High power speaker arrays

Description

WAVES High Power Speaker Arrays (HPSA-8100-R series) from Eaton broadcast crisp, intelligible voice and tone warnings over large outdoor coverage areas where immediate notification is essential. Designed to meet Life Safety requirements, this wide-area Mass Notification System (MNS) features industry-leading intelligibility using an advanced amplification system design. Deployed on a static pole, affixed to a building or mounted on a rooftop, can function autonomously or as an integral component of the WAVES over IP (WoIP) MNS. These Giant Voice speaker arrays ensure that you get the right message to the right person at the right time.

The HPSA-8100-R series delivers live and pre-recorded announcements originating from WoIP Integrated Base Station (IBS) via secure, robust and reliable Ethernet communications network devices, IP Communicators (IPC2). The IPC2 sends and receives audio via an RTP multicast stream through the Local Area Network. Eaton approved radios (RADIO-500G and RADIO-900M) can be added to provide wireless communications. Both the IPC and radios support the highest standards of network security and encryption. The HPSA-8100-R series can also be used to expand outdoor coverage in an existing 2.4 GHz WAVES system by upgrading the IBS and adding IP capability.
Features & benefits

• Highly intelligible live voice and tone announcements with streaming digital audio for higher quality sound
• Energy- and cost- efficient advanced amplification system enables lower current draw and increased battery life, requiring fewer speakers and significantly less power for a substantially larger range (see specifications)
• Continuous emergency operation regardless of primary power outage
• Omni-directional and directional speaker coverage options
• Intelligent battery charger maintains batteries at optimal charge state and supervises the batteries for multiple fault conditions
• Tones/Messages: delivered with minimum 9 standard tones; customizable and multi-lingual messages can be created on-site for timely, event-specific alerting
• Remote operation from the IBS or locally from the HPSA
• Supervision and monitoring with auto-diagnostics; online network diagnostics and configuration

Note: Please read these specifications and associated installation instructions before using, specifying, or installing this product.

Approvals

Applications

Multi-use applications: The HPSA can function as a mass notification, emergency communications, personnel notification, and citizen warning system for natural or man-made disasters. It can also be used for training and exercises, general announcements, crowd control and special events.

Components

• 2, 4, 6 or 8 horns, varies by model
• Assembly horn driver with cover (number varies by model number)
• Electronics cabinet includes IPC2, four 65AH batteries and battery cable

Supporting Equipment & Accessories

• Stand/pedestal: M37-00056
• Mounting options include HRNMT-100° and HRNMT-250°
• Optional microphone for set up and testing: HPSA-MIC*
• 500 ft. speaker wire kit: CAB-SPKR-KIT
• RADIO-500G*
• RADIO-900M*
• For required radio mounting options, please contact your local sales representative

*For additional information, see separate specification sheets.

Installation and mounting dimensions

The diameter of the pole for the HPSA speaker horns must be 4.5” to 6”. Pole and mounting accessories are not included with the HPSA.

HPSA-8100-R series

Figure 1. Speaker Assembly

Figure 2. Electronics cabinet with pedestal
Table 1. Specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Number of Horns</th>
<th>Watts</th>
<th>dB (C) @ 100' (30 m)</th>
<th>Effective Range(^a): 100' Radius @ 70dB (C)</th>
<th>dB (C) @ 360' (30 m)</th>
<th>Effective Range(^a): 360' Radius @ 70dB (C)</th>
<th>Height</th>
<th>Horn &amp; Driver Kit Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPSA-8122-R</td>
<td>2</td>
<td>200</td>
<td>110</td>
<td>1600' (480 m)</td>
<td>105</td>
<td>1200' (386 m)</td>
<td>52 lbs</td>
<td>(23.8 kg)</td>
</tr>
<tr>
<td>HPSA-8124-R</td>
<td>4</td>
<td>400</td>
<td>115</td>
<td>2400' (722 m)</td>
<td>110</td>
<td>1600' (480 m)</td>
<td>104 lbs</td>
<td>(47.2 kg)</td>
</tr>
<tr>
<td>HPSA-8126-R</td>
<td>6</td>
<td>600</td>
<td>119</td>
<td>3040' (927 m)</td>
<td>114</td>
<td>2240' (683 m)</td>
<td>156 lbs</td>
<td>(70.8 kg)</td>
</tr>
<tr>
<td>HPSA-8128-R</td>
<td>8</td>
<td>800</td>
<td>123</td>
<td>4160' (1268 m)</td>
<td>118</td>
<td>2880' (878 m)</td>
<td>208 lbs</td>
<td>(94.4 kg)</td>
</tr>
</tbody>
</table>

\(^a\) Field testing was performed in accordance with ANSI/ASA S12.14-1992, reaffirmed September 11, 2007. Actual SPL performance will depend on parameters such as site design, topography, climate and foliage.

Table 2. Product features

Control Module

- **Signal Duration**: 60 min continuous voice
- **Audio Distortion**: < 1.0% THD

Electronic cabinet dimensions: 36” W x 48” H (60” with pedestal) x 12” D / 91.4 x 121 (152 with pedestals) x 30.5 cm
- **Electronic cabinet weight**: 110 lb (not including batteries) / 49.9 kg; total weight with batteries: 322 lbs / 146 kg
- **Horn dimensions**: 3” 2” W x 2” 1” H x 1” 4” 7/16” D / 96.5 cm x 63.5 cm x 41.6 cm (2 horns with drivers, omni-directional)
- **Horn weight**: 52 lbs for each horn and driver kit (pair) / 23.8 kg
- **Horn material**: Special aluminum alloy horn construction provides long service life without material fatigue
- **Battery weight**: 53 lbs each / 24 kg
- **Speaker mounting/pipe pole**: Minimum 4.5” (11 cm) outside diameter (OD); maximum 6” OD (15.25 cm)
- **Ground mount pedestal kit**: Model M37-00056 raises the cabinet 12” (30.5) cm) from the ground
- **Speaker cable kit**: Model CAB-SKR-KIT, 500 ft (152 m) long; 16 AWG stranded, non-shielded, marine-rated
- **Speaker wire**: 12-16 AWG stranded two-conductor jacketed cable. Non-shielded either twisted or non-twisted. UL/CSA/EU-approved for outdoor use.

Wire size ratings:

- **Speaker Lines**: 12-16 AWG (limited to 14 AWG for connectors)
- **AC Mains**: 10-16 AWG

Power (Including Standby)

- **Input voltage**: 120 to 240 VAC (typical); 50 to 60 Hz Single-phase (Universal AC/Auto-switching)
- **Input current**: 3 Amps
- **Battery input voltage**: 40.8 – 55.4 VDC 48 Volts (nominal)
- **Operating voltage**: ~48 VDC
- **Standby time**: 72 hrs followed by 60 min continuous voice
- **Continuous signaling time**: 60 minutes (voice)
- **Battery charger**: Universal AC Supply
- **Batteries**: Four (4) deep cycle discharge AGM, SLA batteries, 65 AH each, connected in series

Environment

- **Operating temperature**: -40° F to 140° F (-40° C to +60° C)
- **Humidity**: 10 to 93% non-condensing

Amplifiers

- **Amplifier**: Class D
- **Frequency Response**: 300 Hz to 6000 Hz
- **Total Harmonic Distortion**: 1% THD+N Capable; 10% THD+N Max to achieve specified SPL levels
- **Efficiency**: Greater than 90% at full load
- **Thermal Protection**: Yes
- **Short Circuit Protection**: Yes, Auto Recovery
- **Amp Drivers**: 11 Ohm (Typical)
Ethernet/Network Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet Standard</td>
<td>10/100 Base-T</td>
</tr>
<tr>
<td>Switch</td>
<td>4-port 10/100 Base-T</td>
</tr>
<tr>
<td>Networking Standard</td>
<td>IEEE 802.11 g</td>
</tr>
<tr>
<td>Data Rate</td>
<td>54 Mbps</td>
</tr>
<tr>
<td>Encryption level</td>
<td>WPA2/802.11i</td>
</tr>
<tr>
<td>Ethernet cable</td>
<td>Standard RJ-45 cable; 300 ft maximum</td>
</tr>
</tbody>
</table>

IPC Connectors/Interface

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-232</td>
<td>9-pin Dsub Male connector</td>
</tr>
<tr>
<td>Line Level/Audio Input</td>
<td>3.5 mm, 11-pin socket</td>
</tr>
<tr>
<td>AC Input</td>
<td>Standard North America, EI 3-pin (fused) connector</td>
</tr>
<tr>
<td>DC Input</td>
<td>5-pin DIN connector (to optional UPS)</td>
</tr>
<tr>
<td>Relays</td>
<td>3.5 mm, 10-pin socket</td>
</tr>
<tr>
<td>Ethernet</td>
<td>4-port RJ45 jack</td>
</tr>
</tbody>
</table>

HPSA battery charger

Output for 4 series connected sealed lead-acid (SLA) batteries:

- Maximum of 56VDC (14 V/battery, 2.33 V/cell)
- Operates in a constant current mode limited to a total of four amperes.
- Intelligent battery charger maintains batteries at optimal charge state and supervises the batteries for multiple fault conditions.

Recommended maintenance

Batteries: Check all HPSA batteries once a month for optimal power; twice a month if the batteries are used excessively. If the power consistently drops below the working level, as specified in the operator manuals, the batteries may need to be replaced. Note: batteries are not covered under the Cooper Notification limited warranty.

Speaker wire: Visually check once a week all wiring for frays, cuts, and kinking.

Also recommended is to refer to the MNS maintenance schedule as specified by the Unified Facilities Criteria (UFC) code section 4-021-01. Test schedules are to be followed to standard operating systems (SOP) set forth by the UFC and/or WAVES Administrators of the site.

Architects and engineers specifications

The High Power Speaker Array shall be a model HPSA-81___-R, providing alarm tones and recorded or live voice announcements at ___ dB(A) at 30 meters (100 feet) from the source, omnidirectional, consisting of: The Siren Head shall be: [2 - 8] high efficiency aluminum horns [select model] and 2, 4, 6 or 8 high power drivers with connectors [select model] with one (1) set, mounting materials (screws, nuts, washers).

The Siren Electronics shall be: One (1) outdoor cabinet, with terminations and all components fully assembled and tested; Universal AC/ Auto-switching (120 to 240 VAC; 50 to 60 Hz Single-phase) power supply, fused lightning protection. The siren electronics shall include a DSP-based processor board with power distribution board, amplifier and the appropriate set of horn drivers (2, 4, 6 or 8 for the 8122-R, 8124-R, 8126-R and 8128-R models respectively); sound processor with alarm tone signal generator that can be configured with virtually an unlimited number of tones (9 alarms provided) and messages; local control panel for alarm activation, PA, test and configuration setup, RS-232 Serial Interface; an Ethernet network communications interface - IP Communicator (IPC).

The HPSA-81___-R shall interface to IPC2, an Ethernet communications network device that sends and receives audio and data via an RTP multicast stream. To provide wireless communications via 900 MHz ISM band, the RADIO-900M or equivalent shall be added to the HPSA-8100-R series cabinet. To provide wireless communications via 5.8 GHz band, the RADIO-500G shall be used. Both the IPC2 and The HPSA control panel display shall be easy to navigate and operate and be capable of providing public address, test and configuration setup.

Approvals shall include TUV certification.

Note: Due to continuous development of our products, specifications and offerings are subject to change without notice in accordance with Cooper Notification, Inc. dba Eaton standard terms and conditions.
WE ENCOURAGE AND SUPPORT NICET CERTIFICATION
18 MONTH WARRANTY