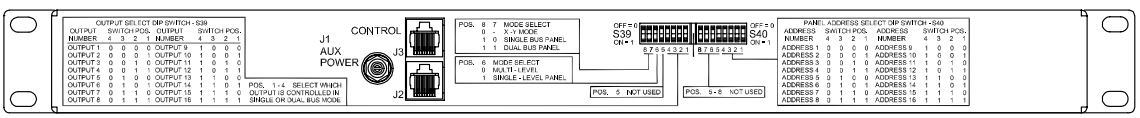


Figure 9. Typical Remote Control Panel Rear View

Specifications

General

Operational Environment

Temperature ..... 0-40°C
Humidity ..... 0-90% Non-Condensing

Physical Dimensions

Height ..... 1.75 in (44 mm) (1 Rack Unit)
Width ..... 19 in (483 mm)
Depth
- Mainframe ..... 9.7 in (246 mm)
- Remote Control Panel ..... 1.3 in (33 mm)

Weight, Standard Definition

Mainframe Chassis ..... 4.5 lb (2.5 kg)
Mainframe Blank Front Panel ..... 0.7 lb (0.3 kg)
Mainframe Control Panel ..... 1.0 lb (0.5 kg)
Remote Control Panel ..... 1.3 lb (0.6 kg)
Mainframe Internal Power Regulator, Audio ..... 0.2 lb (0.1 kg)
Mainframe Internal Power Regulator, Video ..... 0.2 lb (0.1 kg)
Mainframe External Power Supply (US) ..... 1.8 lb (0.8 kg)
Mainframe External Power Supply (OUS) ..... 2.7 lb (1.2 kg)
Remote Control Panel Power Supply ..... 1.3 lb (0.6 kg)
Connector Interface Module ..... 0.1 lb (0.0 kg)
System Controller Module ..... 0.2 lb (0.1 kg)
8x8 Analog Audio Module ..... 0.2 lb (0.1 kg)
8x8 Digital Audio Module ..... 0.2 lb (0.1 kg)
16x16 Analog Audio Module ..... 0.4 lb (0.2 kg)
16x16 Digital Audio Module ..... 0.4 lb (0.2 kg)
8x8 Analog Video Module ..... 0.5 lb (0.2 kg)
8x8 Analog Video (High Level/Sync) Module ..... 0.5 lb (0.2 kg)
8x8 Digital Video Module ..... 0.6 lb (0.3 kg)
16x16 Analog Video Module ..... 1.0 lb (0.5 kg)
16x16 Analog Video (Wideband) Module ..... 1.2 lb (0.5 kg)
16x16 Analog Video (High Level/Sync) Module ..... 1.2 lb (0.5 kg)
16x16 Digital Video Module ..... 1.3 lb (0.6 kg)

Weight, High Definition

Mainframe Chassis ..... 4.5 lb (2.5 kg)
Mainframe Blank Front Panel ..... 0.7 lb (0.3 kg)
Mainframe Control Panel ..... 1.0 lb (0.5 kg)
Remote Control Panel ..... 1.3 lb (0.6 kg)
Mainframe External Power Supply ..... 3.0 lb (1.4 kg)
Remote Control Panel Power Supply ..... 1.3 lb (0.6 kg)
Connector Interface Module ..... 0.1 lb (0.0 kg)
System Controller Module ..... 0.2 lb (0.1 kg)
16x8 Digital Video (High Definition) Module ..... 1.5 lb (0.6 kg)
16x16 Digital Video (High Definition) Module ..... 1.8 lb (0.7 kg)

Power

Mainframe Power Supply, Standard Definition, 24W

US
- Part Number 81-9065-1957-0
- Input ..... 120 VAC, 60 Hz
- Input Connector ..... NEMA 5-15P Plug
- Output ..... 18 VAC with center tap at 24 W

Non-US
- Part Number 81-9065-1958-0
- Input ..... 220/230 VAC, 50 Hz
- Input Connector ..... IEC 320 Receptacle (requires line cord)
- Output ..... 18 VAC with center tap at 24 W

Mainframe Power Supply, Standard Definition, PS100

- Part Number 81-9065-2263-0
- Input ..... Auto-Ranging: 100-240 VAC, 50-60 Hz
- Input Connector ..... IEC 320 Receptacle (requires line cord)
- Output ..... ±9 VDC at 50 W

Mainframe Power Supply, Ocelot High Definition

- Part Number 81-9065-2168-0
- Input ..... Auto-Ranging: 100-240 VAC, 50-60 Hz
- Input Connector ..... IEC 320 Receptacle (requires line cord)
- Output ..... +5 VDC at 30 W, +12 VDC at 6 W, -5 VDC at 15 W

Remote Control Panel Power Supplies

US
- Part Number. 81-9023-0169-0
- Input ..... 120 VAC, 60 Hz
- Input Connector ..... NEMA 1-15P Non-Polarized Plug
- Output ..... 9.4 VDC at 535 mA

UK
- Part Number. 81-9023-0122-0
- Input ..... 230 VAC, 50 Hz
- Input Connector ..... BS 1363A Plug
- Output ..... 9 VDC at 1 A

Euro
- Part Number 81-9023-0123-0
- Input ..... 220/230 VAC, 50 Hz
- Input Connector ..... CEE 7/16 Plug
- Output ..... 9 VDC at 1 A

IEC 320 Line Cords

US
- Part Number 81-9028-0403-0
- Connectors ..... IEC 320-C13 to NEMA 5-15P

UK
- Part Number 81-9028-TBD-0
- Connectors ..... IEC 320-C13 to BS 1363A

Euro
- Part Number 81-9028-0411-0
- Connectors ..... IEC 320-C13 to CEE 7/7 Schuko

Power Consumption by Module Type

Analog Audio, 8x8	1.5 W
Digital Audio, 8x8	2.6 W
Analog Audio, 16x16	3.0 W
Digital Audio, 16x16	9.6 W
Analog Video, 8x8	1.7 W
Analog Video, High Level/Sync, 8x8	11.0 W average, 22.0 W maximum Depending on signal characteristics
Digital Video, 8x8	8.8 W
Analog Video, 16x16	3.6 W
Analog Video, Wideband, 16x16	15.0 W
Analog Video, High Level/Sync, 16x16	22.0 W average, 44.0 W maximum Depending on signal characteristics
Digital Video, 16x16	15.9 W
Digital Video, High Definition, 16x8	TBD
Digital Video, High Definition, 16x16	TBD

Analog Audio (8x8, 16x16)

Input

Level	+26 dBm maximum
Impedance	≥60 kΩ
Type	Electrically Balanced
Coupling	Direct (DC)
Common Mode Rejection Ratio	-80 dB (50-60 Hz)
Connector Type	3-pin, 2-part, detachable plug (one per input)

Output

Level	+24 dBm into 600 Ω
Level Variation Between Inputs	<±0.1 dB
Impedance	≤56 Ω
Type	Electrically Balanced
Coupling	Direct (DC)
DC on Outputs	±20 mV
Load @ 24 dBm	≥600 Ω
Connector Type	3-pin, 2-part, detachable plug (one per output)

Gain

Gain	Adjustable to ±0.1 dB
Gain Adjust Range	±1.0 dB

Frequency

(Reference 1 KHz)	
Sine Wave Response	<±0.1 dB, 20 Hz to 20 kHz
	<-3.0 dB to 200 kHz
Square Wave Response	<±5%, 3 kHz, 100 µs rise time (20 V p-p)
(Overshoot and Ringing)	<±10%, 100 kHz, 1 µs rise time (5 V p-p)

Distortion

Total Harmonic Distortion	<0.05% @ 24 dBm, 20 Hz to 20 kHz
Intermodulation Distortion	<0.06% @ 24 dBm

Crosstalk

10 Hz to 20 kHz	<-85 dB (all inputs and outputs hostile)

Hum and Noise

Wideband 10 Hz to 300 kHz	<-73 dBm
80 kHz Low Pass Filter	<-78 dBm
30 kHz Low Pass Filter	<-86 dBm
15 kHz Low Pass Filter	<-89 dBm
"A" Weighted	<-90 dBm

Digital Audio (8x8, 16x16)

Input

Impedance ..... 110 Ω, ±20%, 0.1-6.0 MHz
Signal Amplitude .....0.5-7.0 V p-p terminated into 110 Ω
Connector Type.....3-pin, 2-part, detachable plug (one per input)

Output

Impedance ..... 110 Ω, ±20%, 0.1-6.0 MHz
Signal Amplitude .....2.0-7.0 V p-p terminated into 110 Ω
Common Mode Rejection Ratio.....≥30 dB below output signal (DC to 6 MHz)
Rise/Fall Time.....5-30 ns, 10-90% amplitude
Jitter ..... <±20 ns
Data Rate.....20 kbps to 10 Mbps
Connector Type.....3-pin, 2-part, detachable plug (one per output)
Standard ..... AES3-1993 Serial Digital

Analog Video (8x8)

Input

Level ..... 1 V p-p nominal
2 V p-p maximum (without obvious distortion)
Impedance ..... 75 Ω internally terminated
Return Loss ..... >40 dB to 5 MHz
>15 dB to 100 MHz
Coupling ..... Direct (DC)
Type ..... Differential
Connector Type ..... BNC (one per input)

Output

Level ..... 1 V p-p nominal
2 V p-p maximum (without obvious distortion)
Impedance ..... 75 Ω
Return Loss ..... >40 dB to 5 MHz
>15 dB to 100 MHz
Coupling ..... Direct (DC)
DC on Outputs ..... <±20 mV maximum
Connector Type ..... BNC (one per output)

Gain

Gain ..... Unity
Gain Adjust Range ..... ±0.5 dB

Linear Distortion

Frequency Response (8x8) ..... ±0.1 dB to 10 MHz
±0.75 dB to 100 MHz
+1.5 dB, -3.0 dB to 250 MHz
Vertical Tilt ..... 0.25% (50 Hz square wave)
Horizontal Tilt 0.25%

Non-Linear Distortion

(All tests, 10-90%, 3.58 MHz or 12.5-87.5%, 4.43 MHz)
Differential Gain ..... 0.1% @ 4.43 MHz
Envelope Delay ..... <2 ns, 50 MHz to 85 MHz
Differential Phase ..... 0.1° @ 4.43 MHz

Crosstalk

Video-to-Video ..... <-60 dB to 5 MHz (all inputs and outputs hostile)

Switching

Differential Delay, Input-to-Input, Same Output ..... ±1.0° @ 4.43 MHz
Differential Delay, Output-to-Output, Same Input ..... ±1.5° @ 4.43 MHz

Signal-to-Noise

Video Filter (low pass to 5 MHz) ..... -73 dB
Luminance Weighting Filter ..... -81 dB

Analog Video(16x16)

Input

Level ..... 1 V p-p nominal
2 V p-p maximum (without obvious distortion)
Impedance ..... 75 Ω internally terminated
Return Loss ..... >40 dB to 5 MHz
>15 dB to 100 MHz
Coupling ..... Direct (DC)
Type ..... Differential
Connector Type ..... BNC (one per input)

Output

Level ..... 1 V p-p nominal
2 V p-p maximum (without obvious distortion)
Impedance ..... 75 Ω
Return Loss ..... >40 dB to 5 MHz
>15 dB to 100 MHz
Coupling ..... Direct (DC)
DC on Outputs ..... <±20 mV maximum
Connector Type ..... BNC (one per output)

Gain

Gain ..... Unity
Gain Adjust Range ..... ±0.5 dB

Linear Distortion

Frequency Response (16x16) ..... ±0.1 dB to 10 MHz
±0.75 dB to 75 MHz
+1.5 dB, -3.0 dB to 150 MHz
Vertical Tilt ..... 0.25% (50 Hz square wave)
Horizontal Tilt 0.25%

Non-Linear Distortion

(All tests, 10-90%, 3.58 MHz or 12.5-87.5%, 4.43 MHz)
Differential Gain ..... 0.1% @ 4.43 MHz
Envelope Delay ..... <2 ns, 50 MHz to 85 MHz
Differential Phase ..... 0.1° @ 4.43 MHz

Crosstalk

Video-to-Video ..... <-60 dB to 5 MHz (all inputs and outputs hostile)

Switching

Differential Delay, Input-to-Input, Same Output ..... ±1.0° @ 4.43 MHz
Differential Delay, Output-to-Output, Same Input ..... ±1.5° @ 4.43 MHz

Signal-to-Noise

Video Filter (low pass to 5 MHz) ..... -73 dB
Luminance Weighting Filter ..... -81 dB

Analog Video, Wideband (16x16)

Input

Level	1 V p-p nominal 2 V p-p maximum (without obvious distortion)
Impedance	75 Ω internally terminated
Return Loss	>40 dB to 5 MHz >15 dB to 400 MHz
Coupling	Direct (DC)
Type	Differential
Connector Type	BNC (one per input)

Output

Level	1 V p-p nominal 2 V p-p maximum (without obvious distortion)
Impedance	75 Ω
Return Loss	>40 dB to 5 MHz >20 dB to 400 MHz
Coupling	Direct (DC)
DC on Outputs	<±20 mV maximum
Connector Type	BNC (one per output)

Gain

Gain	Unity
Gain Adjust Range	±0.5 dB

Linear Distortion

Frequency Response	±0.1 dB to 10 MHz ±0.5 dB to 20 MHz +1.0 dB, -3.0 dB to 40 MHz
Vertical Tilt	0.25% (50 Hz square wave)
Horizontal Tilt	0.25%

Crosstalk

Video-to-Video	<-60 dB to 5 MHz (all inputs and outputs hostile)

Switching

Differential Delay, Input-to-Input, Same Output	±1.0° @ 4.43 MHz
Differential Delay, Output-to-Output, Same Input	±1.5° @ 4.43 MHz

Signal-to-Noise

Video Filter (low pass to 5 MHz)	-73 dB
Luminance Weighting Filter	-81 dB

Analog Video, High Level/Sync (8x8, 16x16)

Input

Level	±5 V referenced to ground
Impedance	75 Ω internally terminated
Return Loss	>40 dB to 5 MHz
Coupling	Direct (DC)
Type	Differential
Connector Type	BNC (one per input)

Output

Level	±5 V referenced to ground
Impedance	75 Ω
Return Loss	>40 dB to 5 MHz
Coupling	Direct (DC)
DC on Outputs	<±20 mV maximum
Connector Type	BNC (one per output)
Equalization for 150 ft Belden 8281	<-2 dB to 400 MHz typical

Gain

Gain	Unity
Gain Adjust Range	±0.5 dB

Linear Distortion

Frequency Response	±0.1 dB to 10 MHz
	±1.0 dB to 200 MHz
	+1.5 dB, -3.0 dB to 400 MHz
Vertical Tilt	0.25% (50 Hz square wave)
Horizontal Tilt	0.25%

Crosstalk

Video-to-Video	<-60 dB to 5 MHz (all inputs and outputs hostile)

Signal-to-Noise

Video Filter (low pass to 5 MHz)	-73 dB
Luminance Weighting Filter	-81 dB

Digital Video (8x8, 16x16)

Input

Impedance ..... 75 Ω
Return Loss ..... >15 dB, 5-270 MHz
Automatic Equalization for Belden 8281 ..... to 100 m for 560 Mbps maximum
to 200 m for 360 Mbps maximum
to 300 m for 270 Mbps maximum
Connector Type ..... BNC (one per input)

Output

Impedance ..... 75 Ω
Return Loss ..... >15 dB, 5-270 MHz
Signal Amplitude ..... 800 mV ±10%, terminated into 75 Ω
DC Offset ..... ±0.5 V, terminated into 75 Ω
Rise/Fall Time ..... 0.6 ns ±100 ps (20-80%) terminated into 75 Ω
Timing Jitter ..... <0.2 Unit Intervals p-p
Alignment Jitter ..... <0.2 Unit Intervals p-p (SMPTE 259M)
Connector Type ..... BNC (one per output)

Digital Video, High Definition (16x8, 16x16)

Input

Impedance ..... 75 Ω internally terminated
Return Loss .....>15 dB, 5 MHz to 1.5 GHz
Data Rate.....1.5 Gbps maximum
Equalization for Belden 1694A..... 100 m
Connector Type.....BNC (one per input)

Output

Impedance ..... 75 Ω
Return Loss .....>15 dB, 5 MHz to 1.5 GHz
Jitter .....<0.2 Unit Intervals p-p
Connector Type.....BNC (one per output)

Chapter 2 – Installation

Shipping Damage Inspection

Immediately upon receipt, all shipping containers should be inspected for damage caused in transit. If any damage is noted, save all packing material and contact both PESA and the carrier as soon as possible.

Unpacking

CAUTION

This equipment contains static sensitive devices. A grounded wrist strap and mat should be used when handling the internal circuit cards.

Carefully unpack the equipment and compare the parts received against the packing list and Table 2 and Table 3. If any parts appear to be missing, please contact PESA immediately.

Table 2. Equipment List, High Definition

Part No., Description	Qty
81-9065-2152-0, Ocelot 16x8 High Definition Routing Switcher System	Note 1
81-9065-2153-0, Ocelot 16x16 High Definition Routing Switcher System	Note 1
81-9034-6508-0, Front Panel, Blank	Note 1
81-9065-2243-0, Mainframe Control Panel, 16x16	Note 1
81-9065-2237-0, Remote Control Panel, 16x16	Note 1
81-9065-2079-0, Module, System Controller	Note 1
81-9065-2016-0, Module, Connector Interface	Note 1
81-9028-0403-0, Line Cord, IEC 320, US	Note 1
81-9028-0411-0, Line Cord, IEC 320, Euro	Note 1
81-9028-TBD-0, Line Cord, IEC 320, UK	Note 1
81-9023-0169-0, Power Supply, RCP, US	Note 1
81-9023-0122-0, Power Supply, RCP, UK	Note 1
81-9023-0123-0, Power Supply, RCP, Euro	Note 1
81-9065-2189-0, BURP Bus Terminator	Note 1
81-9028-0386-0, BURP Cable (RJ-45 to RJ-45), 1 ft	Note 1
81-9028-0385-0, BURP Cable (RJ-45 to RJ-45), 25 ft	Note 1
81-9029-0787-0, Coupler, RJ-45, Female-Female	Note 1
81-9028-0393-0, Cable, Null Modem, 10 ft	Note 1
81-9028-0400-0, Cable, AT Serial Modem, 6 ft	Note 1
81-9065-2297-0, CD, Virtual Panel Software	Note 1
Note 1: This item is optional or may be ordered in varying quantities. Please consult your purchase order to verify that you have received the correct quantity.	

Table 3. Equipment List, Standard Definition

Part No., Description	Qty
81-9065-1921-0, Chassis with Mid-Plane and Cover	Note 1
81-9024-1406-0, Rear Panel, Blank	Note 1
81-9034-6508-0, Front Panel, Blank	Note 1
81-9065-2244-0, Mainframe Control Panel, 8x8	Note 1
81-9065-2243-0, Mainframe Control Panel, 16x16	Note 1
81-9065-2241-0, Remote Control Panel, 8x1	Note 1
81-9065-2242-0, Remote Control Panel, 8x1 Dual	Note 1
81-9065-2240-0, Remote Control Panel, 8x8	Note 1
81-9065-2238-0, Remote Control Panel, 16x1	Note 1
81-9065-2239-0, Remote Control Panel, 16x1 Dual	Note 1
81-9065-2237-0, Remote Control Panel, 16x16	Note 1
81-9065-1929-0, Module, Audio, 8x8 Analog	Note 1
81-9065-2005-0, Module, Audio, 8x8 Digital, AES/EBU	Note 1
81-9065-1913-0, Module, Audio, 16x16 Analog	Note 1
81-9065-2008-0, Module, Audio, 16x16 Digital, AES/EBU	Note 1
81-9065-1908-0, Module, Video, 8x8 Analog	Note 1
81-9065-1923-0, Module, Video, 8x8 Analog High Level/Sync	Note 1
81-9065-1911-0, Module, Video, 8x8 Digital	Note 1
81-9065-1912-0, Module, Video, 16x16 Analog	Note 1
81-9065-2128-0, Module, Video, 16x16 Analog Wideband	Note 1
81-9065-2011-0, Module, Video, 16x16 Analog High Level/Sync	Note 1
81-9065-1914-0, Module, Video, 16x16 Digital	Note 1
81-9065-2079-0, Module, System Controller	Note 1
81-9065-2016-0, Module, Connector Interface	Note 1
81-9065-1957-0, Power Supply, Mainframe, Standard Definition, US, 24 W	Note 1
81-9065-1958-0, Power Supply, Mainframe, Standard Definition, Non-US, 24 W	Note 1
81-9065-2263-0, Power Supply, PS100	Note 1
81-9028-0449-0, Cable, Power, PS100 to Ocelot System	Note 1
81-9028-0403-0, Line Cord, IEC 320, US	Note 1
81-9028-0411-0, Line Cord, IEC 320, Euro	Note 1
81-9028-TBD-0, Line Cord, IEC 320, UK	Note 1
81-9065-1922-0, Power Regulator, Mainframe, Audio	Note 1
81-9065-1917-0, Power Regulator, Mainframe, Video	Note 1
81-9023-0169-0, Power Supply, RCP, US	Note 1
81-9023-0122-0, Power Supply, RCP, UK	Note 1
81-9023-0123-0, Power Supply, RCP, Euro	Note 1
81-9065-2189-0, BURP Bus Terminator	Note 1
81-9028-0386-0, BURP Cable (RJ-45 to RJ-45), 1 ft	Note 1
81-9028-0385-0, BURP Cable (RJ-45 to RJ-45), 25 ft	Note 1
81-9029-0787-0, Coupler, RJ-45, Female-Female	Note 1
81-9028-0393-0, Cable, Null Modem, 10 ft	Note 1
81-9028-0400-0, Cable, AT Serial Modem, 6 ft	Note 1
81-9065-2297-0, CD, Virtual Panel Software	Note 1
Note 1: This item is optional or may be ordered in varying quantities. Please consult your purchase order to verify that you have received the correct quantity.	

Installation Location

WARNING

For safety reasons, this equipment must be located near the socket-outlet or power strip so that the AC line cord plugs are easily accessible (EN60950:1992 §1.7.2).

This equipment should be installed in an environment conforming to the specifications shown in "Operational Environment" on page 5. Each unit should be located as close as possible to its associated equipment to minimize cable runs.

Consideration should be given to the connection of this equipment to the supply circuit and the effect that possible overloading could have on overcurrent protection circuits and supply wiring. Refer to the nameplate ratings when addressing this concern.

Installation in Equipment Rack

This equipment is designed to be installed in a standard 19-inch equipment rack. Sufficient space must be provided behind the equipment racks to allow for control, signal, and power cables. All panel mounting holes should be utilized and mounting hardware tightened securely.

Install the equipment into the rack as follows:

1. Insert the panel assembly into the equipment rack and support the bottom of the panel assembly until all mounting screws have been installed and properly tightened.
2. Install the bottom two panel mounting screws.
3. Install the top two panel mounting screws.
4. Install any remaining panel mounting screws.
5. Tighten all of the panel mounting screws until they are secure.

Interface Connections

For reasons of personal safety, and to prevent damage to the equipment or cables, the following guidelines should be followed when connecting cables to this equipment:

1. Install the equipment in the rack before connecting cables.
2. All cables should be carefully strain relieved to prevent connector separation.
3. To the extent possible, separate control, signal, and power cables to minimize crosstalk and interference.
4. The liberal use of nylon cable ties to secure cables to the rack is encouraged. This will minimize the amount of force transmitted to the equipment and help route cables away from hazardous areas.
5. Route cables away from walk areas to avoid creating a safety hazard.

All interface connections are made at the rear of this equipment.

Input and Output Signal Connectors

Audio

These 3-contact connectors provide the audio input and output signal interfaces. See Figure 10 for an orientation view showing contact locations.

These connectors are connected to the audio sources and destinations with cables constructed with 3-contact connectors (Part No. 81-9029-0811-0) and shielded, twisted-pair audio cable (Part No. 81-9028-0043-2, Belden 8451, or equivalent) as shown in Figure 11.

The connector body has an integral strain relief which requires the use of a nylon cable tie (Part No. 81-9021-0028-8).

Contact locations when viewed from rear of chassis.

Figure 10. Audio Input/Output Signal Connectors

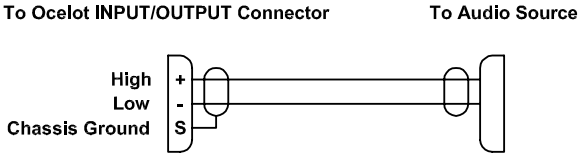


Figure 11. Audio Input/Output Signal Cable

Ocelot audio modules have inputs on the left and outputs on the right. Signals are numbered as shown in Figure 12 through Figure 15.

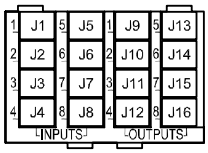


Figure 12. 8x8 Analog Audio Module Rear View

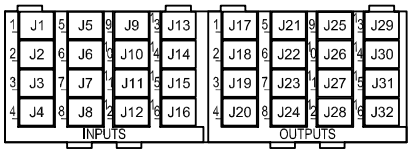


Figure 13. 16x16 Analog Audio Module Rear View

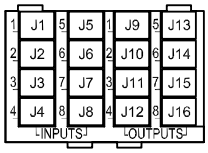


Figure 14. 8x8 Digital Audio Module Rear View

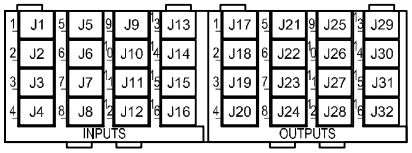


Figure 15. 16x16 Digital Audio Module Rear View

Video

These BNC coaxial connectors provide the video input and output signal interfaces. Use coaxial cable and a standard BNC connector to connect to each source and destination.

Ocelot video modules have inputs on the right and outputs on the left. Signals are numbered as shown in Figure 16 through Figure 24.

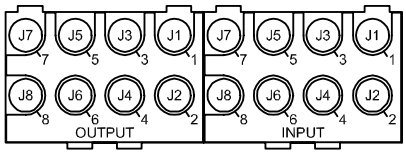


Figure 16. 8x8 Analog Video Module Rear View

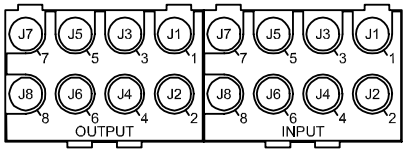


Figure 17. 8x8 Analog Video (High Level/Sync) Module Rear View

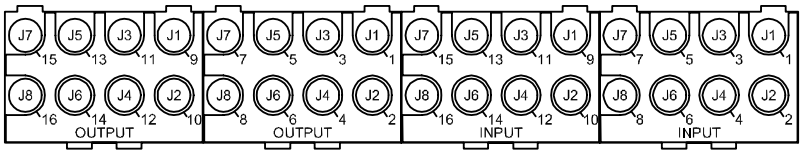


Figure 18. 16x16 Analog Video Module Rear View

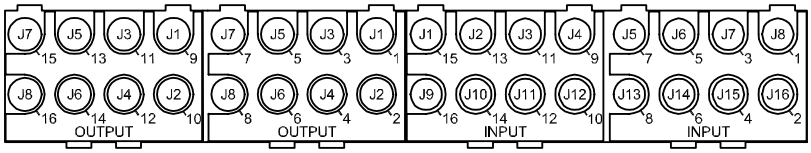


Figure 19. 16x16 Analog Video (Wideband) Module Rear View

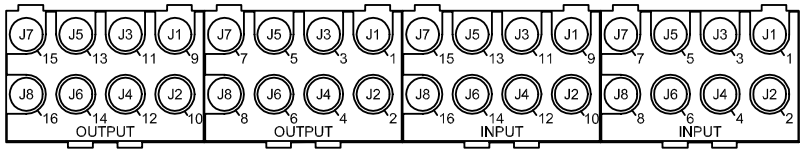


Figure 20. 16x16 Analog Video (High Level/Sync) Module Rear View

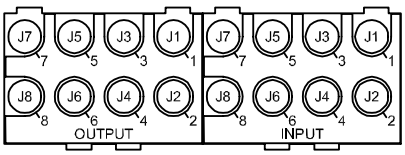


Figure 21. 8x8 Digital Video Module Rear View

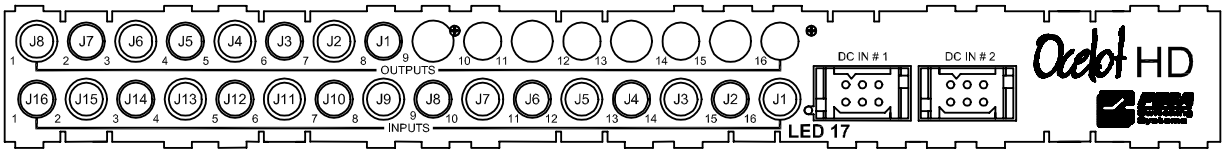


Figure 22. 16x8 Digital Video (HD) Module Rear View (Rear Plate not Shown)

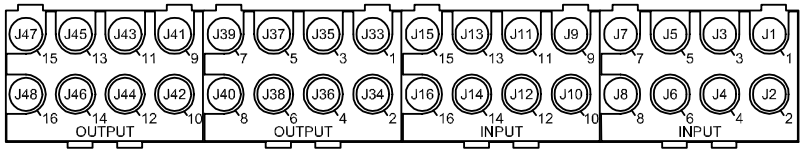


Figure 23. 16x16 Digital Video Module Rear View

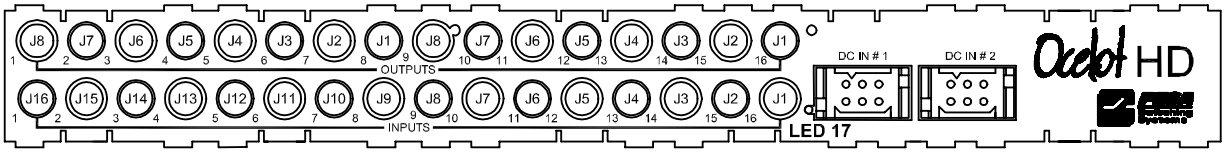


Figure 24. 16x16 Digital Video (HD) Module Rear View (Rear Plate not Shown)

Control Signal Connectors

NOTE

System Topology: All mainframes and remote control panels (RCPs) in an Ocelot system shall be connected in a bus topology using the RJ-45 connector pairs located on the rear of each panel assembly (see Figure 1 on page 3). Jack splitters shall not be used. All mainframes shall be contiguous along the bus, and shall be located in close proximity to each other. A BURP Bus Terminator shall be installed in every unused external RJ-45 connector.

Remote Control Panels: An Ocelot system shall not have more than two RCP buses. The total amount of cable per RCP bus shall not exceed 300 feet. The total number of control panels in an Ocelot system, mainframe and remote combined, shall not exceed 16.

Mainframe

All mainframe control signals are routed through either a system controller module, or a connector interface module. The system controller module may be installed in any of the mainframes. Connector interface modules are installed in all other mainframes.

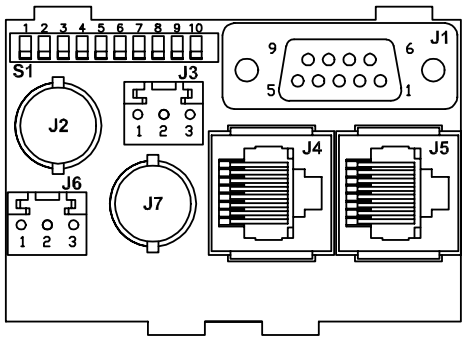


Figure 25. System Controller Module Rear View (Connectors J1, J2, J4, J5, J7)

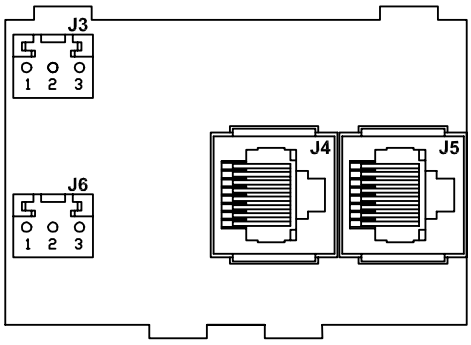


Figure 26. Connector Interface Module Rear View (Connectors J4, J5)

Communication Bus Connectors (J4, J5)

These RJ-45 connectors are used to provide a serial communication interface using the Bobcat Universal Router Protocol (BURP). They are wired in parallel to allow mainframes and remote control panels to be daisy-chained together.

Ocelot mainframes and remote control panels are interconnected with BURP cables available in two lengths: 1 ft (Part No. 81-9028-0386-0) and 25 ft (Part No. 81-9028-0385-0).

Ocelot panels may also be interconnected with eight-conductor UTP patch cables conforming to TIA/EIA 568-A, Category 5.

If necessary, BURP cables may be spliced together by using an RJ-45 female-to-female coupler (Part No. 81-9029-0787-0).

Install a BURP Bus Terminator (Part No. 81-9065-2189-0) in all unused RJ-45 connectors.

House Sync Input Connectors (J2, J7)

These BNC coaxial connectors provide the interface for a house sync signal (NTSC, PAL, etc.) and are wired in parallel. Either of them may be connected to house sync with coaxial cable and standard BNC connectors. The other connector may be used to loop the signal to another piece of equipment.

Install a 75 Ohm terminator (Part No. 81-9029-0668-4) on all unused BNC connectors.

External Control Connector (J1)

This DB-9 Male connector provides an external system control interface. See “System Controller Module” on page 66 for the switch and jumper settings necessary to configure this connector for use.

RS-232 CPU Link Interface (PC)

Connect J1 to a serial port on a PC with a null modem cable (Part No. 81-9028-0393-0). If necessary, a cable up to 50 feet in length may be fabricated in the field as shown in Figure 27.

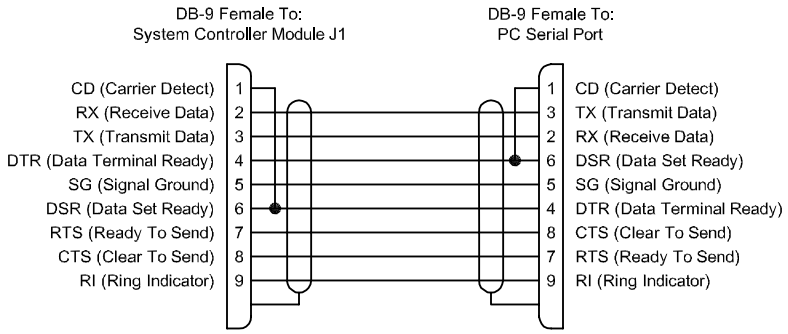


Figure 27. RS-232 CPU Link Interface (Null Modem) Cable

RS-232 CPU Link Interface (External Modem)

Connect J1 to an external modem with an AT serial modem cable (Part No. 81-9028-0400-0). If necessary, a cable up to 50 feet in length may be fabricated in the field as shown in Figure 28.

The only modems tested by PESA for use as remote modems are the Practical Peripherals PM288MT II and the U.S. Robotics Sportster 28.8. Use the following initialization strings:

- PM288MT: AT S0=2 Q1 X4 &C1 &D0 &K3 &S1 &W0 &Y0
- Sportster 28.8: AT &F1 S0=2 &H1 &R2 &I0 L2 Q1 &C1 &D0 Y0 &W0

For more information on the use of an external modem, consult the manual that came with your control system software.

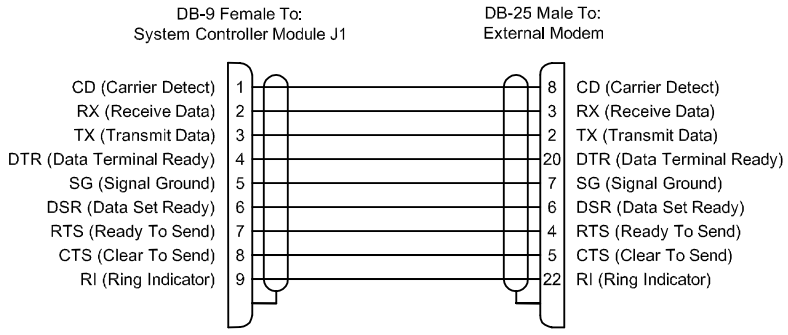


Figure 28. RS-232 CPU Link Interface (AT Serial Modem) Cable

RS-422 CPU Link Interface (Point-to-Point)

Connect J1 to a serial port on a PC with an AT serial modem cable (Part No. 81-9028-0400-0). If necessary, a cable up to 4000 feet in length may be fabricated in the field as shown in Figure 29.

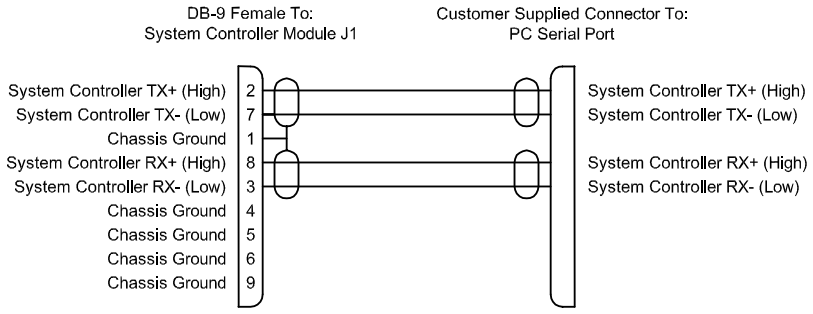


Figure 29. RS-422 CPU Link Interface (Point-to-Point) Cable

RS-422 CPU Link Interface (Multi-Drop)

Multiple Ocelot systems may be controlled by a single computer when RS-422 Multi-Drop Mode is selected. Using cables constructed as shown in Figure 29, the system controller modules are daisy-chained together, and then connected to the PC as shown in Figure 30. The total amount of cable in the RS-422 bus may not exceed 4000 feet.

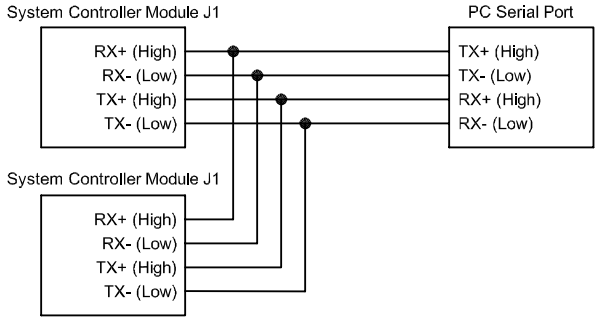


Figure 30. RS-422 CPU Link Interface (Multi-Drop) Cable

RS-422 PRC Interface

Connect J1 to the PRC interface connector on any PESA routing switcher or system controller with an AT serial modem cable (Part No. 81-9028-0400-0). If necessary, a cable up to 4000 feet in length may be fabricated in the field as shown in Figure 31.

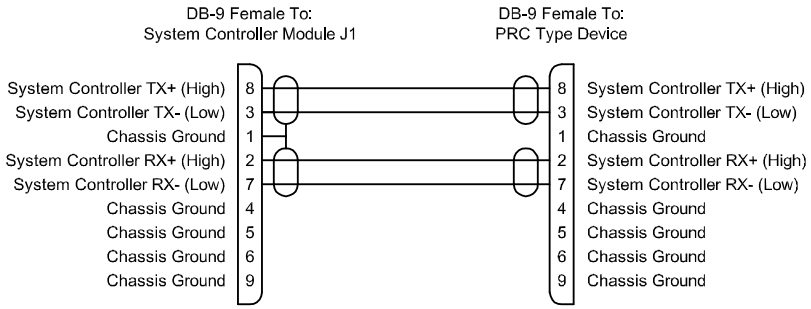


Figure 31. RS-422 PRC Interface Cable

Control Panels

Mainframe Control Panel

Control signals for mainframe control panels are routed through connectors located on the rear of each panel as shown in Figure 32.

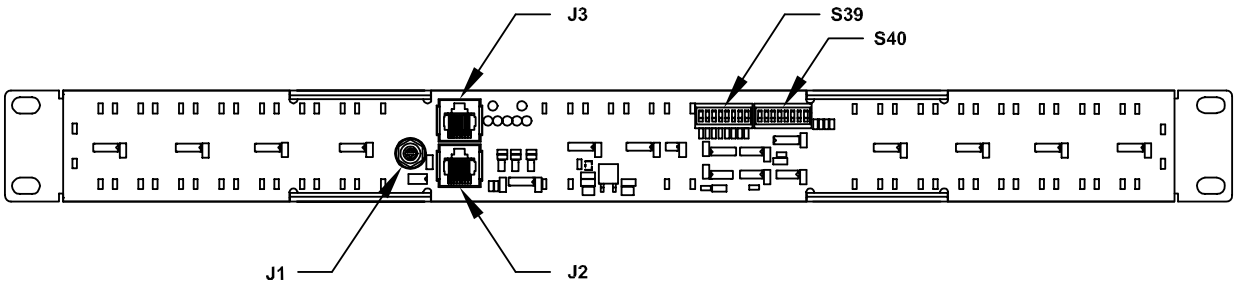


Figure 32. Mainframe Control Panel Rear View (Connectors J2, J3)

Communication Bus Connectors (J2, J3)

These RJ-45 connectors are wired in parallel, and are used to provide a serial communication interface using the Bobcat Universal Router Protocol (BURP).

Connect either J2 or J3 to the RJ-45 connector (J14) located on the front side of the Ocelot mid-plane, with a 1 ft BURP Cable (Part No. 81-9028-0386-0).

An eight-conductor UTP patch cable conforming to TIA/EIA 568-A, Category 5 may also be used.

It is not necessary to install a BURP Bus Terminator in the unused RJ-45 connector on the rear of the mainframe control panel.

Remote Control Panel

Control signals for remote control panels are routed through connectors located on the rear of each panel as shown in Figure 33.

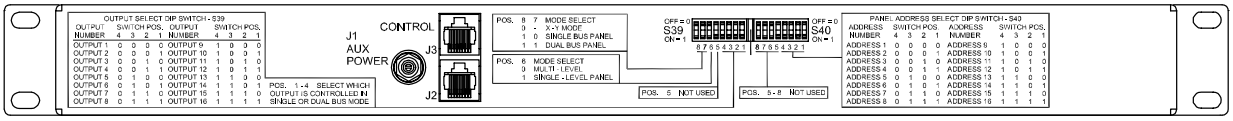


Figure 33. Typical Remote Control Panel Rear View (Connectors J2, J3)

Communication Bus Connectors (CONTROL) (J2, J3)

These RJ-45 connectors are used to provide a serial communication interface using the Bobcat Universal Router Protocol (BURP). They are wired in parallel to allow mainframes and remote control panels to be daisy-chained together.

Ocelot mainframes and remote control panels are interconnected with BURP cables available in two lengths: 1 ft (Part No. 81-9028-0386-0) and 25 ft (Part No. 81-9028-0385-0).

Ocelot panels may also be interconnected with eight-conductor UTP patch cables conforming to TIA/EIA 568-A, Category 5.

If necessary, BURP cables may be spliced together by using an RJ-45 female-to-female coupler (Part No. 81-9029-0787-0).

Install a BURP Bus Terminator (Part No. 81-9065-2189-0) in all unused RJ-45 connectors.

Power Connectors

WARNING

Always use grounded AC receptacles to avoid a potentially lethal shock hazard in the event of an equipment power line fault.

Mainframe, Standard Definition, ≤24 W, Standard Power Supply (J3, J6)

CAUTION

When only one standard 24 W power supply is connected to a standard definition mainframe, the exposed contacts on the unused power connector are energized with 18 VAC. While this voltage level does not present a hazard to personal safety, care should be taken not to short these contacts to each other, or ground. Doing so will damage the power supply.

NOTE

Power Supply, Mainframe, Standard Definition, ≤24 W: If the total power required by the modules installed in a standard definition mainframe is 24 Watts or less, the standard 24 W power supply shall be used. Power requirements may be determined by consulting "Power Consumption by Module Type" on Page 7. Power connectors are provided in pairs on system controller modules, and connector interface modules. However, no more than one 24 W power supply shall be connected to a mainframe. The power supply may be connected to either of the power connectors. A mainframe that requires more than 24 W of power, or requires a backup power source, shall use the PS100 power supply.

Ocelot standard definition mainframes are powered by external power supplies that plug into the AC mains. These power supplies are available in both US and Non-US configurations. See “Mainframe Power Supply, Standard Definition, 24W” on page 6 for specifications and part numbers.

The US power supply is a wall-mounted transformer that plugs into the AC mains.

The non-US power supply has a pigtail with an IEC 320 receptacle and requires a line cord for connection to the AC mains. See “IEC 320 Line Cords” on page 6 for available line cords.

The power supply is connected to J3 or J6 on either the system controller module, or the connector interface module.

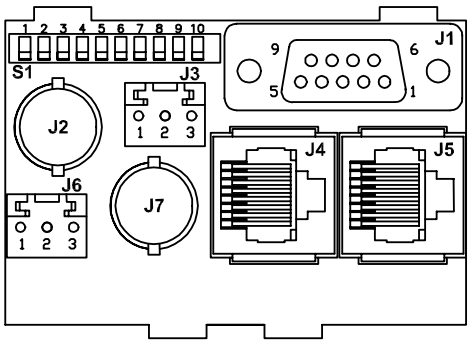


Figure 34. System Controller Module Rear View (Power Connectors J3, J6)

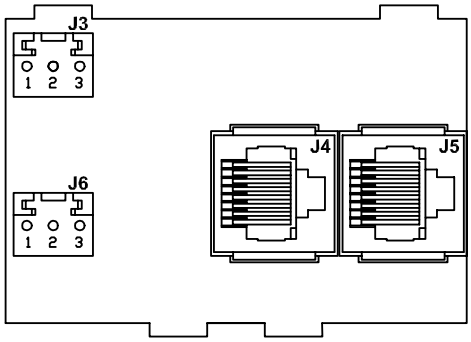


Figure 35. Connector Interface Module Rear View (Power Connectors J3, J6)

Mainframe, Standard Definition, >24 W, PS100 Power Supply (J3, J6)

CAUTION

When only one PS100 power supply is connected to a standard definition mainframe, the exposed contacts on the unused power connector are energized with ±9 VDC. While this voltage level does not present a hazard to personal safety, care should be taken not to short these contacts to each other, or ground. Doing so will damage the power supply.

NOTE

Power Supply, Mainframe, Standard Definition, >24 W or Backup Power Source Required: If the total power required by the modules installed in a standard definition mainframe is greater than 24 Watts, or if a backup power source is required, the PS100 power supply shall be used. Power requirements may be determined by consulting "Power Consumption by Module Type" on Page 7. Power connectors are provided in pairs on system controller modules, and connector interface modules. A single PS100 power supply may be connected to either of the power connectors. A second PS100 power supply may be connected to the remaining power connector in order to provide a backup power source.

Mainframes With High Power Requirements

A standard definition mainframe that requires more than the 24 W available from a standard power supply, must use the PS100 power supply. See "Mainframe Power Supply, Standard Definition, PS100" on page 6 for part number and specifications.

This power supply has an IEC 320 receptacle and requires a line cord for connection to the AC mains. See "IEC 320 Line Cords" on page 6 for available line cords.

The power supply is connected to J3 or J6 on either the system controller module, or the connector interface module, with a PS100 Ocelot Power Cable (Part No. 81-9028-0449-0).

Backup Power Supplies

The PS100 has an AC input and a DC output. Because of this, two PS100 power supplies may safely be connected to different branch circuits on the AC mains, without regard to phase, and then connected to the same mainframe.

Mainframe, High Definition – DC IN #1 (J30), DC IN #2 (J31)

NOTE

Power Supply, Mainframe, High Definition: All high definition mainframes shall only use the high definition power supply. Power connectors are provided in pairs on the rear of the high definition input board. A single high definition power supply may be connected to either of the power connectors. A second high definition power supply may be connected to the remaining power connector in order to provide a backup power source.

High definition mainframes use the high definition power supply. See "Mainframe Power Supply, Ocelot High Definition" on page 6 for part number and specifications.

This power supply has an IEC 320 receptacle and requires a line cord for connection to the AC mains. See "IEC 320 Line Cords" on page 6 for available line cords.

The power supply is connected to either the DC IN #1 connector (J30), or the DC IN #2 connector (J31) on the rear of the chassis.

NOTE

The high definition mainframe derives all required power from the high definition power supply. Do not connect power supplies to either a system controller module (J3 or J6), or a connector interface module (J3 or J6) present in a high definition mainframe.

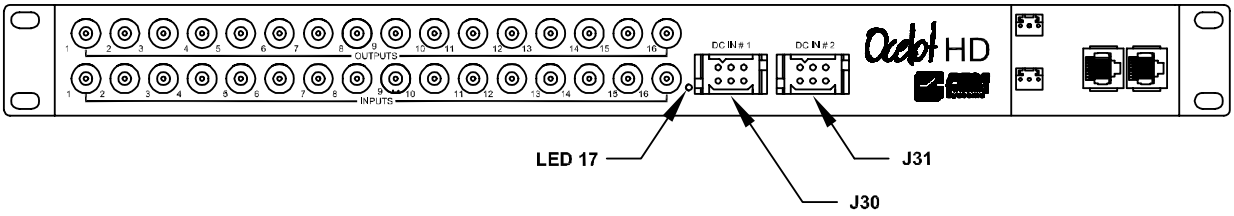


Figure 36. High Definition Mainframe Rear View (Connectors J30, J31)

Remote Control Panel (J1)

Ocelot remote control panels are powered by external power supplies that plug into the AC mains. These power supplies are available in both US and Non-US configurations. See “Remote Control Panel Power Supplies” on page 6 for specifications and part numbers. One power supply will be required for every RCP.

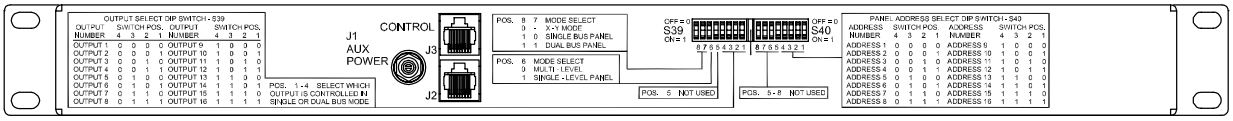


Figure 37. Typical Remote Control Panel Rear View (Connector J1)

Mainframe Control Panel (J1)

Mainframe control panel power is supplied from the mainframe mid-plane, through the communication bus cable (see “Communication Bus Connectors (J2, J3)” on page 29).

No connection is made to J1 on a mainframe control panel.

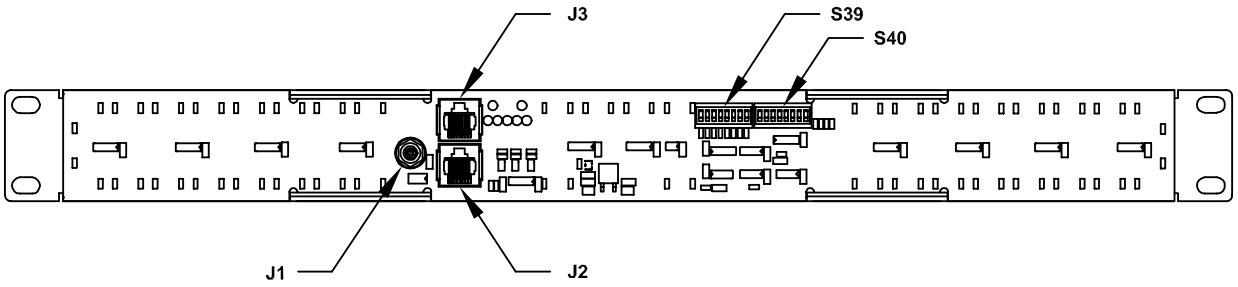


Figure 38. Mainframe Control Panel Rear View (Connector J1)

Switch and Jumper Settings

Mainframe Control Panel

The Mainframe Control Panel switches (S39 and S40) are used to select the panel output, panel type, panel address, and switching mode. Figure 39 and Figure 40 show the location and orientation of these switches.

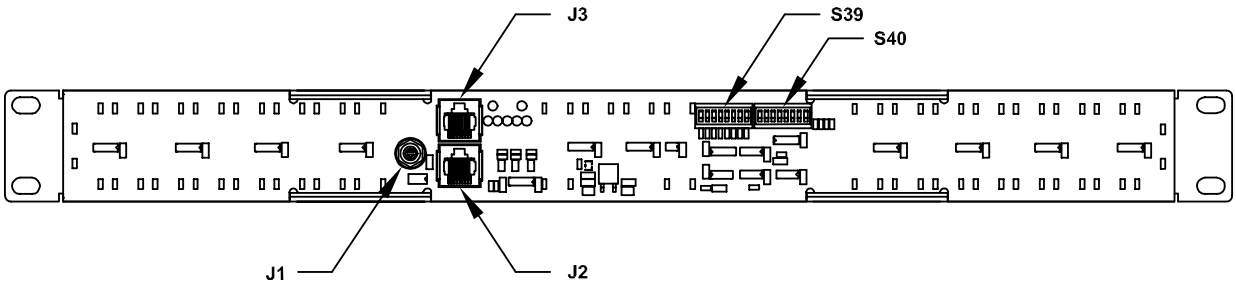


Figure 39. Mainframe Control Panel Rear View

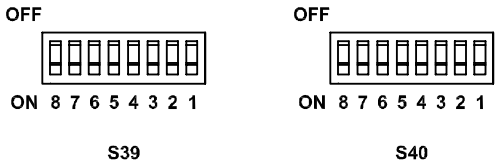


Figure 40. Mainframe Control Panel Switches S39, S40

Panel Output (S39-1 through S39-4)

When configuring a single output panel (8x1, 16x1), these switches are used to select the output to be controlled.

When configuring a dual output panel (8x1 Dual, 16x1 Dual), these switches are used to select the output to be controlled by Bus-1. The next output in numeric sequence will be controlled by Bus-2.

When configuring an X/Y panel (8x8, 16x16), these switches should be in the OFF position.

For example, if a 16x1 Dual panel is configured by setting S39-1 and S39-2 in the ON position, and S39-3 and S39-4 in the OFF position, Bus-1 (the input keys on the left) will control Output 4, and Bus-2 (the input keys on the right) will control Output 5.

Table 4. Control Panel Output (S39-1 through S39-4)

Mainframe Control Panel Panel Output	Switch S39-1	Switch S39-2	Switch S39-3	Switch S39-4
Output 1	OFF	OFF	OFF	OFF
Output 2	ON	OFF	OFF	OFF
Output 3	OFF	ON	OFF	OFF
Output 4	ON	ON	OFF	OFF
Output 5	OFF	OFF	ON	OFF
Output 6	ON	OFF	ON	OFF
Output 7	OFF	ON	ON	OFF
Output 8	ON	ON	ON	OFF
Output 9	OFF	OFF	OFF	ON
Output 10	ON	OFF	OFF	ON
Output 11	OFF	ON	OFF	ON
Output 12	ON	ON	OFF	ON
Output 13	OFF	OFF	ON	ON
Output 14	ON	OFF	ON	ON
Output 15	OFF	ON	ON	ON
Output 16	ON	ON	ON	ON

Reserved for Future Use (S39-5)

S39-5 is reserved for future use and should be in the OFF position.

Switching Mode (S39-6)

Single Level Switching mode allows switches to be taken on only one level at a time.

Multi-Level Switching mode allows switches to be taken on multiple levels at the same time.

Table 5. Control Panel Switching Mode (S39-6)

Mainframe Control Panel Switching Mode	Switch S39-6
Multi-Level Switching Mode	OFF
Single Level Switching Mode (Default)	ON

Panel Type (S39-7, S39-8)

These switches are used to select the panel type.

Table 6. Control Panel Type (S39-7, S39-8)

Mainframe Control Panel Panel Type	Switch S39-7	Switch S39-8
X/Y Panel (8x8, 16x16)	OFF	OFF
Single Output Panel (8x1, 16x1)	OFF	ON
Dual Output Panel (8x1 Dual, 16x1 Dual)	ON	ON

Panel Address (S40-1 through S40-4)

These switches are used to assign the control panel address. Every Ocelot control panel, whether mainframe or remote, must be assigned a unique address.

Table 7. Control Panel Address (S40-1 through S40-4)

Mainframe Control Panel Panel Address	Switch S40-1	Switch S40-2	Switch S40-3	Switch S40-4
Panel Address 1	OFF	OFF	OFF	OFF
Panel Address 2	ON	OFF	OFF	OFF
Panel Address 3	OFF	ON	OFF	OFF
Panel Address 4	ON	ON	OFF	OFF
Panel Address 5	OFF	OFF	ON	OFF
Panel Address 6	ON	OFF	ON	OFF
Panel Address 7	OFF	ON	ON	OFF
Panel Address 8	ON	ON	ON	OFF
Panel Address 9	OFF	OFF	OFF	ON
Panel Address 10	ON	OFF	OFF	ON
Panel Address 11	OFF	ON	OFF	ON
Panel Address 12	ON	ON	OFF	ON
Panel Address 13	OFF	OFF	ON	ON
Panel Address 14	ON	OFF	ON	ON
Panel Address 15	OFF	ON	ON	ON
Panel Address 16	ON	ON	ON	ON

Reserved for Future Use (S40-5 through S40-8)

S40-5 through S40-8 are reserved for future use and should be in the OFF position.

Remote Control Panels

The Remote Control Panel switches (S39 and S40) are used to select the panel output, panel type, panel address, and switching mode. Figure 41 and Figure 42 show the location and orientation of these switches.

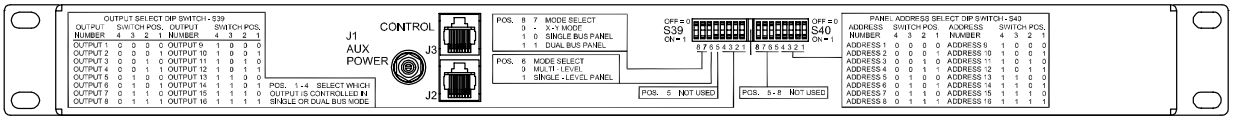


Figure 41. Typical Remote Control Panel Rear View (Switch S39)

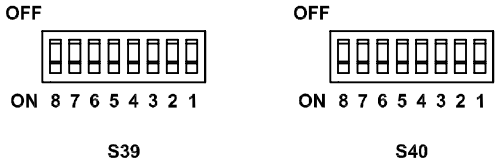


Figure 42. Remote Control Panel Switches S39, S40

These switches are configured in the same manner as those on the mainframe control panel. See “Mainframe Control Panel” on page 36 for more information.

Modules

8x8 Analog Audio Module

J2, J8 and J9 are jumpers used to assign the module to a level, and select the input power source. Figure 43 and Figure 44 show the location and orientation of these jumpers

CR1 is a green LED that is ON when ±15 VDC input power is present.

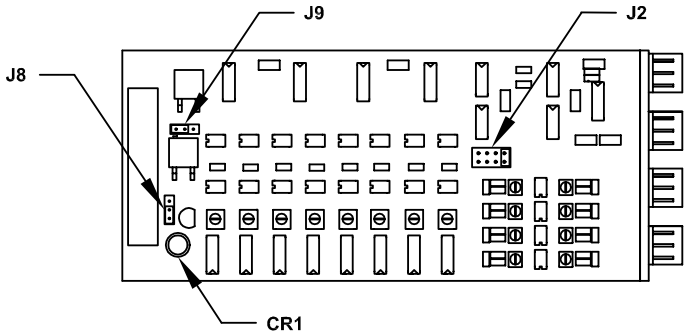


Figure 43. 8x8 Analog Audio Module Top View

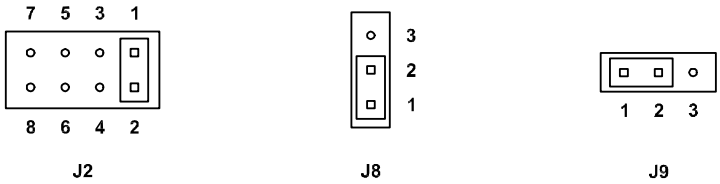


Figure 44. 8x8 Analog Audio Module Jumpers J2, J8, J9

Level Assignment (J2)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 8. 8x8 Analog Audio Module Level Assignment (J2)

8x8 Analog Audio Level Assignment	Jumper J2
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

+15 VDC Source(J8)

J8 is used to select the +15 VDC input power source. This jumper should not be changed from the default position.

Table 9. 8x8 Analog Audio Module +15 VDC Source (J8)

8x8 Analog Audio +15 VDC Source	Jumper J8
External (Default)	1-2
Internal	2-3

-15 VDC Source (J9)

J9 is used to select the -15 VDC input power source. This jumper should not be changed from the default position.

Table 10. 8x8 Analog Audio Module -15 VDC Source (J9)

8x8 Analog Audio -15 VDC Source	Jumper J9
External (Default)	1-2
Internal	2-3

16x16 Analog Audio Module

J10, J11 and J12 are jumpers used to assign the module to a level, and select the input power source. Figure 45 and Figure 46 show the location and orientation of these jumpers.

J7, J8 and J9 are connectors reserved for future use.

CR5 is a green LED that is ON when ±15 VDC input power is present.

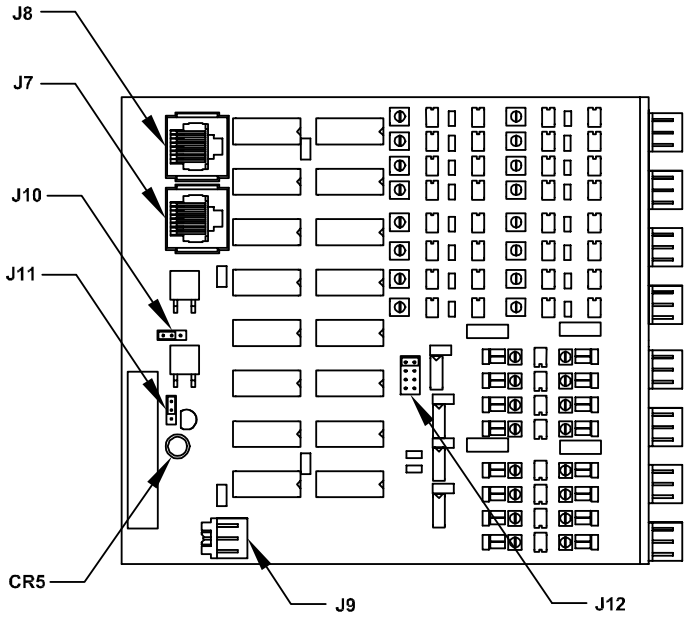


Figure 45. 16x16 Analog Audio Module Top View

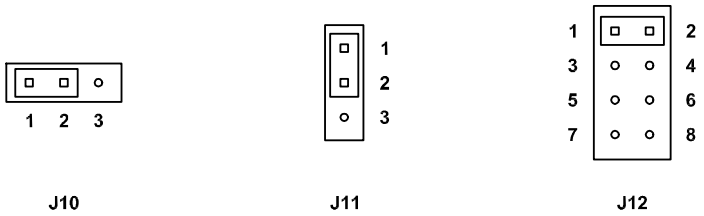


Figure 46. 16x16 Analog Audio Module Jumpers J10, J11, J12

Level Assignment (J12)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 11. 16x16 Analog Audio Module Level Assignment (J12)

16x16 Analog Audio Level Assignment	Jumper J12
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

+15 VDC Source (J11)

J11 is used to select the +15 VDC input power source. This jumper should not be changed from the default position.

Table 12. 16x16 Analog Audio Module +15 VDC Source (J11)

16x16 Analog Audio +15 VDC Source	Jumper J11
External (Default)	1-2
Internal	2-3

-15 VDC Source (J10)

J10 is used to select the -15 VDC input power source. This jumper should not be changed from the default position.

Table 13. 16x16 Analog Audio Module -15 VDC Source (J10)

16x16 Analog Audio -15 VDC Source	Jumper J10
External (Default)	1-2
Internal	2-3

8x8 Digital Audio Module

J10 and J11 are jumpers used to assign the module to a level, and select the input power source. Figure 47 and Figure 48 show the location and orientation of these jumpers.

J2, J3 and J3A are connectors reserved for future use.

CR20 is a green LED that is ON when +5 VDC input power is present.

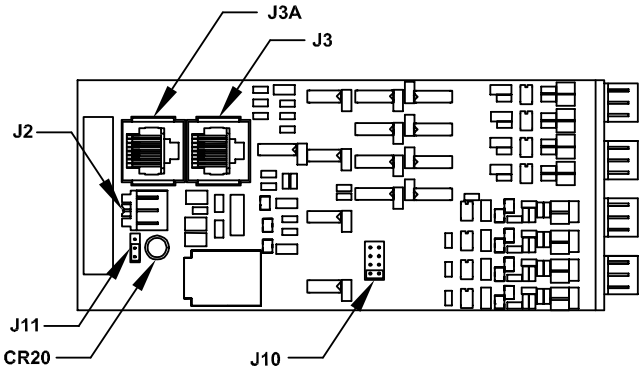


Figure 47. 8x8 Digital Audio Module Top View

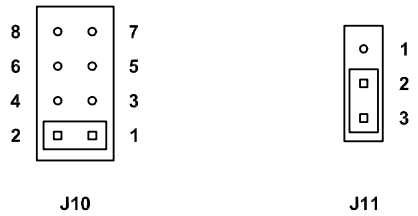


Figure 48. 8x8 Digital Audio Module Jumpers J10, J11

Level Assignment (J10)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 14. 8x8 Digital Audio Module Level Assignment (J10)

8x8 Digital Audio Level Assignment	Jumper J10
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

+5 VDC Source (J11)

J11 is used to select the +5 VDC input power source. This jumper should not be changed from the default position.

Table 15. 8x8 Digital Audio Module +5 VDC Source (J11)

8x8 Digital Audio + 5 VDC Source	Jumper J11
External	1-2
Internal (Default)	2-3

16x16 Digital Audio Module

J2 is a jumper used to assign the module to a level. Figure 49 and Figure 50 show the location and orientation of this jumper.

J1, J3 and J4 are connectors reserved for future use.

LED1 is a green LED that is ON when +5 VDC input power is present.

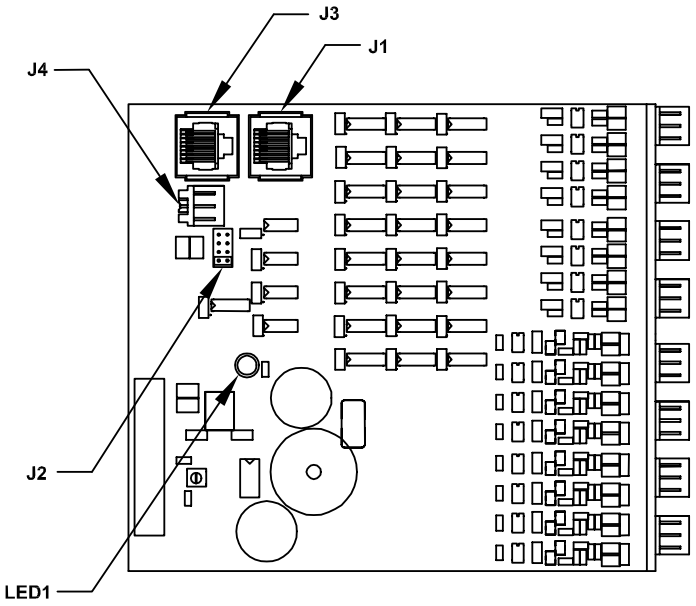


Figure 49. 16x16 Digital Audio Module Top View

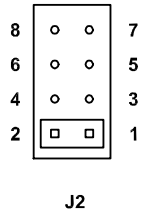


Figure 50. 16x16 Digital Audio Module Jumper J2

Level Assignment (J2)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 16. 16x16 Digital Audio Module Level Assignment (J2)

16x16 Digital Audio Level Assignment	Jumper J2
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

8x8 Analog Video Module

J1, J2 and J3 are jumpers used to assign the module to a level, and select the input power source. Figure 51 and Figure 52 show the location and orientation of these jumpers.

J4, J5 and J6 are connectors reserved for future use.

CR5 is a green LED that is ON when ±5 VDC input power is present.

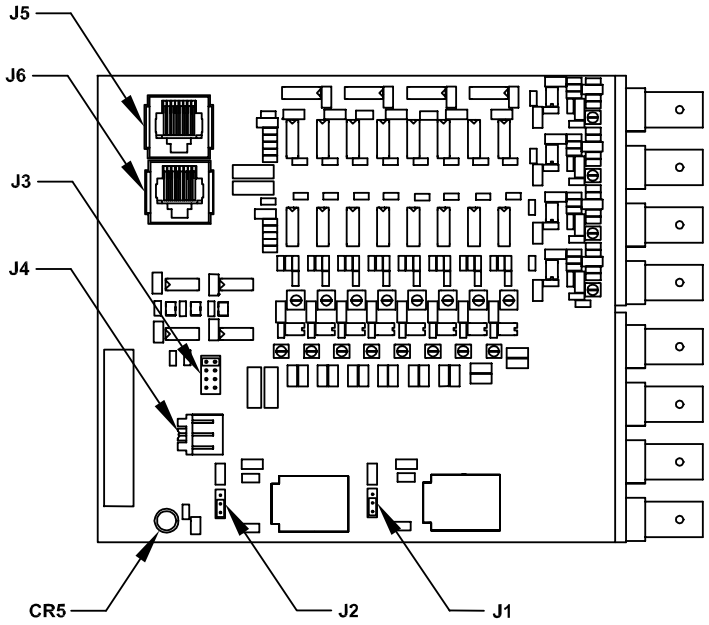


Figure 51. 8x8 Analog Video Module Top View

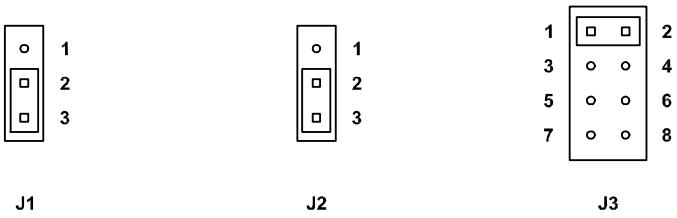


Figure 52. 8x8 Analog Video Module Jumpers J1, J2, J3

Level Assignment (J3)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 17. 8x8 Analog Video Module Level Assignment (J3)

8x8 Analog Video Level Assignment	Jumper J3
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

+5 VDC Source (J1)

J1 is used to select the +5 VDC input power source. This jumper should not be changed from the default position.

Table 18. 8x8 Analog Video Module +5 VDC Source (J1)

8x8 Analog Video +5 VDC Source	Jumper J1
External	1-2
Internal (Default)	2-3

-5 VDC Source (J2)

J2 is used to select the -5 VDC input power source. This jumper should not be changed from the default position.

Table 19. 8x8 Analog Video Module -5 VDC Source (J2)

8x8 Analog Video -5 VDC Source	Jumper J2
External	1-2
Internal (Default)	2-3

8x8 Analog Video (High Level/Sync) Module

J1, J2 and J3 are jumpers used to assign the module to a level, and select the input power source. Figure 53 and Figure 54 show the location and orientation of these jumpers.

J4, J5 and J6 are connectors reserved for future use.

CR5 is a green LED that is ON when ±5 VDC input power is present.

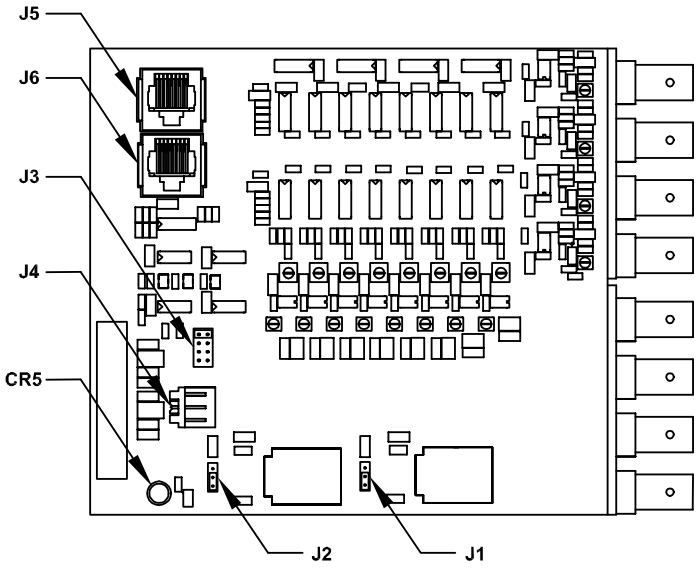


Figure 53. 8x8 Analog Video (High Level/Sync) Module Top View

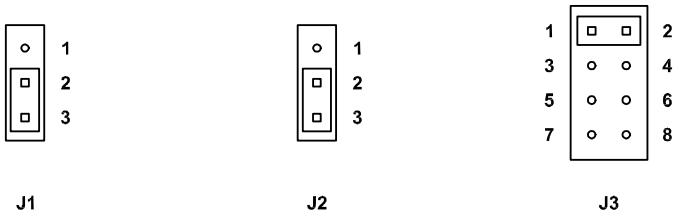


Figure 54. 8x8 Analog Video (High Level/Sync) Module Jumpers J1, J2, J3

Level Assignment (J3)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 20. 8x8 Analog Video (High Level/Sync) Module Level Assignment (J3)

8x8 Analog Video (High Level/Sync) Level Assignment	Jumper J3
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

+5 VDC Source (J1)

J1 is used to select the +5 VDC input power source. This jumper should not be changed from the default position.

Table 21. 8x8 Analog Video (High Level/Sync) Module +5 VDC Source (J1)

8x8 Analog Video (High Level/Sync) +5 VDC Source	Jumper J1
External	1-2
Internal (Default)	2-3

-5 VDC Source (J2)

J2 is used to select the -5 VDC input power source. This jumper should not be changed from the default position.

Table 22. 8x8 Analog Video (High Level/Sync) Module -5 VDC Source (J2)

8x8 Analog Video (High Level/Sync) -5 VDC Source	Jumper J2
External	1-2
Internal (Default)	2-3

16x16 Analog Video Module

J18, J19 and J20 are jumpers used to assign the module to a level, and select the input power source. Figure 55 and Figure 56 show the location and orientation of these jumpers.

J21, J22 and J23 are connectors reserved for future use.

CR2 is a green LED that is ON when ±5 VDC input power is present.

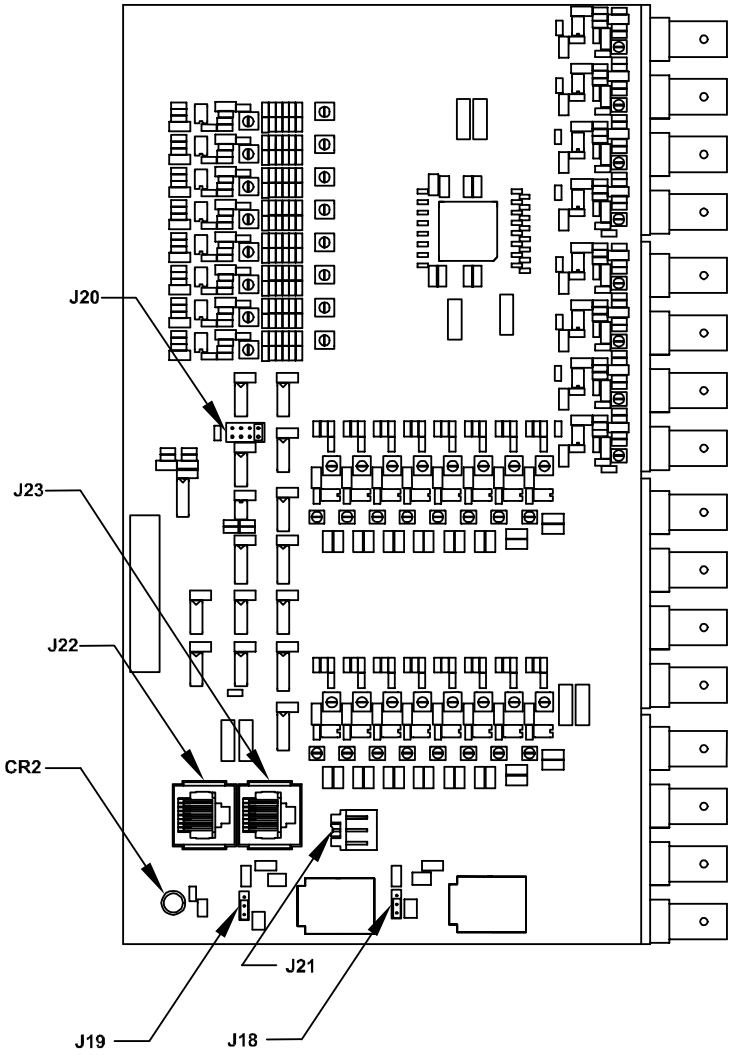


Figure 55. 16x16 Analog Video Module Top View

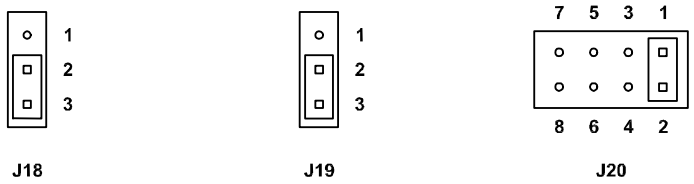


Figure 56. 16x16 Analog Video Module Jumpers J18, J19, J20

Level Assignment (J20)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 23. 16x16 Analog Video Module Level Assignment (J20)

16x16 Analog Video Level Assignment	Jumper J20
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

+5 VDC Source (J19)

J19 is used to select the +5 VDC input power source. This jumper should not be changed from the default position.

Table 24. 16x16 Analog Video Module +5 VDC Source (J19)

16x16 Analog Video +5 VDC Source	Jumper J19
External	1-2
Internal (Default)	2-3

-5 VDC Source (J18)

J18 is used to select the -5 VDC input power source. This jumper should not be changed from the default position.

Table 25. 16x16 Analog Video Module -5 VDC Source (J18)

16x16 Analog Video -5 VDC Source	Jumper J18
External	1-2
Internal (Default)	2-3

16x16 Analog Video (Wideband) Module

J1, J3 and J6 are jumpers used to assign the module to a level, and select the input power source. Figure 57 and Figure 58 show the location and orientation of these jumpers.

J2, J4 and J5 are connectors reserved for future use.

LED1 is a green LED that is ON when ±5 VDC input power is present.

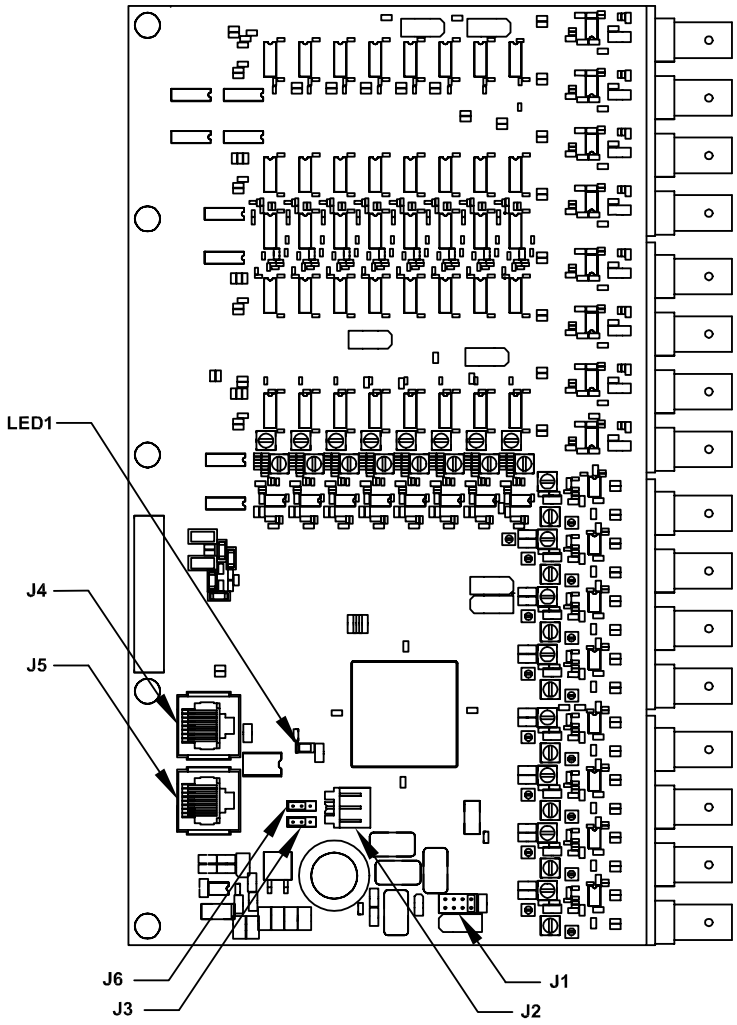


Figure 57. 16x16 Analog Video (Wideband) Module Top View

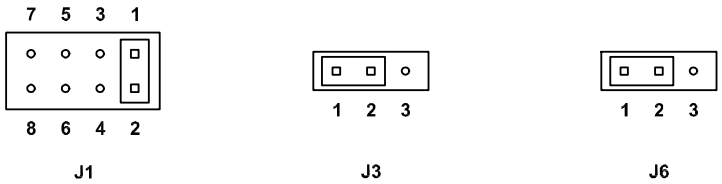


Figure 58. 16x16 Analog Video (Wideband) Module Jumpers J1, J3, J6

Level Assignment (J1)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 26. 16x16 Analog Video (Wideband) Module Level Assignment (J1)

16x16 Analog Video (Wideband) Level Assignment	Jumper J1
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

+5 VDC Source (J3)

J3 is used to select the +5 VDC input power source. This jumper should not be changed from the default position.

Table 27. 16x16 Analog Video (Wideband) Module +5 VDC Source (J3)

16x16 Analog Video (Wideband) +5 VDC Source	Jumper J3
External (Default)	1-2
Internal	2-3

-5 VDC Source (J6)

J6 is used to select the -5 VDC input power source. This jumper should not be changed from the default position.

Table 28. 16x16 Analog Video (Wideband) Module -5 VDC Source (J6)

16x16 Analog Video (Wideband) -5 VDC Source	Jumper J6
External (Default)	1-2
Internal	2-3

16x16 Analog Video (High Level/Sync) Module

J20 is a jumper used to assign the module to a level. Figure 59 and Figure 60 show the location and orientation of this jumper.

J100, J119, J125, J139, J147, J155, J163, J171, J195, J203, J221, J229, J245, J253, J277, J280, J496, J499, J510, J513, J524, J527, J530, J533, J536, J539, J550, J553, J556, J559, J594, and J597 (not shown) are jumpers used to select the output voltage.

J21, J22 and J23 are connectors reserved for future use.

CR7 is a green LED that is ON when ±5 VDC input power is present.

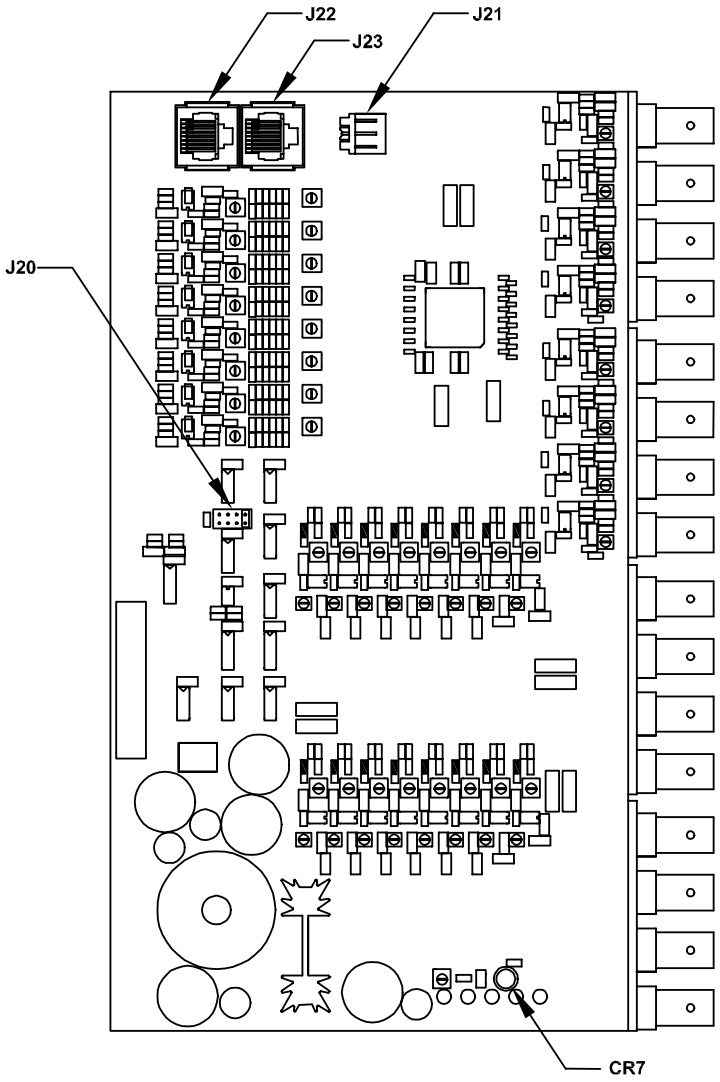


Figure 59. 16x16 Analog Video (High Level/Sync) Module Top View

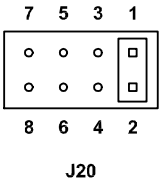


Figure 60. 16x16 Analog Video (High Level/Sync) Module Jumper J20

Level Assignment (J20)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 29. 16x16 Analog Video (High Level/Sync) Module Level Assignment (J20)

16x16 Analog Video (High Level/Sync) Level Assignment	Jumper J20
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

CAUTION

J100, J119, J125, J139, J147, J155, J163, J171, J195, J203, J221, J229, J245, J253, J277, J280, J496, J499, J510, J513, J524, J527, J530, J533, J536, J539, J550, J553, J556, J559, J594, and J597 are not typical jumpers.

They are 10 Ω SMT (Surface Mount Technology) resistors soldered in place at the factory. Special tools are required to reposition these components without causing damage to adjacent areas.

Failure to consult with Customer Service prior to repositioning these resistors may void the warranty on this equipment.

Table 30. 16x16 Analog Video (High Level/Sync) Module Output Voltage (J100 → 597)

16x16 Analog Video (High Level/Sync) Level Assignment	Jumper J20
±12 VDC for use with high level input (Default)	1-2
±5 VDC for use with standard level input	2-3

8x8 Digital Video Module

J9 is a jumper used to assign the module to a level. Figure 61 and Figure 62 show the location and orientation of this jumper.

J10, J10A and J11 are connectors reserved for future use.

CR26 is a green LED that is ON when ±5 VDC input power is present.

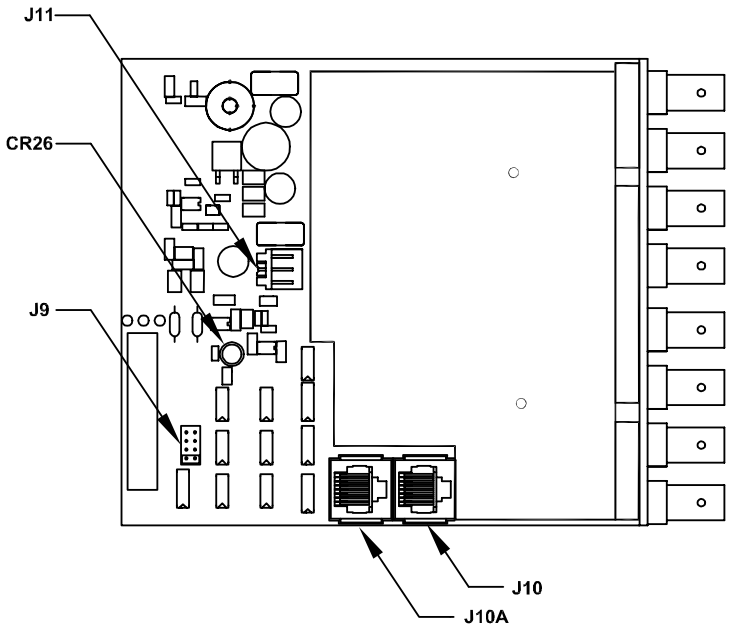


Figure 61. 8x8 Digital Video Module Top View

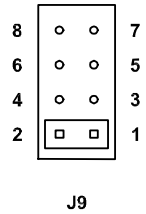


Figure 62. 8x8 Digital Video Module Jumper J9

Level Assignment (J9)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 31. 8x8 Digital Video Module Level Assignment (J9)

8x8 Digital Video Level Assignment	Jumper J9
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

16x8 Digital Video (High Definition) Module

J23 is a jumper used to assign the module to a level. Figure 63 and Figure 64 show the location and orientation of this jumper.

LED17 is a green LED that is ON when ±5 VDC input power is present.

Input Board LED1 through LED16 are green LEDs that are ON when input signals are present.

Output Board LED1 through LED8 are green LEDs that are ON when valid output signals are present.

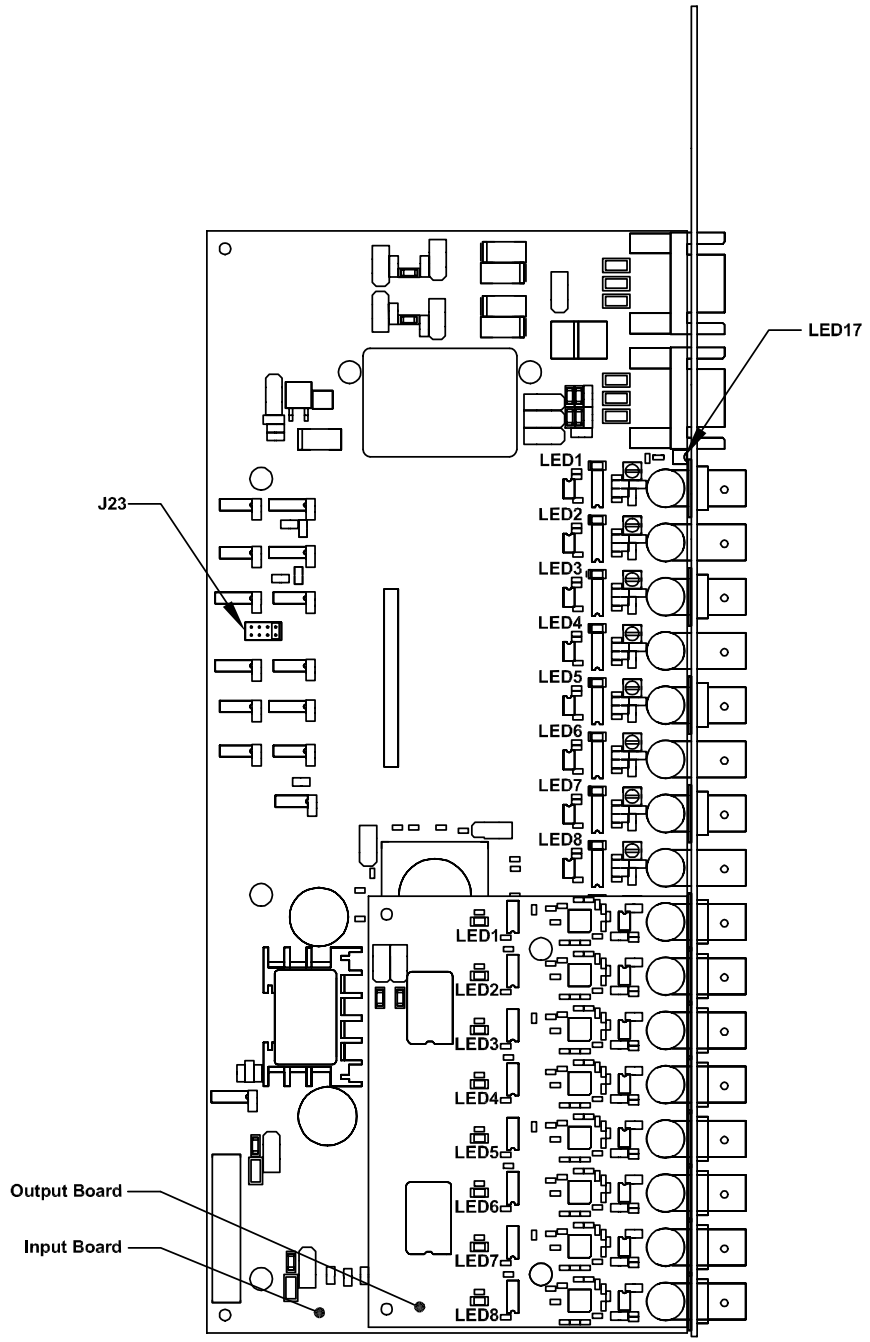


Figure 63. 16x8 Digital Video (High Definition) Module Top View

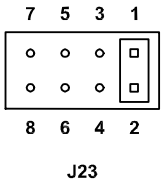


Figure 64. 16x8 Digital Video (High Definition) Module Jumper J23

Level Assignment (J23)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 32. 16x8 Digital Video (High Definition) Module Level Assignment (J23)

16x8 Digital Video (High Definition) Level Assignment	Jumper J23
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

16x16 Digital Video Module

J4 is a jumper used to assign the module to a level. Figure 63 and Figure 64 show the location and orientation of this jumper.

J1, J2 and J3 are connectors reserved for future use.

CR26 is a green LED that is ON when ±5 VDC input power is present.

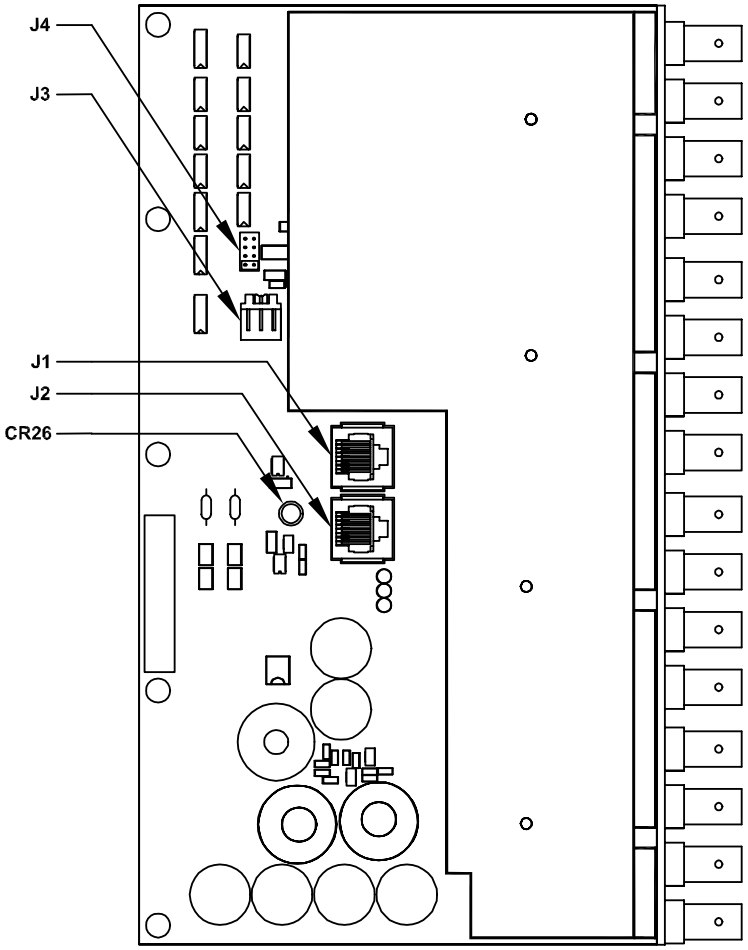


Figure 65. 16x16 Digital Video Module Top View

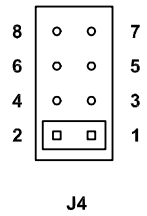


Figure 66. 16x16 Digital Video Module Jumper J4

Level Assignment (J4)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 33. 16x16 Digital Video Module Level Assignment (J4)

16x16 Digital Video Level Assignment	Jumper J4
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

16x16 Digital Video (High Definition) Module

J23 is a jumper used to assign the module to a level. Figure 63 and Figure 64 show the location and orientation of this jumper.

LED17 is a green LED that is ON when ±5 VDC input power is present.

Input Board LED1 through LED16 are green LEDs that are ON when input signals are present.

Output Board LED1 through LED8 are green LEDs that are ON when valid output signals are present.

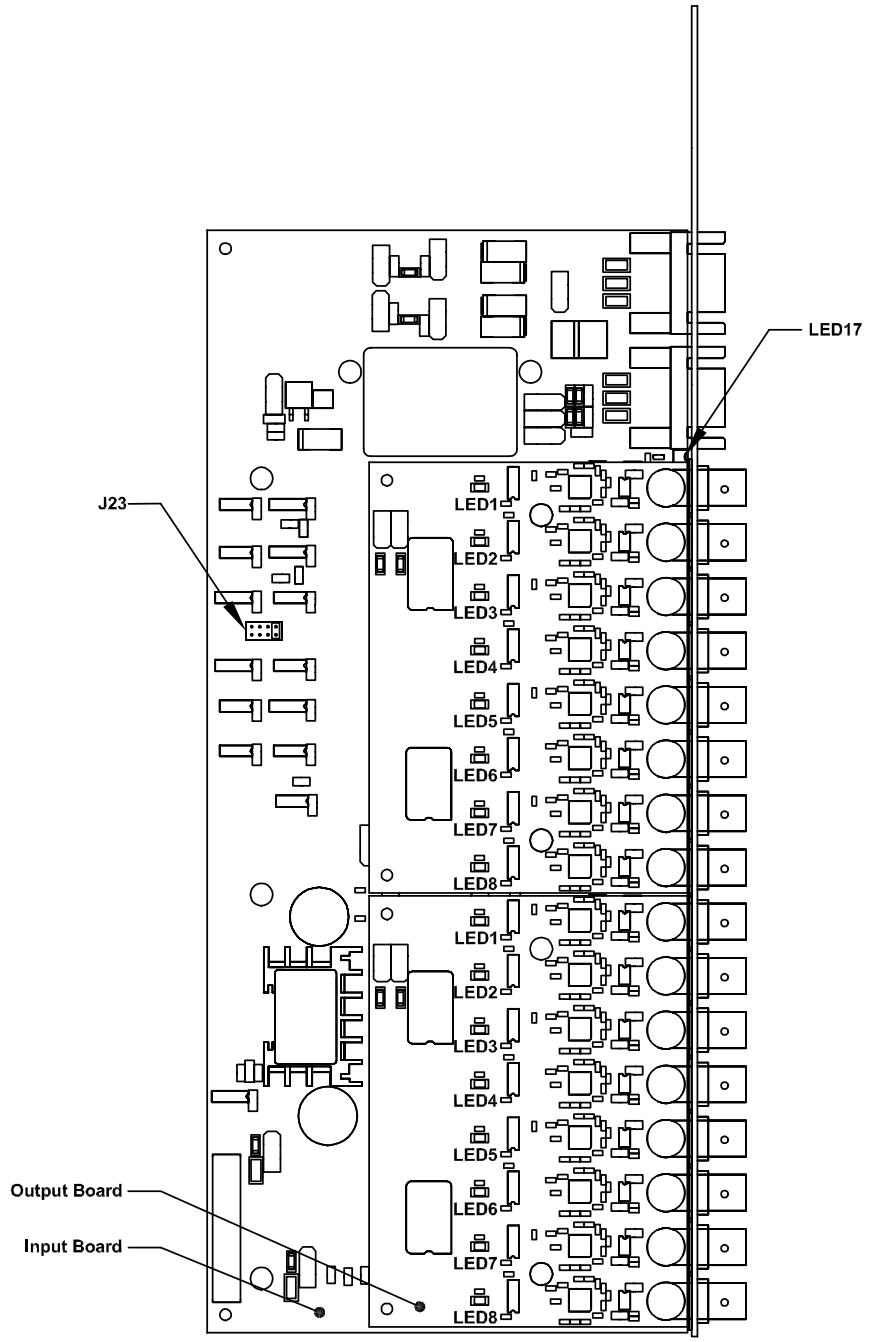


Figure 67. 16x16 Digital Video (High Definition) Module Top View

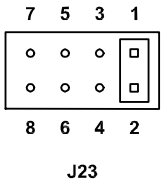


Figure 68. 16x16 Digital Video (High Definition) Module Jumper J23

Level Assignment (J23)

An Ocelot system may have up to four levels. Each module must be assigned to one of these levels.

Table 34. 16x16 Digital Video (High Definition) Module Level Assignment (J23)

16x16 Digital Video (High Definition) Level Assignment	Jumper J23
Level 1 (Default)	1-2
Level 2	3-4
Level 3	5-6
Level 4	7-8

System Controller Module

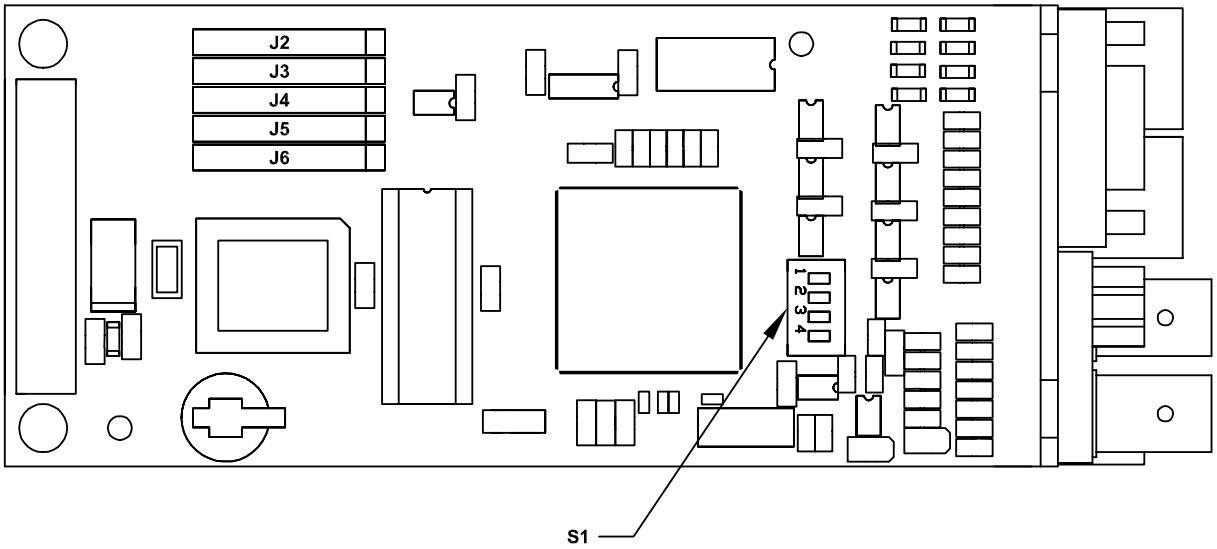


Figure 69. System Controller Module Top View

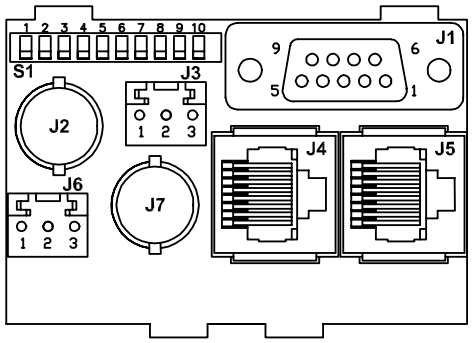


Figure 70. System Controller Module Rear View

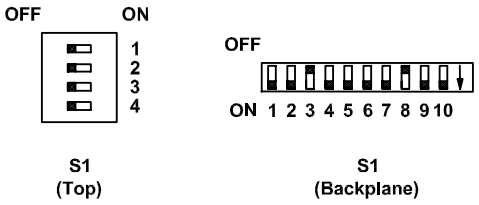


Figure 71. System Controller Module Switches S1, S1

S1 (On Top)

S1 is a four-position DIP switch consisting of four single-pole, single-throw (SPST) switches numbered 1 through 4. Figure 69 on page 66 and Figure 71 on page 66 show the location and orientation of this switch.

Diagnostic Mode Enable (S1-1)

S1-1 should be in the OFF position unless directed otherwise by PESA Customer Service. For more information, see "Ocelot Onboard Diagnostic Program" on page 82.

Table 35. Diagnostic Mode Enable (S1-1)

System Controller (Top) Diagnostic Mode Enable	Switch S1-1
Diagnostic Mode Enable	ON
Diagnostic Mode Disable (Default)	OFF

Reserved for Future Use (S1-2)

S1-2 is reserved for future use and should be in the OFF position.

Checksum Disable Switch (S1-3)

S1-3 is used to disable the communication protocol checksums as shown in Table 36.

- Enabled: Checksums are required for CPU Link commands/messages.
- Disabled: Checksums, if present, will be ignored.

Table 36. Checksum Enable (S1-3)

System Controller (Top) Checksum Enable	Switch S1-3
Checksum Enable (Default)	ON
Checksum Disable	OFF

Reserved for Future Use (S1-4)

S1-4 is reserved for future use and should be in the OFF position.

External Control Interface Mode Select Jumper (J2, J3, J4, J5, J6)

The external control interface mode is selected by moving a 10-position DIP jumper, to one of three positions provided by the five 10-position SIP sockets J2 through J6, located as shown in Figure 69 on page 66.

- J2 to J4 (RS232) — This RS-232 CPU Link interface is used to control the Ocelot system with a PC running software such as Virtual Panel. The interface cable may be up to 50 feet in length. Protocol P1E is used.
- J3 to J5 (RS422 MATRIX) — This RS-422 PRC interface is used to allow the Ocelot system to be controlled by a PRC system controller such as the 3500Plus™. Protocol PRC is used.
- J4 to J6 (RS422 CNTRL) — This RS-422 CPU Link interface is similar to the RS-232 CPU Link interface, except the cable may be up to 4000 feet in length. To use this interface, the PC must have an RS-422 interface card installed in the expansion bus. Protocol P1E is used.

See also:

- “External Control Interface Type (S1-4)” on page 69
- “PRC Base Strobe (S1-5, S1-6, S1-7, S1-8)” on page 70
- "CPU Link Mode (S1-5, S1-6, S1-7, S1-8)” on page 71

S1 (On Backplane)

S1 is a ten-position SIP switch consisting of ten single-pole, single-throw (SPST) switches numbered 1 through 10, all of which share a common input. Figure 70 on page 66 and Figure 71 on page 66 show the location and orientation of this switch.

Number of System Levels (S1-1, S1-2)

An Ocelot system may control up to four levels. S1-1 and S1-2 are used to set the number of levels in the Ocelot system.

Table 37. Number of System Levels (S1-1, S1-2)

System Controller (Backplane) Number of System Levels	Switch S1-1	Switch S1-2
1 Level in System (Default)	OFF	ON
2 Levels in System	ON	OFF
3 Levels in System	OFF	OFF
4 Levels in System	ON	ON

Number of System Inputs (S1-3)

Ocelot modules are available in both 8 input and 16 input versions. Both types may be mixed in a system. This switch is used to select the maximum number of inputs supported by the system controller.

Table 38. Number of System Inputs (S1-3)

System Controller (Backplane) Number of System Inputs	Switch S1-3
8 Inputs	OFF
16 Inputs (Default)	ON

External Control Interface Type (S1-4)

This switch is used to select one of two possible external control interface types:

- PRC – For use with a PRC-type System Controller such as the 3500Plus.
- CPU Link – For use with a PC running control software such as Virtual Panel.

Table 39. External Control Interface Type (S1-4)

System Controller (Backplane) External Control Interface Type	Switch S1-4
PRC	OFF
CPU Link (Default)	ON

See also:

- “External Control Interface Mode Select Jumper (J2, J3, J4, J5, J6)” on page 67
- “PRC Base Strobe (S1-5, S1-6, S1-7, S1-8)” on page 70
- “CPU Link Mode (S1-5, S1-6, S1-7, S1-8)” on page 71

PRC Base Strobe (S1-5, S1-6, S1-7, S1-8)

This section only applies when S1-4 is OFF (PRC External Control Interface).

When the PRC interface is used, strobe numbers must be assigned to each level. These switches control the strobe number assigned to Level 1. Successive levels are assigned the next sequential strobe numbers. For example if PRC Base Strobe 7 is selected for a four level Ocelot system, Level 1 is Strobe 7, Level 2 is Strobe 8, Level 3 is Strobe 9, and Level 4 is Strobe 10.

Table 40. PRC Base Strobe (S1-5, S1-6, S1-7, S1-8)

System Controller (Backplane) PRC Base Strobe	Switch S1-5	Switch S1-6	Switch S1-7	Switch S1-8
PRC Base Strobe 1 (Default)	ON	ON	ON	ON
PRC Base Strobe 2	OFF	ON	ON	ON
PRC Base Strobe 3	ON	OFF	ON	ON
PRC Base Strobe 4	OFF	OFF	ON	ON
PRC Base Strobe 5	ON	ON	OFF	ON
PRC Base Strobe 6	OFF	ON	OFF	ON
PRC Base Strobe 7	ON	OFF	OFF	ON
PRC Base Strobe 8	OFF		OFF	ON
PRC Base Strobe 9	ON	ON	ON	OFF
PRC Base Strobe 10	OFF	ON	ON	OFF
PRC Base Strobe 11	ON	OFF	ON	OFF
PRC Base Strobe 12	OFF	OFF	ON	OFF
PRC Base Strobe 13	ON	ON	OFF	OFF
PRC Base Strobe 14	OFF	ON	OFF	OFF
PRC Base Strobe 15	ON	OFF	OFF	OFF
PRC Base Strobe 16	OFF	OFF	OFF	OFF

See also:

- “External Control Interface Mode Select Jumper (J2, J3, J4, J5, J6)” on page 67
- "External Control Interface Type (S1-4)” on page 69
- "CPU Link Mode (S1-5, S1-6, S1-7, S1-8)” on page 71

CPU Link Mode (S1-5, S1-6, S1-7, S1-8)

This section only applies when S1-4 is ON (CPU Link External Control Interface).

When CPU Link has been selected for the External Control Interface type, three different modes are available:

- Standard Mode – Standard Mode is used when connecting one Ocelot system to one PC. It may be used with either the RS-232 CPU Link or the RS-422 CPU Link.
- Modem Mode – Modem Mode is used when connecting one Ocelot system to one external modem. See “RS-232 CPU Link Interface (External Modem)” on page 26 for more information.
- Multi-Drop Mode (RS-422 Only) – RS-422 Multi-Drop Mode is used when connecting multiple Ocelot systems to one PC. See “RS-422 CPU Link Interface (Multi-Drop)”on page 27 for more information.

Table 41. CPU Link Mode (S1-5, S1-6, S1-7, S1-8)

System Controller (Backplane) CPU Link Mode	Switch S1-5	Switch S1-6	Switch S1-7	Switch S1-8
Standard Mode (Default)	ON	ON	ON	ON
Multi-Drop Mode Address 1	OFF	ON	ON	ON
Multi-Drop Mode Address 2	ON	OFF	ON	ON
Multi-Drop Mode Address 3	OFF	OFF	ON	ON
Multi-Drop Mode Address 4	ON	ON	OFF	ON
Multi-Drop Mode Address 5	OFF	ON	OFF	ON
Multi-Drop Mode Address 6	ON	OFF	OFF	ON
Multi-Drop Mode Address 7	OFF	OFF	OFF	ON
Multi-Drop Mode Address 8	ON	ON	ON	OFF
Multi-Drop Mode Address 9	OFF	ON	ON	OFF
Reserved for Future Use	ON	OFF	ON	OFF
Reserved for Future Use	OFF	OFF	ON	OFF
Reserved for Future Use	ON	ON	OFF	OFF
Reserved for Future Use	OFF	ON	OFF	OFF
Reserved for Future Use	ON	OFF	OFF	OFF
Modem Mode	OFF	OFF	OFF	OFF

See also:

- “External Control Interface Mode Select Jumper (J2, J3, J4, J5, J6)” on page 67
- "External Control Interface Type (S1-4)” on page 69
- "PRC Base Strobe (S1-5, S1-6, S1-7, S1-8)” on Page 70

CPU Link Lock Override Enable (S1-9)

S1-9 enables the CPU Link Lock Override. When enabled, this permits the control system software running on the PC (e.g., Virtual Panel), to take a switch on a locked destination.

Table 42. CPU Link Lock Override (S1-9)

System Controller (Backplane) CPU Link Lock Override	Switch S1-9
CPU Link Lock Override Enabled	OFF
CPU Link Lock Override Disabled (Default)	ON

Control Panel Generation (S1-10)

There are two generations of Control Panels:

- First Generation control panels have small (0.32") keys.
- Second Generation control panels have large (0.50") keys with removable legends.

If an Ocelot system contains any First Generation control panels, the system may not have more than eight control panels total (mainframe and remote), and S1-10 must be ON.

If an Ocelot system contains only Second Generation control panels, the system may have up to 16 control panels total (mainframe and remote), and S1-10 must be OFF.

Table 43. Control Panel Generation (S1-10)

System Controller (Backplane) Control Panel Generation	Switch S1-10
Second Generation Control Panels (Default)	OFF
First Generation Control Panels	ON

Subassembly Installation

If specified when ordered, the switches and jumpers on the subassemblies will already be properly configured. Otherwise, please refer to Switch and Jumper Settings on page 36 prior to installation.

Modules

CAUTION

This equipment contains static sensitive devices. A grounded wrist strap and mat should be used when handling the internal circuit cards.

Standard Definition

Modules are installed in a standard definition mainframe as follows:

1. Remove power from the mainframe.
2. Use a No. 0 Phillips screwdriver to remove the 10 screws that secure the top cover to the chassis.
3. Slide the rear filler panel up and out of the chassis, and modify it to provide an opening for the new module. The rear filler panel is made of phenolic, and is perforated so sections can easily be removed to provide additional openings.
4. Install the module in the chassis so that the front connector engages one of the mid-plane interface connectors.
5. Reinstall the rear filler panel and top cover.

High Definition

All high definition mainframes contain 2 modules: one switching module (either 16x8 or 16x16); and one interface module (either a system controller module or a connector interface module). There is no rear filler panel on high definition mainframes.

Modules are installed in a high definition mainframe as follows:

1. Remove power from the mainframe.
2. Use a No. 0 Phillips screwdriver to remove the 14 screws that secure the top cover to the chassis.
3. Install the module in the chassis so that the front connector engages one of the mid-plane interface connectors.
4. Reinstall the top cover.

Mainframe Power Regulator Installation

Some standard definition modules require that a power regulator be installed in the mainframe (see Table 1 on page 3). Power regulators are installed as follows:

1. Remove power from the mainframe.
2. Use a No. 0 Phillips screwdriver to remove the 10 screws that secure the top cover to the chassis.
3. Remove all modules from the mainframe.
4. Slide the mid-plane up and out of the chassis.
5. The mid-plane can accommodate up to two power regulators, one at each end of the front surface. Attach the power regulator so that the power regulator connectors J1 (audio and video), J2 (video only), J3 (audio only) and J4 (audio and video), mate with the corresponding mid-plane connectors.
6. Use a No. 0 Phillips screwdriver to install the two screws that secure the power regulator to the mid-plane.
7. Reinstall the mid-plane, modules and top cover.

Audio Power Regulator

J1, J3 and J4 mate with the following connectors on the front of the mid-plane:

- J11, J15 and J18 when installed on the left side of the mid-plane.
- J13, J12 and J19 when installed on the right side of the mid-plane.

CR1 is a green LED that is ON when ±15 VDC output power is present.

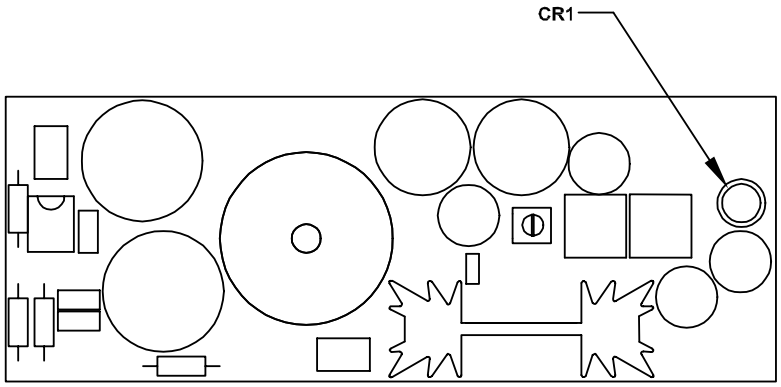


Figure 72. Power Regulator, Audio Module, Front View

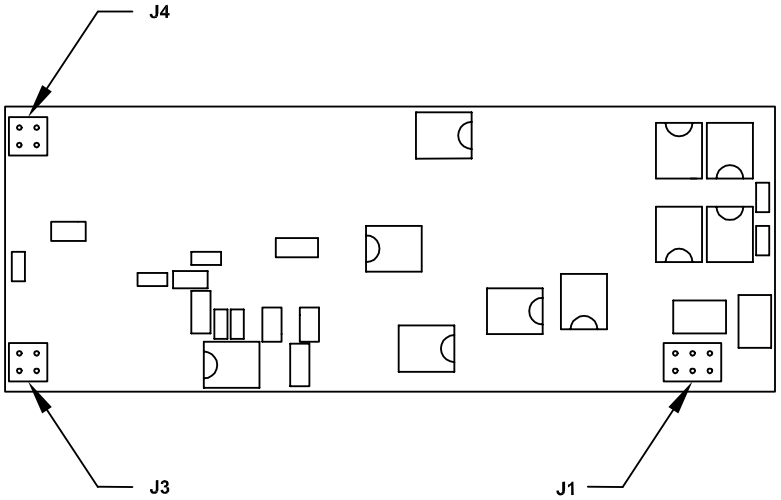


Figure 73. Power Regulator, Audio Module, Rear View

Video Power Regulator

J1, J2 and J4 mate with the following connectors on the front of the mid-plane:

- J11, J10 and J18 when installed on the left side of the mid-plane.
- J13, J16 and J19 when installed on the right side of the mid-plane.

CR1 is a green LED that is ON when ±5 VDC output power is present.

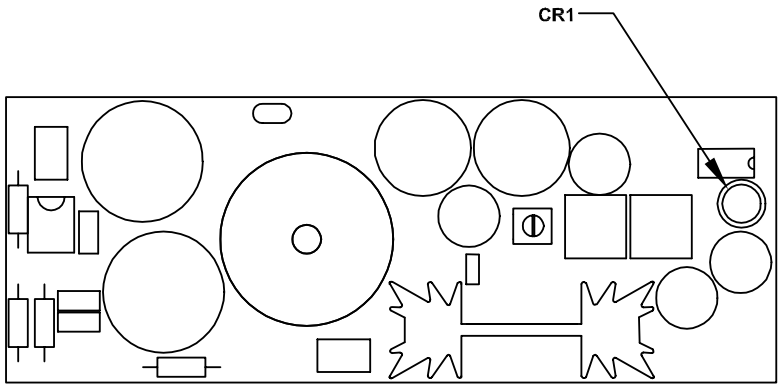


Figure 74. Power Regulator, Video Module, Front View

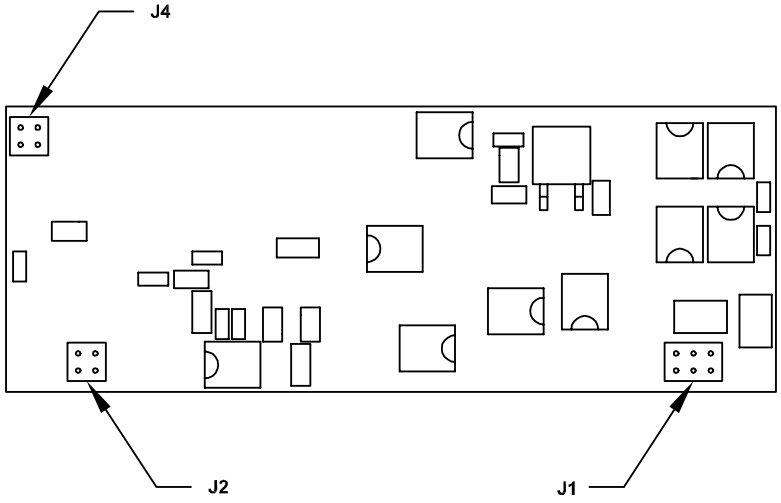


Figure 75. Power Regulator, Video Module, Rear View

Chapter 3 – Operation

An Ocelot system may be controlled by using the following:

- Ocelot Control Panels
- CPU Link – The Ocelot system controller module is connected to a PC running software such as Virtual Panel. The connection is made using either of the following methods:
  - Direct Connection – The Ocelot system controller module is connected to a local PC with a serial cable.
  - Modem Connection – The Ocelot system controller module is connected to an external modem with a serial cable. A remote PC, also equipped with a modem, may then control the Ocelot system through a dial-up connection.
- PRC System Controller – The Ocelot system controller module is connected to a PRC system controller such as the 3500Plus.

Ocelot Control Panels

An Ocelot system may be controlled by using Ocelot control panels. A control panel may either be installed on the front of a mainframe, or situated remotely in a separate chassis. Each Ocelot system may have up to 16 control panels.

There are three types of control panels available:

- Single Output Panels – These are the 8x1 and 16x1 control panels. These panels have only one output which is selected by setting a DIP switch as described in “Panel Output (S39-1 through S39-4)” on page 37.
- Dual Output Panels – These are the 8x1 Dual and 16x1 Dual control panels. These panels have two outputs which are selected by setting a DIP switch as described in “Panel Output (S39-1 through S39-4)” on page 37. Different inputs may be switched to each output.
- X/Y Panels – These are the 8x8 and 16x16 control panels. These panels may switch any input to any output.

Control panels may be set to operate in two different modes.

- Single Level Switching Mode
- Multi-Level Switching Mode

Single Level Switching Mode

Single level switching mode allows a switch to be taken on only one level at a time. This operating mode is selected by setting a DIP switch on the control panel as described in “Switching Mode (S39-6)” on page 37.

Single level switching mode only allows one level to be selected at a time.

Example: If Level 1 is currently selected, pressing the Level 2 key will automatically deselect Level 1 and select Level 2.

While in single level switching mode, control panels operate as follows:

Follow Switch

A follow switch is one where a single source is switched to a single destination on all levels.

When making follow switches in Single Level mode, each level is switched serially, not simultaneously.

Example: To switch:

- Input 1 to Output 1 on Level 1
- Input 1 to Output 1 on Level 2
- Input 1 to Output 1 on Level 3

Press the following keys:

1. Output 1 key, Level 1 key, Input 1 key
2. Level 2 key, Input 1 key
3. Level 3 key, Input 1 key

Breakaway Switch

A breakaway switch is one where more than one source is switched to a single destination on multiple levels.

When making breakaway switches in Single Level mode, each level is switched serially, not simultaneously.

Example: To switch:

- Input 1 to Output 1 on Level 1
- Input 2 to Output 1 on Level 2
- Input 3 to Output 1 on Level 3:

Press the following keys:

1. Output 1 key, Level 1 key, Input 1 key
2. Level 2 key, Input 2 key.
3. Level 3 key, Input 3 key.

Lock

Pressing the Lock key will toggle the lock ON and OFF for a selected output.

Multi-Level Switching Mode

Multi-level switching mode allows a switch to be taken on multiple levels at the same time. This operating mode is selected by setting a DIP switch on the control panel as described in “Switching Mode (S39-6)” on page 37.

Multi-level switching mode allows multiple levels to be selected at the same time.

Example: If Level 1 is currently selected, pressing the Level 2 key will not deselect Level 1. Level 1 and Level two will both be selected.

While in multi-level switching mode, control panels operate as follows:

Follow Switch

A follow switch is one where a single source is switched to a single destination on all levels.

When making follow switches in Multi-Level mode, each level is switched simultaneously, not serially.

Example: To switch:

- Input 1 to Output 1 on Level 1
- Input 1 to Output 1 on Level 2
- Input 1 to Output 1 on Level 3

Ensure that all levels are selected (all Level LEDs OFF) and press the following keys:

1. Output 1 key, Level 1 key, Level 2 key, Level 3 key, Input 1 key

Breakaway Switch

A breakaway switch is one where more than one source is switched to a single destination on multiple levels.

When making breakaway switches in multi-level mode, each level is switched serially, not simultaneously.

Example: To switch:

- Input 1 to Output 1 on Level 1
- Input 2 to Output 1 on Level 2
- Input 3 to Output 1 on Level 3

Ensure that all levels are selected (all Level LEDs OFF) and press the following keys:

1. Output 1 key, Level 1 key, Input 1 key
2. Level 1 key, Level 2 key, Input 2 key.
3. Level 2 key, Level 3 key, Input 3 key.

Lock

Pressing the Lock key will toggle the lock ON and OFF for a selected output.

CPU Link Control

To control an Ocelot system with the CPU Link, the Ocelot system controller module is connected to a PC running control software such as Virtual Panel. The connection is made using either a serial cable to a local PC, or a modem to a remote PC.

NOTE

For more information on operating the Ocelot system through the CPU Link, consult the manual that came with your control system software.

Serial Cable

Connect the system controller module to the PC using a serial cable as described in "External Control Connector (J1)" on page 26.

Modem

Connect the system controller module to the external modem using a serial cable as described in "RS-232 CPU Link Interface (External Modem)" on page26.

PRC Control

To control an Ocelot system with a PRC system controller, such as the 3500Plus, the Ocelot system controller module is connected to the PRC system controller. The connection is made with an AT serial modem cable as described in "RS-422 PRC Interface" on page 28.

The PRC system controller may be either a dedicated unit controlling only the Ocelot system, or one embedded in a larger system containing other PRC components such as a Tiger routing switcher.

NOTE

For more information on operating the Ocelot system through the PRC interface, consult the manual that came with your PRC system controller.

Chapter 4 – Maintenance and Repair

Periodic Maintenance

No periodic maintenance is required.

Troubleshooting

CAUTION

This equipment contains static sensitive devices. A grounded wrist strap and mat should be used when handling the internal circuit cards.

Subassembly LEDs

In the rare event this equipment fails to operate correctly, check the appropriate LEDs listed below for information concerning operational status.

Standard Definition

Power Status

All standard definition modules (except the system controller module and the connector interface module), and both power regulators, have green LEDs that indicate the presence of input power. These LEDs can only be seen when the top cover is removed. If these LEDs are not ON:

- Check the power supply for correct operation.
- Ensure that all mid-plane interface connectors for the module or regulator are correctly mated.
- Contact Customer Service.

High Definition

Power Status

Both the 16x8 and 16x16 HD modules have green LEDs that indicate that input power is present. These LEDs are visible when looking at the rear of the chassis. If these LEDs are not ON:

- Check the power supply for correct operation.
- Contact Customer Service.

Input Board Signal Status

Each input has a green LED that indicates when any signal is present on that input. If this LED is not ON, contact Customer Service. These LEDs can only be seen when the top cover is removed.

Output Board Signal Status

Each output has a green LED that indicates when any valid signal is present on that output. If this LED is not ON, contact Customer Service. These LEDs can only be seen when the top cover is removed.

Ocelot Onboard Diagnostic Program

Each Ocelot system contains an onboard diagnostic program embedded in the system controller module. While designed for factory use prior to system shipment, this program may yield some benefit in the field when used as directed by PESA Customer Service. The diagnostic program is activated as follows:

1. Connect the System Controller Module to a PC as described in "RS-232 CPU Link Interface (PC)" on page 26.
2. Set System Controller Module DIP Switch S1-1 to ON. This is S1 on the top of the module, not S1 on the backplane.
3. Start HyperTerminal on the PC, or other terminal emulation software, and configure as follows:
   - Speed: 9600 BPS
   - Data Bits: 8
   - Parity: None
   - Stop Bits: 1
   - Flow Control: None
4. Restart the System Controller Module by disconnecting, and then reconnecting, the Ocelot system from its power source.
5. HyperTerminal will display the Ocelot Diagnostics Menu.
6. Press the number key for the test to be performed, or Q to quit.

PESA Customer Service

If the troubleshooting information above has not solved your problem, please contact the PESA Customer Service Department. Skilled technicians are available to assist you 24 hours per day, seven days per week.

Repair

Before attempting to repair this equipment, please consult your warranty documents and the PESA Customer Service Department. Unauthorized repairs may void your warranty.

WARNING

Ocelot 24 W Power Supply

In the event of failure, this power supply should be replaced, not repaired.

Attempting to repair this power supply could create a safety hazard.

WARNING

PS100 Power Supply

This power supply should only be serviced by qualified personnel using appropriate equipment.

An incorrectly repaired power supply could be a safety hazard.

WARNING

Ocelot HD Power Supply

This offline switching power supply contains internal voltages in excess of 300VDC, and is not isolated from the AC power source. It should only be serviced by qualified personnel using appropriate equipment.

An incorrectly repaired power supply could be a safety hazard.

WARNING

RCP Power Supply

In the event of failure, this power supply should be replaced, not repaired.

Attempting to repair this power supply could create a safety hazard.

CAUTION

The PC boards in this equipment may contain Surface Mount Technology components. Special tools are required to replace these components without causing damage to adjacent areas.

Failure to consult with Customer Service before attempting to repair these boards may void your warranty.

Replacement Parts

Only parts of the highest quality have been used in the design and manufacture of this equipment. If the inherent stability and reliability are to be maintained, replacement parts must be of the same high quality. Please consult our Customer Service Department before installing any parts not purchased from PESA.

Factory Service

Before returning any equipment to our factory for service or repair, please contact our Customer Service Department for an RMA number.

PESA Documents

IL35-1112	Drawing Tree, Ocelot, Standard Definition
IL35-1132	Drawing Tree, Ocelot, High Definition
WI50-0259	Wiring Diagram, Power Supply, Standard Definition Mainframe, US
WI50-0260	Wiring Diagram, Power Supply, Standard Definition Mainframe, Non-US
WI50-0294	Wiring Diagram, Cable, PS100 to Ocelot System
81-9059-0390-0	Manual, Ocelot Routing Switcher System
81-9059-0408-0	Manual, Virtual Panel Control System
81-9059-0426-0	Manual, Win3500Plus Control System
81-9059-0430-0	Manual, 3500Plus System Controller
81-9062-0316-0	Specification, PESA Router Control Protocol (PRC)
81-9062-0407-0	Specification, CPU Link Protocol No. 1 (P1)
81-9062-0408-0	Specification, CPU Link Protocol No. 1 Extensions (P1E)
81-9062-0409-0	Specification, Unsolicited Status Protocol (USP)
81-9062-0410-0	Specification, Truck Link Protocol (TRK)
81-9062-0448-0	Specification, PESA Internet Remote Control Protocol (PIRC)
81-9062-0458-0	Specification, Bobcat Universal Router Protocol (BURP)

Glossary

Revised: 06-04-01

NOTE

Entries in this glossary that relate to specific system controller features, are made with reference to the PESA 3500Plus (v3.1).

AES/EBU Audio

Informal name for a digital audio standard established jointly by the Audio Engineering Society and the European Broadcasting Union.

All Call

A diagnostic procedure that causes a single physical input to be switched to a range of physical outputs, for a specified component, with a single command.

Example: Assume the existence of component RED spanning physical inputs 1 through 6 and physical outputs 1 through 6. All call can be used to switch physical input 3 to physical outputs 2 through 6 with a single command.

See also: Diagonal.

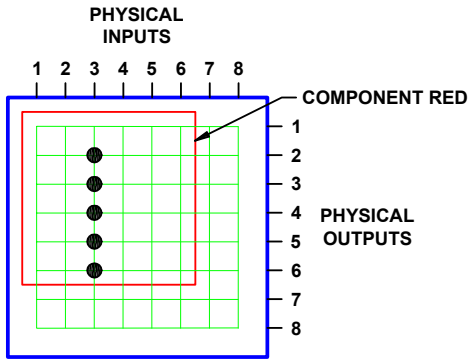


Figure 76. All Call

ANSI

American National Standards Institute.

Baud

The number of times a communication signal changes state (voltage, frequency, etc.) in one second.

Generally, only one bit of information is encoded in each change of state for signals operating below 300 baud. At these speeds, baud equals the number of bits transmitted per second.

At 300 baud and above, communications standards generally allow more than one bit to be encoded in each change of state. For example, modems operating at 1200 bits per second, and conforming to the Bell 212A standard, operate at 300 baud using a modulation technique called

phase modulation that transmits four bits per baud. At these speeds, data transmission rates are usually expressed in bits per second (b/s) rather than baud.

Baud was originally a unit of telegraph signaling speed, set at one Morse code dot per second. It was proposed at the International Telegraph Conference of 1927, and named after French Engineer J.M.E. Baudot (1845-1903).

Black Burst

A composite color video signal that has sync, color burst, and black video. It is used to synchronize other video sources to the same sync and color information.

See also: House Sync.

Block

A group of contiguous crosspoints in a routing switcher that form the smallest unit on which confidence is checked.

Because of the nature of the circuits involved, individual crosspoints cannot be checked to see if they are operating correctly. Instead, the control circuitry shared by groups of crosspoints is monitored. These groups of crosspoints, called blocks, vary in size according to product type. Block size for RM5 routing switchers is 8 inputs by 2 outputs and block size for PRC routing switchers is 8 inputs by 8 outputs. If any block gives a confidence error, all crosspoints in that block are assumed to be non-functional.

Block Checking

The continuous, sequential monitoring of confidence for each block in a routing switcher.

Block checking occurs automatically and continuously but can be disabled for troubleshooting purposes.

Blocked Destination

See: Source Block.

Blocked Source

See: Source Block.

Breakaway Switch

A switch where multiple sources are switched to a single destination on multiple levels.

Example: Assume the existence of sources VTR1 and VTR2, and destination MON1, defined on levels VIDEO and AUDIO. If VTR1 is switched to MON1 on the VIDEO level, and VTR2 is switched to MON1 on the AUDIO level, a breakaway switch has been taken.

Table 44. Breakaway Switch

Destination	Source	
	Level: VIDEO	Level: AUDIO
MON1	VTR1	VTR2

See also: Follow Switch.

Category

Entities used to construct source, destination , and reentry names.

Categories provide an easy means of classifying and grouping switching system devices.

Example: The categories VTR, 1, 2, and 3 can be used to construct the source names VTR1, VTR2, and VTR3.

Category names:

1. Shall be created using only the following characters:
   - Upper case letters A through Z
   - Lower case letters A through Z if enabled in the control system software
   - Numbers 0 through 9
   - The following special characters: space ( ), hyphen-minus (-), exclamation mark (!), ampersand (&), plus sign (+), equals sign (=), commercial at (@), and low line (_)
2. Shall contain a minimum of one, and a maximum of eight characters.
3. Shall not begin with a space. However, they may end with a space, have embedded spaces, and consist of a single space.
4. Shall be unique in the universe of category names.

Chop

To rapidly switch two different video signals into a monitor or other piece of test equipment. This is done to compare some signal characteristic, usually for quality control.

Chop Rate

The parameter used to control the switching rate when chopping two signals. The signal switching rate is determined as follows:

$$\frac{\text{Video Frame Rate (frames/s)}}{\text{Chop Rate}} = \text{Signal Switching Rate (switches/s)}$$

Figure 77. Chop Rate

For example, a chop rate of 1 used with NTSC signals (30 Frames/Second) will cause the signals to be switched 30 times per second. A chop rate of 60 used with the same signals will cause them to be switched every two seconds.

Component

The most basic signal element that can be switched by a single crosspoint. For example, in RGB video, “Red”, “Green”, and “Blue” are components; in stereo audio, “Left” and “Right” are components.

In Matrix Space, components of like type are usually grouped together into rectangular matrices of crosspoints having contiguous inputs and outputs. These matrices are also referred to as components and are grouped together into levels.

Figure 78 shows a 2x2 RGB video level (VID) consisting of three components (RED, GRN, and BLU).

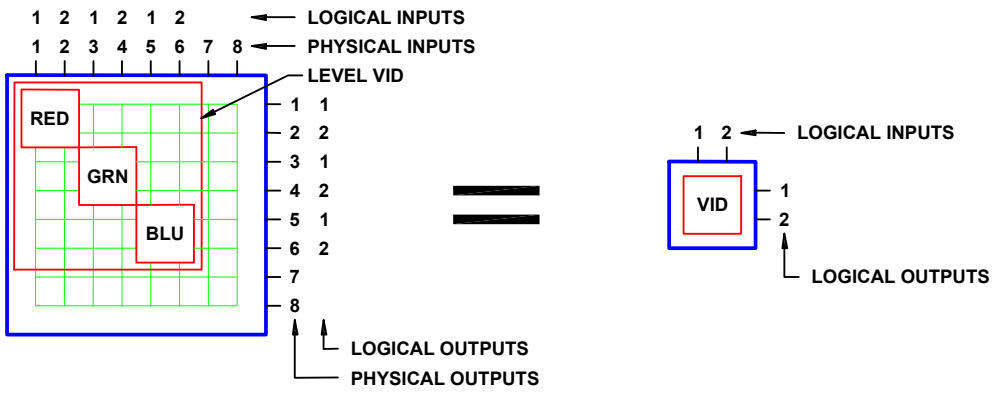


Figure 78. Component

As a general rule, users control the switching of levels, but component switching is handled automatically by the switching system. As shown in Figure 78, a user can specify a single logical switch, such as VID Input 1 to VID Output 2. This would result in the control system software taking three physical switches by activating crosspoints (1,2), (3,4), and (5,6).

Component names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Composite Video

A type of video signal that contains luminance, chrominance, blanking, and synchronizing information. NTSC, PAL, and SECAM are composite video signals, as opposed to RGB video which is not.

See also: Vertical Sync Signal.

Confidence

A property of a block that indicates whether or not the circuitry controlling the crosspoints in the block is functioning correctly.

When block checking determines that a block is not functioning correctly, the block is said to have a confidence error.

Confidence Error

See Confidence.

Configuration

A collection of system definitions that define the environment in which the system controller operates.

Each configuration is stored as a collection of files (.dbf or .txt) in a separate folder.

Configuration names may contain up to 32 alphanumeric characters.

Configuration Lock

A security measure enabled when a configuration is being uploaded or downloaded.

A configuration lock is used to ensure that only one user at a time may download a configuration to the controller.

Control Panel

See: Panel.

CPU Link

A bi-directional communication interface. A CPU link has two components: a serial port (either RS-232 or RS-422), and a protocol to govern how the port is used.

Crosspoint

The circuitry and components on a printed circuit board that constitute a single physical switch.

See also: Physical Switch.

Data Key

A user configurable control panel key, whose assigned function is used when the panel is in any mode except Salvo Select Mode.

Many control panels have user configurable keys. Each key can be assigned two functions, one as a data key and one as a salvo key. When the keys are pressed, the data key functions are used except when the panel is in salvo mode.

Data Key List

A named list of the functions assigned to each data key on a panel.

Multiple panels may share a data key list as long as they are the same type of panel. Different panel types may not use the same data key list.

Data key list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Default Destination

The destination for which status will be displayed when power is applied to a panel, or when a new configuration is downloaded to the controller.

Although not mandatory, it is recommended that a default destination be selected for each panel.

Destination

One or more logical outputs (limited to one per level), on one or more levels, that are switched together as a group.

Destination names may be created by using categories, and:

1. Shall be created using only the following characters:
    - Upper case letters A through Z
    - Lower case letters A through Z if enabled in the control system software
    - Numbers 0 through 9
    - The following special characters: space ( ), hyphen-minus (-), exclamation mark (!), ampersand (&), plus sign (+), equals sign (=), commercial at (@), and low line (_)
2. Shall contain a minimum of one, and a maximum of eight characters.
3. Shall not begin with a space. However, they may end with a space, have embedded spaces, and consist of a single space.

4. Shall be unique in the universe of destination and reentry names.

See also: Category.

Destination Block

See: Source Block.

Destination Group

See: Destination.

Destination Include List

A named list of the destinations a specific control panel is authorized to control.

A destination include list may be shared by multiple panels.

The default destination assigned to a panel may be controlled even if it is not on the destination include list.

Destination include list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Destination Number

A number assigned to each destination by the controller and used by CPU Protocol 1.

Destination numbers are also assigned to reentries.

Destination Status

See: Status.

Diagonal

A diagnostic procedure that causes a range of physical inputs to be switched to a range of physical outputs, in a diagonal pattern starting from a specified coordinate and continuing until the either the inputs or outputs are exhausted, for a specified component, with a single command.

Example: Assume the existence of component RED spanning physical inputs 1 through 6 and physical outputs 1 through 6 on a routing switcher. A diagonal with a starting input of 2 and a starting output of 1 would cause the following physical switches to be taken: (2,1), (3,2), (4,3), (5,4), and (6,5).

See also: All Call.

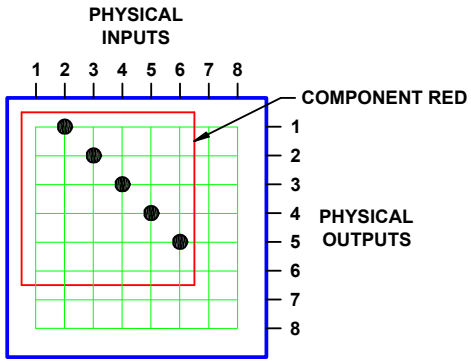


Figure 79. Diagonal

EIA

Electronic Industries Alliance.

Follow Switch

A switch where a single source is switched to a single destination on all levels. An abbreviated form of audio-follow-video switch.

Example: Assume the existence of source VTR1 and destination MON1 defined on levels VIDEO and AUDIO. If VTR1 is switched to MON1 on both the VIDEO level and AUDIO level, a follow switch has been taken.

This is the most common manner in which switches are taken on a routing switcher.

Table 45. Follow Switch

Destination	Source	
	Level: VIDEO	Level: AUDIO
MON1	VTR1	VTR1

See also: Breakaway Switch.

House Black

See: House Sync.

House Sync

A composite color video signal that has sync, color burst, and black video. It is used to synchronize video sources, and other equipment, to the same sync and color information.

Index

Obsolete. Prior to 3500Plus v3.0, indices were numbers used with categories to construct source, destination, and reentry names.

See also: Category.

Input Offset

In matrix space, the amount by which the origin of a component on strobe x, is offset from the origin of strobe x, measured along the input axis.

The coordinates of crosspoints in matrix space are determined by the strobe they reside on, and their input and output numbers. They are given in the form (input,output) on strobe x. The origin of a component (a matrix of crosspoints) is designated by the point that falls nearest the origin of its strobe (1,1). In Figure A below, the 3x4 component bounded by coordinates (3,2), (5,2), (5,5), and (3,5) has its origin at (3,2).

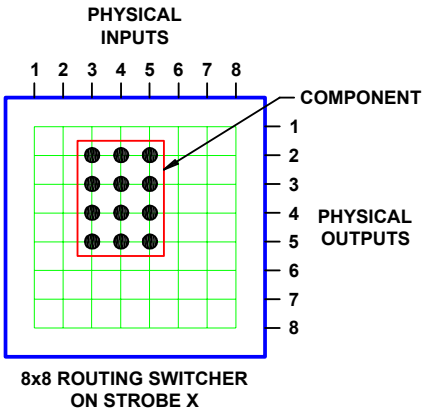


Figure 80. Input Offset, Single Routing Switcher

Input offset is the amount by which the origin of a component is offset from the origin of its strobe, measured along the input axis. A component whose origin coincides with that of its strobe (1,1) will have an input offset of 0. The component shown in Figure 80 has an input offset of 2.

When multiple routing switchers are assigned to the same strobe, the input and output connectors are renumbered to provide a unique coordinate for each crosspoint. Crosspoint coordinates are then determined in the same manner as above. The component shown in Figure 81 has its origin at (12,7) and an input offset of 11.

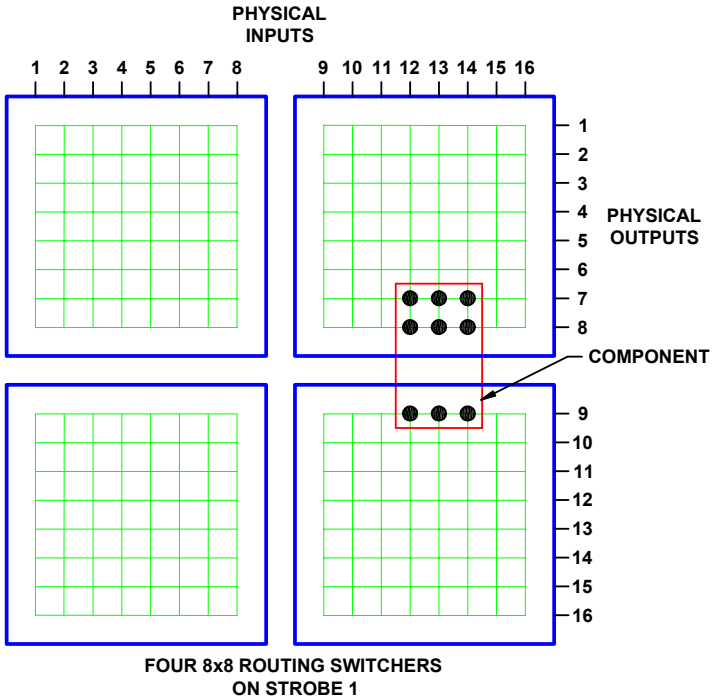


Figure 81. Input Offset, Multiple Routing Switchers

Level

A group of related components that are switched together.

A level is sometimes referred to as a level of control and is the basic granularity seen by a user. The components that comprise a level will always be switched together except when performing diagnostic operations.

Figure 82 shows a 2x2 RGB video level made up of three components, “RED”, “GRN”, and “BLU”, all of which are switched together at the same time.

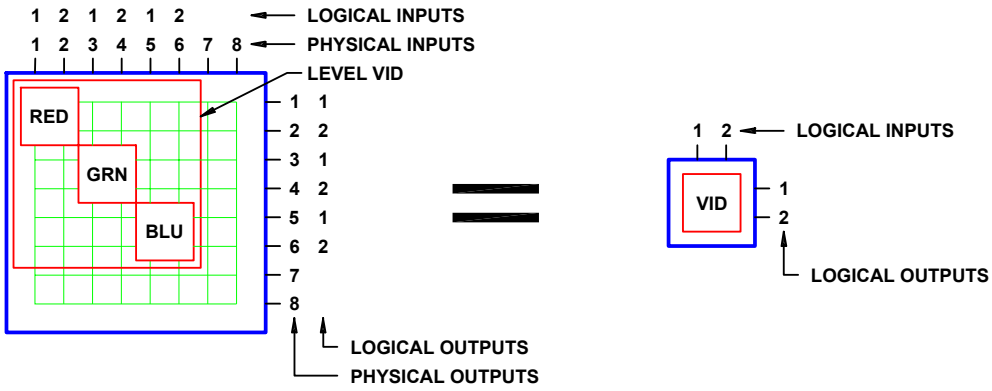


Figure 82. Level

As a general rule, users control the switching of levels, but component switching is handled automatically by the switching system. As shown in Figure 82, a user can specify a single logical switch, such as VID Input 1 to VID Output 2. This would result in the control system software taking three physical switches by activating crosspoints (1,2), (3,4), and (5,6).

Level names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Level Order

A property assigned to a level that controls the order of display when levels are displayed on a control panel, or addressed in CPU link protocols.

Levels of Control List

A named list of the levels a specific control panel is authorized to control.

Multiple panels may share a levels of control list.

Levels of control list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Local Modem

A modem connected to a PC running control system software such as Win3500Plus.

See also: Remote Modem.

Lock

A property placed on a destination that prevents all panels and ports from taking a switch on that destination, including the panel or port that locked it.

Locks may be cleared by any panel or port that has the same requester code and lock priority as the panel that locked the destination, that has a higher lock priority, or that has a lock priority of 0 (zero).

See also: Lock Priority, Protect.

Lock Priority

A property of panels and ports that allows them to be grouped with other panels or ports for the purpose of establishing lock and protect authority.

The lower the lock priority number, the higher the priority. Panel lock priorities not explicitly defined automatically default to "0" which gives absolute authority to clear any lock or protect on the system.

See also: Lock, Protect.

Logical Input

One or more physical inputs that are switched together as a group.

Logical inputs and outputs are switched level-by-level. Since each level may have more than one component, switching a single logical input or output may involve switching more than one physical input or output.

For example, a RGB input signal represents three physical inputs because it is connected to three input connectors on the routing switcher. However, since all three components (R, G, and B) are switched together as a level, it is a single logical input.

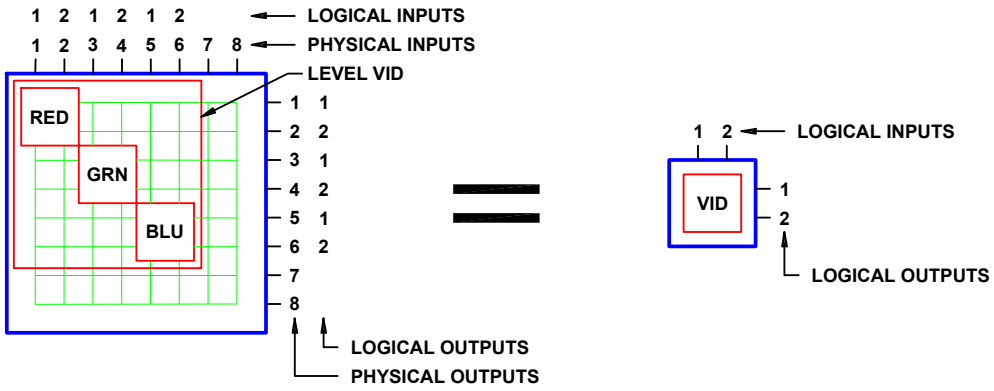


Figure 83. Logical Input

Logical inputs are numbered sequentially, level-by-level, beginning with 1. Input numbers are assigned in the same order as the physical inputs to the component(s) of the level. Since a routing switcher may be configured to have more than one level, it may have more than one logical input designated as number 1. However, within each level, every logical input will have a unique number. Logical outputs are numbered in the same manner. Logical input/output numbering is handled automatically by the control system software as components are configured.

See also: Physical Input.

Logical Output

See: Logical Input.

Logical Switch

The control system software command that switches a logical input to a logical output.

See also: Physical Switch.

Matrix Breakup

The division of a single physical matrix into one or more components.

Matrix breakup allows complex signal types to reside within a single physical matrix. For example, a video matrix is often broken into R, G, and B components.

Matrix breakup is a software function handled by the control system software.

Matrix Space

A three-dimensional mathematical model of the crosspoints in a switching system.

The coordinates of crosspoints in matrix space are given in the form (input,output) on strobe x.

When a switching system is physically made up of only one routing switcher, the crosspoint coordinates are the same as the input and output connector numbers, and the resulting matrix space has only two dimensions. For example, the coordinates of the crosspoint indicated in Figure 84 is (4,2) on strobe 1.

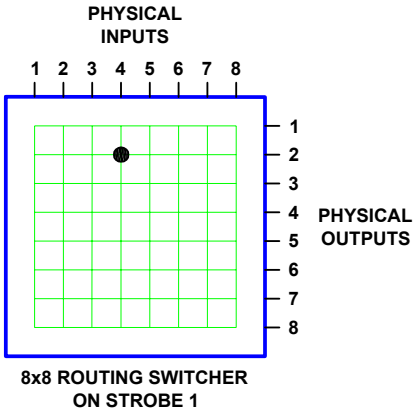


Figure 84. Matrix Space, One Routing Switcher on One Strobe

Two-dimensional matrix space can also be composed of the crosspoints located in multiple routing switchers. The input and output connectors on the additional routing switchers are renumbered as required to ensure that each crosspoint can be identified by a unique (input,output) coordinate. When switching systems are constructed in this manner, matrix space size is no longer constrained by routing switcher size. The switching system shown in Figure 85 consists of four 8x8 routing switchers assigned to the same strobe. The coordinates of the indicated crosspoint are (12,14) on strobe 1.

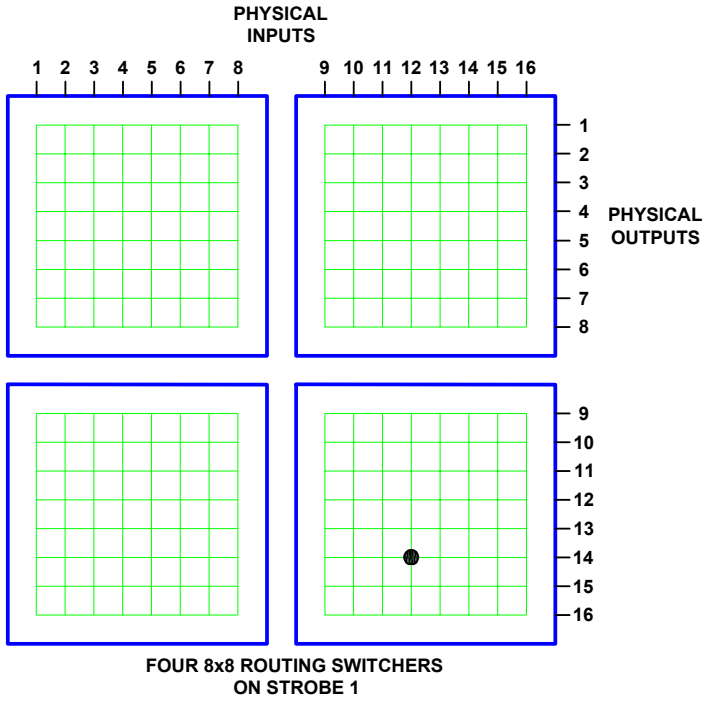


Figure 85. Matrix Space, Four Routing Switchers on One Strobe

Strobe numbers are used to introduce a third dimension into matrix space. Every routing switcher in a switching system is assigned to a strobe. In systems using more than one strobe (and, therefore having three-dimensional matrix space), crosspoint coordinates are given in the form (input,output) on strobe x. In Figure 86, the coordinates of the indicated crosspoint in the left routing switcher are (4,2) on strobe 1. The coordinates of the crosspoint on the right are (4,2) on strobe 2.

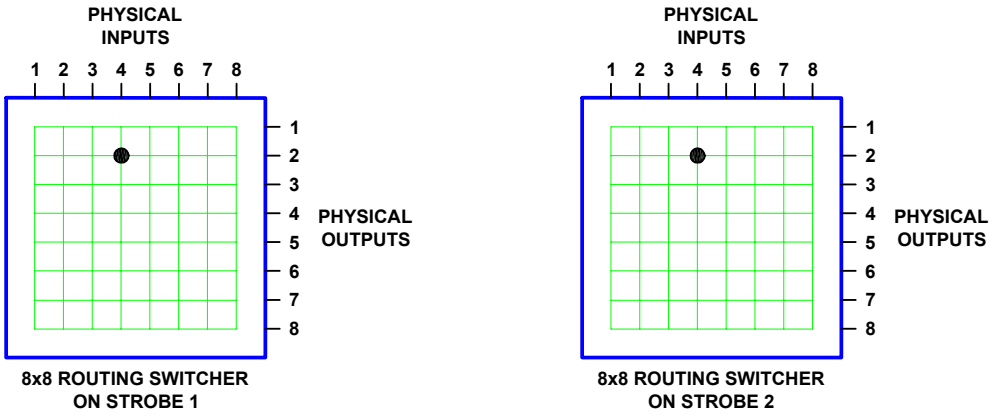


Figure 86. Matrix Space, Two Routing Switchers on Two Strobes

NTSC

National Television Standards Committee. The NTSC was responsible for setting television and video standards in the United States. The NTSC standard for television defines a composite video signal with a refresh rate of 60 half-frames (interlaced) per second. Each frame contains 525 lines and can contain 16 million different colors.

See also: PAL, SECAM.

Output Offset

In matrix space, the amount by which the origin of a component on strobe x, is offset from the origin of strobe x, measured along the output axis.

The coordinates of crosspoints in matrix space are determined by the strobe they reside on, and their input and output numbers. They are given in the form (input,output) on strobe x. The origin of a component (a matrix of crosspoints) is designated by the point that falls nearest the origin of its Strobe (1,1). In Figure 87 below, the 3x4 Component bounded by coordinates (3,2), (5,2), (5,5), and (3,5) has its origin at (3,2).

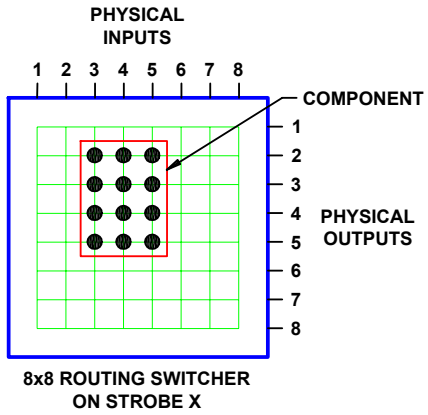


Figure 87. Output Offset, Single Routing Switcher

Output offset is the amount by which the origin of a component is offset from the origin of its strobe, measured along the output axis. A component whose origin coincides with that of its strobe (1,1) will have an output offset of 0. The component shown in Figure 87 has an output offset of 1.

When multiple routing switchers are assigned to the same strobe, the input and output connectors are renumbered to provide a unique coordinate for each crosspoint. Crosspoint coordinates are then determined in the same manner as above. The component shown in Figure 88 has its origin at (12,7) and an output offset of 6.

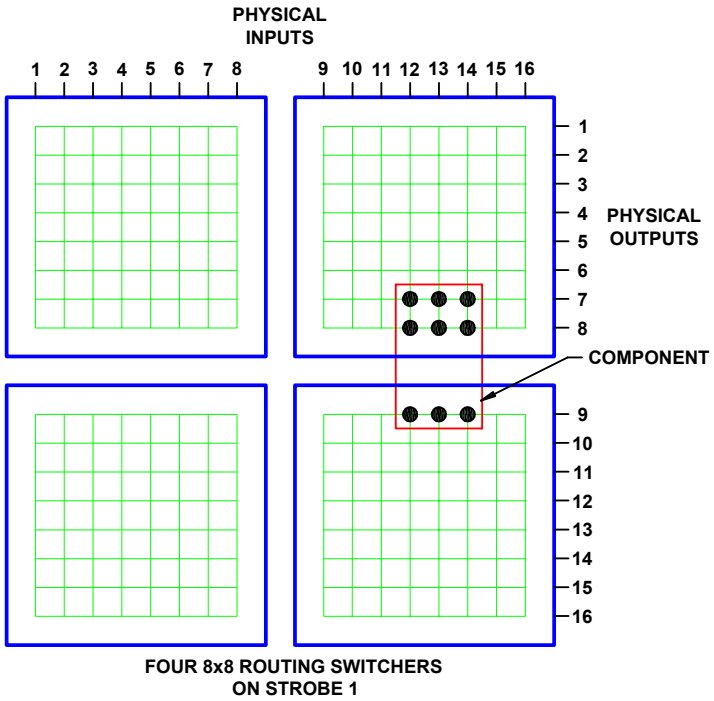


Figure 88. Output Offset, Multiple Routing Switchers

PAL

Phase Alternating Line, the dominant television standard in Europe. The United States uses a different standard, NTSC. Whereas NTSC delivers 525 lines of resolution at 60 half-frames per second, PAL delivers 625 lines at 50 half-frames per second.

See also: NTSC, SECAM.

Panel

A user interface, usually mounted in a standard 19" rack, containing alphanumeric displays, push buttons, LEDs, etc. Sometimes referred to as a control panel.

A panel is used to control a switching system by taking switches, obtaining status, etc.

Panel names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Panel Address

A unique identifier, set by DIP switch on every panel, that allows the system controller to differentiate between panels.

Panel Name

An optional identifier for a control panel.

Individual panels are identified by panel address. Because of this, a panel name is not required when configuring a panel.

Panel names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Password

Each User Account and Configuration may be protected with an eight-character, upper case, alphanumeric password.

PC

Personal computer. Typically used to run control system software such as Win3500Plus.

PESA control system software is designed to operate on any IBM® compatible personal computer (AT® or later) with a Microsoft Windows™ operating system (3.1, 95, 98, or NT).

Physical Input

The electrical signal coming from a device connected to an input connector on a routing switcher.

Physical inputs and outputs are the electrical signals passing through the input and output connectors of a routing switcher. Each connector represents one input or output.

For example, a RGB input signal would represent three physical inputs since it would be connected to three input connectors on the routing switcher.

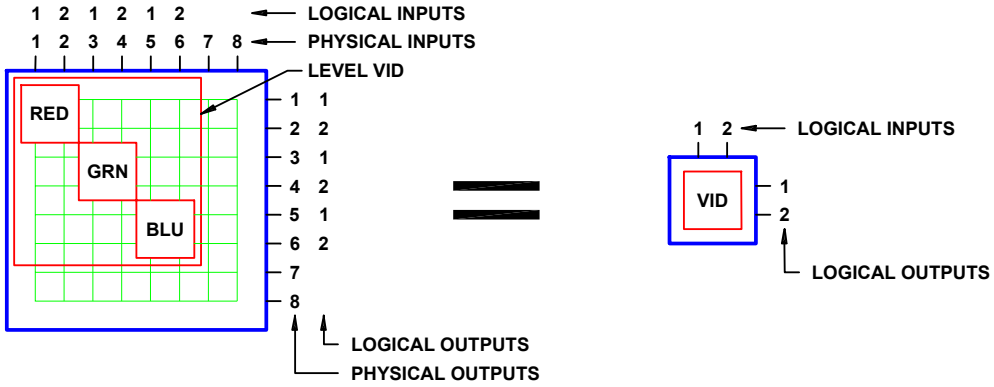


Figure 89. Physical Input

Physical inputs are numbered sequentially beginning with 1, and have the same number as the corresponding input connector on the routing switcher. This includes connectors that have been renumbered with input offset when multiple routing switchers have a common strobe. Physical outputs are numbered in the same manner.

See also: Logical Input.

Physical Switch

The hardware that switches a physical input to a physical output. Sometimes referred to as a crosspoint.

See also: Logical Switch, Crosspoint.

Physical Output

See: Physical Input.

Port

A serial communication bus interface connector on a system controller.

Port names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter. Port names are optional because a port is identified by its address.

PRC Device

A device designed to be compatible with the PESA Routing Control protocol (PRC).

Ocelot, Cougar, Jaguar, Tiger, and Cheetah routing switchers are PRC devices.

See also: RM5 Device.

Protect

A property placed on a destination that prevents all panels and ports from taking a switch on that destination, unless taken from a panel or port that has the same requester code as the panel or port that protected it.

Destination protection may be cleared by any panel or port that has the same requester code and lock priority as the panel or port that protected the destination, that has a higher lock priority, or that has a lock priority of 0 (zero).

See also: Lock, Lock Priority, Requester Code.

Protect Priority

See: Lock Priority.

Protocol

The format to be used when sending data between two devices.

Protocol names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Readback

Information received from a routing switcher reporting which physical input is currently switched to a specified physical output.

To ensure that the configuration in the controller, and the actual state of the physical switches in a routing switcher agree, the routing switcher can be made to read back the status of each physical output. Where the routing switcher reports a different physical input from that expected by the controller, a readback error is declared.

Readback Error

See Readback.

Reentry

An entity that exists as both a source and destination at the same time, whose function is to facilitate switching a single source to multiple destinations, with a single logical switch.

Reentries are virtual entities that exist in the control software only. Their creation and use does not require any physical modification to the switching system hardware.

Example: Assume the existence of source SRC1 and destinations DST1, DST2, and DST3. Reentry REENT1 is created and switched to the three destinations. With a single logical switch, SRC1 can now be switched to REENT1 and the signal will arrive at all three destinations at the same time.

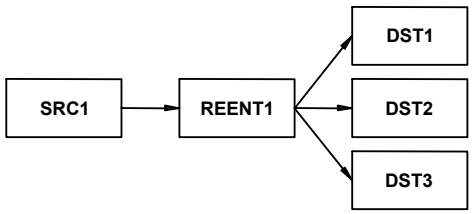


Figure 90. Reentry

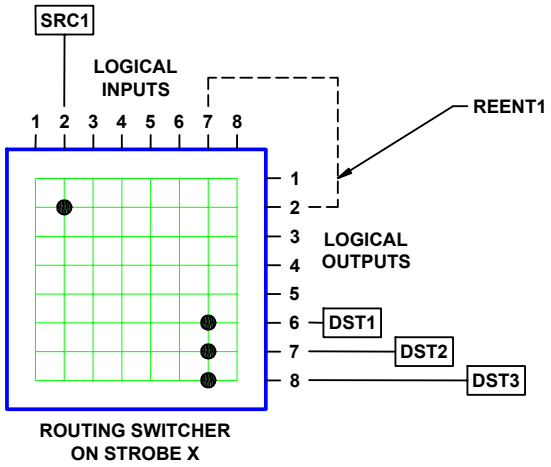


Figure 91. Reentry

A reentry is assigned both a source number and a destination number.

Reentry names may be created by using categories, and:

1. Shall be created using only the following characters:
   - Upper case letters A through Z
   - Lower case letters A through Z if enabled in the control system software
   - Numbers 0 through 9
   - The following special characters: space ( ), hyphen-minus (-), exclamation mark (!), ampersand (&), plus sign (+), equals sign (=), commercial at (@), and low line (_)
2. Shall contain a minimum of one, and a maximum of eight characters.
3. Shall not begin with a space. However, they may end with a space, have embedded spaces, and consist of a single space.
4. Shall be unique in the universe of source, destination, and reentry names.

See also: Category.

Remote Client

A user connected to a networked system controller such as the e-Route.

Remote Client Name

A string of up to sixteen characters consisting of letters, numbers, and some symbols. A Remote Client Name must begin with a letter, and may not contain any spaces.

Symbols Permitted: - _ @ ! & + =

Remote Client Parameters

Reserved for future use.

Remote Client Password

A string of up to eight characters consisting of letters, numbers, and some symbols. A Remote Client Password may begin with either a number or a letter, and may not contain any spaces.

Symbols Permitted: : ; < = > ? @

Remote Modem

An external modem connected to a system controller.

The remote modem must be an external type capable of being configured to automatically answer incoming calls. Because the system controller does not output any modem configuration information, the remote modem must be completely transparent to the controller. The only modems tested by PESA for use as remote modems are the Practical Peripherals PM288MT II and the U.S. Robotics Sportster 28.8 using the following initialization strings:

PM288MT II: AT S0=2 Q1 X4 &C1 &D0 &K3 &S1 &W0 &Y0

Sportster 28.8: AT &F1 S0=2 &H1 &R2 &I0 L2 Q1 &C1 &D0 Y0 &W0

For more information about these modems and their initialization strings, contact Practical Peripherals or U.S. Robotics. Before using any other type of remote modem, please consult with PESA Customer Service.

See also: Local Modem.

Requester Code

A property of panels and ports that allows them to be grouped with other panels or ports for the purpose of establishing lock and protect authority.

Panel requester codes not explicitly defined automatically default to the panel address.

See also Lock, Lock Priority, Protect.

RM5 Device

A device designed to be compatible with the System 5 (RM5) control protocol.

The RM4000, RM5000, and Lynx routing switcher families are RM5 devices.

See also: PRC Device.

Salvo

A group of predefined logical switches taken in the same vertical interval.

Example: Assume the existence of sources CART1 and CART2; and destinations MON1, VTR1, and VTR2, defined on levels AUD and VID.

By pressing a single control panel key, the user desires to take the following switches: audio and video from CART1 to MON1; audio from CART2 and video from CART1 to VTR1; and audio and video from CART2 to VTR2.

Table 46. Salvo

Salvo Entry	Destination	Source	
		Level: AUD	Level: VID
1	MON1	CART1	CART1
2	VTR1	CART2	CART1
3	VTR2	CART2	CART2

Salvo SAL1 is created and will consist of three salvo entries (one salvo entry per destination in the salvo). Each salvo entry is then configured to switch the selected sources on the appropriate levels. Once salvo SAL1 is assigned to a salvo key on the control panel, the user will be able to take all the specified switches with the press of a single key.

All switches in a salvo are taken within the same vertical interval.

Salvo names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Salvo Entry

One or more logical switches assigned to a specific destination that is part of a salvo.

Salvo entry names are the same as the destination they are associated with.

Salvo Include List

A named list of the salvos a specific control panel is authorized to control.

A salvo include list may be shared by multiple panels.

Salvo include list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Salvo Key

A user configurable control panel key, whose assigned function is used when the panel is in salvo select mode.

Many control panels have user configurable keys. Each key can be assigned two functions, one as a data key and one as a salvo key. When the keys are pressed, the data key functions are used except when the panel is in salvo mode.

When a panel is in salvo select mode, a salvo will be executed immediately when the salvo key is pressed.

Salvo Key List

A named list of the functions assigned to each salvo key on a panel.

Multiple panels may share a salvo key list as long as they are the same type of panel. Different panel types may not use the same salvo key list.

Salvo key list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

SECAM

Sequential Couleur Avec Memoire, the line sequential color system used in France, Russia, Eastern Europe, and some Middle Eastern countries. Like PAL, SECAM is based on a 50 Hz power system, displaying interlaced lines at 50 fields per second. The color information is

transmitted sequentially (R-Y followed by B-Y, etc.) for each line and conveyed by a frequency modulated sub carrier that avoids the distortion arising during NTSC transmission.

See also: NTSC, SECAM.

Serial Port

See: Port.

Shared Input

A logical input that is used by more than one source.

Note that shared outputs are not permitted.

See also: Source Block.

SMPTE

Society of Motion Picture and Television Engineers. A professional organization that recommends standards for the television and film industries.

Soft Destination Key

See: Soft Key.

Soft Key

A special type of data key whose assigned function may be changed locally by a panel user.

Control system software is used to designate a data key as either a soft source key or a soft destination key. The assignment of a specific source or destination to the soft key may then be made with either the control system software, or locally at the panel by using Store Mode.

Soft Source Key

See: Soft Key.

Source

One or more logical inputs (limited to one per level), on one or more levels, that are switched together as a group.

Destination names may be created by using categories, and:

1. Shall be created using only the following characters:
   - Upper case letters A through Z
   - Lower case letters A through Z if enabled in the control system software
   - Numbers 0 through 9
   - The following special characters: space ( ), hyphen-minus (-), exclamation mark (!), ampersand (&), plus sign (+), equals sign (=), commercial at (@), and low line (_)
2. Shall contain a minimum of one, and a maximum of eight characters.
3. Shall not begin with a space. However, they may end with a space, have embedded spaces, and consist of a single space.
4. Shall be unique in the universe of source and reentry names.

See also: Category.

Source Block

A means of ensuring that a particular source will not be switched to a specific.

When configuring a switching system, it may be desirable to use source blocking to restrict the switching of certain logical inputs. This may be done while configuring either sources or destinations.

Since a blocked source may contain a logical input that is shared (used by more than one source), care should be taken to ensure that all sources using the logical input are blocked from the destination to be protected.

Source Group

See: Source.

Source Include List

A named list of the sources a specific control panel is authorized to control.

A source include list may be shared by multiple panels.

Source include list names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

Source Number

A number assigned to each source by the controller and used by CPU Protocol 1.

Source numbers are also assigned to reentries.

Status

A list of all sources on all levels currently switched to a selected destination.

Sometimes also used to refer to the operational state of the control system (lock status, switch status, and panel status).

Status Level

The default level to be used when displaying the status of a destination receiving signals from multiple sources, on a panel in all levels mode (ALL LEVS).

One function of the LCD display on a panel is to show which source is currently switched to a selected destination. This is known as destination status. Although more than one source can be switched to a single destination (limited to one source per level), the status display can only show one source at a time. When the panel is in all levels mode (ALL LEVS), Status Level is used to designate a default level to be used when displaying status. Only the source on this default level will be displayed. On panels that do not have LCD displays, this is indicated by a continuous, bright, pushbutton light.

If one or more other sources are also switched to the destination (on other levels), an octothorp (the “#” symbol) will be appended to the source name. The other source names can be viewed by toggling each level key in turn to show, level-by-level, which source has been switched to the destination. On panels that do not have LCD displays, this is indicated by an alternating bright/dim push button light.

Status Method

One of two possible ways to display status when a panel is in all levels (ALL LEVS) mode and the destination is not defined on the Status Level.

When a panel is in all levels mode (ALL LEVS), the status shown will be the source on the Status Level assigned to that panel. If the destination is not defined on the Status Level, Status Method is used to control the resulting display:

If DEF (Default Method) is selected, NO XXXXX will be displayed where XXXXX is the Status Level assigned to the panel.

If GRP (Group Method) is selected, the controller will examine every level sequentially, starting with the level designated as Level Order 1. The source switched on the first level found where the destination is defined, will be displayed as the destination status.

Stop Bit

In asynchronous communication, a bit that indicates that a byte of data has just been transmitted.

Every byte of data is preceded by a start bit and followed by a stop bit.

Strobe

The third dimension of matrix space.

Every routing switcher in a switching system is assigned a strobe. This is usually accomplished by setting a DIP switch on the back of the routing switcher. Strobes do not have to be unique and, in larger systems, each strobe might be associated with several routing switchers.

In many switching systems, strobes are used to group levels of the same type together. For example, video may be on Strobe 1, audio on Strobe 2, etc.

Sync Reference

A vertical sync signal used to ensure that switching occurs in the vertical interval of a video signal.

Sync Reference names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

See also: Vertical Sync Signal.

System 5 Device

See: RM5 Device.

TIA

Telecommunications Industry Association.

Tieline

A special type of logical switch that allows a logical input on one level to be switched to a logical output on a different level.

Example 1 - Switch a signal from analog camera ANCAM into an analog-to-digital converter (A/D) and then into digital video tape recorder DIGVTR: (Figure 92) Connect a cable between the appropriate output connector of the analog routing switcher and the input of the A/D, and a cable between the output of the A/D and the appropriate input connector on the digital routing switcher. Configure levels ANAVID and DIGVID and tieline TLINE1 to connect them. Configure destination DIGVTR on level DIGVID. Configure source ANCAM on level ANAVID to use

tieline TLINE1. ANCAM may now be switched to DIGVTR with a single logical switch even though they are on different levels.

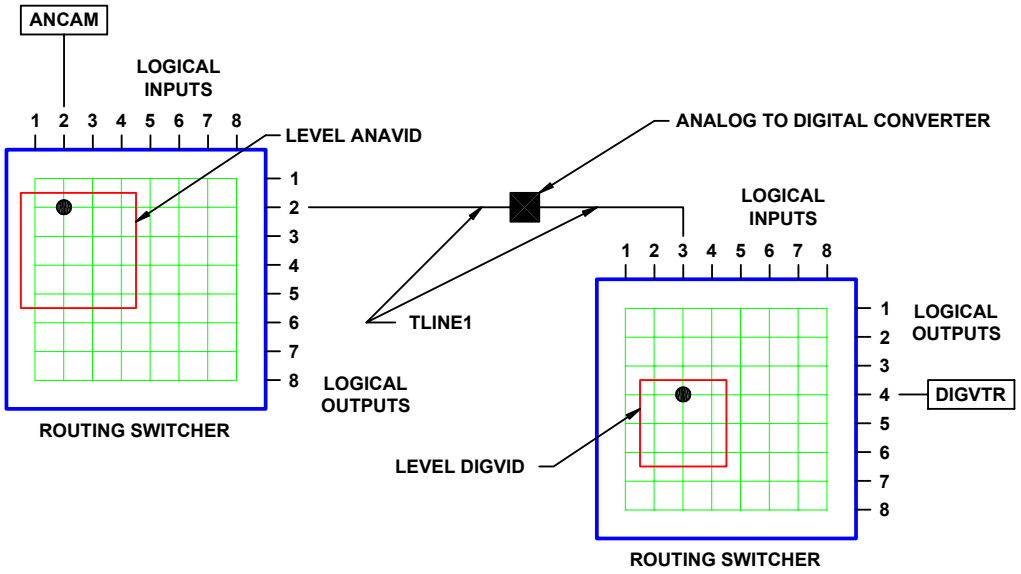


Figure 92. Tieline

Example 2 - Switch a signal from camera CAM1 (connected to a routing switcher in Room A) to video tape recorder VTR1 (connected to a routing switcher in Room B): (Figure 93) Connect a cable between the appropriate output connector of the routing switcher in Room A and the appropriate input connector on the routing switcher in Room B. Create levels VIDA and VIDB and configure a tieline connecting the output of VIDA to the input of VIDB. Define source CAM1 on level VIDA and destination VTR1 on level VIDB. CAM1 may now be switched to VTR1 with a single logical switch even though they (and their respective routing switchers) are located in two separate rooms.

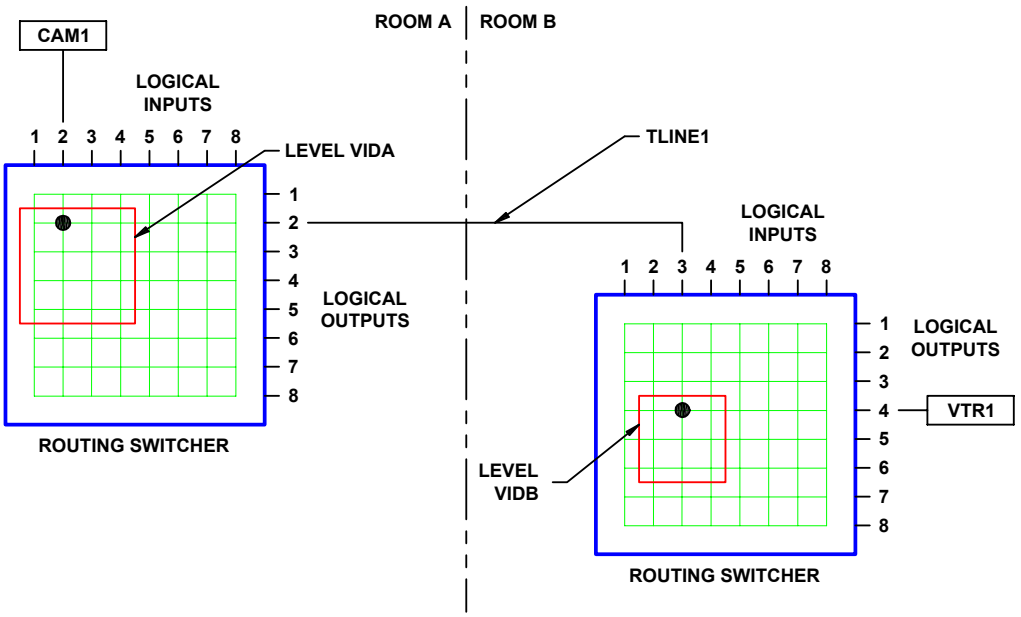


Figure 93. Tieline

Tieline names are one to eight characters in length and are constructed using uppercase letters, numbers, and spaces. The first character must be a letter.

User Account

A set of privileges and an optional user password saved as a user name.

User accounts provide a means of restricting access to certain system functions on a user-by-user basis.

User Name

A string of up to eight characters consisting of upper case letters, numbers, spaces, and some symbols:

Permitted: ! @ # $ % ^ & * _ + - = [ ] \ : " ; ' < > . ? /

Forbidden: { } | , ( )

User Password

A string of up to eight characters consisting of letters, numbers, and spaces. A User Password may begin with either a number or a letter. Leading spaces are discarded.

Vertical Interval

The portion of the video signal in which image information is absent to allow for the video device to prepare for the next frame of information.

Vertical Sync Signal

A short pulse generated at the beginning of each video timing frame that tells the video monitor when to start a new video timing field. For switching purposes, the vertical sync signal may be derived from house sync.

See also: Sync Reference.

Vertical Trigger

See: Vertical Sync Signal.

Video Timing Field

A package of information that contains information required to complete a full scan across a video monitor. There are two types of video fields denoted as odd and even.

Video Timing Frame

A package of information that contains all the information required to draw an image on a video device. Generally considered with respect to NTSC and PAL signals where the information is transmitted over a fixed time frame. A frame consists of two video timing fields denoted odd and even.

Working Directory

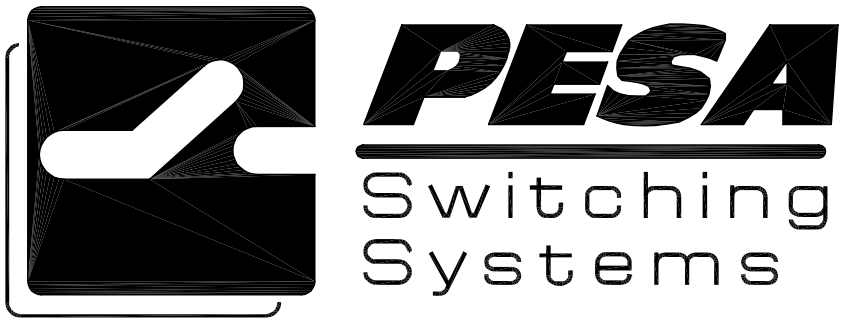
The location on the PC hard drive where control system software such as Win3500Plus is installed.

If the default settings of the Win3500Plus installation program were used, this will be c:\win3500p for 16-bit versions of the Microsoft Windows OS, and c:\program files\win3500p for 32-bit

versions. Configurations may not be saved in the working directory or any subdirectory of the working directory.

Revision History

Rev.	Date	Description	By
01	05-15-97	Initial Release	C. Jaynes
A	11-30-97	Incorporated Ocelot Phase II changes.	C. Jaynes
B	02-28-98	Incorporated ECO changes.	C. Jaynes
C	12-11-98	Added Addendum 1 for system controller module with PRC interface per ECO-3189.	G. Tarlton
D	07-23-99	Added Addendum 2 for system controller module with PRC interface (Rev B) per ECO-3372.	G. Tarlton
E	09-02-99	Added Technical Bulletin 81-9059-0418-0 Rev. B per ECO-3419. Replaced Technical Bulletin 81-9059-0418-0 Rev. B with Rev. C per ECO-3421.	G. Tarlton
F	09-14-99	Added Addendum 3 for 16x8 HD and 16x16 HD per ECO-3428.	G. Tarlton
G	09-21-99	Replaced Technical Bulletin 81-9059-0418-0 Rev. C with Rev. D per ECO-3435.	G. Tarlton
H	N/A	Not Released – Agile Conversion	G. Tarlton
I	N/A	Not Released – Agile Conversion	G. Tarlton
J	N/A	Not Released – Agile Conversion	G. Tarlton
K	02-21-01	Synchronized revision level with Agile per ECO CE00156.	G. Tarlton
L	02-21-01	Deleted Printing Specification per ECO CE00157	G. Tarlton
M	02-21-01	Complete revision. Incorporated ECOs 3074, 3451, 3465, 3654, 3670, 3678, and CE00039	G. Tarlton
N	05-25-01	Synchronized revision level with Agile per ECO CE00329.	G. Tarlton
O	06-13-01	Revised power consumption values for digital audio modules per ECO CE00353.	G. Tarlton


PESA
Switching
Systems