



TRIPP-LITE S3MT-100KWR480V S3MT-Series 3-Phase Input and Output Transformers Owner's Manual

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TRIPP-LITE S3MT-100KWR480V S3MT-Series 3-Phase Input and Output Transformers



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Introduction

Tripp Lite's S3MT-100KWR480V is a 480V Wrap-Around Transformer that includes two transformers in one enclosure: a 480V (Delta) to 208V (Wye) input isolation step-down transformer and a 208V (Wye) to 480V (Wye) output auto step-up transformer.

The input isolation transformer mitigates utility line surges and spikes, while protecting the UPS. The output auto transformer is designed to support 480V (Wye) IT loads. This model has built-in circuit breakers to prevent dangerous circuit overloads. Eight ball-bearing fans maintain quiet operation and help to dissipate transformer heat. An overheat-sensing relay and switch, combined with an LED light in the front panel, provide over-temperature warning and overheating protection. The UPS system's small footprint and quiet acoustic profile enable installations with minimal space and noise impact. The transformer features a rugged all-metal housing with a front panel similar to the S3M-Series 208V 3-Phase UPS line.

UPS Model	Series Number	Capacity	Description
S3MT-100KWR480V	AG-0513	100kW	Input Transformer: 480V to 208V Isolation Step-Down Transformer Output Transformer: 208V to 480V Auto Step-Up Transformer

Typical applications

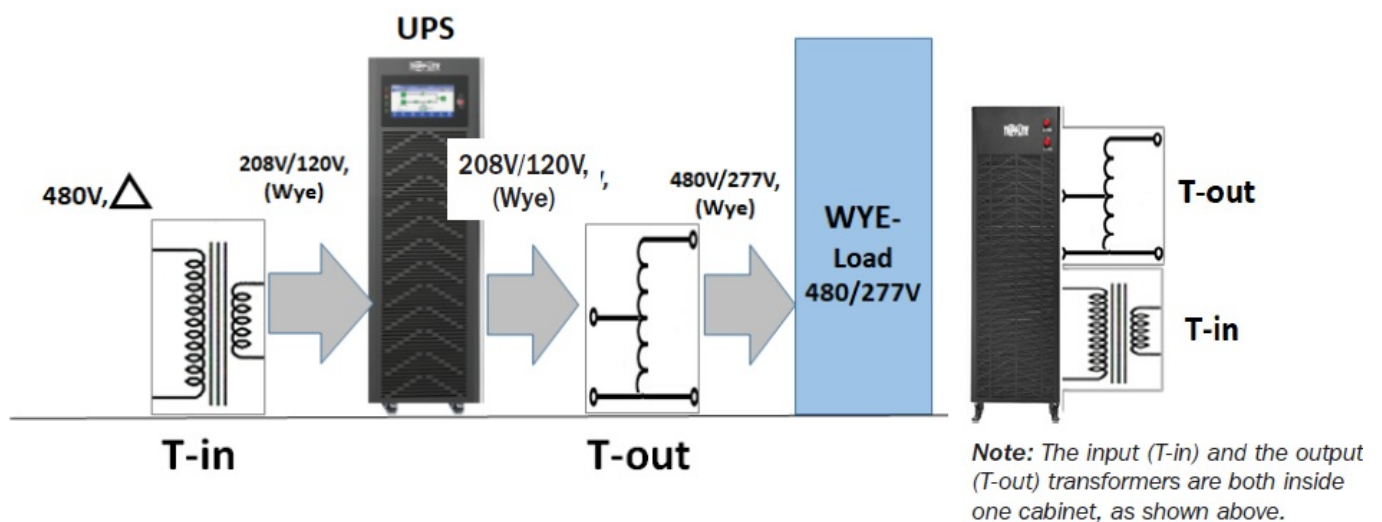
4-Wire (3Ph+N+PE) IT equipment loads in government, manufacturing, hospitals, industrial settings and corporate settings that have 480V electrical mains and 480V IT loads.

Key Features

- The input step-down transformer provides 480V (Delta) to 208V/120V (Wye) isolation protection to the UPS input
- The output auto transformer provides 208V (Wye) to 480V (Wye) step-up to support 480V IT loads
- Circuit breakers at the output of the input transformer and the input of the output transformer
- Overheating warning and protection
- 96.7% to 97.8% efficiency
- Copper windings
- Wide input voltage and frequency operating range: Voltage: -20% to +25% @ 100% load and 40-70 Hz
- Insulation class: 180 material
- Reliability-tested according to ISTA-3B for vibration, shock, drop (tip test)
- UL and CSA TUV certifications
- Rugged all-metal housing shipped ready for installation
- 2-year warranty

Typical Configurations

The 480V Wrap-Around (WR) Transformer includes both the input (T-in) and output (T-out) transformers in one enclosure.



This 480V Wrap-Around Transformer may be purchased separately or as part of kit model with a Tripp Lite S3M80K or S3M100K 3-Phase UPS:

Wrap-Around Transformer Models		Maximum Constant Load	Compatible with 208V 3Ph UPS	Kit Models: UPS + Transformer	
				Kit Models	Kit Models Include
480V	S3MT-100KWR480V	100kW	80-100kW UPS	S3M80K-100KWR4T	S3M80K UPS + S3MT-100KWR480V
				S3M100K-100KWR4T	S3M100K UPS + S3MT-100KWR480V

Important Safety Warnings

SAVE THESE INSTRUCTIONS

This manual contains important instructions for model S3MT-100KWR480V that should be followed during installation and maintenance of the transformer and UPS.

CAUTION! Risk of electrical shock! Hazardous live parts inside this unit are energized from the transformer even when the breaker is turned off.

WARNING! The unit intended for installation in a controlled environment.

CAUTION! A transformer can present a risk of electric shock and high short circuit current. The following precaution should be observed when working on the transformer:

- Remove watches, rings or other metal objects.
- Use tools with insulated handles.

To reduce the risk of electric shock, disconnect the transformer and UPS from the mains supply before performing maintenance or service.

Servicing the 3-phase transformer and UPS should be performed by Tripp Lite certified personnel with knowledge the 3-phase transformer and UPS and all required precautions.

The transformer is extremely heavy. Caution should be taken in moving and positioning equipment. The instructions contained within this manual are important and should be closely followed at all times during installation and follow-up maintenance of the 3-phase transformer and UPS.

CAUTION!

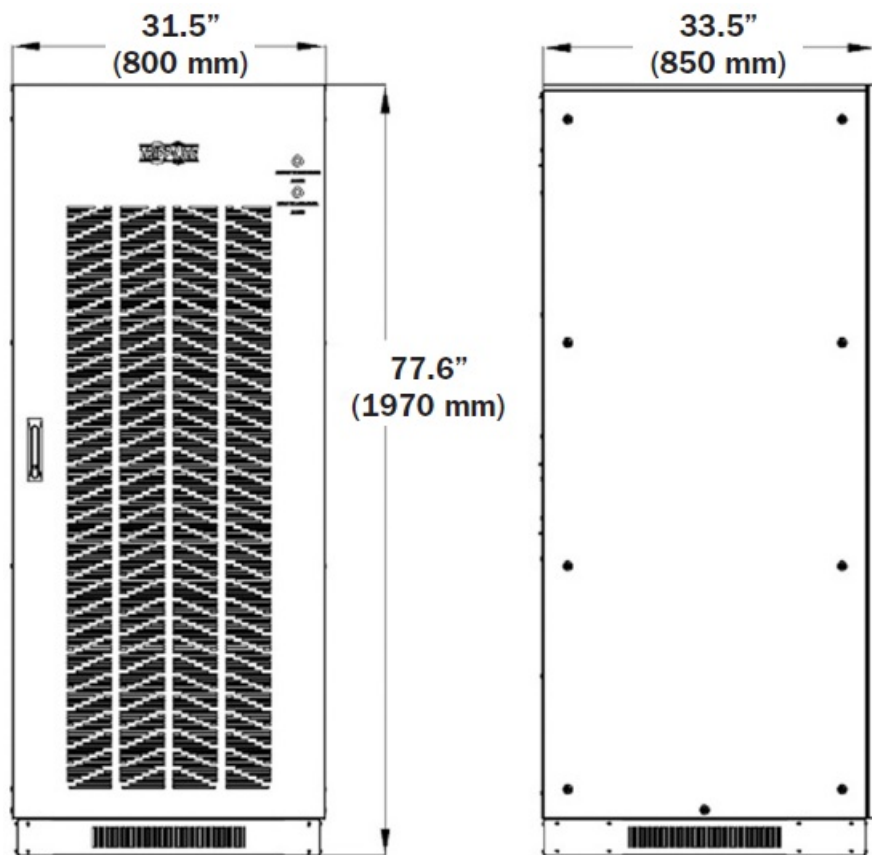
The transformer has a dangerous level of heat. If the transformer's front-panel red LED indicator is on, the unit's outlets may have a dangerous level of heat.

All servicing on this equipment must be carried out by qualified Tripp Lite-certified personnel.

Before conducting any maintenance, repair or shipment, first ensure everything is turned off completely and disconnected.

Installation

Mechanical Data



Physical Requirements

Leave space around the cabinet for operation and ventilation (Figure 3-1):

1. Leave at least 23.6 in. (600 mm) space in the front for ventilation
2. Leave at least 20 in. (500 mm) space at the right and left for operation
3. Leave at least 20 in. (500 mm) space at the back for ventilation

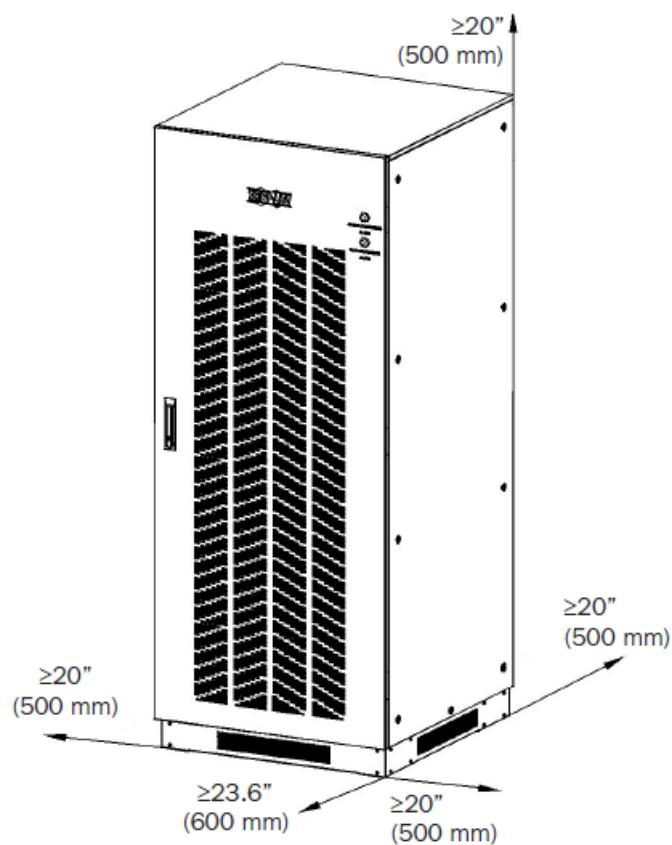


Figure 3-1

1. Don't lean the transformer cabinet when removing it from the packaging.
2. Check the appearance to see if the transformer cabinet was damaged during transport. Do not power on the transformer cabinet if any damage is found. Contact the dealer immediately.
3. Check the accessories against the packing list and contact the dealer in case of missing parts.

Unpacking the UPS

Hold the sliding plate steady. Cut and remove the binding straps (Figure 3-2).

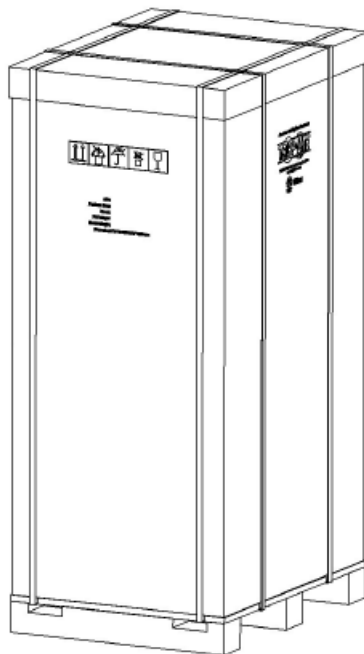


Figure 3-2

Remove the plastic bag and the outer carton (Figure 3-3).

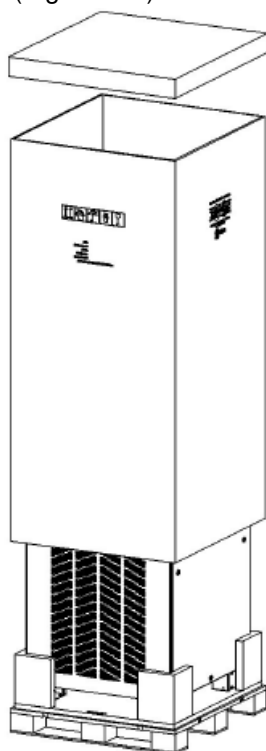


Figure 3-3

Remove the foam packing material and the beveled pallet (Figure 3-4).

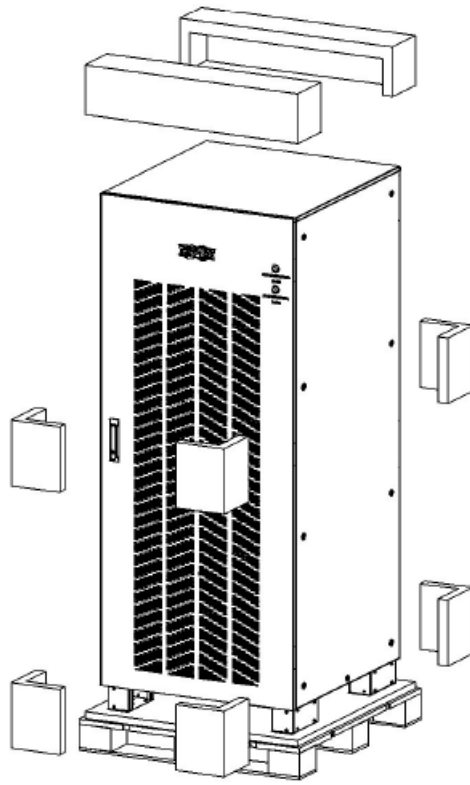


Figure 3-4

Remove the screws securing the cabinet to the pallet (Figure 3-5).

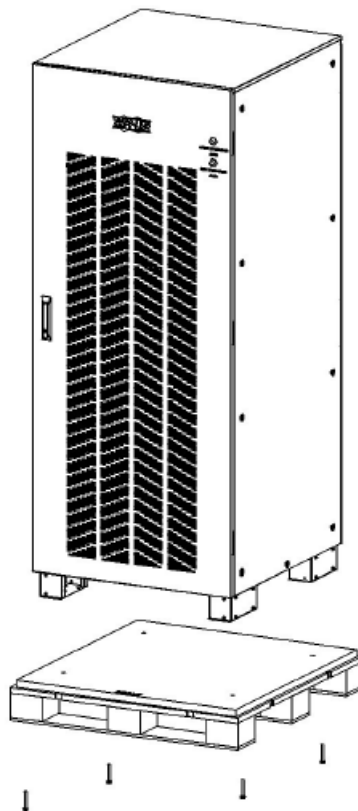


Figure 3-5

Lift the cabinet with a forklift and remove the packing pallets (Figure 3-6).

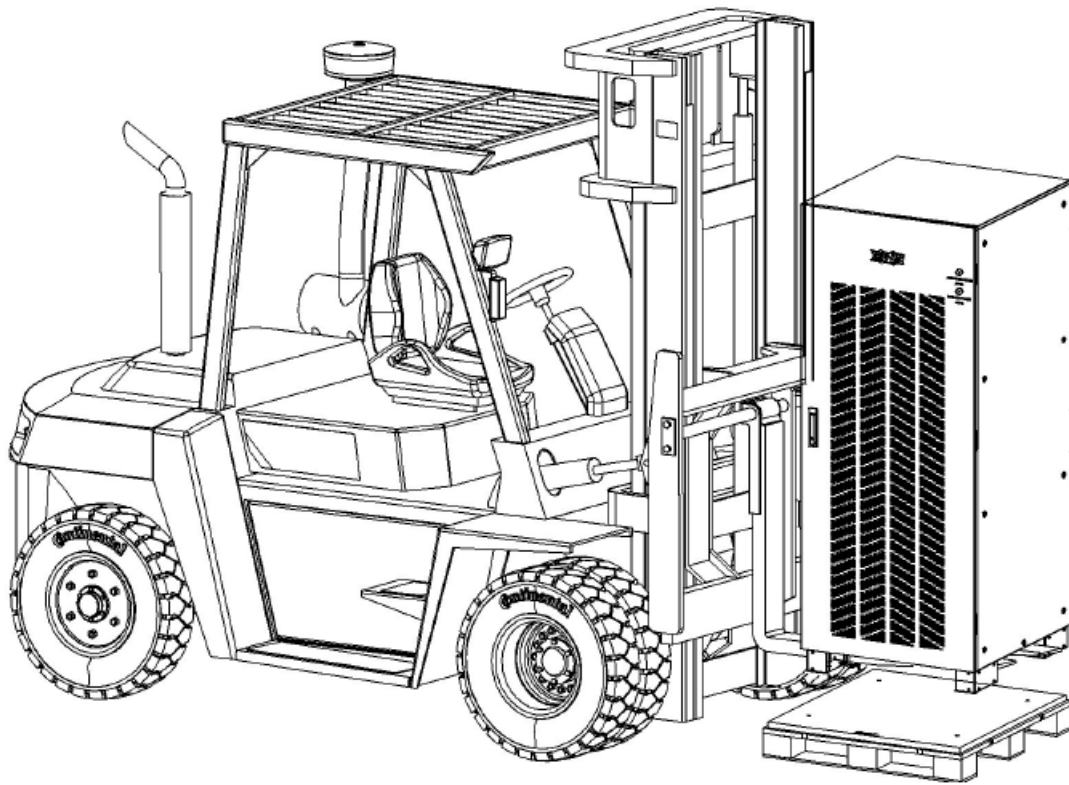


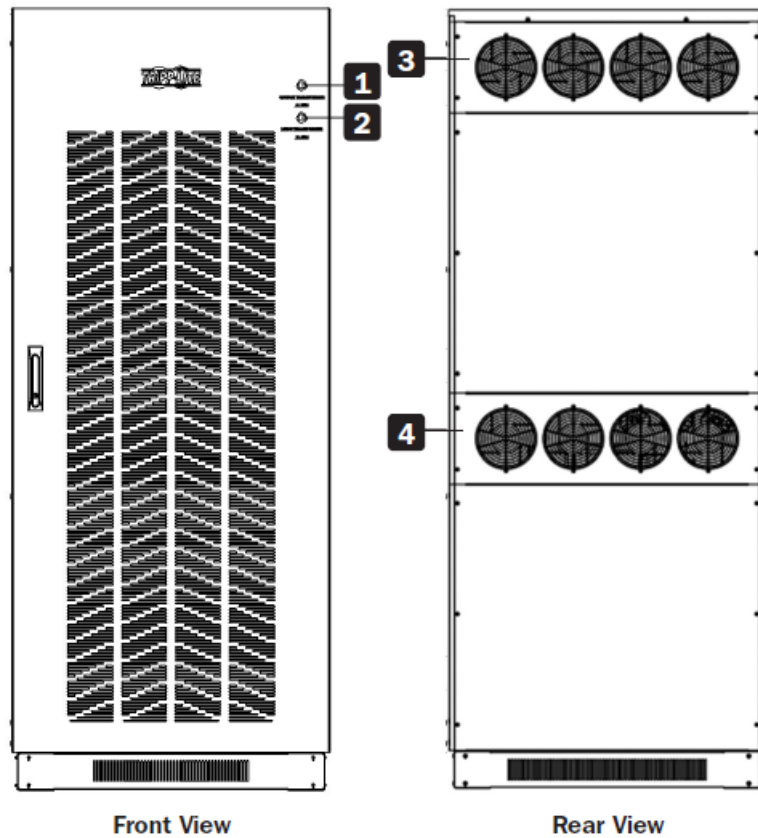
Figure 3-6

Package Contents

Contents	TL P/N	S3MT-100KWR480V
Input and Output Transformers in One Cabinet		1
Owner's Manual	933D06	1
Bottom Skirts	1038F8A	2
Bottom Skirts	103924A	2
Screws for Skirts	3011C3	24

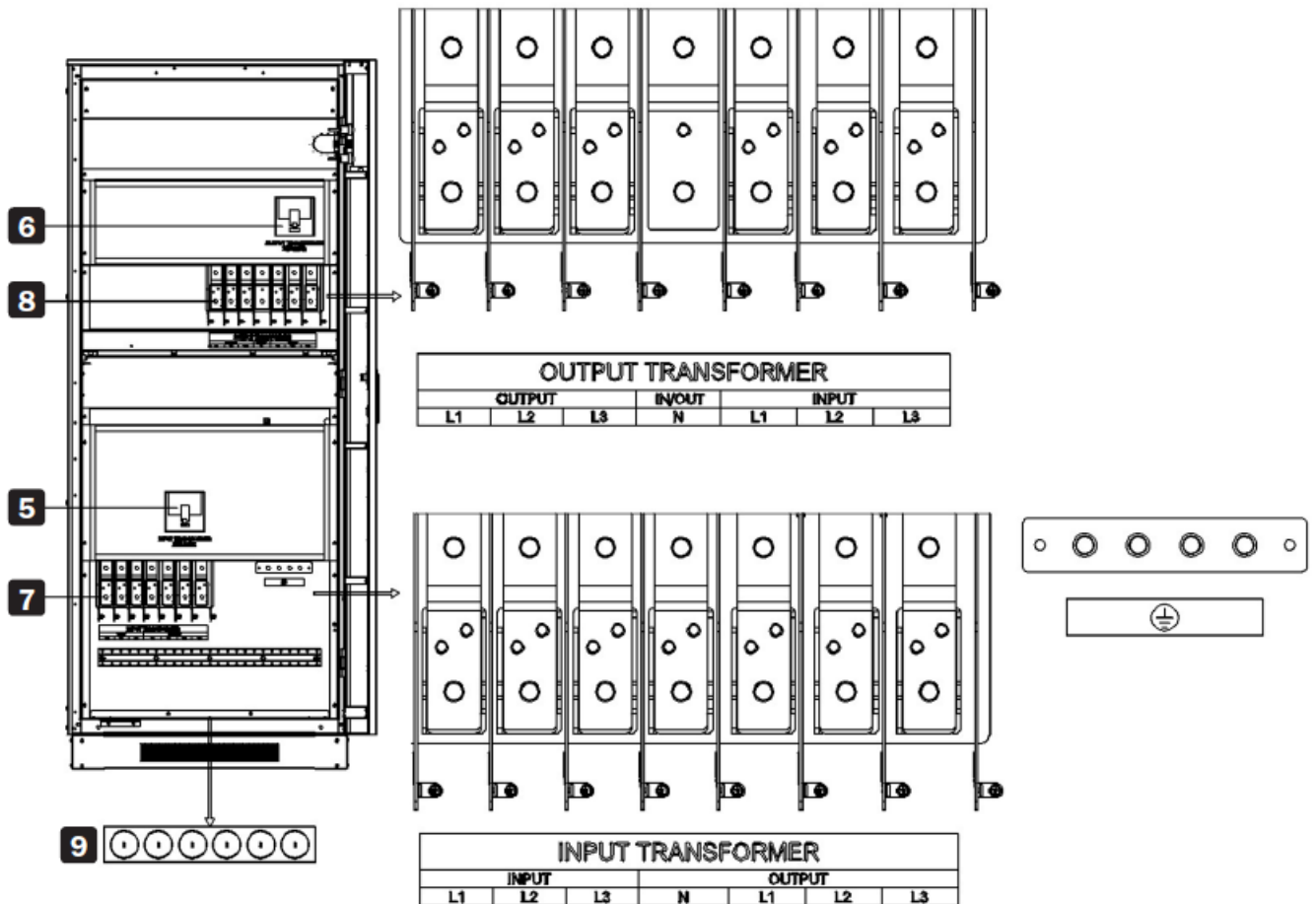
Cabinet Overview

1. Output Transformer Over-Temperature Alarm LED
2. Input Transformer Over-Temperature Alarm LED
3. Output Transformer Cooling Fans
4. Input Transformer Cooling Fans
5. Input Transformer Breaker with Trip
6. Output Transformer Breaker with Trip
7. Input Transformer Cabling Terminal
8. Output Transformer Cabling Terminal
9. Bottom Entry Knockouts (for Power Cable Entry and Exit)



Front View

Rear View



Front View (Terminal Block without Cover) of S3MT-100WR480V

Power Cables

The cable design shall comply with the voltages and currents provided in this section, and in accordance with local electrical codes.

WARNING!

UPON STARTUP, ENSURE YOU ARE AWARE OF THE LOCATION AND OPERATION OF THE EXTERNAL ISOLATORS CONNECTED TO THE UPS INPUT/BYPASS SUPPLY OF THE UTILITY DISTRIBUTION PANEL. ENSURE THESE SUPPLIES ARE ELECTRICALLY ISOLATED AND POST ANY NECESSARY WARNING SIGNS TO PREVENT INADVERTENT OPERATION.

Cable Sizes

UPS Model	Cable Sizes (THHW wiring at 75°C)								
	AC Input		AC Output		Neutral		Grounding		Lu g
	Gauge	Torque	Gauge	Torque	Gauge	Torque	Gauge	Torque	
S3MT- 100K WR480V	Input transformer								
	70mm2 Max. 120 mm2	50N•m	70mm2x2 Max. 120mm2x 2	50N•m	120mm2x 2 Max. 120mm2x 2	50N•m	95mm2 Max. 120mm2x 2	50N•m	M 10
	Output transformer								
	70mm2 Max. 120mm2 x2	50N•m	70mm2x2 Max. 120mm2x 2	50N•m	120mm2x 2 Max. 120mm2x 2	50N•m	95mm2 Max. 120mm2x 2	50N•m	M 10

Input and Output Transformer-to-UPS Connection Line Diagram

Connections are shown below for the cabinet with built-in input isolator transformer, output auto transformer and breakers with trip and fault LED.

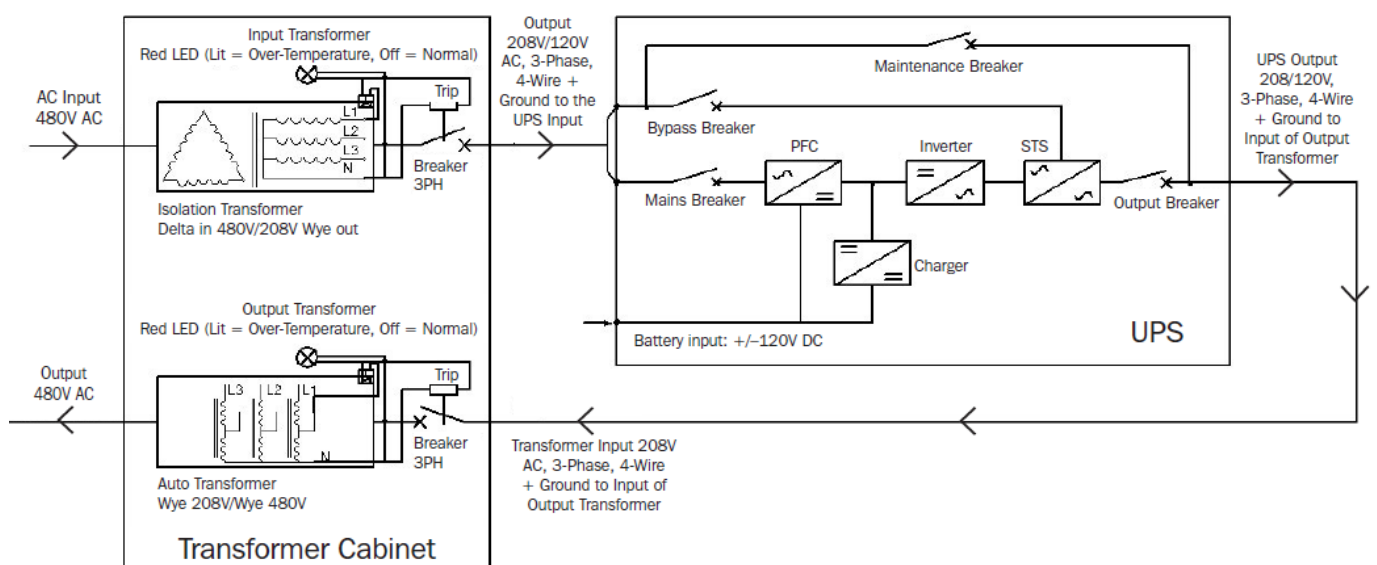


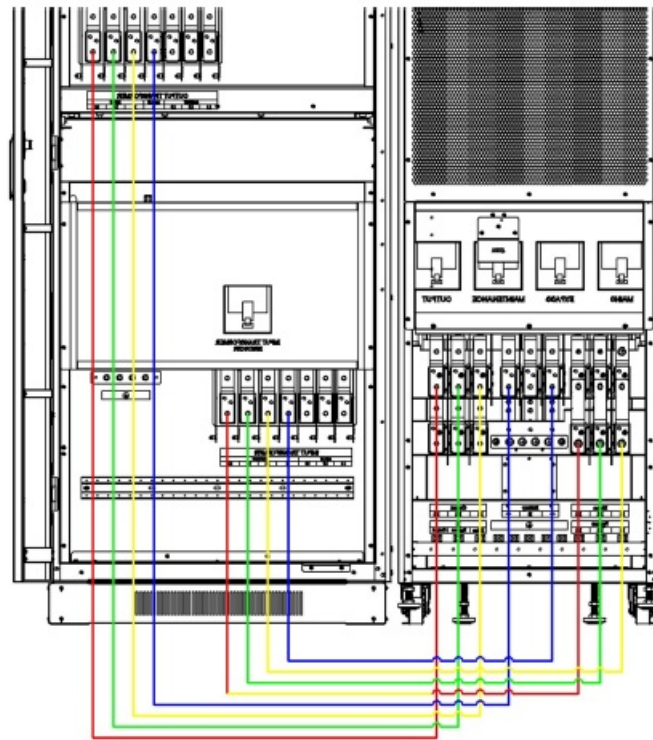
Figure 3-7: Connection Line Diagram

Input and Output Transformer Connections

WARNING: The input transformer (T-in) output neutral is not bonded to chassis ground. Please provide a means

to connect the transformer chassis ground to the transformer output neutral. Note: The transformer chassis ground must be connected to earth ground.

IMPORTANT: You may view and/or download this manual from the tripplite.com website to view the cable connections in colors.



Transformer Cabinet

Note: Transformer input is Delta 3-Wire (3Ph + Ground) and output transformer is Wye 4-Wire (3Ph + N + Ground).

Operation

WARNING:

It is not advised to connect two UPS in parallel when using individual transformers for each UPS.

Over-Temperature Protection

Over-Temperature Warning LED Light (Red)

The transformer includes two warning LED lights on the top portion of the front panel: one light for the input transformer and one light for the output transformer. The corresponding warning light may turn ON when the secondary side of the input (T-in) or when primary side of the output (T-out) transformer reaches a temperature of $160^{\circ}\text{C} \pm 5^{\circ}\text{C}$, i.e. a range of 155°C to 165°C (311°F to 329°F). The warning light turns OFF when the transformer cools to a temperature of $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$, i.e. a range of 120°C to 130°C (248°F to 266°F).

Over-Temperature Protection Relay and Thermal Switch

The transformer includes two warning LED lights on the top portion of the front panel. One light for the input transformer and one light for the output transformer. The corresponding warning light will turn ON when the secondary side of the input (T-in) or when primary side of the output (T-out) transformer reaches a temperature of $160^{\circ}\text{C} \pm 5^{\circ}\text{C}$, i.e. a range of 155°C to 165°C (311°F to 329°F). The warning light turns OFF when the transformer cools to a temperature of $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$, i.e. a range of 120°C to 130°C (248°F to 266°F).

- Input Transformer (T-in): If the secondary side of the (T-in) input transformer reaches temperatures of $160^{\circ}\text{C} \pm 5^{\circ}\text{C}$, i.e. a range of 155°C to 165°C (311°F to 329°F), an over-temperature protection relay and thermal switch will activate and will open the breaker on the secondary side of the transformer. Once the transformer temperature has cooled down to $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$, i.e. a range of 120°C to 130°C (248°F to 266°F) the warning

LED light will turn OFF, and you may manually re-activate (close) the output breaker on the transformer to restart normal operation.

- Output Transformer (T-out): If the primary side of the (T-out) output transformer reaches temperatures of $160^{\circ}\text{C} \pm 5^{\circ}\text{C}$, i.e. a range of 155°C to 165°C (311°F to 329°F), an over-temperature protection relay and thermal switch will activate and will open the breaker on the primary side of the transformer. Once the transformer temperature has cooled down to $125^{\circ}\text{C} \pm 5^{\circ}\text{C}$, i.e. a range of 120°C to 130°C (248°F to 266°F), the warning LED light will turn OFF, and you may manually re-activate (close) the input breaker on the transformer to restart normal operation.

Specifications

Model		S3MT-100KWR480V
	Description	Two 100kW Transformers in one Cabinet: Input Isolation Transformer (T-In) 480V Input (Delta) to 208V Output (Wye) Transformer, and Output AutoTransformer (T-Out) 208V (Wye) Input to 480V(Wye) output
	KVA/kW Ratings for Input (T-in) and Output (T-out) Transformers	100kVA/100kW
	Transformer Type	Dry-Type
INPUT SPECS		
Input Transformer (T-In)	T-in Input Voltage	480V AC
	T-in Input Voltage Range	(-45%,+25%) for 40 % load (-20%,+25%)for 100 % load
	T-in Input Amp(s)	168 AMPS
	T-in Input No. Of Phases	3 PH
	T-in Input Connections	3-Wire (L1, L2, L3 + PE)
	T-in AC Input Configuration	DELTA
	T-in Input Connection Type	Copper Bar
	T-in AC Input Frequency	50/60 Hz
	T-in Frequency Range	40-70 Hz
	T-in Voltage Selection	N/A
	Voltage Drop Ratio: Output with no load to output with Full Load	£ 3%
	T-In Input Isolation	Yes
	T-in Input Inrush Current	1450/3330 (10 mS)
	T-out Input Voltage Range	-45%,+25%)for 40 % load (-20%,+25%)for 100 % load
	T-out Input Voltage	208V

Output Transformer (T-Out)	T-out Input Amp(s)	287A
	T-out No. Of Phases	3PH
	T-out Input Connections	4-Wire (L1, L2, L3 + N + PE)
	T-out AC Input Configuration	WYE
	T-out Input connection type	Copper Bar
	T-out AC Input Frequency	50/60 Hz
	T-out Frequency Range	40-70 Hz
	T-out Voltage Selection	N/A
	T-out Input Isolation	No
	T-out Input Inrush Current	3330 (10 ms)

Model		S3MT-100KWR480V
Output Specs		
Input Transformer (T-In)	T-in AC Output Voltage (V)	208V
	T-in AC Output Amps	374A
	T-in Output No. Of Phases	3PH
	T-in Output Connections	4-Wire (L1, L2, L3 + N + PE)
	T-in AC Output Configuration	Wye
	T-in Connection Type	Copper Bar
	T-in Output Breaker Rating	400A
Output Transformer (T-Out)	T-out AC Output Amps	120A
	T-out output No. Of Phases	3PH
	T-in Output Connections	4-Wire (L1, L2, L3 + N + PE)
	T-out AC Output Configuration	Wye
	T-out Connection Type	Copper Bar
	T-in Output Breaker Rating	400A
Operation		
	Over-Temperature Warning LED (Red)	Turns ON at 160°C ±5°C (155°C/311°F to 165°C/329°F) and turns OFF at 125°C ±5°C (120°C/248°F to 130°C/266°F)

Over-Temperature Protection Reset Device	<p>T-in: Input Transformer</p> <p>I Transformer output OFF (Breaker opens) at a temperature of 160°C ± 5°C,</p> <p>i.e. a range of 155°C to 165°C (311°F to 329°F).</p> <p>I You may turn ON (close) output Breaker Manually when the LED light turns OFF</p> <p>T-out: Output Transformer</p> <p>I Transformer input/primary will be OFF (Breaker opens) at temperatures of 160°C ±5°C (155°C/311°F to 165°C/329°F)</p> <p>I You may turn ON (close) the input breaker manually when the LED light turns OFF</p> <p>I The warning light will turn off at 125°C ±5°C (120°C/248°F to 130°C/266°F), at which time you may close the breaker manually to restart operations.</p>
	Insulation Class 180°C
	Temperature Rise 125°C
	T-in Efficiency @ Full Load 96.70%
	T-in Efficiency @ Half Load 97.80%
	T-out Efficiency @ Full Load 96.70%
	T-out Efficiency @ Half Load 97.80%

Model		S3MT-100KWR480V
Physical Information		
	Unit Height (Inches/cm)	77.6/ 197.1
	Unit Width (Inches/cm)	23.6/ 60
	Unit Depth (Inches/cm)	33.5/ 85.1
	Unit Weight Lbs.	1960/ 889
	Floor Loading	1322 (kg/m²)
	Unit Carton Height Inches	85.4/216.9
	Unit Carton Width Inches	27.6/70.1
	Unit Carton Depth Inches	37.8/96
	Unit Carton Weight	2072/939.8
	Tip-n-Tell Label Required (Y/N)	Yes
	Audible Noise (ENG)	65dB max
	Humidity	95%

	Online Thermal Dissipation at Full Load, (Btu/Hr)	22526
	Storage Temperature (ENG)	-15°C ~ 60°C
	Operating Temperature (ENG)	0°C ~ 40°C
	Operating Elevation	<1000 METERS FOR NOMINAL POWER (OVER 1000M THE POWER DE-RATING IS 1% PER 100M)
Mechanical		
	Transformer Winding	Aluminum Wire
	Cabinet Material	Cold Rolled Galvanized Steel (SGCC)
	Cabinet Color	RAL 9011
	Fan (Type / Quantity)	8 x BALL BEARING, 172×152 mm (1928 TOTAL CFM)
Reliability		
	Vibration	ISTA-3B
	Shock	ISTA-3B
	Drop	ISTA-3B (Tip Test)
Agency Approvals		
	Approving Agency	cTUVs
	Agency Standard Tested	UL 1778 5th Edition
	Canadian Approvals	CSA 22.2-107.3-14
	CE Approvals	N/A
	EMI Approvals	N/A
	RoHS/REACH	Yes

Storage

Before storing the isolation transformer, ensure all connections have been disconnected and all breakers are turned OFF. Replace all input or output access covers to avoid damaging any contacts.

The transformer must be stored in a clean, secure environment with temperatures between 5°F to 140°F (-15°C to 60°C) and relative humidity less than 90% (non-condensing).

Store the transformer in its original shipping container, if possible.

WARNING: The transformer(s) is/are very heavy. Before storing the transformer, make sure to take into account the floor loading (kg/m²) requirements listed in section 5. Specifications under “Physical Info” to store safely.

Warranty and Regulatory Compliance

Limited Warranty

Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship for a period of 2 years from the date of initial purchase. If the product should prove defective in material or workmanship within that period, Seller will repair or replace the product, in its sole discretion. Service under this Warranty includes parts only. International customers should contact Tripp Lite support at

intlservice@tripplite.com. Continental USA customers should contact Tripp Lite Customer Service at 773-869-1234 or visit intlservice@tripplite.com tripplite.com/support/help

THIS WARRANTY DOES NOT APPLY TO NORMAL WEAR OR TO DAMAGE RESULTING FROM ACCIDENT, MISUSE, ABUSE OR NEGLIGENCE. SELLER MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY EXPRESSLY SET FORTH HEREIN. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ALL IMPLIED WARRANTIES, INCLUDING ALL WARRANTIES OF MERCHANTABILITY OR FITNESS, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD SET FORTH ABOVE; AND THIS WARRANTY EXPRESSLY EXCLUDES ALL INCIDENTAL AND CONSEQUENTIAL DAMAGES. (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 limitations or exclusions may not apply to you. This Warranty gives you specific legal rights, and you may have other rights, which vary from jurisdiction to jurisdiction.)
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WARNING: The individual user should take care to determine prior to use whether this device is suitable, adequate or safe for the use intended. Since individual applications are subject to great variation, the manufacturer makes no representation or warranty as to the suitability or fitness of these devices for any specific application.

Product Registration

Visit tripplite.com/warranty today to register your new Tripp Lite product. You will be automatically entered into a drawing for a chance to win a FREE Tripp Lite product!*

* No purchase necessary. Void where prohibited. Some restrictions apply. See website for details.

WEEE Compliance Information for Tripp Lite Customers and Recyclers (European Union)

Under the Waste Electrical and Electronic Equipment (WEEE) Directive and implementing regulations, when customers buy new electrical and electronic equipment from Tripp Lite they are entitled to:


- Send old equipment for recycling on a one-for-one, like-for-like basis (this varies depending on the country)
- Send the new equipment back for recycling when this ultimately becomes waste

Use of this equipment in life support applications where failure of this equipment can reasonably be expected to cause the failure of the life support equipment or to significantly affect its safety or effectiveness is not recommended.

Tripp Lite has a policy of continuous improvement. Specifications are subject to change without notice. Photos and illustrations may differ slightly from actual products.

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Documents / Resources

	<p>TRIPP-LITE S3MT-100KWR480V S3MT-Series 3-Phase Input and Output Transformers [pdf] Owner's Manual S3MT-100KWR480V S3MT-Series 3-Phase Input and Output Transformers, S3MT-100KWR480V, S3MT-Series 3-Phase Input and Output Transformers</p>
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References

- [Eaton - Power and Connectivity Solutions](#)

- [7L Help Center | Eaton](#)
- [7L Help Center | Eaton](#)
- [7L Product Registration | Eaton](#)

Manuals+.