



AtlasIED 1544ZOP 4x4 Smart Zone Output Processor Installation Guide

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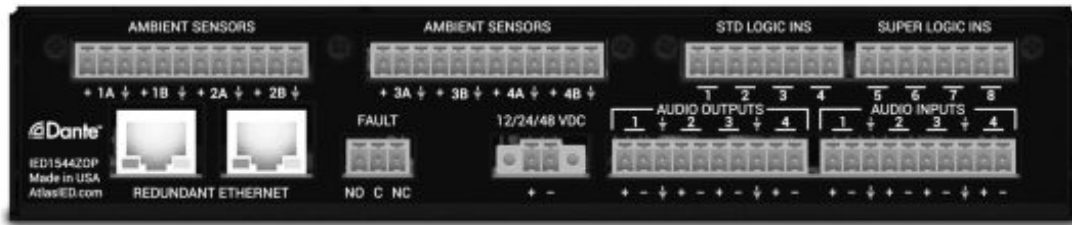


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AtlasIED 1544ZOP 4x4 Smart Zone Output Processor Installation Guide





1544ZOP

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Important Safety Instructions



WARNING: SHOCK HAZARD – DO NOT OPEN

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE



The lightning flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage “ within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this device 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 device 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 are 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 receptacles, and the point where they exit from the device.
11. Only use attachments / accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the device. When a cart is used, use caution when moving the cart / device combination to avoid injury from tip-over.



13. Unplug this device during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the device 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 device, the device has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
16. **WARNING:** To reduce the risk of fire or electric shock, this device should not be exposed to rain or moisture and objects filled with liquids, such as a vase, should not be placed on this device.
17. To completely disconnect this equipment from the mains, disconnect the power supply cord plug from the receptacle.
18. The mains plug of the power supply cord shall remain readily operable.
19. Protective earthing terminal. The apparatus should be connected to a mains socket with a protective earthing connection.



WARNING – When The Device Is In Use

WARNING: For the terminals marked with symbol of may be of sufficient magnitude to constitute a risk of electric shock. The external wiring connected to the terminals requires installation by an instructed person or the used of ready-made leads or cords.

- **WARNING:** The apparatus shall not be exposed to dripping or splashing and that objects filled with liquids, such as vases, shall not be placed on apparatus.
- **WARNING:** The mains plug is used as disconnect device, the disconnect device shall remain readily operable.
- To prevent electric shock, do not remove the product cover as there are high voltage components inside. Refer all servicing to AtlasIED.
- Should any of the following irregularities occur during use, immediately switch off the power, disconnect the power cord from the AC outlet and contact AtlasIED. Do not to attempt to continue operation with the product

as this may cause fire or electric shock:

- Smoke or strange smell coming from the unit.
- If the product falls or the case is damaged.
- If water or any metallic objects falls into the product.
- If the power supply cord is damaged in any way.
- If the unit is malfunctioning.
- Do not insert or drop metallic objects or flammable materials into the ventilation holes of the product's cover, as this may result in electric shock or fire.
- Do not place any containers with liquid or metallic objects on the top of the product. If any liquid spills into the unit, fire or electric shock may result.
- Never operate this product or touch the power supply cord during an electrical storm, electric shock may result.
- Never exceed the power rating on the product when connecting equipment. Fire and/or property damage may result.
- Operate the product only with the voltage specified on the unit. Fire and/or electric shock may result if a higher voltage is used.
- Do not modify, kink, or cut the power cord. Do not place the power cord in close proximity to heaters and do not place heavy objects on the power cord, including the product itself, doing so may result in fire or electrical shock.
- Ensure that the safety ground terminal is connected to a proper ground. Never connect the ground to a gas pipe as a catastrophic disaster may result.
- Be sure the installation of the product is stable, avoid slanted surfaces as the product may fall and cause injury or property damage.



CAUTION – When Installing The Product

- Plugging in or unplugging the power cord with wet hands may result in electric shock.
- Never move the unit with the power cord plugged into the wall, as damage to the power cord may result.
- When unplugging the cord from the wall, grasp the plug, NOT the cord.
- Never install this product in humid or dusty locations, nor in direct sunlight, near sources of heat, or in areas where sooty smoke or steam are present. Fire and electric shock may result.
- Keep all sides of the unit at least 31/2" away from objects that may obstruct air flow to prevent the unit's internal temperature rise.



CAUTION – When The Product Is In Use

- Never place heavy objects on the product, causing it to fall and/or break, resulting in personal injury and property damage. In addition, the product itself may fall and cause injury and property damage.
- Contact AtlasIED for instructions on cleaning the inside of the unit. Large accumulations of dust inside the unit may result in heat buildup and fire.
- Ensure that the power supply plug is securely plugged into the wall outlet. Never allow dust to accumulate on the power plug or inside the wall outlet.
- When cleaning the unit or the unit is not to be operated for an extended period, unplug the power cord from the

wall.

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.

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.

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

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

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 AtlasIED 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 AtlasIED 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 ATLASIED SYSTEM MAY NOT OPERATE, OR MAY OPERATE IMPROPERLY. THIS COULD RESULT IN PROPERTY DAMAGE AND SERIOUS INJURY OR DEATH TO YOU AND/OR OTHERS.

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 AtlasIED factory for direction on how to operate and maintain an AtlasIED 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 AtlasIED system equipment shall not be made without explicit authorization of AtlasIED. 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 AtlasIED 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 AtlasIED 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.

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 department.

Introduction

The 1544ZOP 4x4 Smart Zone Output Processor provides all the network audio routing and zone digital signal processing functions of a DNA2404D integrated network amplifier unit. This includes Dante network audio input, equalization, level control, and IED's patented AlwaysHEAR™ smart ambient analysis automatic level adjustment. The 1544ZOP provides four line-level balanced analog audio outputs for driving external amplifiers or powered line arrays. The 1544ZOP integrates with AtlasIED's GLOBALCOM.IP announcement controller. Optionally, the processed zone output audio may be routed back out over the network as Dante digital audio.

In addition to the four zone outputs, the 1544ZOP has four balanced line-level analog inputs that may be used as automated test inputs associated with the four zone outputs. Alternately, the analog inputs may be routed out over the network as Dante digital audio for such uses as for background music or auxiliary audio sources.

The 1544ZOP also provides eight (8) logic inputs. Four of the inputs are standard closure detection and four are supervision capable, which provides the additional means to detect open or short conditions on the incoming links.

Inputs are provided for connecting up to eight (8) 540S ambient noise sensors (2 sensors for each output channel). This allows the output of each channel to be automatically adjusted in real time based on the measured ambient noise level in the zone.

Key Features

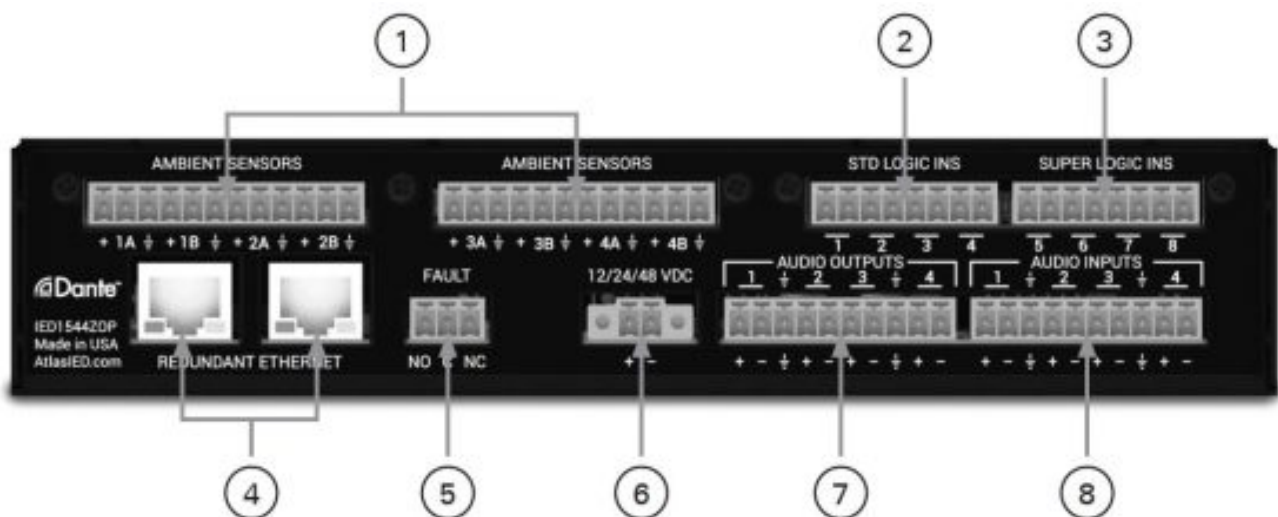
- Four Balanced Line Level Audio Inputs
- Four Balanced Line Level Audio Outputs
- Four Standard Logic Inputs
- Four Supervised Logic Inputs
- Eight Ambient Sensor Inputs
- Supports Audinate's Dante™ Digital Network Audio
- Compatible with AtlasIED GLOBALCOM® Systems and 3rd Party Dante™ Devices
- 7-band Parametric EQ and a High-Pass and Low-Pass Filter Per Channel
- Built-In Supervision of External Equipment or Speaker Lines May Be Configured
- Fault Reports and Amplifier Status Available Over Ethernet Using Standard SNMP Protocol
- LED Indicators for Power and Faults, Plus a Fault Relay (Form C)
- Two Inputs for Ambient Noise Sensors for Each Amplifier Output Channel

Front Panel



1. **Power Indicator** – Illuminates green when unit is has power.
2. **Status Indicator** – Illuminates yellow when there is a fault in the system.

Rear Panel

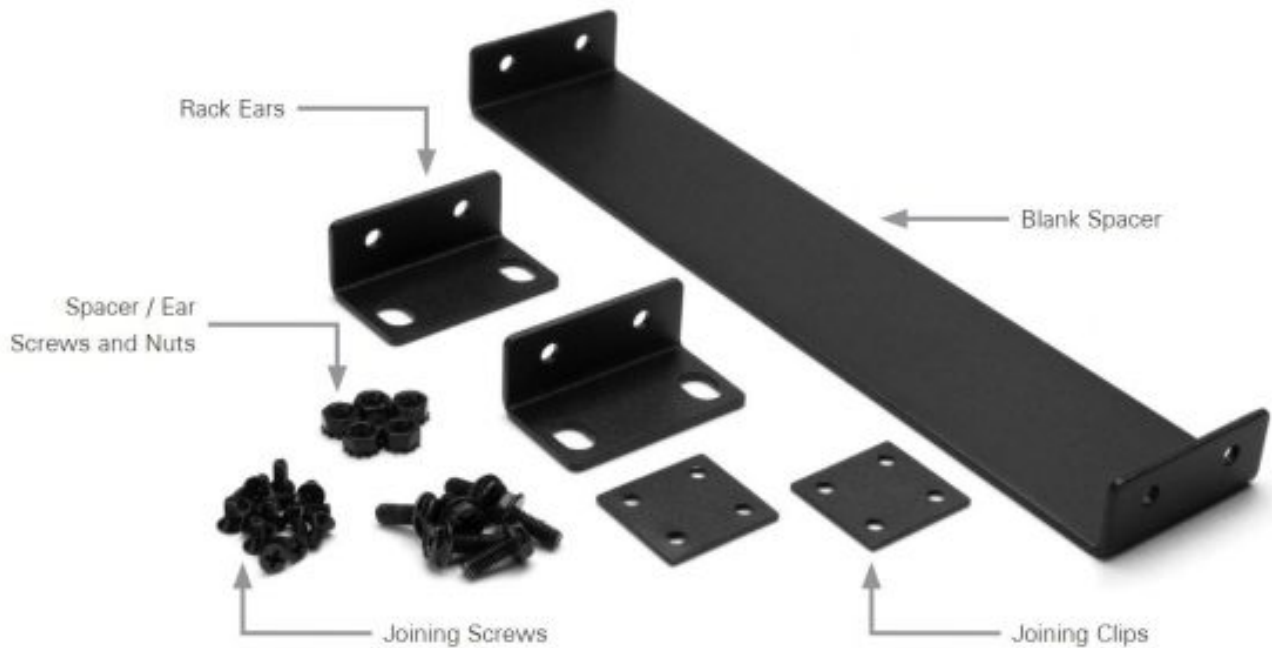


1. **Ambient Sensors** – Up to two sensors (A and B) per channel may be connected. If only one sensor is used per channel, it can go into either the A or B position for the channel.
2. **Standard Logic Inputs** – These four inputs only detect open or closed circuit connections, such as from dry contact closures. Wetting voltage for inputs are supplied internally.
3. **Supervisable Logic Inputs** – These four inputs can be configured to detect shorts and opens in the connecting line as well as activated / de-activated with proper external wiring.
4. **Redundant Ethernet Connections** – RJ-45 jacks for standard 100Base-T Ethernet connections.
5. **Fault Relay Connection** – Form-C relay connections of Normally-Open, Normally-Closed and Common.
6. **Power Input** – Input of 12V to 48V with current rating sufficient for 10 Watts of power.
7. **Analog Audio Outputs** – Balanced audio with level of +6 dBu maximum.
8. **Analog Audio Inputs** – Balanced audio with level of +6 dBu maximum.

Installing the 1544ZOP

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 a PA702-RMK kit of rack ears, blank spacer and joining clips for easy mounting into a 19" rack. The components of the rack mount kit are shown in the figure below.



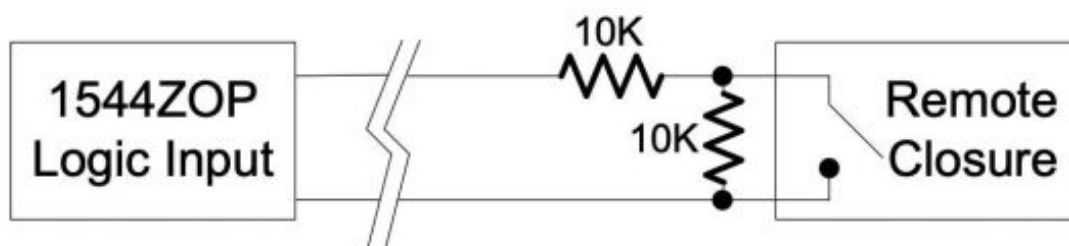
The unit may be mounted either singly in a 19" rack using blank spacer and rack "ears". The unit can also be combined with a second 1544ZOP or compatible half-rack-unit device to mount two across in a 19" rack. See the instructions that are included with the PA702-RMK kit for specifics on how to prepare units for rack mounting using the parts in the kit.

Installing the Unit into a Rack

The one rack unit assembly prepared above should be mounted into a 19" rack using the four mounting holes on the rack "ears".

Connecting Supervised Logic Inputs

In order to supervise logic inputs, it is necessary to provide external 10k Ohm resistors (not provided) on or near the remote device as shown in the figure below.



Connecting Unbalanced Audio Inputs / Outputs

The analog audio inputs / outputs on the 1544ZOP are balanced. On occasion, it may be necessary to connect unbalanced audio devices to the 1544ZOP. When doing this, one should wire as shown in the figure below.



Connecting a Power Supply

A suitable power supply should be connected to the rear connector, being careful to observe the polarity shown on the connector. Suitable power supplies are any supply capable of supplying at least 10 Watts of power. For example, a 12V, 1 Amp supply or a 48V, 1/4 Amp supply. Possible supplies that may be ordered separately from AtlasIED and used for this purpose include:

- IED1112PS rack mount, 5-output power supply, with optional redundant supply,
- IED1112MPS-MOD, single unit power supply.

Complete Unit Configuration

Once the unit is booted up, complete the system configuration using GLOBALCOM.IP System Management Center (SMC) software, as part of overall system configuration.

System	
Type	4x4 Smart Zone Output Processor
Connections	All Connections Except Ethernet via 3.81mm Spacing Lugless Screw Connectors.
Ethernet RJ-45	2 (Redundant) 1 (w/ PoE)
Balanced Line Level Audio Inputs	4 (3 Pins Each)
Balanced Line Level Audio Outputs	4 (3 Pins Each)
Standard Logic Inputs	4 (2 Pins Each)
Supervised Logic Inputs	4 (2 Pins Each)
Ambient Sensor Inputs	8 (3 Pins Each)
Fault Relay	1 (Form C, 3 Pins)
Indicators	
Power LED	Green LED on Front
Fault LED	Yellow / Amber LED on Front
Network Connection LED	Yellow LED on RJ-45 Connectors on Rear
Network Data LED	Green LED on RJ-45 Connectors on Rear
Electrical	
Frequency Response	±0.3 dB, 20 Hz - 20 kHz Unweighted
Total Harmonic Distortion (THD)	<0.01%, 20 Hz - 20 kHz Unweighted
Signal to Noise Ratio	>90 dB, 20 Hz - 20 kHz Unweighted
Line Level Inputs	+6 dBu Max.
Line Level Outputs	+6 dBu Max.
A/D Converter	24 Bit

D/A Converter	24 Bit
Sample Rate	48 kHz
DSP Functions	
Level Control	Per Input / Output Channel
Equalization	7 Parametric Plus High-Pass & Low-Pass Per Channel
Ambient Analysis	Up To Two Sensors Per Channel
Built-In Automated Testing	For 4 Inputs
Compression On Audio Inputs	4
Power Requirements	
115V – 60V DC	2-pin Lugless Compression-Type (Nominally Use 12, 24 or 48V Supply) Screw Terminal
Max Power Draw	10 Watts
Mechanical	
Dimensions (HxWxD)	1.75" x 8.5" x 8.9" (44mm x 216mm x 226mm)
Shipping Dimensions (HxWxD)	2.25" x 10.25" x 14.75" (57mm x 260mm x 375mm)
Unit Weight - lbs	3.25lb (1.5kg) (individual unit) - 3.75lb (1.7kg) (unit w/ rack ears)
Shipping Weight - lbs	4.4lb (2kg)
Rack Mount Requirements	Rack-Mount Ears 1 RU
Cooling Fan	None

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.

Limited Warranty

All products manufactured by AtlasIED are warranted to the original dealer/installer, industrial or commercial purchaser to be free from defects in material and workmanship and to be in compliance with our published specifications, if any. This warranty shall extend from the date of purchase for a period of three years on all AtlasIED products, including SOUNDOLIER brand, and ATLAS SOUND brand products except as follows: one year on electronics and control systems; one year on replacement parts; and one year on Musician Series stands and related accessories. Additionally, fuses and lamps carry no warranty. AtlasIED will solely at its discretion, replace at no charge or repair free of charge defective parts or products when the product has been applied and used in accordance with our published operation and installation instructions. We will not be responsible for defects caused by improper storage, misuse (including failure to provide reasonable and necessary maintenance), accident, abnormal atmospheres, water immersion, lightning discharge, or malfunctions when products have been modified or operated in excess of rated power, altered, serviced or installed in other than a workman like manner. The original sales invoice should be retained as evidence of purchase under the terms of this warranty. All warranty returns must comply with our returns policy set forth below. When products returned to AtlasIED do not qualify for repair or replacement under our warranty, repairs may be performed at prevailing costs for material and labor unless there is included with the returned product(s) a written request for an estimate of repair costs before any nonwarranty work is performed. In the event of replacement or upon completion of repairs, return shipment will be made with the transportation charges collect.

EXCEPT TO THE EXTENT THAT APPLICABLE LAW PREVENTS THE LIMITATION OF CONSEQUENTIAL DAMAGES FOR PERSONAL INJURY, ATLASIED SHALL NOT BE LIABLE IN TORT OR CONTRACT FOR ANY DIRECT, CONSEQUENTIAL OR INCIDENTAL LOSS OR DAMAGE ARISING OUT OF THE INSTALLATION, USE OR INABILITY TO USE THE PRODUCTS. THE ABOVE WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

AtlasIED does not assume, or does it authorize any other person to assume or extend on its behalf, any other warranty, obligation, or liability. This warranty gives you specific legal rights and you may have other rights which vary from state to state.


Service

Should your 1544ZOP 4x4 Smart Zone Output Processor require service, please contact the AtlasIED warranty department at 1-800-876-3333 or atlaswarranty@atlasied.com to obtain an RA number.

AtlasIED Tech Support can be reached at 1-800-876-3333 or www.atlasied.com/support. Visit our website at www.atlasied.com to see other AtlasIED products.

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