ZONIT®
Structured Solutions

Zonit® µATS™ Users Guide

Version 1.1

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Warranty

The µATS™ Retention Kit made by Zonit Structured Solutions, LLC in the U.S.A. is warranted to be free of defects in materials and workmanship for a period of 1 year from date of purchase. If the product becomes defective during the warranty period, we will elect to either repair or replace it free of charge. After contacting Zonit Structured Solutions for a return authorization, send the product (with the original proof of purchase and freight prepaid) to Zonit Structured Solutions, LLC, 1790 30th St. #140, Boulder, Colorado, 80301.

This warranty does not include repair or replacement of any equipment used with the µATS™ Retention Kit. It does not apply to any product which has been repaired or altered in any manner by anyone other than Zonit Structured Solutions, LLC or to any product which has been installed, connected, used, or otherwise adjusted other than in accordance with written instructions furnished by Zonit Structured Solutions, LLC. Zonit Structured Solutions, LLC shall also not be obligated to repair or replace product which is found to be in need of repair because of damage resulting from accident or misuse. Zonit Structured Solutions, LLC makes no other express warranty for the product. No agent, representative, dealer, or employee of Zonit Structured Solutions has the authority to increase or alter the obligations or limitations of this warranty.

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Product Overview

Product ID: Zonit® Micro Automatic Transfer Switch ("µATS™")
Model: µATS1-HV-(C14, NEMA 6-15 or LG-15)

Description: The µATS™ is a small form factor, "Zero-U" mounting, automatic transfer switch for 200-240VAC service. The µATS™ is for use with ITE equipment only. This product is suitable for use with electronic data processing equipment requiring high to ultra high power path reliability, with fast failover times needed by modern switched power supplies. It is also ideal for applications involving high or very high equipment deployment density.

Several types of plug-strips and adaptors for the most common power distribution needs are also available for use with this product. Contact your Zonit® Structured Solutions sales representative for additional information.

Product Features

• The IEC320 plug was designed for "zero-U" mounting with most devices, no matter the orientation of the device power connector. In the few cases the µATS™ cannot mount directly to the equipment it is powering, a short IEC320 extension cord (optional) can be used. The unit has a pair of mounting eyelets which can be used to attach the µATS™ to any suitable support via the optional retention kit to ensure connection security.

• If multiple receptacles that are auto-switched are needed, the Zonit µATS™ can easily perform this function by use of an optional IEC320 to IEC C14 plug conversion cord. This allows a standard power strip to be plugged into the auto-switched outlet of the µATS™.

• The power input plugs of the Zonit µATS™ are labeled so that the user knows which is the A source and which is the B source. Further, the input plugs can be color coded as desired by the user to key the input plugs to any color-coding scheme used in the data center to identify power sources.

• The Zonit µATS™ is designed to always use the A source if it is available and of acceptable quality. This allows data center managers to know and plan for the load on each power source - a requirement for power capacity management.

• Power quality problems of several types (interruptions, under-voltage, sag, etc.) are detected and will initiate a switch from the A to B source. This helps protect against downtime and makes it easy to use line + UPS power sources without risking downtime.

• The unit has current level sensing and will illuminate a yellow LED when the current draw exceeds 8A which is the rated amperage capacity of the unit.

• The µATS™ has voltage level sensing on the A side only and will switch to the B side if the A input voltage is less than 158VAC or greater than 260VAC. When an over-voltage condition is detected, the µATS™ will illuminate an orange LED. Once the A side voltage goes back in range for at least 6 seconds (either greater than 158VAC or less than 260VAC), the unit will switch back to A side power. This feature is very useful for data centers that desire to use filtered utility line power on the A side to gain efficiency and reduce cost.

• The Zonit µATS™ is equipped with a Zonit patent-pending Virtual Circuit Breaker. The unit will disconnect the attached load from the service input (either the A source or the B source) if current supplied exceeds 8 Amps for a duration similar, but slightly faster than, a 8 Amp fast blow fuse, and will sound an audible alarm. If the µATS™ is drawing from the A side it will illuminate a red LED and sound the warning buzzer continuously. If on the B side, the unit will briefly illuminate the red LED, sound the buzzer, and then it will shutdown. After removing the excessive load, if the A side power is still available the uATS™ can then be reset by pressing the reset button on the rear of the case. If B side power is the only power available, it will require the A power cord to be placed on B to reset, after which it can be moved back to the A side, which will cause a switch back to the B side, until the A side power is restored. This uATS™ shutdown feature forces intervention in the event of a failure of both the A side power source and an overload condition occurring simultaneously.

• If a µATS™ unit was already installed, remove it after the equipment is powered down.

• Locate a suitable location in the equipment rack or cabinet to attach and secure the µATS™. It is recommended that you choose a location in the rack that will neither interfere with normal operation of slide rail kits nor inserting and removing equipment from the rack. Make sure the adapter cord that you are using for the indirect attach of the µATS™ is long enough to not have tension on it when the µATS™ is secured to the rack.

• Use one or both of the zip-lock tie wraps to secure the µATS™ unit to the rack. It may be useful to use one or both of the tie wrap retainers screwed to the rack, but this is rarely neccesary; the zip-lock tie wraps can usually be laced around or through some part of the rack structure.

• Now connect the µATS™ to power following the instructions in the µATS™ User Guide.

• Turn on the equipment following the manufacturers recommended startup procedure.

De-installation

• Shutdown, then power off all the equipment that the µATS™ is supplying power to, following the µATS™ de-installation instructions in the µATS™ User Guide. Be sure to follow the manufacturers recommended shutdown procedure for all equipment.

• Cut the zip-lock tie wraps that secure the µATS™ unit to the equipment or rack.

• Now remove the µATS™ from the equipment or rack.

• If a direct attach scenario was used, loosen the screws holding the tie wrap retainers to the equipment and then slide them out from under the screw heads. It is recommended that you do not remove the screws. After removing the tie wrap retainers, re-tighten the screws securely. If tie wrap retainers were used with a rack, unscrew and remove them.

Note: If no screws are located near the power inlet, it may be advantageous to use two tie wrap retainers instead of one. This way two tie wraps can be used and their off-center axis forces on the µATS™ unit are balanced.

• Insert the µATS™ unit into the equipment to be powered via the integral IEC320 C13 female plug. If the plug on the µATS™ will not insert because of clearance issues, use an optional accessory, the IEC C13 Adaptor Cord (Part Number PA1-C13C14-1) to do an indirect attach installation. This C13 extension cord can be used to make the connection between the equipment and the µATS™. Do NOT yet plug in either the A or B input cords of the µATS™ - this will be done in a later step.

• Take one or both of the zip-lock tie wraps supplied with the µATS™ Retention Kit and thread them through the retention eyelets in the case of the µATS™. If only one tie wrap will be used, it can be advantageous to thread it through both of the µATS™ retention eyelets as shown in Figure 3a and 3b. Note that the square end of the zip tie is positioned so that it is aligned parallel to the top edge of the µATS™ case. This makes threading and tightening the zip tie much easier.

Figures 3a & 3b - µATS™ Retention Kit Installed

• If desired, clip off the excess length of the zip-lock tie with a suitable tool.

• Now connect the µATS™ to power following the instructions in the µATS™ User Guide.

• Turn on the equipment following the manufacturers recommended startup procedure.

Indirect Attach or Plugstrip Feed Scenarios

• Make sure that the equipment the µATS™ Retention Kit will be connected to is powered down. If the equipment is already powered up, be sure to follow the manufacturers recommended shutdown procedure before powering it down.

Pre-Installation Considerations

Prior to deployment of the uATS™, the following site considerations should be reviewed to ensure the µATS™ will function properly in its intended application.

POWER TYPE & MOUNTING OPTIONS

The µATS™ can be ordered with 200-240 IEC C14, NEMA 6-15 or plugs on both its A and B input cords, which are to be connected to 8A single phase VAC power sources. The output is an IEC320 C13 female plug, which is the most common input to modern electronic data processing equipment.

The µATS™ can be used in several configurations:
• Direct Attach – The µATS™ is connected directly to equipment via its integral IEC320 C13 plug.

• Indirect Attach – The µATS™ can be connected indirectly to equipment via an optional IEC C13 adaptor cord (Part Number PAT-C13C14-1).

• Plugstrip Feed – The µATS™ can be used to feed a 8-10A plugstrip via an optional IEC C14 Adaptor Cord – (Part Number PAT-C14-1).

Note: For applications that use 120VAC input Zonit offers µATS™ models for that application. Call for availability.

Site Preparation

Site preparation with the µATS™ is simple and easy to implement.

The site must have two separate power sources with receptacles for each power source that the µATS™ can connect to via appropriate agency approved receptacles. The µATS™ must be fed from both the A and B sources by single phase 200-240VAC power of suitable capacity. Make sure that the A and B socket-outlets to be used are installed near the equipment the µATS™ will power and are easily accessible. Also make sure the outlets are identified for staff performing the µATS™ installation.

• The µATS™ should be plugged in such that the A power source is the preferred source for normal operations for the equipment being powered. The B power source is the failover power source. This point is important, the µATS™ is most efficient when drawing on the A power source.

• Make sure that the needed power capacity which will be drawn by the µATS™ (8A max) is available in both the A and B circuits the µATS™ is connected to. This is necessary for the µATS™ to failover correctly and ensure equipment uptime.

Installation

• Unpack the µATS™ shipping carton and verify the unit is intact and undamaged and is the model ordered for the desired application. The carton should contain the µATS™ unit, and any optionally ordered accessories.

• Insert the µATS™ main unit via the integral IEC320 C13 female plug into the equipment to be powered. If the plug on the µATS™ will not insert because of clearance issues, use an optional accessory, the IEC C13 Adaptor Cord (Part Number PA1-C13C14-1). This C13 extension cord can be used to make the connection between the equipment and the µATS™. Do NOT yet plug in either the A or B input cords of the µATS™ - that will be done at a later step.

• If it is desired or required to physically secure the µATS™ to the equipment, then use the µATS Retention Kit (Part Number µATS1-RET) and follow the included instructions to physically secure the µATS™ to the equipment.

• Check that the equipment is turned off if a power supply switch is on the equipment.

• Now insert the µATS™ A power source cord into a suitable 200-240VAC receptacle that supplies the primary power source. Remember that the µATS™ will always use the A power source when it is available. Then, insert the µATS™ B power source cord into a suitable 200-240VAC receptacle that supplies the secondary B power source. The illumination of the µATS™ LED indicators will show that the unit is operational. *Note: If the equipment has no power switch it will turn on as soon as the A side µATS™ power cord is connected.*

If the equipment has a power switch, turn it on.

Site Preparation

Perform site preparation in accordance with the directions in the µATS™ User Guide.

Installation

• Take the µATS™ Retention Kit out of its shipping materials (it may be bundled with a µATS™ unit or shipped separately, depending on how it was ordered) and verify that there are two keyhole style brackets and two matching zip-lock nylon ties, intact and undamaged.

Direct Attach Scenario

• Make sure that the equipment the µATS™ Retention Kit will be installed onto is powered down. If the equipment is already powered up, be sure to follow the manufacturers recommended shutdown procedure before powering it down.

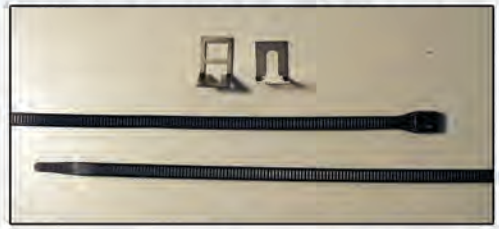

Figure 1 - µATS™ Retention Kit Materials

• If a µATS™ unit was already installed, remove it after the equipment is powered down.

• Locate a screw (which must not be a flathead screw) on the rear panel of the powered-down equipment that you are installing the µATS™ Retention Kit onto. Choose a screw that is close to the power inlet. Orient the zip-lock tie wrap retainer so that it will be pulled as close to the center axis of the power inlet as is practical. Loosen the screw slightly - only enough to slide the supplied tie wrap retainer underneath it. It is recommended that you do not remove the screw. Once the tie wrap retainer is slid underneath the screw, tighten it securely. See Figure 2 below for an example installation.

Figure 2 - Example Installation of Tie Wrap Retainer

Appendix A

Product ID: Zonit® Micro Automatic Transfer Switch ("µATS™")
Model: All
Option: µATS Retention Kit – Part Number µATS1-RET

Description: This kit consists of a pair of keyhole style brackets and matching zip-lock nylon ties. Use the kit in situations where it is desirable to physically attach the Zonit µATS™ to the equipment being powered or secure it to the rack where the equipment is mounted.

Pre-installation Considerations

Prior to deployment of the µATS™ Retention Kit, the following site considerations should be reviewed to ensure the µATS™ will function properly in its intended application

MOUNTING OPTIONS

The µATS™ has IEC C14, NEMA 6-15 or NEMA L6 plugs on its input cords, intended to be connected to 8A single phase 200-240V power sources. The output is an IEC320 C13 female plug, which is the most common input to modern electronic data processing equipment.

The µATS™ can be used in several configurations:

• Direct Attach – The µATS™ is connected directly to equipment via its integral IEC320 C13 plug.

• Indirect Attach – The µATS™ can be connected indirectly to equipment via an optional accessory, the IEC C13 Extension Kit (Part Number PA-C13C14-1).

• Plugstrip Feed – The µATS™ can be used to feed a 10A plug-strip via an optional accessory, the NEMA 5-15 Extension Kit – (Part Number PA-515-1).

Note: For applications that use 120V input Zonit offers µATS™ models for that application. Call for availability.

The µATS™ Retention Kit can be used in both the direct attach and indirect attach scenarios.

µATS Operational Indicators

The µATS™ has five LED indicators: green, blue, orange,yellow and red. It also has an audible alarm. They are used as follows to indicate the operational state of the µATS™.

● Green LED lit: The µATS™ is operating normally and drawing power from the A power source.

● Blue LED lit: The µATS™ is operating normally and drawing power from the B power source. The primary source is offline and not available or in an under-voltage or over-voltage condition.

● Yellow LED lit: The µATS™ is operating normally, however the current draw is 8A. The user should review if current draws will exceed 8A in cold start scenarios, which could trip the virtual circuit breaker.

● Orange LED lit: The µATS™ is detecting an over-voltage condition on the A power source and has disconnected from that source. It is drawing on the B power source (where over-voltage is not monitored). The µATS™ will continue to monitor the voltage on the A source and switch back to the A source once the over-voltage condition is corrected.

● Red LED lit: The µATS™ has had its 8A capacity limit exceeded and activated the Virtual Circuit Breaker, disconnecting from both power sources. It does not supply power. To reset it, the reset button on the rear of the unit must be pressed or the A power source must be shut off and restored (cycled).

🔔 Audible Alert: The alert sounds when the Virtual Circuit Breaker has been tripped and the µATS™ is not supplying power. The audible alert will continue to sound after the Virtual Circuit Breaker has tripped, until the unit is reset.

○ No LEDs lit: The µATS™ is not receiving power from the A or B sources, has experienced an overload while on the B side with the A side unavailable, or it has blown its internal protective overload fuses. If the fuses are blown, the unit must be returned to Zonit for service. To determine if the unit has overloaded while on the B side when the A side was unavailable, plug the A side input plug into a known good power source and the unit will reset if it is working properly.

Important Note: The µATS™ continues to connect the A source to the C13 outlet, even if the internal circut board fails, which could result in no LEDs being lit. The automatic transfer switch function will not work, but the unit will continue to pass power from the A source to the C13 outlet.

De-Installation

Shutdown, then power off all the equipment that the µATS™ is supplying power to. Be sure to follow the manufacturers recommended shutdown procedure for all equipment. If the µATS™ has been physically secured to the equipment de-install the retention kit. Unplug the µATS™ power cords, first the B side, then the A side. Now remove the µATS™ from the equipment.

Note: If the equipment has no power switch it will turn off as soon as both µATS™ power cords are disconnected.

Troubleshooting

The µATS™ is designed and tested for the highest reliability possible. Factory testing is extensive, and all circuits are fully tested for load capacity, isolation, circuit breaker trip limits, etc. Problems encountered with improper voltages or inactive circuits will generally be traced to abnormal conditions of the branch circuit wiring delivering the source power to the µATS™. This unit contains no serviceable parts and must be returned to the manufacturer for repair or replacement.

If any condition exists that would indicate a problem, follow this process:

1) Check A and B source panel(s) (or PDU) circuit breakers. Be sure the A and B branch circuit breakers are fully engaged. Snap them off and back on again. Check the LED indicators at the µATS™.

2) Using a different µATS™, if available, can be useful in determining if the circuit is at fault or if the µATS™ is the source of the problem. If the same results are attained with two µATS™ units, the problem is likely to be in the branch feeder circuit.

Optional Accessories

The following optional accessories are available for the Zonit µATS™.

1) µATS Retention Kit – Order Part Number µATS1-RET. This kit consists of a pair of keyhole style brackets and matching zip-lock nylon ties. Use it in situations where it is desirable to physically attach the Zonit µATS™ to the equipment being powered.

2) IEC C13 Extension Kit – Order Part Number PA1-C13C14-1. This kit consists of an IEC C14 to IEC C13 extension cord. It is used to connect the µATS™ to the equipment being powered in situations where clearance to plug it in directly is an issue or it is desired to place the µATS™ in a location where its indicators can more conveniently be viewed.

3) IEC C14 Extension Kit – Order Part Number PA1-515-1. This kit consists of an IEC C14 to NEMA 5-15R extension cord. It is used to connect the µATS™ to a plugstrip or other device that is designed to plug into a NEMA 5-15 receptacle.

3) If a problem is indicated on only one plug-strip feeding the µATS™, or at a particular receptacle on a plugstrip, move µATS™ input plug(s) to receptacles on plugstrips that test OK.

4) The following tests should be done by a qualified electrician only. Using a suitable volt meter, test the 200-240VAC A and B source receptacles.

a) Verify inter-phase voltage of 410 to 480 volts.
b) Verify phase to neutral voltages of 200 to 240 volts.
c) Verify 0.0 volts from Neutral to Ground.
d) Verify less than 1 ohm from Neutral to Ground.

5) If any fault is located with the branch feeder circuit, have a certified electrician correct it.

6) If the branch feeder circuit checks out as acceptable and a problem persists at the µATS™, return it to the factory.

Warranty

The µATS™ made by Zonit Structured Solutions, LLC in the U.S.A. is warranted to be free of defects in materials and workmanship for a period of 3 years from date of purchase. If the product becomes defective during the warranty period, we will elect to either repair or replace it free of charge. After contacting Zonit Structured Solutions for a return authorization, send the product (with the original proof of purchase and freight prepaid) to Zonit Structured Solutions, LLC, 1790 30th Street #140, Boulder, Colorado, 80301.

This warranty does not include repair or replacement of any connected equipment. This warranty excludes damage to Zonit product if a surge or spike reaches the product through an unprotected source connected to it. It does not apply to any product which has been repaired or altered in any manner by anyone other than Zonit Structured Solutions, LLC or to any product which has been installed, connected, used, or otherwise adjusted other than in accordance with written instructions furnished by Zonit Structured Solutions, LLC. Zonit Structured Solutions, LLC shall also not be obligated to repair or replace the product which is found to be in need of repair because of damage resulting from accident or misuse. Zonit Structured Solutions, LLC makes no other express warranty for the product. No agent, representative, dealer, or employee of Zonit Structured Solutions has the authority to increase or alter the obligations or limitations of this warranty.

THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHETHER ARISING BY LAW, CUSTOM, OR CONDUCT, AND THE RIGHTS AND REMEDIES PROVIDED UNDER THIS WARRANTY ARE EXCLUSIVE AND IN LIEU OF ANY OTHER RIGHTS OR REMEDIES. IN NO EVENT SHALL ZONIT STRUCTURED SOLUTIONS LLC BE LIABLE, WHETHER IN CONTRACT, UNDER ANY WARRANTY, IN TORT (INCLUDING NEGLIGENCE), IN STRICT LIABILITY OR OTHERWISE, FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL, INDIRECT OR OTHER SIMILAR DAMAGES, INCLUDING, BUT NOT LIMITED TO, PERSONAL INJURY, PROPERTY DAMAGE, DAMAGE TO OR LOSS OF EQUIPMENT, LOST PROFITS OR REVENUE, COSTS OF RENTING REPLACEMENTS AND OTHER ADDITIONAL EXPENSES. ZONIT STRUCTURED SOLUTIONS, LLC'S LIABILITY SHALL NOT IN ANY EVENT EXCEED THE AMOUNT OF THE PURCHASE PRICE OF THE PRODUCT. Some states do not allow limitations on how long an implied warranty lasts, and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Specifications

Zonit µATS1-HV-(C14, NEMA 6-15 or L6-15)

Electrical	
Nominal Input Voltage	208 V
Acceptable Input Voltage	200-240 V
Nominal Input Frequency	50/60 Hz
Input Connectors	IEC C14, NEMA 6-15P or NEMA L6-15P 2 foot attached linecords. 6 foot line cords available.
Output Connectors	One IEC C13 female
Maximum Amperage Rating	8 A
Physical	
Size (H x W x D)	0.75 x 1.60 x 4.25 in (1.9 x 4.06 x 10.8 cm)
Weight	0.9lb (3.9kg)
Shipping weight	Qty.1: 1.1 lb (0.5 kg), Qty. 25: 24.5 lb (11.1 kg)
Environmental	
Elevation: Operating (above MSL)	0 to 10,000 ft (0 to 3000m)
Elevation: Storage (above MSL)	0 to 50,000 ft (0 to 15 000m)
Temperature: Operating	23 to 140 F (-5 to 60 C)
Temperature: Storage	-13 to 149 F (-25 to 65 C)
Operating Humidity	0 to 95%, non-condensing
Approvals	
Safety Verification	US & Canada: UL/cUL