

PRASAR BHARATI
(BROADCASTING CORPORATION OF INDIA)
DIRECTORATE GENERAL: ALL INDIA RADIO
(P&D UNIT)

Technical Specification for Digital Recording Console

1. GENERAL

1.1 This specification is for Digital Audio Recording Console for use in Production studios of All India Radio. The consoles shall be fully digital modular plug-in design and based on the field-proven modern technology. It should be rugged in construction and suitable for reliable operation 24 hours a day and 365 days in a year.

Only professional and branded products manufactured by reputed companies in sound broadcasting equipment field shall be offered.

1.2 The tenderer must submit the following documents along with the tender:

- (a) A point-to-point compliance statement as per Annexure-I highlighting deviations, if any, on all the clauses of specification from the manufacturer of the offered equipment duly signed in original. Actual performance figures should be quoted under remarks column. If compliance statement is in format other than Annexure-I, the tender will be rejected out rightly.
 - (b) Detailed printed literature of the equipment giving complete electrical and mechanical data including detailed dimensions and mounting requirements.
 - (c) The quote should either be from the original manufacturer or from their authorized representative/dealer. In case, the quote is from the authorized representative/dealer, a certificate in original from the original manufacturer that the tenderer is authorized representative/dealer for India should be enclosed with the tender. In case, the quote is from both i.e. Authorised representative/dealer and also from original manufacturer, the quotation from original manufacturer will be considered for technical evaluation.
- 1.3 The tenderer may be required to demonstrate the functioning of the tendered unit during technical evaluation, including verification of electrical performance parameters as may be required during technical evaluation, in New Delhi. Non-compliance of equipment demonstration, if asked for by the indenter, shall disqualify the tender.
- 1.4 Incomplete offers will be rejected out rightly.

2. SCOPE OF THE TENDER

The specification is for supply of Digital Recording Console (including equipment rack for mounting of electronics part of the console if such a design console is offered) along with all accessories, mating connectors and cables, etc. required to be fully functional.

3. TECHNICAL SPECIFICATION

3.1 General Features

- 3.1.1 The console should be simple in operation.
- 3.1.2 The console should be compact ergonomically designed professional product and suitable for reliable operation on 24x7x365 basis working. It should be housed in rust-proof pre-painted metal cabinet. It may either be single composite unit or the main electronics portion may be in separate 19-inch rack mountable unit.
- 3.1.3 The Console should be suitable for Tabletop mounting.
- 3.1.4 The layout of modules / parts / components in the console should be professional to permit easy access to the wiring, inspection, repairs / servicing.
- 3.1.5 All the inputs and outputs should be available in 'D' type connector for digital and on balanced 3-pin XLR for analog audio. The mating pins of 'D' connectors should be gold plated.
- 3.1.6 All switches / buttons / knobs operable by operator should be sturdy and designed for reliable operation for long hours. Inputs / Outputs and connectors shall not be on the working / operating area of the console surface.
- 3.1.7 The controls for output bus assignment, channel on/off, monitoring level control, talkback & signaling etc. should be appropriately located on the control surface of the console.
- 3.1.8 Provision for ganging the mono inputs for stereo operation should also be available.
- 3.1.9 All selection points on the console surface if required shall be provided with clear illuminated status indication, if possible in different colours for easy understanding.
- 3.1.10 Status Indication (LED) in different colours, should be provided for signaling, talk-back from other consoles, on air, channel selection, PFL indication, Stereo/Mono and other operations.
- 3.1.11 Console should have facility to work with computer based Studio / News automation systems.
- 3.1.12 All the internal Audio Signal Processing in the consoles should be fully digital signal processor based.
- 3.1.13 Various Control Circuits in the console should be digital and entire switching shall be through solid-state digital switches.
- 3.1.14 A to D and D to A converters shall have minimum 24 bit resolution.
- 3.1.15 There should be in-built word clock for synchronization of external digital devices and provision should also exist to synchronize the console from and external word clock or AES/EBU source.
- 3.1.16 All digital inputs and outputs will be in AES/EBU format and conform to AES3-1992 signal format.

3.2 Input Fader channel Modules Features

All the input fader channel modules should have following minimum provisions:

- 3.2.1 Selection for feeding/assigning any of the input to any of the input program bus and to any of the output program bus.
- 3.2.2 The control fader of each Input/output module should fade in from infinity to zero to provide nominal output with minimum 10dB reserve gain.
- 3.2.3 Console should have facility for Pre-Fade Listening (PFL), with suitable indicator during PFL.
- 3.2.4 Fader on/off switch on console surface should be available.
- 3.2.5 Each Fader channel should have facility of at least three character LCD display of input type.

3.3 Input Configuration

The consoles shall have minimum 12 faders. In case the frame size is not exactly matching the requirement of 12 input faders, higher frame size may be offered. The minimum requirement of input sources, faders and its configuration are as detailed below:

1. No. of faders: 12
2. Provision to connect input sources:
 - (i) Microphones
 - (a) Mono 8
 - (b) Stereo Refer to item No. 3.3.1.3
 - (ii) Line
 - (a) Analogue mono line 8 (with further provision to configure as 4 Stereo)
 - (b) Digital 8
3. It should be possible to feed 4 Digital Stereo line inputs along with 8 mono mike inputs, with a facility to replace each mike input with a mono line input.

3.3.1 Mono Mike Inputs

All mike channels should have the following provisions.

- 3.3.1.1 Input Level range adjustable -60 dBu to -35 dBu (Ref. 0 dBu = 0.775V rms) with sensitivity control.
- 3.3.1.2 Input Impedance \geq 1 K ohms balanced.
- 3.3.1.3 Provision to gang two adjacent mono mike channels for feeding stereo (mike) input.
- 3.3.1.4 Phase reversal switch
- 3.3.1.5 Built in switch-able Phantom Supply of 48 Volts
- 3.3.1.6 Provision for muting of various monitoring speakers as detailed in section 3.12
- 3.3.1.7 Pan potentiometer
- 3.3.1.8 Selectable inbuilt parametric equalizer with high Q capable of providing at Least \pm 12dB equalization, independent in each of three bands, i.e., at low, mid and high audio frequencies.

3.3.2 Mono Line Inputs (Analogue)

All mono analogue channels shall have the following features and parameters:

- 3.3.2.1 Nominal level: + 4 dBu with headroom of at least 15 dB
- 3.3.2.2 Maximum Input Level: + 24dBu
- 3.3.2.3 Input Impedance: ≥ 10 K ohms balanced.
- 3.3.2.4 Balance control in each channel

3.3.3 Digital Inputs

All Digital Input Channels shall have the following features/ parameters:

- 3.3.3.1 Level Reference: 0 dB_{FS} digital = + 24 dBu analogue
(+ 4 dBu = - 20 dB FSD)
- 3.3.3.2 Signal Format: AES-3 of 1992
- 3.3.3.3 Level: Digital input level should match the analogue input level (as mentioned in para 3.3.2)
- 3.3.3.4 Internal Sampling rates: 32 kHz, 44.1 kHz and 48 kHz
- 3.3.3.5 Convertor: A/D 24-bit, SRC on all digital input
In-built sampling rate converter on each digital input channel to accept different sampling rates

3.4 Output Configuration

The console should provide at least 4 independent stereo Programme Outputs, each in analogue as well as in digital format.

3.4.1 Analogue Output

- (a) Nominal Output Level: + 4dBu, adjustable
- (b) Max. Output Level: + 24 dBu
- (c) Output (Source) Impedance: ≤ 60 ohms balanced
- (d) Output load Impedance: 600 ohm

3.4.2 Digital Output

- (a) Level Reference : 0 dB_{FS} digital = + 24 dBu analogue
- (b) Output Level: Digital output level should match the analogue output level as mentioned in para 3.4.1
- (c) Output Impedance: 110 ohms.
- (d) Conversion: 24 bit

3.5 Frequency Response over the entire frequency range of 20 Hz to 20 kHz and at nominal input and nominal output levels:

- (a) Mike inputs to program outputs within ± 0.5 dB
- (b) Analogue/ Digital line inputs to program outputs within ± 0.3 dB

- 3.6 Total Harmonic Distortion + Noise
- (a) Mike Pre input to Analog Output: < .01%, -35 dBu Analog input,
+ 24 dBu Analog Output, Filter BW 22 kHz
 - (b) Analog input to Analog Output: < .01%, + 24 dBu Input, + 24dBu output,
Filter BW 22 kHz
 - (c) Digital Input to Digital Output: < .01%, 20 Hz to 20 kHz, Filter BW 20 kHz
+0dB_{FS} input, + 0dB_{FS} output, Filter BW 20 kHz
 - (d) Digital Input to Analog Output < .01%, 20 Hz to 20 kHz,
-1dB_{FS} input, +23 dB_u output, Filter BW 22 kHz
- 3.7 Equivalent Input Noise Level and Signal to Noise Ratio
- (a) Equivalent input noise for mike channel shall be better than: - 125 dBu
(For Microphone channels, with nominal input level of -60 dBu and nominal output of +4 dBu (rest of the input faders in off position) and measurement band limited to 20 Hz-20 kHz)
 - (b) Signal to Noise Ratio for Line Channel: ≥ 80 dB
(With nominal input level of + 4 dBu in line channel and + 4 dBu output and rest of the input faders in off position and measurement band limited to 20 Hz -20 kHz)
- 3.8 Stereo Separation
- Channel Separation (Between L&R of same channel)
Better than 60dB, with maximum input and output within frequency band of 20 Hz to 20 kHz.
- 3.9 Inter-channel Cross Talk
- Better than 90 dB, with maximum input and output and measurement band limited to 20 Hz-20 kHz.
- 3.10 Monitoring Facilities
- 3.10.1 Announcer / Recording booth Monitor
- Monitoring signal of 0 dBu nominal level should be available for monitoring on external speakers for any one of the programme outputs selected. Headphone monitoring facilities should also be available. Both the monitoring facilities shall have built- in level controls of 10 dB.
- It should be possible to select any of the two external stereo sources on the monitor.

3.10.2 Studio Monitor

Similar monitoring facilities, as under para 3.10.1, should be provided for artists in studio for any one of the programme outputs selected.

3.10.3 PFL Monitor

Facility to monitor all input channels in a built-in PFL speaker as well as on headphone should be provided. PFL speaker as well as headphone should have in-built level control of 10dB.

3.11 Talk-Back

Talk-Back facility with studio and another console installed in control room, other studios and dubbing room shall be available. The talk back mike should preferably in-built.

3.12 Mute Controls

PFL, Talkback and Announcer monitor speakers in Announcer Booth of the studio shall get muted when any mike channel is faded in. Similarly, studio monitor for artists shall be muted when any artist – mike is faded in.

3.13 Signaling & Warning Lights

- (a) Provision for a 'red light' (On-Air) indication on the console surface (by receiving 0 logic, controlled from the console in control room) shall be provided.
- (b) Provision for generating at least two warning light signals (0 logic) controlled from each mike fader.
- (c) Provision should also exist for generating 'green light for sending ready signal in control room by extending '0' logic.

3.14 Metering

Two numbers of LCD indicators to provide the VU as well as PPM (selectable) should be available to monitor the level on any of the output buses.

3.15 Power Supply

3.15.1 The console shall work on 230V \pm 10%, 50 Hz \pm 6% single phase A.C. Supply.

- 3.15.2 The power supply unit of the console should be protected against overload, short circuit and over-voltage.
- 3.15.3 Power supply unit / module should either be external (19 inch rack mountable) or in case of internal, temperature of console front surface should be comfortable when power is ON.
- 3.16 Climatic Conditions
The console will generally be installed in air-conditioned environment. However, the console should perform satisfactorily in the dry temperature range of 5°C to 40°C and humid conditions prevailing in tropical climate. A test certificate in this regard should be produced from an approved Test House.
- 3.17 Accessories

Each console shall be supplied with following accessories / items and their cost shall be included in quotation:
- 3.17.1 19 Inch mounting rack should be provided if the electronics of the console is separate from the table top of the console.
- 3.17.2 A complete set of mating connectors (with gold plated contacts) and power chord etc.
- 3.17.3 A set of operation manual and service manual.
- 3.17.4 Any other item, including interconnecting cables and related configuration software (Pre loaded and on Media CD/DVD) for the console etc. required for making the console fully operational.
4. GUARANTEE / WARRANTY
- 4.1 The equipment shall be guaranteed for trouble free operation for a minimum period of one year from the date of supply. Replacement / servicing shall be effected free of cost for hardware and software during the guarantee period.
- 4.2 The contractor/seller hereby guarantee that the said goods/stores/articles would continue to conform to the description and quality aforesaid for a period of 36 months from the date of installation and commissioning at the consignee's site and that notwithstanding the fact that the purchaser (inspection) may have inspected and /or approved and said goods/ stores/ articles, if during the aforesaid period of 36 months the said goods/ stores/articles be discovered not to conform to the description and quality aforesaid, not giving satisfactory performance or having deteriorated, the purchaser shall be entitled to call upon

the contractor/seller to rectify goods/stores/articles or such portion thereof as is found to be defective by the purchaser with a reasonable period or such specified period as may be allowed by the purchaser within a reasonable period or such specified period as may be allowed by the purchaser in his discretion on application made thereof by the contractor/seller and in such an event the above mentioned warranty period shall apply to the goods/stores/articles rectified from the date of rectification thereof; otherwise contractor/seller shall pay to the purchaser such compensation as may arise by reasons of the breach of the warranty herein contained.

4.3 Guarantee that firm will supply spare parts, if and when required on the agreed price. The agreed basis could be including but without any limitation on agreed discount on the published catalogue or on agreed percentage of profit on the landed cost.

4.4 Warranty to the effect that before going out of production for the spare parts the firm will give adequate advance notice to the purchaser of the equipment so that latter may undertake the balance of the life time requirements.

4.5 Warranty to the effect that firm will make available the blue prints of the drawings of the spares, if and when required in connection with the main equipment.

5. PRE-DESPATCH INSPECTION

Pre-dispatch inspection would comprise complete testing of the console to be supplied including functional tests and various measurements at manufacturer's premises before shipment by authorized representatives of All India Radio. The Acceptance Test Procedure (ATP) shall be prepared by the tenderer and got approved from the indenter after the firm order is placed. The testing shall include:

- (a) Physical test.
- (b) Functional tests.
- (c) Performance tests.

The tenderer will give a notice in writing to the indenter at least 12 weeks before the commencement of factory inspection. The tenderer shall provide all equipment, materials and manpower as may be required for performing various tests as per ATP.

In case of imported equipment, the expenses on air travel, accommodation and daily allowances for AIR's inspecting officers would be borne by All India Radio.

6. SPARES

Essential required spares may be recommended. The spares shall be quoted separately. The list should include name and part no. of the parts/ components with quantity and its unit cost. The tenderer shall ensure availability of spares in India for the quoted equipment for a period of at least 5 years from the date of supply of last equipment to AIR. The cost for software upgrades, if any, shall also be quoted as an option.

7. ELECTROMAGNETIC COMPATIBILITY

The console shall conform to the electromagnetic standards that are listed in the guidelines 89 / 336/ EC & FCC, part 15. The certificate from independent Test laboratory regarding compliance to the aforesaid standard should be attached with the technical bid.

8. TRAINING

The tenderer shall be required to train at least 16 AIR persons at a location specified by DG: AIR in India, on operation, maintenance and repair of the equipment. The cost of training should be quoted separately.

(V S Nagar)
Dy.Dir.Engg. (MR)

(Y Trihan)
Station Engineer (NBH)

(V P Singh)
Dir. Engg. (SMS)

(A.K. Dixit)
Dir. Engg. (SD)

Specification Of
6 Channel Digital Recording Console
AT B.H. New Delhi
UNDER 10th PLAN

PRASAR BHARATI
(BROADCASTING CORPORATION OF INDIA)
DIRECTORATE GENERAL: ALL INDIA RADIO
(P&D UNIT)

Technical Specification for 6 Channel Digital Recording Console

1. GENERAL

1.1 This specification is for 6 Channel Digital Audio Recording Console for use in Talk studios of Broadcasting House at All India Radio New Delhi. The consoles shall be fully digital modular plug-in design and based on the field-proven modern technology. It should be rugged in construction and suitable for reliable operation 24 hours a day and 365 days in a year.

Only professional and branded products manufactured by reputed companies in sound broadcasting equipment field shall be offered.

1.2 The tenderer must submit the following documents along with the tender:

(a) A point-to-point compliance statement as per Annexure-I highlighting deviations, if any, on all the clauses of specification from the manufacturer of the offered equipment duly signed in original. Actual performance figures should be quoted under remarks column. If compliance statement is in format other than Annexure-I, the tender will be rejected out rightly.

(b) Detailed printed literature of the equipment giving complete electrical and mechanical data including detailed dimensions and mounting requirements.

(c) The quote should either be from the original manufacturer or from their authorized representative/dealer. In case, the quote is from the authorized representative/dealer, a certificate in original from the original manufacturer that the tenderer is authorized representative/dealer for India should be enclosed with the tender. In case, the quote is from both i.e. Authorised representative/dealer and also from original manufacturer, the quotation from original manufacturer will be considered for technical evaluation.

1.3 The tenderer may be required to demonstrate the functioning of the tendered unit during technical evaluation, including verification of electrical performance parameters as may be required during technical evaluation, in New Delhi. Non-compliance of equipment demonstration, if asked for by the indenter, shall disqualify the tender.

1.4 Incomplete offers will be rejected out rightly.

2. SCOPE OF THE TENDER

The specification is for supply of Digital Recording Console (including equipment rack for mounting of electronics part of the console if such a design console is offered) along with all accessories, mating connectors and cables, etc. required to be fully functional.

3. TECHNICAL SPECIFICATION

3.1 General Features

- 3.1.1 The console should be simple in operation.
- 3.1.2 The console should be compact ergonomically designed professional product and suitable for reliable operation on 24x7x365 basis working. It should be housed in rust-proof pre-painted metal cabinet. It may either be single composite unit or the main electronics portion may be in separate 19-inch rack mountable unit.
- 3.1.3 The Console should be suitable for Tabletop mounting.
- 3.1.4 The layout of modules / parts / components in the console should be professional to permit easy access to the wiring, inspection, repairs / servicing.
- 3.1.5 All the inputs and outputs should be available in 'D' type connector for digital and on balanced 3-pin XLR for analog audio. The mating pins of 'D' connectors should be gold plated.
- 3.1.6 All switches / buttons / knobs operable by operator should be sturdy and designed for reliable operation for long hours. Inputs / Outputs and connectors shall not be on the working / operating area of the console surface.
- 3.1.7 The controls for output bus assignment, channel on / off, monitoring level control, talkback & signaling etc. should be appropriately located on the control surface of the console.
- 3.1.8 Provision for ganging the mono inputs for stereo operation should also be available.
- 3.1.9 All selection points on the console surface if required shall be provided with clear illuminated status indication, possibly in different colours for easy understanding.
- 3.1.10 Status Indication (LED) in different colours, should be provided for signaling, talk-back from other consoles, on air, channel selection, PFL indication, Stereo/Mono and other operations.
- 3.1.11 Console should have facility to work with computer based Studio / News automation systems.
- 3.1.12 All the internal Audio Signal Processing in the consoles should be fully digital signal processor based.
- 3.1.13 Various Control Circuits in the console should be digital and entire switching shall be through solid-state digital switches.
- 3.1.14 A to D and D to A converters shall have minimum 24 bit resolution.
- 3.1.15 There should be in-built word clock for synchronization of external digital devices and provision should also exist to synchronize the console from an external word clock or AES/EBU source.
- 3.1.16 All digital inputs and outputs will be in AES/EBU format and conform to AES3-1992 signal format.

3.2 Input Fader channel Modules Features

All the input fader channel modules should have following minimum provisions:

- 3.2.1 Selection for feeding/assigning any of the input to any of the input program bus and to any of the output program bus.
- 3.2.2 The control fader of each Input/output module should fade in from infinity to zero to provide nominal output with minimum 10dB reserve gain.
- 3.2.3 Console should have facility for Pre-Fade Listening (PFL), with suitable indicator during PFL.
- 3.2.4 Fader on/off switch on console surface should be available.
- 3.2.5 Each Fader channel should have facility of at least three character LCD display of input type.

3.3 Input Configuration

The consoles shall have minimum 6 faders. In case the frame size is not exactly matching the requirement of 6 input faders, higher frame size may be offered. The minimum requirement of input sources, faders and its configuration are as detailed below:

- | | |
|---|---|
| 1. No. of faders: | 6 |
| 2. Provision to connect input sources: | |
| (i) Microphones | |
| (a) Mono | 4 |
| (b) Stereo | Refer to item No. 3.3.1.3 |
| (ii) Line | |
| (a) Analogue mono line | 2 (with further provision to configure as One Stereo) |
| (b) Digital Input | 2 |
| 3. It should be possible to feed 2 Digital Stereo line inputs along with 4 mono mike inputs, with a facility to replace each mike input with a mono line input. | |
- 3.3.1 Mono Mike Inputs
All mike channels should have the following provisions.
- 3.3.1.1 Input Level range adjustable -60 dBu to -35 dBu (Ref. 0 dBu = 0.775V rms) with sensitivity control.
 - 3.3.1.2 Input Impedance \geq 1 K ohms balanced.
 - 3.3.1.3 Provision to gang two adjacent mono mike channels for feeding stereo (mike) inputs.
 - 3.3.1.4 Phase reversal switch
 - 3.3.1.5 Built in switch-able Phantom Supply of 48 Volts
 - 3.3.1.6 Provision for muting of various monitoring speakers as detailed in section 3.12
 - 3.3.1.7 Pan potentiometer
 - 3.3.1.8 Selectable inbuilt parametric equalizer with high Q capable of providing at Least \pm 12dB equalization, independent in each of three bands, i.e., at low, mid and high audio frequencies.

3.3.2 Mono Line Inputs (Analogue)

All mono analogue channels shall have the following features and parameters:

- 3.3.2.1 Nominal level: + 4 dBu with headroom of at least 15 dB
- 3.3.2.2 Maximum Input Level: + 24dBu
- 3.3.2.3 Input Impedance: ≥ 10 K ohms balanced.
- 3.3.2.4 Balance control in each channel

3.3.3 Digital Inputs

All Digital Input Channels shall have the following features/ parameters:

- 3.3.3.1 Level Reference: 0 dB_{FS} digital = + 24 dBu analogue
(+ 4 dBu = - 20 dB FSD)
- 3.3.3.2 Signal Format: AES-3 of 1992
- 3.3.3.3 Level: Digital input level should match the analogue input level (as mentioned in para 3.3.2)
- 3.3.3.4 Internal Sampling rates: 32 kHz, 44.1 kHz and 48 kHz
- 3.3.3.5 Convertor: A/D 24-bit, SRC on all digital input
In-built sampling rate converter on each digital input channel to accept different sampling rates

3.4 Output Configuration

The console should provide at least 4 independent stereo Programme Outputs, each in analogue as well as in digital format.

3.4.1 Analogue Output

- (a) Nominal Output Level: + 4dBu, adjustable
- (b) Max. Output Level: + 24 dBu
- (c) Output (Source) Impedance: ≤ 60 ohms balanced
- (d) Output load Impedance: 600 ohm

3.4.2 Digital Output

- (a) Level Reference : 0 dB_{FS} digital = + 24 dBu analogue
- (b) Output Level: Digital output level should match the analogue output level as mentioned in para 3.4.1
- (c) Output Impedance: 110 ohms.
- (d) Conversion: 24 bit

3.5 Frequency Response over the entire frequency range of 20 Hz to 20 kHz and at nominal input and nominal output levels:

- (a) Mike inputs to program outputs within ± 0.5 dB
- (b) Analogue/ Digital line inputs to program outputs within ± 0.3 dB

- 3.6 Total Harmonic Distortion + Noise
- (a) Mike Pre input to Analog Output: < .01%, -35 dBu Analog input,
+ 24 dBu Analog Output, Filter BW 22 kHz
 - (b) Analog input to Analog Output: < .01%, + 24 dBu Input, + 24dBu output,
Filter BW 22 kHz
 - (c) Digital Input to Digital Output: < .01%, 20 Hz to 20 kHz, Filter BW 20 kHz
+0dB_{FS} input, + 0dB_{FS} output, Filter BW 20 kHz
 - (d) Digital Input to Analog Output < .01%, 20 Hz to 20 kHz,
-1dB_{FS} input, +23 dBu output, Filter BW 22 kHz
- 3.7 Equivalent Input Noise Level and Signal to Noise Ratio
- (a) Equivalent input noise for mike channel shall be better than: - 125 dBu
(For Microphone channels, with nominal input level of -60 dBu and nominal output of +4 dBu (rest of the input faders in off position) and measurement band limited to 20 Hz-20 kHz)
 - (b) Signal to Noise Ratio for Line Channel: ≥ 80 dB
(With nominal input level of + 4 dBu in line channel and + 4 dBu output and rest of the input faders in off position and measurement band limited to 20 Hz -20 kHz)
- 3.8 Stereo Separation
- Channel Separation (Between L&R of same channel)
Better than 60dB, with maximum input and output within frequency band of 20 Hz to 20 kHz.
- 3.9 Inter-channel Cross Talk
- Better than 90 dB, with maximum input and output and measurement band limited to 20 Hz-20 kHz.
- 3.10 Monitoring Facilities
- 3.10.1 Announcer / Recording booth Monitor
- Monitoring signal of 0 dBu nominal level should be available for monitoring on external speakers for any one of the programme outputs selected. Headphone monitoring facilities should also be available. Both the monitoring facilities shall have built- in level controls of 10 dB.
- It should be possible to select any of the two external stereo sources on the monitor.

3.10.2 Studio Monitor

Similar monitoring facilities, as under para 3.10.1, should be provided for artists in studio for any one of the programme outputs selected.

3.10.3 PFL Monitor

Facility to monitor all input channels in a built-in PFL speaker as well as on headphone should be provided. PFL speaker as well as headphone should have in-built level control of 10dB.

3.11 Talk-Back

Talk-Back facility with studio and another console installed in control room, other studios and dubbing room shall be available. The talk back mike should preferably in-built.

3.12 Mute Controls

PFL, Talkback and Announcer monitor speakers in Announcer Booth of the studio shall get muted when any mike channel is faded in. Similarly, studio monitor for artists shall be muted when any artist – mike is faded in.

3.13 Signaling & Warning Lights

- (a) Provision for a 'red light' (On-Air) indication on the console surface (by receiving 0 logic, controlled from the console in control room) shall be provided.
- (b) Provision for generating at least two warning light signals (0 logic) controlled from each mike fader.
- (c) Provision should also exist for generating 'green light for sending ready signal in control room by extending '0' logic.

3.14 Metering

Two numbers of LCD indicators to provide the VU as well as PPM (selectable) should be available to monitor the level on any of the output buses.

3.15 Power Supply

- 3.15.1 The console shall work on 230V \pm 10%, 50 Hz \pm 6% single phase A.C. Supply.

- 3.15.2 The power supply unit of the console should be protected against overload, short circuit and over-voltage.
- 3.15.3 Power supply unit / module should either be external (19 inch rack mountable) or in case of internal, temperature of console front surface should be comfortable when power is ON.
- 3.16 Climatic Conditions
The console will generally be installed in air-conditioned environment. However, the console should perform satisfactorily in the dry temperature range of 5°C to 40°C and humid conditions prevailing in tropical climate. A test certificate in this regard should be produced from an approved Test House.
- 3.17 Accessories

Each console shall be supplied with following accessories / items and their cost shall be included in quotation:
- 3.17.1 19 Inch mounting rack should be provided if the electronics of the console is separate from the table top of the console.
- 3.17.2 A complete set of mating connectors (with gold plated contacts) and power chord etc.
- 3.17.3 A set of operation manual and service manual.
- 3.17.4 Any other item, including interconnecting cables and related configuration software (Pre loaded and on Media CD/DVD) for the console etc. required for making the console fully operational.
4. GUARANTEE / WARRANTY
- 4.1 The equipment shall be guaranteed for trouble free operation for a minimum period of one year from the date of supply. Replacement / servicing shall be effected free of cost for hardware and software during the guarantee period.
- 4.2 The contractor/seller hereby guarantee that the said goods/stores/articles would continue to conform to the description and quality aforesaid for a period of 36 months from the date of installation and commissioning at the consignee's site and that notwithstanding the fact that the purchaser (inspection) may have inspected and /or approved and said goods/ stores/ articles, if during the aforesaid period of 36 months the said goods/ stores/articles be discovered not to conform to the description and quality aforesaid, not giving satisfactory performance or having deteriorated, the purchaser shall be entitled to call upon

- the contractor/seller to rectify goods/stores/articles or such portion thereof as is found to be defective by the purchaser with a reasonable period or such specified period as may be allowed by the purchaser within a reasonable period or such specified period as may be allowed by the purchaser in his discretion on application made thereof by the contractor/seller and in such an event the above mentioned warranty period shall apply to the goods/stores/articles rectified from the date of rectification thereof: otherwise contractor/seller will pay to the purchaser such compensation as may arise by reasons of the breach of the warranty herein contained.
- 4.3 Guarantee that firm will supply spare parts, if and when required on the agreed price. The agreed basis could be including but without any limitation on agreed discount on the published catalogue or on agreed percentage of profit on the landed cost.
- 4.4 Warranty to the effect that before going out of production, for the spare parts the firm will give adequate advance notice to the purchaser of the equipment so that latter may undertake the balance of the life time requirements.
- 4.5 Warranty to the effect that firm will make available the blue prints of the drawings of the spares, if and when required in connection with the main equipment.
5. PRE-DESPATCH INSPECTION

Pre-dispatch inspection would comprise complete testing of the console to be supplied including functional tests and various measurements at manufacturer's premises before shipment by authorized representatives of All India Radio. The Acceptance Test Procedure (ATP) shall be prepared by the tenderer and got approved from the indenter after the firm order is placed. The testing shall include:

- (a) Physical test.
- (b) Functional tests.
- (c) Performance tests.

The tenderer will give a notice in writing to the indenter at least 12 weeks before the commencement of factory inspection. The tenderer shall provide all equipment, materials and manpower as may be required for performing various tests as per ATP.

In case of imported equipment, the expenses on air travel, accommodation and daily allowances for AIR's inspecting officers would be borne by All India Radio.

6. SPARES

Essential required spares may be recommended. The spares shall be quoted separately. The list should include name and part no. of the parts/ components with quantity and its unit cost. The tenderer shall ensure availability of spares in India for the quoted equipment for a period of at least 5 years from the date of supply of last equipment to AIR. The cost for software upgrades, if any, shall also be quoted as an option.

7. ELECTROMAGNETIC COMPATIBILITY

The console shall conform to the electromagnetic standards that are listed in the guidelines 89 / 336/ EC & FCC, part 15. The certificate from independent Test laboratory regarding compliance to the aforesaid standard should be attached with the technical bid.

8. TRAINING

The tenderer shall be required to train at least 16 AIR persons at a location specified by DG: AIR in India, on operation, maintenance and repair of the equipment. The cost of training should be quoted separately.

(V S Nagar)
Dy.Dir.Engg. (MR)

(Y.Trihan)
Station Engineer (NBH)

(V P Singh)
Dir. Engg. (SMS)

(A.K. Dixit)
Dir. Engg. (SD)

