Through PB website

PRASAR BHARTI
(India's Public Service Broadcaster)
Director General : Doordarshan
Doordarshan Bhawan, Copernicus Marg
New Delhi -110001.

Dated: 06/07/2022

Subject: Draft Technical Specifications for Procurement of 2 M/E Multiformat Production Switcher.

The Draft specification of the upcoming tender is enclosed herewith to offer comments, if any by prospective bidders/Firms/OEMs.

2. Bidders/OEMs are requested to provide information about available local content (Make in India) in respect of items listed in suggestive BOM along with budgetary quote.

3. Bidders may please submit the above detail on or before due date by e-mail to ddpurchase401@yahoo.co.in or at following Address.

Assistant Engineer
Room No. 403,
Directorate General: Doordarshan,
Doordarshan Bhawan, Copernicus Marg,
New Delhi -110001 (India)
Telephone: **011- 2311 4401/4403**

Specification For: Draft Technical Specifications for Procurement of 2 M/E Multiformat Production Switcher.

Specification no: SD 04/2022 Dated: 04.07.2022

Due Date to offer Comments: 20.07.2022

Encl.: As above (10 Pages)

Signed by Girish Kumar
Date: 07-07-2022 09:51:46
Reason: Approved

(Girish Kumar)
Assistant Director (Engg)
Doordarshan Directorate: Doordarshan

PRASAR BHARATI
BROADCASTING CORPORATION OF INDIA
DIRECTORATE GENERAL: DOORDARSHAN

SPECIFICATIONS FOR PROCUREMENT OF 2 M/E MULTI FORMAT PRODUCTION SWITCHER

DD Specifications No.: SD 04/2022
Dated: 04.07.2022

1 Scope:

The specifications outlined in this document aim at the procurement of broadcast quality 2 M/E Production Switchers/Vision Mixers for broadcast applications in Doordarshan's Network.

2 General:

2.1 The Vision Mixer (VM) offered in the bid should be from reputed manufacturer and the same should be field proven and in use by globally renowned broadcasters/ media houses.

2.2 The bidder should not include and quote for end of life equipment.

2.3 The bidder should submit a list of broadcasters/ media houses with whom the quoted equipment is in usage. Bids without model specific users list is liable to be rejected.

2.4 The bidder shall submit only one option (Single BOM) for the offered system. Any bid with multiple options (BOMs) is liable to be rejected.

3 ESSENTIAL FEATURES: -

3.1 The offered product should be from reputed manufacturer and the quoted model should be field proven and in use by leading broadcasters/media houses. Bids without a list of users are liable to be rejected.

3.2 The Switchers should be perfectly designed with mission critical applications and auto switchable redundant power supplies for both the main frame and control panel.

3.3 Each switcher should have two full function multi-format M/Es and each M/E should have a minimum of four built-in full function keyers along with a modifier. The control panel should have dedicated rotary controls to set various parameters for the key layers on each M/E.

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3.4 All full function keyers should have Linear, Luminance key and Chroma Key, Mask, Matte, Fill and Key Invert features.

3.5 It should be possible to do at least two chroma keys simultaneously in the offered switcher.

3.6 Each M/E should have wipe generators with pattern generators having the capability to modify various wipes with Softness, Position, Aspect Ratio, Rotation, Multiplication, Modulation, Border Width, Border Softness and Border Color.

3.7 Each M/E should have a matte generator capable of multicolor wash and assignable to Background, Key Fill and Border Fill. It should be able to preview different sources and various effects created on them.

3.8 Each key of both M/Es should have a selection feature for assigning different Key and Fill signals and it should be possible to copy the entire content of a Keyer in the same or different M/Es.

3.9 It should be possible to take the output of an M/E and use it as the background or key on the other M/E.

3.10 The Switcher should support Ultra High Definition (Quad Link), High Definition format (16:9 Aspect Ratio) and Standard Definition format (16:9 and 4:3 Aspect Ratio). All Hardware and Software (with perpetual validity) are required to support these formats and be included in the offered system.

3.11 The Switcher should have 32 video inputs supporting SD-SDI and HD-SDI formats.

3.12 Out of 32 Video Inputs at least 4 inputs should be multi-format and should have internal Up-conversion SD (4:3)/(16:9) to HD (16:9)) to accept SD sources.

3.13 The Switcher should have 16 Outputs including Auxiliary Outputs.

3.14 Out of 16 Video Outputs at least 2 Outputs should be multi-format and should have Internal Down-conversion (HD (16:9) to SD (4:3)/ (16:9) to provide SD outputs.

3.15 Delay due to format conversion should be less than one frame for the reference signal. Further, it should be possible to adjust the delay of the unconverted input signals.

3.16 The Switcher should be equipped with at least 4 floating 2D DVEs assignable to M/E1 and M/E2 in the configuration of 4-0, 3-1, 2- 2, 1-3, and 0-4. 2D DVEs should be capable of resize and reposition for window size and its position on the screen.

3.17 The Up/Down conversion facility as described in para 3.12 & 3.14 above and DVE facility described in para 3.16 above must be available simultaneously.

3.18 The switcher should have a minimum of 8 channels Internal Frame Memory to store at least 6000 frames in HD resolution. It should be possible to instantly recall the stored frame/clip. It should support embedded audio, import frame/clips through a suitable interface, when required.

3.19 It should be possible to create transition/wipes using graphics from the frame memory.

3.20 The Switchers should facilitate transition from On-Air Video to a new video through Cut, Mix (Dissolve) and Wipe. Transition should take place manually by a T-bar fader as well as automatically by a button. Auto transition should be possible at the desired speed in terms of frames and seconds.

3.21 Control Panels of the Switcher should be ergonomically designed for production in any complex live broadcast environment, providing complete operational ease to the operator, especially during fast paced broadcast production environment.

3.22 Operational buttons should be well illuminated and be able to customize source names for different applications.

3.23 The Control Panels should have a minimum twenty four directly accessible cross point source buttons in M/E Buses. It should have the capability to map any source to any cross point.

3.24 It should be possible to assign a name to each source and have Mnemonic displays for source names in directly accessible Cross-Point Buttons of the Control Panel with excellent visibility and viewing angles. Remaining source names should be displayed while pressing the shift button assigned in first row.

3.25 Control Panels should be equipped with High Resolution touch screen menu panels, preferably mounted internally. The External High Resolution touch screen menu panels should be of approximately 14 inch to 17 inches in diagonal size, having instant

functionality selection with intuitive user control. The Switcher should be highly rugged for reliable use in harsh environment.

3.26 The Switchers should have macros to automate multiple keystroke operations which can be recalled with a single button press. It should be possible to do real-time preview and edit macros through a onscreen menu which can be attached to the control panel buttons for operator flexibility.

3.27 The Switcher should have Effects Memory to save events related to cross points transitions including Wipes, DVEs, and Keyers as a snapshot. It should also be possible to save/ store multiple snapshots and including on an external memory device.

3.28 The Switcher should have facility to indicate non-synchronous source (s), On-Air source (s) and failure of any power supply unit.

3.29 It should have a built in format-independent multi-viewer with a minimum of two independently configurable outputs for production. The switcher also should be capable of storing layouts and recalling the same in accordance with the production requirement including names and tally indicators.

3.30 It should be possible to control external devices such as Recorders and Video Servers directly from the Switcher through accepted broadcast industry standard interfaces.

3.31 The Suggestive Bill of Material is given in Appendix-I. The bidder is required to provide a complete list of equipment and accessories offered to meet the specifications in a point wise manner.

4 TECHNICAL SPECIFICATIONS: -

1.	**Video Performance**	:	**Signal processing:** 10 bits, 4:2:2 digital processing for SD & HD **Data Rate:** 270 Mbps for SD-SDI and 1.485 and 2.97 Gbps for HD-SDI **Supported Video Formats:** SMPTE 259M, SMPTE 292 M, SMPTE ST 424 **Aspect Ratio:** 4:3 & 16:9 for SD-SDI and 16:9 for HD-SDI **System delay:** ≤ Single line (without FS, FC & DVE) **Return Loss:** ≥15dB for SD-SDI input ≥12dB for HD-SDI input

2.	**Inputs**	:	**Video-inputs:** 32 nos. conforming to SMPTE ST 424, SMPTE 292M(HDTV), SMPTE 259M (SDTV) on75Ω BNC **Reference inputs:** SD black burst/composite sync, HD Tri-level sync. on 75 Ohm BNC with loop through
3.	**Outputs**	:	**Video-outputs:** Minimum 16 nos. conforming to SMPTE ST 424, SMPTE 292M (HDTV), SMPTE 259M (SDTV) on 75Ω BNC configurable as Preview, Program dedicated or assignable to any Bus including Auxiliary Bus
4.	**Interfaces**	:	**GPI/Tally I/O:** Minimum 32 on D-type Connectors **External interfaces:** RS422, RJ45 Ethernet, USB
5.	**Power Supplies**	:	220 V AC ± 5%, 50 Hz (Two fully independent hot swappable power supplies for Main frames and Control Panels)

5 COMPLIANCE:

(a) A point by point full compliance statement in respect of all parameters, from the principal manufacturers in the format given below, is to be part of the bid. Mere signature on the copy of DD specifications shall not be accepted as a compliance statement.

The above information should be supported by technical literature / data sheets enclosed with the bid. Reference to the page number should be mentioned in the relevant column. Bids without compliance statement or with incomplete compliance statement are liable to be rejected at the sole responsibility of the bidder. Any deviation from specifications detailed in the compliance statement is to be highlighted separately.

Sr. No of DD specs.	DD specs.	Compliance (Yes/No)	Performance Fig. of equipment Offered.	Reference to the Page Number of enclosed literature	Deviations, in case of non-compliance	Optional items, if any, required to make the system Compliant to DD specs.	Features in the offered Product which exceed DD specs.	Remarks, if any
1.	2.	3.	4.	5.	6.	7.	8.	9.

(b) In addition to the above, authorization from manufacturer of the product should necessarily be submitted along with the bid.

6 TECHNICAL LITERATURE:

One set of electronic technical and operations manual for the equipment is to be provided on a non-returnable basis along with the bid to facilitate evaluation in the absence such literature the bid is liable to be ignored. The successful bidder will have to supply an additional set of electronic technical, operational and maintenance manuals with respect to all equipment with the final delivery of the system to Doordarshan.

7 DEMONSTRATION:

If necessary, the bidder may be asked to demonstrate the offered system, as part of the technical evaluation. In such case the bidder will have to make arrangements for the demonstration of the offered system at Doordarshan Bhawan, New Delhi, at a notice of a maximum of 15 days. Accordingly, the bidder should be in readiness for such demonstration.

8 WARRANTY:

a) The system should carry a warranty of three years from the date of accepted consignment at the consignee's premises. In the eventuality of any equipment including software failing during this period, such fault shall need to be rectified or the relevant part / equipment replaced free of cost to Doordarshan. The OEM will be required to give undertaking to this effect along with the bid.

b) After sales service support for an additional 02 (two) years for repairs/maintenance/replacement of the offered system after the completion of warranty period should also be provided. The OEM will need to give an undertaking to this effect along with the bid.

c) Warranty should cover all hardware, software and modules of the complete system.

d) Bidders are required to submit details of after sales service arrangements for the equipment including that of infrastructural facilities available in India.

9 DELIVERY PERIOD: The delivery period will be 03 months. The delivery period does not include the time for training.

10 TRAINING:

The bidder should offer 03 days Zone-wise hands-on training for operations and maintenance to Doordarshan Engineers. Comprehensive training material in the form of soft copies should be available for trainees during the training session.

11 INSPECTION:

The equipment shall be subjected to inspection by Doordarshan officials at Delhi/NCR.

12 ENCLOSURES:

The bidder must necessarily submit the enclosures, as specified in this document, alongwith the technical bid. The bid is liable to be rejected in the absence of the above enclosures at the sole responsibility of the bidder.

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Appendix-I

Bill of Material (BOM)

S. No.	Details of Item	Qty
1.	2 M/E MULTI FORMAT PRODUCTION SWITCHER (As per Specifications)	19
2.	Installation & Training 0f 03 Calendar Days.	19
3.	Installation and training Manuals.	19

Appendix-II

EQUIPMENT SHALL BE INSTALLED AT THE FOLLOWING DOORDARSHAN CENTRES

Sl. No.	Zone	Location of Doordarshan Centre	Total Qty.
1.	East Zone (EZ)	RANCHI	1
2.		AIZWAL	1
3.		SHILLONG	1
4.		IMPHAL	1
5.	North Zone (NZ)	JALANDHAR	1
6.		DEHRADUN	1
7.		LUCKNOW	1
8.		SRINAGAR	1
9.		CHANDIGARH	1
10.		SHIMLA	1
11.		DELHI –DD NEWS	1
12.		JAMMU	1
13.		LEH	1
14.		VARANASI	1
14.	South Zone (SZ)	PORT BLAIR	1
15.		PUDUCHERRY	1
16.		VIJAYWADA	1
17.	West Zone (WZ)	PANAJI	1
18.		INDORE	1
		TOTAL QTY.	19

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