# NetCIRA™ by FOSTEX

Network • Commercial • Industrial • Residential • Audio

## Network Audio Solutions

A range of innovative products for distributing realtime multichannel audio over Ethernet

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## Network Audio Solutions

### A range of innovative products for distributing realtime multichannel audio over Ethernet

NetCIRA™ - Network Commercial, Industrial & Residential Audio - brings together a range of products which, when combined, provide elegant, practical and cost-effective digital audio distribution and management solutions over an Ethernet network.

Incorporating EtherSound™, an audio source transmission technology, NetCIRA™ distributes audio over "off-the-shelf" CAT5 UTP LAN cables and 100Base-TX switching hubs while remaining fully IEEE802.3 compliant. More than 63,000 individually addressable modules can be placed on any one network, each with access to 64 channels of 24-bit 44.1/48kHz digital audio. Either star, daisy chain or a combination of both topologies can be planned and utilised.

**Extremely low Latency - deal for live concert & multi-channel monitoring monitoring**
What is most significant about the technology is the extremely low latency (just 125µsec. initial system latency with 1.22 µsec. per additional daisy-chained node) meaning that NetCIRA™ products are equally at home in a live concert or multi-channel monitoring environment, as well as distributed audio applications. True zoned audio is easily achieved by being able to remotely 'instruct' any of the network devices to broadcast any of the 64 system channels at any time, either locally, over the LAN or over a WAN for true remote system management. Furthermore NetCIRA™ provides a built-in solution for audio format exchange e.g. analog input to AES/EBU output, making it an ideal problem solving solution for many applications.

**Key NetCIRA Features**

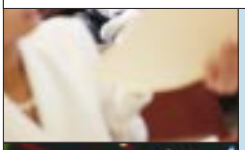
- Up to 64 channels of uncompressed audio per CAT5 cable segment
- 24-bit audio at 44.1/48 kHz audio formats
- Very low latency making NetCIRA solutions ideal for live sound, broadcast, and recording
- Remotely controllable
- Total network flexibility: daisy-chain, star, or a combination of the two topologies can be used
- Fully Ethernet standard IEEE802.3x compliant Supports network Layer 2 (physical) peripherals
- Unique plug-in card design for Master/Sale units offers an extensive range of analogue and digital audio interface options

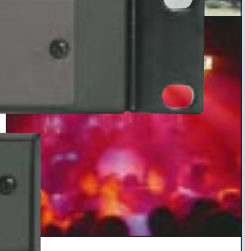
Flexibility, control and, most importantly, a low cost of implementation and installation make NetCIRA™ products the perfect answer to today's call for "No new wires".

## Master / Sla


Slot for card interface

# Card Options

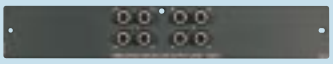






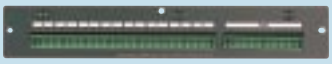
**SO-1** AES/EBU 24-bit/48kHz digital output card

**SO-2** Balanced analog line output [+4dBu] card



**SO-3** Unbalanced analog line output [-10dBV] card

**SO-4** ADAT™ output card



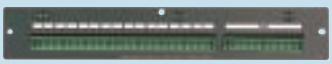
**SO-5** Balanced analog line output [+4dBu] & GPIO card

**MI-1** AES/EBU 24-bit/48kHz digital input card

**MI-2** Balanced analog line input [+4dBu] card

**MI-3** Unbalanced analog line input (-10dBV) & thru card

**MI-4** ADAT™ input card



**MI-5** Balanced analog line input [+4dBu] & GPIO card

**MI-6C** Balanced analog mic/line processor card

- PC Software configurable on a per channel basis:
  - Microphone/line input
  - 48volt phantom power
  - PAD (mic/Line)
  - High Pass Filter
  - Channel mute and gain
  - Two color LED for each XLR input for phantom power and PAD (Mic/Line) settings
- Designed for PA, stage, logging & conference situations
- Using the latest NetCIRA SET controlling software version V1.02, input signal level fed to A ~ H can be monitored on the tricolor bargraph LED meter.

NetCIRA SET software screens

# ave Module




## MS-8 / MS-88

### 8 Channel Master / Slave Modules

- Automatic transmitter (master) or receiver (slave) configuration dependant on card fitted
- Assignable to transmit/receive in groups of 8 ch blocks from unit or 'freeform' via software
- Internal, external or digital word clock with input & output on BNC
- 44.1kHz or 48kHz selectable
- RS232 port for external PC or 3rd party peripheral control
- Locking Neutrik® EtherCon RJ45 connectors
- Interface cards (see right) can be fitted to the front or rear depending on application
- Removable rack-mounting ears and Security cover for DIP switch
- MS-88 is capable of bi-directional operation, passing data both upstream and downstream

# Putting it all together

## Building a unique distributed audio network that's bespoke to your application.

NetCIRA Master/Slave units, receiver modules and speakers can be combined in an almost infinite number of ways to provide a distributed audio solution that's bespoke for your application. With the flexibility to add up to 63,000 receiver modules to a network, to insert audio anywhere on the network (with MS-88 Bi-Directional Master/Slave units) and the ability to increase the distance between devices by up to 2km (using optical fibre), the applications for NetCIRA products are endless.

NetCIRA receiver modules are available with or without integral amplifiers and with balanced/unbalanced line or speaker outputs. For fixed installations in office buildings, cruise ships, retail environments etc, the simple LR-1 remote control units can be used to select audio channels and volume levels as easy as switching on a light.


# Receiver Modules

## LR-1
### Local Remote Control

- Interfaces with NetCIRA ES modules
- No programming or external software required
- Select, Control & display channel and level for either single or dual sources
- Simple & straightforward operation
- Three panel sizes available, fitting in single gang wall boxes

LR-1 UK

LR-1 USA /Australian

LR-1 European

## ES-1 / ES-2
### Receiver Modules

- Single parallel (ES-1) or dual independent (ES-2) channel variants
- Unbalanced line outputs on RCA & standard block connectors
- Remote channel selection & volume control
- Local channel selection & volume control with optional LR-1
- Integral mounting hardware for wall, ceiling, 3rd-party product attachment

ES-1 / ES-2
front connections

ES-1 / ES-2
back controls / connections

## ES-1A / ES-2A
### Active Receiver Modules

- Single 20W / 8Ω (ES-1A) or dual 10W / 8Ω (ES-2A) amplified channel variants
- Speaker outputs on standard block connectors
- Remote channel selection & volume control
- Local channel selection & volume control with optional LR-1
- Integral mounting hardware for wall, ceiling, 3rd-party product attachment

ES-1A controls / connections

ES-2A controls / connections

# Speakers

## ES6300
### Powered speaker receiver

- 10 cm magnetically shielded full-range speaker unit
- Built-in D class power amplifier with 10 W output
- Additional analog input (phone jack) on the rear panel for instant analog source monitoring
- PHONES output (mono) on the rear panel
- Rotary volume control
- Can be controlled (channel and volume) by LR-1 remote
- Compact dimensions, rugged construction
- Rugged all-metal construction
- Can be bracket mounted

## SI & SH Series
### Ceiling mount speakers

- SI-1 Ceiling mount speaker
- SI-1T Ceiling mount speaker with matching transformer
- SI-1H Horn Ceiling mount speaker with 65° or 90° horn

- SI Series feature patented HP diaphragm technology - providing excellent directivity and a wide listening position
- Compact ceiling mount speakers with excellent sound reproduction - ideal for speech and background music
- SI-1H models offer a listening area with very little sound variation at ceiling heights up to 9m
- Also available is the affordable SH-6 Ceiling mount speaker

**SI-1** Ceiling mount speaker

**SH-6** Ceiling mount speaker

**SI-1** Ceiling mount speaker shown with GR-1 grill

**SI-1H** Horn ceiling mount speaker

**GQ and GR grills**
Available in cloth netting and punched metal versions

## ES-1PRO / ES-2PRO
### Receiver Modules

- Single parallel (ES-1PRO) or dual independent (ES-2PRO) channel variants
- Balanced line outputs on XLR connectors
- Remote channel selection & volume control
- Local channel selection & volume control with optional LR-1
- Locking Neutrik® EtherCon RJ45 connectors
- External mains power with remotely switched auxiliary power outlet
- Designed for professional & live sound applications where a very high quality is desired

ES-1PRO / ES-2PRO front connections

ES-1PRO / ES-2PRO back controls / connections

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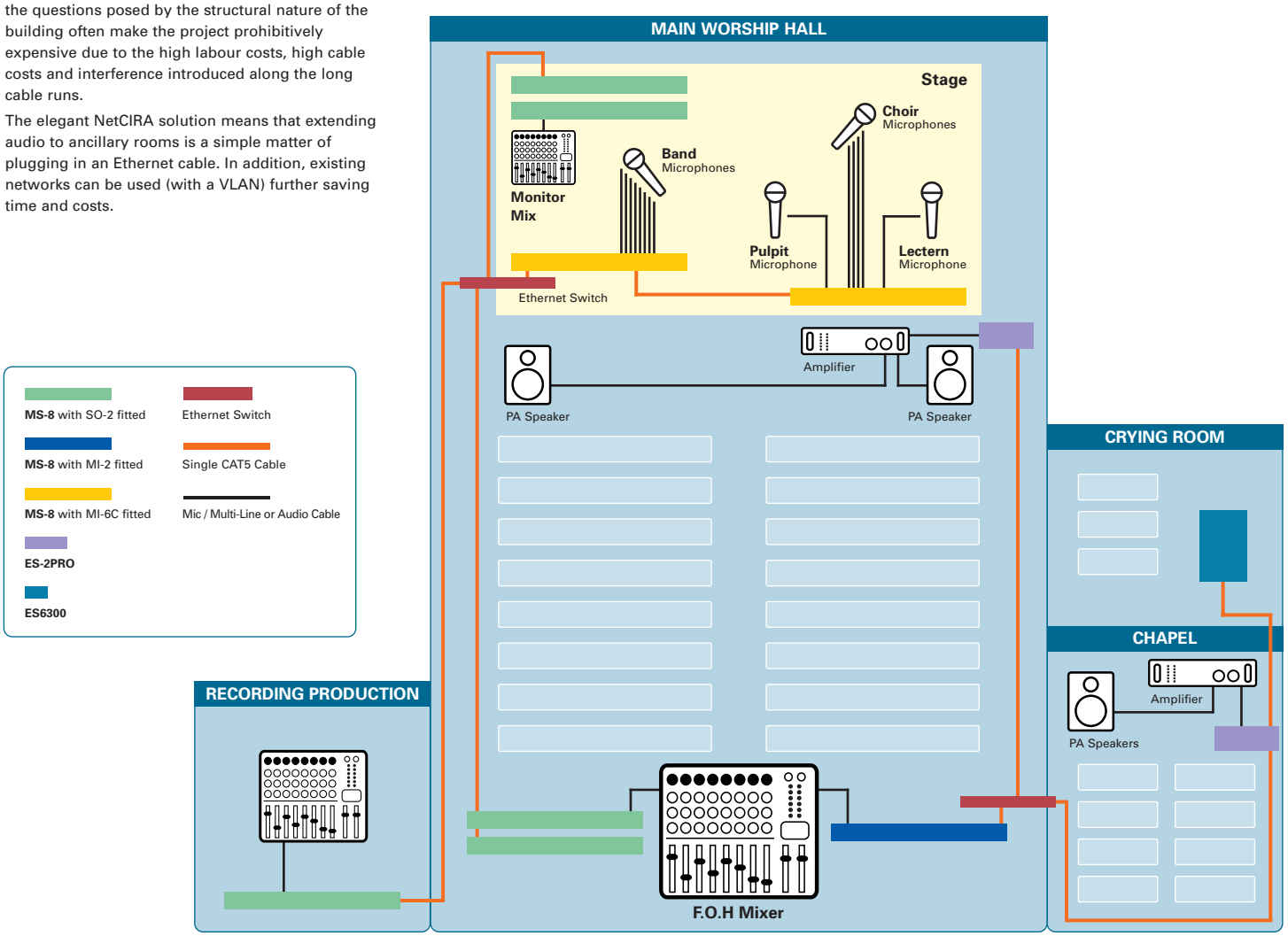
# Application Examples

## Place of Worship

Sound systems in churches and places of worship place particular demands on audio installer. The buildings are often older structures and funds are usually limited, two factors which don't sit happily together. In addition, when the sound system needs to be extended beyond the main worship hall into ancillary overflow rooms / chapel / crying room etc. the questions posed by the structural nature of the building often make the project prohibitively expensive due to the high labour costs, high cable costs and interference introduced along the long cable runs.

The elegant NetCIRA solution means that extending audio to ancillary rooms is a simple matter of plugging in an Ethernet cable. In addition, existing networks can be used (with a VLAN) further saving time and costs.

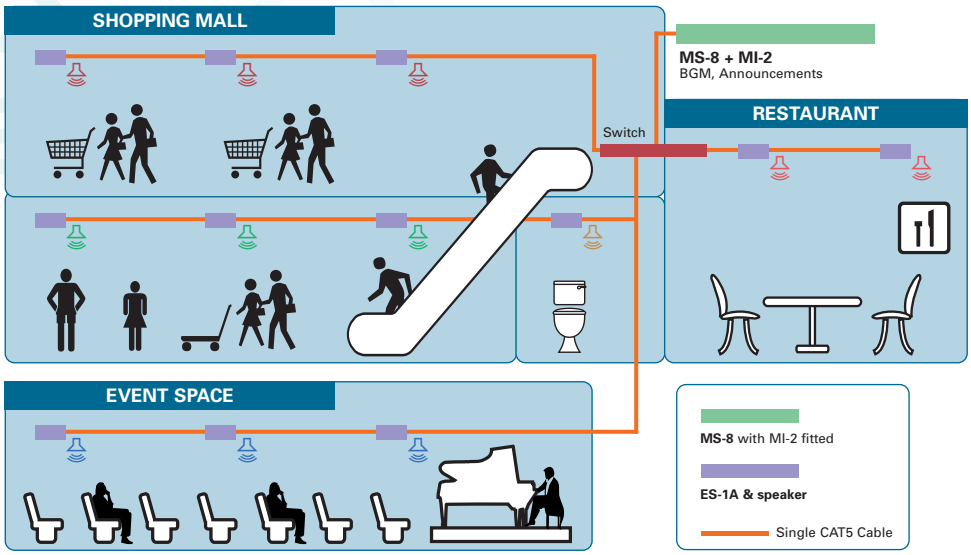
The inherent advantages of Ethernet cables (small diameter, no audible electromagnetic interference, etc.) means that the primary sound system can be extended to locations where a traditional installation would be difficult. A single CAT5 cable can replace a huge number of traditional wires, patch panels, routing matrixes, or other switching devices.




## Complex Commercial Reta

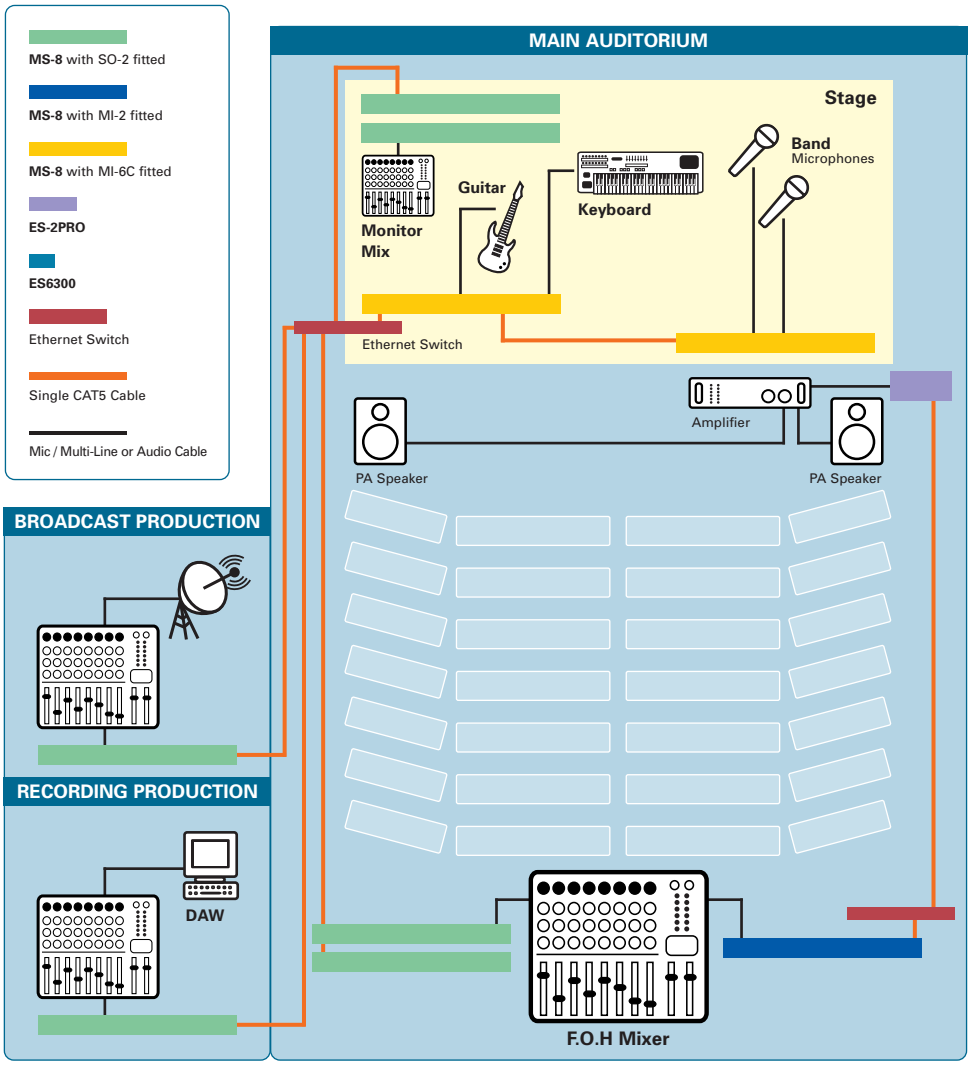
A mixed commercial application requires various types of music / audio to be distributed to different areas of the establishment plus a facility for blanket public address (announcements etc.). For example modern 'pop' music might be appropriate for the fashion shopping mall but unsuitable for the restaurant where lighter background music might be better.

With 64 channels of audio, a range of ceiling mount speakers and easy to install CAT5 cabling a NetCIRA solution can meet these demands head on. In addition, extra audio feeds can be inserted into the network at any point using the new MS-88 bi-directional master/slave unit.




# Live Audio with Recording & Broadcast

Audio signals from the stage are simultaneously available to FOH mixer, recording production mixer and broadcast mixer via an Ethernet switch and CAT5 cables. Using CAT5 cables negate the use of large diameter multi-core making for faster and easier set-up and tear-down.




## SELECTED APPLICATIONS

### Fixed Installations

*Reduced installation and system re-configuration costs (over analogue systems) using standard Ethernet cabling and daisy-chain or star topology.*

- Meeting and board rooms
- Cruise ships
- Conference and exhibition centres
- Electro acoustic music productions
- Government buildings
- Houses of worship
- Multi room entertainment & leisure venues; bars, restaurants, fitness centres, sports centres & venues
- Museums
- Office blocks
- Performing arts centres
- Repertory theatres
- Shopping malls and arcades
- Theatres
- Tours & international productions
- Theme parks and resorts
- Transportation - train PA, railway and bus stations/terminals
- Universities & colleges, schools

### Live Performance PA

*Almost real-time, extremely low latency (125 µsec. at 48 kHz). Also easy to set-up with standard Ethernet cables.*

- Touring and fixed sound reinforcement

### Broadcast

*Simple integration of Ethernet cabling into existing broadcast facilities. High-quality audio (24-bit at 48 kHz) distribution, substitution of analog and digital matrixes for easy signal exchange between studios.*

- Radio and TV stations - outside broadcast, studio and control room interconnectivity and routing
- Live broadcast PA/announcement

### Conference & Intercom

*Reduced installation costs over conventional analogue systems and lower TCO.*

- Concierge to apartment intercoms

### Residential

*Quick and easy to install and set-up. Perfect for new-build.*

- High-end stereo
- Home cinema

# Specifications

## MS-8

| Network interface section | |
|---|---|
| IN port connector | RJ45 |
| OUT port connector | RJ45 |
| Protocol | Digigram EtherSound |
| **DIP SW** | |
| No. 1 - 3 | Input / Output channel select |
| The optional card automatic detection allows MS-8 to work as either MASTER or SLAVE module. | |
| No. 4 | Remote enable (Software channel setting) |
| No. 5 | Not used |
| No. 6 | Fs select (44.1 / 48kHz) |
| No. 7 | Clock select (INT / EXT) |
| No. 8 | EXT clock select (WORD / DIGITAL) |
| **Control interface section** | |
| Connector | Dsub 9-pin |
| OTHERS | |
| Word In/Out | BNC connectors |
| **General** | |
| Power supply | Switching type |
| Power requirement | AC 100V - AC 230V 50 / 60Hz |
| Power consumption | 11W (AC 120V & 230V) |

## MI-1

| General | |
|---|---|
| Connector | XLR-3-31 |
| Format | IEC60958 part3 (AES/EBU) |

## MI-2

| General | |
|---|---|
| Connector | XLR-3-31 (Pin 1: GND, Pin 2: HOT, Pin 3: GND) |
| Input impedance | 10kohm or more |
| Reference input level | +4dBu (-12dB Full Scale level) |
| Maximum input level | +16dBu |
| Frequency response | +/-1dB at 20 ~ 20kHz |
| S/N | 115dB or more |
| Dynamic range | 115dB |
| THD | 0.005% or less |
| Channel separation | 90dB at 1kHz |

## MI-3

| General | |
|---|---|
| Connector | RCA |
| Input impedance | 10kohm ore more |
| Reference input level | -10dBV (-12dB Full Scale level) |
| Maximum input level | +12dBV |
| Frequency response | +/-1dB at 20 ~ 20kHz |
| S/N | 95dB or more |
| Dynamic range | 95dB |
| THD | 0.01% or less |
| Channel separation | 90dB at 1kHz |

## MI-4

| General | |
|---|---|
| Connector | TOS link |
| Format | ADAT |

## MI-5

| General - as MI-2 with the exception of connector | |
|---|---|
| Connector | EURO 24-pin (Analog) |
| | EURO 10-pin (GPIO) |

## SO-1

| General | |
|---|---|
| Connector | XLR-3-32 (pin 1: GND, Pin 2: HOT, Pin 3: COLD) |
| Format | IEC 60953 part3 (AES/EBU) |

## SO-2

| General | |
|---|---|
| Connector | XLR-3-32 |
| Adapt. load impedance | 10kohm or more |
| Reference output level | +4dBu (-12dB Full Scale level) |
| Maximum output level | +16dBu |
| Frequency response | +/-1dB at 20 ~ 20kHz |
| S/N | 115dB or more |
| Dynamic range | 115dB or more |
| THD | 0.005% |
| Channel separation | 90dB at 1kHz |

## SO-3

| General | |
|---|---|
| Connector | RCA |
| Adap. load impedance | 10kohm or more |
| Reference output level | -10dBV (-12dB Full Scale level) |
| Maximum output level | +2dBV |
| Frequency response | +/-1dB at 20 ~ 20kHz |
| S/N | 100dB or more |
| Dynamic range | 100dB or more |
| THD | 0.005% |
| Channel separation | 90dB at 1kHz |

## SO-4

| General | |
|---|---|
| Connector | TOS link |
| Format | ADAT |

## SO-5

| General - as SO-2 with the exception of connector | |
|---|---|
| Connector | EURO 24-pin (Analog) |
| | EURO 10-pin (GPIO) |

## ES-1 / ES-2

| Network interface section | |
|---|---|
| IN port connector | RJ45 |
| OUT port connector | RJ45 |
| Protocol | Digigram EtherSound |
| **Control interface section** | To connect LR-1 for level & CH controlling |
| Remote connector | EURO 6-pin |
| **DIP SW** | |
| No. 1 - 7 | Source channel select |
| No. 8 | Software / hardware CH select |
| **Audio Section** | |
| Output connector | RCA x 2 & EURO 4-pin |
| ES-1 | Selected channel (X) is output from both A & B. |
| ES-2 | Selected channels (X & X+1) are output from A & B respectively. |
| Adapt. load impedance | 10kohm or more |
| Reference output level | -10dBV (-12dB Full Scale level) |
| Maximum output level | +2dBV |
| Frequency response | +/-1dB at 20 ~ 20kHz |
| S/N | 100dB or more |
| Dynamic range | 100dB or more |
| THD | 0.01% or less |
| Channel separation | 90dB at 1kHz |
| **General** | |
| Power supply | AC adaptor AD-12A |
| Power requirement | AC 100V - AC 230V 50 / 60Hz |
| Power consumption | +12V / 150mA |
| Weight | 0.7kg |
| Dimensions | 154 (W) x 54 (H) x 122 (D) mm |

## ES-1A

| Interface section | |
|---|---|
| IN port connector | RJ45 |
| OUT port connector | RJ45 |
| Protocol | Digigram EtherSound |
| **Control interface section** | To connect LR-1 (tentative) for level & CH controlling |
| Remote connector | EURO 6-pin |
| **DIP SW** | |
| No. 1 - 7 | Source channel select |
| No. 8 | Software / hardware CH select |
| **Audio Section** | |
| Output connector | EURO 4-pin (mono output between BTL+ and BTL-) |
| Adapt. load impedance | 8 ~ 16ohm |
| Output level | 20W (8ohm load, 1kHz, -12dB Full Scale level, VR: max) |
| Reference level | -12dB |
| Frequency response | +/-3dB at 20 ~ 20kHz |
| Residual noise | -70dBV or less (DIN AUDIO) |
| THD | 0.1% or less at 15W/8ohm |
| **General** | |
| Power supply | Transformer type |
| Power requirement | AC 100V - AC 230V 50 / 60Hz |
| Power consumption | 26W (100V / 120V / 230V AC) |
| Weight | 2.7kg |
| Dimensions | 280 (W) x 77 (H) x 160 (D) mm |

## ES-2A

| Network interface section | |
|---|---|
| IN port connector | RJ45 |
| OUT port connector | RJ45 |
| Protocol | Digigram EtherSound |
| **Control interface section** | To connect LR-1 for level & CH controlling |
| Remote connector | EURO 6-pin |
| **DIP SW** | |
| No. 1 - 7 | Source channel select |
| No. 8 | Software / hardware CH select |
| **Audio Section** | |
| Output connector | EURO 4-pin ((L and R) |
| Adapt. load impedance | 8 ~ 16ohm |
| Output level | 10W (8ohm load, 1kHz, -12dB Full Scale level, VR: max) |
| Reference level | -12dB |
| Frequency response | +/-3dB at 20 ~ 20kHz |
| Residual noise | -70dBV or less (DIN AUDIO) |
| THD | 0.1% or less at 7W/8ohm |
| **General** | |
| Power supply | Transformer type |
| Power requirement | AC 100V - AC 230V 50 / 60Hz |
| Power consumption | 23W (100V / 120V / 230V AC) |
| Weight | 2.7kg |
| Dimensions | 280 (W) x 77 (H) x 160 (D) mm |

## ES-1/ ES-2 PRO

| Network interface section | |
|---|---|
| IN port connector | RJ45 |
| OUT port connector | RJ45 |
| Protocol | Digigram EtherSound |
| **Control interface section** | To connect LR-1 for level & CH controlling |
| Remote connector | EURO 6-pin |
| **DIP SW** | |
| No. 1 - 7 | Source channel select |
| No. 8 | Software / hardware CH select |
| **Audio section** | |
| Output connector | XLR-3-32 (Pin 1: GND, Pin 2: HOT, Pin 3: COLD) |
| ES-1PRO | Selected channel (X) is output from both A & B. |
| ES-2PRO | Selected channel (X & X+1) are output from A & B respectively |
| Adapt. load impedance | 10kohm or more |
| Reference output level | +4dBu (-12dB Full Scale level) |
| Maximum output level | +16dBu |
| Frequency response | +/-1dB at 20 ~ 20kHz |
| S/N | 115dB or more |
| Dynamic range | 115dB or more |
| THD | 0.005% or less |
| Channel separation | 90dB at 1kHz |
| **General** | |
| Power supply | Transformer type |
| Power requirement | AC 100V - AC 230V 50 / 60Hz |
| Power consumption | 5W (AC 100V / 120V / 230V) |
| Weight | 2kg |
| Dimensions | 320 (W) x 51 (H) x 187 (D) mm |

## MI-6C

| General | |
|---|---|
| Connector | XLR-3-31 type |
| Input impedance | 10kohm ore more |
| Maximum Gain | 40 dB (1 dB step adjustment via NetCIRA SET) |
| Minimum Gain | 6 dB (1dB step adjustment via NetCIRA SET) (Typical) |
| Input Level MIC | - 50 dBu ~ - 16 dBu |
| Input Level LINE | - 24 dBu ~ + 8 dBu |
| Phantom Power | + 48 V |
| PAD | - 26 dB |
| HPF | 70 Hz (- 12 dB/oct) |
| Phase | In phase / Reversed phase |
| The above parameters can be set through the NetCIRA SET controlling software. | |
| Frequency Response | 20 ~ 20 kHz ± 1 dB (Typical) |
| Input Equivalent Noise | - 121 dBu |
| THD | 0.01 % or less |
| Crosstalk | 80 dB or more at 1 kHz |

## ES6300

| Interface section | |
|---|---|
| IN/OUT Port connectors | RJ45 |
| Protocol | Digigram EtherSound |
| **Control interface section** | To connect LR-1 for level & CH controlling |
| Remote connector | RJ45 |
| **Audio Section** | |
| Speaker unit | 10 cm full-range |
| Rated output | Amp: 10W or more, 4ohm |
| | Phones: 30mW or more, 32ohm |
| Distortion | 0.5% or less |
| Frequency response | 80 ~ 13kHz |
| Residual noise | - 60dBV or less (DIN) |
| **General** | |
| Power requirement | AC 100V - AC 230V 50 / 60Hz |
| Weight | 2.0kg |
| Dimensions | 120 (W) x 190 (H) x 120 (D) mm |

## SPEAKER SPECIFICATIONS

| | SH-6 | SI-1 | SI-1T (with matching transformer) | SI-1H (65) | SI-1H (90) |
|---|---|---|---|---|---|
| **Speaker unit** | 16.5 cm coaxial 2-way type | 13 cm HP diaphragm | 13 cm HP diaphragm | 13 cm HP diaphragm | 13 cm HP diaphragm |
| **Horn** | - | - | - | 65 degree type | 90 degree type |
| **Frequency response** | 55 Hz ~ 20 kHz | 80 Hz ~ 20 kHz | 80 Hz ~ 20 kHz | 120Hz ~ 20kHz | 120Hz ~ 20kHz |
| **Impedance** | 8 ohm | 8 ohm | 600 / 1 k / 2 kohm | 4 ohm | 4 ohm |
| **Rated input** | 50 W | 30 W | 16 W (600 ohm), 10 W (1 kohm), 5 W (2 kohm) | 35W | 35W |
| **Program input** | 100 W | 60 W | - | 70W | 70W |
| **Output sound pressure level** | 88 dB/W (1 m) | 88 dB/W (1 m) | 88 dB/W (1 m) | 94dB/W (1m) | 94dB/W (1m) |
| **Dimensions** | 230 (diameter) x 98mm | 230 (diameter) x 157 mm | 230 (diameter) x 157 mm | 330 (W) x 330 (H) x 341.6 (D) mm | 330 (W) x 330 (H) x 275.1 (D) mm |
| **Required ceiling hole size** | 200 (diameter) mm | 200 (diameter) mm | 200 (diameter) mm | 302 x 302 mm square hole | 302 x 302 mm square hole |
| **Weight** | 1.2 kg | 2.1 kg | 2.1 kg | 3.9kg | 3.3kg |
| **Cabinet material** | - | Black moulding with glass fibre | Black moulding with glass fibre | Black coloured mould with glass fibre | Black coloured mould with glass fibre |
| **Included Accessories** | Grill, paper stencil | Paper stencil, code for drop protection | Paper stencil, code for drop protection | - | - |
| **Grill Options** | | GR-W1, GR-W2, GQ-W1, GQ-W2 | GR-W1, GR-W2, GQ-W1, GQ-W2 | GQ-W3 | GQ-W3 |

GR-W1 = Round Cloth GR-W2 = Round Metal GQ-W1 = Square Cloth GQ-W2 = Square Metal GQ-W3 = Square Cloth

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