

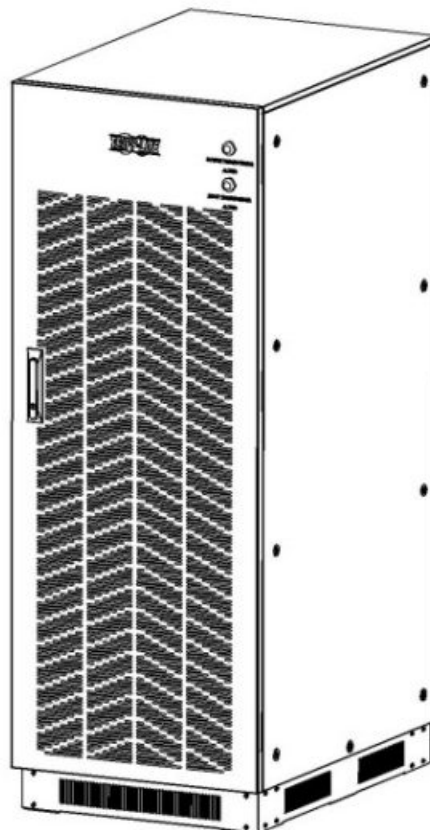


TRIPP-LITE S3MT-60KWR480V S3MT-Series 3-Phase Input and Output Transformers Owner's Manual

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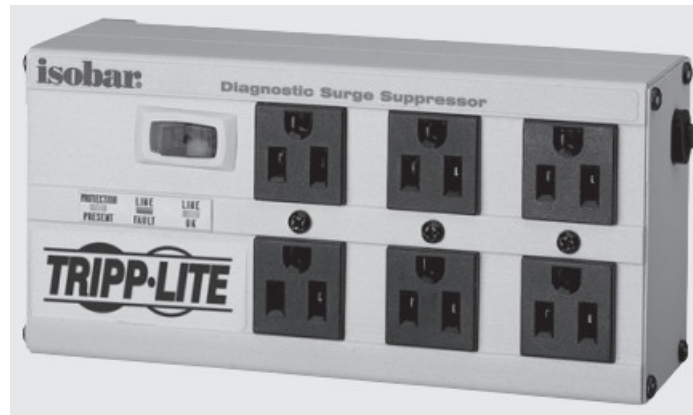
**S3MT-60KWR480V S3MT-Series 3-Phase
Input and Output Transformers
Owner's Manual**



Models: S3MT-30KWR480V, S3MT-60KWR480V

WARRANTY REGISTRATION

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<http://www.tripplite.com/warranty>



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Introduction

Tripp Lite's S3MT-30KWR480V and S3MT-60KWR480V are 480V wrap-around models that include 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

autotransformer is designed to support 480V (Wye) IT loads. These models have built-in circuit breakers to prevent dangerous circuit overloads. Four ball-bearing fans for S3MT-30KWR480V and eight ball-bearing fans for S3MT-60KWR480V maintain quiet operation and help to dissipate transformer heat. An overheat-sensing relay and thermal 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. All transformer models feature stainless steel housings with front panels similar to the S3M-Series 208V 3-Phase UPS line.

UPS Model	Series Number	Capacity	Description
S3MT-30KWR480V (Not compatible with SUT20K or SUT30K UPS)	AG-0511	30kW	input Transformer: 480V to 208V Isolation Step-Down Transformer Output Transformer: 208V to 480V Auto Step-Up Transformer
S3MT-60KWR480V (Not compatible with SUT40K or SUT60K UPS)	AG-0512	60kW	input Transformer: 480V to 208V Isolation Step-Down Transformer Output Transformer: 208V to 480V Auto Step-Up Transformer

Typical applications

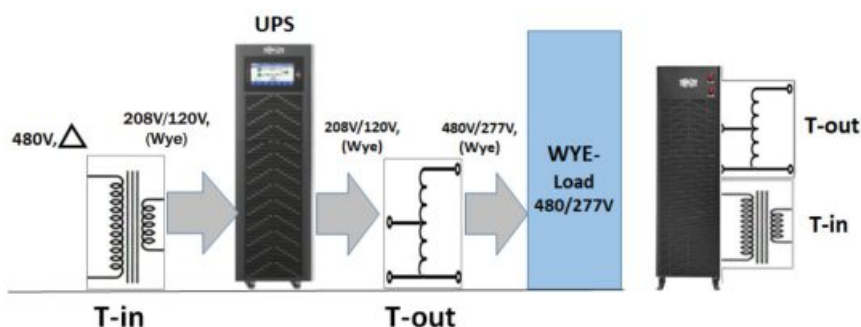
4-Wire (3Ph+N+PE) IT equipment loads in government, manufacturing, hospitals, industrial settings, and corporate settings that have 480V electrical mains and 480V IT loads.

Key Features

- The input step-down transformer provides 480V (Delta) to 208V/120V (Wye) isolation protection to the UPS input
- The output autotransformer 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
- 95.2% to 97.5% efficiency
- Wide input voltage and frequency operating range: Voltage: -20% to +25% @ 100% load and 40-70 Hz
- Insulation class: 180°C material
- Reliability-tested according to ISTA-3B for vibration, shock, drop (tip test)
- UL and CSA TUV certifications
- Rugged stainless steel 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.



These 480V Transformers may be purchased separately or as part of a kit model with a Tripp Lite S3M Series 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-30KWR480V	30kW	20-30kW UPS (Not compatible with SUT20K or SUT 30K)	S3M30K-30KWR4T	S3M30K UPS + S3MT-30KWR480V
	S3MT-60KWR480V	60kW	50 60kW UPS (Not compatible with SUT40K or SUT 60K)	S3M50K-60KWR4T	S3M50K UPS + S3MT-60KWR480V
				S3M60K-60KWR4T	S3M60K UPS + S3MT-60KWR480V

Important Safety Warnings

SAVE THESE INSTRUCTIONS

This manual contains important instructions for models S3MT-30KWR480V and S3MT-60KWR480V that should be followed during the 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 is intended for installation in a controlled environment.



CAUTION! A transformer can present a risk of electric shock and a 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 main supply before performing maintenance or service.

Servicing of the 3-phase transformer and UPS should be performed by Tripp Lite certified personnel with knowledge of 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 Tripp Lite-certified service personnel.

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

Special Symbols – The following symbols are used on the transformer to warn you of precautions:



RISK OF ELECTRIC SHOCK – Observe the warning that a risk of electric shock is present.



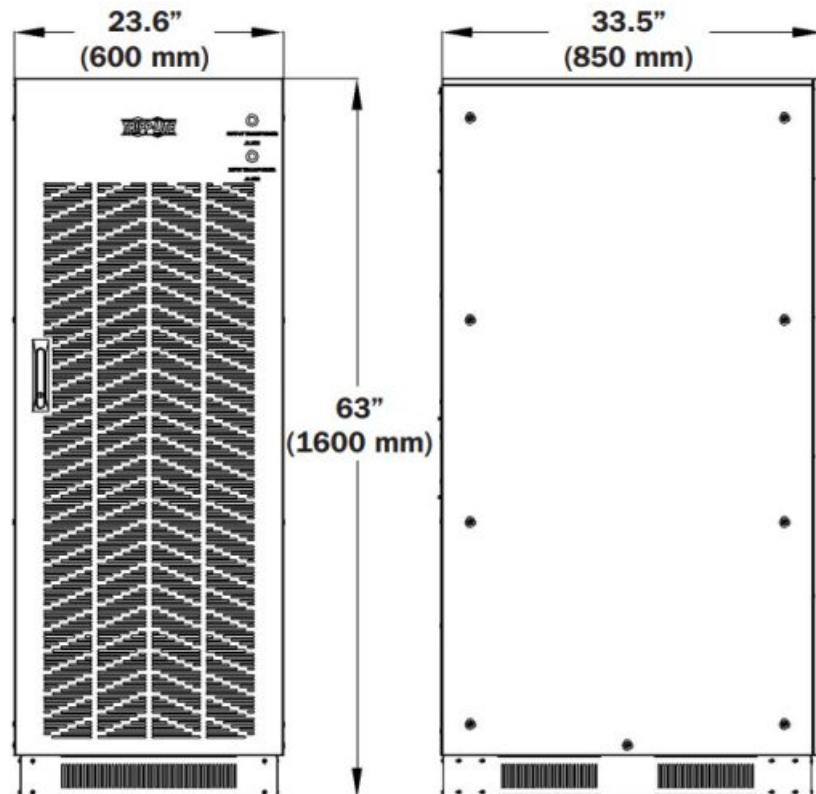
CAUTION – REFER TO OWNER'S MANUAL for information regarding important operating and maintenance instructions.



SAFE GROUNDING TERMINAL – Indicates THE primary safe ground.

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 the operation
3. Leave at least 20 in. (500 mm) space at the back for ventilation

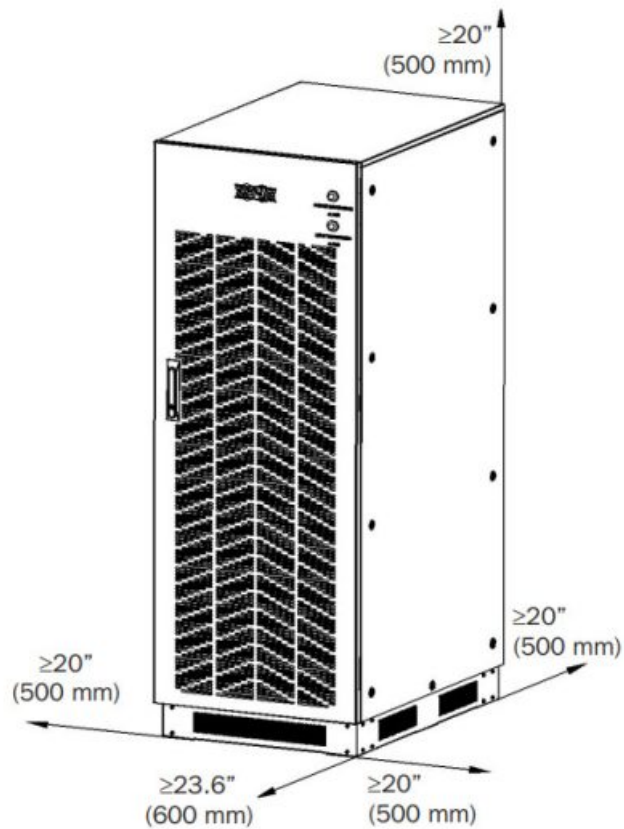


Figure 3-1

Package Inspection

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

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

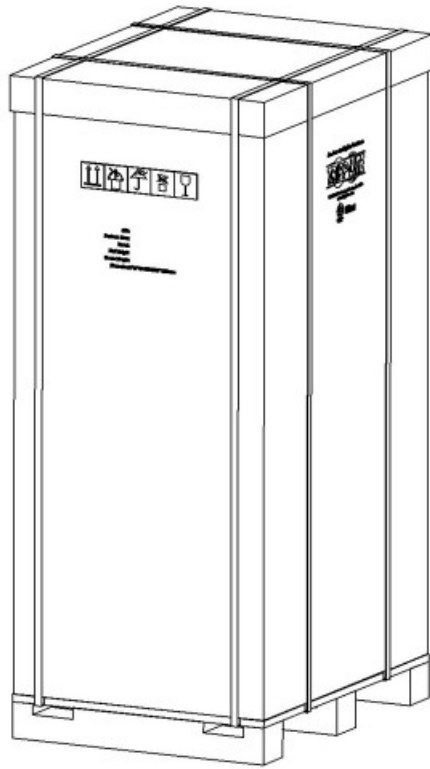


Figure 3-2

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

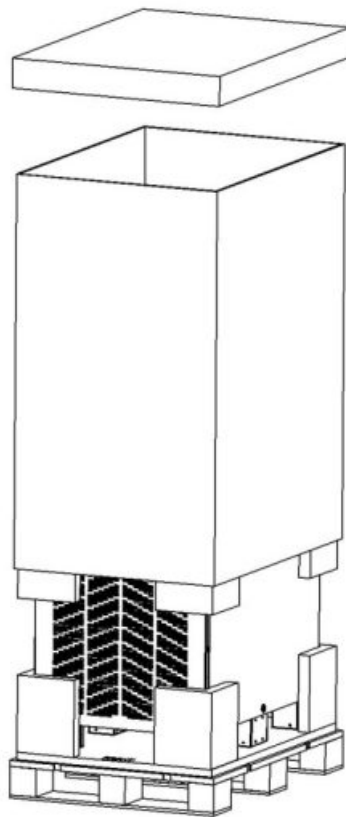


Figure 3-3

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

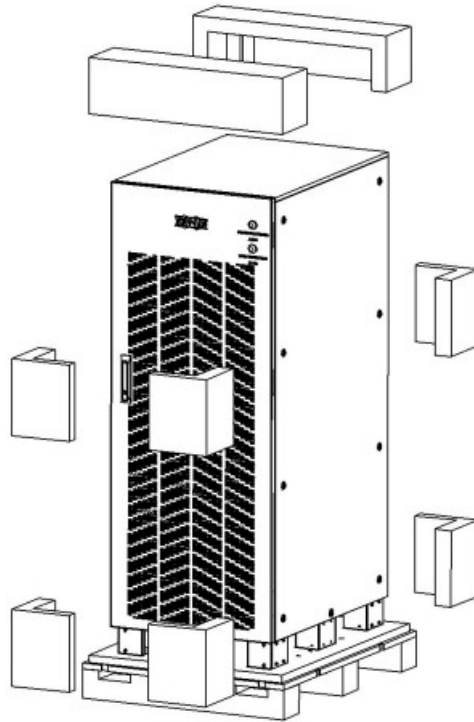


Figure 3-4

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

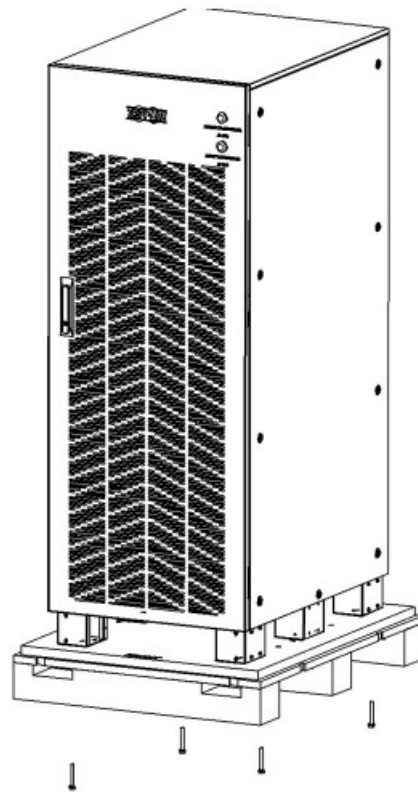


Figure 3-5

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

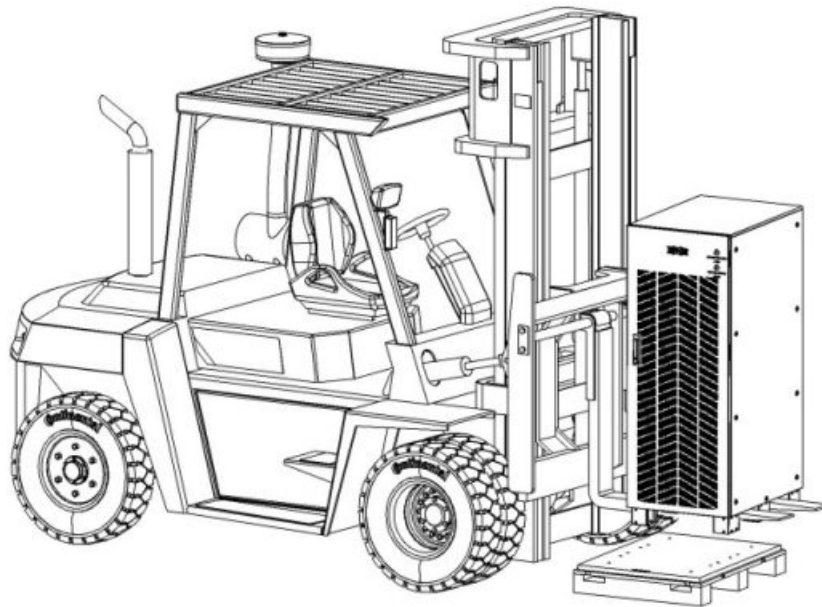
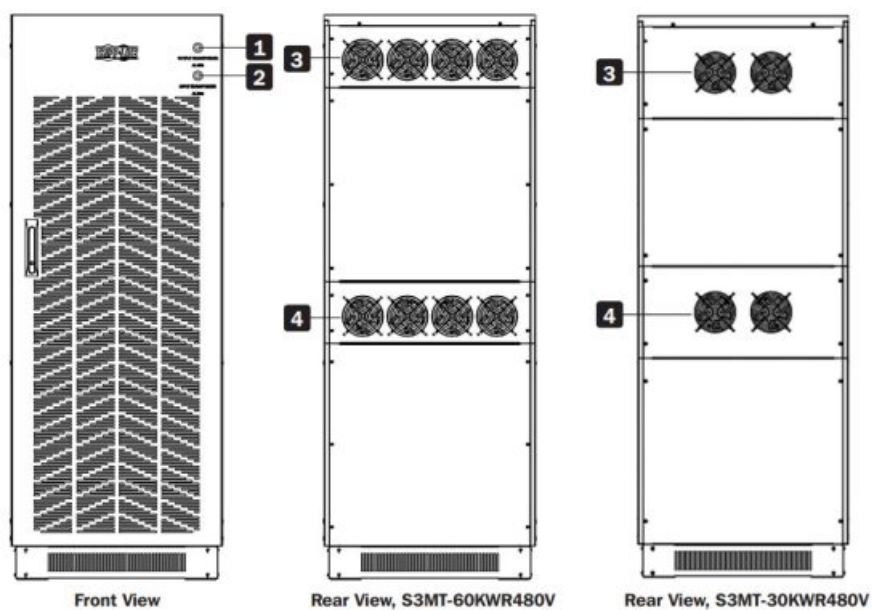


Figure 3-6

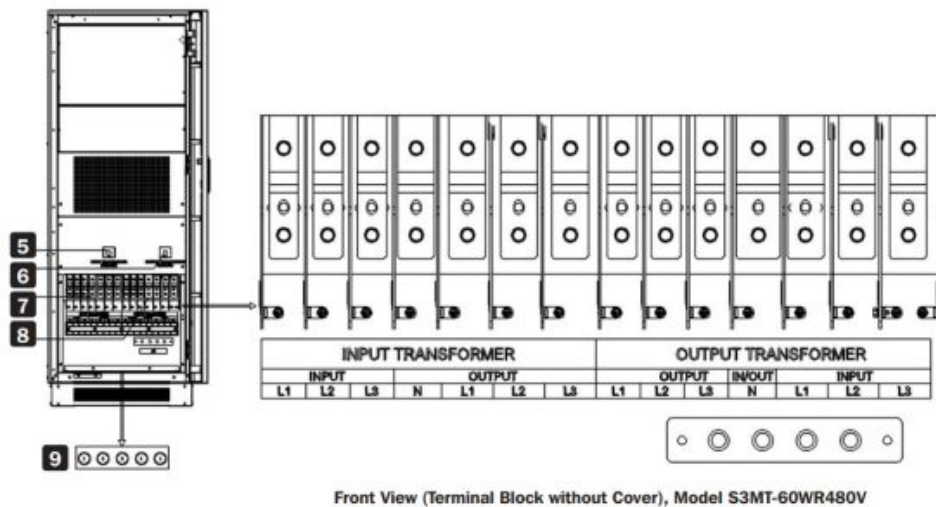
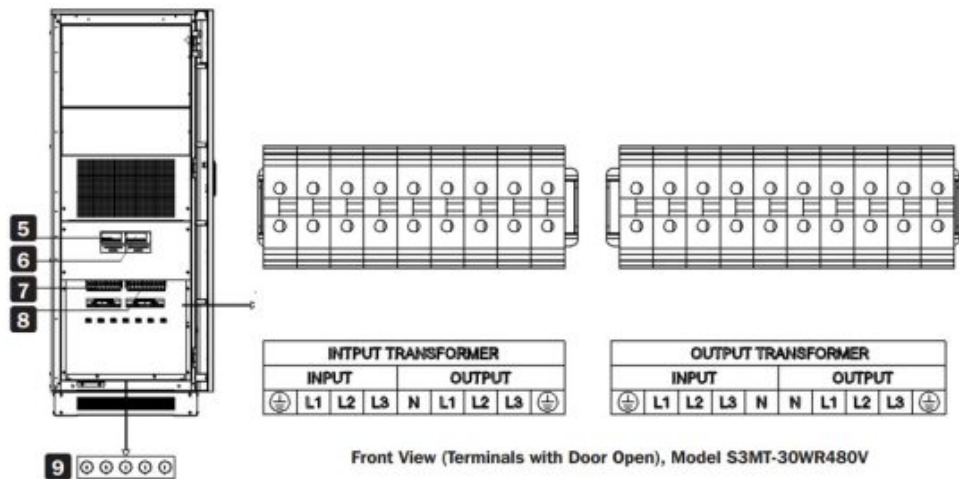
Package Contents

Contents	TL P/N	S3MT-30KWR480V	S3MT-60KWR480V
Input and Output Transfers in One Cabinet		1	1
Owner's Manual	933D04	1	1
Bottom Skirts	103922A	2	2
Bottom Skirts	103923A	2	2
Screws for Skirts	3011C3	24	24

Cabinet Overview



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



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	
	Gauge	Torque	Gauge	Torque	Gauge	Torque	Gauge	Torque
S3MT- 30KWR 480V	Input transformer							
	6AWG Max. 3 AWG	6.5N•m	3 AWG Max. 3 AWG	6.5N•m	3 AWG Max. 3 AWG	6.5N • m	3 AWG Max. 3 AWG	6.5N •rn
	Output transformer							
	6AWG Max. 3 AWG	6.5N•m	3 AWG Max. 3 AWG	6.5N •rn	3 AWG Max. 3 AWG	6.5N •rn	3 AWG Max. 3 AWG	6.5N•m

UPS Model	Cable Sizes (THHW wiring at 75°C)								
	AC Input		AC Output		Neutral		Grounding		Lug
	Gauge	Torque	Gauge	Torque	Gauge	Torque	Gauge	Torque	
S3MT- 60KWR480 V	Input transformer								
	50mm2 Max. 50mm2x 2	25N•m	50mm2 x 2 Max. 50mm2 x 2	25N•m	70mm2x 2 Max. 70mm2x 2	25N•m	50mm2 Max. 50mm2 x 2	25N •rn	M8
	Output transformer								
	50mm2 Max. 50mm2x 2	25N•m	50mm2 x 2 Max. 50mm2 x 2	25N•m	70mm2x 2 Max. 70mm2x 2	25N •rn	50mm2 Max. 50 mm2 x2	25N •rn	M8

Input and Output Transformer-to-UPS Connection Line Diagram

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

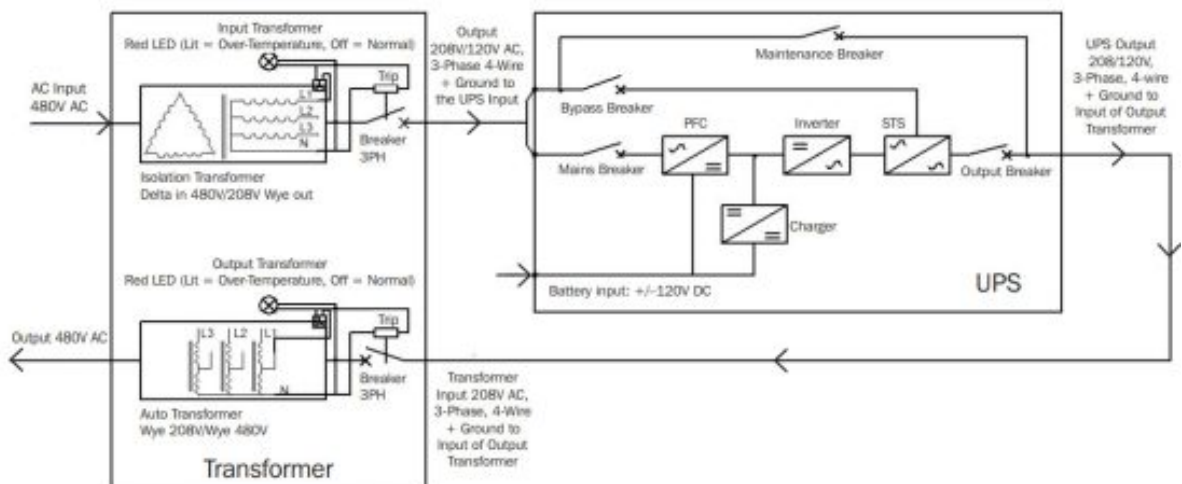


Figure 3-7: Connection Line Diagram

Multiple Transformer Connections



WARNING:

The input transformer (T-in) output neutral is not bonded to the 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 the earth ground.



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

S3MT-30KWR480V Connections for 20kVA to 30kVA 208V UPS Systems

Note: This transformer is not compatible with SUT20K and SUT30K UPS models.

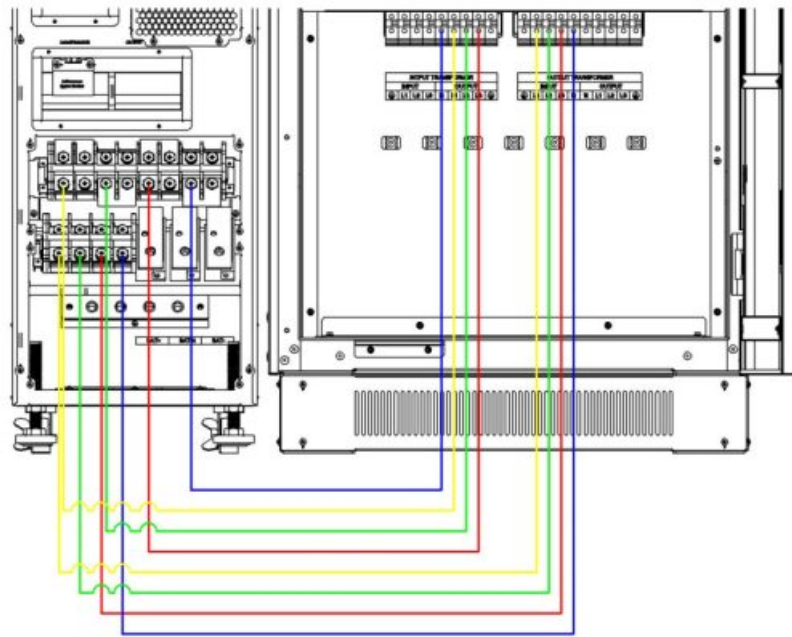


Figure 3-8: UPS

Transformer Cabinet

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

S3MT-60KWR480V Connections for 50kVA or 60kVA UPS Systems

Note: This transformer is not compatible with SUT40K and SUT60K UPS models.



WARNING:

The input transformer (T-in) output neutral is not bonded to the 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 the earth ground.



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

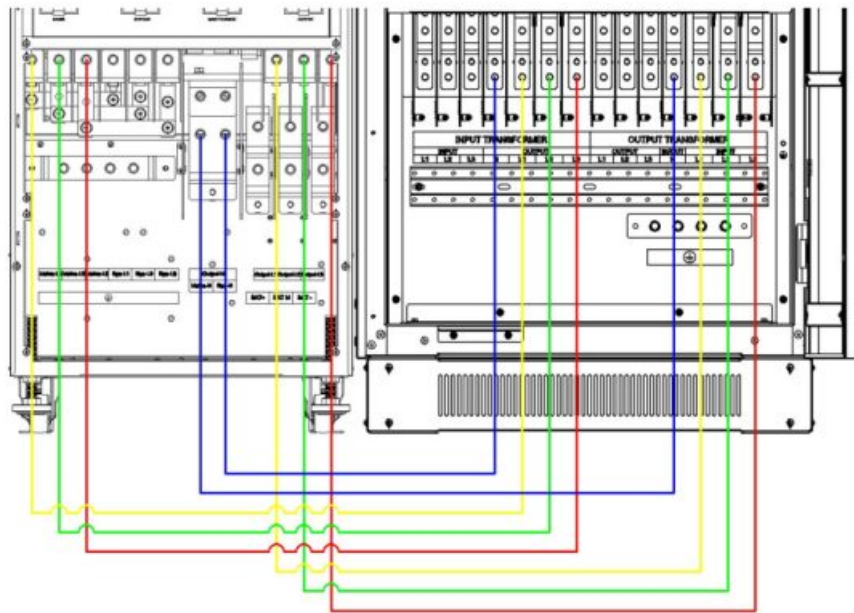


Figure 3-9: UPS

Transformer Cabinet

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

Operation

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 will turn ON when the secondary side of the input (T-in) or when the 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 transformers include an over-temperature protection relay and thermal switch on the secondary sides of the input (T-in) and on the primary side of the output (T-out) transformer to protect the transformer from overheating.

- **Input Transformers (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), and over-temperature protection relay and the 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 Reactivate (close) the output breaker on the transformer to restart normal operation.
- **Output Transformers (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), and over-temperature protection relay and the 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

Models		S3MT-30KWR480V	S3MT-60KWR480V
	Description	Two 30kW Transformer in one Ca binet: Input Isolation Transformer (T-In) 480V Input (Delta) to 208V Output (Wye) Transformer, and Output Au to Transformer (T-Out) 208V (Wye) I nput to 480V (Wye) output	Two 60kW Transformer in one Ca binet: Input IsolationTransformer (T-In) 480V Input (Delta) to 208V Output (Wye) Transformer, and Output Au to Transformer (T-Out) 208V (Wye) I nput to 480V (Wye) output
	KVA/kW Ratings for Input (T i n) and Output (T-out) Transfor mers	30kVA/30kW	60kVA/30kW
	Transformer Type	Dry-Type	
INPUT SPECS of BOTH TRANSFORMERS			
Input Trans form er(T-I n)	T-in Input Voltage	480V	480V
	T-in Input Voltage Range	-45%,+25%) for 40 % load (-20%,+25%) for 100 % load	
	T-in Input Amp(s)	51A	101A
	T-in Input No. Of Phases	3PH	3 PH
	T-in Input Connections	3-Wire (L1, L2, L3 + PE)	
	T-in AC Input Configuration	Delta	Delta
	T-in Input Connection Type	Copper Bar	Copper Bar
	T-in AC Input Frequency	50/60	50/60
	T-in Frequency Range	40/70 Hz	40/70 Hz
	T-in Voltage Selection	N/A	WA
	Voltage Drop Ratio: Output wit h no load to output with Full L oad	3%	
	T-In Input Isolation	Yes	
	T-in Input Inrush Current	d010A (10 ms)	I 920A (10 ms)
Outp ut Tr ansfo rmer(T-Ou t)	T-out Input Voltage Range	(-45%,+25%) for 40 % load (-20%,+25%) for 100 % load	
	T-out Input Voltage	208V	
	T-out Input Amp(s)	87A	173A
	T-out No. Of Phases	3PH	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	Copper Bar
	T-out AC Input Frequency	50/60	50/60

	T-out Frequency Range	40/70 Hz	40-70 Hz
	T-out Voltage Selection	N/A	WA
	T-out Input Isolation	No	
	T-out Input Inrush Current	1010A (10 ms)	2020A (10 ms)

Models		S3MT-30KWR480V	S3MT-60KWR480V
T-out Input Isolation			
Input Transformer(T-In)	T-in AC Output Voltage (V)	208V	208V
	T-in AC Output Amps	113A	225A
	T-in Output No. Of Phases	3PH	3PH
	T-in Output Connections	4-Wire (L1, L2, L3 +N + PE)	
	T-in AC Output Configuration	Me	Me
	T-in Connection Type	Copper Bar	Copper Bar
	T-in Output Breaker Rating	125A	250A
Output Transformer(T-Out)	T-out AC Output Amps	36A	72A
	T-out output No. Of Phases	3PH	3PH
	T-Out Output Connections	4-Wire (L1, L2, L3 + N + PE)	
	T-out AC Output Configuration	Me	Me
	T-out Connection Type	Copper Bar	Copper Bar
	T-in Output Breaker Rating	125A	250A
Operation			
	Over-Temperature Warning LED Light (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> <ul style="list-style-type: none"> Transformer output/ secondary will be OFF (Breaker opens) at 160°C ± 5°C (155°C/311°F to 165°C/329°F). You may turn ON (close) output breaker manually when the LED Light turns OFF. 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 re-start operations. <p>T-out: Output Transformer</p> <ul style="list-style-type: none"> Transformer input/primary will be OFF (Breaker opens) at temperatures of 160°C ±5°C (155°C/311°F to 165°C/329°F). You may turn ON (close) input breaker manually when the LED light turns OFF. The Warning LED 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 re-start operations. 	
Insulation Class	180°C	
Temperature Rise	125°C	
T-in Efficiency @ Full Load	95.%	97.%
T-in Efficiency @ Half Load	98.%	98.%
T-out Efficiency @ Full Load	95.%	97.%
T-out Efficiency @ Half Load	98.%	98.%

Models		S3MT-30KWR480V	I S3MT-60KWR480V
Physical Information			
	Unit Height (Inches/cm)	63/160	
	Unit Width (Inches/cm)	23.6/60	
	Unit Depth (Inches/cm)	33.5/85.1	
	Unit Weight (Lbs./Kg)	961/436	1398/634
	Floor Loading	855 kg/m2	1243 kg/m2
	Unit Carton Height (Inches/cm)	70.9/180.1	
	Unit Carton Width (Inches/cm)	27.6/70.1	
	Unit Carton Depth (Inches/cm)	37.8/96	
	Unit Carton Weight (Lbs./Kg)	1058/479.9	1510/684.9

	Tip-n-Tell Label Required (Y/N)	Yes	
	Audible Noise (ENG)	65dB max	
	RH Humidity, Non-Condensing	95%	
	Online Thermal Dissipation at Full Load, (Btu/Hr)	9829	7167
	Storage Temperature (ENG)	-15 — 60C	
	Operating Temperature (ENG)	0°C — 40 °C	
	Operating Elevation	<1000 meters for nominal power (over 100 m, the power de-rating is 1% per 100 m)	
Mechanical			
	Transformer Winding	Aluminum	
	Cabinet Material	Cold Rolled Galvanized Steel (SGCC)	
	Cabinet Color	RAL 9011	
	Fan (Type / Quantity)	4x Ball Bearing, 120 mm (576 total CFM)	8x Ball Bearing, 120 mm (1152 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 tripplite.com/support/help. THIS WARRANTY DOES NOT APPLY TO NORMAL WEAR OR TO DAMAGE RESULTING FROM ACCIDENT, MISUSE, ABUSE OR NEGLECT. 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.)

Tripp Lite; 1111 W. 35th Street; Chicago IL 60609; USA

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 the 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 the 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.



Manufacturing
Excellence.

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Documents / Resources

	<p>TRIPP-LITE S3MT-60KWR480V S3MT-Series 3-Phase Input and Output Transformers [pdf]</p> <p>Owner's Manual</p> <p>S3MT-30KWR480V, S3MT-60KWR480V, S3MT-60KWR480V S3MT-Series 3-Phase Input and Output Transformers, S3MT-60KWR480V, S3MT-Series 3-Phase Input and Output Transformer S</p>
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References

- [Eaton - Power and Connectivity Solutions](#)
- [Help Center | Eaton](#)
- [Help Center | Eaton](#)
- [Product Registration | Eaton](#)