COMPACT ARRAY SPEAKER SYSTEM

**DESCRIPTION**
An innovative modular speaker design that offers remarkable versatility for use in public address systems of different venues, the HX-5 Series offers high quality audio reinforcement even in venues with acoustic difficulties. The design effectively combines the advantages of large, traditional horn-loaded tweeter and woofer enclosures and full-range compact speaker boxes without the drawbacks usually experienced with such speakers. These included installation requirements and minimal visual appeal in venues where appearance is important.

**FEATURES**
- The HX-5 Series offers controllable coverage characteristics. This allows optimal multiple unit configurations for installations in a wide range of venues including auditoriums, places of worship, banquet halls, community centers, sports bars, shopping malls, boardrooms, gyms and many other medium-sized environments.
- The HX-5 Series makes it simple to optimize dispersion for the different acoustic requirements of various venues with a variable dispersion angle that can be set for 60, 45, 30 and 15 degrees.
- Modular HX-5 speakers can be combined to create a better variable dispersion-controlled frequency range with enhanced low frequency output.
- Regardless of mounting on a wall or ceiling, HX-5 speakers exhibit minimal comb filter and interference effects to produce smoother low frequency output.
- Available in black or white finishes to suit venue decoration schemes.
- Subwoofer module for augmenting low frequency response.
- Simple installation requirements include hanging with the accessory brackets using chains, strong wires or cables. There are also other installation options such as a pre-install frame that can include a subwoofer, ceiling and wall brackets, and an adapter for installing on a dedicated stand.
Design background
The HX-5 is an innovative modular speaker design that incorporates the best characteristics of the traditional, cumbersome woofer enclosure combined with a CD horn-loaded high frequency driver and the full-range compact speaker enclosure without the drawbacks associated with each type.

The traditional speaker system was able to provide well-controlled sound coverage but posed various difficulties for correct installation and also presented an old-fashioned appearance as well that impacts on the venue's appearance. The full-range compact speaker enclosure is easy to install, but the design's sound coverage is hard to control.

The HX-5 features remarkably easy to control coverage characteristics including problematic low frequencies and can be installed in a multitude of ways while maintaining a modern, unobtrusive appearance.

Adjustable sound dispersion
A system is configured by vertically stacking four speaker modules with a total driver complement of four woofers and 12 tweeters positioned along the baffle surface. This configuration allows the variable directivity control and low-frequency dispersion control comparable to using a large constant-directivity horn speaker. A choice of four directivity angles — 15, 30, 45 and 60 degrees can be employed as needed. For instance, a specific directivity angle, or each module can have its directivity independently set for a specific coverage requirement. When two or multiple modules are connected to configure an arc, they effectively function as an immense single speaker controlling directivity for considerably lower frequencies. As a result, public address functions demonstrate optimal intelligibility even in environments with long reverb times.

Minimal reflective effects
Whether mounted on the wall or ceiling, the HX-5 is remarkably free from the comb filter and interference effects often encountered with other speaker designs. It can therefore produce more low frequency output even when mounted on the wall or ceiling.

Versatile mounting options
Compared to many other speaker designs, the HX-5 Series is remarkably easy to install in several ways. It can be hung easily with chains, strong wires and cables using the accessory brackets. There are also options for hanging with a pre-install frame by itself or configured with a subwoofer. There are also other options including ceiling and wall brackets as well as an adapter for use with a dedicated stand.
HX-5B/HX-5B-WP/HX-5W/HX-5W-WP

FREQUENCY RESPONSE

HX-5B/HX-5W

Single Unit: 8Ω (1W/1m)
- 60 degree mode
- 45 degree mode
- 30 degree mode
- 15 degree mode

Connected Two Units: 4Ω (1W/1m)
- Each 60 degree mode (× 2)
- Each 45 degree mode (× 2)
- Each 30 degree mode (× 2)
- Each 15 degree mode (× 2)

HX-5B-WP/HX-5W-WP

Single Unit: 8Ω (1W/1m)
- 60 degree mode
- 45 degree mode
- 30 degree mode
- 15 degree mode

Connected Two Units: 4Ω (1W/1m)
- Each 60 degree mode (× 2)
- Each 45 degree mode (× 2)
- Each 30 degree mode (× 2)
- Each 15 degree mode (× 2)
HX-5B/HX-5B-WP/HX-5W/HX-5W-WP
POLAR PATTERN (VERTICAL)

Single Unit

60 degree mode

45 degree mode

30 degree mode

15 degree mode
Single Unit

60 degree mode

Connected Two Units

Each 60 degree mode (× 2)
Note: The HX-5 series can be used vertically or horizontally.

Vertical Plans

<table>
<thead>
<tr>
<th>Single Unit</th>
<th>Connected Two Units</th>
</tr>
</thead>
</table>
| **60 degree mode** | | ![Graph](image1) 
| **45 degree mode** | | ![Graph](image2) 
| **30 degree mode** | | ![Graph](image3) 
| **15 degree mode** | | ![Graph](image4) 

Horizontal Plans

<table>
<thead>
<tr>
<th>Single Unit</th>
<th>Connected Two Units</th>
</tr>
</thead>
</table>
| **60 degree mode** | | ![Graph](image5) 

Each 60 degree mode (× 2)
HX-5B/HX-5B-WP/HX-5W/HX-5W-WP

Q vs FREQUENCY

Single Unit

60 degree mode

45 degree mode

30 degree mode

15 degree mode

Connected Two Units

Each 60 degree mode (× 2)

Each 45 degree mode (× 2)

Each 30 degree mode (× 2)

Each 15 degree mode (× 2)

IMPEDANCE vs FREQUENCY RESPONSE

HX-5B/HX5W

HX-5B-WP/HX5W-WP
**EQ RECOMMENDATION**

For HX-5B/W/B-WP/W-WP

<table>
<thead>
<tr>
<th>Filter</th>
<th>Frequency</th>
<th>Gain</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPF (12dB/oct)</td>
<td>60Hz</td>
<td>---</td>
<td>2.053</td>
</tr>
<tr>
<td>PEQ</td>
<td>60Hz</td>
<td>-3dB</td>
<td>1.414</td>
</tr>
<tr>
<td>PEQ</td>
<td>800Hz</td>
<td>-3dB</td>
<td>0.7</td>
</tr>
<tr>
<td>PEQ</td>
<td>2.5kHz</td>
<td>-4dB</td>
<td>2.997</td>
</tr>
<tr>
<td>PEQ</td>
<td>5kHz</td>
<td>+5dB</td>
<td>0.305</td>
</tr>
</tbody>
</table>

For HX-5B/W/B-WP/W-WP (low cut) and FB-120B/W

<table>
<thead>
<tr>
<th>Filter</th>
<th>Frequency</th>
<th>Gain</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPF BW (24dB/oct)</td>
<td>90Hz</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>PEQ</td>
<td>800Hz</td>
<td>-3dB</td>
<td>0.7</td>
</tr>
<tr>
<td>PEQ</td>
<td>2.5kHz</td>
<td>-4dB</td>
<td>2.997</td>
</tr>
<tr>
<td>PEQ</td>
<td>5kHz</td>
<td>-5dB</td>
<td>0.305</td>
</tr>
</tbody>
</table>

For FB-120B/W

<table>
<thead>
<tr>
<th>Filter</th>
<th>Frequency</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPF (12dB/oct)</td>
<td>40Hz</td>
<td>2.053</td>
</tr>
<tr>
<td>LPF BW (24dB/oct)</td>
<td>100Hz</td>
<td>---</td>
</tr>
</tbody>
</table>

Note: When using the processor with HX-5 and FB-120, ensure that the wiring polarity of both units is the same. The level balance shown below is just reference. It should be adjusted.

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**APPEARANCE AND DIMENSIONAL DIAGRAM**

**HX-5B/HX5W**

- **Example for directivity angle modes**
  - 45° mode
  - 30° mode
  - 15° mode

- **Speaker module**
  - The mixed angle mode: The angle between the successive speaker modules can be changed by four steps individually.

- **Example for direct wall mounting**
  - Dimensions for direct wall mounting
    - When the speaker is set vertically (60° mode)
    - When the speaker is set horizontally (60° mode)

**HX-5B-WP/HX5W-WP**

- **Example for direct wall mounting**
  - Dimensions for direct wall mounting
    - When the speaker is set vertically (60° mode)
    - When the speaker is set horizontally (60° mode)

- **Note**: The rear bracket can be rotated 90° when using the processor with HX-5 and FB-120.
## SPECIFICATIONS

### HX-5B  HX-5W  HX-5B-WP  HX-5W-WP

<table>
<thead>
<tr>
<th>Power Handling Capacity</th>
<th>Continuous pink noise: 200W, Continuous program: 600W</th>
<th>8Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity 1W, 1m</td>
<td>96dB (60° mode), 97dB (45° mode), 98dB (30° mode), 99dB (15° mode)*</td>
<td>8Ω</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>70 – 20,000Hz (–10dB (60° mode)), 75 – 20,000Hz (–10dB (45° mode)), 80 – 20,000Hz (–10dB (30° mode), 85 – 20,000Hz (–10dB (15° mode))</td>
<td>8Ω</td>
</tr>
<tr>
<td>Crossover Frequency</td>
<td>96Hz</td>
<td>8Ω</td>
</tr>
<tr>
<td>Directivity Angle</td>
<td>Horizontal: 100° (over 2000Hz) Vertical: 60° (over 800Hz), 45° (over 1.2kHz), 30° (over 1.6kHz), 15° (over 3.2kHz) variable</td>
<td>8Ω</td>
</tr>
<tr>
<td>Speaker Component</td>
<td>Low frequency: 12cm cone-type × 4 High frequency: Balanced dome-type × 12</td>
<td>8Ω</td>
</tr>
<tr>
<td>Input Terminal</td>
<td>Speakon NL4MP × 2 and M4 screw terminal</td>
<td>8Ω</td>
</tr>
<tr>
<td>Speaker Cord</td>
<td>—</td>
<td>8Ω</td>
</tr>
<tr>
<td>Water Protection</td>
<td>IPX4 (Install with every speaker module downward)</td>
<td>8Ω</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>—</td>
<td>8Ω</td>
</tr>
<tr>
<td>Finish</td>
<td>Enclosure: Polypropylene, black</td>
<td>8Ω</td>
</tr>
<tr>
<td>Dimensions</td>
<td>408 (W) × 546 (H) × 450 (D)mm</td>
<td>8Ω</td>
</tr>
<tr>
<td>Weight</td>
<td>16kg</td>
<td>8Ω</td>
</tr>
<tr>
<td>Accessory</td>
<td>Hanging bracket × 2, Hex. wrench × 1</td>
<td>8Ω</td>
</tr>
<tr>
<td>Option</td>
<td>Matching transformer: MT-200, HY-PF1B, HY-CW1B, HY-WM1B, HY-WM2B, HY-CN1B, Speaker stand adapter: HY-ST1</td>
<td>8Ω</td>
</tr>
</tbody>
</table>

### HX-5B  HX-5W  HX-5B-WP  HX-5W-WP

<table>
<thead>
<tr>
<th>Power Handling Capacity</th>
<th>Continuous pink noise: 200W, Continuous program: 600W</th>
<th>8Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Response</td>
<td>40 – 1,200Hz (–10dB)</td>
<td>8Ω</td>
</tr>
<tr>
<td>Speaker Component</td>
<td>31cm cone-type</td>
<td>8Ω</td>
</tr>
<tr>
<td>Input Terminal</td>
<td>Speakon NL4MP × 2 and M4 screw terminal, distance between barriers: 11mm</td>
<td>8Ω</td>
</tr>
<tr>
<td>Finish</td>
<td>Enclosure: Wood Punched net: Steel plate, black, paint</td>
<td>8Ω</td>
</tr>
<tr>
<td>Dimensions</td>
<td>408 (W) × 408 (H) × 450 (D)mm</td>
<td>8Ω</td>
</tr>
<tr>
<td>Weight</td>
<td>15kg</td>
<td>8Ω</td>
</tr>
<tr>
<td>Option</td>
<td>Speaker rigging frame: HY-PF1B, Speaker rigging frame: HY-PF1W</td>
<td>8Ω</td>
</tr>
</tbody>
</table>

* (Factory-preset: 60° mode)