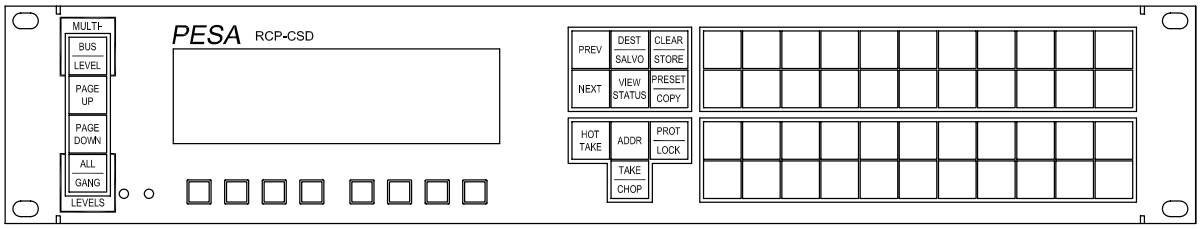

RCP-CSD

Remote Control Panel
Complete Status Display

PESA Switching Systems, Inc.
330-A Wynn Drive Northwest
Huntsville, AL 35805-1961
http://www.pesa.com
(256) 726-9200

Part No. 81-9059-0436-0 Revision C

Service and Ordering Assistance

PESA Switching Systems, Inc.
330-A Wynn Drive Northwest
Huntsville, AL 35805-1961 USA
www.pesa.com

Main Office
(256) 726-9200 (Voice)
(256) 726-9271 (Fax)

Service Department
(256) 726-9222 (Voice) **(24 hours/day, 7 days/week)**
(256) 726-9268 (Fax)
service@pesa.com

National Sales Office

PESA Switching Systems, Inc.
35 Pinelawn Rd., Suite 99-E
Melville, NY 11747 USA
(800) 328-1008 (Voice)
(631) 845-5020 (Voice)
(631) 845-5023 (Fax)

Comments concerning this document are welcome, and should be directed to: techpubs@pesa.com

Printed in the United States of America.

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

Product Name: RCP-CSD Control Panel

Model Number: RCP-CSD

conforms to the following standards or other normative documents:

Electromagnetic Emissions:
EN 50081-1:1992
EN 55022:1995

Electromagnetic Immunity:
EN 50082-1:1997
EN 61000-4-2:1995
EN 61000-4-3:1996
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, September 7,1999
Place and Date

Paul Ethridge
Quality Control Engineer

81905904710 REV. A

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Chapter 1 – Introduction

General

This manual provides instructions for the installation, operation, and maintenance of the PESA RCP-CSD Complete Status Display Remote Control Panel.

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 RCP-CSD is a rack-mounted remote control panel designed to operate with PESA routing switchers, system controllers, and control system software.

Specifications

Power Adapters

U.S.A.

Input 120VAC, 60Hz, 17.5VA
Output..... 9VDC, 1A

U.K.

Input 240VAC, 50Hz, 17.5VA
Output..... 9VDC, 1A

Continental Europe

Input 230VAC, 50Hz, 85mA
Output..... 9VDC, 1A

Physical Characteristics

Height..... 3.5 Inches, 2RU (89mm)
Width..... 19 Inches (483mm)
Depth..... 2.8 Inches (71mm)
Weight..... 3.8 Pounds (1.7kg)

Operational Environment

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

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 1. If any parts appear to be missing, please contact PESA immediately.

Table 1. Equipment List

Part No. Description	Quantity Required
81-9065-2165-0 RCP-CSD Remote Control Panel	1 ea
81-9023-0112-0 Power Adapter – U.S.A. 120VAC, 60Hz	Note 1
81-9023-0122-0 Power Adapter – U.K. 240VAC, 50Hz	Note 1
81-9023-0123-0 Power Adapter – Continental Europe 230VAC, 50Hz	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

This equipment is designed to be installed in a standard 19-inch equipment rack located in an environment conforming to the specifications shown in Chapter 1. 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 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 hardware has 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 as shown in Figure 1.

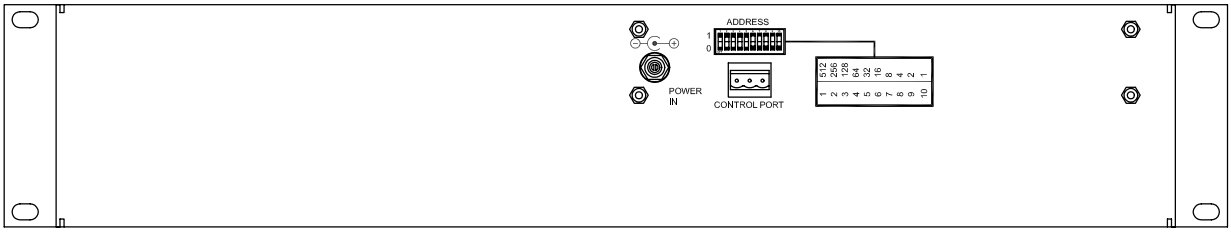


Figure 1. Rear View

RS-485 Serial Communication Connector (CONTROL PORT)

This 3-contact connector provides an RS-485 serial communication interface using the PESA RCP Protocol (Document No. 81-9062-0300-0). See Figure 2 for an orientation view showing contact locations.

CONTROL PORT is connected to a PESA system controller with a cable constructed with a 3-contact connector (Part No. 81-9029-0780-0) and shielded, twisted-pair audio cable (Part No. 81-9028-0043-2, Belden 8451, or equivalent) as shown in Figure 3. The connector body has an integral strain relief which requires the use of a nylon cable tie that is included with the connector. If this cable tie is not available, Part No. 81-9021-0028-8 may be used.

NOTE

It is not necessary to remove power from the remote control panel prior to connecting or disconnecting the RS-485 serial communication cable.

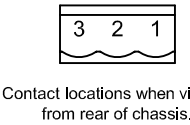


Figure 2. CONTROL PORT Connector

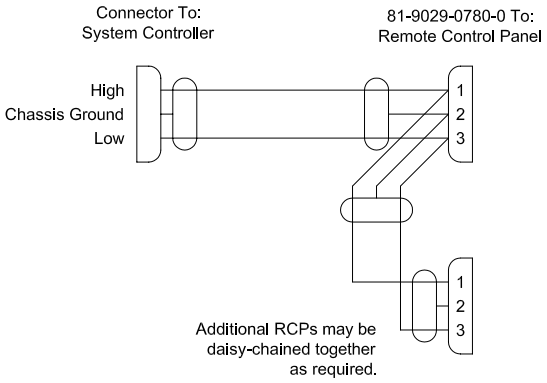


Figure 3. RS-485 Serial Communication Cable

Power Connector

This coaxial connector provides the input power interface. See Figure 4 for an orientation view showing contact locations.

POWER IN is connected to the external power adapter provided with the remote control panel. The power adapter has an integral cable assembly with a push-on coaxial connector.

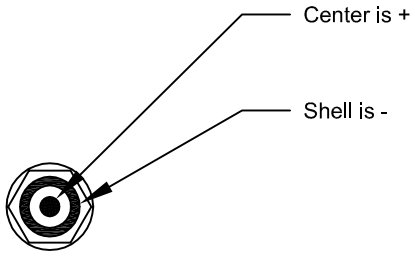
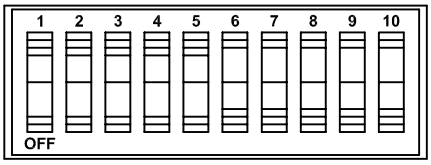


Figure 4. POWER IN Connector

Switch and Jumper Settings

Panel Address DIP Switch

This 10-position DIP switch is used to set the unique panel address required by every remote control panel in a switching system. See Figure 5 for an orientation showing switch locations.



Switch locations when viewed
from rear of chassis.

Figure 5. Panel Address DIP Switch

The panel address is set as follows:

1. Select a unique address to be assigned to the panel.
2. Convert the address to 10-position binary format.
3. Using 1 = ON and 0 = OFF, use the switches to enter the binary address.

Example:

- Panel address will be 185
- 185 is 0 0 1 0 1 1 1 0 0 1 in 10-position binary format
- Set the switches as shown in Table 2

Table 2. Sample DIP Switch Setting for Panel Address 185

1	2	3	4	5	6	7	8	9	10
OFF	OFF	ON	OFF	ON	ON	ON	OFF	OFF	ON

Chapter 3 – Operation

Power Connection

Power up the RCP-CSD as follows:

1. Plug the power adapter into the AC mains.
2. Plug the power adapter cable into the power connector on the rear of the RCP-CSD.
3. The RCP-CSD will then display the following information:
    - Panel Address
    - Panel Type ID No. (RCP-CSD Panel Type ID No. is 15)
    - Internal Software Version
    - Internal Software Release Date

RS-485 Bus Connection

After connecting power to the RCP-CSD, connect the RS-485 bus cable. If the system controller is active, the RCP-CSD will become operational and enter Multi-Level Mode.

LCD Display Controls

In the lower right corner of the panel are access holes for two recessed potentiometers. These are used to control the LCD panel display:

- The left potentiometer controls the display brightness (backlight intensity).
- The right potentiometer controls the display contrast.

Front Panel Keys

This remote control panel is operated by pressing keys (pushbutton switches) located on the front panel. There are two types of keys, Legend Keys and Display Panel Keys.

Legend Keys

Legend Keys have square caps which contain replaceable legends. Each key contains an LED with two light output levels. The low level is always on to provide backlighting for the key legend. The LED may be switched to high level, or made to flash between low and high, if required by the assigned function. In this manual, reference to the LED being on, off, or flashing will refer to the high level. Depending on the function assigned, keys may operate in the following modes:

- Single Function Momentary On – The function is enabled only as long as the key is held down.

  The LED remains off.

- Single Function On-Off – Press the key and release to enable the function, press and release again to disable the function.

  When the function is enabled, the LED is switched on. When the function is disabled, the LED is switched off.

- Dual Function Toggle – Press the key and release to toggle between two functions, one of which is always enabled.

  When the primary function is enabled, the LED is switched on. When the secondary function is enabled, the LED flashes.

- Dual Function Interlocked On-Off – Press the key and release to enable the primary function, press and release again to disable the primary function.

  Press the key and hold for approximately one second to enable the secondary function, press and hold again to disable the secondary function.

  The primary and secondary functions cannot be enabled simultaneously. If one function is enabled, enabling the other function will automatically disable the first.

  When the primary function is enabled, the LED is switched on. When the secondary function is enabled, the LED flashes.

- Dual Function Guarded On-Off – Press the key and release to enable the primary function, press and release again to disable the primary function.

  Press the key and hold for approximately one second to enable the secondary function. To disable the secondary function, press and release the key (without holding).

  The primary and secondary functions cannot be enabled simultaneously. If one function is enabled, the other may not be enabled until the first is disabled by pressing the key.

  When the primary function is enabled, the LED is switched on. When the secondary function is enabled, the LED flashes.

- Dual Function Latch On + On-Off – Press the key and release to enable the primary function. This function is now latched, and will not be disabled if the key is pressed again.

  Press the key and hold for approximately one second to enable the secondary function. To disable the secondary function, press and release the key (without holding).

  The primary and secondary functions cannot be enabled simultaneously. If one function is enabled, enabling the other function will automatically disable the first.

  When the primary function is enabled, the LED remains off. When the secondary function is enabled, the LED flashes.

- Dual Function Interlocked On-Off + Momentary On – Press the key and release to enable the primary function, press and release again to disable the primary function.

  Press the key and hold for approximately one second to enable the secondary function. The secondary function will be disabled when the key is released.

  The secondary function cannot be enabled unless the primary function is disabled.

  When the primary function is enabled, the LED is switched on. When the secondary function is enabled, the LED remains off.

- Dual Function Momentary On + On-Off – The primary function is only enabled as long as the key is held down.

  Press the key and hold for approximately one second to enable the secondary function. To disable the secondary function, press and release the key.

  When the primary function is enabled, the LED remains off. When the secondary function is enabled, the LED flashes.

Legend Keys are further subdivided into two types, Control Keys and Data Keys.

Control Keys

A Control Key is a Legend Key whose function is preassigned, and may not be changed by the user. The Control Keys on this panel, and their operating modes, are shown in Table 3.

Table 3 Control Keys

Control Key Legend	Operating Mode
ADDR	Single Function Momentary On
ALL LEVELS / GANG LEVELS	Dual Function Latch On + On-Off
CLEAR / STORE	Dual Function Momentary On + On-Off
DEST / SALVO	Dual Function On-Off
HOT TAKE	Single Function On-Off
MULTI-BUS / MULTI-LEVEL	Dual Function Toggle
NEXT	Single Function Momentary On
PAGE DOWN	Single Function Momentary On
PAGE UP	Single Function Momentary On
PRESET / COPY	Dual Function Interlocked On-Off + Momentary On
PREV	Single Function Momentary On
PROT / LOCK	Dual Function Guarded On-Off
TAKE / CHOP	Dual Function Momentary On + On-Off
VIEW STATUS	Single Function Momentary On

Data Keys

A Data Key is a Legend Key whose function is determined by the user. The assignment of functions to Data Keys is part of the system configuration performed with the control system software (e.g. Win3500Plus). For more information, see the documentation accompanying your control system software.

The physical operating mode for all Data Keys is Single Function Momentary On. The Data key is pressed and released to enter the selected data. The Data key LED will flash once to signify that the entry has been accepted.

Each data key may be assigned a non-mode-specific function, and one or more mode-specific functions that are only available when the panel is in specific operational modes.

Non-Mode-Specific Data Key Functions

Non-mode-specific Data key functions are available when the panel is in all operational modes except those listed below. Data Keys may be configured to function as one of the following types:

- Category Key
- Index Key
- Category + Index Key
- Source Key
- Soft Source Key
- Destination Key
- Soft Destination Key

Mode-Specific Data Key Functions

While in the operational modes listed below, the non-mode-specific Data key functions are disabled and replaced with the mode-specific functions described.

Salvo Mode Data Key Functions

Each Data key may also be configured as a:

- Salvo Key

When in Salvo mode, pressing a Data key configured as a Salvo key will cause the salvo to be executed immediately. For more information, see “Salvo Execution” on page 25.

At present, Salvo mode is the only mode having mode-specific Data key functions.

Display Panel Keys

The RCP-CSD has one row of eight small keys, without legends, located under the LCD display. These special Data keys are assigned Data key numbers 45 through 188, and may only be configured as one of the following types:

- Destination Key
- Soft Destination Key

The assignment of functions to these keys is part of the system configuration performed with the control system software (e.g. Win3500Plus). For more information, see the documentation accompanying your control system software.

The destinations assigned to these keys are those that will be displayed when the panel is in Multi-Bus mode. In this mode, 18 pages of data will be displayed, with eight destinations per page. Page 1 will display the destinations associated with Data keys 45 through 52, Page 2 will display 53 through 60, etc.

Once the system is operational, the Display Panel keys are used to select items shown in two rows of four items on the LCD display panel above them. The four keys on the left are used for the first row displayed, and the four keys on the right are used for the second row.

In Multi-Bus mode, these keys will be used to select destinations, in Multi-Level mode they will be used to select levels.

LCD Panel Layout

The LCD panel displays information in fields as shown in Figure 6.

1. Selection Legend Field – This field is the legend for the one to its right, and describes the type of information to be found there. It will contain one of the following:
   - PRESET – The item in the Selection field has been selected, but not acted upon yet.
   - DEST – The item in the Selection field is a destination.
   - SALVO – The item in the Selection field is a salvo.
2. Selection Field – This is the item selected for action. It is also used to display the panel address when the ADDR key is pressed. It may be blank, or contain one of the following in inverse video:
   - A destination name.
   - A source name.
   - A salvo name.
   - The panel address.
3. Mode Field – This field indicates which of the main operational modes the panel is in. It will be one of the following:
   - MULTI-LVL – The panel is in Multi-Level mode.
   - MULTI-BUS – The panel is in Multi-Bus mode.
4. Page Field – The page number of the display.
   - PAGE 1
5. Data Fields – Data is displayed in eight pairs of data fields per page. Each pair of data fields contains:
   - Top Field – Will be blank, or contain a level name (in Multi-Level mode), or a destination name (in Multi-Bus mode).
   - Bottom Field – Will be blank, or contain a source name.

SELECTION LEGEND	SELECTION	MODE	PAGE
DATA	DATA	DATA	DATA
DATA	DATA	DATA	DATA
DATA	DATA	DATA	DATA
DATA	DATA	DATA	DATA

Figure 6. LCD Display Fields

Multi-Level Mode

In Multi-Level mode, a user works with one destination at a time. For the selected destination, status may be viewed on all system levels, and both follow and breakaway switches may be taken.

Entering Multi-Level Mode

This is the default mode that the panel enters when power is applied.

To enter Multi-Level mode from any other mode, press the MULTI-BUS / MULTI-LEVEL key.

Multi-Level Mode Status Display

Multi-Level mode displays status on multiple levels for a selected destination, as shown in Figure 7.

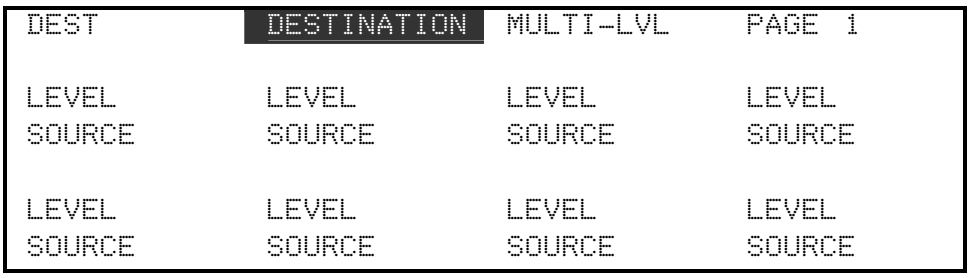


Figure 7. Multi-Level Mode Status Display

When in Multi-Level mode:

- The MULTI-BUS / MULTI-LEVEL key LED will be flashing.
- The Selection Legend field will display `DEST`.
- The Selection field will display the name of the selected destination, in inverse video.
- The Mode field will display `MULTI-LVL`.
- The Data fields will display status for the selected destination, on various levels.

If the panel has been configured to use Status Method DEF (Default), all levels in the system configuration will be displayed. If the panel has been configured to use Status Method GRP (Group), only those levels on which the selected destination is defined will be displayed. For more information on configuring Status Method, see the documentation accompanying your control system software.

If more than eight levels are available for display, PAGE UP and PAGE DOWN may be used to scroll through the list.

Multi-Level Destination Select Mode

Entering Multi-Level Destination Select mode allows the user to select a destination.

When in Multi-Level Destination Select mode:

- The MULTI-BUS / MULTI-LEVEL key LED will be flashing.
- The DEST / SALVO key LED will be on.
- The Selection Legend field will display DEST.
- The Selection field will display the name of the selected destination, in inverse video.
- The Mode field will display MULTI-LVL.
- The Data fields will display status for the selected destination, on various levels.

Enter Multi-Level Destination Select Mode from Multi-Level mode by pressing DEST.

Select a destination by using one of the following methods:

1. Use Data Keys 1 through 44 to select a destination:
   - If data keys have been configured as destination keys, select the destination by pressing its data key.
   - If data keys have been configured as category and index keys, select the destination by first pressing its category key, then pressing its index key(s).
2. Press PREV or NEXT to sequentially scroll through all the destinations in the system configuration.

NOTE

A flashing destination displayed in the Selection field is invalid.

Once the destination has been selected, and is displayed in the Selection field, press DEST / SALVO to exit Multi-Level Destination Select mode and return to Multi-Level mode.

NOTE

Destinations may also be selected by temporarily entering Multi-Bus mode as follows:

- While in Multi-Level mode, press MULTI-BUS / MULTI-LEVEL to enter Multi-Bus mode.
- Press PAGE UP and PAGE DOWN to scroll through the destinations assigned to Data Keys 45 through 188. When the desired destination is displayed, press the corresponding Display Panel key to select it.
- Press MULTI-BUS / MULTI-LEVEL to return to Multi-Level mode. The selected destination will be displayed in the Selection field.

Multi-Level Mode – Follow Switch

To perform a follow switch in Multi-Level mode, first a destination is selected, then a source is selected, then the switch is taken on all levels.

When in Multi-Level mode, the display will show MULTI-LVL in the Mode field as shown in Figure 8.

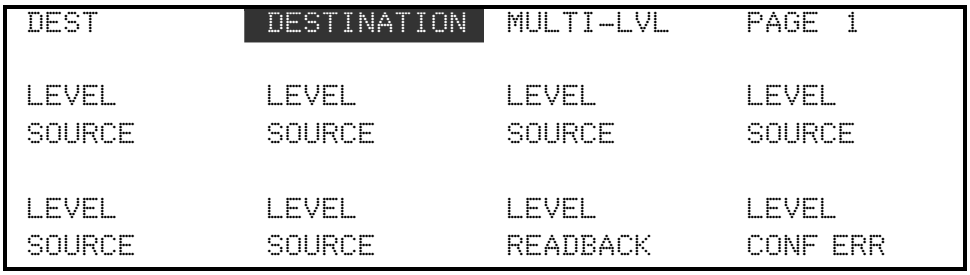


Figure 8. Multi-Level Mode – Follow Switch Display

To take a follow switch in Multi-Level mode:

1. Select the destination as described in “Multi-Level Destination Select Mode” on page 16.
2. Press ALL LEVELS / GANG LEVELS to select all levels for the follow switch. For those levels on which the selected destination is defined, the Display Panel key LEDs will turn on, and the Data fields for will change to inverse video. All sources shown on the second line of each Data field pair will be masked. To view the current status before taking the switch, press and hold VIEW STATUS.
3. Select the source by either using Data keys, or PREV and NEXT to scroll through all the sources in the Source Include List. The source will be displayed on the second line of each data pair selected in step 5. If a source shown on the second line of a Data field is blinking, the source is not defined on the level indicated above it. No switch will be taken on that level. Press CLEAR / STORE to deselect a source and clear the display.
4. Press TAKE / CHOP to take the switch. The Data field pairs will revert back to normal video, and current status will be displayed.

Multi-Level Mode – Breakaway Switch

To perform a breakaway switch in Multi-Level mode, first a destination is selected, next the sources are selected on a level-by-level basis, finally the switch is taken on all levels at the same time.

When in Multi-Level mode, the display will show MULTI-LVL in the Mode field as shown in Figure 9.

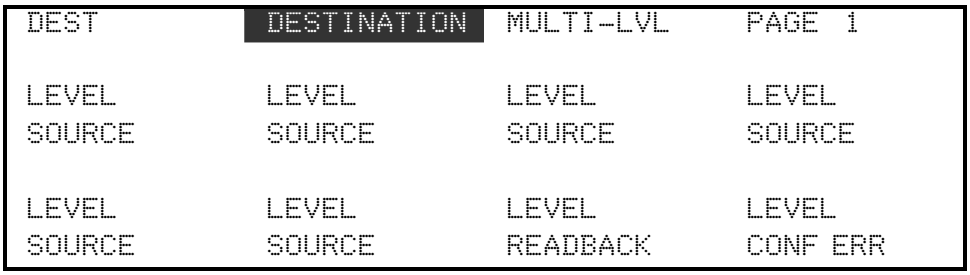


Figure 9. Multi-Level Mode – Breakaway Switch Display

To take a breakaway switch in Multi-Level mode:

1. Select the destination as described in "Multi-Level Destination Select Mode" on page 16.
2. Select the level for the first source by pressing its Display Panel key. More than one level may be selected. The Display Panel key LED will turn on, and the Data field for the selected level will change to inverse video. Any source shown on the second line of the Data field pair will be masked.
3. Select the source by either using Data Keys, or PREV and NEXT to scroll through all the sources in the Source Include List. The source will be displayed on the second line of each data pair selected in step 5. If a source shown on the second line of a Data field is blinking, the source is not defined on the level indicated above it. No switch will be taken on that level. Press CLEAR / STORE to deselect all sources on all selected levels, and clear the display.
4. Deselect the first level by pressing the Display Panel key again. The Display Panel key LED will turn off but the Data field will remain in inverse video.
5. Repeat steps 5 through 7 for each source to be switched.
6. Press TAKE / CHOP to take the switch. The Data field pairs will revert back to normal video, and current status will be displayed.

Multi-Level Mode – Destination Lock / Protect

To prevent inadvertent switching, destinations may be locked or protected.

- 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.
- 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.

A protected destination will only appear as such to panels or ports having the same requester code as the panel or port that protected it. To all other panels and ports, the destination will appear locked.

In order for a panel or port to have the authority to clear protection or a lock from a destination, it must meet one of the following requirements:

- Have the same requester code and lock priority as the panel or port that locked or protected the destination.
- Have a higher lock priority (lower lock priority number) than the panel or port that locked or protected the destination.
- Have a lock priority of 0 (zero), the highest level of lock priority.

Multi-Level Mode – Destination Lock

A destination is locked in Multi-Level mode as follows:

1. Select the destination to be locked as described in “Multi-Level Destination Select Mode” on page 16.
2. Press PROT / LOCK for at least one second to lock the destination
3. When locked, the Selection field will display the name of the destination preceded by an asterisk (*). For example, if the destination VTR 1 is locked, the selection field will display *VTR 1.

Multi-Level Mode – Destination Protect

A destination is protected in Multi-Level mode as follows:

1. Select the destination to be locked as described in “Multi-Level Destination Select Mode” on page 16.
2. Press PROT / LOCK to protect the destination
3. When protected, the Selection field will display the name of the destination preceded by an exclamation mark (!). For example, if the destination VTR 1 is protected, the selection field will display !VTR 1.

Multi-Bus Mode

In basic Multi-Bus mode, a user may take follow switches on a single destination. In Multi-Bus Gang mode, follow switches may be taken on multiple destinations at the same time.

Entering Multi-Bus Mode

To enter Multi-Bus mode from any other mode, press the MULTI-BUS / MULTI-LEVEL key one or more times until MULTI-BUS appears in the Mode field.

Multi-Bus Mode Status Display

Multi-Bus mode displays status for multiple destinations at the same time as shown in Figure 10.

The destinations displayed are those assigned to data keys 45 through 188. Status is displayed in 18 pages, each of which shows status for eight destinations at a time. Pagination is sequential by data key number, e.g., Page 1 displays destinations for data keys 45-52, Page 2 displays destinations for data keys 53-60, etc.

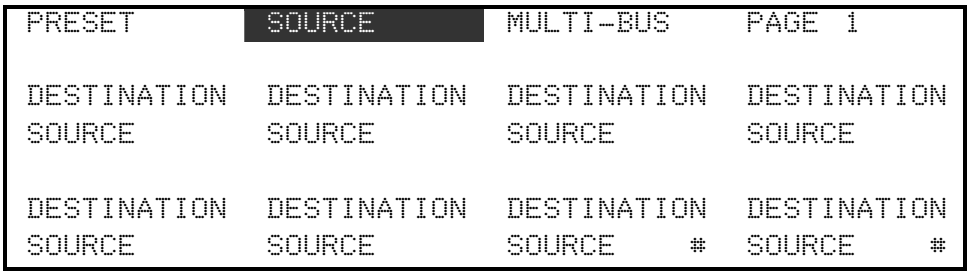


Figure 10. Multi-Bus Mode Status Display

When in Multi-Bus mode:

- The MULTI-BUS / MULTI-LEVEL key LED will be on.
- The Selection Legend field will display PRESET.
- The Selection field will be blank until a source is selected, at which time it will display the name of the selected source, in inverse video.
- The Mode field will display MULTI-BUS.
- The Data fields will display status for eight destinations.

The level on which status is displayed will depend on how the control system software is configured:

For a panel configured to use Status Method DEF (Default):

- If the destination is defined on the default status level, the name of the source will be displayed.
- If the destination is not defined on the default status level, NO will be displayed, followed by the name of the default status level. For example, if the default status level is DIGVID, NO DIGVID will be displayed.

For a panel configured to use Status Method GRP (Group):

- If the destination is defined on the default status level, the name of the source will be displayed.
- If the destination is not defined on the default status level, the controller will scroll through all levels, in order of Level Order Number, beginning with the level having the next higher Level

Order Number than the default status level, until a source is found. The name of this source will be displayed.

When a pound sign (#) is displayed to the right of a destination, this indicates that something different is occurring on a level other than that shown. This may indicate a different source, or a confidence or readback error. To determine the cause, press MULTI-BUS / MULTI-LEVEL to enter Multi-Level mode.

Multi-Bus Destination Select Mode

Entering Multi-Bus Destination Select mode allows the user to select a destination.

When in Multi-Bus Destination Select mode:

- The MULTI-BUS / MULTI-LEVEL key LED will be on.
- The DEST / SALVO key LED will be on.
- The Selection Legend field will display DEST.
- The Selection field will display the name of the selected destination, in inverse video.
- The Mode field will display MULTI-BUS.
- The Data fields will display status for eight destinations.

To enter Multi-Bus Destination Select Mode from Multi-Bus mode, press DEST.

Select a destination by using one of the following methods:

1. Use Data Keys 1 through 44 to select a destination:
   - If data keys have been configured as destination keys, select the destination by pressing its data key.
   - If data keys have been configured as category and index keys, select the destination by first pressing its category key, then pressing its index key(s).
2. Press PREV or NEXT to sequentially scroll through the destinations in the Destination Include List assigned to this panel.

NOTE

A flashing destination displayed in the Selection field is invalid.

Once the destination has been selected, and is displayed in the Selection field, press DEST / SALVO to exit Multi-Bus Destination Select mode and return to Multi-Bus mode. The Data field pair for the selected destination will change to inverted video.

NOTE

Pressing PREV and NEXT will scroll through all of the destinations in the Destination Include list, and display them in the Selection field. However, only destinations which appear in a Data field pair (those assigned to Data keys 45 through 188) may be selected.

If an attempt is made to select a destination which does not appear in a Data Pair field, even though the desired destination appears in the Selection field, it will not be selected when DEST is pressed to exit Multi-Bus Destination Select mode. Instead, the selection will default to the last destination associated with data keys 45 through 188 that appeared in the Selection field when scrolling.

Care should be taken to ensure that when using PREV and NEXT, the desired destination is displayed as a highlighted Data field pair.

Multi-Bus Source Copy

When in Multi-Bus mode, source selection may be made by copying the source already switched to a destination as follows:

1. Press PAGE UP or PAGE DOWN until the desired source is displayed.
2. Press the corresponding Display Panel key to select the Data field pair containing the desired source.
3. Press PRESET / COPY for at least one second.

The source name will be copied to the Selection field. After selecting the desired destination, a switch may then be taken.

Multi-Bus Mode – Follow Switch

To perform a follow switch in Multi-Bus mode, first a destination is selected, then a source is selected, then the switch is taken on all levels.

When in Multi-Bus mode, the display will show MULTI-BUS in the Mode field as shown in Figure 11.

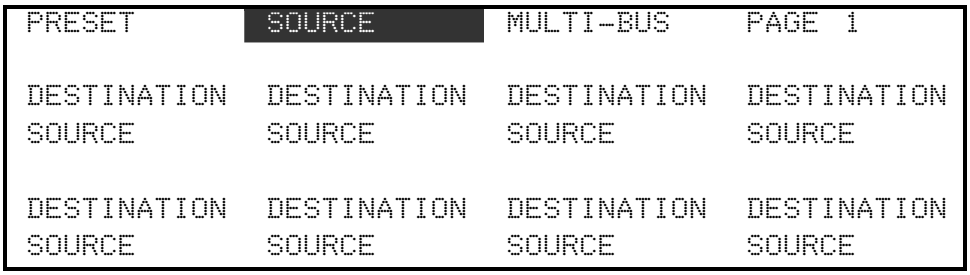


Figure 11. Multi-Bus Mode – Follow Switch Display

To take a follow switch in Multi-Bus mode:

1. Select the destination as described in "Multi-Bus Destination Select Mode" on page 22.
2. Press DEST / SALVO to exit Multi-Bus Destination Select mode. The DEST / SALVO key LED will turn off. The Display Panel key LED for the selected destination will turn on and the Data field pair will change to inverted video.
3. Select the source by using Data keys, PRESET / COPY (see page 23), or PREV and NEXT to scroll through all the sources in the Source Include List. The source will be displayed in the Selection field. If the source displayed is blinking, it is not a valid source. Press CLEAR / STORE to clear a source from the Selection field.
4. Press TAKE / CHOP to take the switch. The Data field pairs will remain in inverted video, and current status will be displayed.

Multi-Bus Mode – Breakaway Switch

Breakaway switches cannot be performed in Multi-Bus mode.

Multi-Bus Gang Mode – Follow Switch

Multi-bus Gang mode allows follow switches to be taken on multiple destinations at the same time. To perform a follow switch in Multi-Bus Gang mode, first the destinations are selected, then a source is selected, then the switch is taken on all levels.

To enter Multi-Bus Gang mode from any other mode, press ALL LEVELS / GANG LEVELS for at least one second.

When in Multi-Bus Gang mode, the display will show MULTI-BUS in the Mode field as shown in Figure 12, and the ALL LEVELS / GANG LEVELS key led will be flashing.

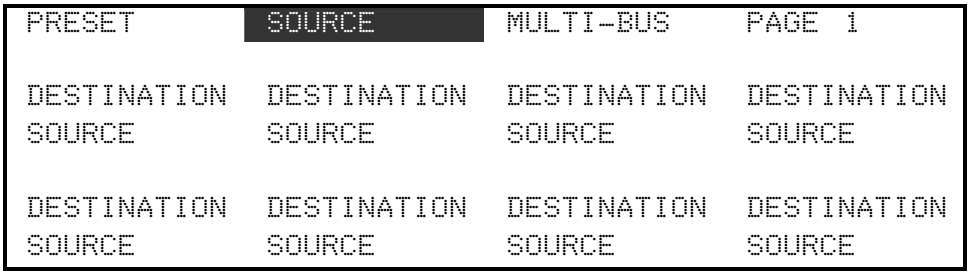


Figure 12. Multi-Bus Gang Mode – Follow Switch Display

To take a follow switch in Multi-Bus gang mode:

1. Use PAGE UP, PAGE DOWN, and the Display Panel keys to select the destinations.
2. Select the source by using Data keys, PRESET / COPY (see page 23), or PREV and NEXT to scroll through all the sources in the Source Include List. The source will be displayed in the Selection field. If the source displayed is blinking, it is not a valid source. Press CLEAR / STORE to clear a source from the Selection field.
3. Press TAKE / CHOP to take the switch. The Data field pairs will remain in inverted video, and current status will be displayed.

Multi-Bus Gang Mode – Breakaway Switch

Breakaway switches cannot be performed in Multi-Bus Gang mode.

Salvo Execution

Salvos are executed in one of two ways:

- By scrolling through the salvo list to select a salvo, and then executing it.
- By pressing a Data key configured as a Salvo key. This will immediately execute the salvo.

When in Salvo mode, the display will show SALVO in the Selection Legend field and MULTI-BUS in the Mode field as shown in Figure 13.

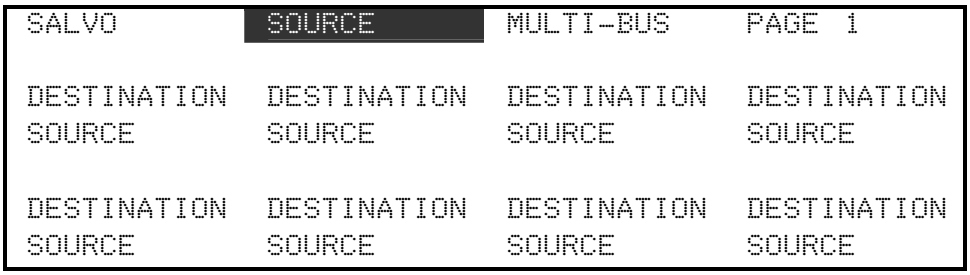


Figure 13. Salvo Mode Display

To execute a salvo:

1. Press DEST / SALVO and hold for approximately one second to enter Salvo mode. The MULTI-BUS / MULTI-LEVEL key LED will be on. The display will show SALVO in the Selection Legend field and MULTI-BUS in the Mode field.
2. Select the salvo by either using Data Keys, or using PREV and NEXT to scroll through all the salvos in the system configuration. The salvo will be displayed in the Selection field.
3. Press TAKE / CHOP to take the switch. The Data field pairs will remain in inverted video, and current status will be displayed.

Chop

To chop two sources, take a switch using the first source, then:

1. Press MULTI-BUS / MULTI-LEVEL to enter Multi-Bus mode. The MULTI-BUS / MULTI-LEVEL key LED will be on. The display will show MULTI-BUS in the Mode field.
2. Select the destination as described in “Multi-Bus Destination Select Mode” on page 22.
3. Select the second source to be chopped by using Data keys, PRESET / COPY (see page 23), or PREV and NEXT to scroll through all the sources in the Source Include List. The source will be displayed in the Selection field. If the source displayed is blinking, it is not a valid source. Press CLEAR / STORE to clear a source from the Selection field.
4. Press TAKE / CHOP and hold for approximately one second to chop the two sources. The Data field pairs will remain in inverted video, and current status will be displayed. The TAKE / CHOP key LED will be flashing.

To cancel the chop, press TAKE / CHOP again.

Multi-Bus Mode – Destination Lock / Protect

To prevent inadvertent switching, destinations may be locked or protected.

- 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.
- 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.

A protected destination will only appear as such to panels or ports having the same requester code as the panel or port that protected it. To all other panels and ports, the destination will appear locked.

In order for a panel or port to have the authority to clear protection or a lock from a destination, it must meet one of the following requirements:

- Have the same requester code and lock priority as the panel or port that locked or protected the destination.
- Have a higher lock priority (lower lock priority number) than the panel or port that locked or protected the destination.
- Have a lock priority of 0 (zero), the highest level of lock priority.

Multi-Bus Mode – Destination Lock

A destination is locked in Multi-Bus mode as follows:

1. Display the destination to be locked by pressing PAGE UP and PAGE DOWN until it appears.
2. Select the destination by pressing the corresponding display panel button.
3. Press PROT / LOCK for at least one second to lock the destination
4. When locked, the top line of the data field will display the name of the destination preceded by an asterisk (*). For example, if the destination VTR 1 is locked, the selection field will display *VTR 1.

Multi-Bus Mode – Destination Protect

A destination is protected in Multi-Bus mode as follows:

1. Display the destination to be protected by pressing PAGE UP and PAGE DOWN until it appears.
2. Select the destination by pressing the corresponding display panel button.
3. Press PROT / LOCK to protect the destination
4. When locked, the top line of the data field will display the name of the destination preceded by an exclamation mark (!). For example, if the destination VTR 1 is protected, the selection field will display !VTR 1.

Hot Take Mode

Hot Take Mode – Follow Switch

In Hot Take mode, a source is selected first, then a destination is selected. The switch is taken immediately on all levels when the destination is selected.

When in Hot Take mode, the display will show HOT TAKE in the Mode field as shown in Figure 14.

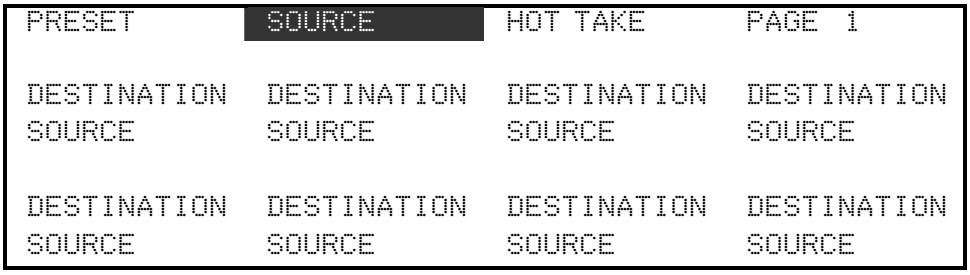


Figure 14. Hot Take Mode Display

To take a follow switch in Hot Take mode:

1. Press HOT TAKE to enter Hot Take mode. The MULTI-BUS / MULTI-LEVEL and HOT TAKE key LEDs will be on. The display will show HOT TAKE in the Mode field, and the currently selected source, if any, in the Selection field.
2. Select the source to be switched by one of these two methods:
   - Use Data Keys to select a source.
   - Use PRESET / COPY (see page 23).
   - Use PREV and NEXT to scroll through all sources in the Source Include List until the desired source is displayed in the Selection field.
3. Press PAGE UP and PAGE DOWN until the destination appears in the display.
4. Take the switch by pressing the display panel key corresponding to the desired destination.
5. Steps 3 and 4 may be repeated as required using the same source.

Hot Take Mode – Breakaway Switch

Breakaway switches cannot be performed in Hot Take mode.

Miscellaneous Functions

Readback and Confidence Error Display

In both Multi-Level and Multi-Bus modes, status errors will be displayed as READBACK for readback errors and CONF ERR for confidence errors, in the bottom field of a data field pair as shown in Figure 15.

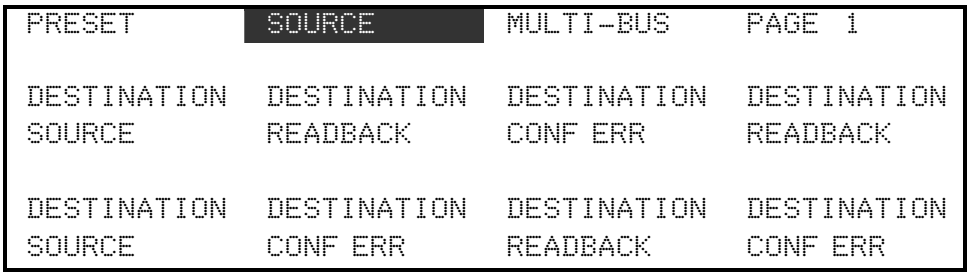


Figure 15. Readback and Confidence Error Display

Display Panel Address

Pressing ADDR while in any mode, will display ADDR= XXX in the Selection field as shown in Figure 16. The ADDR key is a momentary contact switch and, when released, will return the panel to its previous mode.

The address displayed is the one set as described in “Panel Address DIP Switch” on page 7.

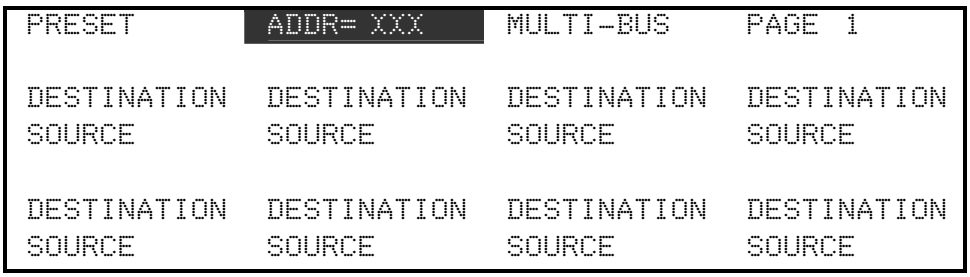


Figure 16. Panel Address Display

Assign Source to Soft Source Key

The control system software (e.g. Win3500Plus) may be used to designate certain Data keys as Soft Source keys. A source is assigned to a Soft Source key as follows:

1. Press PRESET to enter Multi-Level Preset Select mode.
   - The MULTI-BUS / MULTI-LEVEL key LED will be flashing.
   - The PRESET / COPY key LED will be on.
   - The Selection Legend field will display PRESET.
   - The Selection field will be blank.
   - The Mode field will display MULTI-LVL.
2. Select any level with the Display Panel Keys.
   - The Data field pair will switch to inverse video.
3. Select the source by one of the following methods:
   - Use Data keys to select a source.
   - Use PREV and NEXT to scroll through all sources in the Source Include List until the desired source is displayed.

   The source will be displayed on the second line of the data field pair selected above.

> **NOTE**
>
> A flashing source displayed in the Selection field is invalid.

4. Press CLEAR / STORE for at least one second to enter Multi-Level Preset Store mode.
   - The MULTI-BUS / MULTI-LEVEL key LED will be flashing.
   - The PRESET / COPY key LED will be on.
   - The CLEAR / STORE key LED will be flashing.
   - The Selection Legend field will display PRE STOR.
   - The Selection field will be blank.
   - The Mode field will display MULTI-LVL.
   - The Data field pair will revert to normal video.
5. Press the Soft Source key. When the source is successfully assigned to the Soft Source key, the Soft Source key LED will flash once.
   - The MULTI-BUS / MULTI-LEVEL key LED will be flashing.
   - The PRESET / COPY key LED will be on.
   - The Selection Legend field will display PRESET.
   - The Selection field will be blank.
   - The Mode field will display MULTI-LVL.
6. Repeat steps 2 through 5 for each Soft Source key to be defined.
7. Press PRESET to exit Multi-Level Preset Select mode and enter Multi-Level mode.

Assign Destination to Soft Destination Key

The control system software (e.g. Win3500Plus) may be used to designate certain Data keys as Soft Destination keys. A destination is assigned to a Soft Destination key as follows:

1. Press MULTI-BUS / MULTI-LEVEL until the panel is in Multi-Bus mode.
   - The MULTI-BUS / MULTI-LEVEL key LED will be on.
   - The Selection Legend field will display PRESET.
   - The Selection field will be blank.
   - The Mode field will display MULTI-BUS.
2. Press VIEW STATUS to enter Destination Store mode.
   - The MULTI-BUS / MULTI-LEVEL key LED will be on.
   - The VIEW STATUS key LED will be on.
   - The Selection Legend field will display DEST STOR.
   - The Selection field will be blank.
   - The Mode field will display MULTI-BUS.
3. Select the destination by one of the following methods:
   - Use Data keys to select a destination.
   - Use PREV and NEXT to scroll through all destinations in the Destination Include List until the desired destination is displayed.

   The destination will be displayed in the Selection field.

> **NOTE**
>
> A flashing destination displayed in the Selection field is invalid.

4. Press the Soft Destination key. When the destination is successfully assigned to the Soft Destination key, the Soft Destination key LED will flash once.
   - The MULTI-BUS / MULTI-LEVEL key LED will be on.
   - The VIEW STATUS key LED will be on.
   - The Selection Legend field will display DEST STOR.
   - The Selection field will display the last destination selected.
   - The Mode field will display MULTI-BUS.
5. Repeat steps 3 and 4 for each Soft Destination key to be defined.
6. Press VIEW STATUS to exit Destination Store mode and return to Multi-Bus mode.

Chapter 4 – Maintenance and Repair

CAUTION

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

Periodic Maintenance

This equipment does not require any periodic maintenance.

PESA Customer Service

If this equipment is not operating properly, please contact the PESA Customer Service Department. Skilled technicians are available to assist you 24 hours per day, seven days per week.

Detailed contact information for the Customer Service Department is located inside the front cover of this document.

Repair

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

CAUTION

The PC boards in this equipment may contain SMT (Surface Mount Technology) components. Special tools are required to replace these components without causing damage to adjacent areas. It is strongly recommended that PESA Customer Service be consulted prior to attempting to repair any of the PC boards in this equipment

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. For this reason, we suggest that you 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.

Detailed contact information for the Customer Service Department is located inside the front cover of this document.

Glossary

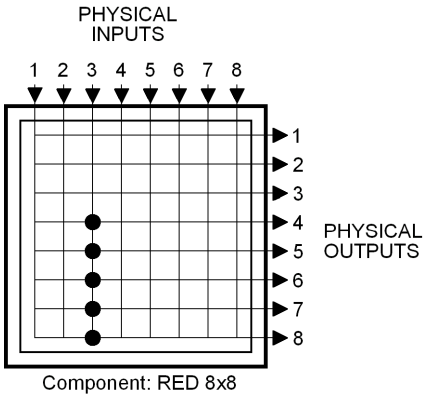
(Revised: 05-02-00)

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 a component RED which spans physical inputs 1 through 8 and physical outputs 1 through 8 on a routing switcher. All call could be used to switch physical input 3 to physical outputs 4 through 8 with a single command.

See also: Diagonal.



Baud

The number of signaling elements that occur each second.

At slow speeds, only one bit of information (signaling element) is encoded in each electrical change. The baud, therefore, indicates the number of bits per second that are transmitted.

For example, 300 baud means that 300 bits are transmitted each second (abbreviated 300 bps). Assuming asynchronous communication, which requires 10 bits per character, this translates to 30 characters per second (cps).

For slow rates (below 1,200 baud), you can divide the baud by 10 to see how many characters per second are sent.

At higher speeds, it is possible to encode more than one bit in each electrical change. 4,800 baud may allow 9,600 bits to be sent each second. At high data transfer speeds, therefore, data transmission rates are usually expressed in bits per second (bps) rather than baud. For example, a 9,600 bps modem may operate at only 2,400 baud.

Black Burst

A composite color video signal which 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 which 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 more than one source is switched to a single destination on multiple levels.

Example: Assume the existence of two sources VTR1 and VTR2 which are defined on levels VIDEO and AUDIO, and a destination MON1 which is defined on the same levels. VTR1 is switched to MON1 on the VIDEO level and VTR2 is switched to MON1 on the AUDIO level. The signal reaching MON1 will have the video from VTR1 and the audio from VTR2, and is a breakaway switch.

See also: Follow Switch.

Category

The first portion of a source, destination, or reentry name.

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

An example of a category is VTR which could be used with the indices 1, 2, and 3 to create the source names VTR 1, VTR 2, and VTR 3.

Category names are one to six characters in length and are constructed using uppercase letters and numbers. The first character must be a letter. Imbedded spaces are not permitted.

Chop

Rapidly switch two different video signals into a monitor or other piece of test equipment. This is done to compare some characteristic of the signals, 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:

$$\frac{\text{Video Frame Rate (Frames/Second)}}{\text{Chop Rate}} = \text{Signal Switching Rate (Switches/Second)}$$

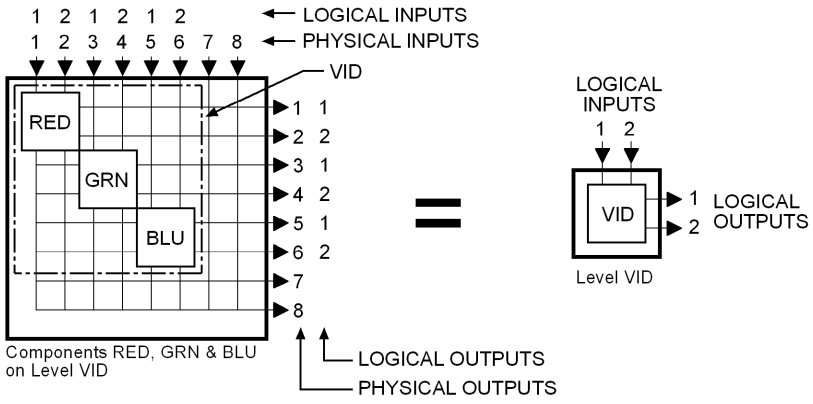
For example, a chop rate of 1 used with NTSC signals (30 Frames/Second) will cause the signals to be switched 30 times per second. A chop rate of 60 used with the same signals will cause them to be switched every two seconds.

Component

The most basic signal element which 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 (“Red” or “Left”) 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.

The example below shows a 2x2 RGB video level made up of three components, “RED”, “GRN”, and “BLU”.



As a general rule, users control the switching of levels, but component switching is handled automatically by the switching system. In the example above, a user could specify a single logical switch, such as VID Input 1 to VID Output 2. This would result in Win3500Plus 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 which 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, and all crosspoints contained in it, are said to have confidence errors.

Confidence has no relation to whether or not any crosspoint in the block is active.

Confidence Error

See Confidence.

Configuration

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

The files which comprise a configuration are stored on a PC as either .dbf format files or text files. Each configuration requires its own separate subdirectory.

Configuration names may have 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, communications interface on a system controller. A CPU link has two components: a serial port (RS-232 or RS-422), and a communications protocol to govern how the port is used.

Crosspoint

The circuitry and components on a printed circuit board which 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, which are switched together as a group.

Destination names are constructed using one category followed by 0, 1 or 2 indices. If no index is selected, the default “00” (which is not displayed) will be used.

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

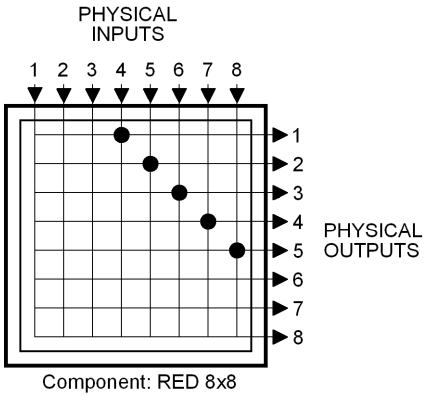
See: Status.

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 a component RED which spans physical inputs 1 through 8 and physical outputs 1 through 8 on a routing switcher. A diagonal with a starting input of 4 and a starting output of 1 would cause the following physical switches to be taken: (4,1), (5,2), (6,3), (7,4), and (8,5).

See also: All Call.



Follow Switch

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

Example: Assume the existence of a source VTR1 which is defined on levels VIDEO and AUDIO, and a destination MON1 which is defined on the same levels. VTR1 is switched to MON1 on both the VIDEO level and AUDIO level. The signal reaching MON1 will have the video and audio from the same source, VTR1. This is a follow switch.

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

See also: Breakaway Switch.

House Black

See: House Sync.

House Sync

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

Index

The last portion of a source, destination, or reentry name.

Indices provide an easy means of differentiating similar switching system devices.

Each source, destination or reentry name may use 0, 1 or 2 indices. If no index is used, “00” is the default but is not displayed. An example of indices are 1, 2, and 3 which could be used with the category VTR to create the destination names VTR 1, VTR 2, VTR 3, VTR 12 and VTR 22.

Indices are one character in length and are constructed using uppercase letters and numbers. The character 0 (zero) is a default index which may not be changed or deleted.

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 which 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).

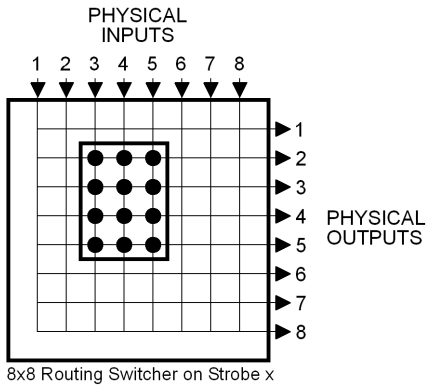


Figure A

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 A above, 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 B below, has its origin at (12,7) and an input offset of 11.

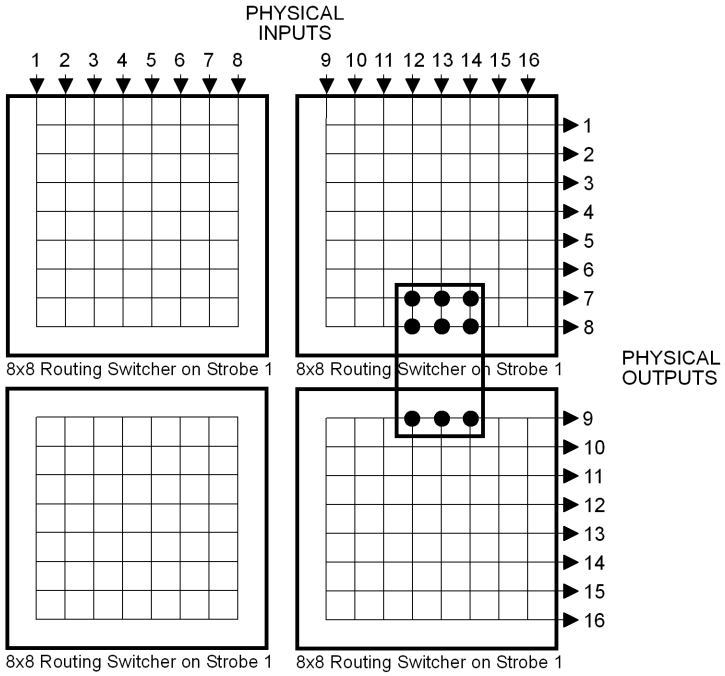

PHYSICAL
INPUTS
1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16
1
2
3
4
5
6
7
8
PHYSICAL
OUTPUTS
8x8 Routing Switcher on Strobe 1
8x8 Routing Switcher on Strobe 1
9
10
11
12
13
14
15
16
8x8 Routing Switcher on Strobe 1
8x8 Routing Switcher on Strobe 1

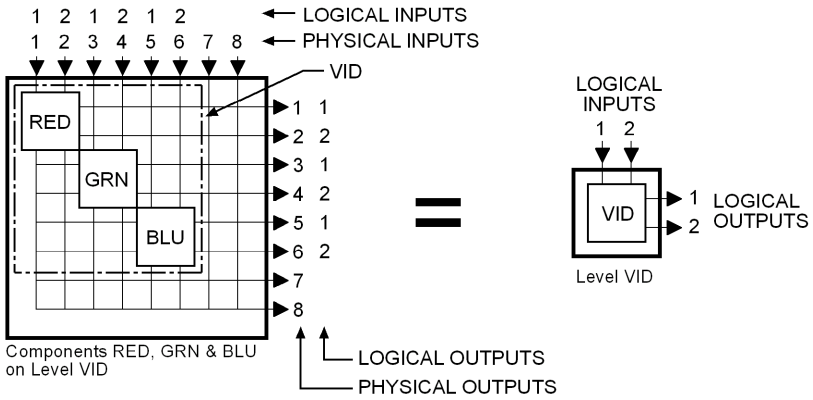
Figure B

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 which comprise a level will always be switched together except when performing diagnostic operations.

The example below 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.



As a general rule, users control the switching of levels, but component switching is handled automatically by the switching system. In the example above, a user could specify a single logical switch, such as VID Input 1 to VID Output 2. This would result in Win3500Plus 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 which 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 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 which 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.

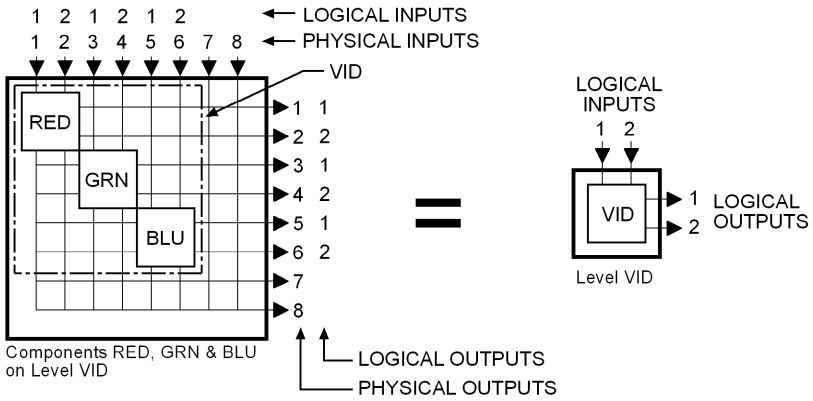
See also: Lock, Protect.

Logical Input

One or more physical inputs which 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.



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 Win3500Plus as components are configured.

See also: Physical Input.

Logical Output

See: Logical Input.

Logical Switch

The Win3500Plus 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 Win3500Plus.

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 A is (4,2) on strobe 1.

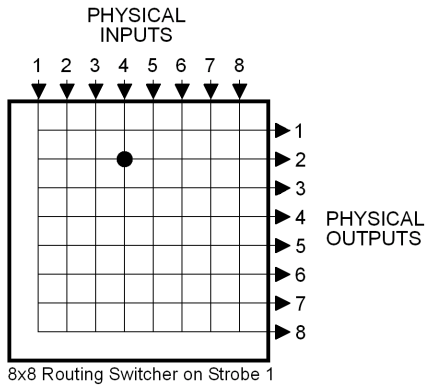


Figure A

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 B consists of four 8x8 routing switchers assigned to the same strobe. The coordinates of the indicated crosspoint are (12,14) on strobe 1.

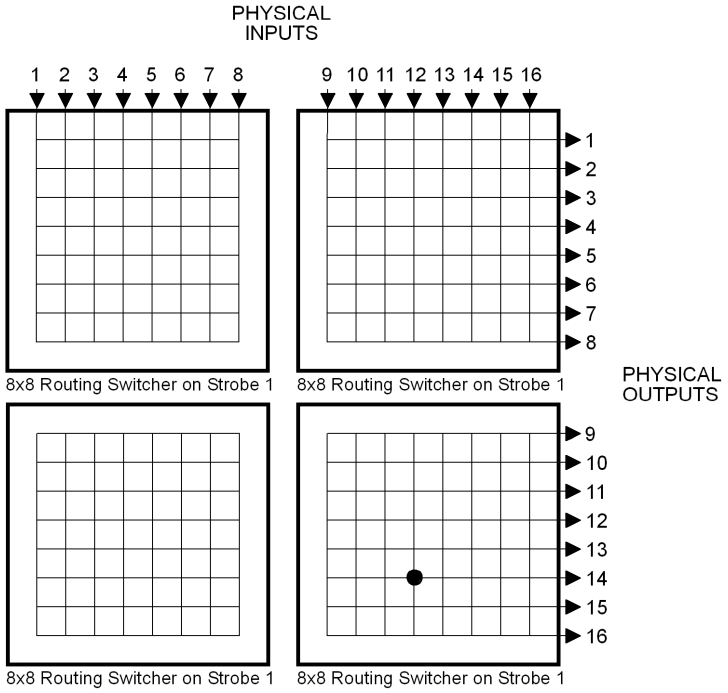


Figure B

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 C, 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.

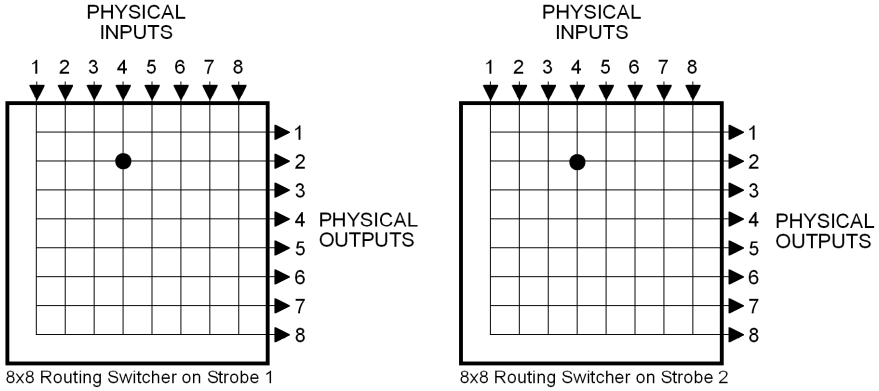


Figure C

NTSC

National Television Standards Committee. The NTSC is responsible for setting television and video standards in the United States (in Europe and the rest of the world, the dominant television standards are PAL and SECAM). 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 which 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).

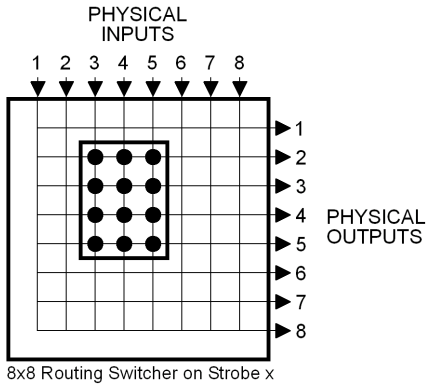


Figure A

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 A above, 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 B below, has its origin at (12,7) and an output offset of 6.

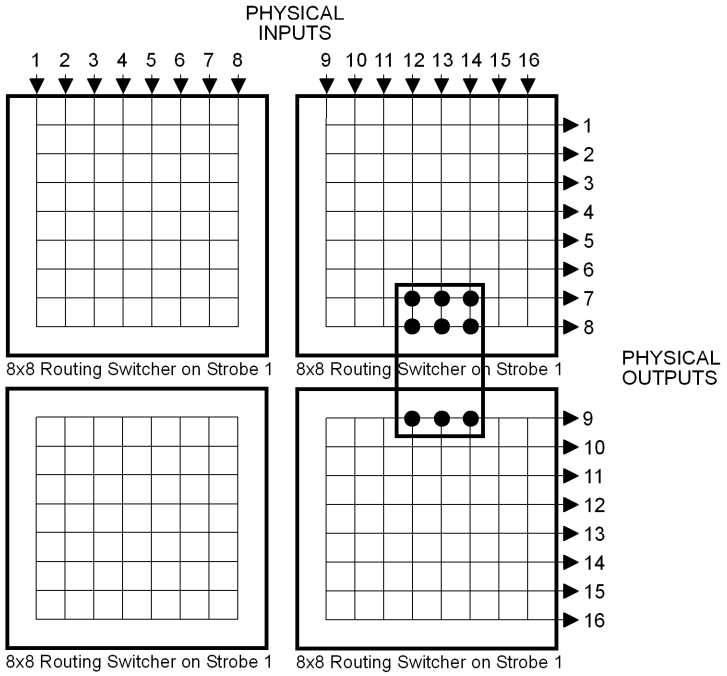


Figure B

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, which allows the 3500Plus 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 eight-character, upper case, alphanumeric passwords.

PC

The Personal Computer on which Win3500Plus is running.

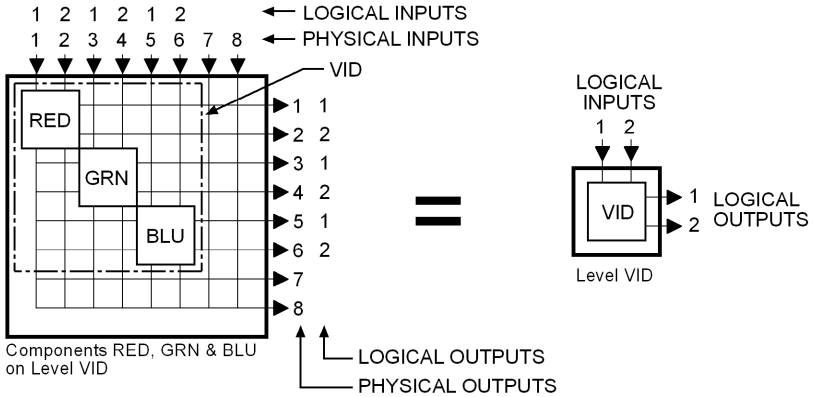
Win3500Plus is designed to operate on any IBM PC compatible personal computer running a Microsoft Windows™ operating system (3.1, 95, 98, or NT).

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.



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 which 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

Any of the serial communications bus interface connectors on the 3500Plus 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 (PRC) protocol.

The Ocelot, Cougar, Jaguar, and Tiger routing switcher families 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

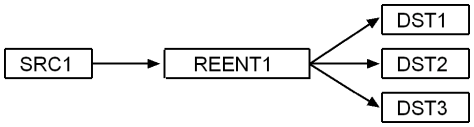
See Readback.

Reentry

An entity which 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.



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

Reentry names are constructed using one category followed by 0, 1 or 2 indices. If no index is selected, the default “00” (which is not displayed) will be used.

Remote Modem

A modem connected to a 3500Plus System Controller.

The remote modem must be an external type capable of being configured to automatically answer incoming calls. Because the 3500Plus 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, see the Practical Peripherals web site at http://www.practical.com/ or the U.S. Robotics web site at http://www.usr.com/. Before using any other type of modem for the remote modem, please consult with the PESA Customer Service Department.

Once a remote modem has been selected, it must be properly configured before it is connected to a 3500Plus System Controller. This is done by connecting the remote modem to a PC running Win3500Plus, transferring certain data into the remote modem, disconnecting the remote modem from the PC, and then connecting the remote modem to the controller.

See also: Local Modem.

Requester Code

A property of panels and ports which 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 two sources, CART1 and CART2; and three destinations, MON1, VTR1, and VTR2. All of these sources and destinations are defined on two 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.

Destination (Salvo Entry)	Level: AUD	Level: VID
MON1	CART1	CART1
VTR1	CART2	CART1
VTR2	CART2	CART2

Salvo SAL1 is created which 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 which is used by more than one source.

Note that shared outputs are not permitted.

See also: Source Block.

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.

Win3500Plus 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 Win3500Plus, 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, which are switched together as a group.

Source names are constructed using one category followed by 0, 1 or 2 indices. If no index is selected, the default “00” (which is not displayed) will be used.

Source Block

A means of ensuring that a particular source will not be switched to a specific destination, inadvertently or without adequate permission.

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 which 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 which 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 communications, 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.

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 A) 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.

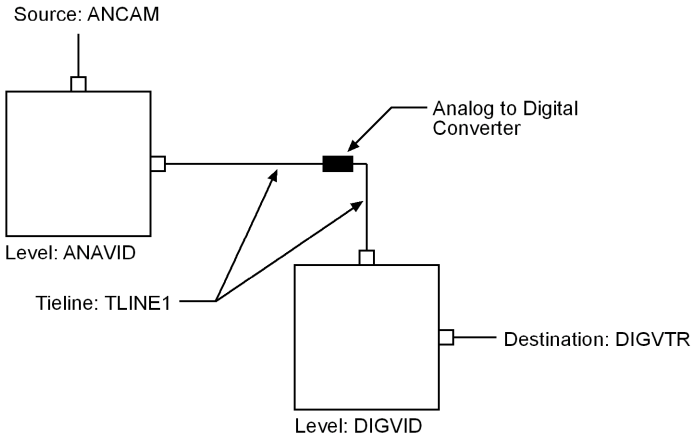


Figure A

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 B) 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.

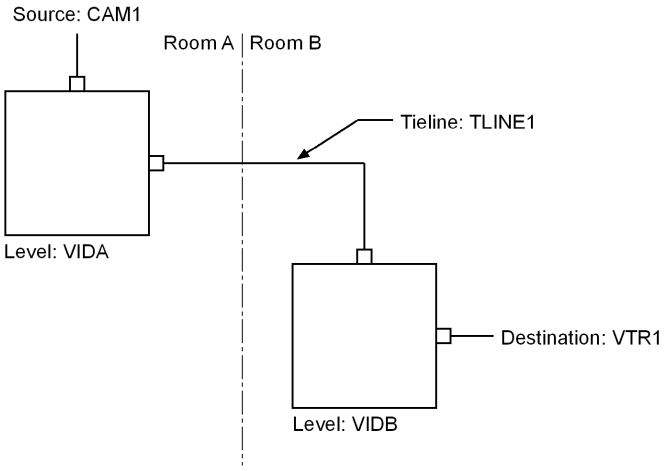


Figure B

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

An eight-character string consisting of upper case letters, numbers, spaces, and some symbols:

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

Forbidden: { } | , ( )

User Password

An eight-character string 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 which 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.

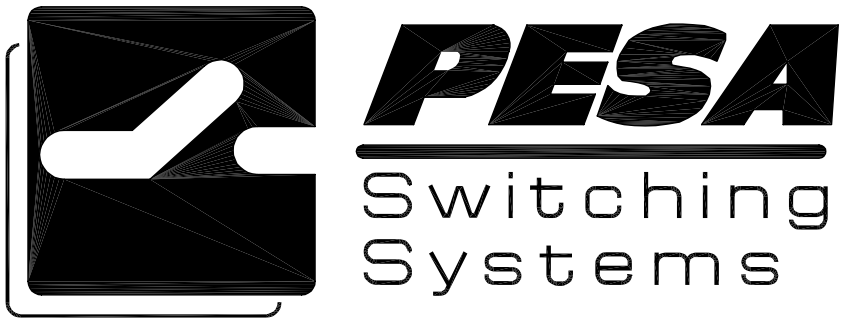
Working Directory

The directory on a PC where Win3500Plus is installed.

If the default settings of the installation program were used, this will be c:\win3500p in 16-bit versions of Windows and c:\program files\win3500p in 32-bit versions of Windows. Configurations may not be saved in the working directory or any subdirectory of the working directory.

Revision History

Rev.	Date	Description	By
A	05-02-00	Initial release per ECO-3636. Incorporated Declaration of Conformity per ECO-3462.	G. Tarlton
B	03-05-01	Deleted Printing Specification per ECO CE00113.	G. Tarlton
C	03-16-01	Deleted bills of material, drawings, and schematics per ECO CE00130.	G. Tarlton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