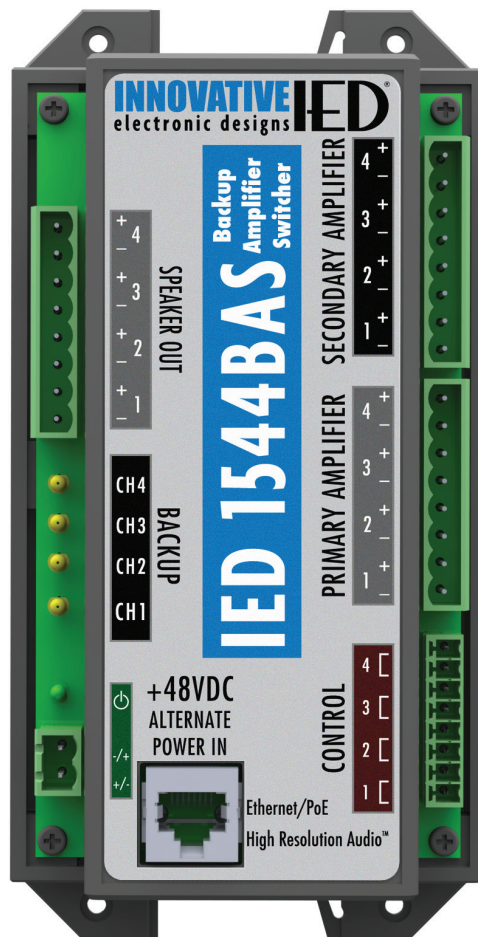


## 1544BAS

### Installation Instructions BACKUP AMPLIFIER SWITCHER



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## IMPORTANT SAFETY INSTRUCTIONS

<ol style="list-style-type: none"> <li>1. Read these instructions.</li> <li>2. Keep these instructions.</li> <li>3. Heed all warnings.</li> <li>4. Follow all instructions.</li> <li>5. Do not use this apparatus near water.</li> <li>6. Clean only with dry cloth.</li> <li>7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.</li> <li>8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.</li> <li>9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.</li> <li>10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.</li> <li>11. Only use attachments/accessories specified by the manufacturer.</li> </ol>	<ol style="list-style-type: none"> <li>12.  Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.</li> <li>13. Unplug this apparatus during lightning storms or when unused for long periods of time.</li> <li>14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.</li> </ol> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;"> <p><b>CAUTION</b></p> <p>RISK OF ELECTRIC SHOCK DO NOT OPEN</p> <p>RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR</p> </div> <div style="text-align: center;">  </div> </div> <div style="text-align: center; margin-top: 5px;"> <p><b>TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK) NO USER SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED PERSONNEL</b></p> </div> </div>
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**WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain, moisture, dripping, splashing, or place objects filled with liquids on the equipment.

**AVERTISSEMENT:** Afin de réduire le risque d'incendie ou de choc électrique, n'exposez pas cet appareil à la pluie, à l'humidité, à l'égouttement, aux éclaboussures, et ne posez pas des objets remplis de liquide sur l'appareil

**WARNING:** If apparatus is equipped with Class I grounding plugs for safety purposes, it must be connected to MAINS that employ a protective earth ground connection.

**AVERTISSEMENT:** si l'appareil est équipé de prises de terre classe I, pour des raisons de sécurité, il doit être branché sur un réseau ayant une prise de terre de protection.

**WARNING:** The MAINS plug on this device may be used as the DISCONNECT DEVICE for MAINS power and must remain readily operable.

**AVERTISSEMENT:** La prise principale de cet appareil peut être utilisé comme DISPOSITIF de DECONNEXION du courant principal et doit rester facilement accessible.

**WARNING:** Installation and maintenance of IED equipment is to be made by trained/qualified personnel and must conform to all applicable local codes.


**AVERTISSEMENT:** l'installation et la maintenance des équipements IED doit être faite par du personnel formé / qualifié et doivent être conformes à toutes les réglementations locales en vigueur.


**WARNING:** If unit contains a lithium battery, there is a danger of explosion. Replace only with the same or equivalent type.


**AVERTISSEMENT:** Si l'unité contient une pile au lithium, il y a un danger d'explosion. Remplacez-la uniquement avec un modèle identique ou équivalent.

### SAFETY SYMBOLS

Labeling on products and the *Installation Instructions & User Manual* may use safety related graphical symbols as shown below to note safety requirements.

 **Lightning Bolt:** The lightning flash with arrowhead symbol, within an equilateral triangle, WARNING symbol, is intended to alert the user to the presence of uninsulated **dangerous voltage** within the product's enclosure that may be sufficient in magnitude to constitute a risk of electric shock to persons or domestic animals.

 **Exclamation Point:** The exclamation point within an equilateral triangle, CAUTION symbol, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions, or a hazard that can damage equipment.

 Do not proceed beyond a WARNING or CAUTION notice until you have understood the hazardous condition and have taken appropriate steps.

Ne continuez pas avant d'avoir pris connaissance du danger et prendre les mesures appropriées.

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## SAFETY CONSIDERATIONS

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### SAFETY PRECAUTIONS

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Personnel properly qualified in the application and use of life safety equipment ("qualified personnel") shall read this manual carefully before performing any actions to specify, apply, install, maintain and perform operational tests of IED systems, and associated products in accordance with the instructions in this manual. This manual shall be made available to all qualified personnel who operate, test, maintain, or service IED systems, and associated products. It is strongly recommend that such personnel read and understand the entire manual.

**WARNING: IF SAFETY PRECAUTIONS, INSTALLATION AND TESTING ARE NOT PERFORMED PROPERLY, CONDITIONS COULD EXIST IN WHICH THE IED SYSTEM MAY NOT OPERATE, OR MAY OPERATE IMPROPERLY. THIS COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.**

**AVERTISSEMENT: SI LES MESURES DE SECURITE, L'INSTALLATION ET LES ESSAIS NE SONT PAS EFFECTUES CORRECTEMENT, CELA POURRAIT EMPECHER LE SYSTEME IED DE FONCTIONNER, OU DE FONCTIONNER CORRECTEMENT. CELA POURRAIT PROVOQUER DES DEGATS MATERIELS ET DES BLESSURES GRAVES, OU LA MORT POUR LES AUTRES ET/OU VOUS-MEMES.**

It is very important that only responsible, trained personnel are allowed to operate and maintain these systems, and that they use only appropriate equipment and tools. If a person is not trained, they shall contact the IED factory for direction on how to operate and maintain an IED system.

**Unauthorized personnel and equipment must be restricted from the areas of operation.**

All operations should be performed carefully, methodically, and without hurrying. Greater effectiveness will be developed by increased familiarity of personnel with their assignments. During any maintenance operation, if a malfunction occurs or an incorrect indication appears, stop the operation and determine whether or not it is safe to proceed. Before performing any step in a procedure, be sure that the preceding step has been properly executed and correct results obtained. Cleanliness and good housekeeping in all installation areas are major factors in effective accident prevention. Tools and equipment should be maintained in good working order and should always be returned to their proper storage place after usage. Cleaning agents and other cleaning aids should be removed from the equipment areas immediately upon completing the task at hand.

### GENERAL PRECAUTIONS

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Changes, modifications, or additions in connection with the IED system equipment shall not be made without explicit authorization of IED.

Safety devices found on mechanical, and electrical and electronic equipment are put there for the protection of personnel and equipment. These devices must be maintained in good working order and operative at all times. Safety devices shall never be removed or bypassed unless specifically authorized by the IED factory. Where safety devices have been rendered inoperable by proper and specific authorization, adequate notices shall be posted to warn personnel of the potential hazard.

Avoid the use of flammable or toxic cleaning fluids, and the use of carbon tetrachloride is prohibited.

Maintenance of the equipment shall be at least what is specified in the IED manuals and literature, and performed only by qualified personnel.

Whenever operation and maintenance is ongoing, personnel in the equipment areas shall have an effective communication among these areas in order to protect people if any accident occurs.

## PRELIMINARY PRECAUTIONS

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Precautions which are applicable to general electrical or electronic maintenance are as follows:

- a. Check yourself. Wear no article that might catch on equipment or that might act as a conductor.
- b. Check the working area. The equipment area shall be clean and dry. If possible, stand on a special insulator such as a rubber mat. There should be ample working space and good lighting.
- c. Check the tools. Always use proper tools and check them for their safe condition. Use screwdrivers with plastic handles. Check test equipment periodically and examine test leads carefully as the slightest break in insulation is dangerous.
- d. Check the procedures. Study the entire procedure before taking the first step. Consult the circuit diagram frequently to obtain an understanding of what is accomplished at each step. Know what is in the equipment and how it differs from others on which you have worked.
- e. Be aware that high voltages may be present across terminals that are normally low voltage, due to equipment breakdown. Be careful when measuring low voltages in equipment containing high voltage circuits.
- f. Do not make resistance measurements with power on.
- g. Do not work within the equipment without the presence of a person who is capable of rendering aid, and who is familiar with the procedure for emergency shutdown of the equipment.

## PRECAUTIONS WHEN MEASURING HIGH VOLTAGE POTENTIALS

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Observe the following precautions when measurements must be performed on circuits with potentials over 48 volts.

- a. Do not measure potentials over 48 volts without the presence or assistance of a person who is capable of rendering aid, and who is familiar with the procedure for emergency shutdown of the equipment.
- b. Be sure you are not grounded when you are adjusting equipment or using measuring equipment. Stand on a rubber mat or other insulator if possible. Be sure the equipment area is clean and dry. In general, use only one hand when servicing live equipment.
- c. If a test meter must be held or adjusted while voltage is applied, ground the case of the meter before starting a measurement. Do not touch the live equipment or personnel working on live equipment while holding the meter. The "common" terminal on some A/C electronic voltmeters is at ground potential; never connect the "common" terminal to any point above ground potential.
- d. High-voltage, high-capacitance capacitors should be discharged before servicing is started.



**WARNING!** Discharging must be done carefully and judiciously. First ascertain whether there is a built-in bleeder network. If so, wait a minute or two for the capacitor to discharge through the network. Otherwise, use an external discharge network. This is most important in the case of high voltage or high capacitance capacitors. If one terminal is connected to ground, connect the discharge network between the other terminal and ground. If neither terminal of the capacitor is grounded, connect the network across the capacitor terminals. Connecting a short circuit across the terminals is not recommended. Doing so can produce extremely high currents and a flash which can injure the eyes, vaporize metals, and cause burns.



**AVERTISSEMENT:** La décharge doit être faite soigneusement et judicieusement. Vérifier d'abord si il y a un réseau de purgeur incorporé. Si c'est le cas, attendez une minute ou deux pour que le condensateur se décharge par le réseau. Sinon, utilisez un réseau de décharge externe. Ceci est très important en cas de haute tension ou des condensateurs à haute capacité. Si un terminal est relié à la terre, connecter le réseau de décharge entre l'autre terminal et la terre. Si aucun terminal de condensateur est fondé, relier le réseau au terminal du condensateur. La connexion d'un

court-circuit entre les terminaux n'est pas recommandée. Cela peut créer des courants très élevés où des étincelles pourrait blesser les yeux, fondre les métaux et causer des brûlures.

---

## PRECAUTIONS WHEN WORKING ON ENERGIZED EQUIPMENT

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When it is necessary to work on energized equipment, think ahead and anticipate every hazard. Never work alone on energized equipment.

Interlock switches are installed on some of the doors and panels to break the power circuits when the enclosure is entered. When it is necessary to work within such an enclosure on energized equipment, the interlock may be bypassed. Extreme caution should then be exercised, as dangerous voltages are present within the unit.

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## AC POWER CIRCUITS

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Equipment obtaining power from a secondary distribution system should be grounded at all times by means of a third grounding wire on the power lines. Equipment permanently wired to a secondary distribution system should also be grounded separately by connection to a grounding bus or ground rod with a sufficiently large conductor to handle the current expected if the secondary source is accidentally shorted to the equipment.

The ground wire should be protected from mechanical damage and periodically inspected for good physical condition.

Personnel should never depend on a switch to remove power from equipment. If the equipment is connected to the secondary distribution system by means of a power cable, detach the cable from the receptacle before attempting any repairs or removal of chassis.

If the equipment is permanently wired to the secondary distribution system, remove the main fuses or open the power switch. Attach a suitable warning tag to the switch which will warn personnel not to operate the equipment; only the person who originally attaches the warning tag should be authorized to remove it.

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## RESUSCITATION

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Personnel working with or near high voltage should be familiar with modern methods of resuscitation. Such information and training is available from the Red Cross or local emergency response personnel such as the police and fire departments.

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## DESCRIPTION

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The 1544BAS is a backup amplifier switching module capable of switching up to four (4) loudspeaker loads from a primary power amplifier to a secondary amplifier when a failure is detected. In stand-alone mode, logic outputs from the primary amplifier are used to trigger the switching of each individual channel to the backup amplifier. In network control mode, switching is determined by the IED GLOBALCOM system supervision sub-system. In network control mode, multiple 1544BAS units can be used to switch multiple primary amplifiers to a single backup amplifier unit. When used in this manner, all switching logic is accomplished through network commands and the logic inputs are not used.

The 1544BAS is powered using standard Power Over Ethernet (PoE) and draws a maximum power of 4 watts. If PoE equipment is not used or the unit is used in stand-alone mode, an input is provided for an optional 48VDC alternate power supply. A green LED indicator illuminates to show that the unit is powered on. Each channel has a yellow LED indicator that illuminates when the channel is switched to the backup amplifier input.

When not in network control mode, each channel can be switched to the backup using a contact closure on the corresponding logic input.

The 1544BAS is provided in an enclosure that either mounts to a DIN rail or is screwed down on a panel or wall to allow for convenient installation close to the amplifiers in the equipment rack.

## CONNECTIONS

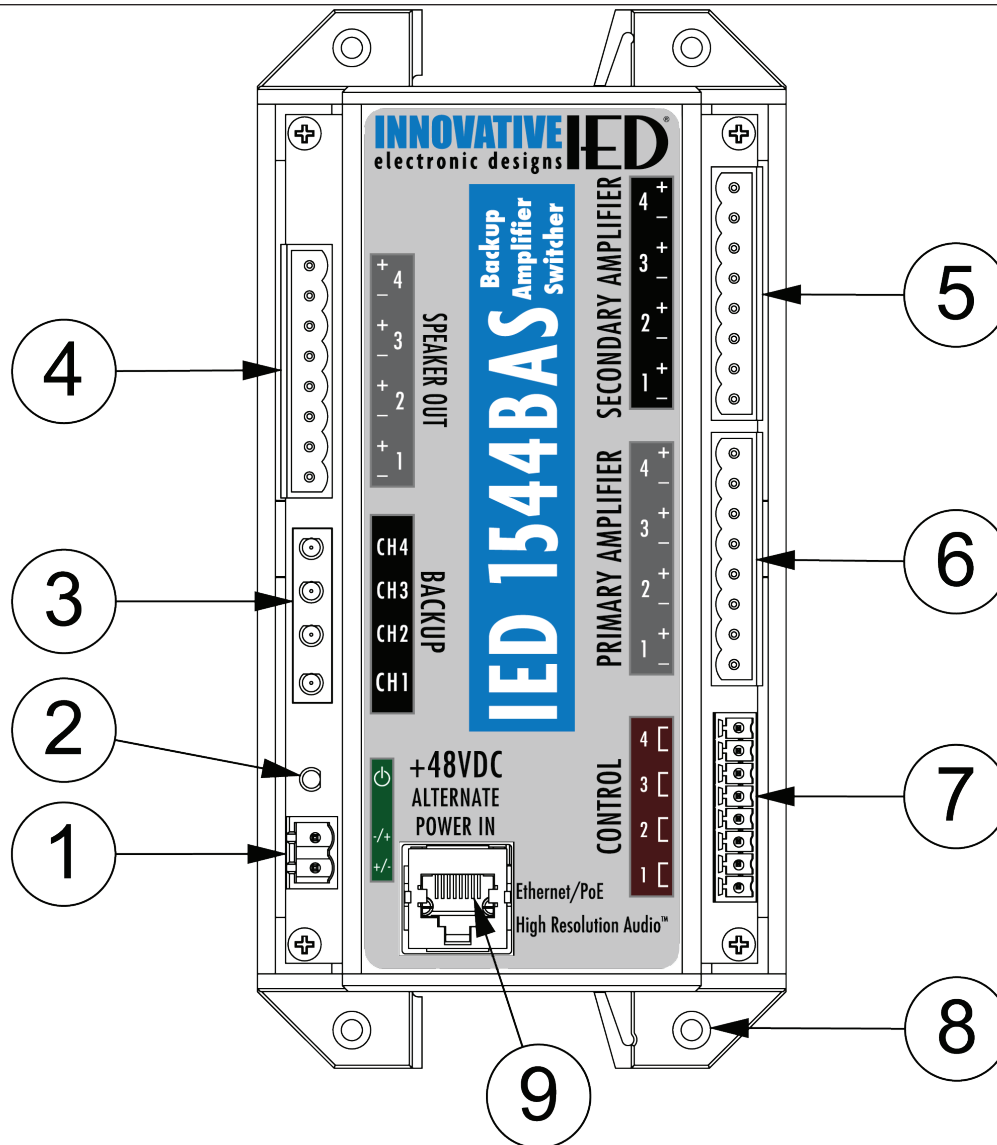


Figure 1 - Front View - 1500BAS Connections

1. 48VDC Alternate Power Input Connector
2. Power LED
3. Backup Status LEDs
4. Loudspeaker Output Connectors
5. Secondary Amplifier Input Connectors
6. Primary Amplifier Input Connectors
7. Control Logic Inputs Connectors
8. Optional Screw Mounting Locations
9. Ethernet/PoE Connector



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## CONNECTIONS (Continued)

---

### 1. 48VDC Alternate Power Input Connector

When PoE is not used, an external DC supply can be used to supply power to the 1544BAS.

### 2. Power LED

This LED will illuminate when the unit is powered on.

### 3. Backup Status LEDs

The Backup LEDs will indicate when each backup channel is engaged.

### 4. Loudspeaker Output Connector

Loudspeaker cables are connected using the supplied 8-pin, 5.08 mm spacing Phoenix plugs. Ensure that the proper polarity is maintained throughout all terminations. Use a stranded 2-conductor unshielded wire of a gauge appropriate to the loudspeaker load and wire length.

### 5. Secondary Amplifier Input Connectors

The Secondary Amplifier Inputs are connected using the supplied 8-pin, 5.08 mm spacing Phoenix plugs. Ensure that the proper polarity is maintained throughout all terminations. Use a stranded 2-conductor unshielded wire of a gauge appropriate to the loudspeaker load and wire length.

### 6. Primary Amplifier Input Connectors

The Primary Amplifier Inputs are connected using the supplied 8-pin, 5.08 mm spacing Phoenix plugs. Ensure that the proper polarity is maintained throughout all terminations. Use a stranded 2-conductor unshielded wire of a gauge appropriate to the loudspeaker load and wire length.

### 7. Control Logic Inputs Connectors

The Control Logic Inputs are connected using the supplied 8-pin, 3.81 mm spacing Phoenix plugs. Each Control Logic input (2-pins) must be connected to externally provided contacts (SPST) that have no voltage, or ground sources current. To activate the desired backup channel the externally provided contacts must close (make contact with each other). De-activating the desired backup channel requires that the externally provided contacts must be open (not make contact with each other).

### 8. Optional Screw Mounting Locations

There are 4 optional screw mounting locations and up to a size 6 screw can be used.

### 9. Ethernet/PoE Connector

The Ethernet PoE connector is used to connect the unit to the network using a standard RJ-45 (Cat 5e or higher, 100BaseTX cable) connector.

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## WALL MOUNTING

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After unpacking the 1544BAS from its shipping carton, install four screws securely in the designated areas. Screw size can be up to a size 6.



**Figure 2 - Wall Mounting with Screws**

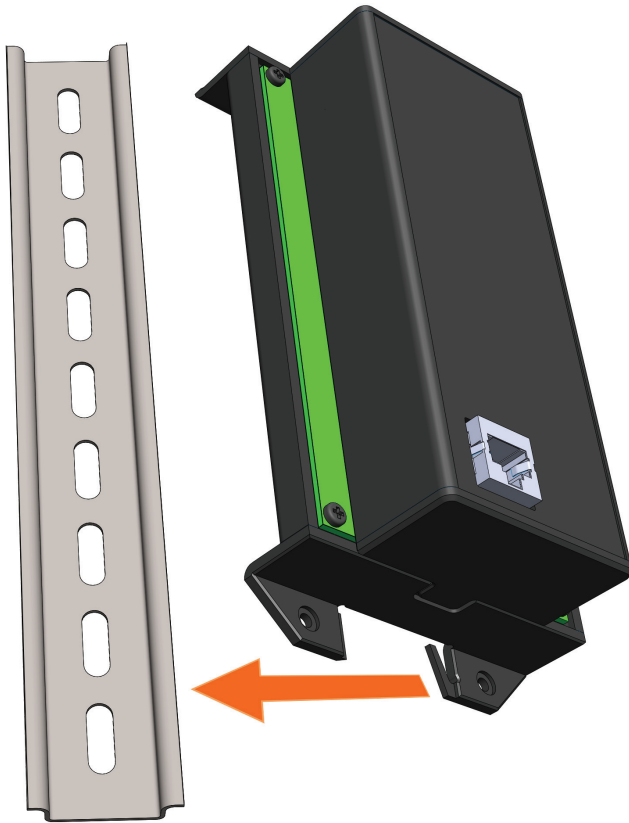
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## DIN RAIL MOUNTING

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**STEP 1:** Position the tabs on the right side flanges under the lip of the DIN rail.

**STEP 2:** Rotate the 1544BAS to the left until it snaps into place.



**Figure 3** - 1544BAS Mounting on the DIN Rail  
Example



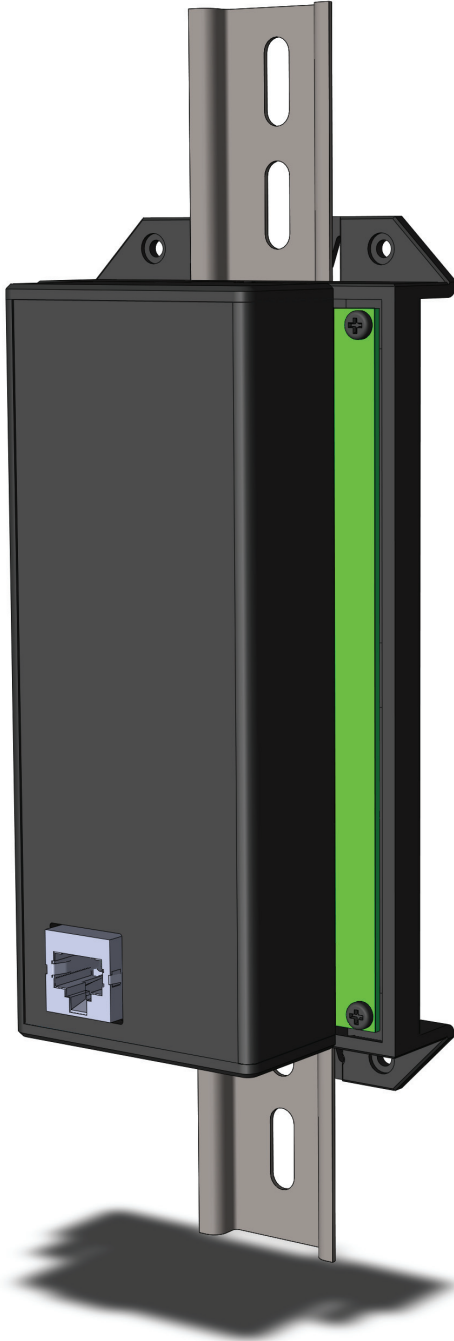
**Figure 4** - 1544 Rotating and Snapping into Place  
Example

---

## DIN RAIL MOUNTING (Continued)

---

The figure below depicts the completed DIN rail mounted option.



**Figure 5** - 1544BAS - Din Rail Mounted Example

**REMOVING FROM DIN RAIL MOUNT**

**STEP 1:** Push the 1544BAS in from the right side, and rotate the unit to the right and pull away from the DIN rail.



**Figure 6** - 1544BAS Removing from DIN Rail Example

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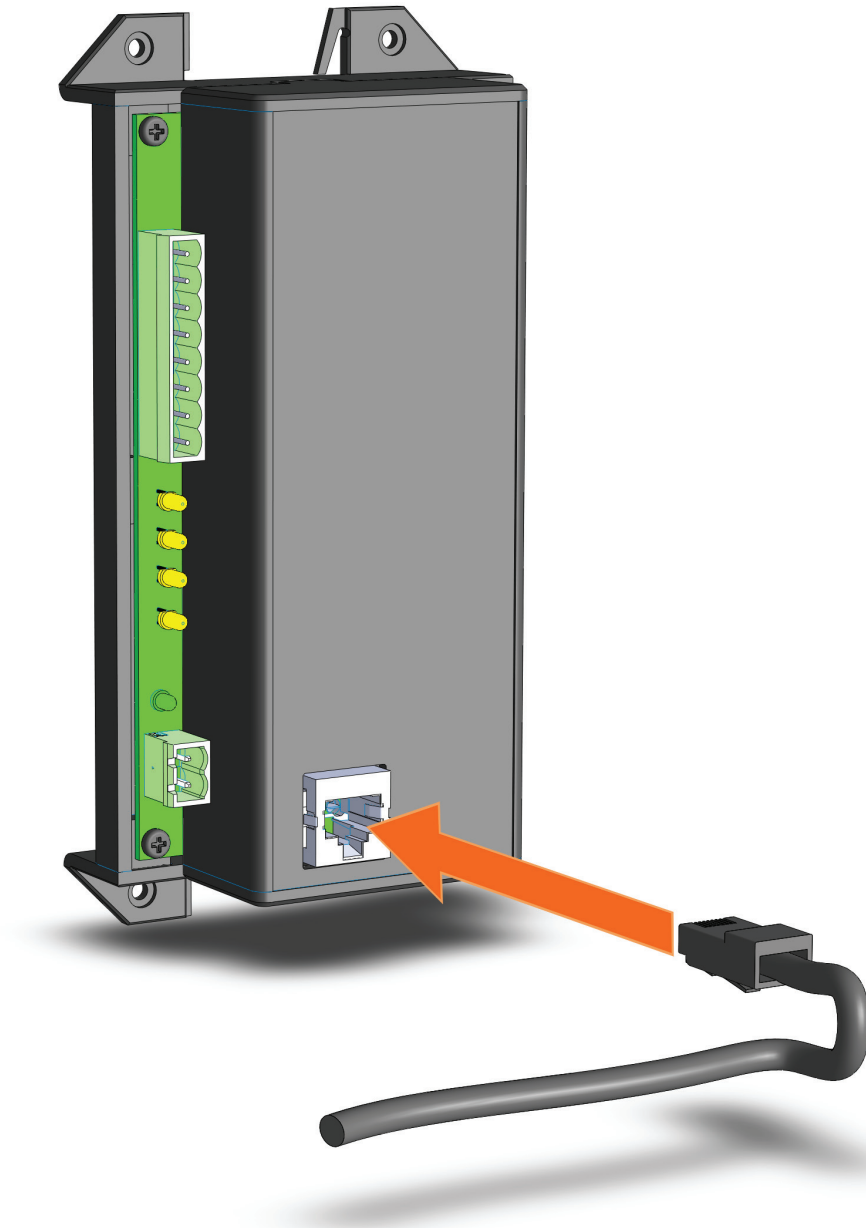
## 1544BAS EXAMPLES

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### ETHERNET/PoE INPUT CONNECTION EXAMPLE

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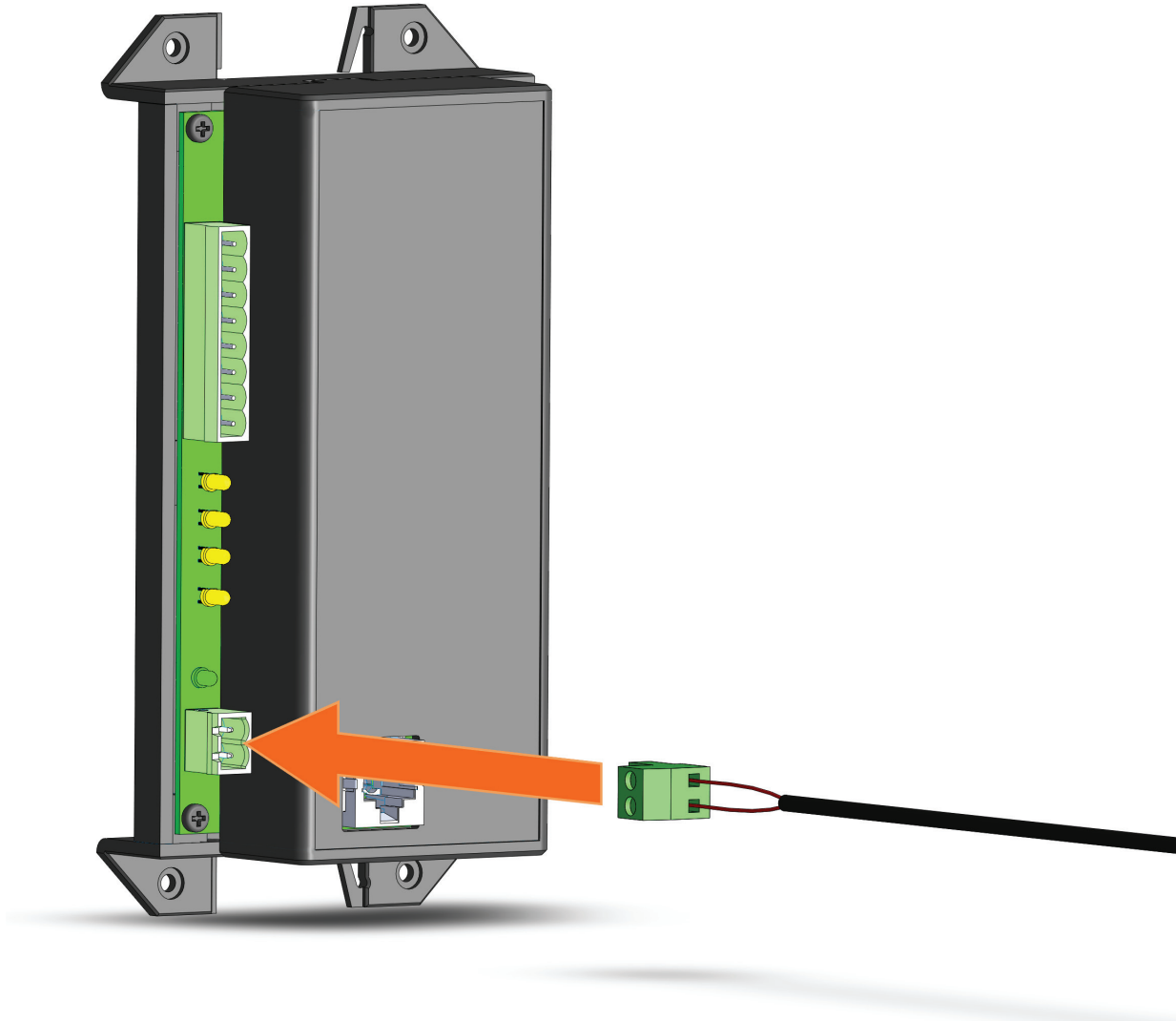
The Ethernet/PoE Input connection cable should be an RJ-45 (Category 5e or higher, 100BaseTX cable) with or without PoE power that conforms to IEEE 802.3af.



**Figure 7 - 1544BAS Ethernet/PoE Input Connection Example**

**48VDC ALTERNATE POWER INPUT CONNECTION EXAMPLE**

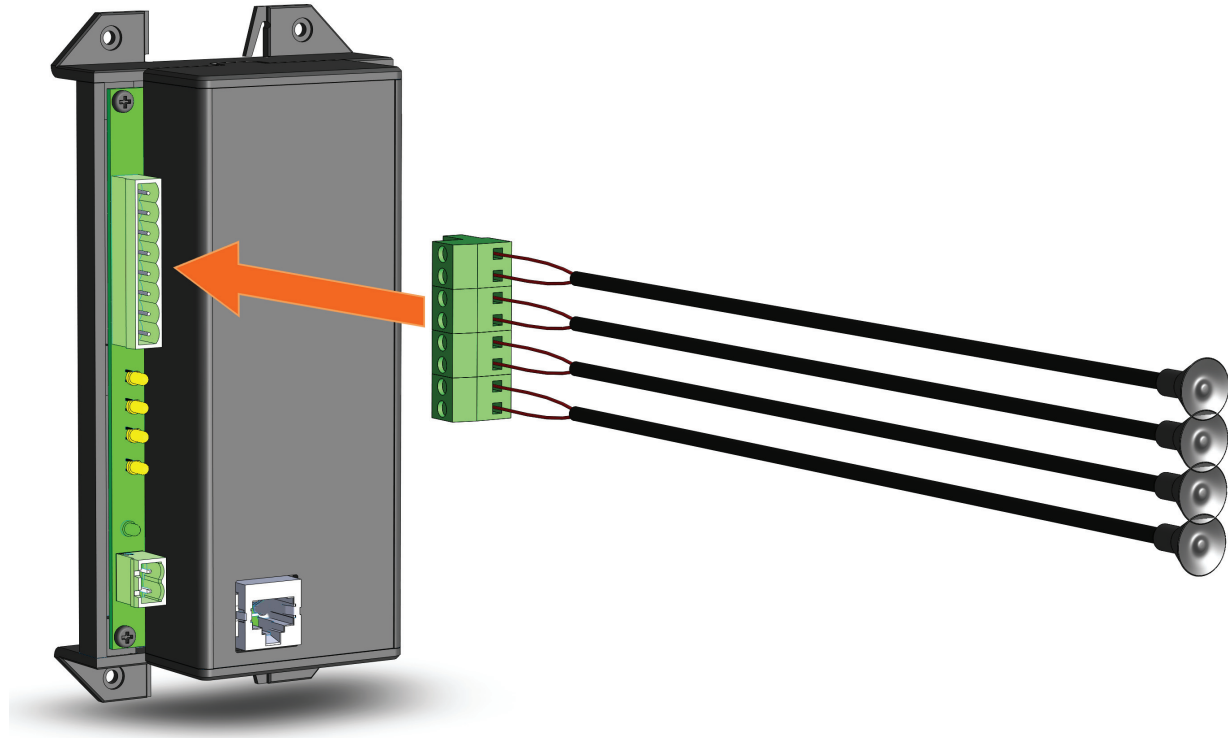
When PoE is not used, an external DC supply can be used to supply power to the 1544BAS. The 48VDC connection has no polarity and therefore, plus and minus may be in either orientation.



**Figure 8** - 1544BAS Optional 48VDC Alternate Power Input Connection Example

## LOUDSPEAKER OUTPUT CONNECTION EXAMPLE

Loudspeaker cables are connected using the supplied 8-pin, 5.08 mm spacing Phoenix plugs. Ensure that the proper polarity is maintained throughout all terminations. Use a stranded 2-conductor unshielded wire of a gauge appropriate to the loudspeaker load and wire length.

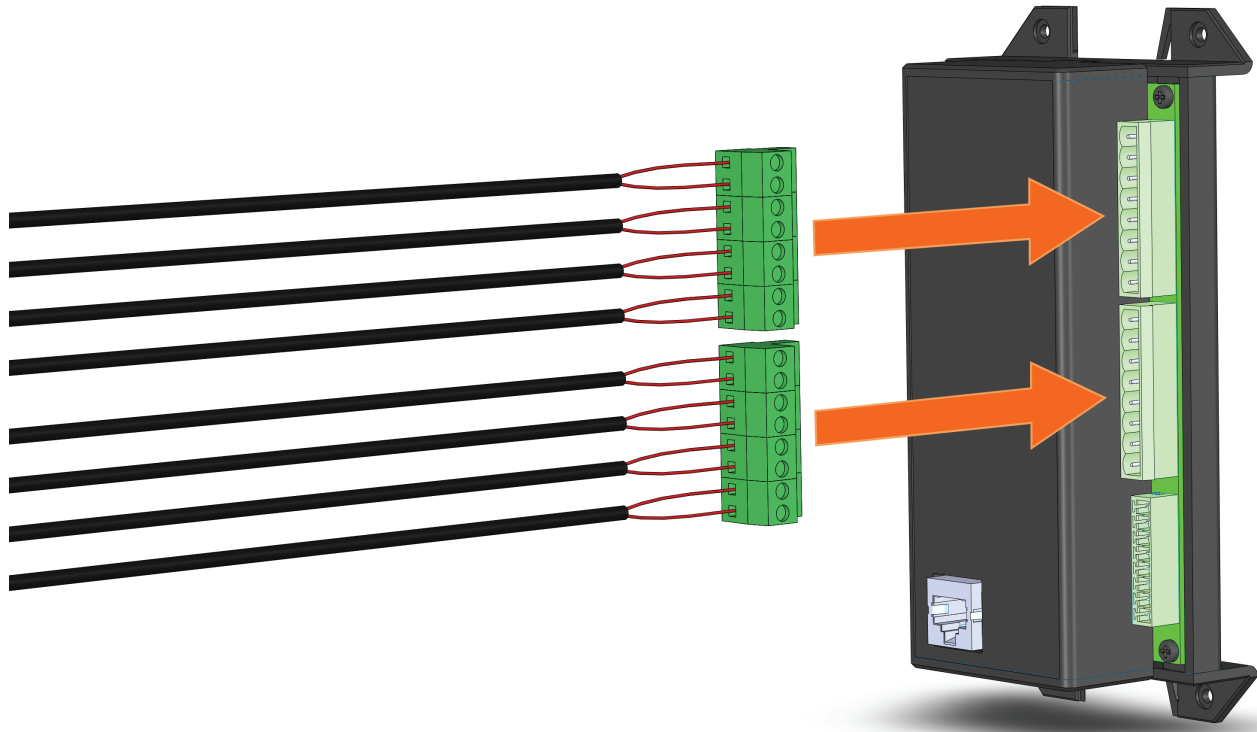


**Figure 9** - 1544BAS Loudspeaker Output Connection Example



**PRIMARY AND SECONDARY AMPLIFIER INPUT CONNECTIONS EXAMPLE**

The Primary Amplifier Inputs are connected using the supplied 8-pin, 5.08 mm spacing Phoenix plugs. Ensure that the proper polarity is maintained throughout all terminations. Use a stranded 2-conductor unshielded wire of a gauge appropriate to the loudspeaker load and wire length.



**Figure 10** - 1544BAS Primary and Secondary Amplifier Input Connections Example

### CONTROL LOGIC INPUT CONNECTIONS EXAMPLE

The Control Logic Inputs are connected using the supplied 8-pin, 3.81 mm spacing Phoenix plugs. Each Control Logic input (2-pins) must be connected to externally provided contacts (SPST) that have no voltage, or ground sources current. To activate the desired backup channel the externally provided contacts must close (make contact with each other). De-activating the desired backup channel requires that the externally provided contacts must be open (not make contact with each other).

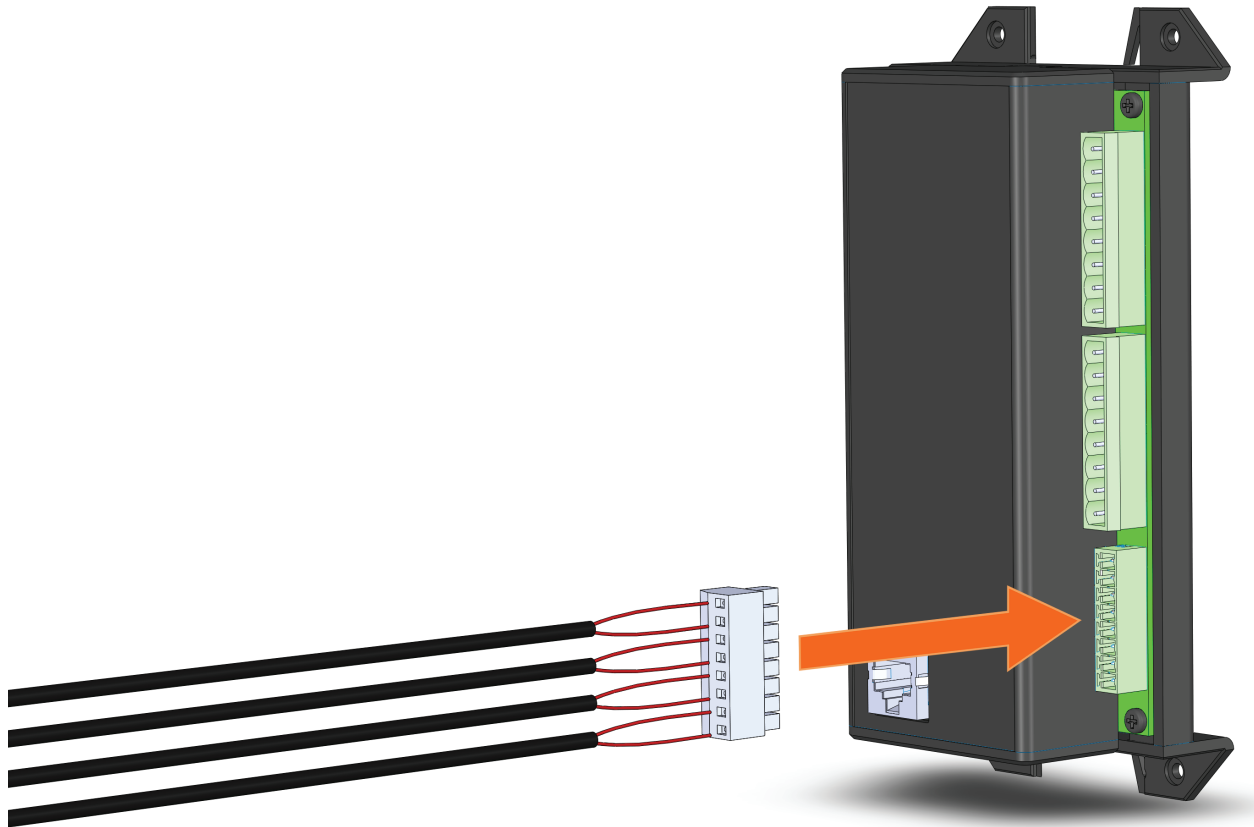
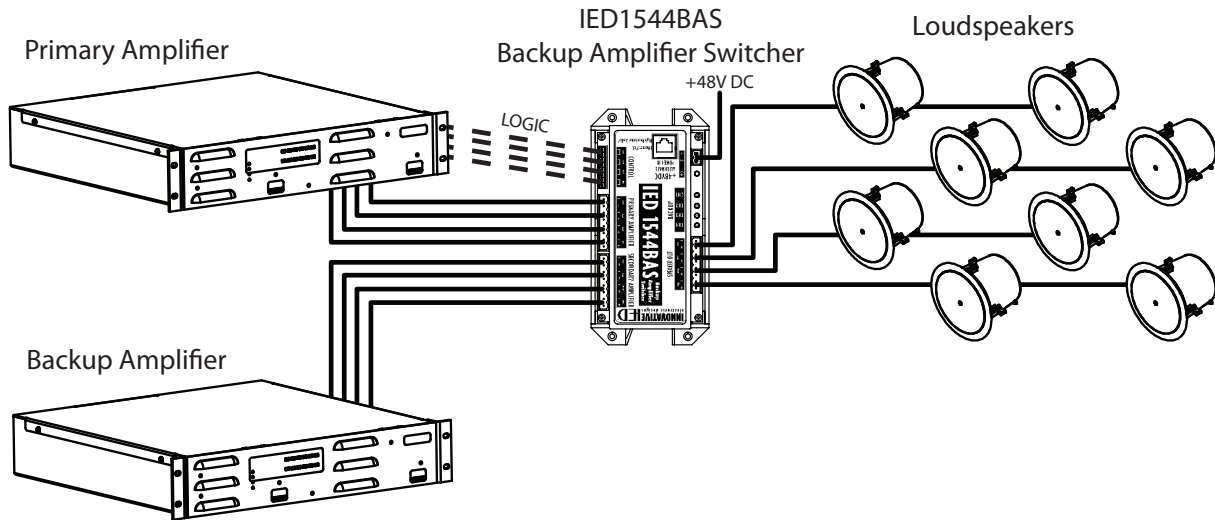


Figure 11 - 1544BAS Control Lines Input Connections Example

**SYSTEM USAGE EXAMPLE**

**1544BAS Application Using Logic Inputs (Stand-Alone Amplifiers)**

The figure below is an example of a 1-for-1 backup of amplifier channels without network control.

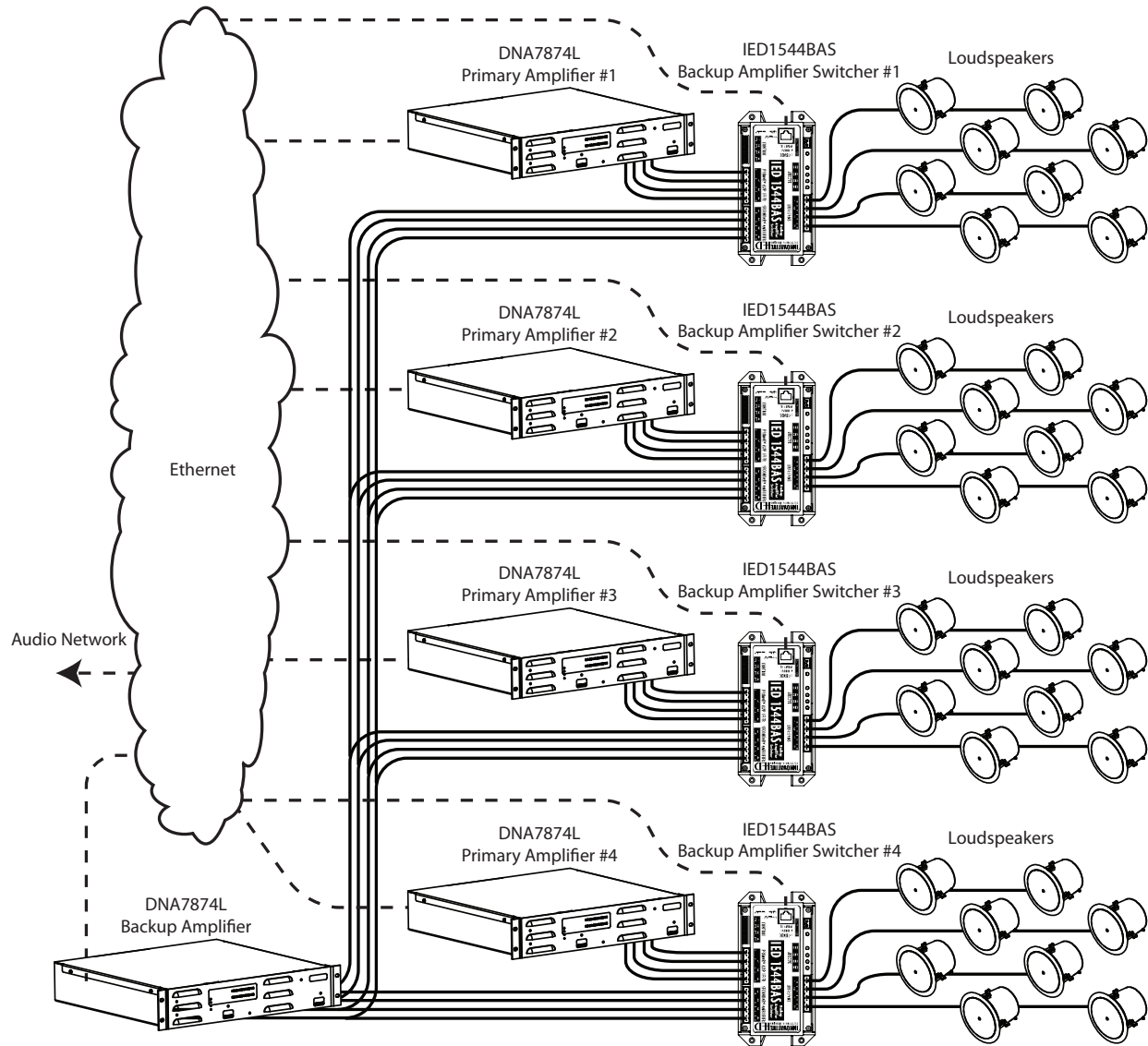


**Figure 12 - 1544BAS Non-network System Usage Example**

**SYSTEM USAGE EXAMPLE (Continued)**

**1544BAS Application Using Network Communications**

The figure below is an example of backup of 1-for-4 amplifiers channels using network control.



**Figure 13 - 1544BAS System Usage Example**

# SPECIFICATIONS

**Part Number**

IED1544BAS

**Electrical**

Relay Contacts (4)

Contact Form..... DPDT (Form C)  
 Max Voltage..... 250VAC  
 Max Current..... 8 Amps  
 Max Power Amplifier Rating (each channel)..... 500 Watts

**Power Requirements**

Input Voltage .....48VDC (PoE Compliant with IEEE 802.3af)  
 Power..... 4 Watts max  
 Optional 48VDC Alternate Power Input Voltage ..... 48 - 50VDC

**Indicators**

Power LED..... 1 (Green)  
 Backup Status LEDs .....4 (Yellow)

**Connectors**

Loudspeaker Output (1) ..... 8-pin Phoenix, 5.08 mm spacing  
 Primary/Secondary Inputs (2) ..... 8-pin Phoenix, 5.08 mm spacing  
 Control Logic Input (1) ..... 8-pin Phoenix, 3.81 mm spacing  
 Ethernet/PoE (1) ..... RJ-45 (Cat 5e or higher, 100BaseTX cable)  
 48VDC Alternate Power Input (1) ..... 2-pin Phoenix, 5.08 mm spacing

**Mechanical**

Height..... 7.01" (17.81 cm)  
 Width ..... 3.50" (8.90 cm)  
 Depth ..... 2.00" (5.08 cm)  
 Weight .....9.6 oz (272 g)

**Environmental**

Operating Temperature Range .....-22 °F – +149 °F (-30 °C – +65 °C)

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## FCC NOTICE

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This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense