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ALL INDIA RADIO & DOORDARSHAN
OFFICE OF THE ADDL.DIRECTOR GENERAL (E) (EZ)
18/3, Uday Shankar Sarani, Golf Green, Kolkata-700 095.



File No.TV/EM-3/Digital Intercom System /2020-21

Date: 01/12/2020

Subject: Draft Technical Specifications for High Quality Digital Intercom System for Broadcast TV Production.

The Draft specification of the upcoming tenders is enclosed herewith to offer comments if any by prospective bidders. Please also submit Budgetary quote of the item by due date at e-mail address tvmeez@prasarbharati.gov.in or on following Address:

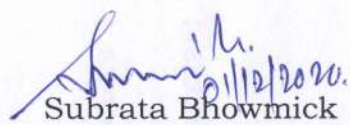
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Specification For: Draft Technical Specifications for High Quality Digital Intercom System for Broadcast TV Production.

Specification no: Digital Intercom System (EZ)/2020-21 Dated:01.12.2020

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Encl: As Above(08 Pages)


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**SPECIFICATION FOR HIGH QUALITY DIGITAL INTERCOM SYSTEM
FOR BROADCAST TV PRODUCTION**

1. SCOPE:-

The specifications lay down the required performance characteristics of high quality Digital Intercom System to be used for 1st Channel TV Studios of Doordarshan Kendra-Kolkata.

2. GENERAL:-

- a) The offered equipment should be from an internationally reputed manufacturer and the quoted model should be field proven and in use by leading Broadcasters. The bidder should essentially submit the list of the Broadcasters to whom the quoted model has been supplied. The tenders without the proper user list shall liable to be rejected out rightly.
- b) The specifications aim at the SITC for Studio Talk-Back System along with Control Panels and Accessories for intercommunication between Producer/Director, Camera persons, Floor Manager/Floor Assistant, Talent/Anchor and other Technical facilitated area such as Audio Panel, Lighting Panel, CCU Panel, and VTR-Room etc. during programme production in a Broadcasting TV Studio. The system should be an integrated system for 1st Channel Studios (St#A & St#B) and it should also integrate News Room, MSR, CAR, Earth-Station, Digital Terrestrial Transmitter Hall etc for transmission/recording purpose from 1st Channel Studios (St#A & St#B) of Doordarshan Kendra-Kolkata.

3. Essential Features: -

- a) The talkback systems can be designed with/without Central-Matrix with digital signal processing and self-contained power supply in 19" rack mounting.
In case of a system without a Central-Matrix all the functionality of the Talkback system should be achieved as is being achieved with a Central-Matrix with redundancy.
- b) In case of a system with Central-Matrix, all the interconnections should be made through this Central-Matrix.
In case of Matrix-free system, all the interconnections should be made through Enterprise class Network Switches in redundant mode that supports IGMP (Internet Group Management Protocol) for managing Multicast group traffic.
- c) The system should be Modular & scalable for future addition of Ports, Panels & Interfaces. The interface cards populated in the matrix for the panels/IFBs/ Belt Packs/Cameras should have at least 8 Ports.
- d) Audio Signal Processing and Transmission up to the control panels should be digital.
- e) Control-panels should have excellent ergonomics to give good look in the installed area.
- f) All Control-panels & Headsets should be rugged in design to withstand professional use.

- g) Belt packs and Remote panels should be constructed of high grade Aluminum or Steel. These should be shielded against hum, RFI and Thyristor switched dimmer noise.
- h) Dual muff Noise attenuating Headsets with dynamic noise cancelling microphones should be used to reduce the ambient noise and minimize feedback.
- i) The Intercom unit should use apposite bandwidth to maximize the intelligibility of the human voice.
- j) Apart from communication from Producer to Floor Manager/Floor Assistant/Anchor/Talent and Producer to Camera persons, it should have control panels for various areas like VTR, CCU, Audio, Lighting-Console, News-Room, MSR, CAR, Earth-Station, Digital Terrestrial Transmitter Hall etc for transmission/recording purpose from 1st Channel Studios (St#A & St#B) of Doordarshan Kendra-Kolkata.
- k) Remote control panels should be equipped with wide frequency professional quality gooseneck microphones, built in amplifier and speaker, channel select buttons, intercom and program level volume control. Facility to connect headsets should also be available. The microphone preamplifier should have compressor/ limiter and speech bandwidth filters to improve intelligibility and reduce feedback.
- l) The system should allow two way communications between all Remote Control Panels, Producer Station and Floor Manager/Floor Assistant's Belt Packs.
- m) The Producer Panel should be equipped with electronically latching push ON and push OFF selector switches to enable hands free operation and sigma mode of calling (All select). Switches may be lever or push button type.
- n) Other Remote Control Panels should be equipped with 'Push To Talk' selector switches.
- o) The Producer Control panel should have 32 Buttons/Switches and other remote control panels should have at least 16 Buttons/Switches.
- p) The Producer Control panel could be a single unit 32 Buttons panel or created with combination of main and expansion panel for simultaneous display and operation on 32 buttons. The software support for installation of expansion panels, shift key enable, audio I/O should be offered for all the required control panels.
- q) The system should have facility to create groups and party-line communication interface.
- r) The system should have Wired Belt Pack unit and Headset for Floor Manager/ Floor Assistant for two way communication with the Producer.
- s) The system should have IFB (**Interruptible Fold Back**) configurable Wired belt packs to provide communication to the talent/anchor in the studio through earphone (separately for both Studios).
- t) The system should be able to interface with 6 (**six**) nos of Camera's CCU/Base-Stations via 4-wire/2- wire systems for Studio#A and 4 (**four**) nos of Camera's CCU/Base-Stations via 4-wire/2- wire systems for Studio#B.

- u) Talkback system should be designed to ensure that Remote Control Panels can be situated at about **100 meters** from Central Matrix or Network Switch.
- v) The software for system configuration should be easy to learn and use and should also have facility of drag & drop operation, intuitive graphical user interface.
- w) The firm should certify the completeness of the offered system. It will be the sole responsibility of the Bidder to offer all the items including software, hardware (Interface & I/O cards and Network switches), Cables & Connectors that are necessary to complete the system.
- x) The firm should also provide the schematic depicting all the talkback stations of the offered system to help understand the completeness of the system.
- y) The Bill of Material required is given in **Appendix-I** (Pg#8).

4. SYSTEM as detailed below should be offered:-

- i) The Central Matrix based System should have at least 32 Ports for Panel connections. In Distributed Network System (Matrix-free) Enterprise Class Network Switches with PoE should be used for creating 32 Ports.
- ii) The system should have redundant CPU and redundant Power Supply.
- iii) The system should have 4-wire connectivity to connect **6 (six)** nos of Camera in Studio#A and **4 (four)** nos of Camera in Studio#B.
- iv) The system should have both way communicating 2 (two) nos of 32 Buttons/Switches Panels for Producers and 12 nos of 16 Buttons/Switches Remote Panels other than Producers.
- v) The system should have facility for connecting 4 Nos. of wired Belt Packs along with 4 Nos. Earplugs to facilitate IFB for Talent/Anchor and another 4 Nos. of wired Belt Packs along with 4 Nos. dual muff Headsets for Floor Manager/ Floor Assistant.

5. Technical Specifications:-

A. Matrix Based Intercom System

SN	Specification	Parameter
CENTRAL MATRIX		
1	Central Matrix Size	32 Ports
2	Chassis	2RU or more Rack mountable
3	Number of CPU	2 Nos (In Redundancy mode)
4	Number of Power Supply Unit on Boards	2 Nos (Auto Switchable)
5	Sample Rate	48KHz or Better
6	Resolution	24 Bits or more
7	Operating Temperature	0°C to 50°C
8	Power Supply	240 V AC 50 Hz or DC INPUT with Power Adapter
DIGITAL KEY PANELS		
1	Panel Chassis	1RU or 2RU Rack mountable
2	Number of Push-Buttons (Producers)	32 Individual Push-Buttons
3	Number of Push-Buttons (Other than Producers)	16 Individual Push-Buttons
4	Display Type	High Contrast LED Display
5	Panel Microphone	Electrets Gooseneck Microphone
6	Headset	Binaural Headset with Microphone
7	Loud-Speaker	Integrated Dynamic Speaker
8	Volume Level Control	1 or more
9	Rear Panel Connector To Matrix To Expansion Panel	RJ45 Connector RJ45 Connector
10	Audio Sample Rate	48KHz or Better
11	Resolution	24 Bits or more
12	Power Supply	240 V AC 50 Hz or DC INPUT with Power Adapter
WIRED BELTPACKS FOR FLOOR MANAGER & ANCHOR(IFB)		
1	Beltpack connectivity	Wired
2	No. of channels	1 or more
3	Type of connector	RJ45 or MC12 or XLR
4	Power Supply	DC supply on XLR/PoE (Power on Ethernet)
5	Closed Headset with Mic	Mini XLR or XLR or similar
6	Anchor Earplug without Mic	3•5mm EP Jack or similar

B. Matrix Free Intercom System

SN	Specification	Parameter
CORE NETWORK SWITCH		
1	Chassis	1RU, Half rack-width form factor, Rack mountable
2	SFP Gigabit Ports	2 Nos. or more on RJ-45
3	1000BASE-T Copper Ports	2 Nos. or more on RJ-45
4	100BASE-T Ports	8 Nos. or more on RJ-45 PoE available at least on 4 Ports.
5	Supported Protocols	IPv4, IGMP Version 2, HTTP, 802.1p
6	IGMP Snooping Parameters	Router present time out: 400s or better Query Response Interval: 10s or better
7	Operating Temperature	0°C to 50°C
8	Power Supply	120V - 240V AC 50 Hz
DIGITAL KEY PANELS		
1	Panel Chassis	1RU or 2RU Rack mountable
2	Number of Push-Buttons (Producers)	32 Individual Push-Buttons
3	Number of Push-Buttons (Other than Producers)	16 Individual Push-Buttons
4	Display Type	High Contrast LED Display
5	Panel Microphone	Electrets Gooseneck Microphone
6	Headset	Binaural Headset with Microphone
7	Loud-Speaker	Integrated Dynamic Speaker
8	Volume Level Control	1 or more
9	Rear Panel Connector To Matrix To Expansion Panel	RJ45 Connector RJ45 Connector
10	Audio Sample Rate	48KHz or Better
11	Resolution	24 Bits or more
12	Power Supply	240 V AC 50 Hz or DC INPUT with Power Adapter
WIRED BELTPACKS FOR FLOOR MANAGER & ANCHOR(IFB)		
1	Beltpack connectivity	Wired
2	No. of channels	1 or more
3	Type of connector	RJ45 or MC12 or XLR
4	Power Supply	DC supply on XLR/PoE (Power on Ethernet)
5	Closed Headset with Mic	Mini XLR or XLR or similar
6	Anchor Earplug without Mic	3•5mm EP Jack or similar

6. SOFTWARE:-

All the necessary software required for Control Panels, Matrix and other required ancillary interfacing units should be supplied for proper working of the system in original and should be licensed to Doordarshan with perpetual validity.

7. COMPLIANCE:-

- a) Any substandard equipment included in the offer may cause the rejection of complete offer with the sole responsibility of Bidder.
- b) The firm should provide the offered un-priced bill of material in electronic form also in addition to the hard copy for ease of technical evaluation.
- c) A point-by-point compliance statement from the principal manufacturer in respect of all the points laid down in these specifications is to be enclosed along with the offer in the format given below. Mere signature on the copy of the specifications shall not be accepted as a compliance statement.

The figures so mentioned should be supported by record of these in the technical literature enclosed with the tender and reference to the page number of enclosed literature for all features and technical specifications should be mentioned in the relevant column. Offers without the compliance statement or with incomplete compliance statement will be liable for rejection with the sole responsibility of the bidder. Any deviation from the specification detailed in the compliance statement is to be highlighted separately.

Sr. No. of DD Specs.	DD Specs	Compliance (Yes/No)	Performance Figure of equipment Offered.	Reference to the Page No. of enclosed literature	Deviations in case of non-compliance	Optional items if any reqd. to make the sys. Compliant to DD Specs.	Features in the offered Product which exceeds DD Specs.
1	2	3	4	5	6	7	8

8. ACCESSORIES:-

All the essential accessories such as various types of connectors, power cord etc. is required to be quoted essentially. Various types of interconnecting cables along with matching connectors at both ends, required with the system for its completeness, should also be included in the offer. All the Optional items may be quoted separately. The firm must provide enough details about optional items to decide its utility.

9. DOCUMENTATION:-

One set of printed technical and operation & maintenance manuals for all the equipment are to be provided on non-returnable basis along with the tender to facilitate the technical evaluation, otherwise the tender is liable to be ignored. The successful bidder will have to supply one set of printed Operation, Service & Maintenance manuals for each equipment.

10. GUARANTEE:-

- a) The system should be guaranteed on Site for **3 (three) years** of trouble free operation from the date of installation. In case of any equipment failure including software and hardware within this period, the same shall be rectified or replaced free of cost to Doordarshan.
- b) The guarantee should cover all hardware, software and modules of the complete system.

11. DEMONSTRATION:-

If necessary, the firm may be asked for demonstration of the offered system as part of the technical evaluation. In such case the firm will have to make suitable arrangement for the demonstration of the offered system at O/o the ADG(E)(EZ) Kolkata/ Doordarshan Kendra-Kolkata on notice of 7 days. Accordingly the firm should be in readiness for demonstration on a notice of 7 days.

12. TRAINING:-

The bidder has to arrange comprehensive operation and maintenance training by the OEM or by their certified Trainer(s) on the Intercom system at Consignee location for a period of 2(Two) working days. The bidder has to provide comprehensive training material in the form of hard copies as well as soft copies to the trainees during the training session.

13. DELIVERY PERIOD :-

The delivery period for the project including training will be 03 (Three) months.

14. INSPECTION:-

The equipment shall be subjected to inspection by representative of O/o the ADG(E)(EZ) Kolkata.

15. ENCLOSURE:-

The bidder must necessarily submit the following enclosures along with the technical bid:

- a) Compliance statement with respect to all the points of the specifications duly signed by the OEM (Pg#6, Para-7(C)).
- b) The reference to the page number of enclosed literature for all features and technical specifications should be essentially mentioned in the relevant column of the compliance statement.
- c) Technical manuals/Detailed technical literature/catalogues for all the offered products for substantiating the model no. and technical specifications.
- d) The schematic depicting all the talkback stations of the offered system to help understand the completeness of the system.
- e) Model specific broadcast user list of the offered product.
- f) Any other document mentioned elsewhere in the tender document.

NOTE: - The Tender is liable to be rejected in the absence of the above enclosures with the sole responsibility of the Bidder.

APPENDIX-I

Bill of Material for Intercom System (Total Quantity: 1 set)

Catering for 2 nos of Studios with MSR, CAR, IT, NEWS, ENG, Earth Station, DTTs etc.

SN	Items	Qty.
1.	32 Ports Matrix with redundant CPU and Power supply or 32 Ports Distributed Network System (Matrix-less) with redundant Enterprise Class IGMP enabled Network Switches.	01 Set
2.	32 Button/Switch Producer-Station with gooseneck microphone and built in speaker and power supply (may be configured with expansion panels). (Production Panel of PCR#A &B).	02 nos.
3.	16 Button/Switch Remote Control Panel with gooseneck microphone and built in speaker and power supply unit. (VTR, CCU, Audio Console, Lighting Console of PCR#A, VTR, Audio Console of PCR#B and at CAR, MSR, IT-Room, News-Room, DES & DTT).	12 nos.
4.	Headset with suitable connectors for using with Remote panels.	12 nos.
5.	Digital Interface card for connecting remote panels catering at least 8-Digital Audio ports (including 1 No. of spare interface card).	04 nos.
6.	Analog Interface card for connecting FM Belt pack & IFB Belt pack catering at least 8 nos Analog Audio ports (including 1 No. of spare interface card).	02 nos.
7.	Wired Belt pack with dual muff Headset for Floor-Manager/Floor-Assistant.	04 nos.
8.	Wired Belt pack (IFB) with earpiece for Anchors/Talents.	04 nos.
9.	Interconnecting cables with necessary matching Connectors at both ends (Note:- Central Matrix or Network Switch will be placed at CAR only)	1 Lot
	i. CAR to St#A Producer Panel	60 m 1 No
	ii. CAR to St#A VTR Panel	65 m 1 No
	iii. CAR to St#A CCU Panel	60 m 1 No
	iv. CAR to St#A Audio Console	60 m 1 No
	v. CAR to St#A Lighting Console	60 m 1 No
	vi. CAR to St#A Floor Cameras (6 Nos)	60 m 6 Nos
	vii. CAR to St#A Floor Manager/Assistant	70 m 2 Nos
	viii. CAR to St#A Floor Talent/Anchor (IFB)	70 m 2 Nos
	ix. CAR to St#B Producer Panel	45 m 1 No
	x. CAR to St#B VTR Panel	50 m 1 No
	xi. CAR to St#B Audio Console	45 m 1 No
	xii. CAR to St#B Floor Cameras (4 Nos)	45 m 4 nos
	xiii. CAR to St#B Floor Manager/Assistant	60 m 2 Nos
	xiv. CAR to St#B Floor Talent/Anchor (IFB)	60 m 2 Nos
	xv. CAR to RCP at CAR	10 m 1 No
	xvi. CAR to RCP at MSR	15 m 1 No
	xvii. CAR to RCP at IT-Room	25 m 1 No
	xviii. CAR to RCP at NEWS ROOM	70 m 1 No
	xviv. CAR to New Earth Station/DTT Room	60 m 2 Nos
10.	Any other item to make the system fully functional	01 set
11.	Operation Manual/ User Guide/ Technical Manual/ Installation Manual etc.	01 set
12.	Service & Maintenance Manuals	01 set