

UCI-2000-P PROTOCOL TRANSLATOR

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About This Manual

This manual provides detailed instructions for the installation, operation, and maintenance of the PESA UCI-2000-P Protocol Translator.

Warnings, Cautions, and Notes



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



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



Notes contain information important to the correct installation, operation, or maintenance of the equipment.

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Chapter 1 – Introduction

The PESA UCI-2000-P protocol converter is designed to provide an interface between BTS/Philips and PESA routing switchers and control systems. The UCI-2000-P can operate in one of two distinct modes, allowing PESA routing matrices to be controlled by the BTS/Philips Jupiter Control System or allowing BTS/Philips Venus compatible routing matrices to be controlled by a PESA 3300/3500/3500+ Control System.

1.1 BTS/Philips to PESA Control Mode

The BTS/Philips to PESA control mode allows the UCI-2000-P to control up to four levels of PESA PRC-based routing switchers from the Jupiter Control System. Each of the four additional levels can support a matrix size of 512 x 512 inputs and outputs. These control levels must occupy a consecutive block in the level space of the Jupiter Control System and cannot share an existing level with a Philips router. Figure 1 depicts a typical system block diagram of the BTS/Philips to PESA control mode.

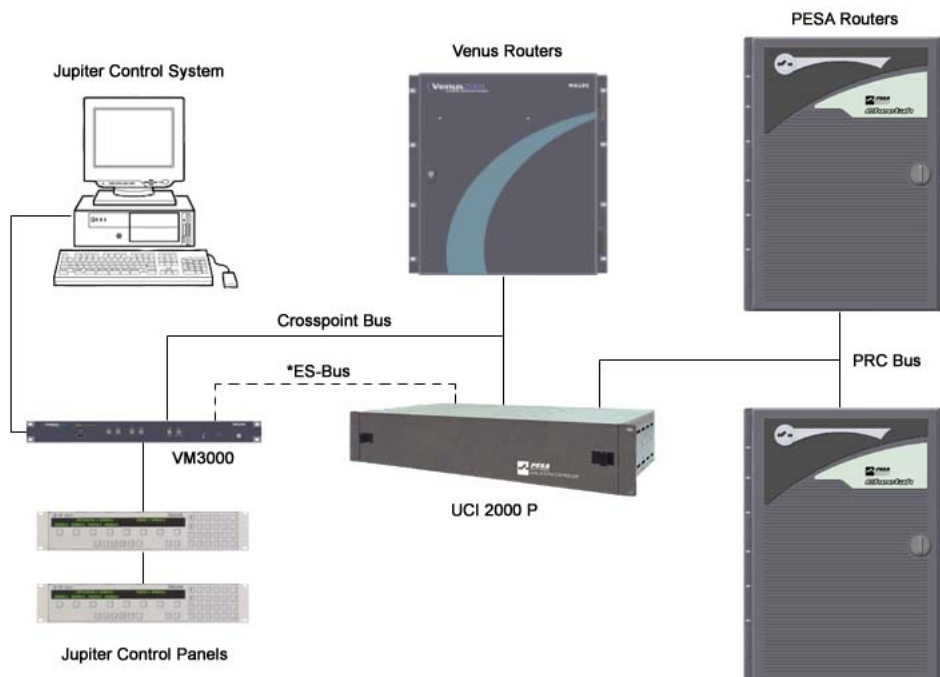


Figure 1. BTS/Philips to PESA Control Mode

The UCI-2000-P receives commands from the VM3000 through either a SMPTE ES-Bus or a native Philips Crosspoint Bus connection. Please note that in order to use an ES-Bus connection, the ES-Control option must be installed in the Jupiter Control System software. A Crosspoint Bus connection is the preferred interface method and is the standard/native connection for all Philips Venus routing switchers.

All commands received from the VM3000 are translated by the UCI-2000-P and sent to the controlled PESA routing switchers over the PESA PRC Control Bus. Appropriate Status and Confirm signals are returned to the VM3000 in response to all crosspoint takes.

1.2 PESA to BTS/Philips Control Mode

The PESA to BTS/Philips control mode allows the UCI-2000-P to control up to four levels of BTS/Philips Venus compatible routing switchers from a PESA 3500 family control system. Dune and Triton series routing switchers are not currently supported by the UCI-2000-P. Each of the four additional levels can support a matrix size of 512 x 512 inputs and outputs and cannot share an existing level with a PESA router. Figure 2 depicts a typical system block diagram of the PESA to BTS/Philips control mode.

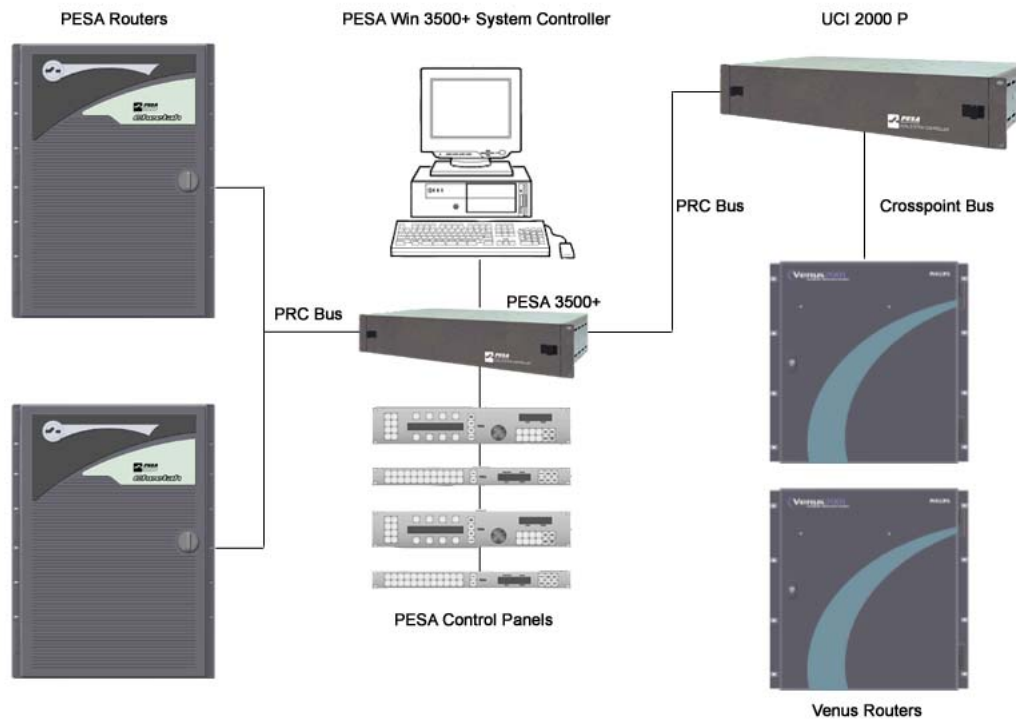


Figure 2. PESA to BTS/Philips Control Mode

The UCI-2000-P receives commands from the PESA 3500 family system controller through its PRC Bus connection. These commands are then translated into appropriate BTS/Philips Crosspoint Bus commands and transmitted to the BTS/Philips routing switchers.

Chapter 2 - Installation

This section details UCI-2000-P Mainframe installation procedures. The following topics are discussed:

- Receipt Inspection
- Unpacking
- Location
- Mounting
- Cabling
- Plug-In Card Installation
- Power Supply Installation



The UCI-2000-P contains static sensitive devices. Care should be used when it is necessary to handle the internal circuit cards. It is recommended that a ground wrist strap and grounding mat be used before attempting any equipment installations.

2.1 Receipt Inspection

The UCI-2000-P Mainframe was tested and inspected prior to leaving the factory. Upon receipt, inspect the equipment for shipping damage. If any damage is found, contact the carrier and PESA immediately and save all packing material.

2.2 Unpacking

The UCI-2000-P Mainframe is comprised of 1RU chassis/backplane assembly, one UCI2000 protocol translator card and one SRU Power Supply. Prior to discarding packing material compare the parts received against the packing list. Carefully inspect the layers of packing material for any components that may have been overlooked during the initial unpacking.

The UCI2000P comes in both 1 RU single chassis (single operation) and a 2 RU dual chassis (Redundant operation).

2.3 Location

The UCI-2000-P Mainframe may be located anywhere power is available. However, units should be mounted as close as possible to their associated equipment to minimize cable runs. Installation should be in an area where the ambient temperature does not exceed 40°C (104°F) inside the equipment rack.

2.4 Mounting

The UCI-2000-P Mainframe is rack mounted in a standard 19" equipment rack. Sufficient space must be provided behind the rack to allow for the control and power cables. All mounting holes should be utilized and mounting hardware tightened securely. As with all equipment installed in a rack, the bottom screw on each side should be installed before proceeding with the remainder of the screws. Then all screws should be securely tightened. Support the UCI-2000-P Mainframe's bottom while installing it in the rack. Figure 3 illustrates chassis installation in the equipment rack.

To install a UCI-2000-P Mainframe in an equipment rack, follow these steps:

1. Align the chassis with the slotted opening in the rack.
2. Install the bottom screws first.
3. Install the two top screws
4. Tighten all four screws securely.

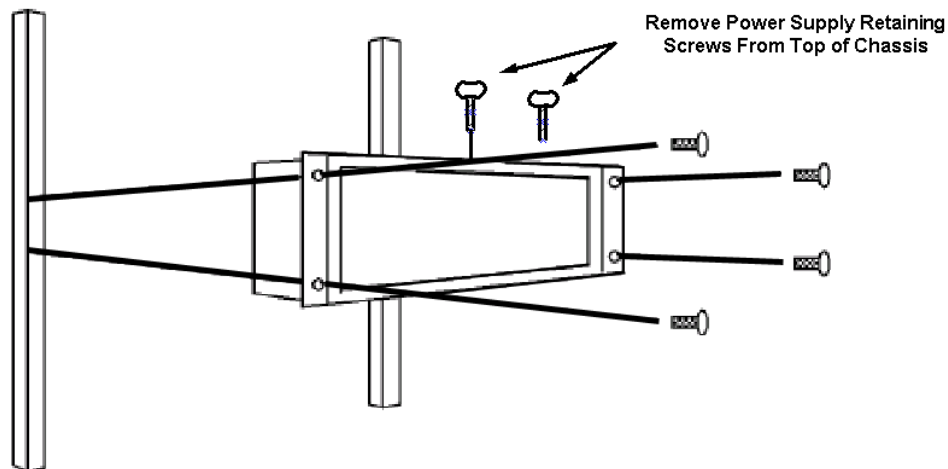


Figure 3. Chassis Mounting

2.5 Cabling

All cables should be strain relieved and secured to racks or other supporting structures. Failure to provide adequate cable support can result in cables separating from connectors. If cable runs are to be stored under an elevated floor, they should be tied to the racks as a guide. If cables are run along the floor, do not allow them to lay in the work area behind the racks. Stepping or tripping on the cables may result in connections being pulled free or wire breakage inside the insulation. The UCI-2000-P Mainframe should be installed in the equipment rack prior to attaching cables.

Use the following rules when cabling the UCI-2000-P Mainframe:

1. Lay all cables in their intended positions, separating control from power cables wherever possible.
2. Provide proper support for each cable during the cabling process. The use of tie-wraps is recommended, as shown below in Figure 4.

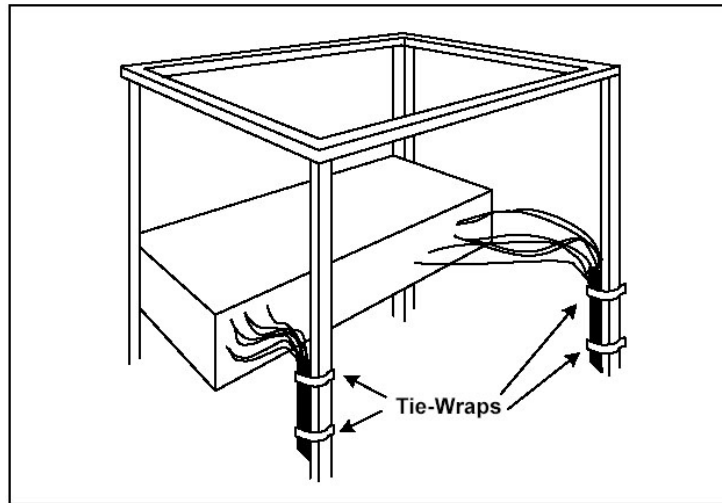


Figure 4. Cabling

2.6 Plug-In Card Installation

To install a board in the UCI-2000-P Mainframe, take the following steps:

1. Align the board with a set of circuit card guides in the center of the frame.
2. Carefully push the board into the frame until the circuit card connector makes initial contact with the backplane connector. At this point, firmly but carefully push the board into the frame while making sure the connectors are properly aligned. Continue pushing the board until it is in place and the connectors are firmly mated.

2.7 Power Supply Installation

The SRU Power Supply connects to the rear of the chassis through a 3 pin M-N-L connector. Loop through power is available which allows you to connect to either power connection. The Dual frame has internal power supplies.

Chapter 3 – Setup and Operation

3.1 Hardware Configuration

3.1.1 Setting the Operating Mode

Dip switch S1 on the UCI-2000-P PC board is used to set the card's operating mode. Available operating modes for the UCI-2000-P are listed in Table 1 below.

Table 1. UCI2000P Operating Modes

Operating Mode	S1-8	S1-7	S1-6	S1-5	S1-4	S1-3	S1-2	S1-1
Controlling PESA Routers	Off	Off	Off	Off	Off	Off	Off	On
Controlling Philips Routers	Off	Off	Off	Off	Off	Off	On	Off
Factory Test Mode	On	On	On	On	On	On	On	Off
Board Reset	On	On	On	On	On	On	On	On
All other settings are Reserved								

The same DIP switches S2, S3 and S6 have different meanings depending upon the mode of operation set on switch S1.

3.1.2 Setting the PRC Base Strobe (Control Level) and Number of Controlled Levels

BTS/Philips To PESA Mode:

Switches 1 – 6 of dip switch S2 set the starting (base) strobe number of the controlled PESA matrices using a binary representation according to the following table. Valid level numbers are 1 – 63. (ON is to the right when viewing from above and the rear connectors are at the top of the board).

Table 2. Base Control Level of PESA Routers

Starting Level #	S2-6	S2-5	S2-4	S2-3	S2-2	S2-1
Level 1	Off	Off	Off	Off	Off	On
Level 2	Off	Off	Off	Off	On	Off
Level 3	Off	Off	Off	Off	On	On
Level 4	Off	Off	Off	On	Off	Off
Level 5	Off	Off	Off	On	Off	On
Level 6	Off	Off	Off	On	On	Off
Level 7	Off	Off	Off	On	On	On
Level 8	Off	Off	On	Off	Off	Off
Up to...						
Level 60	On	On	On	On	Off	Off
Level 61	On	On	On	On	Off	On
Level 62	On	On	On	On	On	Off
Level 63	On	On	On	On	On	On

Switches 7 and 8 of S2 set the number of controlled PESA matrices according to the following table:

Table 3. Number of Controlled PESA Levels

S2-7	S2-8	Function
Off	Off	UCI Controls 1 Level
On	Off	UCI Controls 2 Levels
Off	On	UCI Controls 3 Levels
On	On	UCI Controls 4 Levels

PESA To BTS/Philips Mode:

Switches 1 – 4 of dip switch S6 set the starting (base) strobe number used by the PESA control system to control the BTS/Philips matrices. Valid strobe numbers are 1 – 15. (ON is to the right when viewing from above and the rear connectors are at the top of the board).

Table 4. Base Control Level of BTS/Philips Routers

Starting Level #	S6-4	S6-3	S6-2	S6-1
Reserved	Off	Off	Off	Off
Level 1	Off	Off	Off	On
Level 2	Off	Off	On	Off
Level 3	Off	Off	On	On
Level 4	Off	On	Off	Off
Level 5	Off	On	Off	On
Level 6	Off	On	On	Off
Level 7	Off	On	On	On
Level 8	On	Off	Off	Off
Level 9	On	Off	Off	On
Level 10	On	Off	On	Off
Level 11	On	Off	On	On
Level 12	On	On	Off	Off
Level 13	On	On	Off	On
Level 14	On	On	On	Off
Level 15	On	On	On	On

Switches 5 and 6 of S6 set the number of controlled BTS/Philips matrices according to the following table:

Table 5. Number of Controlled BTS/Philips Levels

S6-5	S6-6	Function
Off	Off	UCI Controls 4 Levels
On	Off	UCI Controls 1 Levels
Off	On	UCI Controls 2 Levels
On	On	UCI Controls 3 Levels

Switches 7, 8, 9, and 10 of switch S6 should be left in the OFF position

The UCI-2000P can control up to 4 Philips matrices that are up to 512x512 in size. The actual number of PESA matrices being controlled is determined by switch S6. Switches S2 and S3 determine the mapping of PESA levels to Philips matrices.

In addition, the first three levels can be mapped to insure that the switches taken on these matrices are sync'd to vertical reference. (Disabling vertical sync lock allows for switches to be taken more quickly on the matrix.)

First PESA Level Mapping**Table 6. First Level Mapping and Video Sync Association**

S2-4	S2-3	S2-2	S2-1	Function
	Off	Off	Off	Philips Level 1 (Venus Video Default)
	Off	Off	On	Philips Level 2 (Venus A1 Audio Default)
	Off	On	Off	Philips Level 6 (Venus A2 Audio Default)
	Off	On	On	Philips Level 8 (Venus A3 Audio Default)
	On	Off	Off	Philips Level 12 (Venus A4 Audio Default)
	On	Off	On	Philips Level 3 (Venus TimeCode Default)
	On	On	Off	Philips level 7 (Venus Serial Digital Default)
	On	On	On	Philips Level 32 (Venus AES Default)
Off				First Level Not Locked to Vertical Reference
On				First Level Locked to Vertical Reference

Second PESA Level Mapping**Table 7. Second Level Mapping and Video Sync Association**

S2-8	S2-7	S2-6	S2-5	Function
	Off	Off	Off	Philips Level 1 (Venus Video Default)
	Off	Off	On	Philips Level 2 (Venus A1 Audio Default)
	Off	On	Off	Philips Level 6 (Venus A2 Audio Default)
	Off	On	On	Philips Level 8 (Venus A3 Audio Default)
	On	Off	Off	Philips Level 12 (Venus A4 Audio Default)
	On	Off	On	Philips Level 3 (Venus TimeCode Default)
	On	On	Off	Philips level 7 (Venus Serial Digital Default)
	On	On	On	Philips Level 32 (Venus AES Default)
Off				Second Level Not Locked to Vertical Reference
On				Second Level Locked to Vertical Reference

Third PESA Level Mapping**Table 8. Third Level Mapping and Video Sync Association**

S3-4	S3-3	S3-2	S3-1	Function
	Off	Off	Off	Philips Level 1 (Venus Video Default)
	Off	Off	On	Philips Level 2 (Venus A1 Audio Default)
	Off	On	Off	Philips Level 6 (Venus A2 Audio Default)
	Off	On	On	Philips Level 8 (Venus A3 Audio Default)
	On	Off	Off	Philips Level 12 (Venus A4 Audio Default)
	On	Off	On	Philips Level 3 (Venus TimeCode Default)
	On	On	Off	Philips level 7 (Venus Serial Digital Default)
	On	On	On	Philips Level 32 (Venus AES Default)
Off				Third Level Not Locked to Vertical Reference
On				Third Level Locked to Vertical Reference

Fourth PESA Level Mapping**Table 9. Fourth Level Mapping**

S3-8	S3-7	S3-6	S3-5	Function
	Off	Off	Off	Philips Level 1 (Venus Video Default)
	Off	Off	On	Philips Level 2 (Venus A1 Audio Default)
	Off	On	Off	Philips Level 6 (Venus A2 Audio Default)
	Off	On	On	Philips Level 8 (Venus A3 Audio Default)
	On	Off	Off	Philips Level 12 (Venus A4 Audio Default)
	On	Off	On	Philips Level 3 (Venus TimeCode Default)
	On	On	Off	Philips level 7 (Venus Serial Digital Default)
	On	On	On	Philips Level 32 (Venus AES Default)
Off				Must ALWAYS BE OFF



The fourth Philips level cannot be locked to video reference. Switch S3-8 must always be in the OFF position.

3.2 Software Configuration

3.2.1 BTS/Philips To PESA Mode

To enable the new PESA routers in the system, they must be added to the configuration in the Jupiter control system software. The PESA routers are added and configured exactly as if they were BTS/Philips routers. If the UCI-2000-P is to operate via the SMPTE ES-Bus protocol, the ES-C third-party interface software option must be resident in the Jupiter system software and the appropriate serial port on the VM3000 must be configured as such. Please refer to the Jupiter instruction manual for more information.

3.2.2 PESA to BTS/Philips Mode

To enable the BTS/Philips Venus routers in the system, they must be added to the configuration in the PESA Win3500 Plus control system software. The Venus routers are added and configured exactly as if they were PESA routers. Please refer to the Win3500 Plus instruction manual for more information.

3.2.3 Redundant Operation

The UCI-2000-P is capable of fully redundant operation when two cards are installed in the dual controller chassis. The front panel toggle switch is used to select one of three redundancy modes: Active, Standby and Automatic.

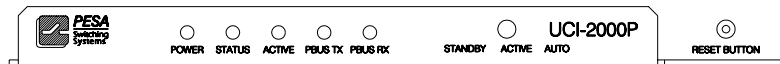


Figure 5. UCI-2000-P Card

In the automatic mode, one card operates in the active mode and the other card operates in standby. If a failure is detected on the active card by the standby, the standby card will automatically disable the active card and assume the active role. The standby card receives and processes the same data from the controller and the routers as the active card, so that in the event of a failure on the active card it can take over instantly and transparently. To enable the automatic mode, set the toggle switch on both cards to the Auto position. The Active light on the front of the card is used to indicate which of the cards is currently operating in the active state.

For the system to operate in manual mode, one card must be set to the active mode and the other to the standby mode. If the toggle switch settings on the cards are invalid, the Status light will continuously flash three times.

3.3 Cable Connections

3.3.1 BTS/Philips to PESA Mode

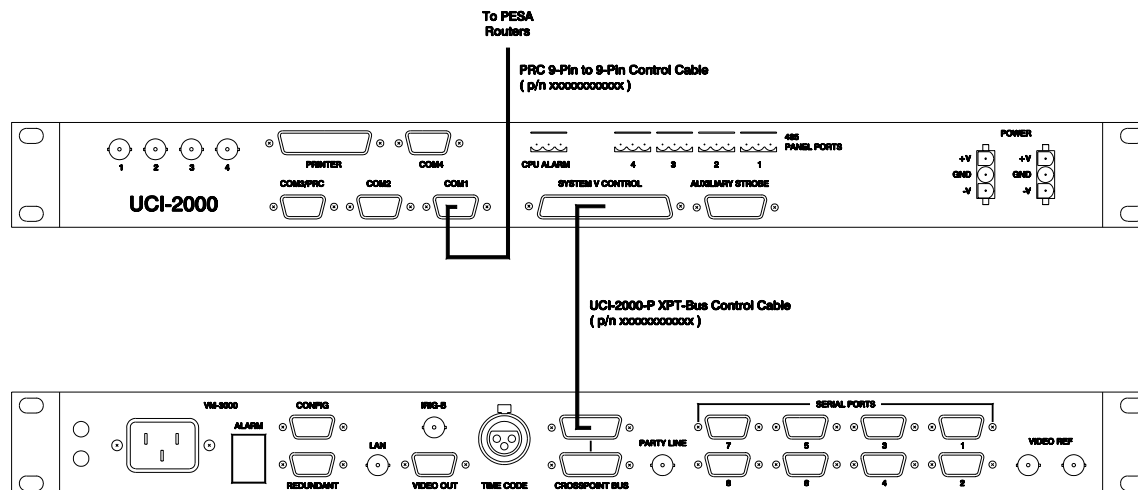


Figure 6. Control Cable Connections, BTS/Philips XPT-Bus

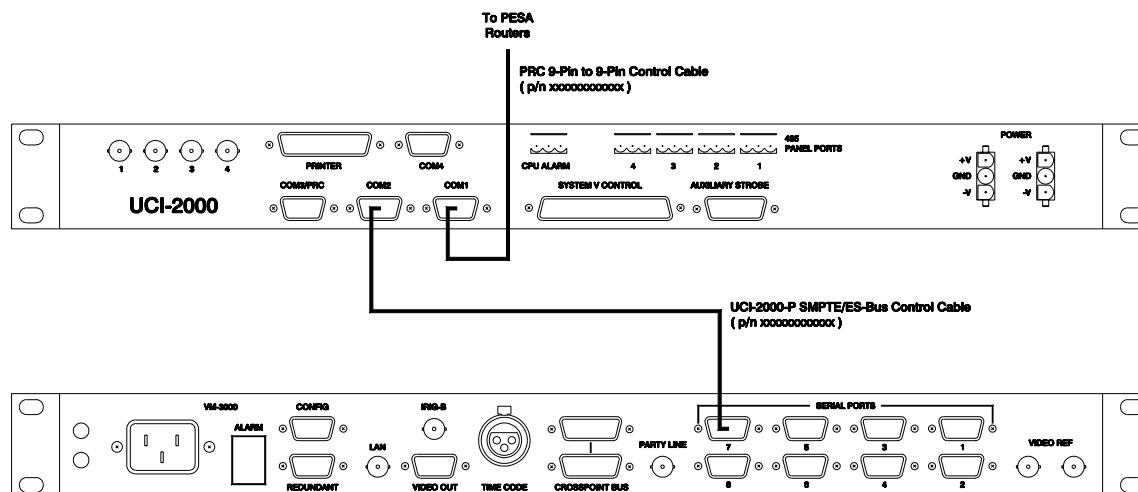


Figure 7. Control Cable Connections, SMPTE ES-Bus

3.3.2 PESA to BTS/Philips Mode

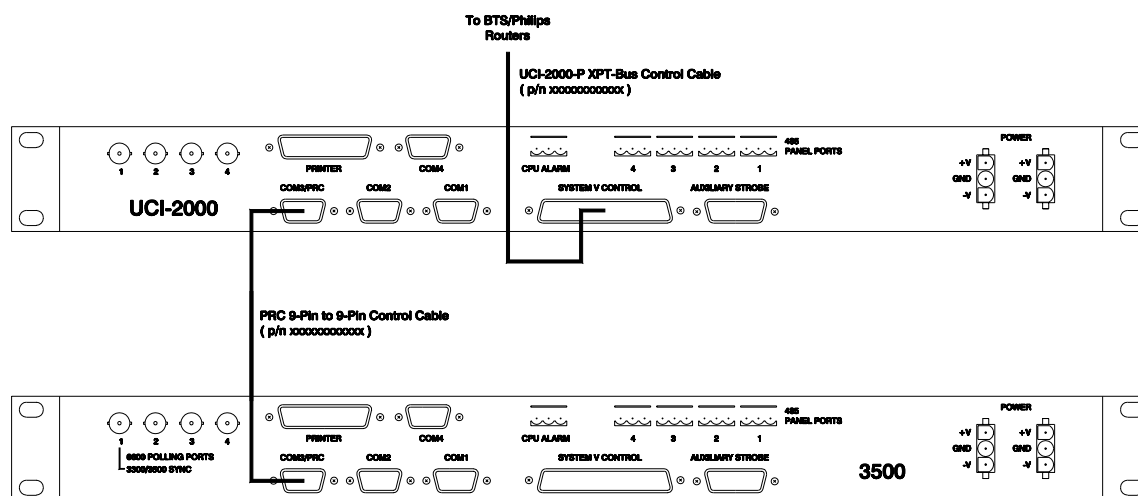


Figure 8. Control Cable Connections, PESA to BTS Philips Mode

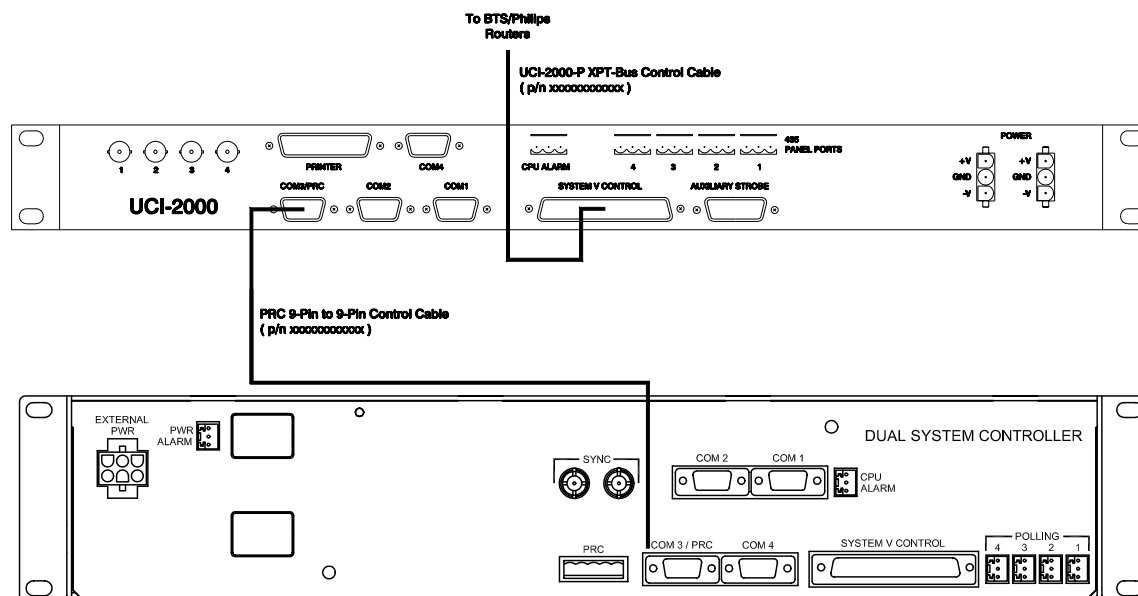


Figure 9. Control Cable Connections, PESA to BTS Philips Mode with Dual Controller

Chapter 4 - Installation and Initialization Procedure Philips to PESA Mode

This section describes the installation procedure for a new UCI-2000-P protocol conversion board. This procedure is performed with the UCI-2000-P powered up and connected to the VM3000 and all PESA routing switchers with the appropriate cables. If your system contains redundant UCI-2000-P controller cards, this procedure must be performed on each card separately.

1. Remove all UCI-2000-P boards from the controller chassis.
2. Set the PRC base strobe (level) and number of controlled levels using dip switch S2 as follows:
Switches 1 – 6 of S2 set the starting (base) strobe number of the controlled PESA matrices using a binary representation according to the following table. Valid level numbers are 1 – 63. (ON is to the right when viewing from above and the rear connectors are at the top of the board).

Table 10. Base Control Level

Starting Level #	S2-6	S2-5	S2-4	S2-3	S2-2	S2-1
Level 1	Off	Off	Off	Off	Off	On
Level 2	Off	Off	Off	Off	On	Off
Level 3	Off	Off	Off	Off	On	On
Level 4	Off	Off	Off	Off	Off	Off
Level 5	Off	Off	Off	Off	Off	On
Level 6	Off	Off	Off	Off	On	Off
Level 7	Off	Off	Off	Off	On	On
Level 8	Off	Off	On	Off	Off	Off
Up to...						
Level 60	On	On	On	On	Off	Off
Level 61	On	On	On	On	Off	On
Level 62	On	On	On	On	On	Off
Level 63	On	On	On	On	On	On

Switches 7 and 8 of S2 set the number of controlled PESA matrices according to the following table:

Table 11. Number of Control Levels

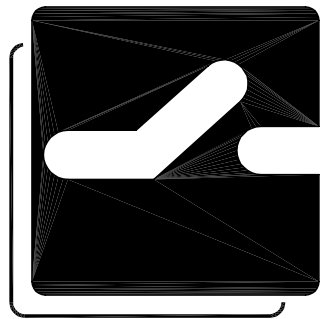
S2-7	S2-8	Function
Off	Off	Controls 1 Level
On	Off	Controls 2 Levels
Off	On	Controls 3 Levels
On	On	Controls 4 Levels

3. Turn ON **all** switches on dip switch S1 to re-initialize the board's internal memory to factory defaults. This will cause the UCI-2000-P to query each routing switcher connected to the PESA PRC Bus to determine the number and sizes of each of the matrices the next time the board is powered-up. This should be the default setting when shipped from the factory.
4. Set the front panel toggle switch to the AUTO or ACTIVE setting.
5. Verify that **only** switch #2 on dip switch S4 is ON.
6. Install the UCI-2000-P card in the chassis and apply power (if necessary). Verify that the Power led is illuminated.
7. Press and hold the front panel Reset Button for about 1 second, then release.
8. The board will now query each PESA router. The Tx LED will indicate data activity on the PRC Bus. When it is finished, all front panel LEDs will turn off (except for the power LED). This process should take between 30 seconds and two minutes to complete, depending on the number and size of the PESA routers.
9. Remove the UCI-2000-P card from the chassis.
10. Set the front panel toggle switch to the AUTO setting.
11. Turn OFF all switches on dip switch S1 **except** for switch # 1. This will set the normal mode of operation for the system. Available operating modes for the UCI-2000-P are listed in Table 8.

Table 12. UCI-2000-P Operating Modes

Operating Mode	S1-8	S1-7	S1-6	S1-5	S1-4	S1-3	S1-2	S1-1
Controlling PESA Routers	Off	Off	Off	Off	Off	Off	Off	On
**Controlling Philips Routers	Off	Off	Off	Off	Off	Off	On	Off
Factory Test Mode	On	On	On	On	On	On	On	Off
Board Reset	On	On	On	On	On	On	On	On
All other settings are Reserved								
**Note: This mode is currently unavailable.								

12. Repeat steps 1-11 for the redundant UCI-2000-P card (if equipped).
13. Re-install the UCI-2000-P card(s) in the chassis.



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