

**WYOMING PBS SATELLITE PRODUCTION TRUCK UPGRADE EQUIPMENT**  
**High Definition Switcher Upgrade**

**Request For Bids**

**SECTION I General Conditions and Requirements**

NOTICE IS HEREBY GIVEN that Central Wyoming College is requesting bids for the purchase of a HIGH DEFINITION SWITCHER to upgrade Wyoming PBS' Satellite Production Truck. The Wyoming PBS Grant Administrative Assistant will receive bids at the offices of Wyoming PBS, 2660 Peck Avenue, Riverton, Wyoming 82501, until 1:30 p.m., Monday, June 27, 2011. Late bids will not be accepted. Bids shall be sealed and clearly marked "High Definition Switcher Upgrade". Bids will be opened and read publicly shortly after 1:30 p.m. at the offices of Wyoming PBS. A contract will not be awarded until the Central Wyoming College Vice President for Administrative Services has reviewed the bids and authorized negotiation of contracts.

Bid documents can be obtained at Wyoming PBS, Grant Administrative Assistant, 2660 Peck Avenue, Riverton, Wyoming 82501, or by calling Jan Jensen, at 307-856-6944. Questions regarding the equipment specifications should be directed to Kyle Nicholoff, Production Services Manager, Wyoming PBS 307-856-6944.

The College reserves the right to reject any and all bids and to waive any irregularities, formalities, or informalities in the bid process, and to award the bids as may be in the best interest of the College.

**1. SUBMISSION OF BIDS:** It is the responsibility of the bidder to carefully examine the Request for Bid document and be familiar with all of the requirements, stipulations, provisions and conditions. All changes, additions, or clarifications to the RFB documents will be done with a numbered addendum. No bids will be considered in which any of the conditions or provisions have been modified. No oral or telephone interpretations of the bid documents shall be binding upon the Central Wyoming College. Bids received after the time and date specified will not be considered and will be returned unopened to the firm. FAXED AND EMAIL BIDS WILL NOT BE ACCEPTED.

Three (3) copies of each bid are to be submitted to:

Ms. Jan Jensen, Grant Administrative Assistant  
Wyoming PBS  
2660 Peck Avenue  
Riverton, Wyoming 82501

Bids will be received no later than 1:30 p.m., local time, on June 27, 2011.

**2. VENDOR QUALIFICATION:** Bidders shall be the manufacturer of, or authorized representatives of the manufacturers of the equipment specified. The vendor shall be fully able to validate and execute warranty directly or on behalf of the equipment manufacturer.

**3. CONTRACTOR PREFERENCE:** Bidders are advised that the resident contractor preference and State of Wyoming materials preference statues contained in Wyoming Statutes Sections 16-6-102 and 16-6-106 and related statutes may apply to the submitted proposals to the extent required by law. Because of the nature of this RFB, the extent and the manner to which statutes apply will be considered and evaluated with respect to

each responsible proposal submitted. Those bidders claiming Wyoming residency should include a copy of their Wyoming Certificate of Residency.

This project is a public works project. The Owner is a community college district and a political subdivision of the State of Wyoming. As such, this project is subject to the state statutes concerning resident preferences, specifically, W.S. 16-6-102 and 16-6-106. It is the sole responsibility of the Contractor to become acquainted with and to comply with laws regarding resident preferences.

Pursuant to W.S. 16-6-102 (a), “... ***the contract shall be let to the responsible certified resident making the lowest bid if the certified resident’s bid is not more than five (5%) higher than that of the lowest nonresident bidder.***”

Pursuant to W.S. 16-6-106, “ ***preference is hereby given to materials, supplies, agricultural products, equipment, machinery, and provision produced, manufactured, supplies or grown in Wyoming, quality being equal to articles offered by the competitors outside of the state.***”

The extent and the manner to which these statutes, and any other applicable statutes, rules or regulations apply will be considered and evaluated with respect to each responsible bid submitted.

**4. ACCEPTANCE PERIOD:** All bids shall be firm for a period of 90 (ninety) days from the date bids are due.

**5. AWARD OF BID:** Acceptance of bids is contingent upon available funding and official approval. This bid cannot be assigned or transferred without the written consent of Central Wyoming College. Where terms conflict, provisions contained within this RFB take precedence.

Minority business enterprises will be afforded full opportunity to submit a bid and to contract with the college and will not be subject to discrimination on the grounds of race, creed, national origin, sex or handicap in consideration for an award.

By submitting a bid, the firm certifies under penalty of perjury that it has not acted in collusion with any other firm.

**6. PROPERTY OF THE DISTRICT:** Documents submitted, as a response to this RFB, shall become the property of Central Wyoming College. Such documents, as property of Central Wyoming College, are subject to public disclosure as prescribed by Wyoming statutes. Proprietary information must be identified and will be protected to the extent allowable by Wyoming law.

**7. CONSIDERATION OF BIDS:** Price, warranty, any recurrent fees and the equipment that best integrates with the existing system while meeting the needs of Wyoming PBS will be factors in the selection of the equipment.

**8. WARRANTY:** Warranty periods will commence with the completion of a full proof of performance test by the vendor’s representative witnessed on site by a Wyoming PBS representative. Vendor and/or manufacturer shall be responsible for the shipping cost both ways and any other expenses for equipment repair on site or elsewhere for any equipment which is not received in an operating condition and meeting the manufacturer’s published specifications. Equipment warranty statements shall be provided with the bid response.

**9. RETENTION OF FUNDS:** Wyoming PBS shall retain Ten (10) percent of the total bid price as a final payment until all equipment, material and documentation meeting specifications are delivered to Wyoming PBS and all claims and provisions of the contract are completed.

**10. SHIPPING:** All equipment and material shall be shipped to the attention of the Kyle Nicholoff, Production Services Manager, Wyoming PBS, 2660 Peck Avenue, Riverton, WY 82501 not later than 120 days after receipt of order. Methods and schedule of shipping shall be arranged upon letting of the contract. The successful bidder(s) shall prepay freight and present invoices for the actual amount of the shipping charges. As part of the proposal response bidders shall provide an estimate of the freight charges.

**11. EXCEPTIONS/ SUBSTITUTIONS/ ALTERNATIVES:** Exceptions to any part of specification shall be indicated in writing and included with the bid response designating the section, item number and/or paragraph to which the exception refers. Central Wyoming College may consider equipment other than that specified if equal or better specification, function and value. Bidders proposing alternative equipment shall provide sufficient documentation to permit Central Wyoming College to evaluate any such alternative.

**12. LAWS AND REGULATIONS:** All equipment shall comply with applicable Federal, State and local laws, regulations and codes and be constructed using best engineering practices.

**13. MANUALS:** Except as noted at least two (2) copies each of a maintenance and operation manual (instruction sheet) shall be provided of each model type of equipment supplied. Whenever possible, manuals should be provided in electronic form also.

**14. EXTENDED MAINTENANCE AGREEMENTS:** Vendors shall indicate in their response any costs associated with ongoing software and hardware support beyond the initial warranty period.

## **SECTION II Detailed Specifications**

### **1. Ross Vision 2M multi-definition Video Production Switcher**

#### **1.1 Video Processing**

Switcher video processing shall meet the following specifications:

##### **1.1.1 Standard Definition**

**1.1.1.1** 10 Bit 4:2:2 component digital video and key processing

**1.1.1.2** 480i/59.94 (525 line) conforming to SMPTE 125M and SMPTE 259M-C

**1.1.1.3** 576i/50 (625 line) conforming to ITU-R BT.601-5 and SMPTE 259M-C

**1.1.1.4** 4:3 and anamorphic 16:9 switchable aspect ratio (wipe patterns)

**1.1.1.5** Video delay through the switcher in SD modes to be less than ¼ line.

##### **1.1.2 High Definition**

**1.1.2.1** 10 Bit 4:2:2 component digital video and key processing

**1.1.2.2** 1080i/59.94 conforming to SMPTE 274M and SMPTE 292M

**1.1.2.3** 720p/59.94 conforming to SMPTE 296M and SMPTE 292M

**1.1.2.4** 1080i/50 conforming to SMPTE 274M and SMPTE 292M

**1.1.2.5** 720p/50 conforming to SMPTE 296M and SMPTE 292M

**1.1.2.6** 1080pSF/24 conforming to SMPTE RP 211 and SMPTE 292M

**1.1.2.7** 1080pSF/23.98 conforming to SMPTE RP 211 and SMPTE 292M

**1.1.2.8** 1080p/24 conforming to SMPTE 292M

**1.1.2.9** Video delay through the switcher in HD modes to be less than ¼ line.

#### **1.2 Video and Key Inputs**

**1.2.1** The switcher shall include 16 standard inputs.

**1.2.2** The switcher shall be expandable up to 48 inputs internally without an external matrix or routing system.

**1.2.3** Switcher video and key inputs shall meet the following specifications:

**1.2.3.1** BNC, 75 Ohm Terminating

**1.2.3.2** Standard Definition equalization at 270 Mb/s for >150 meters (500 feet) of Belden 1694 or equivalent cable

**1.2.3.3** High Definition equalization at 1.5 Gb/s for > 75 meters (250 feet) of Belden 1694 or equivalent cable.

### **1.3 Video Outputs**

**1.3.1** The switcher shall be expandable to 16 outputs with 48 inputs or 24 outputs with 32 inputs all of which will be assignable.

**1.3.2** All output buses are to be auto-timed.

**1.3.3** Switcher video and key outputs shall meet the following specifications:

**1.3.3.1** 10 Bits, conforming to ITU-R BT.601-5, SMPTE 259M-C and SMPTE 292M

**1.3.3.2** BNC, 75 Ohm

**1.3.3.3** Signal Level: 800mV +/- 10%

**1.3.3.4** Output Jitter: <130ps

**1.3.3.5** Rise and Fall Time: 800 ps +/- 10% (SD), 240 ps +/-10% (HD)

**1.3.3.6** Return Loss: >18 dB at 1.5GHz

**1.3.3.7** DC Offset: 0 Volts

**1.3.3.8** Overshoot: < 8%

### **1.4 Serial Ports**

**1.4.1** The switcher shall be equipped with 12 assignable RS-422 ports for external device interfacing and control.

**1.4.2** The switcher shall offer an optional port expansion to allow up to 36 RS-422 ports.

### **1.5 Ethernet Network Ports**

**1.5.1** The switcher shall be equipped with two 10/100 Mb/s Ethernet ports for video and graphics networking and software upgrades.

### **1.6 General Purpose Inputs and Outputs**

**1.6.1** The switcher shall be equipped with 10 general purpose inputs.

**1.6.2** The switcher shall be equipped with 10 general purpose outputs.

### **1.7 Tally Outputs**

**1.7.1** The switcher shall be equipped with 36 assignable tally outputs.

**1.7.2** Switcher tally outputs shall be expandable to 72.

**1.7.3** Tally outputs shall be a dry contact closure type.

**1.7.4** The switcher shall offer optional serial tally outputs using industry standard tally protocols.

### **1.8 Power Requirements**

**1.8.1** The switcher shall be UL and CE certified.

**1.8.2** The switcher shall incorporate auto-sensing supplies capable of 110V/60Hz operation or 220V/50Hz operation.

**1.8.3** The switcher shall include capabilities for redundant power in both the mainframe and control panel.

**1.8.3.1** Redundant power supplies shall be incorporated to share the load, so that supplies are continuously "hot".

**1.8.3.2** Redundant power supplies shall have separate power cords for both main and redundant power supplies.

**1.8.4** The switcher control panel must provide a power fail indication for both the control panel and rackframe power supplies. It must provide an indication of failure if either of the main or redundant supplies fails or if there is a fan failure in the power supply.

### **1.9 Rack Space**

Rack space shall not exceed 3 RU including redundant power, tally connections, serial device control ports and DVEs.

### **1.10 Hardware Warranty**

**1.10.1** All hardware shall be covered by a 1 year warranty.

1.10.2 The hardware warranty shall be transferable to a new owner.

1.10.3 **The manufacturer shall quote the cost, on a per year basis, for an extended hardware warranty.  
( see section 1, paragraph 14 above)**

## **2.0 Software**

### **2.1 Software Updates**

2.1.1 Software updates shall be available electronically from the manufacturer's web site or via email.

2.1.2 The switcher shall be capable of software updates via the switcher's internal disk drive or via Ethernet.

2.1.3 Software updates shall be available free of charge for a minimum period of three years from date of purchase.

2.1.4 Electronic versions of current manuals matching the current software versions must be available from the switcher menu and available to be exported for printing.

### **2.2 3rd Party Software**

The switcher manufacturer shall declare any dependencies on third party software such as operating systems outside of the manufacturer's direct control. If a 3<sup>rd</sup> party operating system is utilized, the manufacturer shall state the mechanism by which software bugs introduced in the 3<sup>rd</sup> party software will be fixed. All 3<sup>rd</sup> party software shall be covered by a minimum 3 year warranty and software updates shall be available free of charge for a minimum period of three years from date of purchase. Any ongoing licensing fees on 3<sup>rd</sup> party software that are required to stay current shall be clearly stated by the manufacturer.

## **3.0 Production Capabilities Specifications**

### **3.1 Control Panel General Capabilities**

3.1.1 The switcher control panel shall utilize the industry standard next transition style of operation.

3.1.2 The switcher control panel shall be equipped with a 3-axis joystick for DVE, border, and wipe control.

3.1.3 The switcher control panel shall be capable of controlling 8 MEs.

3.1.4 The switcher control panel shall be equipped with a fader position LED indicator.

3.1.5 The switcher control panel shall include an integrated Windows and Macintosh OSX compatible USB drive for effects memory storage.

3.1.6 The switcher control panel shall include a PC-compatible keyboard and mouse ports for switcher setup, still management and menu function control.

3.1.7 The switcher control panel shall include USB ports for keyboard, mouse, and USB media drive connections

3.1.8 The switcher control panel shall incorporate a menu system for detailed operational control and technical set up.

3.1.9 The switcher menu system shall be capable of running 2 separate instances of operational control menus.

3.1.10 The switcher menu shall be a 12.1 inch touchscreen display with soft buttons and control knobs.

3.1.11 The switcher control panel shall have 24 assignable source buttons that can be user color themed.

3.1.12 The switcher control panel shall offer optional 8-character mnemonic displays for each ME.

3.1.13 The switcher control panel shall have standard 8-character mnemonic displays in the Keyer sections of every ME for each Keyer. These displays will feedback source and key type information to the user.

3.1.14 The mnemonic displays shall support a minimum of three separate colors for distinct source identification.

3.1.15 All buttons on the switcher panel shall be 30-bit LEDs that the user can adjust to any color. These color themes shall be ME independent.

### **3.2 Mix Effects (ME) Capabilities**

3.2.1 The switcher shall be equipped with 2 full MEs.

3.2.2 The switcher shall be capable of expanding up to 4 MEs.

3.2.3 Each ME shall have ability to wipe between any combination of background, key 1, key 2, key 3 and key 4 by the push of the ME fader handle or auto transition button.

3.2.4 Each ME shall have the ability to dissolve between any combination of background, key 1, key 2, key 3 and key 4 by the push of the ME fader handle or auto transition button.

3.2.5 Each ME shall have the ability to use the internal DVE as a transition between any combination of background, key 1, key 2, key 3 and key 4 by the push of the ME fader handle or auto transition button.

3.2.6 Each ME shall include 4 effects keyers.

3.2.7 Each ME shall include 8 pattern generators for wipes, washes, pattern keys and masking.

3.2.8 Each ME shall include 2 quality chroma keyers.

- 3.2.9 Each ME shall include a 5<sup>th</sup> keyer exclusively for transition effects with the internal DVE.
- 3.2.10 Each ME shall have key priority transition capability.
- 3.2.11 Each ME shall have the ability to set a transition limit.
- 3.2.12 Each ME shall have 100 dedicated memories
- 3.2.13 Each ME shall have the option for internal still stores on program and preset buses and in the keyers.

### **3.3 Program/Preset Bus Capabilities**

- 3.3.1 The Program/Preset Bus shall have ability to wipe between any combination of background, key 1, key 2, key 3 and key 4 by the push of the fader handle or auto transition button.
- 3.3.2 The Program/Preset Bus shall have the ability to dissolve between any combination of background, key 1, key 2, key 3 and key 4 by the push of the fader handle or auto transition button.
- 3.3.3 The Program/Preset Bus shall have the ability to use the internal DVE as a transition type between any combination of background, key 1, key 2, key 3 and key 4 by the push of the fader handle or auto transition button.
- 3.3.4 The Program/Preset Bus shall include 4 full function keyers.
- 3.3.5 Each ME shall include 8 pattern generators for wipes, washes, pattern keys and masking.
- 3.3.6 The Program/Preset Bus shall include 2 quality chroma keyers.
- 3.3.7 The Program/Preset Bus shall include a 5<sup>th</sup> keyer exclusively for transition effects with the internal DVE.
- 3.3.8 The Program/Preset Bus shall have the ability for preset black transitions.
- 3.3.9 The Program/Preset Bus shall have 100 dedicated memories.
- 3.3.10 The Program/Preset area shall have the option for internal still stores on program and preset buses and in the keyers.

### **3.4 Extended Downstream Keyers**

- 3.4.1 The switcher shall have the ability to add 2 additional downstream keyers for auto select and self key capability for a total of 6 Keyers in PGM/PST ME.

### **3.5 Pattern Generators**

- 3.5.1 The switcher shall be equipped with 2 pattern generators in each ME with a selection of classic, rotary, and matrix wipes.
- 3.5.2 The switcher shall be equipped with 6 pattern generators in each ME with a selection of classic wipes.
- 3.5.3 The pattern generators shall have an array of buttons on the control panel display menu for direct pattern selection.
- 3.5.4 The patterns shall be accessible for preset pattern keys, wipes, washes and masks.

### **3.6 Matte Generators**

- 3.6.1 The switcher shall be equipped with 10 matte generators in each ME, 2 of which will be capable of complex multi-color washes.
- 3.6.2 Any one of the color generators shall be assignable to background colors, key fills, borders, or wipe pattern edges.

### **3.7 Effects Keyers**

- 3.7.1 The ME effects keyers shall have the following key types: self key, auto select key, chroma key, and preset pattern key.
- 3.7.2 The Program/Preset keyers shall have the ability to perform self key, auto select key, chroma key, and preset pattern key.
- 3.7.3 The effects keyers shall employ a shared key bus with display for Key 1, Key 2, Key 3 and Key 4.
- 3.7.4 The effects keyers shall allow split key operation.
- 3.7.5 The effects keyers shall incorporate a unique memory for each auto-key source.
- 3.7.6 All effects keyers must have separate keyer source and type indication without requiring delegation.
- 3.7.7 A chroma key must be possible in two ME Keyer at the same time.

### **3.8 Internal 3D DVE**

- 3.8.1 The switcher shall include as an option up to 2 channels of internal 3D DVE per ME.
- 3.8.2 The internal DVE shall be able to fly self keys, auto select keys, chroma keys, and boxes at the push of a single button.
- 3.8.3 The internal DVE shall be able to float between ME 1 and ME 2.
- 3.8.4 The internal DVE shall be able to float between ME 3 and ME 4.
- 3.8.5 The internal DVE shall be controllable via the switcher control panel joystick for X, Y, and Z-axis control.

- 3.8.6 The internal DVE shall pass a full 10 bits of resolution.
- 3.8.7 The internal DVE shall incorporate sub pixel motion for smooth motion.
- 3.8.8 The internal DVE shall incorporate key frame style effects programming via a sequence menu system.
  - 3.8.8.1 Two levels of timeline control shall be incorporated to enable nested motion paths.
- 3.8.9 The internal DVE shall be capable of a four box, interview effect with borders.
- 3.8.10 The internal DVE shall be available for use as push wipes. There shall be a minimum of 40 preset push wipes available.
  - 3.8.10.1 The internal DVE will enable customization or user programming of push wipes.
- 3.8.11 The internal DVE shall incorporate a wide range of preprocessor effects including defocus, mosaic, posterization, colorization, and strobe.
- 3.8.12 The internal DVE shall incorporate a positionable lighting generator for lighting effects.
- 3.8.13 The internal DVE shall include a wide variety of curvilinear or warp effects including Page Turn.
- 3.8.14 The internal DVE shall incorporate an object builder.
- 3.8.15 The internal DVE shall include a border generator capable of a variety of frame effect borders.

### **3.9 Border Generators**

- 3.9.1 Each ME shall have optional border generators for each keyer.
- 3.9.2 Border generators shall include border, outline, shadow, and ghost modes.
- 3.9.3 Border generators shall also include advanced key trail modes.

### **3.10 Memory System**

- 3.10.1 The switcher shall be equipped with a minimum of 100 independent memories per ME.
- 3.10.2 Each ME shall have its own memory keypad for controlling the memories associated with that ME.
- 3.10.3 The memory system will handle stores and recalls as well as effects dissolve capabilities.
- 3.10.4 The memory system shall allow keys only recalls to recall only key settings without affecting the background and preset buses.
- 3.10.5 The memory system shall retain the source when it is held down on either a background or key bus when a memory is recalled.
- 3.10.6 The memories shall offer sports mode operation – the ability to limit banks enabled starting at 0 and enabling the last bank as any one between 0 and 9.
- 3.10.7 The memory system shall offer an attributes mode to allow the user to specify all buses including aux buses that are to be recalled within the memory. Further Keyer state shall also be selectable to be recalled with the memory. Still Store Channels shall have the ability on a per channel basis to specify recall of still/clip. Transition area attributes for Next Transition settings, Transition type and Auto Run shall also be set to recall or not. Each Memory shall also have the ability to attach and Auto Run a Macro.

### **3.11 Macro Buttons**

- 3.11.1 The switcher shall be equipped with a minimum of 24 dedicated, user definable macro buttons located on the switcher control panel.
- 3.11.2 The macro buttons shall be shiftable, to allow up to twelve banks of 12 (or 144) macros.
- 3.11.3 The switcher shall offer 8-character mnemonic displays to display the names of the user definable macros.
- 3.11.4 The macro buttons shall be capable of recalling user keystrokes and memory recalls.
- 3.11.5 The macro buttons shall be capable of recalling timeline sequences.
- 3.11.6 The macro buttons shall be capable of controlling external devices connected to the switcher via serial control.
- 3.11.7 The macro buttons shall be capable of recalling auxiliary bus crosspoint selections.
- 3.11.8 The switcher shall offer optional shotbox modules extending the capabilities of the macro system with user layouts and additional macro buttons. These modules can be mounted externally for remote access control.
- 3.11.9 The switcher shall offer the ability to run additional macros from the GUI.
- 3.11.10 The switcher shall offer the ability to attach or replace any button on the panel with a macro.
- 3.11.11 The switcher shall offer the ability to run up to 10 macros at the same time including the embedding of macros within other macros.

### **3.12 Preview Capabilities**

- 3.12.1 The switcher shall have independent preview outputs from each ME.
- 3.12.2 The switcher shall have a built in preview switcher with dedicated control panel buttons that allows selection of any ME's program or preview output on the main (switched) preview output from the switcher.
- 3.12.3 The switcher shall have a separate preview output with the following graphical overlay:
  - 3.12.3.1 Safe Area and Safe Title.
  - 3.12.3.2 Center Cross Hairs.
  - 3.12.3.3 Program and Preset Source ID and Transition Type Selected.
  - 3.12.3.4 Count Up/Down Timer.
  - 3.12.3.5 Mask Preview.
  - 3.12.3.6 VTR or Server Time Code from a controlled device for the On-Air and next to air channels.

### **3.13 Clean Feed Capabilities**

- 3.13.1 Each ME and the Program/Preset area shall have two fully programmable clean feed outputs, which can be derived from either before or between the keyers in the ME.

### **3.14 Auxiliary Bus Control Panels**

- 3.14.1 The switcher shall offer, as an option, a remotely positionable, dedicated auxiliary bus control panel for control of a single auxiliary bus.
- 3.14.2 It shall be possible to connect up to 24 auxiliary bus control panels to the switcher.
- 3.14.3 The switcher shall offer, as an option, an enhanced control panel that adds source mnemonics and mnemonic function buttons for macro assignment

### **3.15 Global Still and Video Store**

- 3.15.1 The switcher shall offer 3 independent channels of global still and video store that is available as inputs to the switcher crosspoint buttons.
- 3.15.2 The still store channels shall be capable of either still or moving video or key play back.
- 3.15.3 The still store shall contain non-volatile storage for over 800 SD or 138 HD online stills.
- 3.15.4 The still store shall have rapid access to additional stills from the internal hard disk drive.

### **3.16 ME Still and Video Store**

- 3.16.1 The switcher shall offer 4 independent channels of ME still and video store that are available as background, preset, and key sources.
- 3.16.2 The still store channels shall be capable of either still or moving video or key play back.
- 3.16.3 The still store shall contain non-volatile storage for over 800 SD or 138 HD online stills.
- 3.16.4 The still store shall have rapid access to additional stills from the internal hard disk drive.

### **3.17 Auxiliary Bus Mixing and Keying**

- 3.17.1 The switcher shall offer the ability to mix and key on auxiliary bus outputs.
- 3.17.2 The switcher shall be able to control these functions from the control panel, through macros and from the remote auxiliary control panels.
- 3.17.3 No ME keyer or transition resources should be utilized to perform this function.

### **3.18 Hard Disk Drive**

- 3.18.1 The switcher shall include a hard disk drive to provide additional storage for stills, video images, configuration settings, memory settings, DVE effects timelines, and macros.
- 3.18.2 The hard drive is to be accessible via either Ethernet port for graphic file transfer into the switcher.

### **3.19 Internal Proc Amps**

- 3.19.1 The switcher shall offer an optional digital proc amp capability with luma gain, chroma gain, and chroma phase adjustments.

### **3.20 RGB Color Correctors**

- 3.20.1 The switcher shall offer optional RGB color correctors.

### **3.21 Up/Down Format Conversion**

- 3.21.1 The switcher shall offer, as an option, an up/down conversion loop-through with Aux Bus Tie Line Management technology.
- 3.21.2 The switcher shall have the ability to produce an output video that uses both SD and HD inputs simultaneously.
- 3.21.3 All buses in the switcher, including key and utility buses, shall be supported.

3.21.4 All inputs on the switcher shall be available for conversion.

3.21.5 All Wings/Pillar Box video insertion will not require the use of an ME Keyer or Utility bus.

#### **4.0 External Device Control and Integration**

##### **4.1 General Purpose Inputs (GPIs) and General Purpose Outputs (GPOs)**

4.1.1 The switcher shall have a minimum of 10 general purpose inputs that allow any cut, auto-transition, or macro button on the control panel to be “pressed” from an external contact closure.

4.1.2 The switcher shall have a minimum of 10 general purpose outputs that allow external devices to be triggered from both macro buttons and memory recall attributes.

##### **4.2 Editor Interface**

4.2.1 All popular editing systems shall have the ability to control the switcher using an RS-232 or RS-422 interface and industry-standard GVG 100, GVG 200 or GVG 4000 editor protocol.

##### **4.3 VTR Control (Serial)**

4.3.1 The switcher shall have the capability of controlling VTRs directly via RS-422 or RS-232, using Sony serial VTR protocol.

4.3.2 VTR commands shall include stop, play, fast-forward, rewind, frame advance, and frame reverse.

4.3.3 The switcher shall be capable of saving and recalling VTR clips.

4.3.4 The switcher must have the ability to link VTR clips to switcher memory recalls.

4.3.5 The switcher shall have the capability to automatically roll a VTR, with the correct pre-roll time when selected on a background or key bus using a cut, auto-transition, or direct selection.

4.3.6 The switcher shall have target devices for DDRs based on the Betacam protocol for Doremi, Drastic Technologies and Fast Forward Video.

##### **4.4 Video Server Control**

4.4.1 The switcher shall have the ability to control the Grass Valley Group Profile, MSeries, K2, Harris VR / Nexio, Bug.TV, Pinnacle Thunder, Vortex, and Media Stream, GEEVS, 360 Systems, Omneon, Spencer Technologies, Avid AirSPACE and Airspeed / Multi Stream, EVS maXS/XT, Abekas 6000 / Mira, Ross SMS, Bitcentral Precis, and Video Technics Apella video servers.

4.4.2 The switcher shall have the capability of directly controlling video servers serially via RS-422 or RS-232 using the industry standard Video Disk Control Protocol (VDCP) as published by Harris (Louth) Automation.

4.4.3 The switcher shall have the capability of saving and recalling video server clips for quick recall from the switcher control panel.

4.4.4 The switcher shall have the ability to link video server clips to switcher memory recalls.

4.4.5 The switcher shall have the capability to automatically roll a video server, with the correct pre-roll time when selected on a background or key bus using a cut, auto-transition, or direct selection.

##### **4.5 Audio Server Control**

4.5.1 The switcher shall have the capability of directly controlling Sony MiniDisc Players, the Enco DAD, and the 360 Systems DigiCart II and DigiCart/E serially via RS-422 using the native protocol as published by the respective manufacturer.

4.5.2 The switcher shall have the capability of saving and recalling audio server clips for quick recall directly from the switcher control panel.

4.5.3 The switcher shall have the ability to link audio server clips to switcher memory recalls and Macros.

##### **4.6 External Router Integration**

4.6.1 The switcher shall have the ability to integrate with a 3<sup>rd</sup> party external routing system manufactured by Miranda/NVision, Pro-Bel, Pesa, Evertz/Quartz, Thomson Grass Valley, Harris/Leitch, Sierra, Extron, Utah Scientific, or Codan via a serial RS-422 or RS-232 interface.

4.6.2 The switcher shall allow selection of router crosspoints directly from the switcher control panel.

4.6.3 The switcher shall allow the user to scroll all available router sources directly from the switcher’s control menu.

##### **4.7 External Audio Mixer Integration**

4.7.1 The switcher shall integrate with a Yamaha 01V96, 02R96, DM-1000, DM- 2000, M7CL, PM5D, LS-9, Wheatstone D6, D7, D9, D10, E5, E6, Calrec Alpha, Sigma, Omega, Zeta, Studer On Air 3000, Lawo mc2, Euphonix Max Air and System 5 audio mixers for audio follow video mixing.

**4.7.2** The interface shall be via Yamaha's MIDI protocol, serial protocol, Wheatstone's Ethernet protocol, Calrec, Lawo and Euphonix all via the serial Ross Audio Protocol, or Studer's Ethernet protocol.

**4.7.3** The audio mixer interface shall enable mapping of audio mixer sources to video switcher sources.

**4.7.4** Individual audio levels must be quickly adjustable from the video production switcher control panel.

**4.7.5** The switcher shall offer optional audio mixer ganging, which enables control of a pair of cascaded Yamaha audio mixers, simultaneously.

#### **4.8 External Robotic Camera System Integration**

**4.8.1** The switcher shall integrate with a Telemetrics, AMX, Cambotics, Canon, Hitachi Eagle, Sony VISCA, Panasonic, ParkerVision CameraMan, Vinten Fusion/200, Shotoku or Radamec robotics camera systems.

**4.8.2** The interface shall be direct, using native protocols or VISCA protocol over RS-422 or Ethernet depending on device. Bid Spec, 2 ME Multi-Def Switcher April 2010 11 of 11

**4.8.3** The switcher shall be able to adjust the robotic camera system directly via the 3-axis joystick located on the switcher control panel.

**4.8.4** Robotic controls are to include Pan, Tilt, Zoom, Focus, Iris, Pedestal, and Scene Store and Recall where supported by the Robotics Control Manufacturer.

#### **4.9 Peripheral Bus Interface**

**4.9.1** The switcher shall offer an optional Peripheral Bus 2 protocol interface for external device integration.

#### **4.10 Still Store Interface**

**4.10.1** The switcher shall offer an optional Still Store Chyron protocol interface for control over the Chyron Aprisa Still and Clipstore.

#### **4.11 Character Generator Interface**

**4.11.1** Using serial control, the switcher shall be capable of controlling a character generator directly from the control panel.

**4.11.2** The switcher shall have the ability to integrate with the Ross Video XPression, Insciber Inca CG, Inca G Series, Avid/Pinnacle Deko series, Chyron Duet LEX/HyperX Series, Orad Maestro, Vizrt Pilot v5 and Trio.

**4.11.3** The switcher shall have the ability to pass MOS commands to Ross Video XPression, Chyron Camio, Deko series, Vizrt Pilot v5 and Trio models, Miranda Vertigo, Orad Maestro and Pixel Power Clarity from the connected Production Control Automation System.

#### **4.12 Serial Tally Device Interface**

**4.12.1** Using a Contribution Serial Tally Protocol the switcher shall be able to interface to devices to deliver Tally, Source Mnemonic and Output Bus status.

**4.12.2** The switcher shall support Evertz MVP, VIP, Image Video TSI 1000, Miranda Kaleido KX, K2, Talia Kookaburra, and the TSL Tallyman.

**4.12.3** Switcher will allow the mnemonic display source names to update via the TSL UMD update protocol.

#### **4.13 Multi-Image Display Integration**

**4.13.1** The switcher shall have the ability to interface with the Miranda Kaleido-K2, KX, Alto and Quad monitor wall using native protocol.

**4.13.2** Using the macro buttons, the switcher shall be able to load a preset layout, change the input channel on a particular monitor, or edit dynamic text.

#### **4.14 Production Automation Support**

**4.14.1** The switcher shall be capable of adding a production automation system as an option.

**4.14.2** The respondent shall fully describe their suggested production automation solution.

**4.14.3** The production automation solution shall be able to integrate with newsroom systems AP ENPS, Autocue Qnews, Dalet and Avid iNews.

### **SECTION III Options**

Vendor will supply costs for the following options.

#### **1. Vision 2M Control Panel**

**1.1** Standard Panel Includes:

- 1.2** 24 Crosspoint Buttons on Panel
  - 1.3** 2 Multi-Level Effects Systems (MLE) Control Areas
  - 1.4** USB Ports for Keyboard, Mouse, and Media Drives
  - 1.5** Auto-Follow, Industrial Grade, Dual Display System Control Touch Screen
  - 1.6** 24 Custom Control Macro Buttons with 8 Way Shift
  - 1.7** On-Panel Aux Bus Control
  - 1.8** Source Awareness™ Automatic Features
  - 1.9** Unique Ross "Roll Clip" Button in Every MLE
  - 1.10** 100 Event Memory System
  - 1.11** Preview Overlay™ Safe Area/Title and Operator Heads-Up Information Display
  - 1.12** 36 Fully Assignable Parallel Tally Outputs
  - 1.13** Panel Glow User Definable Button Color Themes
- 2.** Mnemonics for Custom Control Macro Buttons
    - 2.1** Mnemonics for Custom Control Macro Buttons
    - 2.2** 24 Eight Character Mnemonic Displays.
    - 2.3** 16 Eight Character Mnemonic Displays.
- 3.** Mnemonics for MLE 1 Sources
    - 3.1** 24 Eight Character Mnemonic Displays for MLE 1.
- 4.** Mnemonics for MLE 2 Sources
    - 4.1** 24 Eight Character Mnemonic Displays for MLE 2.
- 5.** Vision Endblocks
- 6.** QMD Live Production Engine 2 MLE (Rack Frame)
    - 6.1** Rack Frame Processing Engine including all Standard System boards
    - 6.2** Standard System Includes:
    - 6.3** Multi-Definition support for any of the following formats:
    - 6.4** 525, 625, 1080i 50, 1080i 59.94, 720P 50, 720P 59.94, 1080P 24, 1080PSF 24
    - 6.5** 1080PSF 23.98
    - 6.6** 16 Multi-Definition Serial Digital Inputs, expandable to 32 or 48
    - 6.7** Up to 4 Multi-Level Effects Systems (MLE)
    - 6.8** 4 Keyers in Full MLEs and 2 Keyers in Half MLEs
    - 6.9** 2 UltraChrome™ Chroma Keyers with Super Fine Keying Quality in every MLE
    - 6.10** 4 Channel Global-Store with 1 GB of Memory (818 Stills in SD or 138 in 1080i HD Mode or 311 in 720p HD Mode)
    - 6.11** Up to 24 Powerful Pattern Generators and 8 Complex Wash Generators
    - 6.12** Wipes in Program/Presets on Full MLE Systems
    - 6.13** Outputs are not Included. Configurable to 16 Outputs or 24 Outputs (with a max of 32 Inputs)
    - 6.14** Hard Disk Drive for Storing Configurations, Stills, Animations and Clips
    - 6.15** 100 Event Memory System
    - 6.16** FlexiClean™ Assignable Clean Feed Outputs per MLE
    - 6.17** Preview Overlay™ Safe Area/Title and Operator Heads-Up Information Display
    - 6.18** 10 GPI Inputs, 10 GPI Outputs
    - 6.19** 3RU Chassis (including Power Supplies)
    - 6.20** Full 10-Bit Processing in both HD and SD modes

- 6.21** 4:3/16:9 Switchable
- 6.22** 10 Meter Control Panel Cable
- 6.23** Comprehensive System Operation and Engineering Manuals Disc
- 6.24** Full 1 Year Transferable Warranty
- 6.25** Lifetime Software Updated via Ross Website, Lifetime Telephone Support MDI MD Inputs, 16 Additional
- 6.26** Adds 16 additional Serial Digital Inputs.
- 6.27** A maximum of 2 Additional Input Boards may be added to QMD

**7. MD Outputs, 16 Timed Outputs**

- 7.1** Adds 16 Assignable Serial Digital Outputs (6 fixed outputs on .5 MLE systems)

**8. Squeeze & Tease MD Carrier, for MLE 1**

- 8.1** One Carrier Board Required Per System for MLE 1,2,3 and 4 S&T MD & WARP Options

**9. Migrating Squeeze & Tease MD Channels 1 & 2, for MLE 1**

- 9.1** 2 Channels of Multi-Definition 3D DVE for MLE 1 Keyers, enables 3D Effects,
- 9.2** Fly any Key Type, Preprocessor Effects such as Defocus, Mosaic, Posterization,
- 9.3** Colorization and Strobe, Picture Frame Effect Borders, Lighting and Timeline Sequences and Wipes.
- 9.4** Requires QMD-140 Carrier Board
- 9.5** Note: Migrating channels have the ability to float to Keyers of MLE 2.  
Refer to the QMD Ordering Guide for details.

**10. Migrating Squeeze & Tease MD Channels 1 & 2, for MLE 2**

- 10.1** 2 Channels of Multi-Definition 3D DVE for MLE 2 Keyers, enables 3D Effects,
- 10.2** Fly any Key Type, Preprocessor Effects such as Defocus, Mosaic, Posterization,
- 10.3** Colorization and Strobe, Picture Frame Effect Borders, Lighting and Timeline Sequences and Wipes.
- 10.4** Requires QMD-140 Carrier Board.

**11. Onsite Operational Training, 1st Day**

**12. Onsite Operational Training, Additional Day**

**WYOMING PBS SATELLITE PRODUCTION TRUCK UPGRADE EQUIPMENT**  
**High Definition Switcher Upgrade**

Equipment Quoted (attach separate sheet if necessary):

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**Total Bid \$** \_\_\_\_\_

Quote prepared by: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date \_\_\_\_\_

Name of Company: \_\_\_\_\_ Years in business \_\_\_\_\_

Address: \_\_\_\_\_

City/State: \_\_\_\_\_ Phone: \_\_\_\_\_

T.I.N. \_\_\_\_\_ Fax: \_\_\_\_\_

Wyoming Resident Business Y\_\_\_\_ N\_\_\_\_ Email \_\_\_\_\_

Delivery Will Be Made On Or Before \_\_\_\_\_

***Quote must contain this sheet.***