



# Lightweight High Power Speaker Arrays

## HS Series



### Overview

EST brand HS Series High Power Speaker Arrays (HPSA) employ exclusive HyperSpike® technology to deliver lightweight and acoustically sophisticated solutions for outdoor Emergency Communication Systems/Mass Notification Systems/Life Safety Systems (ECS/MNS/LSS) installations. These rugged outdoor-rated units are among the industry's smallest in physical size, yet they reproduce some of the clearest (up to 0.91 STI, source-dependant) and loudest (up to 138 dBA-fast @ 1m) audio signals available. Loudspeaker heads are as small as 13.2" (33.52 cm) in diameter and 25.25" (64.13 cm) in height. A single panel unit weighs as little as 16 lb (7.3 kg).

HS Series loudspeakers are available in a number of different configurations, from one panel configurations that provide a relatively narrow sound dispersion, to five-panel configurations with full 360° sound projection.

The unique design of HS Series loudspeakers allow for a 100 percent up-time duty cycle — when powered from an AC source, they can be powered and ready to perform 24/7. This makes them ideally suited for daily activation, as well as emergency use.

HS Series HPSAs can be permanently installed, or can be configured for portable use. Units come standard with an internal inverter/charger system that can operate the HPSA from the 24 VDC battery compliment.

Each HS Series HPSA loudspeaker has a remotely-mounted Electronics Control Cabinet (ECC) that can be installed indoors or outdoors. These house the audio power amplifiers as well as control and power equipment. The lockable reinforced fiberglass cabinets are rated NEMA 3, 3R, 3S, 4, 4X, 12, 12K and 13. They come ready to interface with the EST3-Sixty Emergency Communication Platform.

### Standard Features

- Intelligible audio performance (up to 0.91 STI)
- 24/7/365 duty cycle
- 360, 230, 185 and 120 degree dispersion pattern options
- 320 to 6400 watt configurations
- Easy installation – mounts to standard 2-inch diameter mast
- Lightweight loudspeaker heads – as low as 16 pounds (7.3 kg)
- Rugged outdoor construction
- Reliable and supervised interfaces to the EST3-Sixty platform
- Includes a 8 ft (2.44 m) flexible weathertight wiring conduit

## Application

Any outdoor facilities, such as:

- Universities, Colleges & High Schools
- Health care campuses
- Quads
- Parking lots
- Military bases
- Force protection
- Large ships
- Piers
- Docks
- Industrial complexes
- Refineries
- Power plants
- Air fields
- Stadiums
- Golf Courses
- Camp Grounds
- Amusement parks
- Open mines
- Weather warning systems
- Flood warning systems
- Civil defense

## Installation

For optimal performance and safety when installing in permanent locations, High Power Speaker Arrays (HPSAs) loudspeakers should be mounted 35 to 55 feet (10.7 to 16.8 m) above grade on a pole, building or other structure. For portable or vehicle-mounted applications, the loudspeaker head should be at least 20 feet (6.1 m) above grade and away from people. For all installations, it is also key to have clear, open space around the speaker head. HPSA output is best via line-of-sight.

The factory assembled and tested Electronics Control Cabinets (ECCs) contain the HPSA interface terminals, transient protectors, and components to support easy, clean, and supervised connection to the EST3-Sixty platform. This makes for simple and intuitive control of the units from a single control point or multiple locations.

The ECCs contain the power amplifier(s), digital signal processor, and power inverter system. Batteries are maintained in a Ready State by a temperature-compensated charging system.

The ECCs can be mounted inside or outside. Mounting options include pole, flange (wall), or pedestal. Heaters and ventilation units can also be ordered when required. When outdoor mounting, ECC and battery cabinets can be mounted below the loudspeaker head for easy access, but high enough to prevent vandalism. The ECC can hold one or two replaceable power amplifiers. Cabinets are equipped with tamper switches.

Internal displays and diagnostic LEDs simplify maintenance. HPSA status is also transmitted to the EST3-Sixty platform. A GFCI-protected convenience outlet is provided with ECCs to aid in servicing. All ECC power is protected with circuit breakers. Exterior wiring to and from the ECC is protected by transient protectors.

Typically, the HS Series HPSA provides the EST3-Sixty platform with the following signals:

- Activation Confirmation
- Incoming AC failure
- Inverted AC failure
- Audio failure
- DC failure
- Door tamper

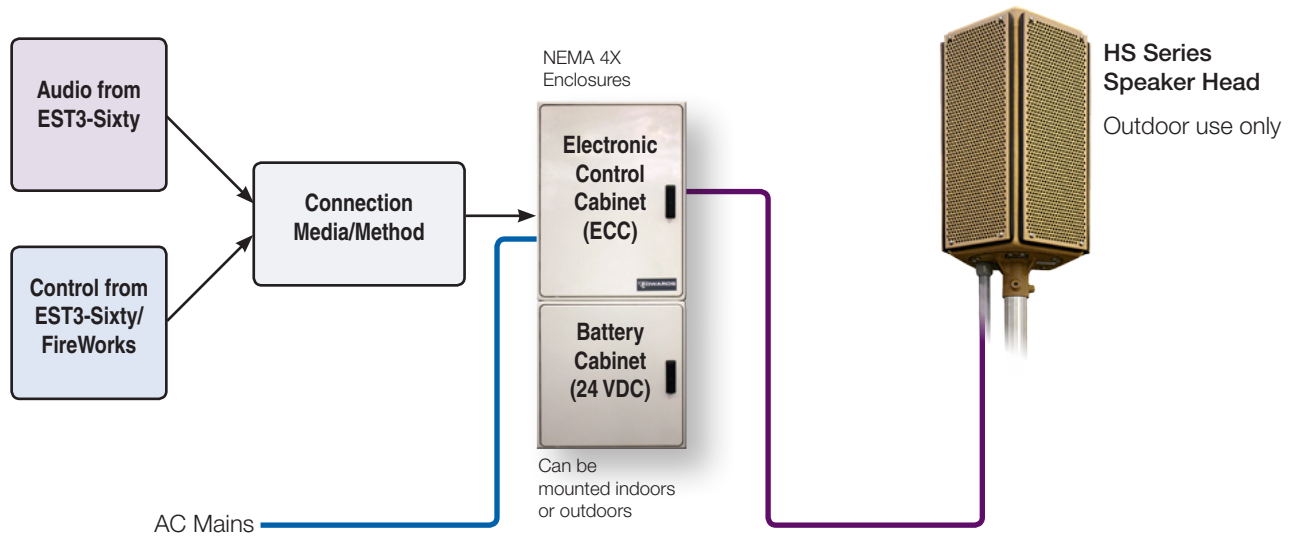
Units come standard with a one year warranty. An optional second year of additional coverage may be purchased at the time of the initial order. Warranties exclude batteries, which carry a 90-day warranty.

## US Military Specifications

### Loudspeaker Head

Random vibration	MIL-STD 810F, Method 514.4
Shipboard vibration	MIL-STD 167-1A
Shipboard shock	MIL-STD-910D, Class 1
SRS shock	MIL-STD-810F, Method 516.5
Rain	MIL-STD-810F, Method 506.4
Operating Humidity	MIL-STD-810F, Method 507.4
Salt fog	MIL-STD-810F, Method 509.4

# Typical Deployment



## Specifications

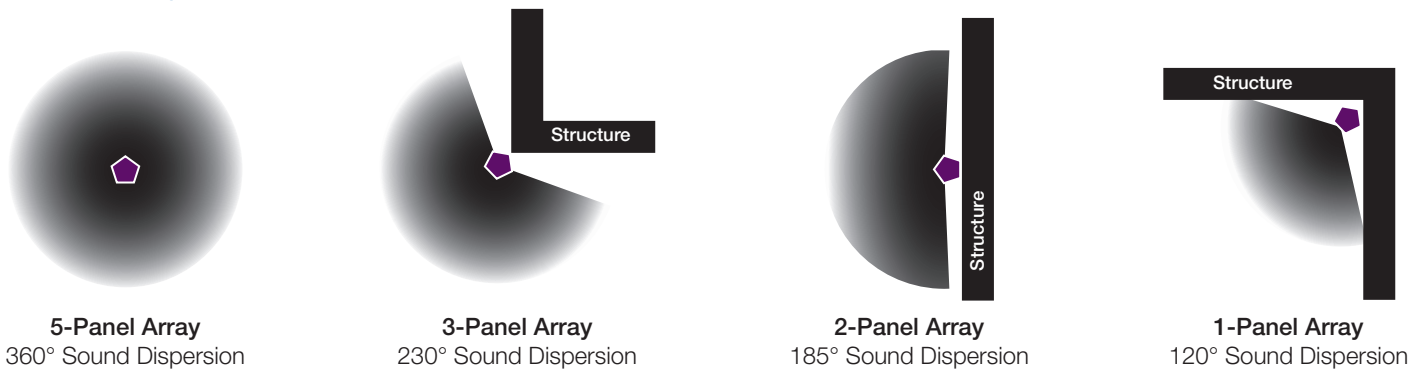
### Loudspeakers

	Speaker Panels	Sound Dispersion	1600 Class	3200 Class	6400 Class
Output	5 Panel Array	360°	1600 Watts	3200 Watts	6400 Watts
	3 Panel Array	230°	960 Watts	1920 Watts	3840 Watts
	2 Panel Array	185°	640 Watts	1280 Watts	2560 Watts
	1 Panel Array	120°	320 Watts	640 Watts	1280 Watts
Weight	5 Panel Array	360°	48 lb. (21.77 kg)	96 lb (43.55 kg)	192 lb (87.09 kg)
	3 Panel Array	230°	31 lb (14.06 kg)	62 lb (28.12 kg)	124 lb (56.25 kg)
	2 Panel Array	185°	24 lb (10.89 kg)	48 lb (21.77 kg)	96 lb (43.55 kg)
	1 Panel Array	120°	16 lb (7.26 kg)	32 lb (14.52 kg)	64 lb (29.03 kg)
Dimensions	Each	Diameter	13.2" (33.52 cm)	13.2" (33.52 cm)	13.2" (33.52 cm)
	Each	Height	25.25" (64.13 cm)	40.50" (102.87 cm)	81" (205.74 cm)
Environmental	Operating temperature: -4 °F to 140 °F (-20 °C to 60 °C); Humidity: 0% to 95% (non-condensing).				

### Electronics Control Cabinet

Dimensions	70" x 30" x 12" 177.8 x 76.2 x 30.5 cm	70" x 30" x 12" 177.8 x 76.2 x 30.5 cm	70" x 60" x 12" 177.8 x 152.4 x 30.5 cm
Weight (without batteries)	242 lb (109.8 kg)	248 lb (112.5 kg)	496 lb (225.0 kg)

## Sound Dispersion Patterns



## Ordering Information

### High Power Speaker Array Assemblies

HPSA Assemblies are AC powered with DC backup. They come with a lockable NEMA 4 Electronics Control Cabinet (ECC) that holds the amplifier and battery charger, and a lockable NEMA 4 battery enclosure. Enclosures are equipped with tamper switches. Loudspeakers come pre-assembled with an eight foot (2.4 meter) ¾-inch liquid-tight flexible conduit whip and wire leads. Batteries and battery enclosures are ordered separately.

High Power Speaker Array Assemblies	Model Number		Output	Sound Dispersion	Active Panels	Speaker Head Color
	With 110V/60Hz inverter/charger	With 230V/50Hz inverter/charger				
1600 Watt Class	MN-HS16T5P	MN-HS16T5P-E	1600 Watts	360°	5 of 5	Tan
	MN-HS16T3P	MN-HS16T3P-E	960 Watts	230°	3 of 5	
	MN-HS16T2P	MN-HS16T2P-E	640 Watts	185°	2 of 5	
	MN-HS16T1P	MN-HS16T1P-E	320 Watts	120°	1 of 5	
	MN-HS16G5P	MN-HS16G5P-E	1600 Watts	360°	5 of 5	Gray
	MN-HS16G3P	MN-HS16G3P-E	960 Watts	230°	3 of 5	
	MN-HS16G2P	MN-HS16G2P-E	640 Watts	185°	2 of 5	
	MN-HS16G1P	MN-HS16G1P-E	320 Watts	120°	1 of 5	
3200 Watt Class	MN-HS32T5P	MN-HS32T5P-E	3200 Watts	360°	5 of 5	Tan
	MN-HS32T3P	MN-HS32T3P-E	1920 Watts	230°	3 of 5	
	MN-HS32T2P	MN-HS32T2P-E	1280 Watts	185°	2 of 5	
	MN-HS32T1P	MN-HS32T1P-E	640 Watts	120°	1 of 5	
	MN-HS32G5P	MN-HS32G5P-E	3200 Watts	360°	5 of 5	Gray
	MN-HS32G3P	MN-HS32G3P-E	1920 Watts	230°	3 of 5	
	MN-HS32G2P	MN-HS32G2P-E	1280 Watts	185°	2 of 5	
	MN-HS32G1P	MN-HS32G1P-E	640 Watts	120°	1 of 5	
6400 Watt Class	MN-HS64T5P	MN-HS64T5P-E	6400 Watts	360°	5 of 5	Tan
	MN-HS64T3P	MN-HS64T3P-E	3840 Watts	230°	3 of 5	
	MN-HS64T2P	MN-HS64T2P-E	1280 Watts	185°	2 of 5	
	MN-HS64T1P	MN-HS64T1P-E	640 Watts	120°	1 of 5	
	MN-HS64G5P	MN-HS64G5P-E	6400 Watts	360°	5 of 5	Gray
	MN-HS64G3P	MN-HS64G3P-E	3840 Watts	230°	3 of 5	
	MN-HS64G2P	MN-HS64G2P-E	1280 Watts	185°	2 of 5	
	MN-HS64G1P	MN-HS64G1P-E	640 Watts	120°	1 of 5	

### Accessories

Protective Covers	
MN-HS16GPC	Gray HS Series 1600 Watt class optional protective cover.
MN-HS32GPC	Gray HS Series 3200 Watt class optional protective cover
MN-HS64GPC	Gray HS Series 6400 Watt class optional protective cover
MN-HS16TPC	Tan HS Series 1600 Watt class optional protective cover.
MN-HS32TPC	Tan HS Series 3200 Watt class optional protective cover
MN-HS64TPC	Tan HS Series 6400 Watt class optional protective cover

Warranty Programs	
MN-HS16EXWARR2	HS Series 1600 Watt class extended warranty - 2 years total. Must be ordered when HPSA is ordered.
MN-HS32EXWARR2	HS Series 3200 Watt class extended warranty - 2 years total. Must be ordered when HPSA is ordered.
MN-HS64EXWARR2	HS Series 6400 Watt class extended warranty - 2 years total. Must be ordered when HPSA is ordered.

Batteries and Accessories	
MN-HSBATT140	HS Series ECC Standard Battery set. 140 AH SLA. 2 batteries required for each ECC. Replace in pairs.
MN-HSBHK1X	HS Series Battery compliment heating blankets (set of 2) for use with MN-HSBX1 Extended Battery Enclosure. 120 VAC. Requires MN-HSECCH1.
MN-HSBHK1S	HS Series Battery compliment heating blankets (set of 2). 120 VAC. Requires MN-HSECCH1. Two used for MN-HS64 Series.
MN-HSBX1	HS Series ECC Battery Extension enclosure (without batteries). Includes tamper switch, battery shelf and cabling. Can be mounted to the side or below the ECC primary battery enclosure.

### Separate Electronics Control Cabinets (ECCs)

MN-HSECC1	MN-HS16 Class lockable NEMA 4 amplifier, 110V/60Hz. inverter/battery charger and electronics enclosure, lockable NEMA 4 battery enclosure (w/o batteries). Enclosures equipped with tamper switches. AC powered amplifier with DC backup. Batteries and accessories are ordered separately.
MN-HSECC2	MN-HS32 Class lockable NEMA 4 amplifier, 110V/60Hz. inverter/battery charger and electronics enclosure, lockable NEMA 4 battery enclosure (w/o batteries). Enclosures equipped with tamper switches. AC powered amplifier with DC backup. Batteries and accessories are ordered separately.
MN-HSECC4	MN-HS64 Class lockable NEMA 4 amplifier, 110V/60Hz. inverter/battery charger and electronics enclosures, lockable NEMA 4 battery enclosures (w/o batteries). Enclosures equipped with tamper switches. AC powered amplifier with DC backup. Batteries and accessories are ordered separately.
MN-HSECC1-E	MN-HS16 Class lockable NEMA 4 amplifier, 230V/50Hz. inverter/battery charger and electronics enclosure, lockable NEMA 4 battery enclosure (w/o batteries). Enclosures equipped with tamper switches. AC powered amplifier with DC backup. Batteries and accessories are ordered separately.
MN-HSECC2-E	MN-HS32 Class lockable NEMA 4 amplifier, 230V/50Hz. inverter/battery charger and electronics enclosure, lockable NEMA 4 battery enclosure (w/o batteries). Enclosures equipped with tamper switches. AC powered amplifier with DC backup. Batteries and accessories are ordered separately.
MN-HSECC4-E	MN-HS64 Class lockable NEMA 4 amplifier, 230V/50Hz. inverter/battery charger and electronics enclosures, lockable NEMA 4 battery enclosures (w/o batteries). Enclosures equipped with tamper switches. AC powered amplifier with DC backup. Batteries and accessories are ordered separately.

### Heating and Ventilation

MN-HSECCFAN1	HS Series ECC Top-mount ventilation fan system with side louvers. 115 VAC. Changes ECC rating to NEMA 3R
MN-HSECCFAN1-E	HS Series ECC Top-mount ventilation fan system with side louvers. 230 VAC. Changes ECC rating to NEMA 3R
MN-HSECCH1	HS Series ECC Cabinet heater system kit (120 VAC). Provides terminals for battery heater blanket kits. One used for MN-HS16 & MN-HS32 Series. Two used for MN-HS64 Series.
MN-HSECCH1-E	HS Series ECC Cabinet heater system kit (230 VAC). Provides terminals for battery heater blanket kits. One used for MN-HS16 & MN-HS32 Series. Two used for MN-HS64 Series.
MN-HSECCPED1	HS Series ECC Housekeeping Pedestal Mount Kit (4"). Used when wall-mounting MN-HS16 or MN-HS32 Series ECC. 2 required if wall-mounting MN-HS64 Series ECCs.

### Audio Software

MN-AUDSOF1	HS Series audio optimization software package
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### Modeling Services

MN-HSEMD12	HS Series EASE modeling exterior direct/reflected energy. Up to (12) 3D buildings overlaid on Google earth map or provided PDF/CAD site topology drawing. Modeling based on 125-2Khz band and provide medium resolution graphics with 3dB steps in propagation for up to (6) acoustic device/array locations onto chloropleth map. Scale limit of this offer is for 4 million square feet venue.
MN-HSEMDNB	HS Series EASE modeling exterior direct energy only (no 3D buildings) overlaid on Google earth map or on provided PDF/CAD site topology drawing. Modeling based on 125-2Khz band and provide medium resolution graphics with 3dB steps in propagation for up to (4) acoustic device/array locations onto chloropleth map. Scale limit of this service is in 2 million square feet increments.
MNHSEMDQ	HS Series EASE modeling exterior direct/reflected energy. Over 12 3D buildings overlaid on Google earth map or provided PDF/CAD site topology drawing. Modeling based on 125-2Khz band and provide medium resolution graphics with 3dB steps in propagation for system required acoustic device/array locations onto chloropleth map. Contact Edwards Customer Service for quote.
MN-HSEMN12	HS Series EASE modeling interior direct/reflected energy. Up to (12) interior 3D substructures overlaid on provided PDF/CAD plan view drawing. Modeling based on 125-2Khz band and provide medium resolution graphics with 3dB steps in propagation for up to (10) acoustic device/array locations onto chloropleth map. Scale limit of this offer is for 250,000 square foot venue.
MN-HSEMN24	HS Series EASE modeling interior direct/reflected energy. Up to (24) interior 3D substructures overlaid on provided PDF/CAD plan view drawing. Modeling based on 125-2Khz band and provide medium resolution graphics with 3dB steps in propagation for up to (16) acoustic device/array locations onto chloropleth map. Scale limit of this offer is for 500,000 square foot venue.
MN-HSEMNQ	HS Series EASE modeling interior direct/reflected energy. Over 24 interior 3D substructures overlaid on provided PDF/CAD plan view drawing. Modeling based on 125-2Khz band and provide medium resolution graphics with 3db steps in propagation for up to system required acoustic device/array locations onto chloropleth map. Contact Edwards customer service for quote.

### Mounting Accessories

MN-HSECCPM1	HS Series ECC pole-mount installation kit. For use with MN-HS16 & MN-HS32 Series only.
MN-HSLPMK1	HS Series Emitter (loudspeaker) pole-mount kit. Bolts to steel or wooden pole. Additional support and guy wires may be necessary.
MN-HSPM16	Portable HS Series HPSA portable tripod mast. Extends up to 16'
MN-HSPM33	HS Series Portable mast & guy wire unit. Extends up to a maximum 33' (10M)
MN-HSTPMS1	HS Series Emitter (loudspeaker) tripod mounting system. 10' tripod with 14' mast. Additional support and guy wires may be necessary. ECC cannot be mounted to this unit.
MN-HSWB1	HS Series Emitter head (loudspeaker) wall-mount bracket & installation kit





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## Replacement Parts

### Speaker Heads, complete

MN-HS16SPKHRT5P	Tan HS Series 1600 Watt HPSA (5 of 5 Active Panels)
MN-HS16SPKHRT3P	Tan HS Series 1600 Watt HPSA (3 of 5 Active Panels)
MN-HS16SPKHRT2P	Tan HS Series 1600 Watt HPSA (2 of 5 Active Panels)
MN-HS16SPKHRT1P	Tan HS Series 1600 Watt HPSA (1 of 5 Active Panels)
MN-HS16SPKHRG5P	Gray HS Series 1600 Watt HPSA (5 of 5 Active Panels)
MN-HS16SPKHRG3P	Gray HS Series 960 Watt HPSA (3 of 5 Active Panels)
MN-HS16SPKHRG2P	Gray HS Series 640 Watt HPSA (2 of 5 Active Panels)
MN-HS16SPKHRG1P	Gray HS Series 320 Watt HPSA (1 of 5 Active Panels)
MN-HS32SPKHRT5P	Tan HS Series 3200 Watt HPSA (5 of 5 Active Panels)
MN-HS32SPKHRT3P	Tan HS Series 1920 Watt HPSA (3 of 5 Active Panels)
MN-HS32SPKHRT2P	Tan HS Series 1280 Watt HPSA (2 of 5 Active Panels)
MN-HS32SPKHRT1P	Tan HS Series 640 Watt HPSA (1 of 5 Active Panels)
MN-HS32SPKHRG5P	Gray HS Series 3200 Watt HPSA (5 of 5 Active Panels)
MN-HS32SPKHRG3P	Gray HS Series 1920 Watt HPSA (3 of 5 Active Panels)
MN-HS32SPKHRG2P	Gray HS Series 1280 Watt HPSA (2 of 5 Active Panels)
MN-HS32SPKHRG1P	Gray HS Series 640 Watt HPSA (1 of 5 Active Panels)
MN-HS64SPKHRT5P	Tan HS Series 6400 Watt HPSA (5 of 5 Active Panels)
MN-HS64SPKHRT3P	Tan HS Series 3840 Watt HPSA (3 of 5 Active Panels)
MN-HS64SPKHRT2P	Tan HS Series 2560 Watt HPSA (2 of 5 Active Panels)
MN-HS64SPKHRT1P	Tan HS Series 1280 Watt HPSA (1 of 5 Active Panels)
MN-HS64SPKHRG5P	Gray HS Series 6400 Watt HPSA (5 of 5 Active Panels)
MN-HS64SPKHRG3P	Gray HS Series 3840 Watt HPSA (3 of 5 Active Panels)
MN-HS64SPKHRG2P	Gray HS Series 2560 Watt HPSA (2 of 5 Active Panels)
MN-HS64SPKHRG1P	Gray HS Series 1280 Watt HPSA (1 of 5 Active Panels)

### Power Amplifiers & Components

MN-HSAMPCL16	HS Series ECC replacement 120 VAC power amplifier and mated compressor/limiter mounted in mini-rack for ECC for MN-HS16 Series
MN-HSAMPCL32	HS Series ECC replacement 120 VAC power amplifier and mated compressor/limiter mounted in mini-rack for ECC for MN-HS32 Series (1 used) or MN-HS64 Series (2 used)
MN-HSAMPCL16-E	HS Series ECC replacement 230 VAC power amplifier and mated compressor/limiter mounted in mini-rack for ECC for MN-HS16 Series
MN-HSAMPCL32-E	HS Series ECC replacement 230 VAC power amplifier and mated compressor/limiter mounted in mini-rack for ECC for MN-HS32 Series (1 used) or MN-HS64 Series (2 used)
MN-HSECCACB20	HS Series ECC Replacement AC Circuit breaker - 20 Amp
MN-HSECCACB30	HS Series ECC Replacement AC Circuit breaker - 30 Amp
MN-HSECCDM1	HS Series ECC Replacement inverter display module
MN-HSPAXFM1	HS Series ECC Replacement pre-amp audio isolation transformer module
MN-HSPWR110	HS Series Replacement 24VDC/120VAC charger/inverter module
MN-HSPWR-E	HS Series Replacement 24VDC/230VAC charger/inverter module

### Doors and Mounting Hardware

MN-HSECCDPK1	HS Series ECC Door replacement pin and E-clip kit (8 pins and 8 clips)
MN-HSECCLD	HS Series ECC Replacement lower door. One used for MN-HS16 & MN-HS32 Series. Two used for MN-HS64 Series.
MN-HSECUD	HS Series ECC Replacement upper door. One used for MN-HS16 & MN-HS32 Series. Two used for MN-HS64 Series.
MN-HCECCDCB1	HS Series ECC replacement DC Circuit breaker with mounting hardware
MN-HSRPLKEY1	HS Series replacement key set (2 keys)

### Loudspeaker

MN-HSSPKR1	HS Series replacement individual loudspeaker
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