FEDERAL SIGNAL
Safety and Security Systems

Directional Speaker

Model DS100X
100-watt speaker
For use in hazardous locations

Description, Specifications, and Installation Manual

Limited Warranty

This product is subject to and covered by a limited warranty,
a copy of which can be found at www.fedsig.com/SSG-Warranty.
A copy of this limited warranty can also be obtained by written
request to Federal Signal Corporation, 2645 Federal Signal Drive,
University Park, IL 60484, email to info@fedsig.com or
call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or
implied, contractual or statutory, including, but not limited to the
warranty of merchantability, warranty of fitness for a particular
purpose and any warranty against failure of its essential purpose.

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Safety Messages

⚠ **WARNING**

It is important to follow all instructions shipped with this product. This device is to be installed by trained personnel who are thoroughly familiar with the country's electric codes and will follow these guidelines as well as local codes and ordinances, including any state or local noise-control ordinances.

Planning

- If suitable warning equipment is not selected, the installation site for the DS100X Speaker is not selected properly, or the DS100X Speaker is not installed properly, it may not produce the intended optimum audible warning. Follow Federal Emergency Management Agency (FEMA) recommendations.

- If DS100X Speakers are not activated in a timely manner when an emergency condition exists, they cannot provide the intended audible warning. It is imperative that knowledgeable people, who are provided with the necessary information, be available at all times to authorize activation.

- When DS100X Speakers are used out of doors, people indoors may not be able to hear the warning signals. Separate warning devices or procedures may be needed to effectively warn people indoors.

- The sound output of sirens can cause permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings, and restrict access to areas near sirens. Review and comply with any local or state noise control ordinances as well as OSHA noise exposure standards, regulations, and guidelines.

- Activating the DS100X Speaker may not result in people taking the desired actions if those to be warned are not properly trained about the meaning of warning sounds. Users should follow FEMA recommendations and instruct those to be warned of corrective actions to be taken.

After installation, service, or maintenance, test the system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.

Safety Messages to Installers

People's lives depend on your safe installation of our products. It is important to follow all instructions shipped with this product. This device is to be installed by a trained and qualified electrician who is thoroughly familiar with the National Electrical Code and/or Canadian Electrical Code and will follow the NEC and/or CEC Guidelines as well as all local codes. NFPA70, Chapter 5, "Special Occupancies," must be followed. This DS100X Speaker should be considered a part of the warning system and not the entire warning system.

The selection of the mounting location for this DS100X Speaker, its controls, and the routing of the wiring is to be accomplished under the Facilities Engineer and the Safety Engineer direction. Listed below are some other important safety instructions and precautions you should follow:

- Electrocution or severe personal injury can occur when performing various installation and service functions such as making electrical connections, drilling holes, or lifting equipment. Therefore, only experienced and qualified electricians should

install this product in compliance with national, state, and any other applicable codes, ordinances, and regulations. Perform all work under the direction of the installation or service crew safety foreman.

- Read and understand all instructions before installing, operating, or servicing this equipment.

- This product shall be mounted at the minimum hearing distance of ten feet per FEMA guidelines limiting sound level exposure to 123 dBc maximum sound level.

- All effective warning sounds may, in certain circumstances, cause permanent hearing loss. Take appropriate precautions, including wearing adequate hearing protection. Do NOT exceed the maximum sound level exposure limits specified in OSHA 29 CFR 1910.

- I-IP100 series, DSA1, and DS100 devices are intended for permanent installation and operation per Title 46, Code of Federal Regulations, Parts 110–113, or Title 33, Code of Federal Regulations, Part 183, Subpart I, Section 183.410, and the applicable requirements of the American Boat and Yacht Council, Inc., and/or ANSI/NFPA 302, "Fire Protection Standard for Pleasure and Commercial Motor Craft."

- For optimum sound distribution, do not install this speaker where objects would block any portion of the front of the DS100X Speaker.

- Do not paint the DS100X Speaker. No finish or coating is required. Paint may obstruct the sound output, reducing the effectiveness of the horn.

- Establish a procedure to check the signal system for proper activation and operation routinely.

- Any maintenance to the unit MUST be performed by a trained and qualified electrician per NEC Guidelines and local codes or a Federal Signal certified Service Provider.

- Never modify or alter the unit in any manner.

- The nameplate should NOT be obscured, as it contains cautionary and/or other information of importance to maintenance personnel.

- After installation and completion of the initial system test, provide a copy of these instructions to all personnel responsible for the operation, periodic testing, and maintenance of the equipment.

- File these instructions in a safe place and refer to them when maintaining, servicing, and/or reinstalling the device.

- This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D; Class II, Division 2, Groups F and G; Class III or nonhazardous locations only.

- Substitution of any components may impair suitability for Division 2.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

⚠ **WARNING**

EXPLOSION HAZARD: Do not disconnect the equipment unless power has been switched off or unless the area is known to be non-hazardous.

⚠ **WARNING**

***EXPLOSION HAZARD: Do not remove or replace fuse when energized.***

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

Installation and Service

- After installation or service, test the system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.

- If future service and operating personnel do not have these instructions to refer to and are not properly trained, the system may not provide the intended audible warning, and service personnel may be exposed to hazards that could result in death, permanent hearing loss, or other bodily injuries. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to recruits and trainees. Also give a copy to anyone who is going to service or repair the DS100X Speaker.

- To reduce the risk of electric shock, do not perform any servicing other than what is contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel. Always test the DS100X Speaker before using after repairs have been made. Comply with all applicable OSHA standards regarding Lock Out/Tag Out.

- The sound output of DS100X Speakers is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings, and restrict access to areas near the DS100X Speaker. Speakers may be operated from remote control points. Whenever possible, disconnect all speaker power, including batteries, before working near the speaker.

Symbol Definition
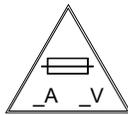
Indicates to reduce the risk of fire, replace the fuse as marked.

Pay careful attention to the notice located on the equipment.

Hazard Classification

Federal Signal uses signal words to identify the following:

⚠ **DANGER**

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ **WARNING**

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION**

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Read and understand the information contained in this manual before attempting to install or service the siren.

General Description

Introduction

The Directional Speaker (DS100X) is an outdoor or indoor speaker that can be used as a warning and alerting device in hazardous (classified) locations. The DS100 contains an internal Interconnect Board to simplify wiring to additional DS100s and optional visual alerting devices. Use the DS100X as a standalone device or connect to another Federal Signal speaker (the controlling speaker) to broadcast high-quality, high-powered tones, prerecorded voice messages, and live PA. In addition, connect to other 10 or 25 VRMS audio generation equipment such as amplifiers and tone generators. Add a Federal Signal light to the speaker to include visual indicators. The DS100X has an internal 100-watt amplifier/driver to deliver tone warnings and intelligible voice messages from the controlling speaker's stored memory.

The DS100X is powered from either 120/240 Vac or 24 Vdc. When the DS100X is powered from AC, it can use the Interconnect Board to activate AC-powered visual alert devices. When the DS100X is powered from DC, it brings power in from an outside source. The DS100X has a 1/2-inch NPT opening on the top of the speaker for simple installation of pipe mount devices such as strobes. The bottom of the speaker has three 3/4-inch NPT openings to allow access to power, relay outputs, and activation inputs.

The DS100X comes with an adjustable stainless steel wall mount bracket that allows the angle of the speaker to be adjusted. Optional pole mount brackets are available for small and large diameter poles.

Features

The DS100X has the following features:

- Outdoor or indoor speaker that contains an internal Interconnect Board to simplify wiring to additional DS100Xs and optional visual alerting devices.

- Combine with a controlling speaker such as an RF100X for a multi-direction system

- Combine with a 10 or 25 V_{RMS} audio signal from a distributed amplifier, for example, Federal Signal 300VSC SelecTone® Command Unit

- Speaker rated at 120 dBa for tones and 114.5 dBa for voice at 10 feet

- Broadcasts live voice, text-to-speech, and prerecorded voice or tone files by connecting to a controlling speaker such as an RF100X or Informer100X. Contact Technical Support for details.

- Ability to adjust volume level. Use VR1 on the Amplifier Board.

- Wall or pole mount options

- Wide outdoor temperature operating range

- The DS100X model is designed specifically for use in Class I, Division 2, Groups A, B, C, D; Class II, Division 2, Groups F and G; and Class III locations as defined in the National Electrical Code (NEC) ANSI/NFPA 70.

- UL and cUL listed

Ordering Information

Table 1 Ordering Information

Part Numbers	Description
DS100	100-watt speaker
DS100X	100-watt speaker for Hazardous Location
I-IP100-PM	Small (2-3/4 to 4-1/2 inch diameter) Pole Mount Bracket
I-IP100-PMW	Large (6-inch diameter or larger) Pole Mount Bracket
I-IP100-OMNI	Omni directional option for speaker with hardware

NOTE: You can connect the DS100X to other Federal Signal speakers. Contact Technical Support. See "Applications" on page 28.

The following are pictures of the DS100X Speaker shown with optional 225XL Warning Light.

Figure 1 DS100X Speaker with 225XL light

Specifications

Table 2 Electrical

Operating Voltages	Switch-selectable 120 or 240 Vac 120 Vac nom, 50/60 Hz or 240 Vac nom, 50/60 Hz
AC Operating Current	120 Vac; 26 mA Standby, 1.50 A during a function 240 Vac; 21 mA Standby, 820 mA during a function
DC Operating Voltages	24 Vdc nominal
DC Operating Current	24 Vdc; 100 mA Standby, 5.15 A during a function

Table 3 Hazardous Location Ratings

T-CODE AT 66°C	
CLASS I, DIV 2, GRPS A,B,C,D	T4A
CLASS II, DIV 2, GRPS F,G	T4A
CLASS III	T4A

Table 4 Electrical Ratings

Audio Input Voltage	Line Input Voltage	Line Operating Current
10 or 25 V_{RMS}	24 Vdc	5.15 A
10 or 25 V_{RMS}	120 Vac, 50/60 Hz	1.50 A
10 or 25 V_{RMS}	240 Vac, 50/60 Hz	0.82 A

The following indicators are for troubleshooting purposes only. These indicators are not visible when the unit is closed.

Table 5 Visual Indications

POWER	Green LED turns on when power is connected. (D2) Located on internal amplifier board.
POWER	Green LED turns on when power is connected. (D2) Located on internal power supply board. Not used for DC-powered units.

Table 6 Connectors (Interconnect board)

JP1	Relay outputs in Relays from the controlling speaker (for example, an RF100X or Informer100X) come into JP1.
JP2	Relay outputs out
JP3	Local relay outputs for wiring to an additional DS100X • Pins 1 and 2 for relay out #1 • Pins 3 and 4 for relay out #2 • Pins 5 and 6 for relay out #3 • Pins 7 and 8 for relay out #4
JP4	Power in
JP5	Power out Use to connect AC power to an additional DS100X unit.
JP6	Local power

Table 7 Connectors and Indicator (Power Supply Board)

JP1	Transformer Primary 1 – Primary #2 upper, BLU 2 – Primary #2 lower, GRY 3 – No Connect 4 – Primary #1 upper, VIO 5 – Primary #1 lower, BRN
JP2	Transformer Secondary 1 – Secondary #2 upper, BLK 2 – Secondary #2 lower, RED 3 – Secondary #1 upper, ORG 4 – Secondary #1 lower, YEL

JP3	AC Power Input 1 – L1 / Hot 2 – L2 / Neutral 3 – Earth Ground
JP4	DC Power Output 1 – +24.0 Vdc 2 – (-) ground
D2	LED indicator is on when output voltage is on.

Table 8 Connectors and Controls (Amplifier Board)

JP1	DC Power Input 1 – +24.0 Vdc 2 – Ground For AC units, factory wired For DC units, disconnect and remove the wires and add 24 Vdc input See "Figure 13 DS100 Wiring Schematic for DC Powered Unit" on page 22.
JP2	Audio Transformer Connection 1 – Transformer secondary high, BLU 2 – Transformer secondary low, GRN 3 – Transformer primary low, WHT 4 – Transformer primary high, RED
JP3	Balanced Audio input 1 and 2 – 10 or 25 V_{RMS} in
JP4	Controller Interface 1 – Ground 2 – Ground 3 – Amp output current signal, 2.5 Vdc + 400 mV/Amp 4 – Mic/speaker driver audio, 360 mV_{PP} max. 5 – Amp output voltage signal, 5 V_{PP} max. 6 – Voice/Siren mode (low for Voice mode, high for Siren) 7 – Audio in, 5 V_{PP} max. 8 – Mute input. Active low. 9 – Driver Temp, 5 to 0.326 Vdc from 25 to 125°C 10 – Power out, 12 to 26 Vdc
JP5	Audio Input. Select Jumper. Jumper 1 and 2 = 25 V_{RMS} input Jumper 3 and 4 = 10 mV_{RMS} input
JP6	Driver Temp Thermistor input 1 – 5 to 0.326 Vdc from 25 to 125°C 2 – Ground
JP7	Audio Output. It is in parallel with JP3. JP7 and JP3 connect together.
LUG1	Speaker (+)
LUG2	Speaker (-)
VR1	Volume Control. Input audio potentiometer used to adjust volume level. Volume level is set by the controlling speaker. The adjustment range is 0% to 100%.
D2	Power
D6	ARM

Table 9 Environmental and Physical

Operating temp range	-40˚F to 150˚F (-40°C to +66°C) at 20% duty cycle. Continuous duty UL rating: -40˚F to 104˚F / (-40˚C to 40˚C).
Humidity range	0-95%, non-condensing
Size (Height x Width x Length)	7 x 9 x 10 inches (17.8 x 22.9 x 25.4 cm)
Weight	19.2 lb (8.7 kg)

Installation

⚠ WARNING

Read and adhere to all safety warnings in this manual before installing the DS100X Speaker.

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, D; Class II, Division 2, Groups F and G; Class III or nonhazardous locations only.

⚠ DANGER

ELECTROCUTION HAZARD: Electrocution or severe personal injury can occur when making electrical connections, drilling holes, or lifting equipment. Therefore, experienced electricians, per national and local electrical codes, acting under the direction of the installation crew safety foreman, should perform the installation.

Determine a Suitable Location

The DS100X can be mounted on any relatively flat surface with the supplied mounting brackets. The mounting surface must be capable of supporting the weight of the speaker.

Determine the Mounting Method

The following speaker mounting options are available for the DS100X.

Table 10 Speaker Mounting Options

Mounting Options	Description
Flat Wall Mount	A wall-mount bracket is included with the speaker.
Larger Pole Mount (6-inch or larger diameter poles)	Use a model I-IP100-PMW to attach the speaker to the pole. The bracket can be secured with lag bolts or stainless steel banding.
Small Pole Mounting (2-3/8 inch to 4-1/2 inch diameter poles)	Use a model I-IP100-PM to attach the speaker to the pole. U-bolts are provided for pipe mounting.

Wall Mounting

The DS100X Speaker comes standard with a bracket for vertical wall or pole mount with optional pole accessories. The standard mount can be flipped to allow ceiling mount.

To wall mount the DS100X Speaker:

1. Find a suitable location to mount speaker. Use industry or company preferred practices when mounting hardware to structures.

2. Verify the mounting is adequate to hold the weight of the speaker, cables, and visual devices if equipped.

3. Refer to Figure 4 or use the U-shaped wall bracket as a template to scribe the mounting hole locations.

4. Mount the DS100X Speaker to the mounting surface with user-supplied hardware. Federal Signal recommends 3/8-inch fasteners.

5. Loosen the pivot bolts to provide the direction of the speaker.

Attaching the Mounting Brackets to the Speaker Housing

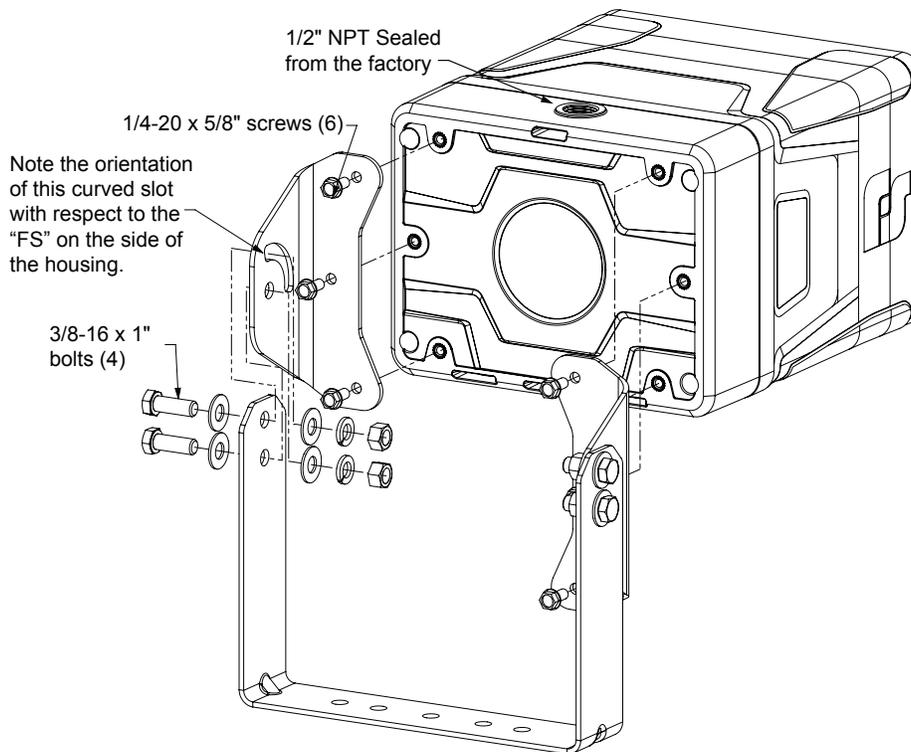The DS100X Speaker comes standard with a bracket attached.

To attach the bracket to the speaker:

1. The mounting brackets are attached to the speaker, as shown below, using the six supplied 1/4-20 by 5/8-inch screws.

   Note the orientation of the curved slots on the L-shaped brackets; this orientation is important for the speaker to pivot downward.

2. Tighten the 1/4-20 by 5/8-inch screws to approximately 80 in-lb.

3. Attach the U-shaped wall bracket with four supplied sets of 3/8-16 by 1-inch bolts, flat washers, lock washers, and nuts.

Figure 2 Bracket attached to speaker

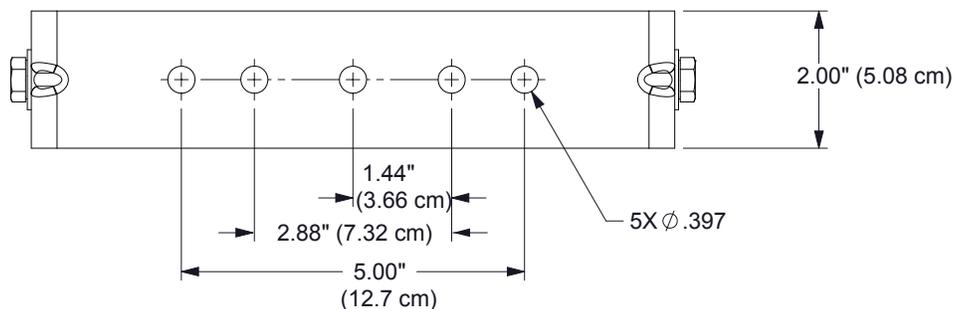

Figure 3 Width and height of bracket
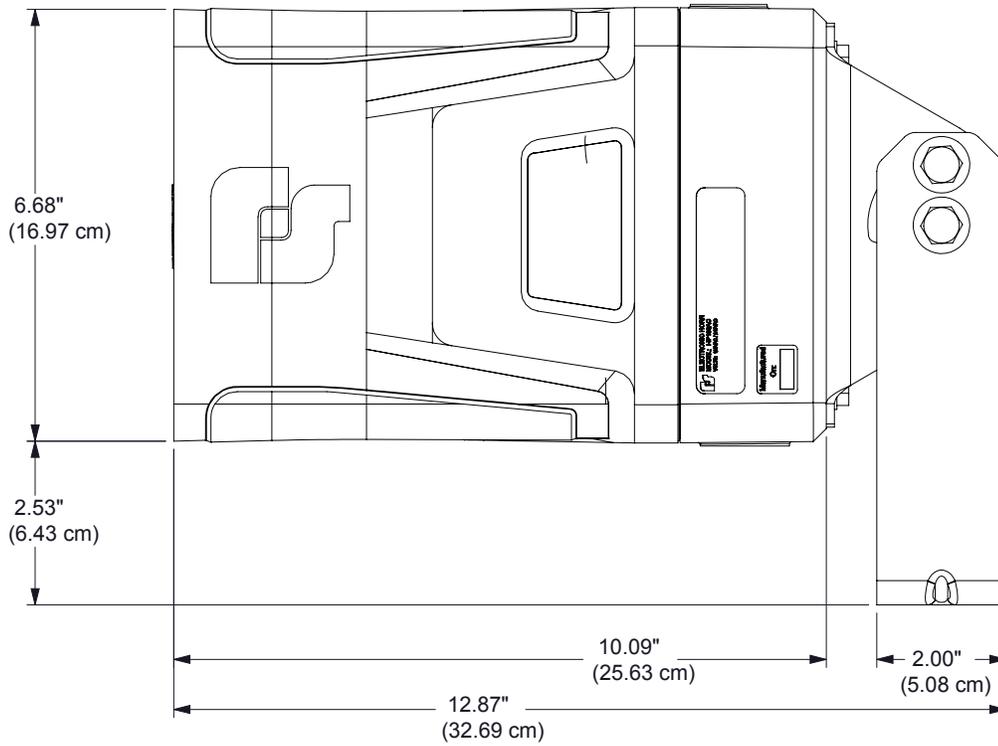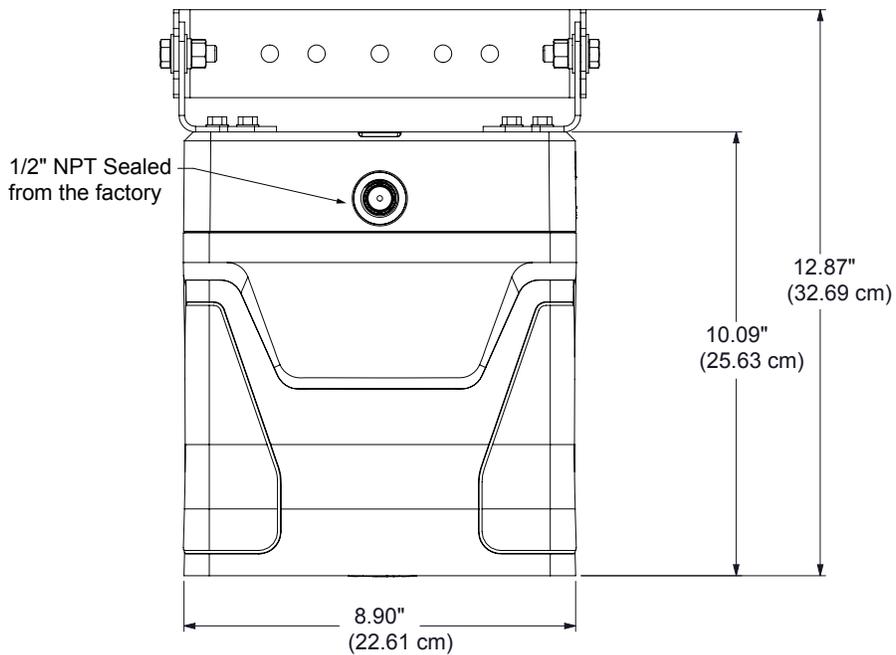
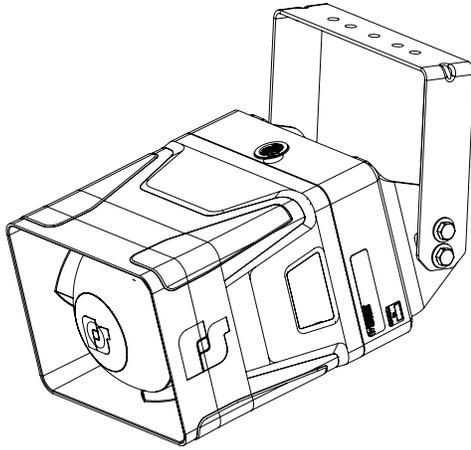**Figure 4 Depth and height with bracket**

6.68"
(16.97 cm)

2.53"
(6.43 cm)

10.09"
(25.63 cm)

2.00"
(5.08 cm)

12.87"
(32.69 cm)

Figure 5 Top view of speaker

1/2" NPT Sealed
from the factory

12.87"
(32.69 cm)

10.09"
(25.63 cm)

8.90"
(22.61 cm)

Figure 6 Ceiling mount

Pole Mounting

The DS100X comes standard with a bracket for vertical wall or pole mount with optional pole accessories.

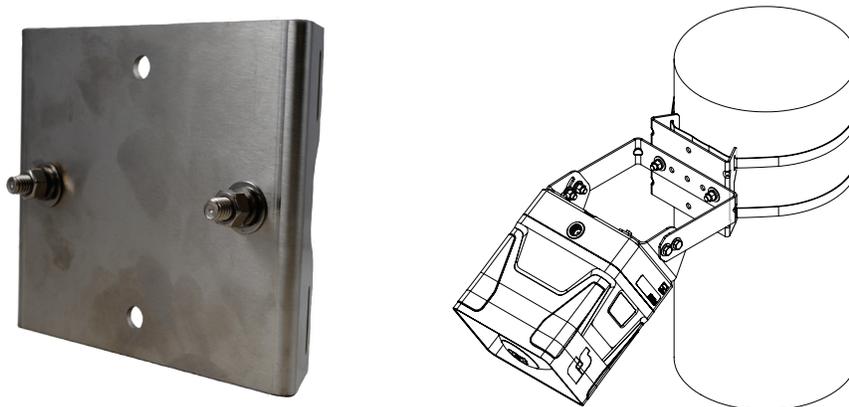## Large Pole Mounting (6-inch diameter or larger)

Use the I-IP100-PMW bracket kit for poles that have a diameter of 6 inches or larger.

Use the following procedure if mounting the speaker with the optional I-IP100-PMW bracket:

1. Find a suitable location to mount the speaker. Use industry- or company-preferred practices when attaching hardware to poles or other structures.

2. Attach the I-IP100-PMW bracket to the pole using banding or use the pre-drilled holes to bolt the bracket to the pole or structure.

3. Using the supplied flat washers, lock washers, and 3/8-inch nuts, mount the speaker to the I-IP100-PMW bracket.

4. Use the side-pivot bolts to allow adjustment of the speaker up and down to optimize speaker effectiveness.

Figure 7 Bracket I-IP100-PMW

Small Pole Mounting (2-3/8 inch to 4-1/2 inch diameter poles)

Use the I-IP100-PM bracket kit for poles that have a diameter between 2-3/8 and 4-1/2 inches.

Use the following procedure if mounting the speaker with the optional I-IP100-PM bracket:

1. Find a suitable location to mount the speaker. Use industry- or company-preferred practices when attaching hardware to poles or other structures.

2. Remove the speaker U-shaped bracket; store the pivot/lock bolts.

3. Select the proper I-IP100-PM U-bolt for the pole.

4. Attach the U-shaped bracket from the speaker to the pole using the I-IP100-PM U-bolt, bracket, nuts, and washers.

5. Attach the speaker and set the direction using the pivot and lock bolts.

Figure 8 Bracket I-IP100-PM
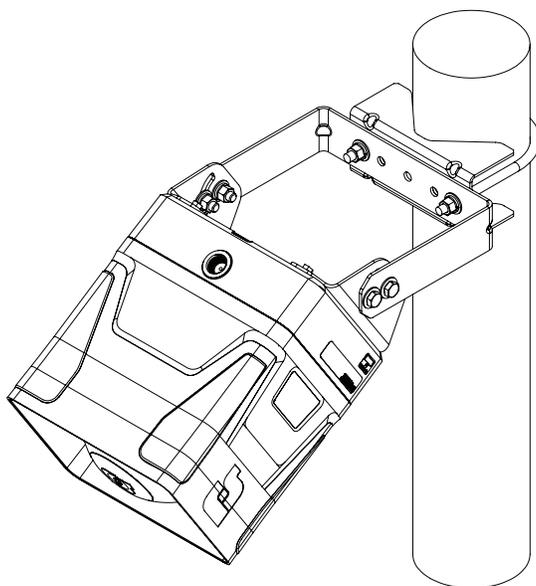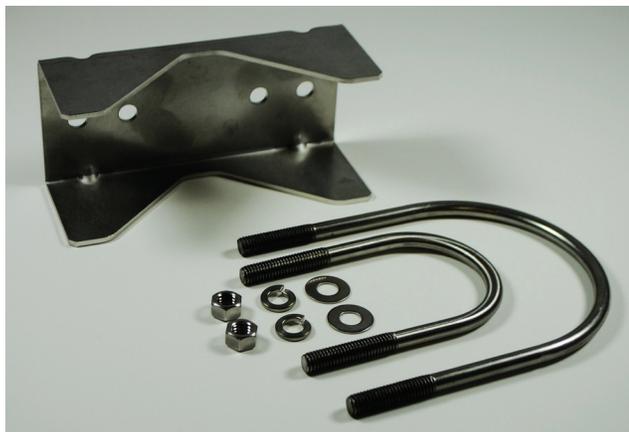
Mounting with Omni Direction Bracket (2-3/8 inch diameter pole)

Use the I-IP100-OMNI bracket to create an omni-directional speaker. The speaker is mounted as described in the Small Pole Mount section with the omni bracket mounted at a distance of 2.0 inches from the speaker.

Use the following procedure if mounting the speaker with the optional I-IP100-OMNI bracket:

1. Identify the desired location for the bracket.

2. Attach the bracket using the supplied U-bolts and hardware.

Figure 9 Bracket I-IP100-OMNI

2.0" (5.08 cm)

Omni Bracket
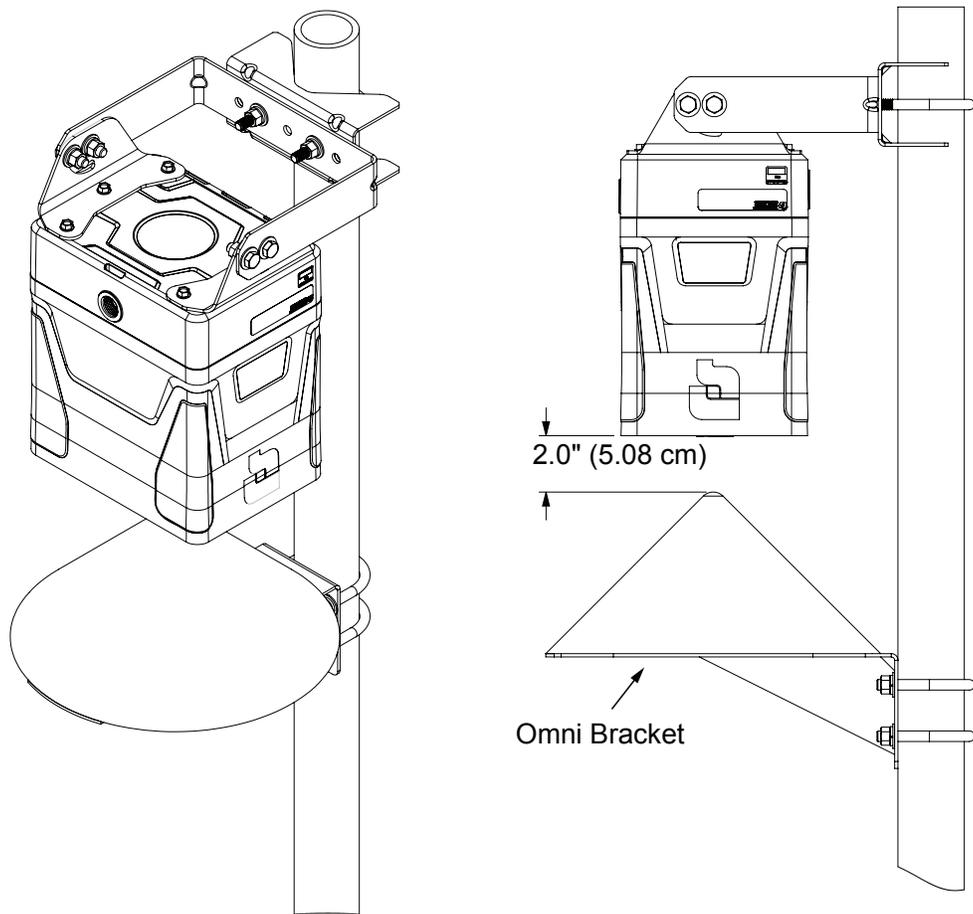
Mounting without Bracket

You can mount the speaker directly to the mounting surface without the bracket. Use installer-supplied 1/4-20 fasteners that are suitable for the mounting surface. See Figure 11 for the hole center dimensions.

Figure 10 Surface mount hole center dimensions
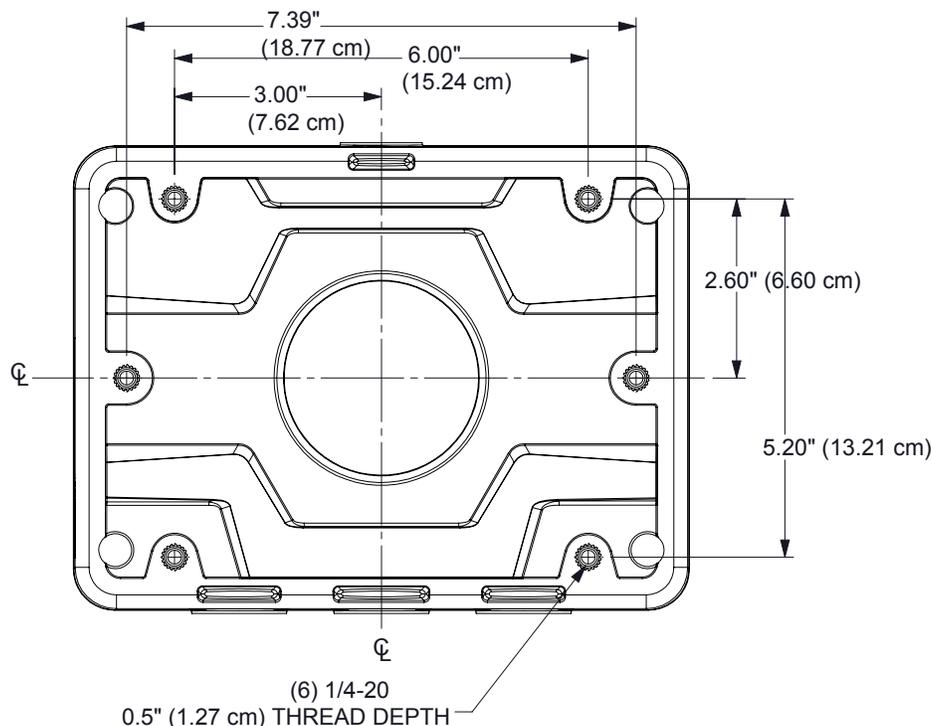
Opening the Housing

Tools required:

- 3/8-inch socket

- 6-inch extension

To open the housing, loosen the four cover screws while supporting the housing so it does not fall. (The cover screws are retained in the housing.) The front of the unit is heavy but it is attached to the rear housing with a pivot hinge to allow ease of service. If the unit requires service, replace the front housing, amplifier, and power supply (if equipped) as an entire unit.

Figure 11 Opening speaker

Cover Screws
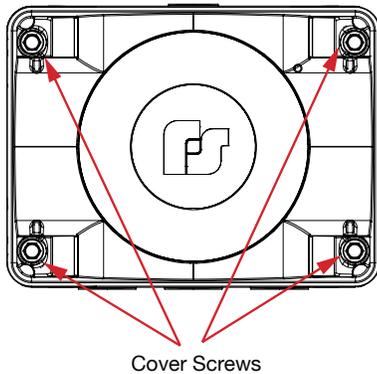
Wiring the Boards

You need to wire the audio for both the AC- and DC-powered units. For the AC-powered unit, you need to wire power and relays to the Interconnect Board. For the DC-powered unit, you need to wire a 24 Vdc input to the Amplifier Board.

Wiring the Audio to the Amplifier Board for AC and DC Units

Audio is brought over from the controlling speaker or another audio source to JP3 on the Amplifier Board. Audio comes back out of the Amplifier Board on JP7 and can be connected to an additional DS100X if used.

AC Units Only

Wiring Power to the Interconnect Board

AC power is brought over from the controlling speaker or another source to JP4 on the DS100X's Interconnect Board. The power passes to JP5 to connect to an additional DS100X if used. Verify that the switch on the Power Supply Board is set correctly.

IMPORTANT: The total AC current draw from the controlling speaker should not exceed 8.5 amperes. This is the AC for powering the speaker.

Wiring the Relays to the Interconnect Board

Relay outputs from the controlling speaker are connected to JP1. They pass on to JP2 and can be connected to an additional DS100X if used. You can attach a light to the DS100X and connect it to one of the four relay outputs on JP3. Each relay output can handle a maximum total load of 1 ampere.

DC Units Only

Wiring 24 Vdc Power to the Amplifier Board

To wire 24 Vdc power to the Amplifier Board:

1. Disconnect and remove the wires that connect the power supply board to the Amplifier Board. See "Figure 13 DS100X Wiring Schematic for DC Powered Unit" on page 24.

2. Bring 24 Vdc from an outside source to JP1 on the Amplifier Board.

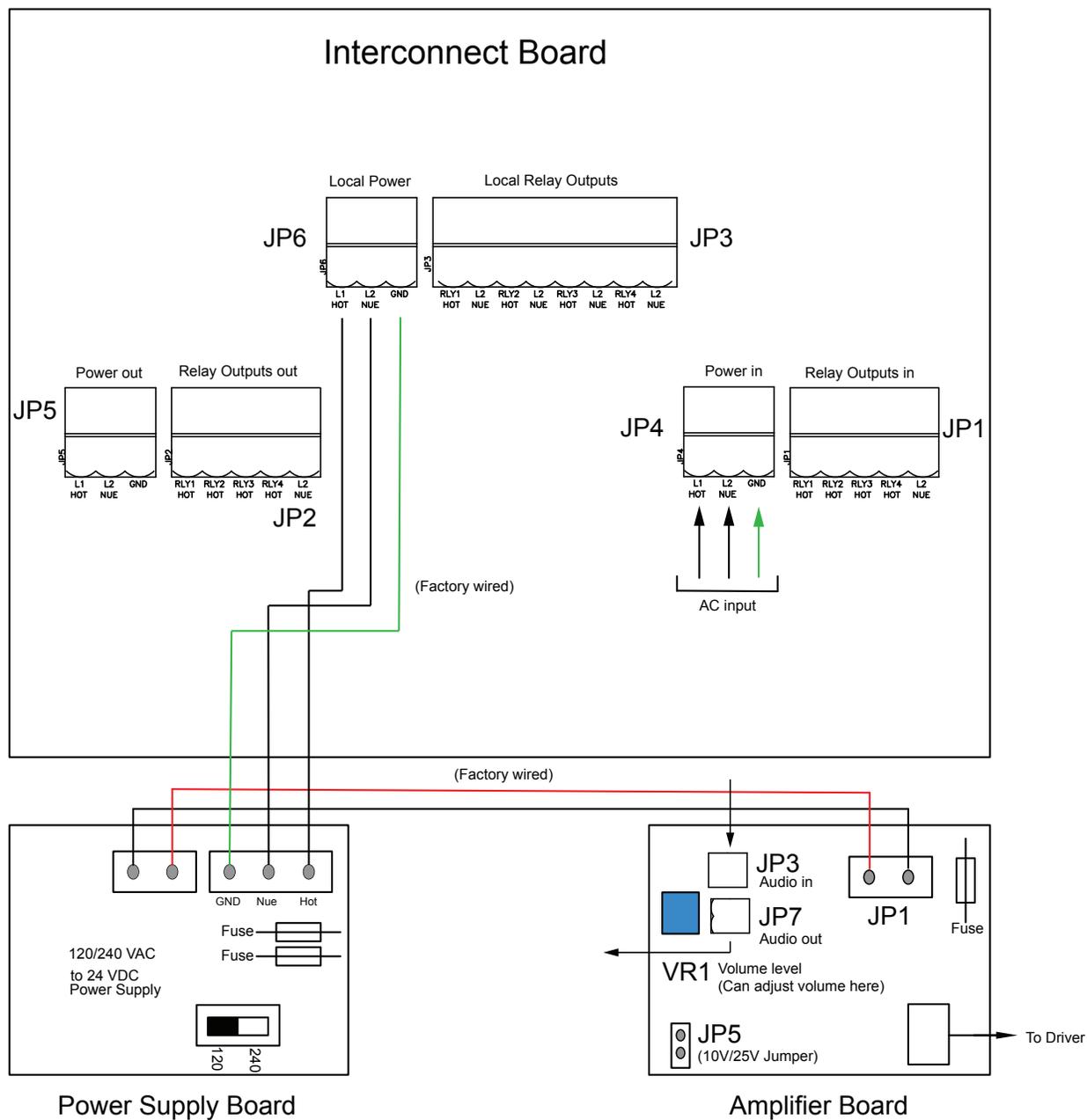## Figure 12 DS100X Wiring Schematic for AC Powered Unit

Interconnect Board

Local Power

Local Relay Outputs

JP6

JP3

| L1 HOT | L2 NUE | GND | | RLY1 HOT | L2 NUE | RLY2 HOT | L2 NUE | RLY3 HOT | L2 NUE | RLY4 HOT | L2 NUE |

Power out

Relay Outputs out

Power in

Relay Outputs in

JP5

JP4

JP1

| L1 HOT | L2 NUE | GND | | RLY1 HOT | RLY2 HOT | RLY3 HOT | RLY4 HOT | L2 NUE |

JP2

| L1 HOT | L2 NUE | GND | | RLY1 HOT | RLY2 HOT | RLY3 HOT | RLY4 HOT | L2 NUE |

(Factory wired)

AC input

(Factory wired)

JP3
Audio in

JP7
Audio out

JP1

Fuse

GND   Nue   Hot

Fuse

Fuse

VR1 Volume level
(Can adjust volume here)

120/240 VAC
to 24 VDC
Power Supply

120   240

JP5
(10V/25V Jumper)

To Driver
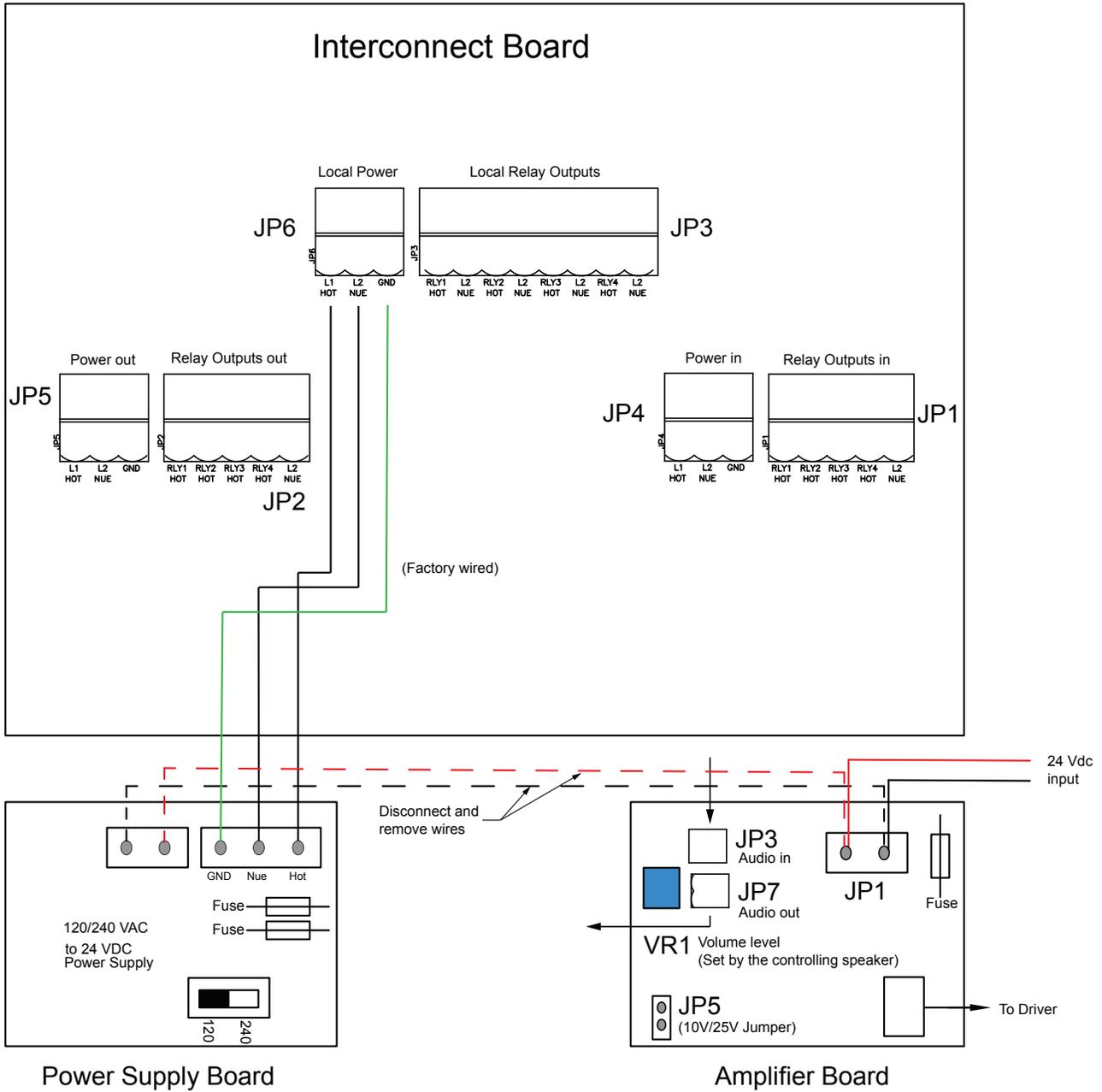
Power Supply Board

Amplifier Board

Figure 13 DS100X Wiring Schematic for DC Powered Unit

Using Optional Warning Lights

IMPORTANT: The total AC current draw from the controlling speaker should not exceed 8.5 amperes.

To wire relays, use JP3 on the Interconnect Board:

- Pins 1 and 2 for relay out #1

- Pins 3 and 4 for relay out #2

- Pins 5 and 6 for relay out #3
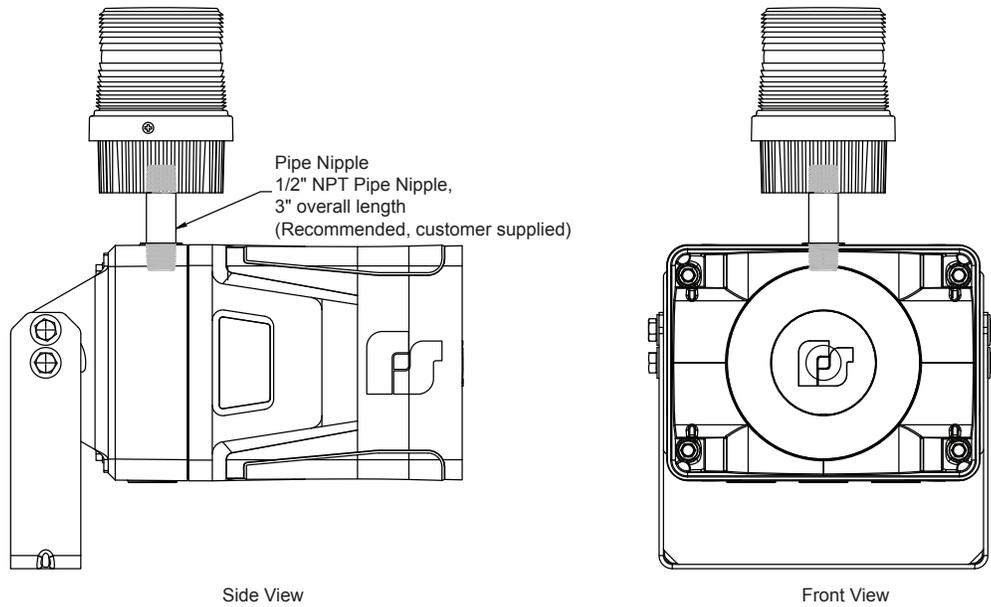
- Pins 7 and 8 for relay out #4

See the following list of Federal Signal DC powered warning lights that may be used with the DS100X:

- 121X Explosion-Proof Rotating Light

- 191XL Hazardous Location Division Listed LED Warning Light

- FB2LEDX Fireball Hazardous Location LED Warning Light

- 225XL Electraray® Hazardous Location LED Flashing Warning Light

- 225XST and 225XST-I Electraray Hazardous Location Strobe Warning Light

- 151XST Hazardous Location Warning Light

See the following list of Federal Signal AC powered warning lights that may be used with the DS100X:

- 225X Electraray® Hazardous Location Rotating Warning Light

- FB2LEDX Fireball Hazardous Location LED Warning Light

- 191XL Hazardous Location Division Listed LED Warning Light

- 225XL Electraray® Hazardous Location LED Flashing Warning Light

- 225XST and 225XST-I Electraray® Hazardous Location Strobe Warning Light

- 151XST Hazardous Location Warning Light

Figure 14 FB2LEDX Strobe with DS100X Speaker

Pipe Nipple
1/2" NPT Pipe Nipple,
3" overall length
(Recommended, customer supplied)

Side View

Front View

For a FB2LEDX Strobe, the following is recommended (customer supplied): 1/2-inch NPT Pipe Nipple (3 inches overall length).

Figure 15 151XST Strobe with DS100X Speaker

3/4" NPT Pipe Nipple
3/4" NPT to 1/2" NPT Reducer,
1/2" NPT Pipe Nipple,
3" overall length
(Recommended, customer supplied)

Side View

Front View
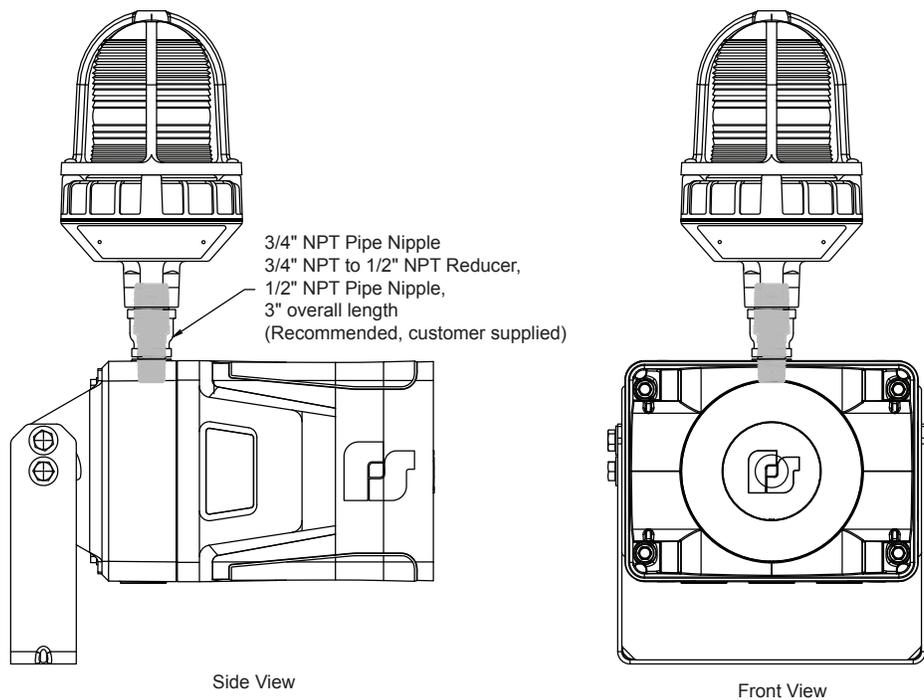
For a 151XST Strobe, the following is recommended (customer supplied):

• 1/2-inch NPT Pipe Nipple

• 3/4- to 1/2-inch NPT Reducer

• 3/4-inch NPT Pipe Nipple (3 inches overall length)

Figure 16 225XST/225XL Strobe with DS100X Speaker

Pipe Nipple
1/2" NPT
3" overall length
(Recommended, customer supplied)

Side View

Front View
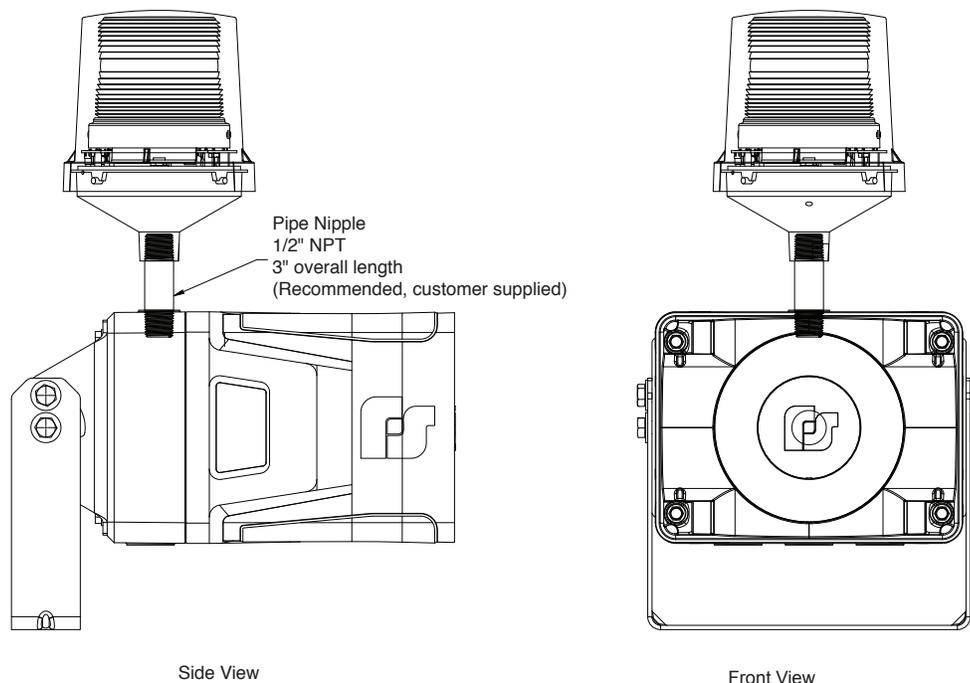
For a 225XST/225XL Strobe, the following is recommended (customer supplied): 1/2-inch NPT Pipe Nipple (3 inches overall length).

Closing the Housing

To close the housing:

1. Verify that the cover gasket is in the groove around the perimeter of the rear cover.

2. If the front of the unit was removed, lift the front of the DS100X to allow the hinge pin to be installed, align the front unit with the rear cover, and attach the hinge pin with retaining clip.

3. Turn on the power to verify that the lights on the boards are functioning. See "Table 5 Visual Indications" on page 12. If the environment does not allow powering, proceed to the next step.

4. Verify all connectors are seated. Verify wires are not strained and are not impeding the ability to close the unit.

5. Lift the front of the unit and seat the front cover against the rear enclosure.

6. Tighten the cover screws hand tight, and then torque them in alternate pattern to 60 in-lb +/- 10 in-lb.

Applications

The following section describes three applications for the DS100X when connected to another Federal Signal speaker.

Configuring the RF100X with the DS100X (120 VAC)

To create a multi-directional system, connect the RF100X with up to three DS100Xs to use the features of the controlling speaker (RF100X), such as prerecorded voice messages and live PA, through the DS100Xs. See "Figure 19 RF100X Connected to Three DS100Xs (120 VAC) Wiring Diagram" on page 33.

Wiring Power to the Interconnect Board

AC power is brought over from the controlling speaker to the DS100X. The power passes to JP5 to connect to an additional DS100X.

IMPORTANT: The total AC current draw from the controlling speaker should not exceed 8.5 amperes. This is the AC for powering the speaker.

To wire power to the DS100X:

1. Bring AC power from JP6 on the RF100X to JP4 on the DS100X's Interconnect Board. The power passes to JP5.

2. Connect JP5 to the next DS100X at JP4.

3. JP6 on the Interconnect Board connects to the DS100X's Power Supply Board.

Wiring AC to the Interconnect Board

To wire AC between the DS100Xs: connect from JP5 on the DS100X to JP4 on the next DS100X.

Wiring Audio to the Amplifier Board

Audio from JP2 on the RF100X controller board is brought to JP3 on the DS100X amplifier board. JP3, on the amplifier board, connects to JP7, which can be connected to additional DS100Xs.

To wire audio to the DS100X:

1. Ensure all audio potentiometers are set to the max by default on both the RF100X and DS100Xs by turning the post of the potentiometer all the way up (fully clockwise).

2. Ensure that the jumper JP5 on the DS100X Amplifier Board is set to the 10 V$_{RMS}$ position to make it compatible with the RF100X audio output. The RF100 outputs a 10 V$_{RMS}$ signal.

3. Connect JP2 on the RF100X to JP3 on the DS100X's Amplifier Board.

4. Connect JP7 on the DS100X's Amplifier Board to the next DS100X at JP3.

Figure 17 DS100X Amplifier Board
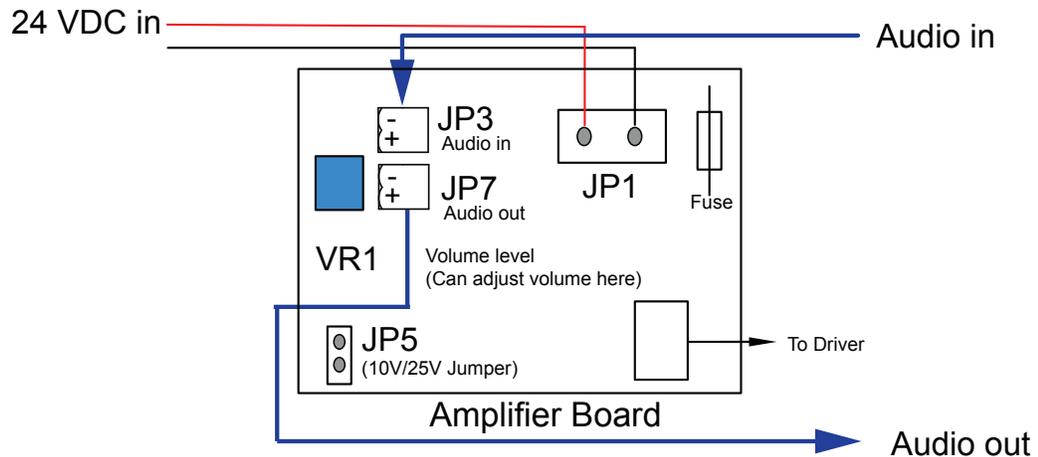
## Wiring Relays to the Interconnect Board

Relay outputs from the RF100X are connected to JP1 on the Interconnect Board on the DS100X. They pass on to JP2 and can be connected to an additional DS100X. You can attach a light to the DS100X and connect it to one of the four relay outputs on JP3. Each relay output can handle a maximum total load of 1 ampere.

To wire relays to the DS100X:

1. Connect the relay on the RF100X to JP1 on the DS100X's Interconnect Board. They pass on to JP2 and can be connected to an additional DS100X.

2. Connect JP2 on the DS100X's Interconnect Board to the next DS100X at JP1.

The following is an example of how to configure the DS100X with the RF100X.

Figure 18 Configuration Examples of DS100Xs with a RF100X
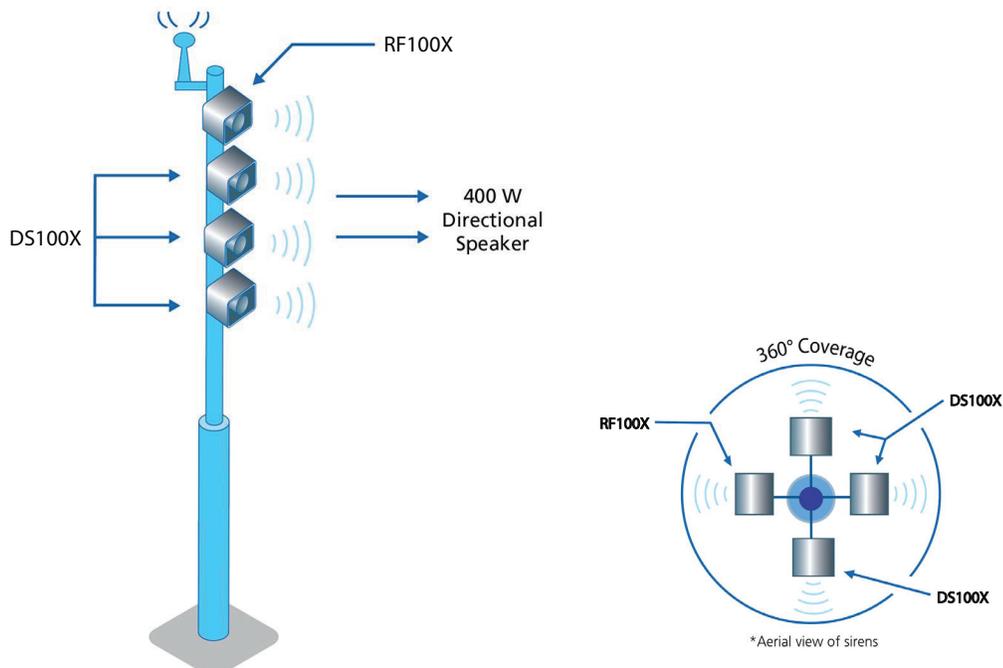
Configuring the RF100X with the DS100X (24 VDC)

To create a multi-directional system, connect the RF100X with up to three DS100Xs to use the features of the controlling speaker (RF100X), such as pr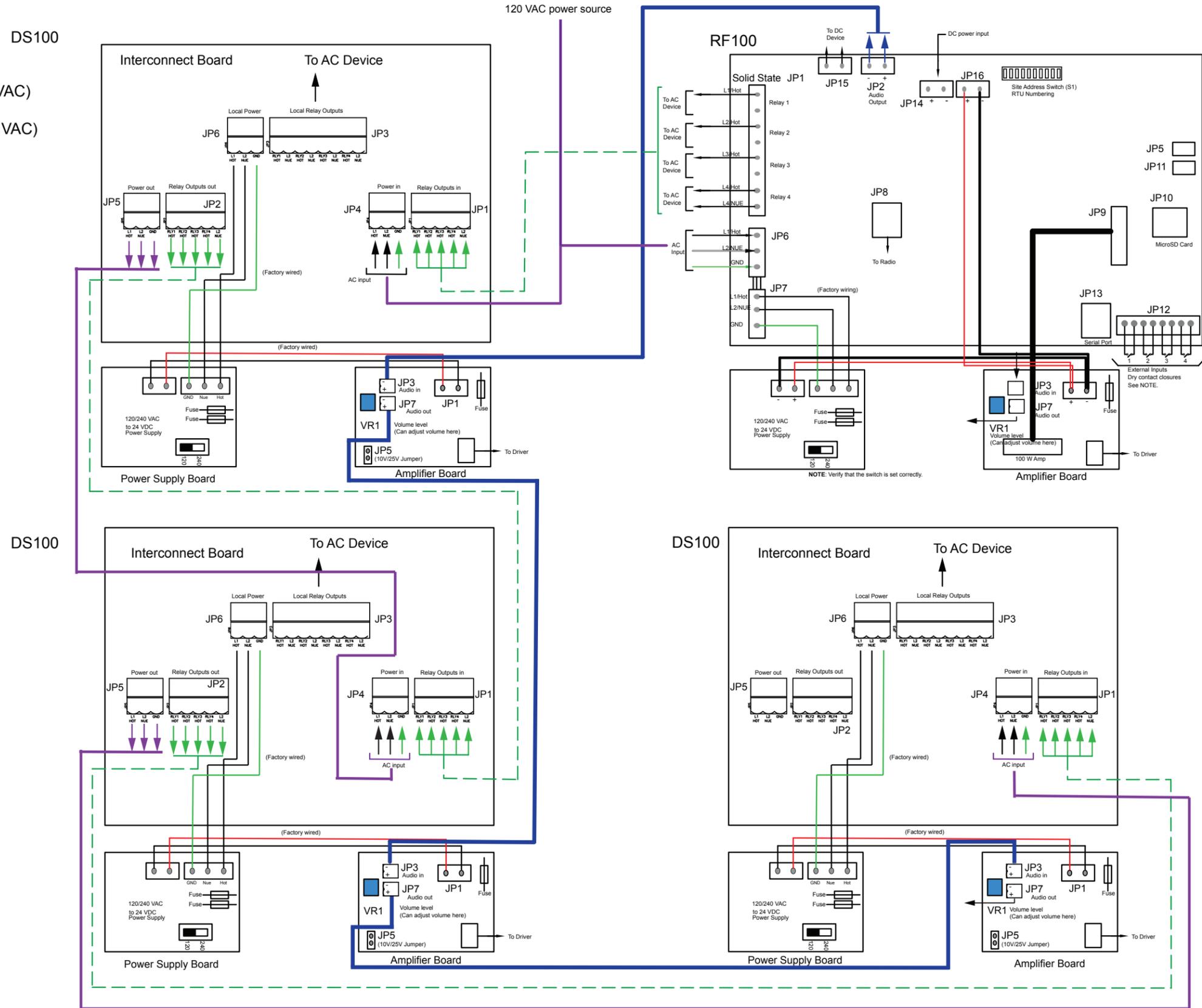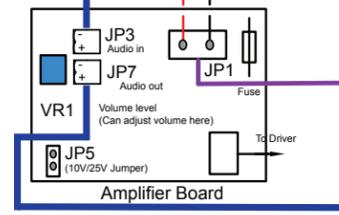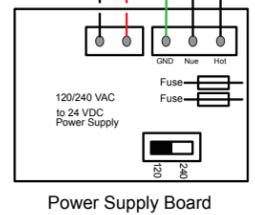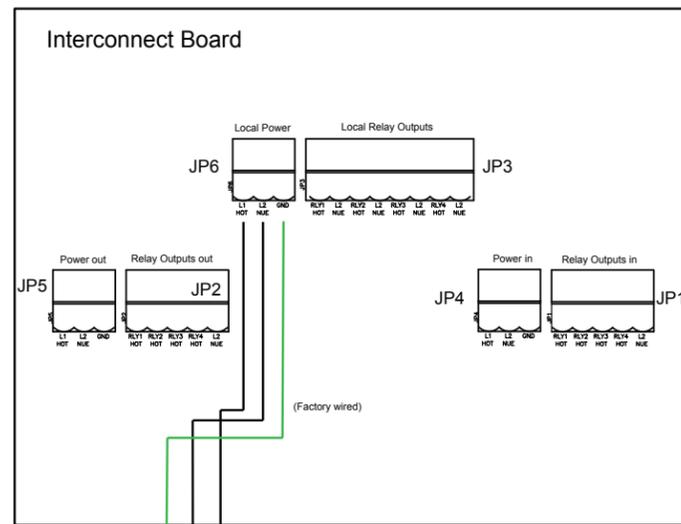erecorded voice messages and live PA, through the DS100Xs. See "Figure 20 RF100X Connected to Three DS100Xs (24 VDC) Wiring Diagram" on page 34. For a list of options lights, see "Using Optional Warning Lights" on page 25

Wiring Power to the Interconnect Board

To wire power to the DS100Xs:

1. Disconnect and remove the wires that connect the power supply board to the Amplifier Board.

2. Bring DC power from an outside source into JP14 on the RF100X board.

3. Wire to JP1 on the DS100X's Amplifier Board.

4. Connect JP1 to the next board.

Wiring Audio to the Amplifier Board

Audio is brought over from the RF100X at JP2 to the Amplifier Board at JP3. Audio comes back out of the Amplifier Board on JP7 and can be connected to an additional DS100X.

To wire audio to the DS100X:

1. Ensure all audio potentiometers are set to the max by default on both the RF100X and DS100Xs by turning the post of the potentiometer all the way up (fully clockwise).

2. Ensure that the jumper JP5 on the DS100X Amplifier Board is set to the 10 V_{RMS} position to make it compatible with the RF100X audio output. The RF100 outputs a 10 V_{RMS} signal.

3. Connect JP2 on the RF100X to JP3 on the DS100X's Amplifier Board.

4. Connect JP7 on the DS100X's Amplifier Board to the next DS100X at JP3.

You can attach a light to the RF100X at JP15

Configuring the 300VSC SelecTone with the DS100X (120 VAC)

The Model 300VSC SelecTone® Command Unit is a central control device that is capable of generating up to four different tone signals on a line that is connected to remote speaker/amplifiers in a SelecTone® System. Connect the 300VSC with up to three DS100Xs to use the features of the controlling speaker (300VSC). "Figure 21 300VSC SelecTone Connected to Three DS100Xs (120 VAC) Wiring Diagram" on page 35.

Wiring Power to the Interconnect Board

To wire power to the DS100X:

1. Connect the power from the power cord connector on the 300VSC to the JP4 on the DS100X's Interconnect Board. The power passes to JP5.

2. Connect to the next DS100X Interconnect Board at JP1.

Wiring Audio to the Amplifier Board

To wire the audio from the 300VSC to the DS100X:

1. Ensure all audio potentiometers are set to the max by default by turning the post of the potentiometer all the way up (fully clockwise).

2. Set the jumper JP5 on the DS100X Amplifier Board from the 10 V_{RMS} to 25 V_{RMS} position to make it compatible with the 300VSC audio output.

3. Connect audio cables from TB1-4 and TB1-5 terminals on the back of the 300VSC to JP3 on the DS100X's Amplifier Board.

4. Connect JP7 on the DS100X's Amplifier Board to the next DS100X at JP3.

Getting Service

If you are experiencing any difficulties, contact Federal Signal Customer Support at 800-548-7229 or 708-534-3400 extension 7511 or Technical Support at 800-524-3021 or 708-534-3400 extension 7329 or through e-mail at techsupport@fedsig.com. For instruction manuals and information on related products, visit http://www.fedsig.com/.

Appendix A Wiring Diagrams

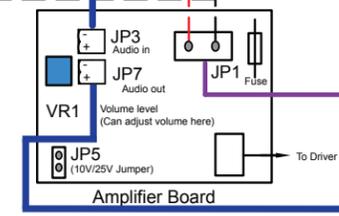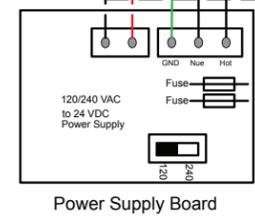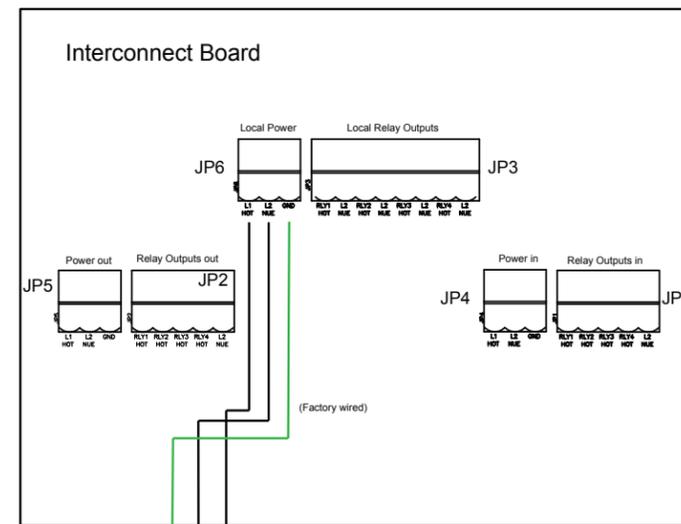## Figure 19 RF100X Connected to Three DS100Xs (120 VAC) Wiring Diagram

Figure 20 RF100X Connected to Three DS100Xs (24 VDC) Wiring Diagram

Figure 21 300VSC SelecTone Connected to Three DS100Xs (120 VAC) Wiring Diagram