

PUBLIC ADDRESS SYSTEM

1.0 Scope of work

- 1.1 The scope of work covers supply, installation, commissioning and testing of the **Public Address System** relating to the Fire Alarm System meeting the intents of the specifications. The system may have centralised or distributed amplifiers
- 1.2 The system could be combined with other paging functions or piped music or any other announcements if specified in the BOQ.

2.0 SYSTEM DESCRIPTION:

The main objective of the Public Address System is to convey clear and audible instructions to all the people on all floors / buildings in case of occurrence of fire / other emergency to reach a place of safety in the open, outside the buildings. The sound output should not be so loud that people nearest to the speakers feel uncomfortable, nor so weak that people away cannot discern what is being broadcast. This is achieved by setting the speaker tap at 50% power input and distributing speakers uniformly all over floor area.

- a. PA System shall cater to fire evacuation speakers for broadcasting alarm signals and evacuation messages in the event of an emergency. The same speakers shall be used for soft music for the selected area if asked for.
- b. The Public Address System shall operate on 24 VDC power and shall suitable for continuous duty, be of modular design and utilize component based on solid state technology.

3.0 CODES AND STANDARDS:

- a. The design, manufacture and performance of equipment shall comply with all currently applicable statutes, regulations and safety codes. Nothing in this specification shall be construed to relieve Vendor of this responsibility. All the components should be designed and installed as per NFPA - 72.
- b. The Public Address System shall be robust and the components such as speaker amplifier, tone generator, wiring circuits, uninterrupted power supplies, standby batteries along with DVD player shall be constantly electrically supervised for any single ground fault, short or open circuit.

c. System Requirements:

The system will comprise of a microphone suitable for voice communication / Announcements through speakers on various floors/buildings. The system shall consist of the following for each building/block. Cabling shall be carried out from local consoles to main console at Central IBMS room.

- a. Control consoles with Microphones
- b. Amplifiers
- c. Speaker
- d. Connecting cables and Racks for mounting above.

P.A. System shall be capable of generating both emergency and evacuation messages to 'ALL' or selected speaker zones located within the floor. It shall also able to play music 'ALL' or selected speaker zone.

The system shall essentially consist of microprocessor based central control equipment with zone selectable announcement. Normally background music shall be played, in selected zone only, using the central DVD/Cassette Player Source. When, a particular zone is selected for making an announcement, the background music to that particular zone only shall be cut-off and the announcement relayed. All other zones shall remain unaffected. Once the announcement is over, the music shall resume.

An emergency call shall include following:

- i) A special slow-whoop signal, sweeping from 500Hz up to 1200 Hz.
- ii) PA pre-recorded message shall be broadcasted on completion of the slow-whooping signal.
- iii) It shall be possible to repeat both of the above procedures to be repeated during the emergency period.
- iv) Provision for recording the message in the field shall be available.

4.0 SYSTEM SPECIFICATIONS:

- a. The system shall provide the Voice paging to individual, grouped or to all zones, from the fire controller's room via microphone from the fire alarm control panel.
- b. Voice paging to individual or all zones, from the microphone shall over ride broadcast or recorded messages, in those selected zones. The paging zones are to select via a keypad located at the microphone location in the Security Room.

- c. The system shall be capable of being easily extended to accommodate (25% spare capacity) additional handsets, speakers, etc. in future. For this purpose, adequate spare capacity shall be provided in equipment. The public address system shall incorporate following operational features:
 - i) A 'siren tone' oscillator and a siren switch shall be provided for emergency purposes. This shall be such that it can be actuated from the handset station only fitted on the main fire alarm control panel. The siren tone shall broadcast over all the loudspeakers.
 - ii) A 'Testing signal' tone oscillator and a test signal switch shall be provided for testing purposes. The test signal shall be broadcast over all the loudspeakers.
 - iii) The frequencies of the tones for 'call attention', 'emergency siren' and 'testing' shall be very much different from each other, so that the same could be differentiated clearly.
 - iv) Vendor shall specifically confirm that communication shall be clear and audible even in noisy areas. If any adjustments in amplifier system etc. required in this connection at site during and after commissioning the same shall be done without any extra cost to the Purchaser.

2. POWER AMPLIFIERS:

- a. Amplifiers shall have the following features:
- b. Power output: 120/240/500 W per channel at 0.05 % harmonic distortion over frequency range 40 to 20,000 Hz + 1 db.
- c. Frequency response 40 to 20,000 Hz + 1 dB at specified power over the entire speech and music range.
- d. Signal and noise level: 100 dB below rated output.
- e. Channel separation: 90 dB at 1 kHz.
- f. Output: 100V / 70 V.
- g. Controls and indicators such as volume control, AC power switches etc.
- h. Hum and noise level below rated output. All volume controls minimum 68 db. One microphone volume and master volume control maximum - 60 db.

- i. Sensitivity - impedance - for microphone 1.5MV 4.7 K - ohms.
- j. Tone control-base +/- 10 db at 100Hz. treble +/-6 db at 10 KHz.
- k. Speech filter - microphone channel - 12 db at 200 Hz.
- l. Auxiliary inputs - for tape recorder or ceramic pickup.
- m. Amplifiers should be in a module of suitable Watts R.M.S only. Maximum 75% capacity should be used. Amplifiers should have standard concealed controls.
- n. Mains AC power supply input, D.C output and standby automatically supplying power in case of mains failure, shall be provided.
- o. The amplifiers rack shall be of mild steel with suitable anticorrosion protective coating. The rack shall have provision for fixing to floor/wall.
- p. The racks shall have appropriate amplifier mounting rails.
- q. The racks shall have lockable steel doors having proper ventilation slots for heat dissipation.
- r. Cable entry parts should be provided at the bottom.
- s. Terminal blocks for connecting to control desk shall be provided.

4. POWER SUPPLY

Power supply unit shall be well filtered, regulated, have constant voltage under load and shall have the following additional features:

Output: 24V dc.

Input: 230 V, 50 Hz, nominal.

Power consumption: as required.

Replaceable fuse: as required.

Rectifier: silicon full wave bridge.

Filter, choke and dual condensers.

Hook-up (+) (-) terminals strip with terminal screws.

Line cord: 2 m (6ft.), 3 (three) conductor with strain relief.

5. CONTROL DESK (CONSOLE)

The control desk fabricated of sheet metal and designed to be mounted on table top and shall be located at Fire Control Room and shall have the following controls and features.

- a. ON/OFF switch for the PA system with LED indication.

- b. One gooseneck type moving coil / cardio / hyper cardio or equivalent microphone with ON/OFF switch.
- c. Push switch buttons calling all the buildings with LED Indicator.
- d. Push switch buttons, calling individually selected buildings with led indication.
- e. Electronic chime to draw attention of the people to announcements.
- f. Push switch button/buttons to actuate standby amplifier/amplifiers with LED indicators.
- g. Push switch button for selecting monitor with LED indicator.
- h. Pre-amplifier with output connection to output transformer and a standby pre-amplifier should also be provided.
- i. Monitor loudspeaker.
- j. Volume unit meters (V.U.Meter) with red LED to flash if the input signal exceeds.
- k. Push switch button for dual tone oscillator for testing the system
- l. Terminal blocks for connecting to amplifier rack.

6.0 SPEAKER AND CABLES:

- 6.1 The ceiling ring speaker shall be double cone Loudspeaker attached to a circular grille which is injection molded from high impact polystyrene. Each speaker (Ceiling / wall mounted) shall have a minimum two hour fire rated cover back side and the cables shall be directly terminated to the box with proper cable gland. The assembly shall be secured in to cut-out, using two integral spring loaded ceiling locking clamps.