Folsom RESEARCH

INSTALLATION AND OPERATOR'S MANUAL

Series 1600 and 1200

ScreenPro PLUS – High-Resolution Seamless Switcher

Manual #26-0007901-00 / Revision B

RECORD OF CHANGES

REV #	DATE	ECO #	DESCRIPTION	Approved By
01	12/00		Preliminary	Mike Jones
A	1/19/01	635	Release to Production	R. Pellicano
B	11/15/01	777	PIP/Keying Upgrade	R. Pellicano

Manual # 26-0007901-00

Operators Safety Summary

The general safety information in this summary is for operating personnel.

Do Not Remove Covers or Panels
There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

Power Source
This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

Grounding the Product
This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Use the Proper Power Cord
Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

Use the Proper Fuse
To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

Do Not Operate in Explosive Atmospheres
To avoid explosion, do not operate this product in an explosive atmosphere.

Terms In This Manual

WARNING *Highlights an operating procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to or death of personnel.*

NOTE *Highlights an essential operating procedure, condition or statement.*

CAUTION

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literatureaccompanying the appliance.

AVERTISSEMENT!

Le point d´exclamation dans un triangle equilatéral signale à alerter l´utilisateur qu´il y a des instructions d´operation et d´entretien tres importantes dans la litérature qui accompagne l´appareil

VORSICHT *ein Ausrufungszeichen innerhalb eines gleichwinkeligen Dreiecks dient dazu,*

den Benutzer auf wichtige Bedienungs-und Wartungsanweisungen in der Dem Great beiliegenden Literatur aufmerksam zu machen.

WARNING *The rear panel ON/OFF switch does not disconnect the unit from input AC power. To facilitate disconnection of AC power, the power cord must be connected to an accessible outlet near the unit. Building Branch Circuit Protection: For 115 V use 20 A, for 230 V use 8 A.*

WARNING

When the ScreenPro PLUS is used in the 230-volt mode, a UL listed line cord rated for 250 volts at 15 amps must be used and must conform to IEC-227 and IEC-245 standards. This cord will be fitted with a tandem prong-type plug.

Terms As Marked on Equipment

CAUTION *Highlights an operating procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to or death of personnel.*

CAUTION

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AVERTISSEMENT!

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VORSICHT

Ein Ausrufungszeichen innerhalb eines gleichwinkeligen Dreiecks dient dazu, den Benutzer auf wichtige Bedienungs-und Wartungsanweisungen in der Dem Great beiliegenden Literatur aufmerksam zu machen.

NOTE *This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the users own expense.*

Table of Contents

1

CHAPTER ONE

Introduction

What you will find in this chapter…

- *About the ScreenPro PLUS*
- *Features*
- *Technical Description*

Introduction

About the ScreenPro PLUS

The ScreenPro PLUS High-Resolution Seamless Switcher is designed to simplify the task of supporting professional-quality video presentations. The unit combines a video router, video scalers, and a full-featured control panel. ScreenPro PLUS has universal inputs that accept composite video, s-video, component, and computer video sources (640x480 VGA to 1600x1200 UXGA). The input video is converted directly to the native resolution of the projection device to optimize image quality.

ScreenPro PLUS is ideal for use whenever multiple video sources must be switched to provide a professional-quality presentation. The operator can transition seamlessly between any of the input sources. Typical applications include live staging events, corporate boardroom presentations, education and training events.

Attention to the Installation and Operation Sections of this manual is important to ensure trouble-free operation. Should you have any questions regarding the operation of this unit, please consult the factory.

Features

- The ScreenPro PLUS provides and offers the following features:
- Modular design supports up to three screens.
- Integrated user interface designed by Vista Control Systems, the leader in multi-screen user interfaces.
- Up to 16 universal inputs; accepts composite (NTSC and PAL), s-video, component, and computer sources.
- Requires no external decoders or line doublers.
- Automatically syncs to input videos with resolutions from 640x480 to 1600x1200.
- High-performance architecture supports seamless switching.
- (2) Program and (1) Preview output for each screen.
- Superior image quality.
- 17 transition effects including cuts, fades, dissolves, curtains, grids, and wipes with variable transition rates.
- Effect selection for single or multi-screen effects.
- Screen "grouping" allows simultaneous transitions on selected screens.
- T-bar for manual control of transitions.
- Joystick simplifies setup of inputs and outputs.
- Six test patterns for projector setup.
- Up to 10 auxiliary outputs.
- 8 camera tallies.
- Motion adaptive de-interlacing.
- User programmable output formats: VGA (640x480), SVGA (800x600), XGA (1024x768), SXGA (1280x1024), (1280x720), (1280x768), (1365x768), (1365x1024).
- Compatibility with Folsom ScreenPro single-screen unit provides premium performance and maximum flexibility.Fully field programmable to support upgrades.
- PIP capability
- Luma Keying functionality

Technical Description

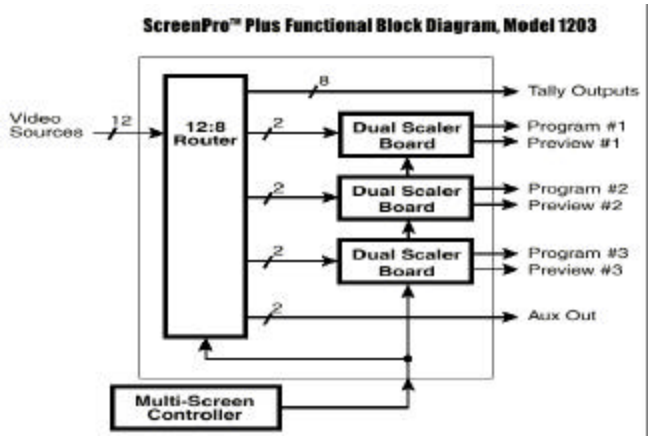
ScreenPro PLUS is an integrated package that simplifies system interconnections, setup, and control while supporting advanced features for presentations with up to three screens. The multi-screen presentation system includes an intuitive user interface and a modular internal design.

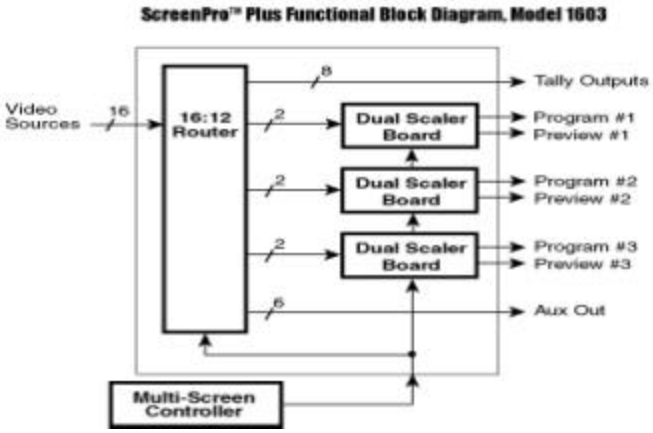
The operator can select from up to sixteen universal inputs that accept composite video, s-video, component video, and computer video sources (640x480 VGA to 1600x1200 UXGA). Sources are scaled to match the native resolution or "sweet spot" of the projection devices to ensure optimal image quality. Seventeen different transition effects including dissolves, wipes, cuts, and fade are supported. The duration of each transition effect is programmable. Each screen output supports two buffered program outputs (one five-wire BNC and one HD-15) and a preview output (HD-15). Two to ten Auxiliary outputs are provided on the rear panel of the unit for feeds that do not require transition effects or scaling.

While other systems require multiple control units for a three-screen show, all ScreenPro PLUS functions (including system setup) are supported via a single user interface. The ScreenPro PLUS user interface simplifies system setup, adjustment, and control. To perform a transition, the operator simply selects a preview source(s) and presses a key to simultaneously transition one, two, or three screens using any of the seventeen transition effects. Sixty-four preset memories allow complex control sequences to be “learned” for quick recall. Presets can include information about sources, effects, transition rates, and auxiliaries. Since all presets are recalled to the preview monitors, the operator can view, edit, and recall presets without affecting the program outputs.

ScreenPro PLUS has been designed to work seamlessly with Folsom's ScreenPro product offerings. This allows customers to utilize Folsom's ScreenPro products for single-screen applications and to utilize the same units in multi-screen applications when combined with ScreenPro PLUS. For example, ScreenPro PLUS Model 1602 with two-screen output can be utilized with a standard ScreenPro unit to support a three-screen show. The ability to mix and match units to support different types of shows provides both premium performance and maximum flexibility.

Below are ScreenPro PLUS Functional Block Diagrams for Models 1203 and 1603.





2

CHAPTER TWO
INSTALLATION

What you will find in this chapter…

- *Rear Panel Connectors*
- *Rack-Mount Installation*
- *Power Cord/Line Voltage Selection*
- *Video Input & Output Connections*
- *Connecting ScreenPro Units*

Installation

Rear Panel Connectors

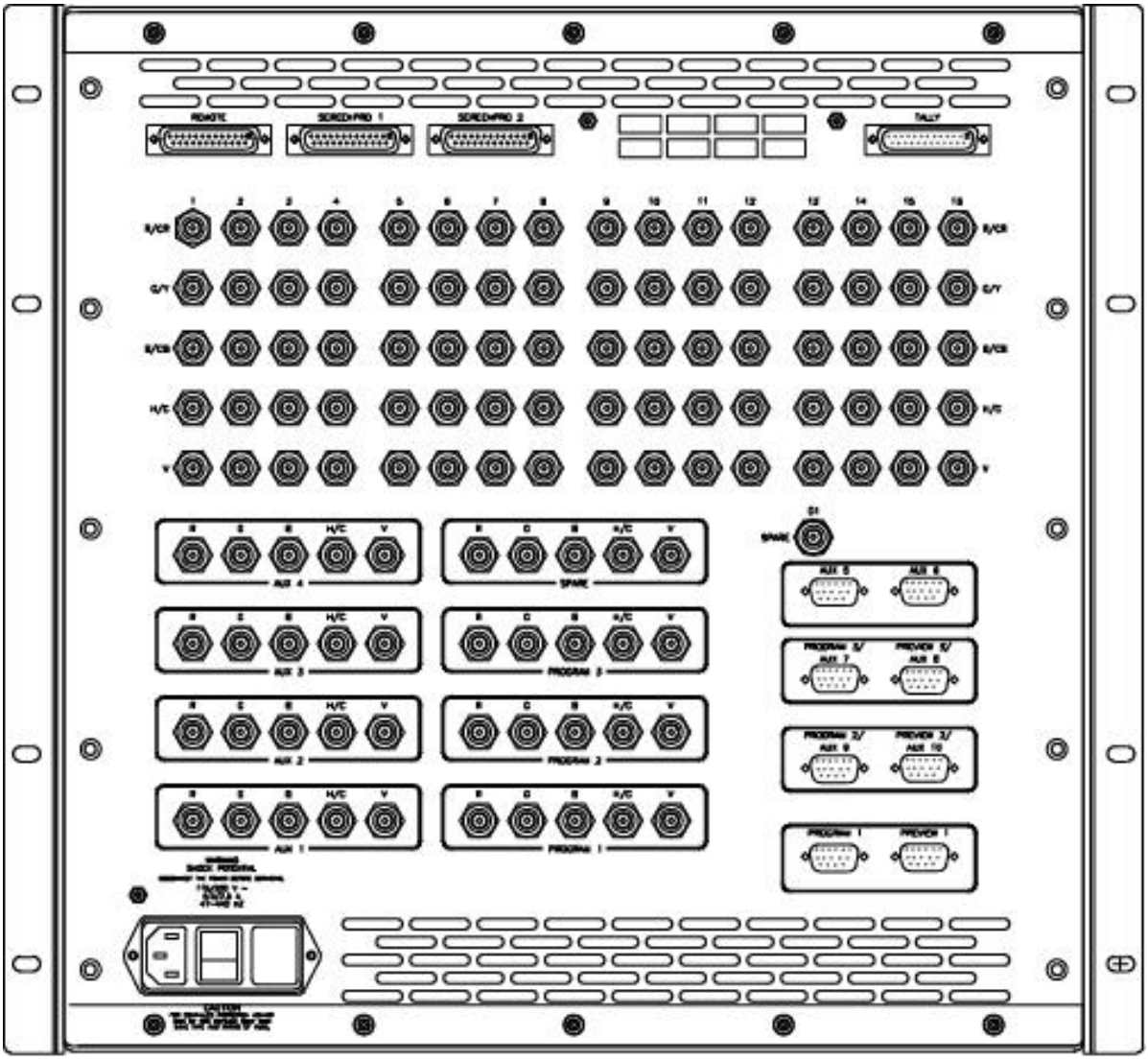


Figure 2-1: ScreenPro PLUS Rear Panel

AC Power connector
Video Input connectors
Program and Preview HD-15 outputs
Aux Output HD-15 connectors
Tally Output on HD-25 connector
Remote HD-25 connector
ScreenPro Compatible HD-23 connector

Rack-Mount Installation

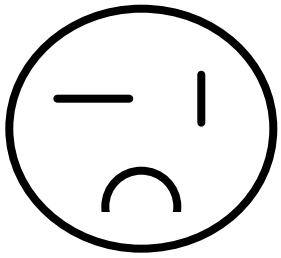
ScreenPro PLUS units are designed to be rack mounted and are supplied with all of the required rack-mount hardware. When rack mounting the unit, remember that maximum ambient operating temperature for the unit is 40 degrees C. Leave at least one inch of space front and rear to make sure that the airflow through the fan and vent holes is not restricted. When installing equipment into a rack, distribute the units evenly to prevent hazardous conditions that may be created by uneven weight distribution. Connect the unit only to a properly rated supply circuit. Reliable Grounding (Earthing) of Rack-Mounted Equipment should be maintained.

Power Cord/Line Voltage Selection

The ScreenPro PLUS High Resolution Seamless Switcher performs line Voltage Selection automatically. No user controls are required for line voltage selection.

WARNING

When the ScreenPro is used in the 230-volt mode, a UL listed line cord rated for 250 volts at 15 amps must be used. This cord will be fitted with a tandem prong-type plug.



Tandem Plug

AVERTISSEMENT

La choix de la ligne de voltage se réalise automatiquement par l'ScreenPro Transformateur Graphique. On n'a pas besoin du controller usager pour la choix de la ligne de voltage.

WARNUNG

Das ScreenPro-Gerät mu beim Anschlu an 240V ~ mit einer vom VDE auf 250V/10A geprüften Netzleitung mit einem Schukostecker ausgestattet sein.

Video Input Connections

The video input section on the ScreenPro PLUS rear panel provides 16 (1600 series) or 12 (1200 series) universal inputs. Each input can accept RGB, YUV, S-Video (Y/C), or composite (NTSC or PAL) video signals. The connections for each input channel are made via five BNC connectors. Connection points for each type of video signal are specified below.

Input Connections

Format – RGB *(Typical Devices: Computers)*		Format – YUV or Y Pr Pb (Betacam) *(Typical Devices: DVD Player or Betacam Deck)*	
Source to ScreenPro PLUS		Source to ScreenPro PLUS	
R	R/CR	Y	G/Y
G	G/Y	Pr	R/CR
B	B/CB	Pb	B/CB
H	H/C	or	
V	V	Y	G/Y
Format – S-Video (Y/C) *(Typical Devices: S-Video VCR)*		U	R/CR
		V	B/CB
Source to ScreenPro PLUS		Format – NTSC/PAL *(Typical Devices: Composite/PAL VCR)*	
Y	G/Y	Source to ScreenPro PLUS	
C	B/CB	Composite/PAL	G/Y

Video Output Connections – Program Outputs

Two independently buffered Program outputs (one five wire BNC connection and one HD-15) are provided for each output screen. Either of these outputs may be used to connect to the display device used for the presentation. The second output is designed to support a local display in the event that the operator is unable to conveniently view the presentation.

Both outputs provide RGB video signals. Connect the outputs labeled R,G, and B on the rear panel of the ScreenPro unit to the correspondingly labeled connectors on the output device.

The operator can select the type of output sync to match application requirements. Separate C (Composite) or separate H/V (Horizontal/Vertical) sync modes are supported. Connect the C or H sync signals from ScreenPro to the correspondingly labeled connectors on the output device. If separate H/V sync mode is being used, be sure to connect the V signal from the ScreenPro to the correspondingly labeled connector on the output device.

Preview Output

One Preview output (on an HD-15 connector) is provided for each output screen. The Preview outputs are provided to permit the operator to view the next source video to be displayed prior to initiating a transition. The Preview outputs provide RGB video signals. Connect the outputs on the rear panel of the ScreenPro PLUS unit to the correspondingly labeled connectors on the output device.

The operator can select the type of output sync to match application requirements. Separate C (Composite) or separate H/V (Horizontal/Vertical) sync modes are supported. Connect the C or H sync signals from ScreenPro PLUS to the correspondingly labeled connectors on the output device. If separate H/V sync mode is being used, be sure to connect the V signal from the ScreenPro to the correspondingly labeled connector on the output device.

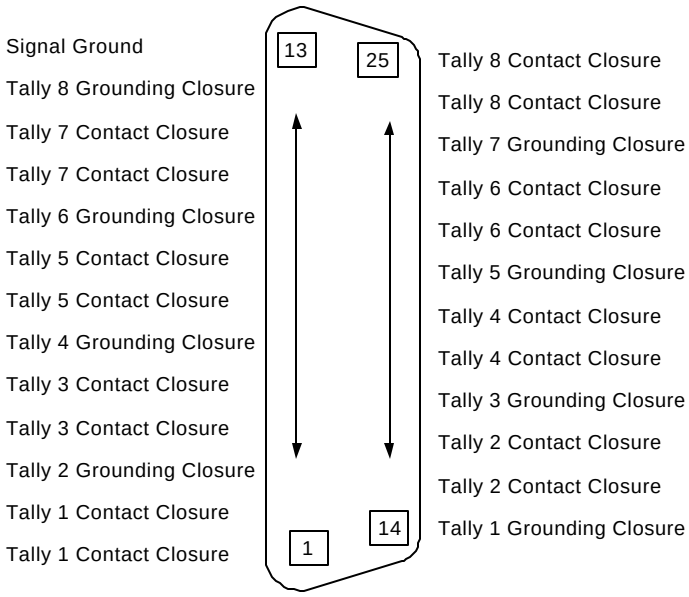
Frame and Controller Connections

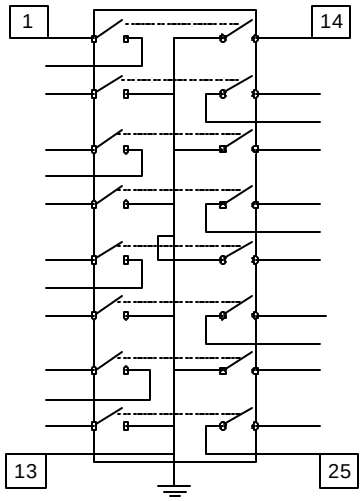
Connect the Controller to the ScreenPro PLUS Frame using the 25-pin serial cable provided with the unit.

Tally Connections

Tally outputs provide dry-contact relay closures between signal pairs or contact closures to ground whenever the corresponding input source is selected for display on a Program output. The Tally outputs may be used to signal when input devices (such as cameras) are “live”. Each contact has a rating of 1 Amp at 30 VDC and 0.5 Amps at 125 VDC. A mating connector (DB-25 female) is required (see diagram next page).

Tally Connector Pin Out





Aux Outputs

Router outputs that are not used as inputs to the scaler boards within the ScreenPro PLUS unit are routed to the rear panel where they may be used to feed devices that do not require transition effects or scaling. The number of Aux outputs varies as indicated in the table below for each ScreenPro PLUS model.

Model	# of Inputs	# of Screens	Aux's	Tallies
1201	12	1	6	8
1202	12	2	4	8
1203	12	3	2	8
1601	16	1	10	8
1602	16	2	8	8
1603	16	3	6	8

Connect the Aux outputs to your output devices as required for your specific application successfully.

3

CHAPTER THREE
Operation

What you will find in this chapter…

- *Power-up Initialization*
- *Console Installation*
- *Console Operation*
- *Freeze Preview and Program*
- *Input Configuration*
- *Output Configuration*
- *System Configuration*
- *Presets*

Operation

This portion of the manual provides instructions that indicate how to control all ScreenPro PLUS functions. Keys on the Screen Pro PLUS console are used to select sources and control transitions to support real-time control of presentations. The alphanumeric display and menus are designed to simplify setup and adjustment of the unit.

Configuration of External ScreenPro Units

Note: If your system setup involves the use of ScreenPro units connected to your ScreenPro Plus System follow the instructions in this section. If you have a 1203 or 1603 system or are not connecting to ScreenPro units, proceed to the next section. ScreenPro units must be configured with the Production Release 2 Firmware to work with ScreenPro Plus. To determine if your ScreenPro units are configured with the Production Release 2 Firmware, examine the rear panel of the unit. Units which DO NOT have a connector installed in the location labeled Update are compatible with ScreenPro Plus. If your unit has a connector in the location labeled Update, you will need to return the unit to Folsom Research for upgrade. The upgrade will be performed at no charge and the turn-around time will be 1-2 days.

ScreenPro units must be powered up and configured for remote control before the ScreenPro Plus system is turned on. To configure the ScreenPro units, connect them as described in this section of this document and turn the Screen Pro units on. After a 15-20 second initialization period, the ScreenPro units will display the Main menu.

To enter remote control mode, press the MISC key on the ScreenPro front panel. Use the ADJUST control to scroll down to the item labeled EXT CONTROL. Press the SELECT key to select the external control feature. The ADJUST control can now be used to select between three modes of operation; STANDALONE, SP+ EXT ID #2 and SP+ EXT ID #3. Use the ADJUST knob to select the proper mode (SP+ EXT ID #2 for Screen 2 or SP+ EXT ID #3 for Screen 3). After the proper mode is selected press the SELECT key to activate the selected mode. The display will indicate the selected remote control settings and the backlighting of the lamps on the front panel will be turned off to remind the user that remote control mode has been selected.

To exit remote control mode after the show, select STANDALONE mode in the EXT CONTROL menu and press the SELECT key. The ScreenPro unit will return to stand alone mode and the keys will again be backlit.

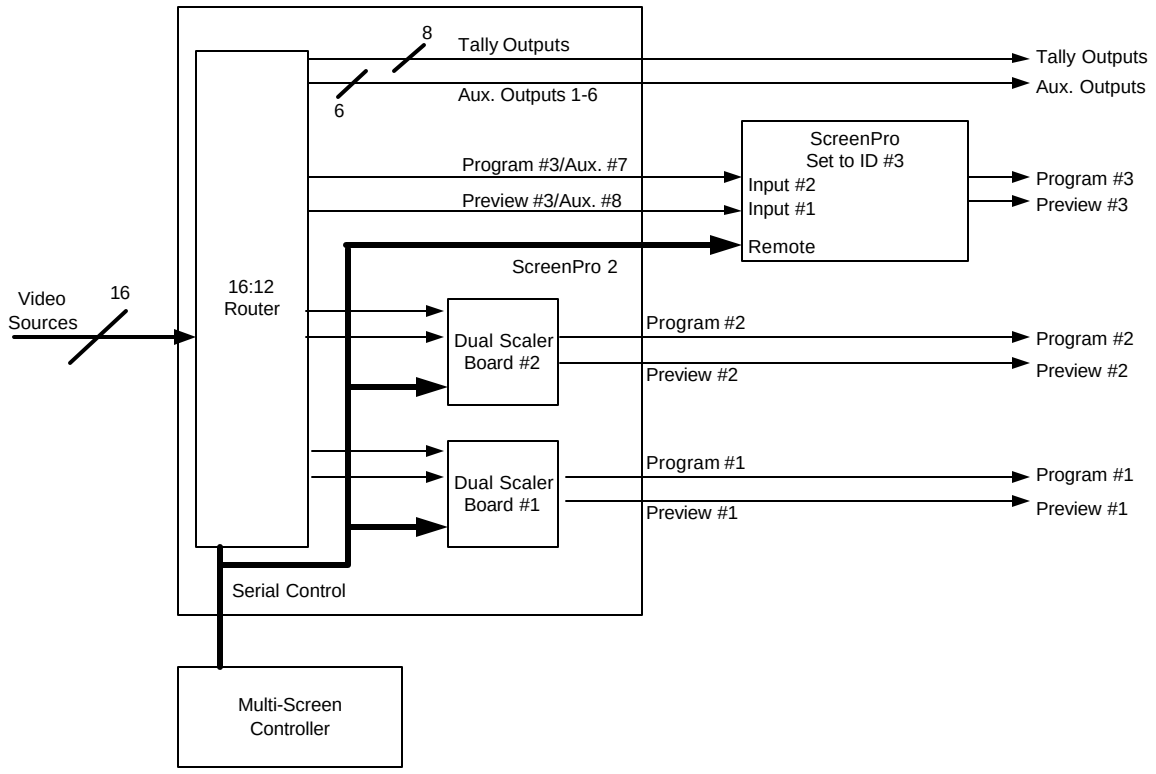
Connecting ScreenPro Units

ScreenPro Plus is designed to work seamlessly with Folsom's ScreenPro products to support multi-screen applications. The drawings provided below illustrate how to connect ScreenPro units to ScreenPro Plus. There are four different drawings each corresponding to a different ScreenPro Plus model (1201,1202,1601,1602). Please refer to the diagram that corresponds to the model you are using. All of the drawings show a full three-screen application. For a two-screen application, refer to the same drawing but ignore connections to support the third screen output.

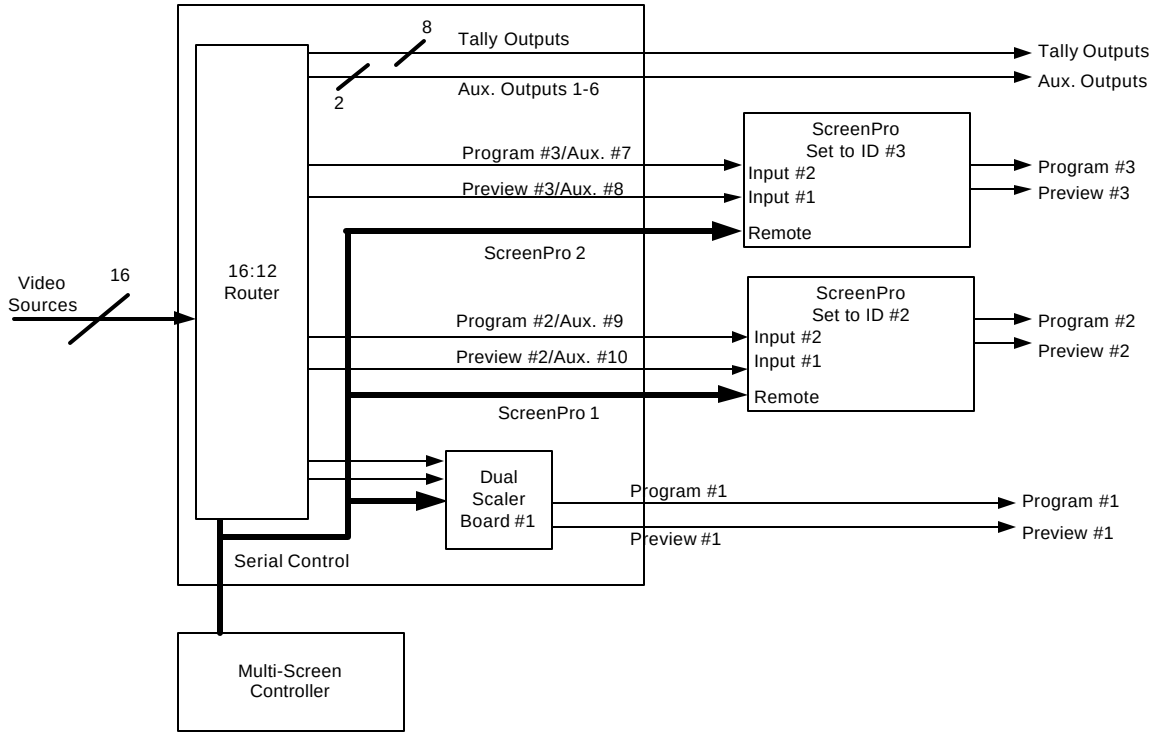
The video connections between ScreenPro Plus and ScreenPro units are made with a cable that has DB-15 male connectors on one end (to connect to ScreenPro Plus) and five BNC connectors on the other end (to connect to ScreenPro). The use of high-quality shielded 75 ohm video cable is recommended and cables are available from Folsom Research as an optional item (Folsom PN 14-9760011-00).

The control connections between the ScreenPro Plus and Screen Pro units are made with standard 25-pin serial cable with DB-25 male connectors on each end of the cable. These cables are available from Folsom Research as an optional item (Folsom PN - TBD).

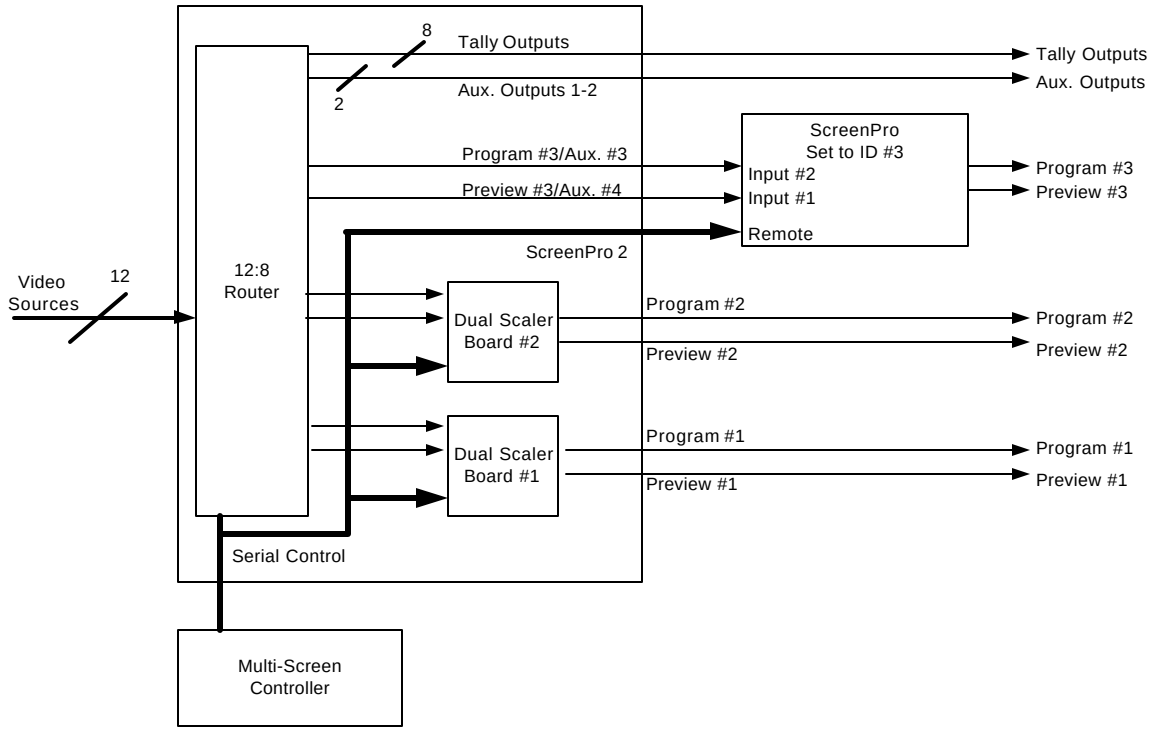
ScreenPro Plus (Model 1602)/ScreenPro Connection Diagram



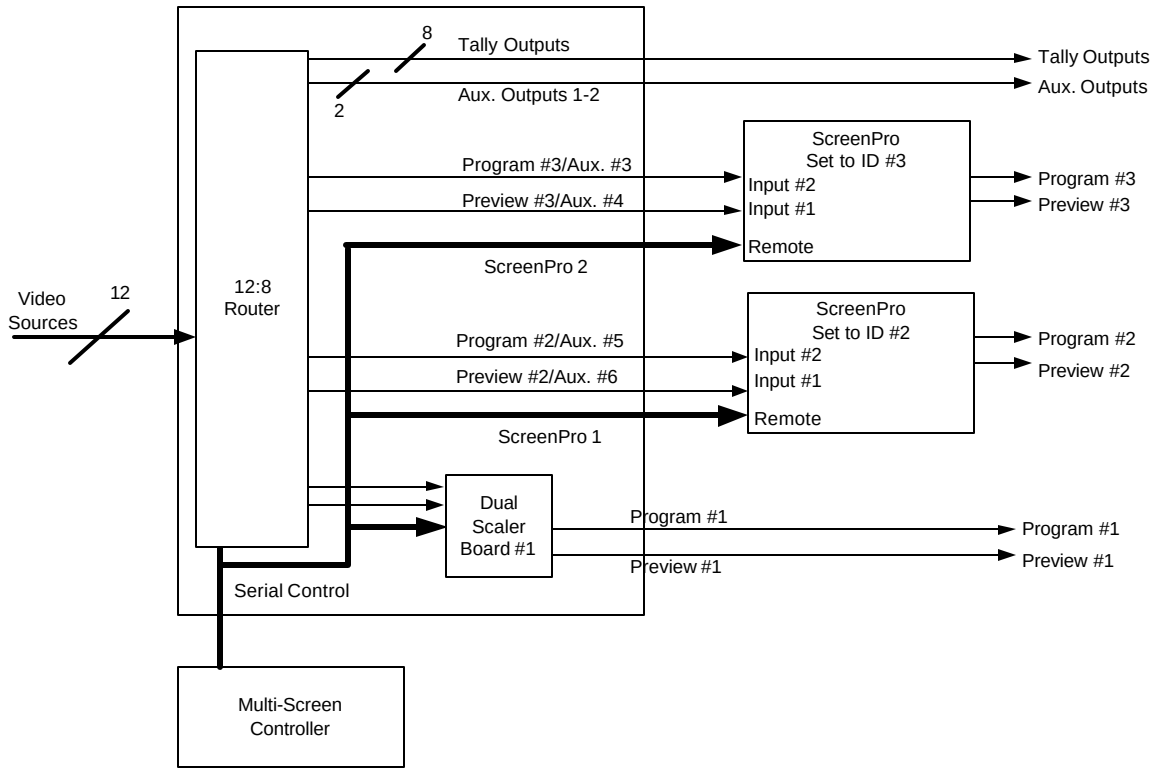
ScreenPro Plus (Model 1601)/ScreenPro Connection Diagram



ScreenPro Plus (Model 1202)/ScreenPro Connection Diagram



ScreenPro Plus (Model 1201)/ScreenPro Connection Diagram



Power-Up Initialization for ScreenPro Plus

Locate the power switch on the rear panels of the Controller and Video Processor Chassis and turn the units on. While ScreenPro PLUS is initializing the following menu will be displayed.

```
Loading...please wait
```

The second line of the menu displays the version of software that is currently being executed. The software version number will change as software upgrades are released. The most current software version is available for download from the Folsom Research web site at *www.folsom.com* .

When initialization is complete, the Main Menu will be displayed.

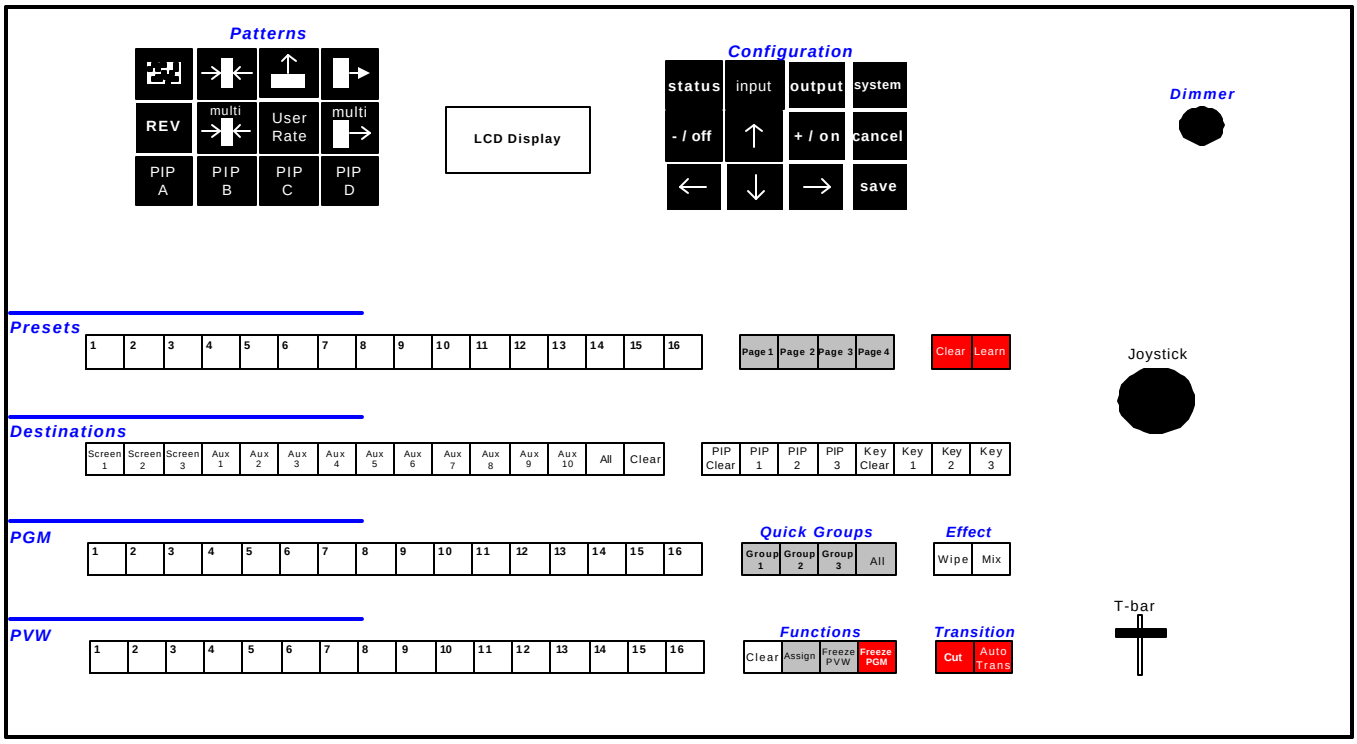
```
SPRO PLUS STATUS
EFF: MIX
SCN AUX  RATE  MWIPE
 3   6    1.0   1.0
```

Overview of User Control Console Controls

Please note that the following instructions describe the operation of a Model 1603 ScreenPro PLUS unit (16 inputs, 3 output screens). Operation for other models is similar; however, the number of inputs and/or number of screens that can be controlled are more limited with the other models.

Model	# of Inputs	# of Screens	Aux's	Tallies
1201	12	1	6	8
1202	12	2	4	8
1203	12	3	2	8
1601	16	1	10	8
1602	16	2	8	8
1603	16	3	6	8

Console Layout Diagram (1600)



Console Feature Overview

Destinations

The ScreenPro PLUS has 2 types of destinations or feeds. Screen Destinations and Auxiliary Destinations

Screen Destinations

Each ScreenPro PLUS system can support up to 3 Screen Destinations. Sources selected to drive Screen Destinations will be scaled to the selected output resolution. Screen Destinations support smooth transition effects at variable Rates using “Cut” and “Auto Trans” or the T-Bar. Input, Transition Rate and Pattern information can also be stored as a Preset for quick recall.

Auxiliary Destinations

Aux Destination output feeds are not scaled. Inputs switched to an Aux output are simply routed to the Aux output. Aux Destinations can be switched independently, in conjunction with screen destinations, or stored as Presets.

Scratch Group

The Scratch Group controls provide easy access to individual Destinations or combinations of Destinations that the user can select for switching. The Scratch Group allows the user to select any available Destination(s), preview an input, and transition to Program. This group provides the ultimate in instant, versatile Destination control. Destinations can be assigned on the fly, hence *Scratch* Group.

For instance, the Director may need Screens 1 and 2, as well as Aux 3, 4, and 5 Transitioned to a new input because of some unforeseen problem. Simply assigning these Destinations to the Scratch Group, selecting the new Input, and making the Transition will accomplish this. The Scratch Group controls give the user complete and versatile control over all Destinations.

Quick Groups

The user can combine multiple Destinations and “assign” them to a group. This allows Destinations that commonly follow each other to be selected quickly for an action. Any combination of Destinations (Screen or Aux’s) can be assigned to a group. Put simply, Quick Groups are preset combinations of Destinations that you want to switch together. The ScreenPro PLUS Console has 3 user-definable Quick Groups.

Individual control of destinations is always possible, whether they have been assigned to a group or not. (see Scratch Group)

For example**,** let’s say that on a 3-screen show, screens 1 and 3 are graphics screens and Aux 5 will feed down stage monitors. Assigning these 3 destinations to Group 1 will let us select all of them with a single switch. Once the destinations are grouped, changing an input and making a transition to Program will affect all the Destinations in Group 1.

Now, let’s suppose screen 2 will be an I-Mag screen and Aux 4 will feed a recording device. We assign them to Group 2. When a new input is selected for this group and a transition is made, these destinations will be switched.

Selecting both Groups together will allow you to switch all of the assigned destinations in each group. Quick Groups can be selected individually or in any combination.

Presets

Presets are memory locations. Information is stored by the user, for instant recall. Destination, Input, Group, Pattern, Effect, and Transition Rates can be stored in a preset.

Once a Preset has been recorded, all of the information will be recalled to Preview with a single button push. It can then be transitioned to Program with “Cut,” “Auto Trans,” or “T-Bar.” *All Presets are learned from and recalled to Preview.*

For example, to create a Walk-in Look which would switch Screen 1, 2, and 3 to Input 8 (say, a GFX logo), and take downstage monitors and record devices to black, could all be stored as a Preset. Instead of going through the machinations each time to achieve this look, selecting this Preset would instantly recall all of this information to Preview, ready to transition to Program.

This example takes an activity that would otherwise require 10 keystrokes and saves it to a single Preset. Presets can be a powerful, time saving tool, especially for repeatable situations like Walk-in Looks, Video Rolls, Graphics, and I-Mag setups, etc. Instead of having to remember the parameters for each look every time, set them up once, learn them to a Preset # location, and easily recall them to Preview. Having the Director call them as a simple video Preset cue # makes it even easier. The ScreenPro PLUS has 4 pages of 16 Presets, for a total of 64.

Configuration

Configuration is done from the Configuration Keypad and the joystick (X, Y, and Z). Changes and settings are viewed on the LCD Display. Configuration includes Status, Input Configuration, Output Configuration, and System Configuration.

The easy to use Configuration menus are keypad driven. Abbreviated instructions are viewed in the LCD Display to assist in menu navigation.

For example, Joy Z indicates that the adjustment is made with the z axis (twist) on the joystick.

Console Operation

Scratch Group

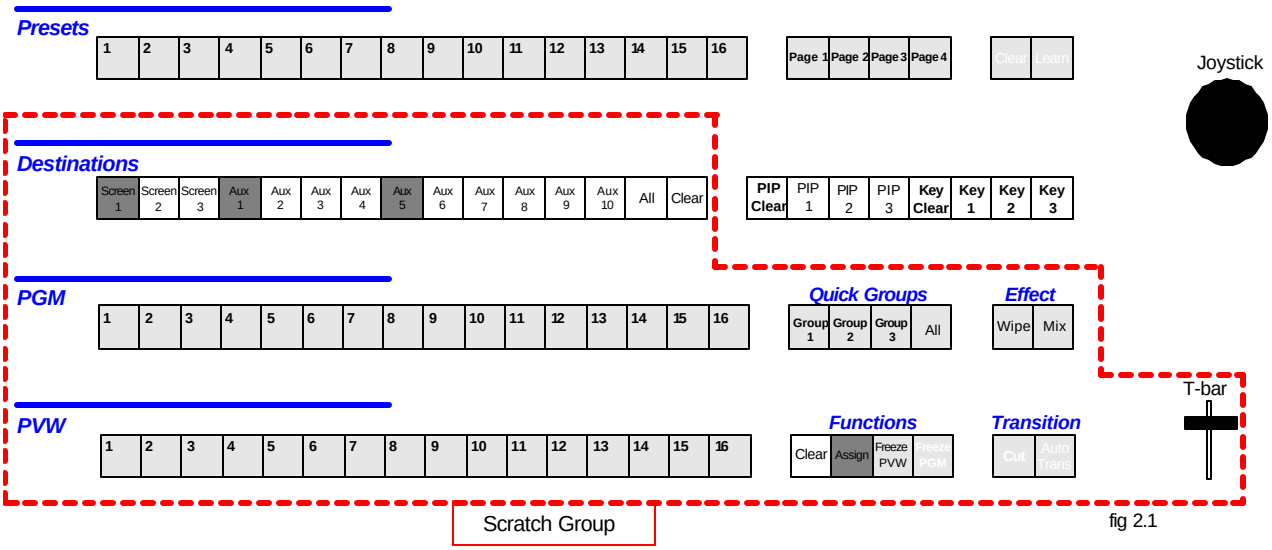


fig 2.1

To Assign Destinations to the Scratch Group

1. Press and hold the “Assign” button on the Functions bar.

2. Press the desired destination(s) on the Destination Bar. When a Destination is pressed, it will light, indicating it has been assigned to the Scratch Group. You may assign any combination of Destination you wish. Destinations will toggle on/off as they are pressed. To undo an assignment, simply press the Destination Key again and the lamp will go off, indicating that the Destination has been removed from the Scratch Group.

3. Using the “PGM” and “PVW” buttons, selected video will be routed or transitioned to the selected destinations.

Figure 2.1 shows Screen 1 and AUX 1 and 5 have been assigned to the Scratch Group.

Clear Assignments

There are two methods to “Clear” or change Destination assignments. Method 1 will clear all Destinations:

1. Press and hold the “Clear” Button.

2. While holding “Clear,” press the “Assign” button adjacent to it.

This will clear all Destinations, leaving you with a clean slate to reassign new Destinations.
Method 2 will reassign Destinations:

1. Press and hold “Assign.”

2. While holding “Assign,” toggle on or off Destinations by pressing the desired Destination(s).

When Destinations have been assigned, you can now select an input for transition

The Scratch Group will remain active until you either change the Destinations in the above manner, “Clear” the assignments, or select a Preset “Quick Group.”
To Add Destinations to a Quick Group

Press and hold the Group 1, 2, or 3 button on the Quick Group Bar.

While holding Group 1, 2, or 3, press the desired Destination(s). The selected Destination will light, indicating that it has been added to that group. To remove a Destination from a group, simply press the Destination again and the lamp will go off, indicating that the destination has been removed from the group.

Repeat these steps for each Group to set-up the desired Destinations for each group.

Figure 2.2 shows Screen 1 and Aux 3, 4, 5 as Quick Group 1.

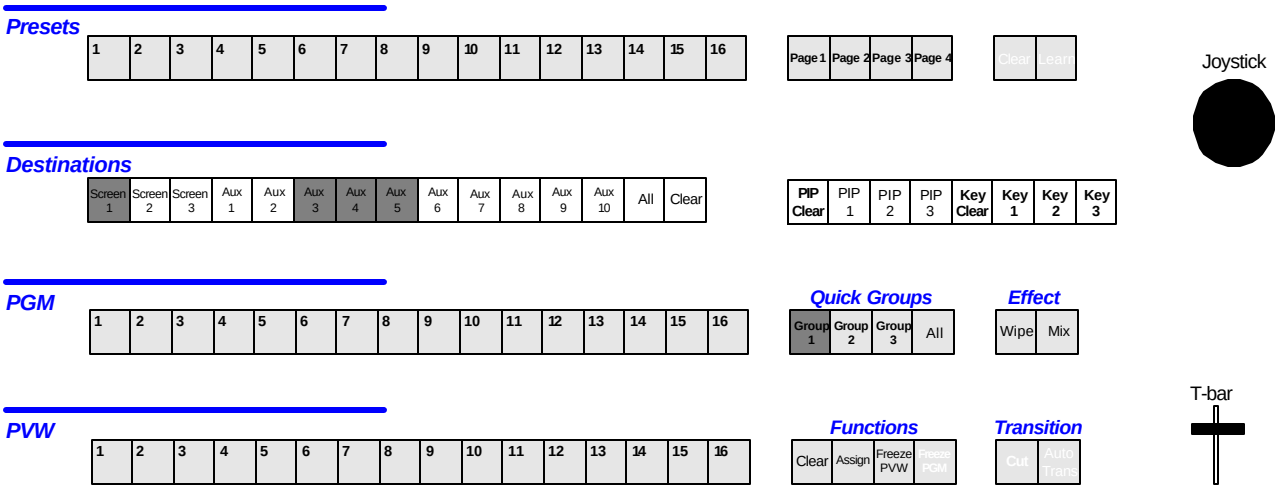


fig 2.2

To verify the destinations in a particular Group, press and hold the desired group button. Only the Destinations assigned to that group will light on the Destinations Bar.

Input Selection

Note: To select an Input source for a transition, you must have a Destination selected. If no Destination is selected, the Preview and Program buses will not be active. The exception to this rule is when a Preset is selected. Presets store the selected destination(s), input, rate, and transition effect, and will be recalled when selected.

When a Destination is selected, the keys associated with the Preview and Program inputs for that Destination will light on the Preview and Program bus. Naturally, when just one Destination is active, only one input keyon each bus will be illuminated. If multiple destinations are selected, multiple input keys will be active (Fig 2.3).

Each group can have different Preview and Program inputs. Conceivably, you could have 13 active Preview and Program inputs. While this is probably not a real-world situation, it could happen.

Fig 2.3 shows multiple Destinations with multiple sources.

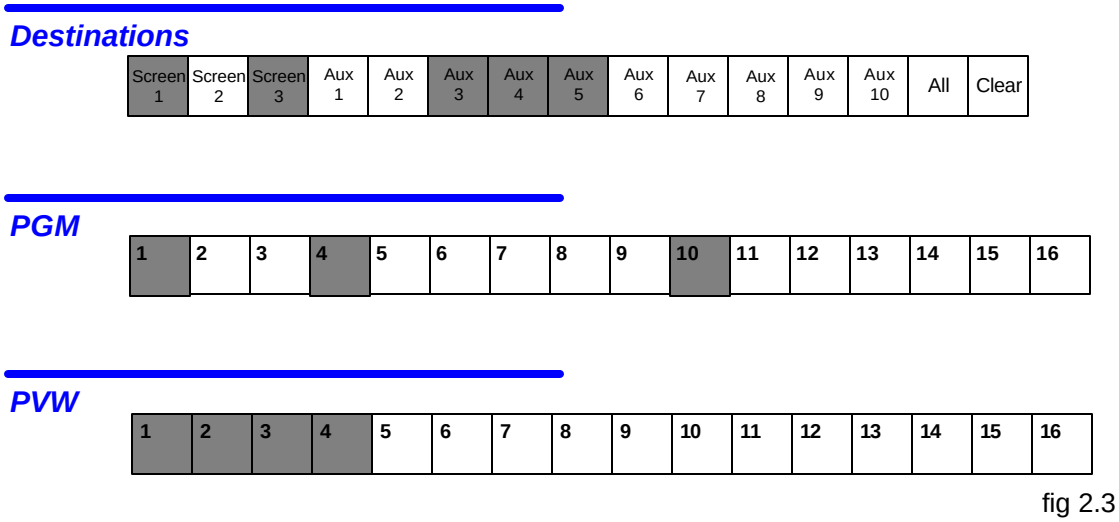


fig 2.3

To View Current Inputs for Grouped Destinations

When a Group with multiple Destinations has been selected, each Destination in that Group will light on the Destination Bar. Sources for each Destination on the Preview and Program buses will also light, indicating the current inputs for the selected Destinations. If multiple inputs are active on the Preview and Program bus, it means that multiple Destinations have been selected with different input assignments. To view the current Preview and Program inputs assigned to an individual Destination, press the desired Destination. The Preview and Program buses will light JUST the inputs for that Destination. When the Destination key is released, the console will resume its former state. This will not change the selected destination or groups, but it will let you view the inputs associated with individual destinations.

To Change an Input for a Destination while Viewing

While you are holding the Destination button to view the input, you can change to a new input in Preview or Program by simply selecting the desired input using the Preview or Program keys.

Note: Changing a Program input will generate an immediate Cut to Program Transition.

Figure 2.4 shows the Transition controls.

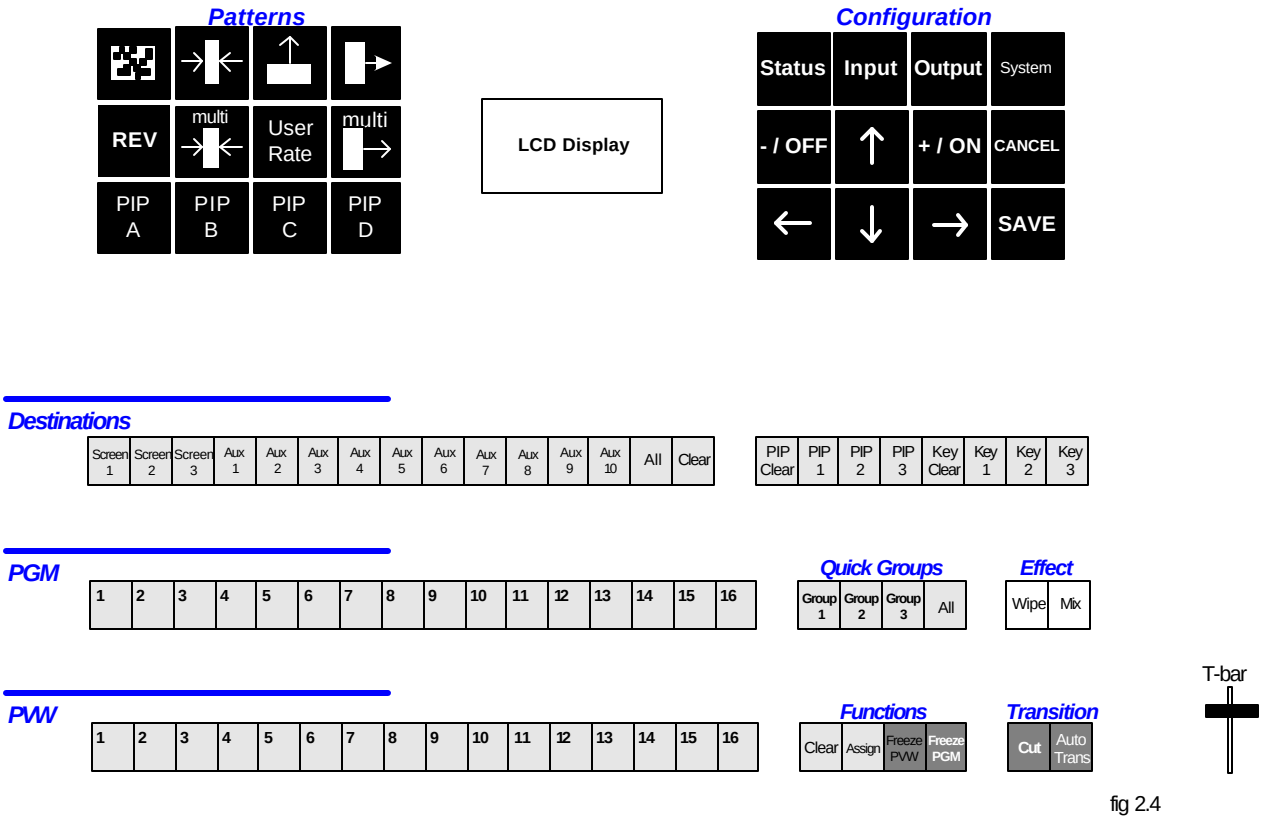


fig 2.4

Transition Types

"Cut" will Cut the source(s) in preview directly to Program for the selected Destinations. "Auto Trans" will Transition the source from Preview to Program using the currently selected Rate Effect. "T-Bar" control allows the user to manually control the Transition Rate for the selected Effect.

Effects

"Wipe" allows the current Pattern Effect to be used for "Auto Trans" and "T-Bar" transitions. "Mix" selectsl dissolve transitions.

Effect

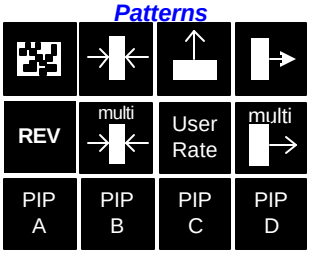
Wipe	Mix

When "Status" on the Config keypad is pressed, the current effect pattern and rate will be displayed in the LCD window.

Wipe Patterns

When Wipe is selected, you can use any available Pattern. The "REV" key will reverse any of the selected Patterns, i.e., "wipe left" when reversed will be come "wipe right."

Patterns



Patterns noted as "Multi" are designed for multi-screen effects.

Multi-Curtain

When selected for 2 or 3 screen wipes. Multi-Curtain will begin in the center and open each screen in progression. The "REV" Key can be used to select a Multi-Curtain close.

Multi-Wipe

When selected for 2 or 3 screen transitions, Multi-Wipe will begin at the left and wipe each screen progressively, to the right. The "REV" Key can be used to select a Multi-Wipe from right to left.

Transition Rates

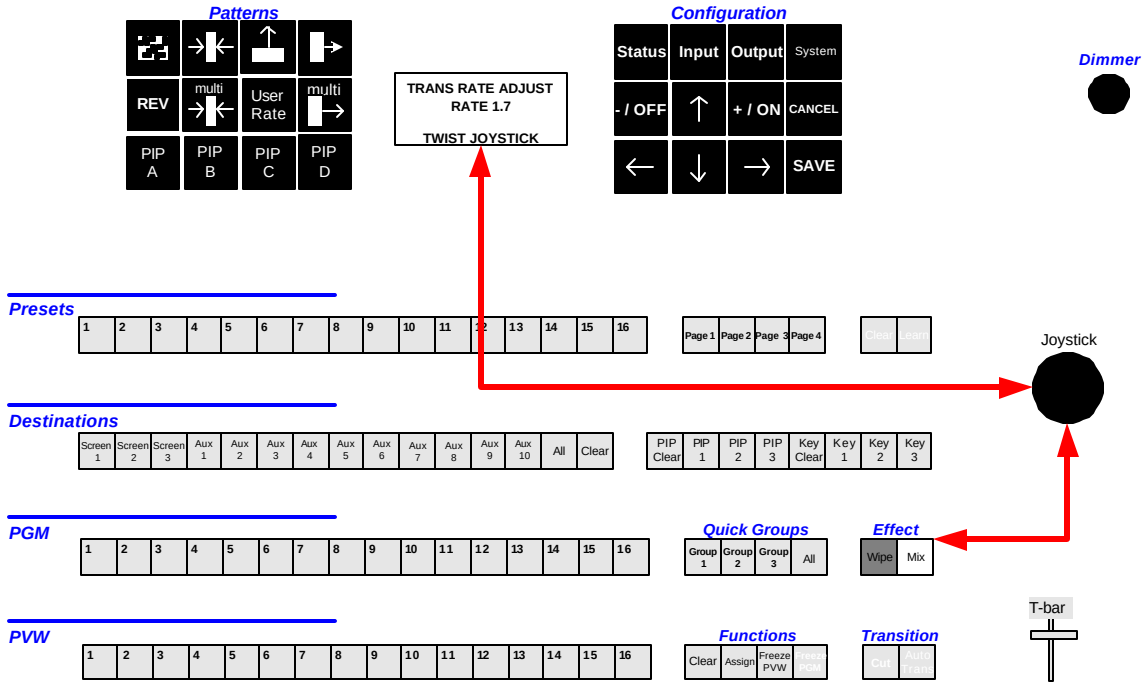
The Transition Rate is user-definable. There are 2 adjustable rates. The first is the Standard Rate, which is used when transitioning a single-screen Pattern or Mix Effect.

The second Rate is to adjust the "MWIPE" rate for transitioning Multi-Pattern Effects.

Note: *Press the STATUS key on the Configuration keypad to view the current rate settings* Non-Multi patterns will transition each selected screen simultaneously with the same pattern. "REV" will reverse the wipe on the selected pattern.

PIP A, B, C, and D are user programmable size and position settings. To program, adjust the PIP in Preset 1 to the desired position and press LEARn and PIP A, B, C, D and hold for 2 seconds.

Adjusting Transition Rates



Changing the Rate

Press and Hold the “Effect” switch. The LCD Display will indicate the current Rate.

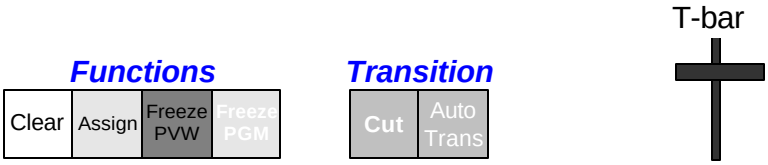
While holding “Effect,” use the Joystick Z axis (twist top) to adjust the Rate up/down. The selected Rates will be stored until subsequent user Rate changes are made.

The exception to this is when a Preset is recalled that has had a different Rate stored. *(see Presets)*

User Rate Preset

A custom transition rate time can be stored in the USER RATE key. After changing the rate to the desired time hold the Learn key and then press the USER RATE key. The rate will be stored in Flash on the controller. Press this key any time to recall the custom transition time.

Freeze Preview & Program



Freeze Preview

To freeze the Preview sources for a selected destination(s):

Select the destination(s) with the input you wish to freeze.

Press “Freeze PVW”

This will freeze each selected Preview source and the “Freeze Pvw” Button will illuminate. The frozen Preview sources can then be transitioned to Program.

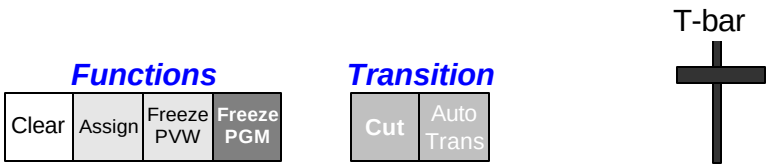
Once transitioned to Program the “Freeze Pgm” will light indicating an image is frozen in Program. The lamp in the “Freeze Pvw” Key will be turned off.

To Clear A Preview Freeze

1. Press and hold “Clear.”
2. While holding, press “Freeze Pvw.”

The image frozen in Preview will return to real-time display.

To Freeze Program



Select a Destination(s) with the input you wish to freeze.

Press “Freeze PGM” This will freeze the selected Program source. The “Freeze PGM” Key will be illuminated. The frozen Program sources can then be transitioned back to Preview and cleared or cleared directly from Program.

Selecting an Input for Transition to a Program Output

There are two methods to transition a new input to the Program outputs.

Transition from Preview to Program

Simply select an input on the Preview bus and use “Cut,” “Auto Trans,” or the T-Bar control to send it to the Program output. *(Note: Remember that you need to have a destination selected.)*

You can use various Transition Rates and Pattern Effects when transitioning from Preview to Program with “Auto Trans.” You can use any of the available Pattern Effects when transitioning with the T-Bar control.

Transition Directly to Program

When an input is selected from the Program bus, this input will “Cut” directly to Program. You will see it momentarily switch and lock in the Preview monitor and then “Cut” directly to Program. The delay (150ms) allows different resolution sources to be acquired and scaled in Preview, providing a clean, glitch-free cut to Program.

Picture-In-Picture Operation

It is recommended that Auto Config is used for the Input Setup when an input is to be used for a PIP.

1. The operator will select the source they want as a picture-in-picture (PIP) and this source will be displayed on the preview monitor. This step can be performed on any of the Preview Screens as necessary.

2. To enable PIP for a screen or screens, press PIP 1, PIP 2 and/or PIP 3, which correspond to screens 1, 2 and 3 respectively. The screen(s) chosen to be in PIP mode will automatically size to 50% of normal and will be placed in the upper left hand corner of the screen.

3. To size and position the PIP, hold down the PIP # key for the screen you wish to adjust and use the XY-axis on the joystick to position the PIP and the Z-axis to size the PIP.

4. To transition the PIP onto the main screen, the operator will press the Auto Trans or Cut key. The T-Bar can be used as well.

5. If the operator presses the Auto Trans or Cut keys while the PIP image is on the main output, the PIP is transitioned off of main leaving the background image showing.

6. To return a PIP image to its normal size, hold down the PIP # key and press the PIP CLEAR key.

7. If the operator clears a PIP while the PIP image is on the main output, the PIP is transitioned off immediately using a Dissolve and the image is returned to full size.

8. If the operator presses any of the source select keys while the PIP image is on the main output, the PIP is transitioned off immediately using a "Cut". After the transition, the new source selection is made.

Please make note of the following when adjusting the Horizontal or Vertical size of a PIP.

The scaler is limited to a maximum 2:1 compression. Therefore, the size of a full PIP ("full" meaning the entire input image is displayed in the PIP) is limited by the following equations:

*Min Horizontal Size (% of output image) = InputHSamples/(2 * OutputHRes) * 100*

*Min Vertical Size (% of output image) = InputVActive/(2 * OutputVRes) * 100*

Note: InputH Samples may not be the same as input horizontal resolution due to over-sampling.

Example:
PIP source is standard video 710x485.
Output is XGA 1024x768.

*Min Horizontal Size (%) = 710/(2 * 1024) * 100 = 34.67%*
*Min Vertical Size (%) = 485/(2 * 768) * 100 = 31.58%*

PIP sizes smaller than the calculated limits can still be used. However the right and bottom edges of the screen will be cropped.

Keying Operation

Video Mixing and Graphics Overlay Effects (Luminance Keying)

1. The operator will select the source they want as a “key/overlay” and this source will be displayed on the preview monitor. This step can be performed on any of the Preview Screens as necessary.

2. To enable Keying for a screen or screens, press KEY 1, KEY 2 and/or KEY 3, which correspond to screens 1, 2 and 3 respectively.

3. To transition the “key/overlay” onto the main screen, the operator will press the Auto Trans or Cut key. The T-Bar can be used as well.

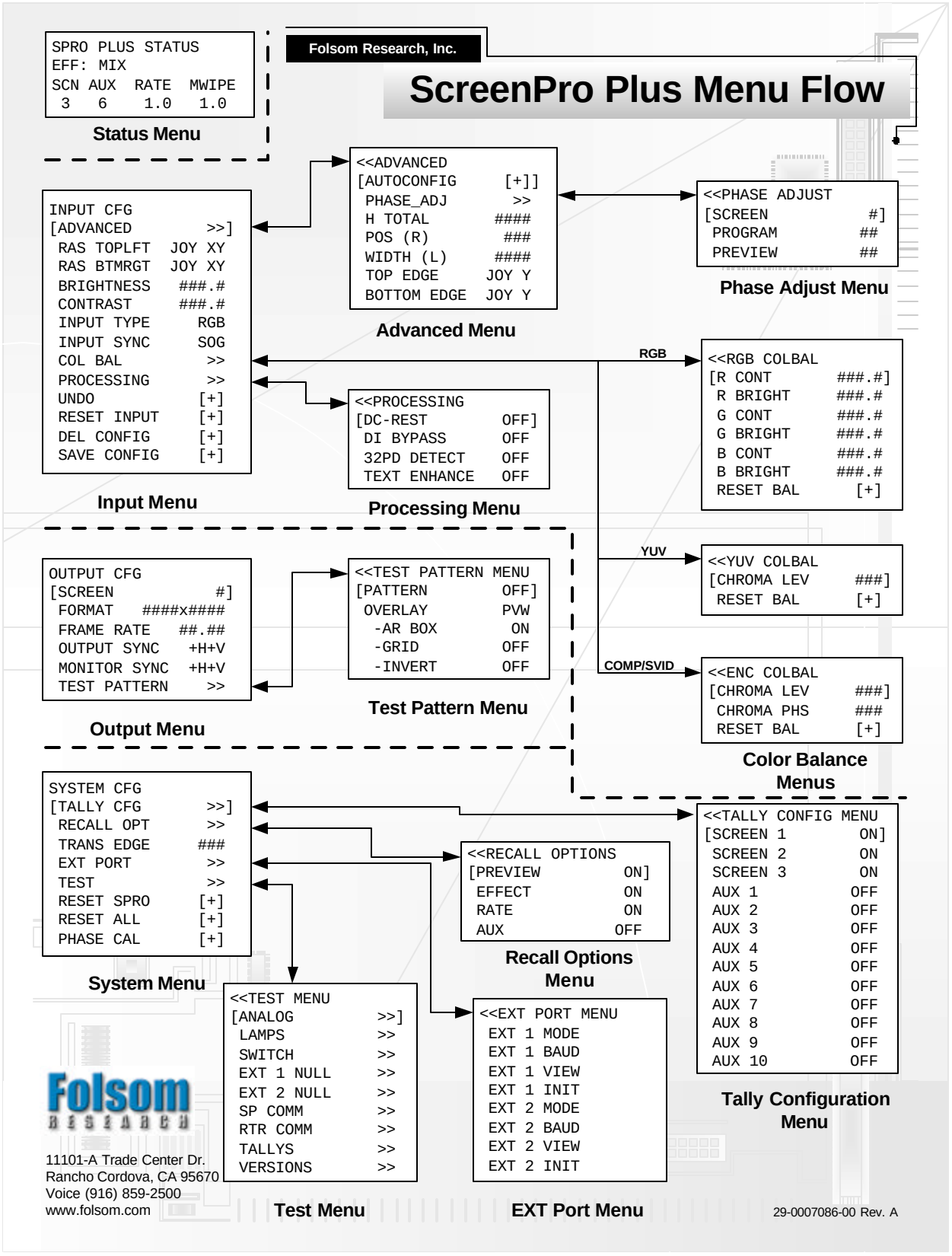
4. To adjust the Key Threshold, hold down the KEY # key for the screen you wish to adjust and use the Z-axis of the joystick to select the desired threshold value, displayed on the LCD. To get an idea of how the threshold affects the final mix, transition the key source over the background image before adjusting the threshold.

5. If the operator presses the Auto Trans or Cut keys while the keyed image is on the main output, the key/overlay is transitioned off of main leaving the background image showing.

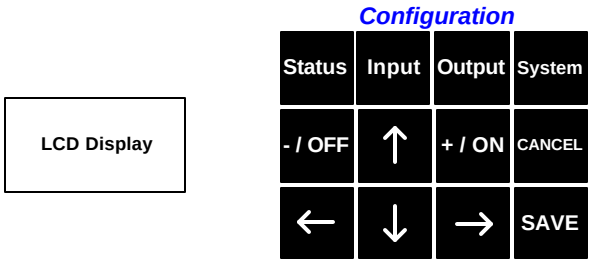
6. To disable the Keying function, hold down the KEY # key and press the KEY CLEAR key.

7. If the operator presses any of the source select keys while the keyed image is on the main output, the key/overlay is transitioned off immediately using a Dissolve. After the transition, the key is disabled and the new source selection is made.

Menu Flow Chart



Configuration



There are four configuration modes selectable from the “Configuration” keypad. When a mode is selected, the LCD display will display the associated configuration menus. Abbreviated instructions are given on the LCD display to assist you with menu navigation.

```
INPUT CFG
[ADVANCED          >>]
 RAS TOPLFT   JOY XY
 RAS BTMRGT   JOY XY
 BRIGHTNESS    ###.#
 CONTRAST      ###.#
 INPUT TYPE      RGB
 INPUT SYNC      SOG
 COL BAL          >>
 PROCESSING       >>
 UNDO            [+]
 RESET INPUT     [+]
 DEL CONFIG      [+]
 SAVE CONFIG     [+]
```

Input Configuration

Input Configuration is used to generate an Input Configuration file for each input source. Input Configuration is performed for each input source on the Screen 1 Preview monitor. Once set up, and saved, the Input Configuration files associated with each source are automatically activated each time a source is selected.

Menu items in parenthesis [---] indicate that this is item being adjusted. Menu items followed by >> indicate additional menus. When >> is present, use the “right arrow” key to go to further levels in the menu item. Use the “left arrow” key to back out of the menu.

Raster Top and Left

Use the joystick to position the *upper and left* edges of the image to the Aspect Ratio box. Y- axis controls vertical movement and X- axis controls horizontal movement.

Raster Bottom and Right

Use the joystick to position the *lower and right* edges of the image to the Aspect Ratio box. At this point, the image should be properly positioned in the Preview monitor of Screen 1.

Y- axis controls vertical movement and X- axis controls horizontal movement

Brightness and Contrast Control

Turn the joystick control clockwise to increase brightness and counterclockwise to decrease brightness. Turn the joystick control clockwise to increase contrast; counterclockwise to decrease contrast.

The brightness and contrast level will be displayed on the LCD display. *To quickly reset Brightness/Contrast levels to 100%, use the "off/-" key on the keypad.*

Input Type
Using the +/ON key the keypad will scroll through the most common settings: RGB, Beta50, Beta60, MII, EBU, NTSC, Svid.

The selected setting will be displayed in the LCD window. As the setting is changed, you will see the change on the image displayed on the Preview 1 output.

Input Sync
Sync settings can be adjusted using the "+/On" keys. Sync selections are: AUTO, SOG, CSYNC, and H&V.

3 and 4-wire sources should be manually set to the correct sync type.

Color Balance
Color balance can adjusted by turning the joystick control clockwise or counterclockwise. Using the +/On key will reset color balance to the default settings.

Processing
The Processing menu items include:

DC Restore – BP (Back Porch = default) or Sync.
DI Bypass – De-interlacer Bypass OFF (default) or ON.
32PD Detect – 3:2 Pulldown Detect ON (default) or OFF.
VID BW – Video Bandwidth High (default) or Nominal.
VID Peaking – Video Peaking MIN (default) or Maximum.

Each can be controlled using the +/On and -/OFF keys.

Undo
Using the +/On key will undo any changes made before the last "Save" in this menu.

Reset Input
Using the +/ON key will reset the input to default settings.

Del Config
Pressing +/ON will delete this input file.

Save
Pressing "Save" will save the input configuration and copy it to the system. It can then be recalled to any screen.

When any input adjustment is made, the "Save" button should be pressed. This will copy the file system wide. Pressing "Save" will save all of these files to non-volatile storage. Any changes made that are not saved will be lost on power-down.

1:1 Sampling Overview

In order to scale an image it must first be digitized. This is the process of changing the analog graphics signals (Red, Green, and Blue for example) into pixels stored in the ScreenPro Plus image memory. The default mode of the ScreenPro Plus is to over sample the input image producing more samples than there are in the original source material. The over sampled image is then scaled to the final output resolution.

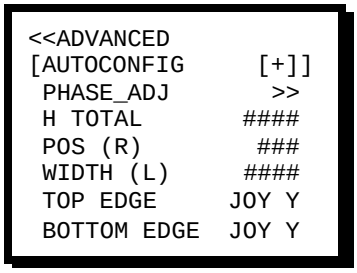
An approach called 1:1 Sampling produces a superior image by sampling the analog graphics signals at exactly the same rate as that of the original source. This allows the image to be re-construction with the reduced digitizing artifacts. This 1:1 Sampling approach requires very accurate settings and even a small sampling error causes noise on the output image. Both the sample clock frequency and phase must be correct to obtain a properly sampled image. ScreenPro Plus incorporates automatic adjustments in the 1:1 Sampling mode.

1:1 Sampling Operation

To automatically set-up for 1:1 Pixel Sampling the input image should have non-black data at the edges and have

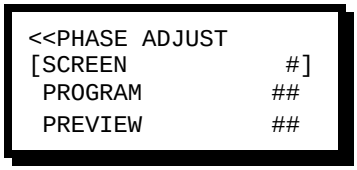
some amount of text or other graphics. The standard Windows GUI is a good example. With an appropriate image displayed on the Preview 1 Monitor, select the AutoConfig field within the Advanced menu and press +/ON. In a couple of seconds, the image should return properly adjusted. During this process, the other Preview screens will be switched to the source selected in Preview 1, adjusted and then returned to their previous state.

The sample clock phase can be fine tuned by adjusting either the Phase Preview or Phase Main adjustments depending on which output you are calibrating. The functions of the menu items that are unique to Advanced Mode operation are described below.



Auto Config

When the Auto Config menu item is activated, the unit examines the incoming video and automatically configures the system for 1:1 pixel sampling. Parameters in the H TOTAL, POS (R), and WIDTH (L) menu fields are calculated and loaded as part of the Auto Config process. Also, the PROGRAM and PREVIEW phase numbers are set to 0 within the PHASE_ADJ submenu. To activate Auto Config mode, select the AutoConfig field within the Advanced menu and press the +/ON key.



Phase Adjust

This menu displays a number between –16 and +16 for each of the screens of Program and Preview. The numbers represents phase adjustment for the sample clock on the output. Use the Screen field to tell the controller which screen to manually adjust. Phase is adjustable to the nearest 1/32 of a clock period. This parameter is automatically loaded when the Auto Config process is complete. Manual adjustments can be made by scrolling to the Program or Preview menu item and making adjustments with the -/OFF or +/ON keys.

H Total

This menu field displays the total number of pixel clock periods during a horizontal line. The parameter is automatically loaded when the Auto Config process is complete. Manual adjustments can be made by scrolling to the H Total menu item and making adjustments with the -/OFF or +/ON keys.

Position (R)

This menu field displays the number of clock intervals assigned to the horizontal front porch. The parameter is automatically loaded when the Auto Config process is complete. Manual adjustments can be made by scrolling to the Position (R) menu item and making adjustments with the -/OFF or +/ON keys. Adjustments should be made to move the right edge of the image to the desired location.

Width (L)

This menu field displays the number of clock intervals assigned to the horizontal active area. The parameter is automatically loaded when the Auto Config process is complete. Manual adjustments can be made by scrolling to the

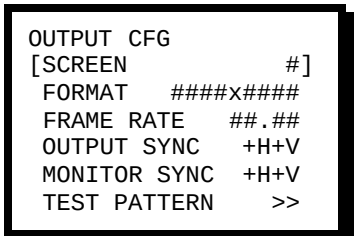
Width (L) menu item and making adjustments with the -/OFF or +/ON keys. Adjustments should be made to move the width of the image to the desired size.

Top and Bottom Edge

While in the Advanced menu, a user can make vertical adjustments to the image. Scroll down to the TOP EDGE or BOTTOM EDGE field and use the Y-axis of the joystick to place the edge of the image in the desired location.

Output Configuration

Output Configurations are selected for each screen output.



Screen

Use the +/On key to select the output screen you wish to adjust.

Format

The +/On key will scroll through the available output resolutions:
640x480
800x600
1024x768
1280x1024
1280x720
1280x768
1365x768
1365x1024

Frame Rate

To eliminate the potential for frame rate artifacts, it is recommended that the output frame set be set to match the input frame rate for video sources (59.94Hz for NTSC, 50Hz or 75Hz for PAL).

The +/One Key will scroll through the available frame rate selections:
59.94Hz
50Hz
75Hz

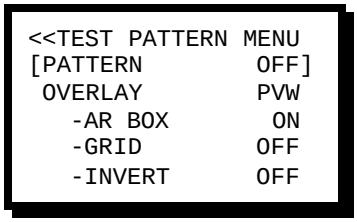
Note: When using the 75Hz frame rate, 1280x1024 and 1365x1024 formats are unavailable.

Sync Type (Output and Monitor)

The OUTPUT SYNC field refers to the BNC Program outputs. The MONITOR SYNC field refers to the HD-15 Program and Preview outputs.

The +/On key will scroll the available Output sync types:
Comp
+H+V
+H-V
-H+V
-H-V

Test Pattern
Use the “right arrow” key to enter this menu.



TPG Mode: The “+/On” key will turn the test pattern on. The “–/Off” key will turn TPG off.

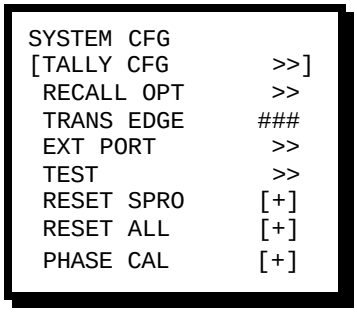
Pattern: The “+/On” key will scroll through the available test patterns. The patterns will be visible on the Preview and Program monitors as they are selected.

Grid
The Grid can be turned on /off using the “+/On” and “-/Off” keys.

AR Box
The Aspect Ratio box can be selected using the “+/On” key. It can be selected to be displayed on:
Preview
Program
Both
Off

Inverted
The “+/On” key will invert the test pattern, and the “-/Off” key will return to normal mode.

System Configuration Menu



Tally Configuration Menu
Tally outputs are available on the first 8 inputs. Tally activation is user-definable. Tallys can be activated based on the output of Screen 1-3 or Aux1-10.

As this menu is scrolled, using the “up/down” arrow keys, the available outputs will be displayed. Turn on the desired output(s) using the “+/On” key and turn them off using “-/Off.”

Recall Options
Recall options allow the user to select which items are recalled from Preset Memories.

For example, if the Recall Option Effect is turned OFF, the Effect will not be recalled from Preset Memories.

The selectable options are:
Preview
Effect
Rate
Aux

Using the “+/On” and “-/Off” keys, the options can be turned on and off.

Trans Edge

This is a global adjustment that determines the fuzziness of the Wipe Edge for all of the Wipe Transitions.

The selectable options are: 4, 8, 16, 32, 64, 128 and 256 with the units being pixels. The default is 16.
.

Ext. Port Menu

This feature is for factory use only.

Test

This menu item will scroll through available console and system tests. Abbreviated instructions will be displayed for each test. The tests include:

Analog: Tests the Joystick and T-Bar analog settings.

Joystick X and Y Axis 97-128. (+/-3)
Joystick Z Axis 83-172 (+/-3)
T-Bar 0x0000 (down position) to 0x03ff (up position)

Lamp

Pressing the **“+/On”** key will test each row of lamps in secession. If you suspect a lamp to be out Watch that particular row as the console performs this test.

Switch

This will allow the individual test of each switch. When the “+/On key is pressed, a single row of switches will light. Actuate each switch to test all th switches in the row. Once the entire row has been pressed, the next row will light. This procedure will repeat for every row of switches.

To exit this test before its completion, press the “-/Off” Key.

Communications Tests

The ScreenPro Controller must be connected to the Video Processor Chassis to perform these tests:

Ext-1: Tests External-1 port communication.

Ext-2: Tests External-2 port communication.

SP Comm: Tests Console and ScreenPro scaler communication.

Rtr Comm: Tests Console and ScreenPro router communication.

Tally: Tests Tally communication.

Versions: Will display the current firmware version.

Presets

Presets are storage locations that allow the user to quickly recall previously saved information. *Presets are always learned from Preview and recalled to Preview.*

The information you bring to Preview (screen selections, group selections, input choices, transition effect, trans rate, etc.) can all be stored to a Preset memory location. Presets are then recalled, by selecting the corresponding Preset Key. The stored information is then loaded into Preview to await transition to Program.

The console has four (4) pages of sixteen (16) preset memory locations for a total of 64 Preset memory locations. Once a Preset is learned, the user can simply press the desired Preset Key and the stored information is recalled to Preview status.

Once a Preset has been recalled, the user can change any of the stored parameters. For example, if Preset #2 is recalled and the user decides to select a new input source, simply select the new source on the Preview bus and that source will be used in the transition.

The Preset memories can include:
Input Selection(s)
Transition Rate
Aux Input Selection(s)
Individual Screens or Groups
Effects

Preset Tutorial

Presets can convert what would have been a time-consuming transition setup to be a single-button recall to Preview.

The Preset we will build is a pretty common type of scenario (graphics on the outside screens and I-Mag on center screen) This Preset will reduce approx. 10 button keystrokes to a single-button recall to Preview.

We need to make a few assumptions before beginning:

Screens 1 & 3 are assigned to Group 1 (our GFX Screens)
Screen 2 is assigned to Group 2 (our I-Mag Screen)
Aux 1 & 2 are assigned to Group 1 (down stage monitors)
Aux 4 is assigned to Group 2 (this will be an Iso record deck).

The Preset we will build will have the following information:

Screens 1 & 3 will have Input 8
Screen 2 will have Input 1 (cam 1)
Aux 1 & 2 will have Input 8 (to follow GFX Screens)
Aux 4 will have Input 1 (to record. the I-Mag image)
(All Screens will use a 1.0 sec rate with a wipe-down effect)

Learning a Preset

On the Quick Group Bar select Group 1 (Screen 1, 3 and Aux 1 & 2 will light on the destination bar). On the Preview bus, select Input 8 (PVW on Screen 1 & 3 switches will change to 8). Then select the Wipe-Down Effect on the Effect keypad and set the Rate to 1.0 sec.

Now select Group 2 (Groups 1 & 3 will go dark). On the Preview bus select Input 1 (our Cam 1). At this point, all the information that we wanted is in a Preview state.

On the Group Bar, select Groups 1&2. This will select (light) all the Groups/Destinations we want learned to the Preset.

Note: Any information on Destinations NOT selected (unlit), will not be saved to a Preset when learned.

Press and hold Preset Learn, and press Preset 1. The information is now learned to Preset 1 and can be recalled to Preview at any time.

Changing Preset Information

Once a Preset is recalled (always to PVW), suppose you want to switch Screen 2 & Aux 4 (the I-Mag screen & record deck) from Input 1 (cam 1) to Input 2 (cam 2).

To do this:

Press and hold Screen 2 on the Destination Bar, and select input 2 on the Preview bus.

Now press and hold Aux 4, then select Input 2 on the Preview bus.

The new input is now in Preview and you can make the transition. If you want to save this change to Preset 1, press and hold Preset Learn and select Preset 1. The change is now saved.

If this is a one-time change and you want keep Preset 1 as it was originally learned, simply do not re-learn it. When Preset 1 is recalled again, it will still have Input 1 (cam 1) learned to it.

OR

On the Scratch Group Bar press and hold “Clear,” then “Group Assign” to de-select all Groups.

Select just Groups 2 for the input change (our I-Mag screen & rec output).

Select the new Input Source (Input 2) on the Preview bus.

Now select Groups 1&2 on the Group Bar to re-select them for the subsequent transition.

As you become familiar with the console you will discover which methods are easiest and quickest for you.

Viewing A Preset

Press a Preset memory. The information learned to that memory location will go to Preview, and the appropriate Destination, Group and Preview Input source buttons will light.

It is possible that Multiple Input sources will be lit on the Preview bus because each Destination is capable of having a different input source.

You can press and hold an individual Destination switch on the Destination Bar and the Preview and Program bus will go dark except for the inputs associated with the selected Destination.

To Clear A Preset

Press and hold Preset Clear. Press the Preset Memory # you wish to clear. The Preset has now been cleared of previously recorded information.

PIP Presets

To save PIP size and position parameters for quick recall, size and position an image in Screen 1 Preview. Hold the Learn key down and then press the PIP A, PIP B, PIP C or PIP D key. The size and position of the PIP will be stored in Flash on the controller. After a PIP preset has been saved, pressing the PIP [A-D] button(s) will apply the preset to the screens currently active in the destination bus. If a PIP is currently in Program, pressing a PIP preset button will have no effect.

4

CHAPTER FOUR

Presentations with ScreenPro and ScreenPro PLUS

What you will find in this chapter…

- *Combining ScreenPro and ScreenPro PLUS*
- *Other Possible Configurations*

Presentations with ScreenPro and ScreenPro PLUS

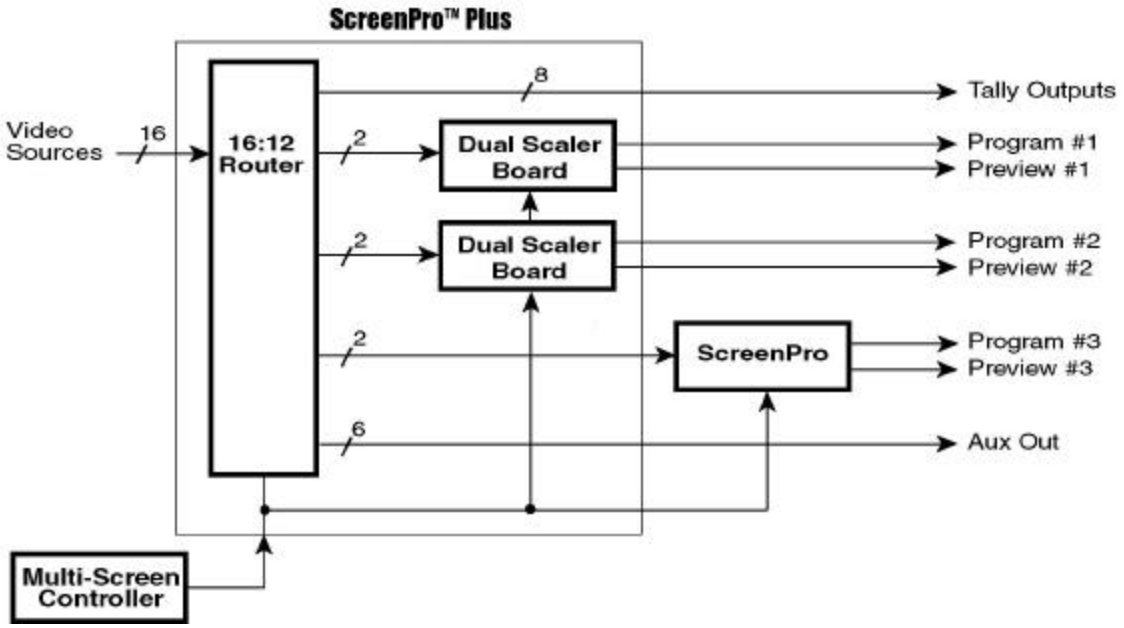
This section of the Operating Manual describes how the ScreenPro and ScreenPro PLUS products may be used together to support a wide variety of multi-screen presentations.

ScreenPro Product Overview

ScreenPro features eight universal inputs, an internal 8:2 router, dual video scalers, and a user-friendly front panel interface. This unit provides an ideal solution for single-screen presentations and may also be used with ScreenPro PLUS to support multi-screen events as described below.

Combining ScreenPro and ScreenPro PLUS Units

The ScreenPro and ScreenPro PLUS products are designed to work together to seamlessly support multi-screen applications. This allows the user to maximize return on investment by purchasing a combination of ScreenPro and ScreenPro PLUS units. For example, a customer may purchase a ScreenPro primarily for single-screen applications and a ScreenPro PLUS system with two Dual Scaler boards for two-screen applications. These units can be combined to seamlessly support a three-screen show as illustrated below.



The functionality provided is identical to a three-screen ScreenPro PLUS system, however, the customer derives the added benefit of being able to separate the components to simultaneously support one and two-screen presentations. A ScreenPro PLUS system with a single Dual Scaler board can be used with two ScreenPro units to support the same type of three-screen show.

Other Possible Unit Configurations

1 Screen Configuration	2 Screen Configuration	3 Screen Configuration
ScreenPro	ScreenPro PLUS 1202, 1602	ScreenPro PLUS 1203, 1603
ScreenPro PLUS 1201, 1601	Screen Pro PLUS 1201, 1601 with (1) ScreenPro unit	ScreenPro PLUS 1202, 1602 with (1) ScreenPro unit
		ScreenPro PLUS 1201, 1601 with (2) ScreenPro units

Applications with More Than Three Screens

For even more demanding applications Folsom Research manufactures the VFC-2200 Dual Scaler product line. VFC-2200 units can be used in conjunction with multi-screen controllers from Vista Control Systems to provide fully integrated presentations for up to six screens. The VFC-2200 also supports enhanced video processing features including smooth “camera like” pan and zoom, picture-in-picture operation and real-time window size and control. The VFC-2200 Dual Scaler accepts signals with up input resolutions up to 2048x1280 to provide compatibility with HDTV program material. For more information on this product, please refer to the VFC-2200 data sheet.

Further Questions?

At Folsom Research, we take pride in offering unique solutions to demanding technical problems. If you have questions, require further information or would like to discuss your application requirements in more detail, please call (916) 859-2500. John Orr and Andy Towers will be happy to supply you with the support you need.

5

CHAPTER FIVE
Software Upgrade Instructions

What you will find in this chapter…

- *Software Upgrade Instructions*
- *Programming the Console*
- *ScreenPro Plus External Control Protocol*
- *Important note to operators using 1:1 pixel sampling features*

Software Upgrade Instructions

Overview
The ScreenPro Plus units built by Folsom Research, Inc. incorporate the system software in a Flash memory component. Flash memory allows easy upgrades without the need to send the unit back to the factory due to software changes.

The loader utility provides the capability to update the system Flash module with the latest revision of software. The upgrade utility can be run from a hard drive (recommended) or a floppy drive. Running the loader from a floppy drive is discouraged though due to the slow speeds associated with disk access.

Hardware Requirements
* IBM compatible computer with an available COM port

* Serial cable conforming to EIA RS-232 specifications (i.e. Standard Modem cable)
(The cable should have a DB-9 male connector on one end)

* SCREENPRO PLUS unit or SCREENPRO PLUS with SCREENPRO(s) attached.

Software Requirements
* Window 95/98/NT/2000

* Flash File Loader

* SCREENPRO PLUS Software files

The Flash File Loader with the Software files can be downloaded from our FTP site as described below.

Connecting to Folsom Research
Folsom Research's FTP site address is: ftp.folsom.com

If you are using an FTP client, logon to our site using "anonymous" for the user name and your email address as the password (ex. johndoe@somecompany.com).

If you are using a web browser to access our FTP site, point the browser to: ftp://ftp.folsom.com

Downloading Necessary Files
ScreenPro Plus Software Files and Flash File Loader

Directory Location: ftp.folsom.com \products \video\sprplus
File to download: "SProPlus_Rev#####_###.exe"

Installing the ScreenPro Plus Software Files and Flash File Loader
Before installing the files, it is recommended that all running programs be properly shut down.

1) Click on the Start button and select Run.
2) Click on the Browse button and locate the "SProPlus_Rev#####_###.exe" file on your hard drive.
3) Double click on this file and then click OK to start the installation process.
4) Follow the on screen instructions to complete the install.

****** NOTE: Before proceeding, do the following: ******

1. Power on the controller unit.
2. Wait for the controller to finish booting.
3. Press the SYSTEM key.
4. Scroll to the TEST menu and press the ON/+ key.

5. Scroll to the VERSIONS menu and press the ON/+ key.

If the version number displayed is prior to 0.0.116, follow the instruction in the *Programming the Console* section below **BEFORE** continuing on with this upgrade, otherwise proceed to the next section of this document.

Starting the Flash File Loader Utility

After the files have been installed the ScreenPro Plus Flash File Loader can be selected to run.

1. Click on the Start button and select Programs.
2. Find the Folsom Research folder and select ScreenPro Plus Flash File Loader.

After the loader has started running, you can learn more about its operation by going to the Help menu and selecting Help Topics.

Preparing to Upgrade the ScreenPro Plus Unit

1. Plug the DB-9 male connector into the port labeled "EXT-1" on the back of the Controller unit.

2. Make sure the other end of the cable is attached to the available COM port on the back of the computer performing the upgrade.

3. In the loader program, click on the Configuration Menu and select RS232 Setup.

4. In the Communication Settings window, select the COM port the ScreenPro Plus Controller is attached to by clicking in the Serial Port field.

5. The ScreenPro Plus Controller defaults to a baud rate of 19.2K. The Baud Rate field should reflect this.

6. Once this is done, click on the Save button to go back to the main loader screen.

Verifying Communications between the Computer and ScreenPro Plus Unit

1. Turn on the ScreenPro Plus frame and wait for it to boot.

Note: If there are any external ScreenPro(s) attached, turn them on and set up the ID for the unit(s) in the EXT CONTROL submenu contained in the MISC Menu. Make sure a 25pin straight-through cable is attached between the ScreenPro(s) and the ScreenPro Plus frame.

2. In the loader program, click on the Program menu and select Terminal Window.

3. A terminal window will open. Several status lights are shown at the bottom of the window as well as the communication settings in the lower left corner of the window.

4. Turn the ScreenPro Plus Controller ON or do a power cycle if it were previously powered on and wait for it to boot.

5. Back at the Terminal window, the CTS status light should be RED.

6. If communications is established, the terminal window will display:
   Booting...
   ScreenPro Plus by VCS
   Version x.x.xxx

7. Back at the Controller display screen, make sure the correct number of screens is listed under the SCN lable. If the wrong number of screens is listed, power cycle the ScreenPro Plus Frame and any attached ScreenPro(s) and wait for them to boot completely. Verify the cable(s) between the external ScreenPro(s) if any are attached and check that their IDs are setup. Now power cycle the Controller and see if the correct number of screens is listed.

8. If any of the communication parameters are changed within the loader, it is recommended that the ScreenPro Plus Controller unit be powered cycled and the verification process started over.

Uploading Files to the ScreenPro Plus Unit

1. Once communications have been established and verified, click on the Start File Upload button to begin the upgrade process.

2. The RED box next to this button will turn GREEN and two progress bars will show the status of the upload.

3. After several minutes, the loader utility will inform the user that the process is complete.

4. At this point, direct your attention to the Controller where you will see it Relaying files to the ScreenPro Plus frame. Wait for this process to complete.

5. Once this is done, it is recommended that the entire system be powered cycled. You can also close the loader utility at this time.

6. Verify the new software is in the system by looking for the version numbers in the SYSTEM --> TEST --> VERSIONS menu. Make sure that the "GBx" which are installed in your system show the same version number.

7. Once you have verified the version number, it is recommended that a factory reset be performed by going to the SYSTEM menu and selecting RESET ALL.

Programming the Console

Requirements:
(1) 9 pin Serial Cable (F-M) wired pin 1 to pin 1 (not nulled) must be connected from PC Com port connector to Ext 1 connector on console.

1. Entering Code Loader Program:
   Power the console ON while holding the ***"SYSTEM"*** Key.

2. Set Communication Parameters
   Start HyperTerminal
   Select File-New Connection
   Name SPPlus Loader
   Direct to COMM port selection
   57600 baud
   8 data bits
   1 stop bit
   NO parity
   Flow control = NONE

   Note: By saving the HyperTerminal File these settings will not have to be made again.

3. Send X Modem Transfer
   Select Transfer-Send File
   Browse to Plusapp.bin (binary upload file)
   Select Xmodem in the protocol box.
   Click Send

4. Begin Upload
   On the console press the **"SYSTEM"** key to begin up load
   Verify Upload has begun by checking the send file dialog in your terminal window.

5. Upload Complete
   HyperTerminal will indicate the upload is complete when the send file dialog box disappears.

6. Flash Erase
   The console will automatically proceed and erase the application flash.
   Once this process has begun the console can no longer run application software until the new software has been written completely. The old software will have been erased.
   This process takes approximately 10 secs.
   Indication None

7. Flash Programming
   The console will automatically proceed to program flash, once it has been erased.
   This process takes approximately 30 secs.
   Indication: when complete, every other four lamps will light for approximately 4 secs.

8. Run New Code
   The console will automatically proceed to run the new application code. You can verify the version number in the System → Test → Version menu.
   Indicated by the Vista Banner and new version number appearing in the HyperTerminal Window.
   Also indicated by the lamps and displays being painted.

ScreenPro Plus External Control Protocol

Serial Command Syntax Specification

Serial Parameters

The following are the parameter settings for serial communication on EXT 1.

- Baud Rate is 38.4.
- Parity is NONE.
- Stop Bit is 1.
- Data Bit is 8.
- Echo is OFF.

The Controller respond to every <CR> with an ACK if the command was recognized and a NAK if the command was invalid.

The command syntax is shown below

cmd arg1 arg2 … argn<CR>

cmd	cmd is any valid Controller command, typically 2 to 6 alphabetic (non numeric) characters.
arg	arg1, arg2, … argn are required or optional parameters depending on the command used.
<CR>	carriage return (ASCII 13) terminates the command

A space (ASCII 32) must be inserted between the command and any arguments that follow. A space must also be inserted between all argument parameters except for the last argument in the chain.

All commands **must** be terminated with a carriage return (ASCII 13). The carriage return will tell the command processor to begin execution of the command.
If the command is not recognized as a valid command, a NAK is returned.

COMMAND LIST:

COMMAND	Name	Parameter(s) and Range
RP	Recall Preset	Preset Number (1..64)
RE	Recall Execute	Preset Number (1..64)
SIN	SELECT INPUT	[dddd] [V|G] [input]
FRZ	Freeze	[dddd] [V|G] [0|1]
TRN	Transition	[dddd] [rate][type] [0|1]

RECALL PRESET:

RP nn <CR>	
Parameters:	
nn	**Preset number to recall to Preview**

This command will recall a preset to Preview.

Example:

RP 4<CR>
This command recalls preset 4 to Preview.

RECALL & EXECUTE PRESET:

RE nn <CR>	
Parameters:	
nn	**Preset number to recall and execute.**

This command will recall a preset to Preview, wait for 300ms, then AutoTrans this preset to program. The delay is required to allow the scalers to lock to the new video sources.

Example:

RE 6<CR>
This command recalls preset 6 to preview,
waits 300ms,
then transitions preset 6 to program.

This command is specifically tailored for Timeline oriented control software. When backing up in a timeline, using this command will allow the PLUS controller to always remain in sync with the Timeline Software.

To eliminate the delay, execute the RP command first. If the RP command is issued and the preset is already recalled to Preview, then when the RE command is issued for the same preset number, the delay is bypassed. Since this preset has already had time to lock up in the scaler(s), the delay is not required. This method also allows you to back up in your timeline and remain in sync. If you only back-up as far as the RE command, but not as far as its preceding RP command, the images on screen are still in sync with your timeline software.

Example 2 (for timeline software control):

RP 22<CR>
This will recall preset 22 to preview.
RE 22<CR>
This will immediately execute an autotrans to place preset 22 in program.

SELECT INPUT:

SIN dddd bus input <CR>	
Parameters:	
dddd	**Destination flags in 4 digit hex**
bus	**'V'=Preveiew; 'G'=Program**
input	**decimal input number**

This command will select the input on the buss on destinations flagged in dddd.

Example:

SIN 000f V 16<CR>
This command sets preview to input 4 on screen 1,2,3,4.

IMPORTANT NOTE TO OPERATORS USING 1:1 PIXEL SAMPLING FEATURES

1:1 pixel sampling features were added with the release of software version 25.00.A. Previous software versions did not support internal phase calibration parameters. If you are upgrading a unit in the field please note the initial software version (see System Cfg. Menu -- Test Menu -- Versions submenu). If the version you are starting with is a higher version then 25.00.A phase calibration parameters have already been entered and the automatic phase calibration procedure is not required. If you are starting with a version prior to 25.00.A please perform the automatic phase calibration procedure described below after downloading the new software.

1. After loading the new software enter go to the System Cfg. menu – Phase Cal field and press ON/+.
2. Follow the instructions provided by the LCD display, which look similar to those below.

Loader Instructions

Connect a 5 wire BNC to BNC cable from Program #1 to Input #1. After the connection is made press ON/+ to begin calibrating.

3. The automatic phase calibration will proceed and report one of the following messages (if necessary):

Lock Error

The unit failed to lock. Insure the 5 wire BNC is connected from Main #1 to Input #1.

Calibration Error

Automated calibration has generated out or range calibration values. The unit may still work correctly. Consult factory for more information.

Note: If ScreenPro units are going to be used with the ScreenPro Plus, be sure to attach them to the Plus frame prior to performing the Phase Calibration procedure. If after the procedure is performed and different ScreenPros are attached to the Plus frame, the Phase Calibration procedure will have to be redone for 1:1 Sampling to work properly.

6

Chapter SIX
Folsom Research Information

What you will find in this chapter…

- *Warranty*
- *RMA Information*
- *Technical Support/General Contact Information*

Folsom Research Warranty

All video products are designed and tested to the highest quality standards and are backed by a full 3-year parts and labor warranty. Warranties are effective upon delivery date to customer. Warranty related repairs include parts and labor, but do not include faults resulting from user negligence, special modifications, lightning strikes, abuse (drop/crush), and/or other unusual damages.

The customer shall pay shipping charges when unit is returned for repair. Folsom Research will cover shipping charges for return shipments to customers.

Return Material Authorization (RMA)

In the unlikely event that a product is required to return for repair, please call 888-414-7226 and ask for a Sales Engineer to receive a Return Merchandise Authorization number (RMA).

RMA Conditions:

a) Prior to returning any item, you must receive a Return Merchandise Authorization (RMA) number.
b) All RMA numbers must appear on their return-shipping label.
c) RMA numbers are valid for ten (10) days from issue date.
d) All shipping and insurance charges on all RMA's must be prepaid by the customer

Folsom Research Contact Information

Sales Contact Information
Direct Sales Line: 916-859-2505
Toll Free Line: 888-414-7226
E-mail: sales@folsom.com

Technical Support Information
Tech Line: 888-414-7226 (Monday – Friday, 8 - 5 pm PST)

E-mail: support@folsom.com

General Company Information
Folsom Research, Inc.
11101-A Trade Center Drive
Rancho Cordova, CA 95670
Toll Free: 888-414-7226
Tel: 916-859-2500
Fax: 916-859-2515
Web Address: www.folsom.com

7

APPENDIX

- *Technical Specifications*

Technical Specifications

Video Input

Router

Input Channels: 16 (1600 Series) or 12 (1200 series).

Video Bandwidth: 350 MHz.

Input Sync Signals: Sync-on-Video; Separate C or H, V.

Connections: BNC.

Type

High-Resolution Video: Supports conversion of videos with horizontal scan rates up to 100 KHz and resolutions up to 1600x1200. Input RGB levels are independently programmable.

Standard Video: Accepts RGB, YUV, S-Video (Y/C), or Composite video formats. Input levels are independently programmable for RGB and YUV sources. Programmable luminance and chrominance levels are provided for S-Video, and Hue and Saturation Controls are provided for NTSC/PAL inputs. Motion adaptive de-interlacing is provided to maximize image quality.

Synchronization: The unit automatically locks to the incoming video source.

Video Output

High-Resolution Video: RGB video in user-selectable format; VGA (640x480), SVGA (800x600), XGA (1024x768), SXGA (1280x1024), (1280x720), (1280x768), (1365x768), (1365x1024).

Screens: Both the 1600 and 1200 series are modular systems that support one, two or three screens.

Main Outputs: The Main output for each screen consists of two independently buffered outputs: (1) RGBHV with five BNC connectors; (1) RGBHV with HD-15 connector.

Preview Output: The Preview output for each screen is (1) RGBHV with HD-15 Connector.

Output Sync Type: Separate C or H/V.

Mixing and Transition Effects: The unit supports seamless switching between sources, including the following transition effects: cut, dissolve, wipe. Transition times and wipe direction are fully programmable.

Physical

Height: 17.50" (44.5 cm).
Width: 19" (48.3 cm).
Depth: 20.25" (51.4 cm).
Weight: 45 lbs (20 kg); **shipping weight:** 52 lbs (23 kg).
Input Power: 85-250 VAC, 50-60 Hz, 250 W max.

Environmental

Temperature: 0-40 degrees C; Humidity: 0-95% non-condensing