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**IP100 / IP108 / IP116
IP108-D / IP116-D
IED Announcement Control System
Installation Instructions**

®

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Innovative Electronic Designs, LLC
9701 Taylorsville Road
Louisville, KY 40299
United States of America

www.iedaudio.com

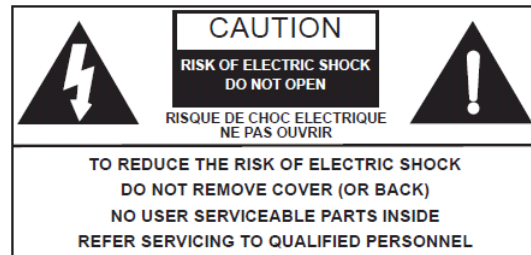
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IMPORTANT SAFETY INSTRUCTIONS

<ol style="list-style-type: none"> 1. Read these instructions. 2. Keep these instructions. 3. Heed all warnings. 4. Follow all instructions. 5. Do not use this apparatus near water. 6. Clean only with dry cloth. 7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions. 8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. 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. 10. Protect the power cord from being walked on or pinched particularly at plugs, convenience 	<p>receptacles, and the point where they exit from the apparatus.</p> <ol style="list-style-type: none"> 11. Only use attachments/accessories specified by the manufacturer. 13. Unplug this apparatus when unused for long periods of time. 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.
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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 un-insulated **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.

SAFETY CONSIDERATIONS

SAFETY PRECAUTIONS

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

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


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

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 pourraient blesser les yeux, fondre les métaux et causer des brûlures.

PRECAUTIONS WHEN WORKING ON ENERGIZED EQUIPMENT

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.

AC POWER CIRCUITS

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.

RESUSCITATION

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.

DESCRIPTION

The IP100 family of products is an integrated control system containing a micro-controller with integrated storage media, data network interface, auxiliary analog audio inputs, logic input ports and relay outputs. The system functions performed by the unit are determined by the software configuration provided with the unit. The IP108 and IP116 models include a CobraNet digital audio network interface. In addition, other models may be available that are denoted by suffixes such as IP100-x or IP100-xx. The models available in the IP100 family are as follows:

IP100	The base level model that handles only IEDnet+ audio devices such as IP Speakers.
IP108	The same base as the IP100, with the addition of an 8-channel CobraNet digital audio network interface.
IP116	The same base as the IP100, with the addition of a 16-channel CobraNet digital audio network interface.
IP108-D	The same base as the IP100, with the addition of an 8-channel Dante digital audio network interface.
IP116-D	The same base as the IP100, with the addition of a 16-channel Dante digital audio network interface.

Other related part numbers are actually “sales kits” that include special features such as education-related pre-configuration in the -EDU versions and included technical support in -CS versions. However, the underlying hardware in each of these cases is one of the above listed options.

CONNECTIONS



Figure 5: IP100 Family Front View

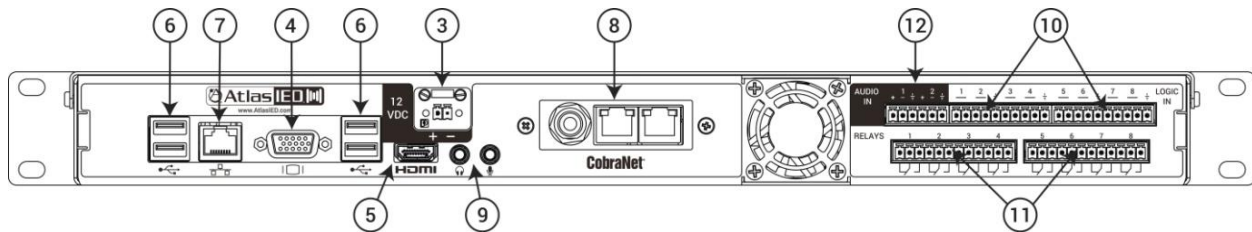


Figure 6: IP100 Family Rear View

1. 2-Line LCD

This display will illuminate when the unit is powered on, and may be used to view and change certain properties of the announcement controller.

2. Navigation Buttons

These buttons are used to navigate through the options on the LCD display.

3. Power

This connector is used to connect the unit to either the included single IED1112PSD power supply module or the IED1112PS rack-mount power supply. This 12VDC jack accepts a 2-pin Phoenix plug with 3.81mm spacing.

4. VGA Monitor Out

This analog video output is used to attach a monitor to the unit. It supports resolutions up to a maximum of 2048 x 1536 (QXGA) at 75Hz refresh rate.

5. HDMI Monitor Out

This digital video output (HDMI) is used to attach an external monitor that supports digital video. It supports a maximum resolution of 1600 x 1200 (UXGA)

6. USB Ports (4)

Use these four USB 2.0 compliant ports to connect a keyboard and mouse to the unit. The remaining ports can be used to attach an external storage device for system backup or file transfers.

7. Control Network

This 10/100/1000 Mbps/sec Ethernet LAN port is used to connect the unit to the network using a standard RJ45 connector. This port transmits and receives control data only. The digital audio from the device is transmitted using the audio network port. Two LEDs are provided to indicate status as shown in the table below.

LED	State	Condition
Link (left)	Off	LAN link not established
	Green (solid)	LAN link is established
	Green (blinking)	LAN activity occurring
Speed (right)	Off	10 Mb/s data rate

	Green	100 Mb/s data rate
	Yellow	1000 Mb/s data rate

8. Audio Network (IP108 / IP116 or IP108-D / IP116-D Only)

These 100 Mbits/sec (CobraNet) or 100/1000 Mbits/sec (Dante) Ethernet LAN ports are used to connect either the CobraNet or Dante digital audio channels of the device to the network using a standard RJ-45 connector. The Primary and Secondary ports can be used to in applications where there is a redundant network. Do not connect both ports into the same LAN/VLAN. The BNC connector on the CobraNet version is not used.

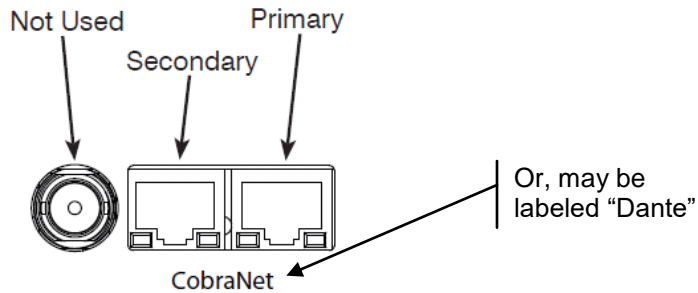


Figure 7: Sound Card Connections

Two LEDs on each connector are provided to indicate the status as shown in the table below.

Condition	Left LED	Right LED
Conductor (CobraNet only)	Flashing Orange	Flashing Green
Performer	Solid Orange	Flashing Green
Fault	Flashing Orange	Flashing Orange

9. 1/8" Mini Phone Connectors (2)

These connectors are used only for local recording and monitoring if connected to suitable microphone and speakers (e.g., self-powered desktop speakers).

10. Logic Inputs

Eight (8) logic inputs provide a simple method to interface the IP100 to other systems such as fire alarm panels, building management systems, security systems, etc.. The function of each input is programmed in the system software.

11. Relay Outputs

Eight (8) dry contact relay outputs are provided to send signals from the IP100 to other systems such as fire alarm panels, building management systems, security systems, etc. Each relay is programmed in the system software. Relays can be programmed to act as zones and trip each time an announcement or message is active for that zone. Relays can also be used to provide a closure when there is a fault condition present in the system.

12. Auxiliary Audio Inputs

These connectors are used to bring in up to two channels of line level analog audio which may be used for such things as background music (BGM) or audio to accompany a logic closure.

IP100 INSTALLATION

UNPACKING AND PREPARING THE UNIT

Unpack the unit from its shipping carton and identify any accompanying components that may have been included. The unit comes with built-in rack ears for easy mounting into a 19" rack.

Two types of external 12VDC power supplies are available. The IED1112PSD is an in-line power supply module that provides power to the unit for situations that do not require power supply redundancy. The IED1112PS is a rack-mount power supply unit with optional redundant power supply modules to provide uninterrupted power to the unit should a supply fail.

If the unit will be used with the IED1112PS, locate the adaptor cable that will be used to connect the two units. If the installation will use the IED1112PSD in-line power supply, then locate this unit and prepare it for installation as shown later in this manual.

INSTALL UNIT INTO A RACK

The IP100 requires one rack unit (1 RU) of available space and a recommended mounting depth of 12" to allow adequate clearance for cabling. Select a location in the 19" rack for the unit based on proximity to the rack mounted 12V power supply system, and (if desired) keyboard and monitor or a KVM (keyboard/video/mouse) switch unit. Mount the unit using suitable screws for the rack being used, two per rack mount ear. Please refer to any safety and installation instructions that came with the rack prior to assembly.

OPTIONAL – CONNECT KEYBOARD, MOUSE AND MONITOR

The unit can be operated as a black box with only network connection, but if desired may be connected to keyboard, mouse and monitor either directly or via a KVM switch shared with other devices in the rack.

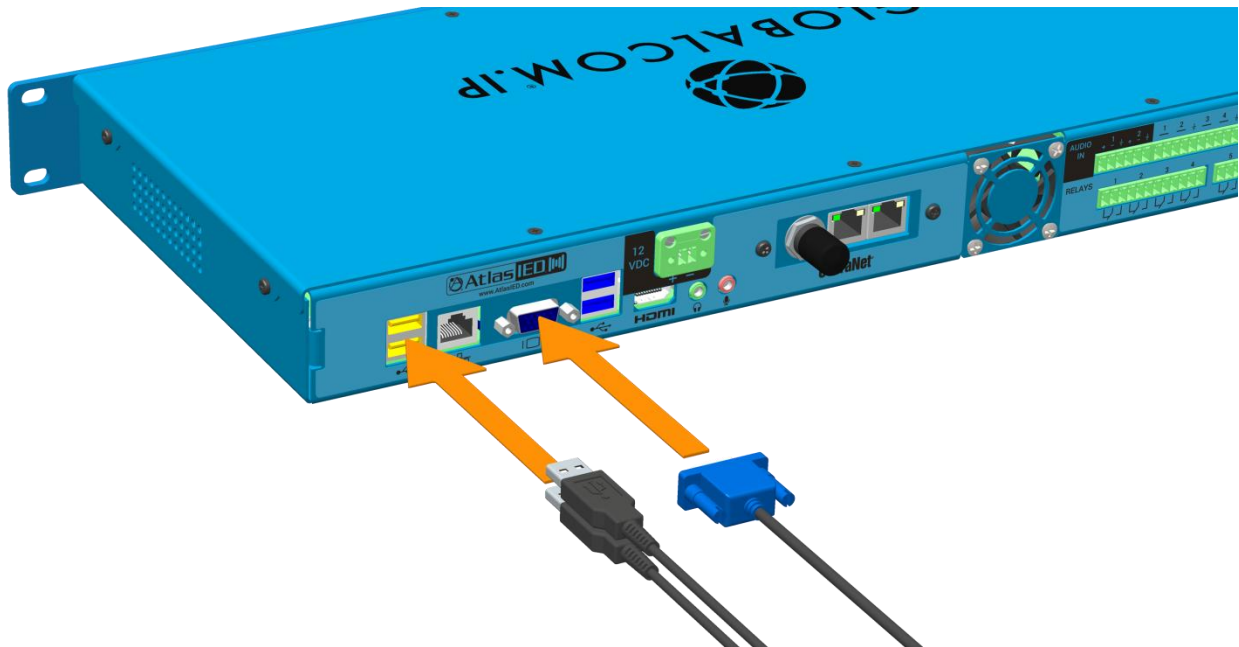


Figure8: Connecting Keyboard, Mouse and Monitor

Connect the keyboard and mouse to two of the available USB ports on the back of the unit. Connect the monitor to either the VGA output (15-pin D shell connector) or the HDMI output on the back as appropriate for the type of monitor being used.

Note: A monitor (VGA or HDMI) or video switcher must be connected when the unit is powered up or rebooted, or else the display driver will not be initialized and connecting a monitor to the unit later will not show any video.

CONNECT NETWORK CABLES

The IP100 unit has one Ethernet port and the IP108/IP116 units have three Ethernet ports located on the rear of the unit. At a minimum the control port and if provided, one of the two digital audio ports must be connected for proper operation. One is used for control and data while the other is dedicated strictly for digital audio. Connect the data and primary CobraNet ports to available Ethernet switch ports using a suitable Cat-5e or Cat-6 jumper cable. The switch ports should be configured for auto-negotiation 10/100 or 10/100/1000.

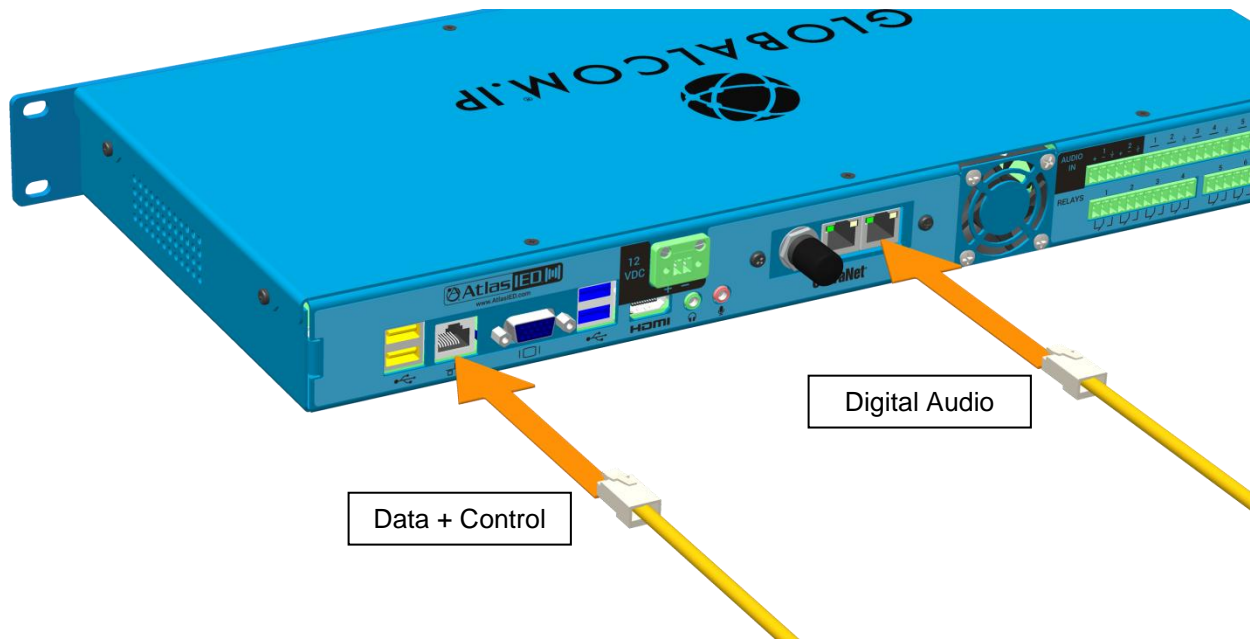


Figure 9: Connecting Network Cables

CONNECT LOGIC AND RELAY I/O

The IP100 provides eight (8) logic sensor inputs that can be used to trigger announcements, indicate a fault with external equipment or mute the system, for example. Also there are eight (8) dry contact outputs which can provide control to external systems or indicate a system status, for example. As required for the application, attach logic input lines and relay output lines to the terminal blocks provided, as shown in Figure 10.

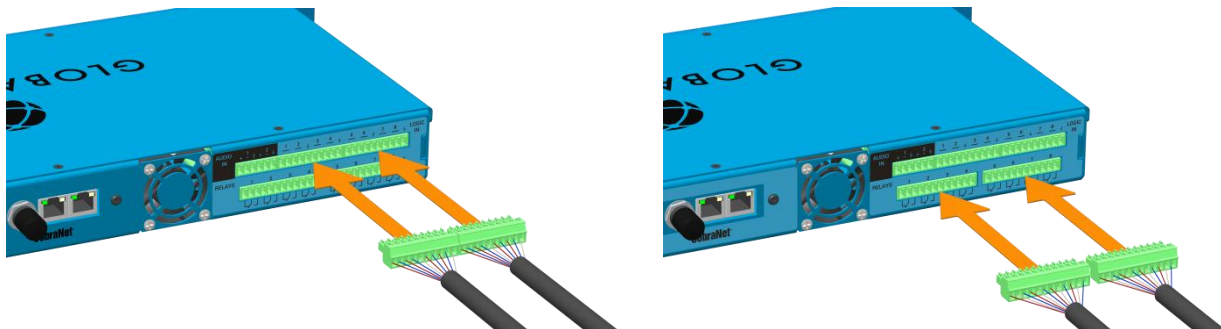


Figure 10: Connecting Logic and Relay Lines

Each logic input is isolated and terminations are made by connecting the signal to the + terminal while using the – terminal for the return path to the signaling device. Pins 5 and 10 on each connector provide a reference to chassis ground. Refer to Figure 11 for details on the logic and relay terminals.

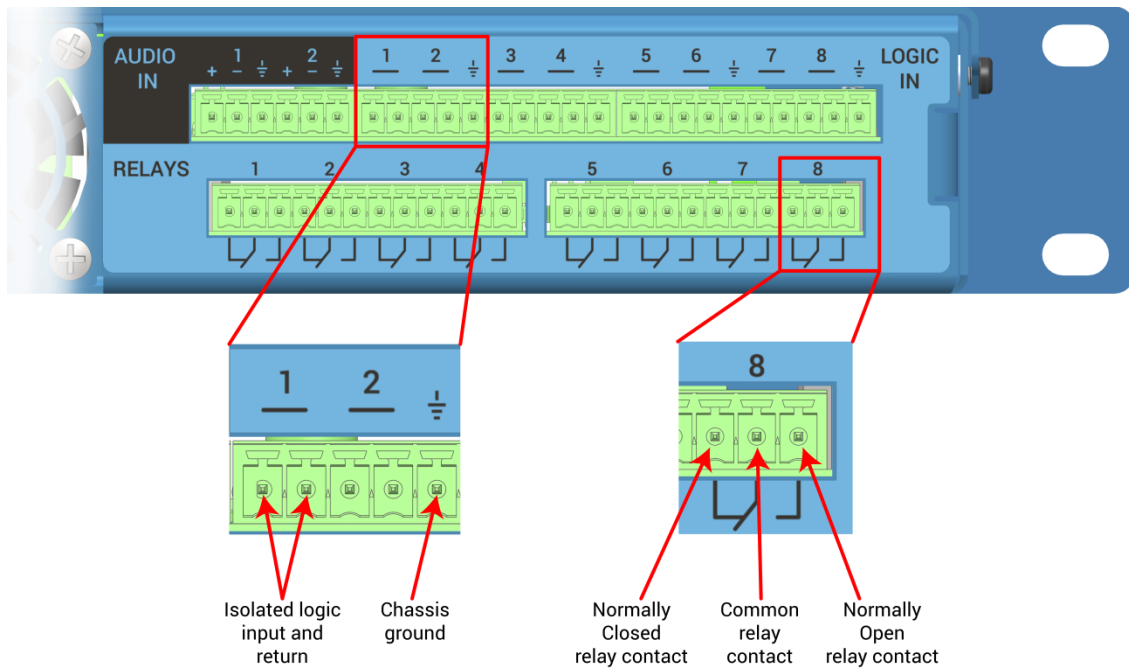


Figure 11: Logic/Relay Connection Details

CONNECT AUXILIARY AUDIO INPUTS

There are two analog audio inputs available on the rear of the IP100, which may be connected for background music or audio to use in a page action, such as from a logic input closure. One makes connections to these inputs as shown in Figures 12. Note, these inputs are balanced. If connecting unbalanced audio to these inputs, it may be done as shown in Figure 13.

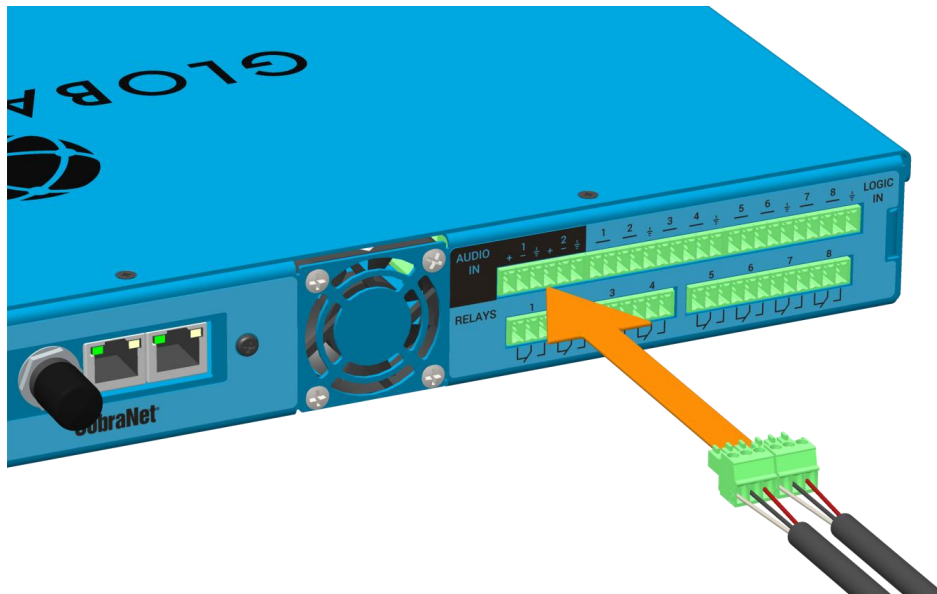


Figure 12: Connecting Auxiliary Audio Inputs



Figure 13: Auxiliary Audio Connection Details

CONNECT POWER PLUG

Connect the cable from the IED1112PSD in-line 12V power supply or the IED1112PS rack mount 12V power supply system to the power connection on the back of the unit. If main power is present, the unit will immediately boot up. The fan will run and the LCD display on the front panel will illuminate.

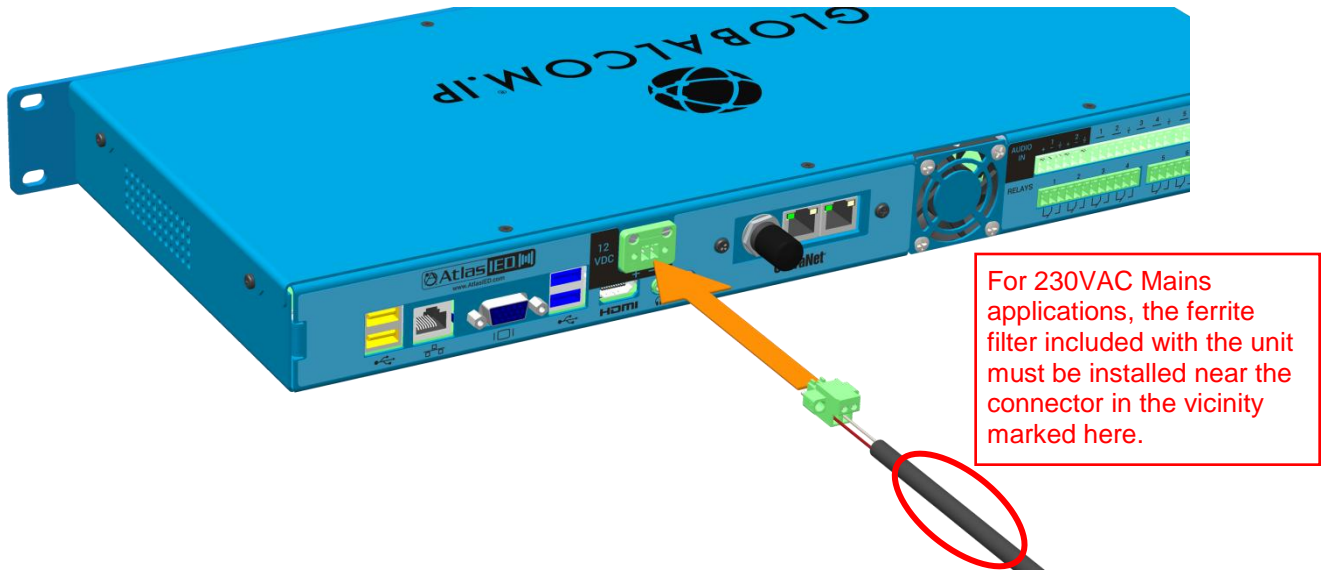


Figure 14: Connect 12V Power Plug

When the unit's power supply is connected to a 230VAC mains line, to avoid excessive EMI from the unit, the ferrite filter should be installed on the power inlet within a few inches of the connector. This ferrite *can* be installed in 120VACS mains applications as well, if desired, with no harmful effects. The ferrite filter simply clamps over the wire as shown in the figure below. (The reason the ferrite is not pre-installed is that there is more than one power supply option that can be ordered and used.)

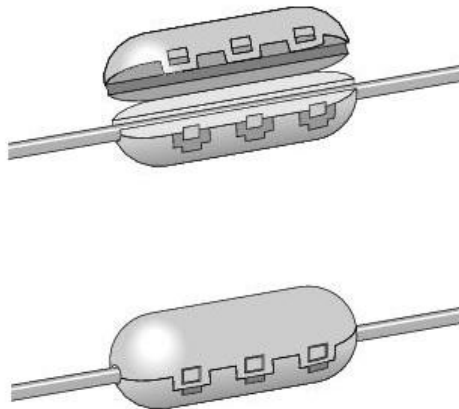


Figure 15: Installing Ferrite Filter

COMPLETE UNIT CONFIGURATION

Once the unit is booted up, complete the system configuration using the supplied configuration software. This is accomplished using either a keyboard, mouse and monitor connected directly to the unit or via remote connection through the network. Refer to the appropriate user guides for the specific model configuration to complete the unit setup.

SPECIFICATIONS

ELECTRICAL, ANALOG

1. Supply Voltage 12V DC
2. Rated Input Current 2 Amps Max (24W)
3. Relay Contact Rating 1A @ 30VDC Max

MECHANICAL

1. Height (4.4 cm) 1.75"
2. Width (without rack mount ears) (43.2 cm) 17"
3. Depth (31.1 cm) 12.25"
4. Weight (4.92 kg) 10.85 lb..

ENVIRONMENTAL

1. Operating Temperature Range (+32 °F+104 °F) 0 °C+40 °C
2. Storage Temperature Range (-4 °F+158 °F) -20 °C+70 °C

CONNECTORS

1. Power 2-pin Phoenix, 3.81mm spacing with locking screws
2. USB 2.0 4 Rear
3. Ethernet (1 or 3) Control (10/100/1000 Mbps),
..... CobraNet Digital Audio (100 Mbps), Dante Digital Audio (100/1000 Mbps)
4. Video (2) VGA / HDMI
5. Auxiliary Audio Input (2) 6-pin Phoenix, 3.81mm spacing
6. Opto-Isolated Logic Inputs (typical of 2) 10-pin Phoenix, 3.81mm spacing
7. Relay Outputs (typical of 2) 12-pin Phoenix, 3.81mm spacing

COMPLIANCE

1. SAFETY:
 - UL60950-1 (Ed.2) Listed
 - CAN/CSA C22.2 No. 60950-1-07 (Ed.2) Certified
 - IEC 60950-1: 2005; AM 1:2009
 - EN 60950-1:2—6/A11:2009/A1:2010
 - CB Certificate
2. FCC / IC:
 - CFR, Title 47, Chapter I, Part 15 Subpart B
 - ICES-003, Issue 6
3. EMC / CE: (only on IP108-D and IP116-D)
 - CISPR 32:2015
 - CISPR 24:2010
 - EN55032:2015
 - EN55024:2010
 - IEC 61000-3-2:2014
 - IEC 61000-3-3:2013

FCC NOTICE

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.