Development Background

The public address system is a mean of delivering voice information over large areas. Depending on the information and the area to cover, the PA specification may require a means to transport the signal large distances. A Long-line public address (LLPA) system is any public address system with a distributed architecture, normally across a wide geographic area. Systems of this type are commonly found in the rail, light rail and metro industries and allow announcements to be triggered from one or several locations to the rest of the network. Traditionally LLPA systems use low bandwidth legacy copper, normally PSTN lines using DSL modems, or media such as optical fiber, or IP-based networks.

Inter-M has developed solutions to transmit High quality uncompressed multi-channel audio and control over TCP/IP networks, dedicated copper lines and Optical fiber cables. High quality digital voice and BGM signal can be transmitted over long distances using Inter-M’s FTA/FRA-108S, ITX/IRX-108, ITX/IRX-102 products.

FTA/FRA-108S will transport high quality 8-channel audio signals, serial data and contact closure triggers over long distances (up to 15km) using Single-mode fiber-optic cable.

ITX/IRX-102/108 will transport high quality 2 and 8-channel audio signals, serial data and contact closure triggers over relatively short distances (up to 100 meter) using standard cat5e cabling.

These products will transport high quality uncompressed audio signals combined with data and contact triggers with very short and relatively small propagation delay of 1.0 ms.

As the requirements of public address systems changes the R&D engineering team of Inter-M is ready to deliver new innovative products to meet market and systems demands.

AOE, FTA/FRA, ITX/IRX  - Comparison Chart, Channel / Distance

<table>
<thead>
<tr>
<th>Connection Type</th>
<th>FTA/FRA-108S</th>
<th>ITX/IRX-108, ITX/IRX-102</th>
<th>AOE-212N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. distance</td>
<td>15km / 9.32mile</td>
<td>150m / 492ft</td>
<td>∞</td>
</tr>
<tr>
<td>Audio Channel</td>
<td>8 CH</td>
<td>2 CH</td>
<td></td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>24 Bit, 48kHz</td>
<td>24 Bit, 8~48kHz</td>
<td></td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20Hz ~ 20kHz</td>
<td>More than 100dB</td>
<td>More than 80dB</td>
</tr>
<tr>
<td>S / N</td>
<td>Less than 0.01%</td>
<td>Less than 0.1%</td>
<td></td>
</tr>
<tr>
<td>Data Type</td>
<td>RS-232C, RS-422</td>
<td>Max. 19,200bps</td>
<td></td>
</tr>
<tr>
<td>Data Speed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trigger Channel</td>
<td>8 CH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Source</td>
<td>AC 220V<del>240, 50/60Hz</del>, DC 24V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10℃ ~ +40℃ / 14℃ ~ 104℃</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimension</td>
<td>482 (W) x 44 (H) x 280 (D) mm / 19(W) x 1.7(H) x 11(D)in</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessory</td>
<td>Optional Communication Module</td>
<td>Multi Connection Mode (LAN 1:60, WAN 1:20)</td>
<td></td>
</tr>
</tbody>
</table>
High-quality audio data transmission

- Audio + data, single cable transmission system
- Uncompressed digital audio transmission (24bit, 48kHz)
- High-quality audio, better than S/N 90dB, THD 0.04 or less
- Up to 8 channels of audio transmission
- Data (422/232/8 contacts trigger) transfer
- Up to 19200bps data communication
- Optical long-distance signal transmission (15km, UTP 150m)
- Long-line transmission using single-mode fiber-optic cable (FTA / FRA)
- Easy transfer using UTP cable (ITX / IRX)
- Neutrik Ethercon connector (ITX / IRX)
- High-quality hybrid Power Supply

User-friendly Functionality

- PAD switch
- Signal clip level indicators
- Sending and receiving data, power LED
- Fiber-optic cable connection status indicator LED
- Compact 1U size
- Simultaneous AC & DC redundant power

Construction for the purpose of convenience features

- Euroblock connectors for Easy Audio Wiring
- Detachable handle
- Balanced Audio input
- Optional Plug-in Communications module
Optional Plug-in Communications Module

These long-distance audio and data transport devices allow for easy design and construction of Long-Line PA systems at budget saving prices.

- Long-Line transmission using single-mode fiber-optic cable (FTA / FRA)
- Easy connectivity using UTP cable (ITX / I RX)

HiFi Audio Quality

Long-distance digital transmission of balanced analogue audio signal without electro-magnetic interference, signal loss or distortion. High quality uncompressed 24bit digital audio at 48kHz transmitted over TCP/IP network with a S/N better than 85dB, THD less than 0.01.

THD: Total harmonic distortion stands. The lower THD means that the equipment produces a more accurate reproduction by reducing harmonics added by electronics and audio media.

S / N Ratio: Stands for Signal to Noise Ratio expressed in dB. It is a measurement that compares the level of a desired signal to the level of background noise. It is defined as the ratio of signal power to the noise power. The higher the ratio indicates more signal than noise.
Data tunneling

Control of Local and remote equipment is possible using the built in eight programmable trigger inputs to initiate and terminate audio transmissions, eight programmable open collector control outputs as well as the RS–232 and RS–422 serial port for data transmission/reception with communication speeds of up to 19200 bps.

- CT–100M : Communication Transmit Module

- CR–100M : Communication Reciever Module
**Long-Range**

Inter-M’s FTA/FRA-108S, ITX/IRX-108, ITX/IRX-102 long-distance audio, transmission products allows for high quality uncompressed audio including contact trigger and RS232 or RS422 data to be transported medium to long-distances from 150 meters using standard UTP and up to 15 km using fiber optics cable.

**POWER**

Simultaneous support of AC and DC power offering un-interrupted broadcast with emergency battery back up in the event of a power outage.
Simultaneous support of AC and DC power offering un-interrupted broadcast with emergency battery back up in the event of a power outage. Internal SMPS or Switch mode power supply offers maximum efficiency and economy.

Convenience

- Easy monitoring of signals is possible via the front panel LED indicators. LED Audio signal clip indicators. A PAD switch allows for easy reduction of high signal levels. LED Data transmission, send and receive monitoring. Fiber-optic cable connection status indicator LED.

- Euroblock connectors for Easy Audio Wiring and installation labour cost.

Function Key / FRONT, REAR PANEL
FTA-1 (Campus)

Main Control Room

Campus #1

Campus #2

Campus #3

FRA/FTA  ITX/IRX

Audio&Data Transmit Solution

### Specifications

<table>
<thead>
<tr>
<th>Input Sensitivity</th>
<th>0dBV/20kΩ</th>
</tr>
</thead>
<tbody>
<tr>
<td>THD(0dBV Output, 28kHz LPF)</td>
<td>Less than 0.01%</td>
</tr>
<tr>
<td>S/N(0dBV Output, 28kHz LPF, A-WTD)</td>
<td>More than 90dB</td>
</tr>
<tr>
<td>S/N(0dBV Output, 28kHz LPF, A-WTD)</td>
<td>More than 100dB</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20Hz ~ 20kHz</td>
</tr>
<tr>
<td>Channel Separation</td>
<td>24bit, 48kHz Sampling</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-10°C ~ 40°C / 14°F ~ 104°F</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>AC 220V, 60Hz, DC 24V</td>
</tr>
<tr>
<td>Power Source</td>
<td>AC Power : 18W, DC Power : 24V, 0.5A</td>
</tr>
<tr>
<td>Weight (set)</td>
<td>4.2kg / 9.2lb</td>
</tr>
<tr>
<td>Dimensions (set)</td>
<td>482(W) x 44(H) x 280(D)mm / 19(W) x 1.7(H) x 11(D)in</td>
</tr>
</tbody>
</table>

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※ Design and specification are subject to be changed without pre notice.