



MADURAI KAMARAJ UNIVERSITY
(University with Potential for Excellence)
MADURAI – 625 021 - TAMILNADU
INDIA



GLOBAL TENDER DOCUMENT FOR
PURCHASE OF PROFESSIONAL BROADCAST VIDEO AND
OTHER EQUIPMENTS
FOR EMMRC



MADURAI KAMARAJ UNIVERSITY
(University with Potential for Excellence)
Madurai – 625 021 – TAMILNADU, INDIA



GLOBAL TENDER NOTIFICATION

Ref: No.01/EMMRC/TENDER-1/2012

Sealed Tenders are invited for the supply and installation of Professional Broadcast Video and other Equipments.

Tender document and other details can be downloaded from **1. www.mkuniversity.org**
2. www.upemku.org **3. www.tenders.tn.gov.in**

The cost of tender document : Rs.2,600/- (2,500 + 4% VAT)
Last date for submission of the tender : 14.02.2012 Time: 10.30 a.m.
Opening of tender : 14.02.2012 Time: 11.30 a.m.

Dr.M. Rajiakodi
Registrar i/c

Date: 25.1.2012.
Place: Madurai – 625 021.
Phone No.: 0452-2459455 ; Fax : 0452-2459181

Cost Rs.2,600/- (Rs.2,500 + VAT 4%) only

TENDER FORM

Reference No: **Technical Bid**

Date:

Description of Item: **SUPPLY AND INSTALLATION OF PROFESSIONAL BROADCAST VIDEO AND OTHER EQUIPMENTS**

Consignee: The Registrar, Madurai Kamaraj University, Madurai-625 021, Tamilnadu, India : Attn: The Director, EMMRC, Madurai Kamaraj University, Madurai-625 021.

Place of Commissioning: EMMRC, Madurai Kamaraj University, Madurai-625 021, Tamilnadu, India

F.No:

From

M/s.

.....

.....

**To,
The Registrar,
Madurai Kamaraj University,
Madurai – 625 021, Tamilnadu, India.**

Sir,

With reference to your Global Tender Notice dated, we offer our technical and commercial bid for the supply and installation of the following professional video equipment:

Sl.No.	Item	Quantity
A	Production Equipment	
1	Tapeless Camcorder (HD),2/3” 3 COD along with accessories	1
2	Studio Camera & CCU 2/3” 3 CCD along with accessories	1
3	Studio Pedestal	1
4	Virtual Studio Set up (Trackless)	1
5	Character Generator	1
6	Ampli Speakers	1
7	Video Graphics/Animation Work Station	1
8	MPEG 4 Encoder Decoder	2
9	VGA to PAL Converter	1
B	Post Production VTR/Recorder	

	Sony XD CAM I-ID Recorder PDW F1600	1
C	Post Production/Non Linear Editing System	
1	Non Linear Editing	2

N.B.: If required, separate sheets may be added to give more technical details of equipments details. These should be on the letter heads of tenderer duly stamped and signed.

Sl. No.	Details of Payment	D.D. No. & Date	Name of the Bank & Place	Amount Rs.
1.	Cost of Application			2,600/- (2,500 + 4% VAT)
2.	EMD			1% of the Tender value

Note: The Demand Draft for cost of application and EMD should be enclosed with Technical Bid cover.

Authorized Signatory *

Name:

Designation:

(* Authorized signatory should be the same at all places in the Tender/Offer)

TENDER FORM – COMMERCIAL BID

**FOR THE SUPPLY OF PROFESSIONAL BROADCAST VIDEO AND
OTHER EQUIPMENTS**

Name of the Company/Firm :

Address :

Phone/Fax Numbers/E-mail ID :

Name of Indian representative :

Address :

Phone/Fax Numbers/E-mail ID :

Price of the system conforming to
required specifications :

(Prices of the main system and of different accessories must be quoted separately; insurance and air-freight charges upto Madurai, Tamilnadu should be mentioned, warranty period should be mentioned)

Date:

Signature with seal of the authorized person of the Firm

(a) Professional Broadcast Video and other Equipments

Technical Specifications & Description of the item

Supply, installation and commissioning of the following Professional Broadcast Video and other equipments:

1. Specifications for SD and HD switchable Tapeless Camcorder

Digital camcorder system should conform to HDTV 1920x1080/50/I (16:9 aspect ratio) conforming to SMPTE 292M and ITU 709 (CIF) HD-SDI: 1.485 Gb/s and SDTV 625/50 (4:3 aspect ratio) conforming to SMPTE 259M and ITU 601 SDI: 270 Mb/s. Both the signals have 4:2:2 sampling and 10 bit quantization and will have embedded audio. The recording should be on a tape less medium based on Optical Disk 50 GB or better with all the required standard accessories and optional accessories as needed to enhance the performance of equipment to the optimum level.

The basic specifications are as follows: -

General Specifications	Detail:
Power Requirements	DC 12 V +5.0 V/-1.0 V
Continuous Operating Time	Approx. 120 min.
Video Recording Format	MPEG HD422 (MPEG-2 422P@HL) (CBR: 50 Mb/s) MPEG HD (MPEG-2 MP@HL): HQ mode (VBR, maximum bit rate: 35 Mb/s) SP mode (CBR, 25 Mb/s) LP mode (VBR, maximum bit rate: 18 Mb/s) (Playback only) MPEG IMX (MPEG-2 422P@ML) (50/40/30 Mb/s) DVCAM (CBR,25 Mb/s)
Proxy Video	MPEG-4
Recording Frame Rate PAL model	MPEG HD422: 1920 x 1080/50i, 25P 1280 x 720/50P MPEG HD: MPEG IMX: 50i DVCAM: 50i
Recording/Playback time	MPEG HD422: 50 Mb/s: Approx. 95 min. (PFD50DLA), Approx. 43 min. (PFD23A) MPEG HD: 35 Mb/s, 4-ch audio: More than 145 min. (PFD50DLA), More than 65 min. (PFD23A) 35 Mb/s, 2-ch audio (playback only): More than 150 min. (PFD50DLA), More than 68 min. (PFD23A) 25 Mb/s, 4-ch audio: Approx. 190 min. (PFD50DLA), Approx. 85 min. (PFD23A) 25 Mb/s, 2-ch audio (playback only): Approx. 200 min. (PFD50DLA), Approx. 90 min. (PFD23A) 18 Mb/s, 4-ch audio (playback only): More than 248 min. (PFD50DLA), More than 112 min. (PFD23A)

18 Mb/s, 2-ch audio: More than 265 min. (PFD50DLA), More than 122 min. (PFD23A)

MPEG IMX

50 Mb/s: Approx. 100 min. (PFD50DLA), Approx. 45 min. (PFD23A)

40 Mb/s: Approx. 120 min. (PFD50DLA), Approx. 55 min. (PFD23A)

30 Mb/s: Approx. 150 min. (PFD50DLA), Approx. 68 min. (PFD23A)

DVCAM

25 Mb/s: Approx. 185 min. (PFD50DLA), Approx. 85 min. (PFD23A)

Inputs/Outputs Specifications

Detail:

Genlock In	BNC x1, 1.0 Vp-p, 75 Ω
TC IN	BNC x1, 0.5 to 18 Vp-p, 10 kΩ
SDI IN	BNC x 1 (HD/SD switchable) HD-SDI: SMPTE 292M (w/embedded audio) SD-SDI: SMPTE 259M (w/embedded audio)
Audio In	CH-1/CH-2: XLR 3-pin (female) x 2, line/mic/mic +48 V selectable
AES/EBU Input	CH-1/CH-2: XLR 3-pin (female) x 2, AES/EBU selectable
MIC In	XLR 5-pin (female, stereo) x 1
Test Out	BNC x 1 (switchable) HD Y/SD composite SD composite (character On/Off)
SDI Out	BNC x 2 1 (HD/SD switchable) HD-SDI: SMPTE 292M (w/embedded audio) SD-SDI: SMPTE 259M (w/embedded audio) 2 (HD/SD switchable, character On/Off)
Audio Out	CH-1/CH-2: XLR 5-pin (male, stereo) x 1
TC Out	BNC x 1, 1.0 Vp-p, 75 Ω
Earphone	Mini-jack x 2 (front: monaural, rear: stereo/monaural)
Monitor Speaker	YES
DC In	XLR 4-pin (male) x 1, 11 to 17 V
DC Out	4-pin (Female) (for wireless microphone receiver), 11 to 17 V DC, MAX. 500 mA
Lens Conector	12-pin
Remote	8-pin
Light	2-pin, DC 12 V, max. 50 W
Camera Adaptor	50-pin
i.Link	IEEE 1394, 6 pin x 1, File Access Mode
Memory Stick	x 1 (for camera setup files)
Gigabit Ethernet	RJ-45 x 1, 100Base-Tx: IEEE802.3u, 10Base-T: IEEE802.3
USB	x 1 (for version-up)

Audio Performance Specifications

Detail:

Frequency Response	20 Hz to 20 kHz, +0.5/-1.0 dB
Dynamic Range	More than 93 dB
Distortion	Less than 0.08% (at 1 kHz, reference level)
Crosstalk	Less than -70 dB (at 1 kHz, reference level)
Wow & Flutter	Below measurable limit
Headroom	20/18/16/12 dB (selectable)

Camera Section Specifications

Detail:

Pickup Device	3-chip 2/3-inch type HD Power HAD FX CCDs
Effective Picture	1920(H) x 1080(V)

Elements	
Optical System	F1.4 prism
Built-In Optical Filters	1: Clear, 2: 1/4ND, 3: 1/16ND, 4: 1/64ND
Shutter Speed (Time)	A: CROSS, B: 3200K, C: 4300K, D: 6300K
	1080/59.94i: 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000,ECS,SLS
	1080/50i: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000,ECS,SLS
	1080/29.97P:1/40, 1/60, 1/120, 1/125, 1/250, 1/500, 1/1000, 1/2000,ECS,SLS
	1080/25p: 1/33, 1/50, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000,ECS,SLS
	1080/23.98p: 1/32,1/48, 1/50,1/60,1/96, 1/125, 1/250, 1/500, 1/1000, 1/2000,ECS,SLS
	720/23.98p(pull down) : 1/32,1/48, 1/50,1/60,1/96, 1/125, 1/250, 1/500, 1/1000, 1/2000,ECS,SLS
Slow Shutter	1- to 8- and 16-frame accumulation
Sensitivity (2000 lx, 89.9% reflectance)	F11 @ 59.94i, F12 @ 50i (typical)
Minimum Illumination	Approx. 0.016 lx (F1.4 lens, +42 dB, with 16-frame accumulation)
Gain Selection	-6, -3, 0, 3, 6, 9, 12, 18, 24, 30, 36, 42 dB
Smear Level	-135 dB (typical)
S/N Ratio	59 dB (54 dB w/o Noise Suppressor)
Horizontal Resolution	1000 TV lines or more (1920 x 1080i mode)
Registration	Less than 0.02%
Modulation Depth	45% or more at 27.5MHz
Monitoring Specifications	Detail:
Viewfinder	Option
Built-In LCD Monitor	3.5-inch type color LCD monitor
Lens Specifications	Detail:
Lens Mount	2/3-inch type bayonet mount
Lens Mount	2/3-inch-type 48 bayonet mount
Lens	Standard Zoom Lens with 22x zoom and 2x extender

2. Studio Camera and CCU 2/3” 3CCD along with accessories

[New line of Portable HD/SD Camera for live-event content creation and compact productions](#)

- [Simple System Configuration](#)
- [2.2-megapixel Power HAD FX CCD for high sensitivity](#)
- [Digital triax operation](#)
- [14-bit Analog to Digital conversion](#)
- [Robust Design](#)

- [Newly developed Focus Assist Functions](#)

[General](#)

Mass Approx. 4.5 kg (9 lb 14 oz, without VF and lens)

Operating temperature -20 to +45 °C (-4 to +113 °F)

[Camera](#)

Pickup device 3-CCD 2/3-inch type 16:9

Effective picture elements (H x V) 1920 x 1080

Spectrum system F1.4 prism system

Built-in filters 1: CLEAR, 2: 1/4ND, 3: 1/16ND, 4: 1/64ND, CC Electrical

Manual filter control Yes

Sensitivity (1080/50i mode) F11 at 2000 lx (3200K, 89.9% reflectance)

S/N ratio HD : -55 dB (1080i) and SD : -65 dB at 59.94 Hz, -63 dB at 50 Hz

Resolution (Horizontal) HD : 1000 TV lines and SD : 900 TV lines

Dynamic range 600%

Registration Within 0.02% (all zones, without lens)

Shutter speed selection 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 s (1080/60i mode) 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 s (1080/50i mode)

Modulation depth HD : 45% at 27.5 MHz (1080i) and SD : 90% at 5MHz

Lens mount Sony bayonet mount

[Input connectors](#)

Audio in (CH-1) XLR-3-31 type (1, female), mic or line selectable

Audio in (CH-2) XLR-3-31 type (1, female), AES/EBU or mic or line selectable

Mic in (front) XLR-3-31 type (1, female)

Return control 6-pin (1)

Genlock/return in Share w/ Prompter output

DC in XLR-4-pin type (1)

[Output connectors](#)

Test out BNC type (1), 1.0 Vp-p, 75 ohm

HD SDI out BNC type (1) HD-SDI or SD-SDI selectable

Earphone out Mini-jack (1), 8 ohm

DC out 4-pin (1), 10.5 to 17 V, max. 0.5 A

[Input/output connectors](#)

CCU Triax connector

Lens 12-pin

Viewfinder 20-pin

Remote 8-pin

Prompter BNC type (1), 1.0 Vp-p, 75 ohm

Tracker 10-pin: Tracker R/T, R/G Tally, unregulated 12 V

Intercom XLR-5-pin (1, female)

[Supplied Accessories](#)

Included Operation manual (1), Lens cap (1), Label for assignable switch (1)

3. Studio Pedestal and other accessories

Max. Capacity:	30 kg / 66 lbs
Height Range:	75 to 160 cm / 29.5 to 63 "
Weight:	13.7 kg / 30.2 lbs
On-Shot Stroke:	41 cm / 16.1 "
Tracking Width:	69 cm / 27 "
Wheel Diameter:	10 cm / 4 "
Steering Ring Diameter:	38 cm / 15 "
Wheel Lock:	Yes
Colour:	Grey
Height:	16.0 cm / 6.3 "
Length:	15.1 cm / 5.9 "
Width:	13.8 cm / 5.4 "
Weight:	3.2 kg / 7.0 lbs
Capacity Range:	6.5 to 17 kg / 14.3 to 37.5 lbs
Tilt Range:	±90°
Ball Base:	100 mm
Pan Bar:	Single telescopic
Camera Fixing:	Quick attachment and release Sideload system, utilizing a standard slide plate complete with captive ¼ " pin and 2 x 3/8 " screws

Levelling Bubble:	Illuminated
Drag Knobs:	Calibrated
Counterbalance:	Infinitely adjustable Perfect Balance
Colour:	Black

4. Specification for 3D Virtual Studio Setup – Trackless System

FEATURES

A Virtual 3D Studio system suitable for broadcast of Educational video Programmes giving look and feel of a huge and ultra modern television studio.

Should be able to operate with one or two static live Video camera(s) for seamless integration with 3D virtual set and the character should be able to move around the set without moving physically the camera(s).

The system should not be requiring camera motion trackers to emulate virtual camera movements & zooming.

To provide multiple virtual camera displays & switching with a single camera.

To have multiple virtual camera positions that should be easily programmed and moved within the 3D environments such as zoom in or out without any effort.

Virtual system should employ advance Chroma keying technique to adjust different colors with different parameters without any color spills or spatial effect and able to remove shadows on the backgrounds efficiently keeping the live images crisp and sharp.

To be able to perform perfectly even with non-professional video equipments and poorly lit background.

Should be able to render complex 3D scenes in real time and eliminate the need of pre-rendering of 3D virtual sets.

Superimpose 32 bit alpha channel logo or graphic file in any format on the virtual set.

Preview the input source on screen (Live camera or an external device).

To be able to import (i) 3D sets for use as integral part of virtual set system (ii) Graphics and video clips to be inserted in the virtual set by simple drag and drop operation.

Render full anti-aliased scenes & providing photo realistic result.

Give realistic and natural look to the live broadcast and production process by creating real time shadows combined with ground texture casted onto arbitrarily shaped objects from multiple light sources with adjustable parameters for direction and position.

Create real time reflections of live talent in front of camera as well as virtual set on surfaces such as a reflective floors or table tops.

The switcher interface should make easy moves from one camera position to another.

Should be simple and able to operate by a single operator using a mouse or a keyboard short cuts.

To have Two, D1 resolution Live and pre-recorded input sources feeds in AVI & MPEG formats in standard definition.

Should have a dynamic foreground to allow the graphics files, text, crawls and Bitmap files, tickers etc., to be overlaid on virtual set thereby enhancing the virtual set production with information and the information to be updated on-line, through the server-client solution.

To allow simultaneous live streaming of Final Program Output, for the internet.

On screen audio mixer is for line input and media files from hard disk with separate faders for both inputs and master volume. Cross fade between two inputs source.

Enhance and correct your incoming video using Brightness, Contrast and Colour controls.

Technical Specifications

A complete Virtual Set Solution with 2 Camera Input, Switcher, Chroma-key, Audio Mixer, Character Generator, Logo / Clip Art Insert, Text scroll, Digital Recorder and a Non-Linear Editor.

Video Inputs:

2 Simultaneous Inputs. Any Combination of:

HD-SDI, HD Component, SD-SDI, SD Component, Y/C (BNC) or Composite.

HD-SDI Video Conforms to SMPTE 292M and SD Video Conforms to SMPTE 259M and ITU-R BT.656. 2 Camera input and 2 Chroma Keys

Video Outputs:

3 HD/SD-SDI, 3 HD/SD Component, HDMI Output

Aux VGA/DVI Output, User Interface VGA/DVI Output

Video Processing:

32-Bit Floating Point, YCbCrA 4:4:4:4

Supported Formats:

1080i 50, 720p 50, 576i 50 (16:9 and 4:3)

Video Ingest:

IEEE FireWire®

Network Selection:

2 Channels Dedicated to Separate iVGA™
Sources (for unlimited network sources)

Virtual Set Support:

HD and SD Virtual, Multiple Live Sets with Single Source, Position & Zoom
Video Sources, Zoom Live sets, Overlay Channel for Each Virtual Input.

Media Player:

2 DDRs, Stills, Titles, Audio Player (all video
sources provide output with alpha channel, for
use in overlays, virtual sets, etc.)

Projector Output:

16:9 and 4:3 Aspects & Up to 1920 x 1200(res)

Streaming:

HD and SD Both

Audio Inputs:

8 x 2 Balanced XLR at Line and Mic Level
8 AES3/EBU BNC Connectors, 8 SDI Embedded
Analog Audio Levels Conform to SMPTE RP-155
Phantom Power Option

Audio Outputs:

4 Balanced XLR (Program Out)
4 Balanced XLR (Auxiliary Out), 2 AES/EBU (Program Out)
3 SDI Embedded (Program Out), 1 Stereo 1/4" Headphone Jack

Recording Capacity:

~ 36 Hours 1080i 59.94
Removable Drive Bays for Unlimited Record Time
and Backup Capability

Overlay:

2 Downstream Keys with Independent Effects
with Keying, Positioning, Scaling, Cropping and 3D Rotation

Preview:

On Screen Preview of All Sources," Computer Sources," "Camera Inputs,"
"Preview and FX" or "Scopes with Switchable Input" (full-time, tabbed - all run
at full field rate)

Live Webcasting:

HD and SD Both & Adobe Flash, Windows Media Push/ Pull and VC-1 Codec
Support with recording

Non linear Editing, redundant power supply

File formats:

AVI, DNxHD, DV, M4V, MPEG-2, QuickTime,

H264, HDV, JPG, PNG, PSD and More

Software:

All requisite Software Licenses and upgrades to be provided for three years.

TRAINING

The manufacturer should provide two days operational training at site and Technical Maintenance Training for three Engineers at factory or training Centre of the manufacturer.

Annual Maintenance Contract:

The equipment should be on warranty for Two year from the date of installation. However the Manufacturer should submit a quote for AMC charges for Hardware and Software maintenance that can be operational after the warranty period is over. The AMC should provide upgrades of software.

ALTERNATIVELY

Specification for 3D Virtual Studio Setup – 2 Camera Tracking System

A. Features of the 2 camera Tracking Virtual Studio set system :

- The system should comprise of individual Render engines for each of the cameras assigned to the virtual studio system.
- The Render Engine should also feature on board Chroma keyer and associated electronics to ensure proper timing of the Rendered background with the Chroma keyed foreground.
- The user can choose freely between a single camera Virtual Environment and add on any number of cameras as he deems fit without limitation.
- The output of each of the Render Engines corresponding to the number of cameras on the set will be input into standard SD or HD Video Production Switchers and will allow the operator to switch just like a normal multi-camera production.
- Chroma key parameters for each of the cameras can thus be individually set from the Master control PC.
- The system should be designed to interface with industry standard Sensor based camera pedestals and jibs available from manufacturers like Radamec, Vinten, Shotoku , etc .
- The Render Engine should allow different configurations of sensors. Some cameras can be equipped with 4 axis sensors like PAN, Tilt, Zoom and Focus for static tripod positions or can take even 7 axis sensors for total freedom of movement of the Camera Pedestal or Jib in the environment.
- The Sensor based systems input the Physical camera position on the studio floor into the Render Engine. The Render Engine will generate the Virtual environment and composite via its inbuilt Chroma keyer the physical Camera input onto the Virtual set.

B. System Components

The supplier should supply the Render Engine with the following functions:

- a. It should comprise of a high speed Graphics Computational Computer capable of generating sophisticated 3 D Virtual Environments.
- b. It should have on board Chroma keyer with sophisticated Chroma key algorithms for both HD and SD SDI I/O capability.
- c. It should have Hi Speed RS422 Data card to receive Trigonometric Data from the Sensors.
- d. 1000 Base T LAN card for communication with Master Control PC
- e. Camera Tally.
- f. Return Video Switching for camera.
- g. Master Control PC to co-ordinate and provide control of the Render Engine.
- h. Tracking Sensors, Tracking Heads, Tracking Camera pedestals, Tracking Jibs

C. The tracking technology should include:-

- a. Render Stations per camera input.
- b. Chroma Keyer per camera input: - Chroma key compositing (or Chroma keying)
- c. Output Generator Station
- d. Encoding Heads / Jibs

- e. Tracking Heads / Dolly
- f. External Switcher

D. Technical Specifications

A complete 2 Camera Tracking based Virtual Set Solution with 2 Camera Input, all required sensors for various camera tracking and positions ,Switcher, Chroma-key, Audio Mixer, Character Generator, Logo / Clip Art Insert, Text scroll, Digital Recorder and a Non-Linear Editor.

Video Inputs:

2 Simultaneous Inputs.

Any Combination of:

HD-SDI, HD Component, SD-SDI, SD Component, Y/C (BNC) or Composite. HD-SDI Video Conforms to SMPTE 292M and SD Video Conforms to SMPTE 259M and ITU-R BT.656. 2 Camera input and 2 Chroma Keys

Video Outputs:

3 HD/SD-SDI, 3 HD/SD Component, HDMI Output, Aux VGA/DVI Output, User Interface VGA/DVI Output

Video Processing:

32-Bit Floating Point, YCbCrA 4:4:4:4

Supported Formats:

1080i 50, 720p 50, 576i 50 (16:9 and 4:3)

Video Ingest:

IEEE FireWire®

Network Selection:

2 Channels Dedicated to Separate iVGA™ Sources (for unlimited network sources)

Virtual Set Support:

HD and SD Virtual, Multiple Live Sets with Single Source, Position & Zoom Video Sources, Zoom Livesets, Overlay Channel for Each Virtual Input.

Media Player:

2 DDRs, Stills, Titles, Audio Player (all video sources provide output with alpha channel, for use in overlays, virtual sets, etc.)

Projector Output:

16:9 and 4:3 Aspects & Up to 1920 x 1200(res)

Streaming:

HD and SD Both

Audio Inputs:

8 x 2 Balanced XLR at Line and Mic Level

8 AES3/EBU BNC Connectors, 8 SDI Embedded

Analog Audio Levels Conform to SMPTE RP-155

Phantom Power Option

Audio Outputs:

4 Balanced XLR (Program Out)

4 Balanced XLR (Auxiliary Out), 2 AES/EBU (Program Out)

3 SDI Embedded (Program Out), 1 Stereo 1/4" Headphone Jack

Recording Capacity:

~ 36 Hours 1080i 59.94

Removable Drive Bays for Unlimited Record Time and Backup Capability

Overlay:

2 Downstream Keys with Independent Effects with Keying, Positioning, Scaling, Cropping and 3D Rotation

Preview:

On Screen Preview of All Sources,” Computer Sources,” “Camera Inputs,” “Preview and FX” or “Scopes with Switchable Input” (full-time, tabbed - all run at full field rate)

Live Webcasting:

HD and SD Both & Adobe Flash, Windows Media Push/ Pull and VC-1 Codec Support with recording

Non linear Editing, redundant power supply**File formats:**

AVI, DNXHD, DV, M4V, MPEG-2, QuickTime, H264, HDV, JPG, PNG, PSD and More

Software:

All requisite Software Licenses and upgrades to be provided for three years.

Training

The manufacturer should provide two days operational training at site and Technical Maintenance Training for three Engineers at factory or training Centre of the manufacturer.

Annual Maintenance Contract:

The equipment should be on warranty for Two year from the date of installation. However the Manufacturer should submit a quote for AMC charges for Hardware and Software maintenance that can be operational after the warranty period is over. The AMC should provide upgrades of software.

5. Specifications for Character Generator

All HD and SD switchable modes

An unlimited number of items that can be animated by moving, rotating and changing color and transparency can be previewed prior to going out to air. Multiple real-time effects can be used for graphics and text providing an optimal visual appearance

Create, display and control a variety of different projects including Lower-Thirds, Tickers, Logos, Crawls, Clock and Rolls - essentially everything you need in your day to day operations

- Broadcast quality, 32 bit
- 3D working environment (object can be moved dynamically on z)
- Allows to work simultaneous with multiple projects
- New custom made transitions can be implemented
- GPU-based rendering
- Should be compatible with Decklink or any compatible system
- Support for RSS feeds
- In and Out animations presets
- Live video acquisition
- Anti-flicker and de-interlace for images and Live video
- Scheduling the project's actions (PLAY,STOP,FFW...)
- Trajectory of an animated item in preview
- Real-time text effects
- On the fly adjustable ticker speed
- Lower Thirds with dynamically assigned images
- Option to shrink text
- Auto-Fit option for text
- It should provide Unicode Font Support.
- Should provide three lines of Crawls
- Genlock Facility
- Should have Frame Buffer Memory.

Software Program features
TV-program titling while editing or on the air, manually or in automatic mode;
Text and graphic information display in form of crawl and roll;
TV-channel / program static logo display;
Any kind of analog clocks generation and display;
Animations and logos, Playback;
Cyclic playback of scripts;
Multilayered graphic windows for incoming information display.
High quality and ease of Character Generation
Using all available Windows TrueType fonts;
Symbols and tickers design with complex 3D-shades, outlines and borders;
Using text processors and graphic editing programs principles;
Fonts with random direction gradients, textures including images in JPEG, BMP

and TGA 32-bit formats;
Anti-aliasing broadcasting rasterization quality;
Line interlacing flicker filter;
Placing logos as symbols in crawls;
Using 16.7 million colours and 256 transparency levels to fill any page element.
Usability and efficiency
Edit and hold in readiness several scripts simultaneously;
Classical Windows program interface and WYSIWYG mode;
Instant title output by using prepared scripts (templates).
Wide range of linear effects
Script consists of an unlimited number of pages; every page has a video effect assigned to it.
Uses the following effects:
Vertical Roll – text that runs vertically from bottom to top;
Horizontal Crawl – «endless» page of random height and length that runs horizontally from left to right;
Reveal Up / Reveal Left – horizontal and vertical slide-ins;
Animated logos and clips playback as an individual effect, or as a part of titles block;
Fade In / Fade Out / Cross Fade – smooth transition effects;
Zoom – scaling effect;
Near 300 kinds of Wipes with transition softness settings.
System Hardware
a. Processor (CPU) Latest CPU as compatible with the system.
b. RAM 2 GB RAM or higher with permission for expansion.
c. HDD Preferably SCSI Hard Disk Minimum 500 GB or higher.
d. DVD-R Drive
f. 105 keys keyboard standard for English, Hindi and other Indian languages mentioned above and matching mouse, Bilingual labels should also be provided.

6. Specifications for Ampli Speaker (100 W)

TECHNICAL SPECIFICATIONS

Input format	Analog
SPL	
Maximum short time sine wave acoustic output at 1 m on axis in half space, averaged from 100 Hz to 3 kHz	≥110 dB SPL
Maximum peak acoustic output per pair with music material	≥115 dB SPL @ 1m
Drivers	
Bass	8"
Treble	1" metal dome
Crossover frequencies	1.8 kHz
Free field frequency response	38 Hz - 20 kHz (± 2 dB)
Amplifier power /ch	
Bass	150 W
Midrange	-
Treble	120 W
Speaker dimensions (H x W x D)	
mm	433 x 286 x 278 mm (Height with Iso-Pod™ 452 mm)
inches	17 1/16 x 11 1/4 x 10 15/16" (Height with Iso-Pod™ 17 13/16")
Amplifier dimensions* (H x W x D)	
mm	Integrated in the speaker cabinet

- **7.Specification for Video Graphics, Animation Workstation. The tenderer for this item can also quote for softwares on Graphics and Animation on turnkey basis. The system provider for this item shall integrate the software packages and Graphics software's for Animation & Composition – 3D Max with All Modules & Adobe CS-5 Professional Package or Latest**

Conforming to HDTV 1920x1080/50/I (16:9 aspect ratio) conforming to SMPTE 292M and ITU 709 (CIF) HD-SDI: 1.485 Gb/s and SDTV 625/50 (4:3 aspect ratio) conforming to SMPTE 259M and ITU 601 SDI: 270 Mb/s. Both the signals have 4:2:2 sampling and 10 bit quantization and will have embedded audio.

Processors: DUAL Quad-core Intel® Xeon® 5500 series processors with up to 6.4GT/s (Intel Quick Path) up to 8MB shared cache. Turbo Mode and Hyper Threading technology on select processors. All processors are 64-bit, support Intel DBS (demand-based switching) and Intel VT (Intel Virtualization Technology); processors support either 1333 or 1066MHz memory.

Operating Systems: Genuine Windows® 7 Professional 64-Bit

Chipset: Intel® 5520 chipset

RAM: 8 GB 1333 MHz DDR3 ECC DIMM memory

Graphics: NVIDIA Quadro® FX 4800*

HARD DRIVES: SATA 3.0Gb/s 7200RPM with 8MB DataBurst Cache up to 250GB for OS, SAS 15K RPM up to 600GB

Hard Drive Controller: Integrated LSI 1068e SAS/SATA 3.0Gb/s controller supports host based RAID 0 or 1

Network Controller: Gigabit Ethernet controller

Audio Controller: Integrated High Definition Audio (Rev 1.0 Specification) implemented

Storage Devices: Blu-ray RW

Video Input: 1 x 10 bit SD/HD switchable.

Video Output: 1 x 10 bit SD/HD switchable

SDI Audio Input: 8 Channels embedded in SD and HD.

SDI Audio Output: 8 Channels embedded in SD and HD.

Analog Video Input: 1 x Component video on 3 BNCs. 1 x S-Video video on S-Video connector. 1 x Composite NTSC/PAL on 1 BNC

Analog Video Output: 1 x Component video on 3 BNCs. 1 x S-Video video on S-Video connector. 1 x Composite NTSC/PAL on 1 BNC.

Analog Audio Input : 4 Channels of professional balanced analog audio via 1/4" jack connectors

Analog Audio Output: 4 Channels of professional balanced analog audio via 1/4" jack connectors

HDMI Audio Input/Output: 2 Channels embedded in SD and HD.

Sync Input: 1 x sync input. Blackburst in SD, 720p50, 720p59.94, 1080i50 and 1080i59.94 formats or Tri-Sync in any HD format.

Video Sampling/Color Space: 4:2:2 YUV

Power supply: 1100 watts 85%+ Efficiency Power Factor Correcting (PFC) power supply

Monitor: 2 x 21.5 inch wide professional TFT

8. Specifications for MPEG 4 Encoder Decoder

ENCODER

The encoder should support either SD/HD video formats in a key-enabled architecture. Video input should be SDI or HD-SDI. It should provide a reduced-resolution compressed stream output. It should support up to three stereo pairs of audio.

The basic specifications are as follows: -

Video Specification

HD-SDI High-Definition:

Digital Video Input Formats	Sample x Lines @ Rate	Standard
1080i 30	1920x1080 @ 30/1.001 Hz	SMPTE 292M-1998, Table 1 Column E
1080i 25	1920x1080 @ 25 Hz	SMPTE 292M-1998, Table 1 Column F
720p 60	1280x720 @ 60/1.001 Hz	SMPTE 292M-1998, Table 1 Column M
Input Line Rate(s)	1.485 Gb/s and 1.485/1.001	

SDI Standard-Definition Digital Video Input Formats

480 and 525-Line Resolutions	720x480, 720x525
Formats	ANSI / SMPTE 259M-C 1997
Input Line Rate	270 Mb/s

Physical Interface

Jitter Tolerance	Meets SMPTE RP184 specifications
Sampling	8-bit
Connectors	75 ohm BNC

Video Compression

Standard	MPEG-4 Part 10 / H.264 / ISO/IEC 14496-10 2003
Profile and Level	Supports main profile at Level 4.0-compatible decoders
HD Horizontal Resolutions	1080i: 1920, 1440, 1280, 960 720p: 1280, 960, 640
SD Horizontal Resolutions	480i: 720, 704, 640, 544, 528, 480, 352 576i: 720, 704, 640, 544, 528, 480, 352
Anchor Frames	2
Macro Block Processing	In-loop de-blocking
Coding	CABAC
Compressed Output (to backplane)	0 25-20.0 Mb/s
Bitrates	
PIP Resolutions	96 x 96 and 192 x 192 pixels

VBI Input Formats

VBI Standard

MPEG Carriage Standard

Closed Captions	EIA-608	EIA-708 and ETSI EN 301 775
Vertical Interval Time Code	SMPTE 12M	SMPTE 266M ISO/IEC 13818-(GOP Header)
WST Teletext	ETSI EN 300 706	ETSI EN 301 775 and ETSI EN 300 472
Wide Screen Signaling	ETSI EN 300 294	ETSI EN 301 775
Lossless Luma (six lines max)	—	ETSI EN 301 775
Prestored Test Patterns	Various	Proprietary

Audio Specifications

Digital Audio Input Format	AES (AES3-1992, ANSI S4.40-1992), SMPTE 276M
Sampling	Synchronized to video and re-sampled to 48 kHz at 24 bits
Connectors	75 ohm BNC

Audio Compression and SMPTE 302 Audio Handling

Audio Compression Standards	
Surround Sound	AAC-LC 5.1, HE-AAC 5.1
3-Channel (3 stereo pairs)	Dolby® AC-3 2.0, MPEG-1 Layer 2, SMPTE 302M, AAC-LC 2.0, and HE-AAC 2.0
Compressed Audio Bitrates	32-640 kb/s, and 2.8, 2.4, 2.0 Mb/s (standard-dependent)

GENERAL SPECIFICATIONS

Systems Multiplex

Ad insertion / Splice point signaling	SCTE 104/SCTE 35
Format	MPEG-2 transport stream
PSI formats	ISO (IEC 13818.1 MPEG-2 systems)

Encryption	BISS-1, BISS-E (EBU Tech 3292 rev. 2)
Jitter	< 1 ms of multiplex jitter < 500 ns PCR jitter

Physical Characteristics

Dimensions (H x W x D)	3.94 x 0.79 x 6.29 in. (100 x 20 x 160 mm)
Weight	0.6 lbs (0.3 kg)

Electrical

Power Consumption	22 W
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DECODER

It should have DVB-S/S2 demodulation capabilities and inputs for DVB-ASI and IP as standard feature. It should support MPEG-2 and H.264 video compression; from the 4:2:2 format to SD and HD formats; as well as MPEG, Dolby® Digital AAC and SMPTE-302 audio systems. It should support vertical ancillary data space (VANC) transport, wide-screen signalling (WSS), active format description (AFD) and other related data signals, as well as DVB fixed-key decryption (BISS) and DVB Common Interface (DVB-CI) descrambling methods.

FEATURES

- Bitstream Input/Output Capabilities
 - DVB-S, DVB-S2 satellite demodulator (standard)
 - Advanced RF demodulator (option) for 16/32 QAM and DSNG
 - DVB-ASI input and output (standard)
 - Dual IP SMPTE 2022-1 inputs and outputs (standard)
 - DVB fixed-key (BISS) decryption (standard)
 - DVB common interface module slot (option)
 - Smart PID filtering to output selected streams on ASI or IP
- Video Compression Formats
 - MPEG-2 MP@ML, MP@HL (standard)
 - MPEG-2 422P@ML, 422P@HL (option)
 - H.264 MP@L3, MP@L4.1 (standard)
 - H.264 422P@L3, 422P@L4.1 [8-bit] (option)
- Audio Compression Formats
 - AAC-LC, HE-AAC v2 2.0 and 5.1 decode (standard)
 - MPEG-1 Layer II decode (standard)
 - Dolby® Digital (AC-3) 2.0 and 5.1 decode (standard)
 - SMPTE-302 PCM and Dolby® E pass-through with AVTrack™ (standard)
 - One or two Dolby® E integrated decoders (option)
- Data/Ancillary Capabilities (standard)
 - VANC processing
 - AFD and WSS

- Teletext
- VBI
- Video/Audio Output Capabilities
 - Dual SDI/HDSI video outputs 1080i/720p/625i/525i 50/59.94 Hz
 - Eight stereo pairs of assignable embedded audio
 - Four assignable separate AES outputs

SPECIFICATIONS

Receiver

Connectors	F-Type (up to 4)
Input Impedance	75 ohms
Baud Rate Range	2 to 45 Mbaud (DVB-S/DSNG), 10 to 30 Mbaud (DVB-S2)
Modulation	QPSK (DVB-S), QPSK/8 PSK/16 APSK (DVB-S2) QOSK/8 PSK (DVB-DSNG/S)
Inner Code:	
DVB-S	QPSK 1/2, 2/3, 3/4, 5/6, 6/7, 7/8 8 PSK 2/3, 5/6, 8/9 16 QAM 3/4, 7/8
DVB-S2	QPSK 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 8 PSK 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 16 APSK 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 32 APSK 3/4, 4/5, 5/6, 8/9, 9/10
DVB-DSNG	QPSK 1/2, 2/3, 3/4, 5/6, 6/7, 7/8 8 PSK 2/3, 5/6, 8/9 16 QAM 3/4, 7/8
Outer Code	204, 188 Reed-Solomon per EN 300 421
L-Band Frequency Range	0.9400 to 1.7500 GHz (In 0.0005 GHz steps)
Maximum Total Input Power	-25 dBm
Minimum Signal Level	-55 dBm

Video Output: Serial Digital Interface

Standard	HD-SDI and SDI (SMPTE 292M/259)
Connector	BNC (2)
Formats	1080i/59.94, 1080i/50, 720p/59.94, 720p/50, 480i/59.94, 525i/50

MPEG-2 and H.264 Video Decoding

MPEG-2 Profiles	Main profile at main level (NTSC/PAL) Main profile at high level (HD) 4:2:2 profile at main level (SD) 4:2:2 profile at high level (HD)
H.264 Profiles	Main profile at level 3.1 High profile at level 4.2 (Broadcast HD)

4:2:2 profile at level 4.2 (8-bit only)

Maximum Video
Elementary Stream
Bitrate 108 Mb/s

Audio

Bitstream Decoding Formats Supported Dolby® Digital AC-3 2.0
Dolby® Digital AC-3 5.1
MPEG-1 layer 2
SMPTE 302M (Dolby® E compatible), IEC 958
Dolby® E integrated decode (optional)
Advanced audio coding low complexity (AAC-LC)
2.0 and 5.1
High-efficiency AAC version 1 (2.0) and version 2
(HE-AAC v2 2.0)
HE-AAC 5.1

Digital Audio Output Format AES/EBU as per SMPTE 276
Embedded as per SMPTE 299
Pass through encoding audio (SMPTE 337) with no
restrictions

Reference Input

Type Blackburst composite video
Reference Connector Standard BNC with passive loop through
SMPTE RP 154

Control LAN Interfaces

Type 10/100Base-T Ethernet (IEEE 802.1)
Connector RJ45

Transport Stream Interface

Connector 2 BNCs (1 in/1 out) and 2 RJ45 (bi-directional)
Physical Layer Interface DVB-ASI (auto-sensing)
DVB-ASI Transport Stream Data Rate 0.0 to 214.0 Mb/s
IP Transport Stream Data Rate 0.0 to 120.0 Mb/s
IP over Ethernet FEC 10/100/1000Base-T Ethernet (IEEE 802.1)
SMPTE 2022

General Specifications

Ambient
Temperature:
Operating 32° to 104° F (0° to 40° C)
Non-Operating 104° to 149° F (40 to 65° C)
Humidity 5% to 95% non-condensing

Physical Specifications

Form Factor 1RU 1.73 in. (4.4 cm)
Standard EIA 19 inch rack mount

Electrical Specifications

Maximum Power 100 W
Voltage 100-240 VAC
Supply Frequency 50-60 Hz
Power Plug IEC-C-13
Protection 2 A @ 250 V GMC time delay fuse
Cooling Front intake, rear exhaust @ 10 CFM

9. SPECIFICATIONS FOR VGA TO PAL CONVERTOR

References

- > Powerful Broadcast Scan Converter with Genlock
- > Supports many outputs formats: HDTV, SDTV, analog and digital
- > High Performance image processing with real time conversion
- > A «Zoom finder» is provided to preview the part of an zoomed image
- > 8 Preset memories for zoom settings

Inputs

- Workstations, PC, Mac compatible input
- DVI and RGB Computer Input up to 1920x1200
- Genlock: HD/SD-SDI or Analog HD Black and Black Burst
- All Genlock timings meet broadcast ITU/SMPTE standards
- All Video outputs are available simultaneously

Outputs

- Digital outputs: HD/SD-SDI 10 bits
- Analog outputs: HD/SD-YUV, NTSC/PAL, RGB, S-Video
- SD/HD-SDI 4:2:2 & SD/HDTV Analog Outputs
- Embedded Stereo Audio w/Delay

Features

- Multi-level anti-flicker
- Horizontal & Vertical filters
- 16/9, 4/3, special sized and cropped output
- Pan & zoom resizing up to 1000%
- Zoom Finder
- Frame & logo memory
- Direct access functions: Freeze, Frame, Under/Over Scan, Aspect Ratio, Zoom position and size
- RS232 Upgradable
- Remote Control Software
- Ethernet interface: Optional
- For High Definition and Standard Television Broadcast
- 8 Preset memories for zoom settings

Technical Specifications

Example of application with BHD930:

Computer Input

For PC, Mac and Workstation

DVI-D and RGsB, RGBS, RGBHV with Automatic synchronization detection

Resolution up to 1600x1200/60Hz 1920x1200RB/60Hz

Horizontal frequency from 31.5 to 130 KHz

Vertical frequency up to 130 Hz

Audio Stereo: Unbalanced 44kOhms - +18dB – Adjustable level

Outputs

HD-SDI (x2): 4:2:2 - 10 bits – 1.5 Gbs - 75 Ohms

or SDI (x2): 4:2:2 – 10 bits – 270 Mbs - 75 Ohms

(fs=48Khz@20/24 bit)

HD-YUV: HD-YCrCb - 0.7Vp/p + 3 level Sync. +/- 0.3V

- 75 Ohms or YCrCb; RGsB, RGSB: 0.7Vp/p + Sync.

0.3V - 75 Ohms

S.Video: Y/C - 0.7Vp/p + Sync. 0.3V - 75 ohms

NTSC/PAL: Composite Video - 0.7Vp/p + Sync. 0.3V

- 75 Ohms

Luma Key (x2): SDI/HDSDI – Same format as output

- 75 Ohms

Luma Key: Analog SD/HD 0.7Vp/p - Same format as output

- 75 Ohms

Frame Lock: TTL Level – Output frame rate

DIGITAL GENLOCK (Model BHD930-DG)

Input: HD/SD-SDI Black

Output: Active loop through

ANALOG GENLOCK (Model BHD930-AG)

Input: 3 level HD Black or Black Burst PAL/NTSC

Output: Active loop through

User Controls and Connectors

FRONT PANEL:

Standby On/Off

Frame recall

Freeze

Under/Over scan

Aspect ratio: 1/1 – Cropped - Full Screen

Zoom up to 1000%, linear pan & scan & Finder

Position and size

LCD screen and control buttons for:

- Input type and status

- 8 level anti-flicker

- RGB & Black level adjustment, sharpness

- Output format selection

- Genlock phase adjustment

REAR PANEL

Input Connectors:

- DVI-I Female: (Digital computer in only)
- HD15 Female (Analog computer in)
- BNC (Genlock in)
- RCA Audio Stereo

Output Connectors:

- DVI-I Female: Active loop through
- HD15 Female: Active loop through
- BNC (x2): HD/SD-SDI
- BNC (x4): HD/SD-YUV & RGsB/RGBS
- 4 pin Mini DIN: S. Video
- BNC: NTSC / PAL
- BNC: Genlock Active loop through
- BNC: Analog Luma key out
- BNC (x2): Digital Luma key out
- BNC: Frame lock out

Miscellaneous:

- DB9: RS232 for remote control
- RJ45: Optional Ethernet connection
- AC Main connector with On/Off switch

Power Supply

Internal, universal, automatic, 100-250 V; 50/60Hz; 40 W (UL, CSA, GS, CE)

Supplied with

- 1 x AC power cable
- 1 x Remote control software
- 1 x User manual on CD-ROM

Warranty:

3 year warranty on parts and labor back to factory specifications subject to change without prior notice

10. Specifications for Tapeless HD/SD, Recorder/Player, Model XD-F1600 or Equivalent

FEATURES

- Recording Bit Rates: MPEG-2 422p@HL format - Bit rate is 50Mbps for both 1080 and 72 - Audio Format 24 bit x 8ch
- Multi-Format Support: DVCAM, MPEG IMX® 30/40/50 Mbps, MPEG HD 420 18*/25/35Mbps should be supported for both recording and playback as standard.
- Record Time: Longer recording time with the Dual Layer and Single Layer Professional Disc Media.
- Design: Half rack size
- Power supply: AC / DC / Battery
- Tilt up front panel: 3.5-inch color LCD Widescreen
- Dual Optical Pick-up, Thumbnail Search function, Expand function, Equipped with a Jog/Shuttle Dial
- The conversion in Playback mode: Down conversion from HD to SD, Up conversion from SD to HD, Cross conversion between 1080 and 720 should be possible
- Front panel operation using the function keys & multi-dial 9 pin video control remote, RS-422A control for linear editing player
- Clip Continuous REC

SPECIFICATIONS

General

Power requirements	100 V to 240 V AC, 50/60 Hz, 12 V DC
Power consumption	AC: 80 W, DC: 65 W, SAVEMODE(DC): 55 W
Operating temperature	+5 to +40 °C (+41 to 104 °F)
Storage temperature	-20 to +60 °C (-4 to +140 °F)
Humidity	25 to 90% (relative humidity)
Recording/playback time	
MPEG HD422 mode	Approx. 95 min. with PFD50DLA. Approx. 43 min. with PFD23A.
Search speed	Jog mode -1 to +1 time normal speed
Variable speed	-2 to +2 times normal speed
Shuttle mode	-20 to +20 times normal speed
F.Fwd/Rev	-35/+35 times normal speed

Inputs/Outputs

HD/SDI IN BNC x 1 (switchable)	HD-SDI: SMPTE 292M (w/embedded audio) SD-SDI: SMPTE 259M (w/embedded audio)
REF.VIDEO IN	BNC x 2 (including loop through), HD Tri-level sync (0.6 Vp-p/75 Ω/negative) or SD black burst/composite sync (0.286 Vp-p/75 Ω/negative)
ANALOG AUDIO IN balanced	XLR 3-pin (female) x 2, +6 dBu, Hi-Z,
DIGITAL AUDIO (AES/EBU) IN and 3/4 ch),	1/2, 3/4 BNC x 2, 4 ch (2 ch each, 1/2 ch

TIME CODE IN	AES-3id-1995 BNC x 1, SMPTE time code, 0.5 to 18 Vp-p/3.3 k Ω /unbalanced
HDSDI OUT 1	BNC x 1, SMPTE 292M (w/embedded audio)
HDSDI OUT 2 (SUPER)	BNC x 1, SMPTE 292M (w/embedded audio), character On/Off
SDSDI OUT 1	BNC x 1, SMPTE 259M (w/embedded audio)
SDSDI OUT 2 (SUPER)	BNC x 1, SMPTE 259M (w/embedded audio), character On/Off
COMPOSITE OUT 1 170M	BNC x 1, 1.0 Vp-p/75 Ω /negative, SMPTE
COMPOSITE OUT 2 (SUPER) 170M,	BNC x 1, 1.0 Vp-p/75 Ω /negative, SMPTE character On/Off
ANALOG AUDIO OUT balanced	XLR 3-pin (male) x 2, +4 dBu, 600 Ω , Lo-Z,
AUDIO MONITOR balanced	XLR 3-pin (male) x 2, +4 dBu, 600 Ω , Lo-Z,
DIGITAL AUDIO and 3/4 ch), (AES/EBU) OUT	1/2, 3/4 BNC x 2, 4 ch (2 ch each, 1/2 ch
TIME CODE OUT Ω /unbalanced	AES-3id-1995 BNC x 1, SMPTE time code, 1.0 Vp-p/75
PHONES	Stereo phone-jack x 1
i.LINK S400	6-pin x 1*1 File Access Mode
HDV*2	1080i/720P
ETHERNET	RJ-45 x 1, 1000Base-T: IEEE802.3ab, 100Base-TX: IEEE802.3u, 10Base-T: IEEE802.5
REMOTE (9P)	D-sub 9-pin (female) x 1, RS-422A
VIDEO CONTROL	D-sub 9-pin (female) x 1, EIA RS-423
AC IN x 1,	100 to 240 V
DC IN	12V XLR 4-pin (male) x 1
REMOTE	4-pin (female) x 1, DC 12 V, 7.5 W
MAINTENANCE	USB x 2

Video Performance

Sampling frequency	Y: 74.25 MHz, Pb/Pr: 37.125MHz
Quantization	8 bit/sample
Compression	MPEG-2 4:2:2P@HL
Composite output Frequency response:	0.5 to 5.75 MHz +0.5 dB/-2.0 dB
S/N(Y):	53 dB or more Y/C delay: \pm 20 ns or less K-
factor (K2T):	1% or less

Processor Adjustment Range

Video level	$-\infty$ to +3 dB
Chroma level	$-\infty$ to +3 dB
Set up/black level	\pm 30 IRE/ \pm 210 mV
Chroma phase	\pm 30 $^{\circ}$
System sync phase	\pm 15 μ s
System sync phase (fine)	0 to 400 ns

Audio Performance

Sampling frequency	48 kHz
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Quantization	24 bit
Frequency response	20 Hz to 20 kHz +0.5 dB/-1.0 dB
Dynamic range	90 dB or more
Distortion	0.05% or less
Headroom	12/16/18/20 dB (selectable)

**Built-in LCD Monitor
Built**

4.3-inch*3 type color LCD monitor

11. Specifications for Non-Linear Editing

FEATURES

- HD/SD SDI input and output with embedded audio and timecode.
- HDMI output for full-resolution, real-time monitoring.
- Embedded HDMI audio output for high-quality audio monitoring.
- Video and audio output should stay perfectly in sync with editing windows for accurate editing and trimming
- Reference input supports blackburst or tri-level sync
- Edit any mix of SD and HD resolution video content together in real time
- Work with different native video formats, including DV, HDV,AVCHD, uncompressed, etc
- Real-time SD/HD resolution, aspect ratio, and frame rate conversion and output – including 16:9
 - to 4:3 and NTSC to PAL
- Real-time editing performance with Min of 2 Full HD Layer and 2 Graphics Layer OR 4 SD
 - Uncompressed Layer and 2 Graphics Layer
- Supports newer file-based formats, including Infinity™ JPEG 2000,XDCAM, XDCAM EX,
- Based on Compatible PC or MAC Platform.

SPECIFICATIONS

Video Formats (Output) (HDMI)

1920x1080i50

1280x720p50

720x576i50

720x576p50

Video Formats (Input/Output)(HD/SD-SDI)

1920x1080i50

1920x1080psf23.98/25

1280x720p50

720x576i50

Video Output Connector HD/SD-SDI:

Video: SMPTE 292M, SMPTE —259M-C

Audio: SMPTE 299M, SMPTE —272M-A

Timecode: LTC/VITC Packet (HD), —D-VITC (SD)

HD-SD/HDMI 1 port : —Video: YCbCr 4:2:2 or RGB 4:4:4 —(8-bit) fro
Monitoring

Audio: LPCM 8-channel —(24-bit/48 kHz)

Video Input Connector HD/SD-SDI

Video: SMPTE 292M, SMPTE —259M-C

Audio: SMPTE 299M, SMPTE —272M-A

Timecode: VITC Packet (HD), —D-VITC (SD)

Audio Formats

LPCM 24-bit/48 kHz

Audio Output Connectors

HDMI LPCM 8-channel HD/SD SDI embedded audio

Reference Input
 BNC: Blackburst or tri-level sync

Machine Control

9-pin D-Sub: RS-422A

A	Video Editing Software with latest Patches on Date of Supply
	Mix frame sizes, frame rates, and formats in the same Timeline in real time Edit at 23.976, true 25, 50 fps Multicam editing of up to 128 sources
	Trimming: Ripple, Roll, Slip and slide, Lift and ripple delete, Asymmetric, multitrack, trimming, Dynamic trimming, JKL trimming, Trim window, Timeline trimming, Keyboard and numeric trimming
	Effects: FxPlug support, Real-time software-based audio normalization, RT Extreme for scalable software-based, multistream real-time effects in DV, SD, and HD formats,, Real-time effects playback on main display and on NTSC/PAL or HD monitor with perfect synchronization, Dynamic RT for automatically adjusting playback quality and/or frame rate based on hardware capabilities Keyframe graphs and editing in Viewer or Timeline, More than 200 transitions, effects, and filters, Import multilayered Photoshop files with layers and alpha support
	Tools: High-quality real-time video vectorscopes and waveform monitors, Multitrack Audio Mixer Keyboard and user interface customization tool, Voice Over tool for adding narration directly to Timeline, Frame Viewer for shot comparisons, Source timecode overlays in Viewer and Canvas QuickView for RAM-based previews of complex multilayered sequences
	Editing support for Audio, Colour correction, Film Cinema Tools
	Native editing for DV, DVCAM, DVCPRO, DVCPRO 50, and DVCPRO HD, FireWire device control, Still images: PSD, BMP, JPEG, PICT, PNG, SGI, TARGA, TIFF
B	Motion and Composing Software with latest Patches on Date of Supply
	Unlimited tracks of movie clips, graphics, text, and particles
	3D Compositing Environment, Position, rotate, and intersect multiple layers in 3D space
	Layer list view makes it easy to change the stacking order of any layer, group, filter, or animation behavior
	Animation, Unique behavior animations for creating natural phenomena like wind, gravity, and vortex
	Particle Engine, Sprite-based particle engine with accelerated performance
	Paint Effects : Paint with pressure-sensitive vector-based brush strokes
	Title Design: Vector-based text engine for creating clean type at any size
	Tracking and Stabilization: Match move using single-point tracking or four corner pinning
	Accelerated Filters and Effects: Over 130 accelerated filters for real-time interactivity
C	Sound Recording & Editing Software with latest Patches on Date of Supply
	Support for AIFF, WAV, MP3, CAF, BWF, SDII, NeXT, QuickTime

	Nondestructive, sample-accurate editing of audio files, Support for up to 24-channel files, including mono, stereo, and surround
	Multitake recording with take editing in Multitake Editor
	Discrete 5.1 mixing, bussing, and routing
	executable from Soundtrack Pro, Final Cut Pro 6, or as AppleScript droplets for batch processing
	Included Effects: Dynamics, Distortion, EQ and Filter, Modulation, Reverb/Delay, Metrics and Diagnostics,
D	Color Correction software with latest Patches on Date of Supply
	Color Grading, Real-time grading controls for SD, HD, and 2K without proxies
E	Encoding Software with latest Patches on Date of Supply
	High-Performance Encoding
	H.264 Apple devices, web, mobile devices, and HD DVD, Compatible I-frame insertion, Full QuickTime support, MPEG-2 encoding, MPEG-1 encoding MPEG-4 encoding
F	DVD Authoring Software with latest Patches on Date of Supply
	Professional DVD authoring software
G	Character Generator Software with latest Patches on Date of Supply
	English/ Hindi -Devnagri font support Title software, integration with Final Cut Pro
E-1	All the items under item no 3 of Integrated NLE and Video editing software are indicative only for illustration and reference purpose. Any equipment of equivalent/ better make/model having similar functions would also be considered as per tender terms and conditions.
2	Warranty : 2 year warranty
3	Quote AMC and per call charges, after the warranty priod is over.
4	Quote future Software charges / scheme / upgrades.
5	The sophistication of the equipment necessitates training for operation and maintenance. Hence a comprehensive training programme in operation and maintenance of the equipment for at least one week each in block of 10 persons, at the factory or at site, should be provided by the tenderer. Quotation for this may be submitted separately, if the training is chargeable.
6	All software's should be bundled and supplied on DVD

Installation, Testing & Commissioning, Training on SITC Basis

Installation and commissioning of the System

Training as per the details given in the specification

Annual Maintenance Contract as defined in the specification.

MADURAI KAMARAJ UNIVERSITY
(University with Potential for Excellence)

GENERAL INSTRUCTIONS, TERMS AND CONDITIONS

FOR SUPPLY OF SCIENTIFIC EQUIPMENT
HIGH RESOLUTION TRANSMISSION ELECTRON MICROSCOPE (HR TEM)

1. The tender schedule is not transferable and it should be used only by the tenderer to whom it is officially issued.
 1. The tender documents can be downloaded from the University web site [1.www.mkuniversity.org](http://www.mkuniversity.org) [2.www.upemku.org](http://www.upemku.org) [3.www.tenders.tn.gov.in](http://www.tenders.tn.gov.in) the document cost i.e. Rs.2,600/- (2,500 + 4% VAT non-refundable) must be made by the tenderer by way of crossed Demand Draft drawn in favour of The Registrar, Madurai Kamaraj University, Madurai 21 payable at Madurai along with tender submission document.
3. The tenderer has the option of sending the offer by Registered post or by Speed post or by courier so as to reach by the date and time indicated. **The last date for receipt of filled in tender document is 14.02.2012 at 10.30 a.m. and the Opening of the tender is 14.02.2012 at 11.30 a.m.** This University will not be responsible for any postal or other transit delay in receipt of the tender offer.
4. **A single stage, two-envelope (Technical Bid and Price Bid envelopes) bidding procedure will be followed.**
5. In addition to the hard copy of Technical Bid, soft copy shall also be submitted in a Compact Disc.
6. All Bids must be delivered at the office of Registrar, Madurai Kamaraj University not later than 10:30 a.m. on 25.01.2012 Technical Bids will be opened at 11:00 a.m. on 25.01.2012 in the presence of the Bidders' representatives who choose to attend. Names of Bidders together with the Nationality of manufacturers and suppliers and such other details as Madurai Kamaraj University, at its discretion, may consider appropriate, will be read out. Price Bids of those who qualify in Technical Bids will be opened at a later date, which will be informed to the qualified Bidders.
7. All the envelopes shall bear on the top left corner, Madurai Kamaraj University's Bid Document Number and also Bid Due Date, and on the bottom left corner, Bidder's name and address.
8. Telex /Fax or Telegraphic offers will not be entertained and will be rejected.
9. Only the tender document downloaded from the University website should be used and it should be resubmitted in full shape without detaching any page from it.

Tenders in any forms other than the forms and schedules issued by the University to the tenderer will not be considered and will be rejected as non-responsive.
10. Each page of the tender document, including technical specifications, should be duly signed for having noted the contents of the document

11. Tenders will be liable to rejection

- a. If the country of manufacture and of the origin of material used in manufacture of articles is not noted in the tender.
- b. If the tender is not in the form supplied by this Office or downloaded from the departmental website.
- c. If the cost of the tender document is not accompanied if the same is downloaded from the web site.
- d. If the tender is not accompanied by the receipt of Earnest Money
- e. If the tenderer fails to fulfill the criteria laid down for evaluation of the "Technical cum Commercial bid" as mentioned in the Tender document
- f. If samples of / models of articles quoted are not submitted as and when required for technical evaluation test
- g. If the tenderer enters any restriction on other conditions in his tender.
- h. If the tenderer enters one rate in figures and another in words and declines to abide by the lower of the two.
- i. If the tenderer alters the period of supply or expunges any clause in the form of tender, and any delay in supply would invite a fee of 1% per week
- j. If the tender is presented without signature.
- k. The equipment mentioned in the tenders must meet all the technical specifications. Any item of the equipment not accompanied by the technical brochure printed by the original manufacturer will be dealt as not meeting the technical specifications
- l. The tenders must meet all the requirements contained in this tender document
- m. Authorization letter duly signed by the manufacturer in case of Authorized Dealer
- n. In the event of violation / non-adherence to any other essential requirements mentioned elsewhere within this Tender document

12. The successful tenderer will be required to enter into a contract with the University regarding purchase.

13. The tender documents shall require all tenderers without exception to pay an Earnest Money Deposit ordinarily not exceeding **one per cent** of the value of the procurement by means of a Demand draft. drawn in favour of the Registrar, Madurai Kamaraj University, Madurai-625 021 payable at Madurai.

i) The Earnest Money will be liable to be forfeited if the tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.

ii) If the successful tenderer fails to furnish the security deposit then the whole Earnest Money will be forfeited.

iii) The rate quoted should be valid for 120 days from the date of opening of the Tender.

14. The tender documents shall require that as a guarantee of the tenderer's performance of the contract, a **security deposit** be taken from the successful tenderer subject to the conditions that the amount of deposit not exceeding **five percent** of the value of the orders placed upto the warranty period.

15. Percentage of payment to be withheld for the effective performance of the contract, provided that withheld amounts do not exceed ten percent of the total value of contract.

16. The tender documents shall specify the period for which the tenderer should hold the prices offered in the tender valid.
17. The tender documents and the contract shall include a clause for payment of liquidated damages and penalty payable by the tenderer in the event of non-fulfilment of any or whole of the contract.
18. The tender documents shall clearly indicate the terms on which the tenderers will be required to quote their price which should be inclusive of all costs of delivery at the final destination such as transportation, payment of duties and taxes leviable, insurance and any incidental services and giving the break up thereof.
19. The tender documents shall clearly indicate the criteria in addition to price which are to be adopted for evaluating the tenders and how such criteria will be quantified or evaluated.
20. Only those firms should respond who are the manufacturers or authorized dealers. A certificate to this effect duly signed by the manufacturer with reference to this tender in respect of all items quoted in the tender should be attached by tenderer(s). A general authorization letter is not acceptable.
21. The cost must include the warranty maintenance for 5 years from the date of installation.
22. Complete address including Phone No., Fax No., E-mail address etc. may be furnished.
23. The Tender should remain valid for a period of six months from the date of the opening of tenders.
24. Only one authorized representative of the tenderer with proper authority letter may attend the opening of the Tender.
25. All documentation is required to be in English.
26. Incomplete tenders and amendments and additions to tender after opening will not be accepted.
27. Fail-safe procedure in detail under following conditions may be indicated in detail.
 - (a) Power failure
 - (b) Voltage variations

The equipment must be capable of withstanding power fluctuations and equipments should not be damaged due to '**trip outs**'. The normal voltage and frequency conditions available at the site
28. Tenderers should include in their tender provision for tools and initial stock of maintenance spares as are essential for proper operation and maintenance of the equipment. Full particulars of spare parts should be provided separately.
29. The successful tenderers shall warranty that spare parts for the system would be available for a minimum period of TEN (10) years after acceptance of the system/equipment. And thereafter before going out of production of the spare parts, he will give a notice prior to such discontinuation.

30. The supplier shall be responsible to obtain all export licence for any other Govt. authorization from their Country.
31. The tenderers shall be responsible for erection & installation of the equipment at destination site and for making it fully operational. Payment and terms and conditions if any, for the same would be specified by the tenderer separately.
32. The tenderer shall be fully responsible for the manufacturers warranty in respect of proper design, quality and workmanship of all the equipment accessories etc. covered by the tender for a period of 5 years from the date of satisfactory installation of the system. **The provision for extended warranty with terms and condition thereof, if any, may also be specifically mentioned.**
33. The supplier will have to provide bank guarantee on execution on the contract performance agreement for 5% of the invoice value. The contract performance agreement should be valid during the course of warranty period.
34. **The University reserves the right to purchase or to reject all or part of any of the Tenders without assigning any reasons.**
35. Canvassing in connection with tender / quotation is strictly prohibited.
36. The tenders are to be submitted in sealed envelope **superscribed the Serial Number and the name of the equipment with the cost of tender document for Rs.2,600/- (2,500 + 4% VAT) to the Registrar, Madurai Kamaraj University, Madurai 625 021 on or before 25.01.2012 at 10.30 a.m. and the same will be opened on 25.01.2012 at 11.00 a.m. in the presence of the tenderers or their authorized representative who would like to be present**

Place: Madurai-21
Date: 25.01.2012

REGISTRAR i/c

