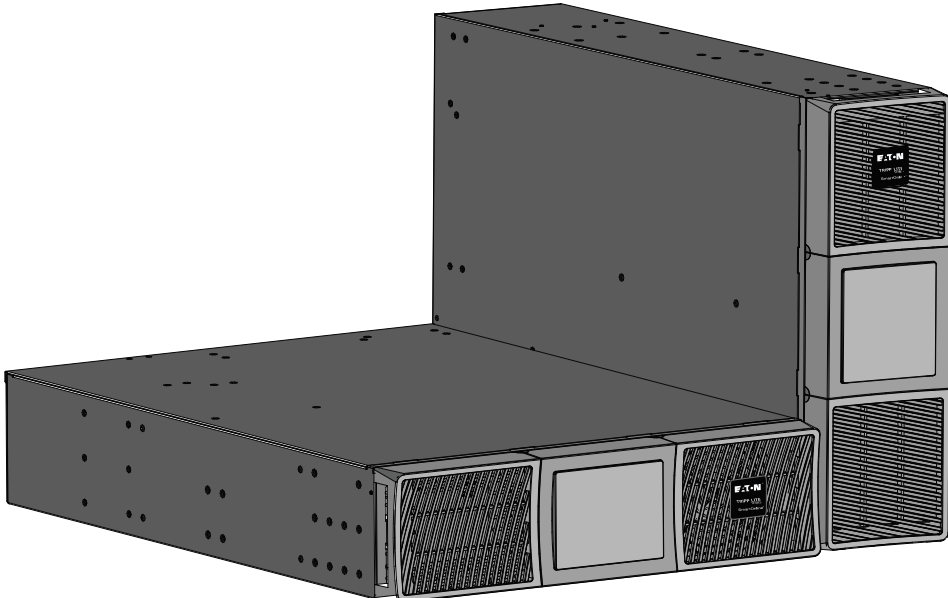


**Eaton Tripp Lite SmartOnline Series**

**Transformer Advanced User's Guide**



**SUTFMR**

## Safety Instructions

**SAVE THESE INSTRUCTIONS. This manual contains important instructions that should be followed during installation and maintenance of the Tripp Lite 5KVA transformer module.**

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.

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### **WARNING**

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This is a Class A-transformer Product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take additional measures.

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## Suppliers Declaration of Conformity

Unique Identifier: EATON, SUTFMR

Responsible Party:

EATON  
10000 Woodward Ave  
Woodridge, IL 60517 USA  
773-869-1111

[tripplite.eaton.com](http://tripplite.eaton.com)

## Special Symbols

The following are examples of symbols used on the product to alert you to important information:



**RISK OF ELECTRIC SHOCK** - Observe the warning associated with the risk of electric shock symbol.



**CAUTION: REFER TO OPERATOR'S MANUAL** - Refer to your operator's manual for additional information, such as important operating and maintenance instructions.



This symbol indicates that you should not discard the transformer or the transformer batteries in the trash. This product contains sealed, lead-acid batteries and must be disposed of properly. Contact your local recycling/reuse or hazardous waste center for more information.



This symbol indicates that you should not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.

## Safety of Persons

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The transformer contains **LETHAL VOLTAGES**. All repairs and service should be performed by **AUTHORIZED SERVICE PERSONNEL ONLY**. There are **NO USER-SERVICEABLE PARTS** inside the transformer.

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### Product Safety

- Changes or modifications not expressly approved by the party responsible for compliance can void the user's authority to operate the equipment.
- To connect the transformer, follow the instructions and operations described in this manual in the indicated order.
- Check that the indications on the rating plate correspond to your AC-powered system and to the actual electrical consumption of all the equipment to be connected to the system.
- For **PLUGGABLE EQUIPMENT**, the socket-outlet shall be installed near the equipment and shall be easily accessible.
- Never install the system near liquids or in an excessively damp environment. This equipment should only be used in a dry, indoor environment.
- This unit is intended for installation in a controlled environment (temperature-controlled, indoor area free of conductive contaminants). Avoid installing the transformer in locations with standing or running water or excessive humidity.
- Ensure that the system is free of any contaminants, that the surrounding area is free of debris, and that there are no foreign substances within the system.
- In the event of an emergency, disconnect the power cord from the AC power supply to properly disable the transformer.
- Avoid covering the unit's cooling vents to reduce the risk of overheating the transformer.
- Do not allow any liquids to enter the transformer. Do not place beverages or any other liquid-containing vessels on or near the unit.
- Never expose the system to direct sunlight or to a heat source.
- Store the system in a dry place before installing, if storage is required.
- Do not attach non-computer-related items, such as medical equipment, life-support equipment, microwave ovens, or vacuum cleaners, to a transformer.
- Unplug the transformer prior to cleaning, and do not use liquid or spray detergent.
- Avoid exposing the transformer to direct sunlight or installing the unit near heat-emitting appliances such as space heaters or furnaces.
- The system is not for use in a computer room AS DEFINED IN the standard for the Protection of Information Technology Equipment, ANSI/NFPA 75 (US installations only).
- The system must be properly grounded at all times.
- The admissible storage temperature range is -25°C to +55°C without batteries, 0°C to 40°C with batteries.

### Special Precautions

- The unit is heavy: wear safety shoes and preferentially use a vacuum lifter for handling operations.
- All handling operations will require at least two people (unpacking, lifting, installation in the rack system).



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# Chapter 1 Introduction

## 1.1 Introduction

Thank you for selecting an Eaton Tripp Lite SmartOnline Series product to protect your electrical equipment.

The Eaton Tripp Lite SmartOnline Series step-down transformer has been designed with the utmost care.

We recommend that you take the time to read this manual to take full advantage of the many features of your SmartOnline Series Transformer.

Before installing your system, please read the booklet presenting the safety instructions. Then follow the indications in this manual.

To discover the entire range of products and the options available for the Eaton Tripp Lite SmartOnline Series product line visit [tripplite.eaton.com](http://tripplite.eaton.com) or contact your Eaton Tripp Lite SmartOnline Series representative.

## 1.2 Environmental Protection

Eaton has implemented an environmental-protection policy.


Products are developed according to an eco-design approach.

### Substances

This product does not contain CFCs, HCFCs, or asbestos.

### Packing

To improve waste treatment and facilitate recycling, separate the various packing components.

- The cardboard we use is comprised of over 50% recycled cardboard.
- Sacks and bags are made of polyethylene.
- Packing materials are recyclable and bear the appropriate identification symbol 

**Table 1. Packing Material Symbols**

Materials	Abbreviations	Number in the symbols
Polyethylene terephthalate	PET	01
High-density polyethylene	HDPE	02
Polyvinyl chloride	PVC	03
Low-density polyethylene	LDPE	04
Polypropylene	PP	05
Polystyrene	PS	06

Follow all local regulations for the disposal of packing materials.

### End of Life

Eaton will process products at the end of their service life in compliance with local regulations. Eaton works with companies in charge of collecting and eliminating our products at the end of their service life.

### **Product**

The product is made mainly of recyclable materials.

Dismantling and destruction must comply with all local regulations concerning waste. At the end of its service life, the product must be transported to a processing center for electrical and electronic waste.

### **Benefits**

The Eaton Tripp Lite Series Step Down Transformer is designed to operate as an accessory with the SmartOnline SU5000RT /SU6000RT uninterruptible power systems (UPSs).

- Backed by worldwide agency approvals.
- Can be installed in a rack or tower configuration.
- Voltage selection for 208 VAC or 240 VAC input.
- The main outlet options on the transformer module include (18) 5-20R
- The transformer module is 3U in height and has a three foot input L6-30 line cord.



## Chapter 2 Presentation

### 2.1 Standard Installations

Figure 1. UPS Dimensions

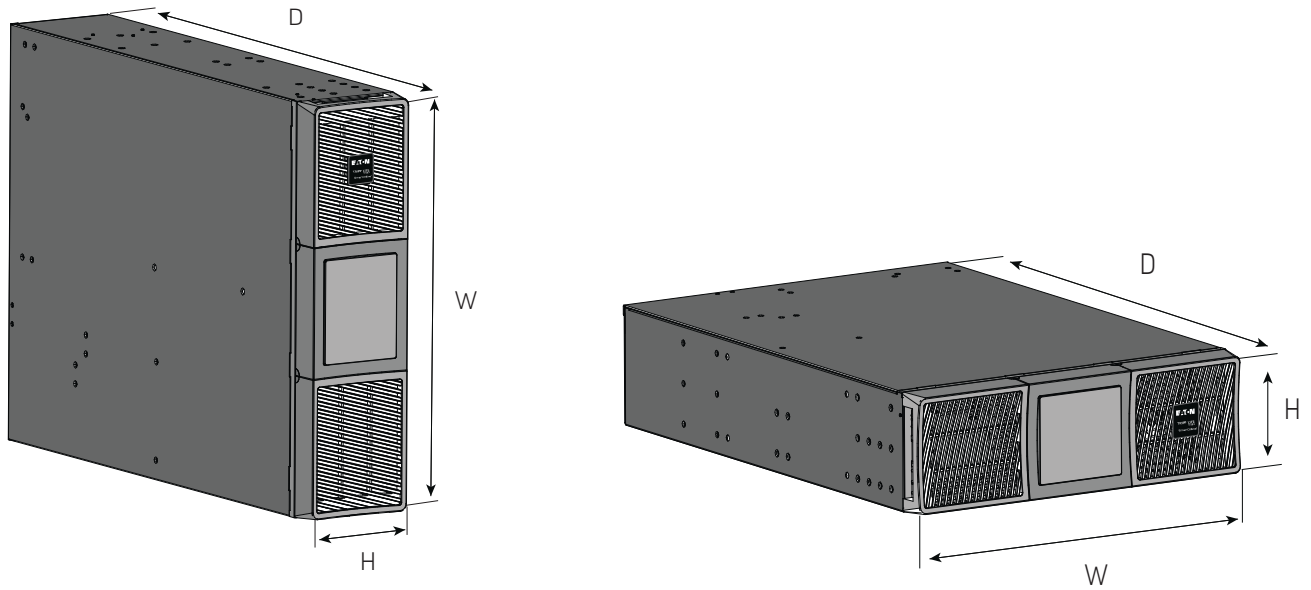
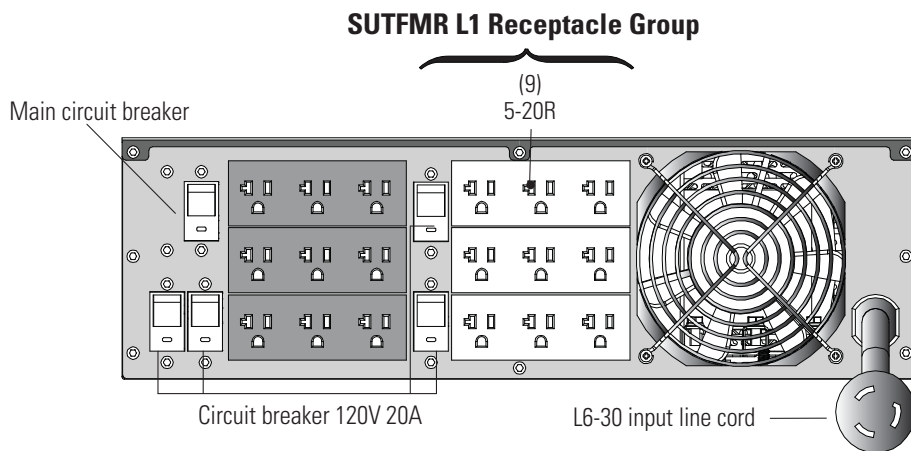


Table 2. Weights and Dimensions

Description	Weights (lb/kg)	Dimensions (inch/mm) D x W x H
SUTFMR	95 / 48	24.5 x 17.3 x 5.1 / 622 x 440 x 130

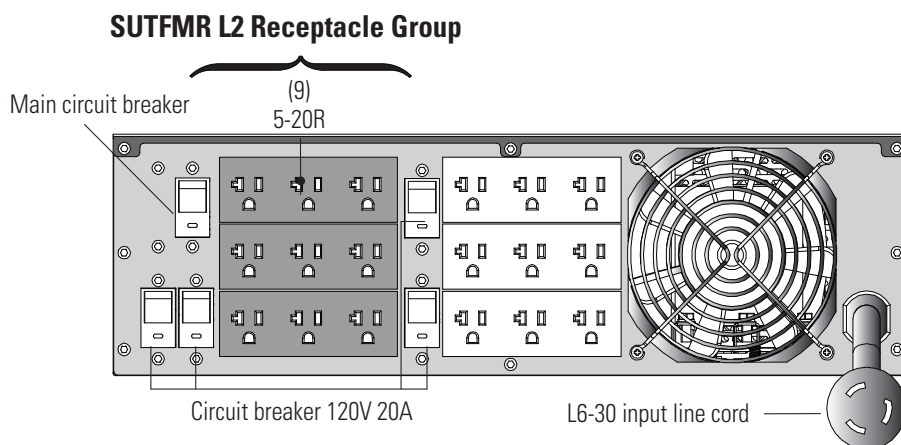
## 2.2 Rear Panel

Figure 2. SUTFMR



**208V:** When the input voltage is 208V, the total output current maximum for the L1 receptacle group is 22.1A.

**240V:** When the input voltage is 240V, the total output current maximum for the L1 receptacle group is 22.5A.



**208V:** When the input voltage is 208V, the total output current maximum for the L2 receptacle group is 22.1A.

**240V:** When the input voltage is 240V, the total output current maximum for the L2 receptacle group is 22.5A.

## Chapter 3 Installation

### 3.1 Inspecting the Equipment

If any equipment has been damaged during shipment, keep the shipping cartons and packing materials for the carrier or place of purchase, and file a claim for shipping damage. If you discover damage after accepting the equipment, file a claim for concealed damage.

To file a claim for shipping damage or concealed damage:

1. File with the carrier within 15 days of receipt of the equipment;
2. Send a copy of the damage claim to a Eaton service representative within 15 days.

### 3.2 Unpacking the Cabinet

Unpacking the cabinet in a low-temperature environment may cause condensation to occur in and on the cabinet. Do not install the cabinet until the inside and outside of the cabinet are absolutely dry (risk of electric shock).

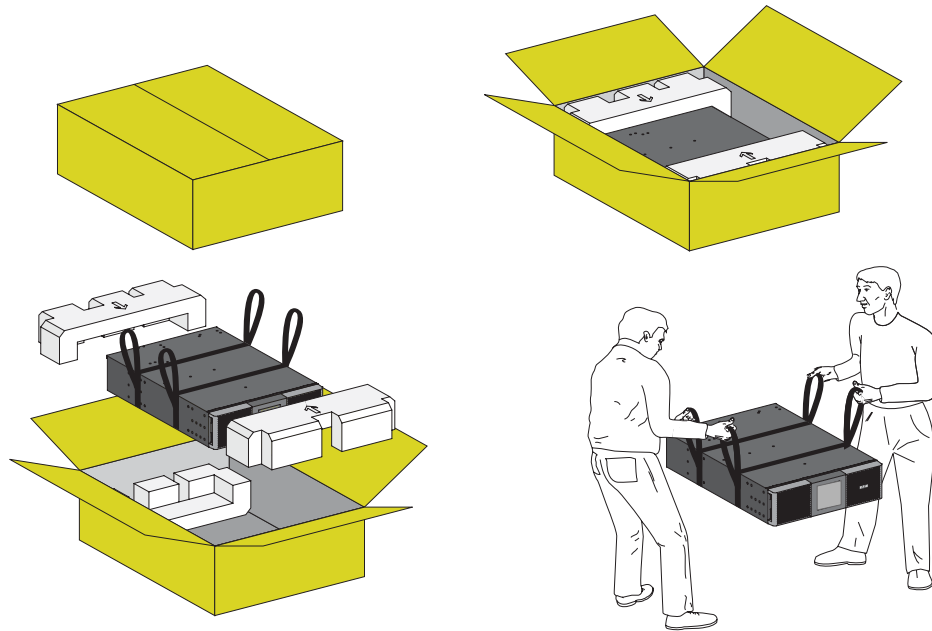
The cabinet is heavy. Follow special precautions provided and on the carton.

Unpack the equipment and remove all of the packing materials and shipping carton.

**NOTE**

Do not lift the transformer from the front panel.

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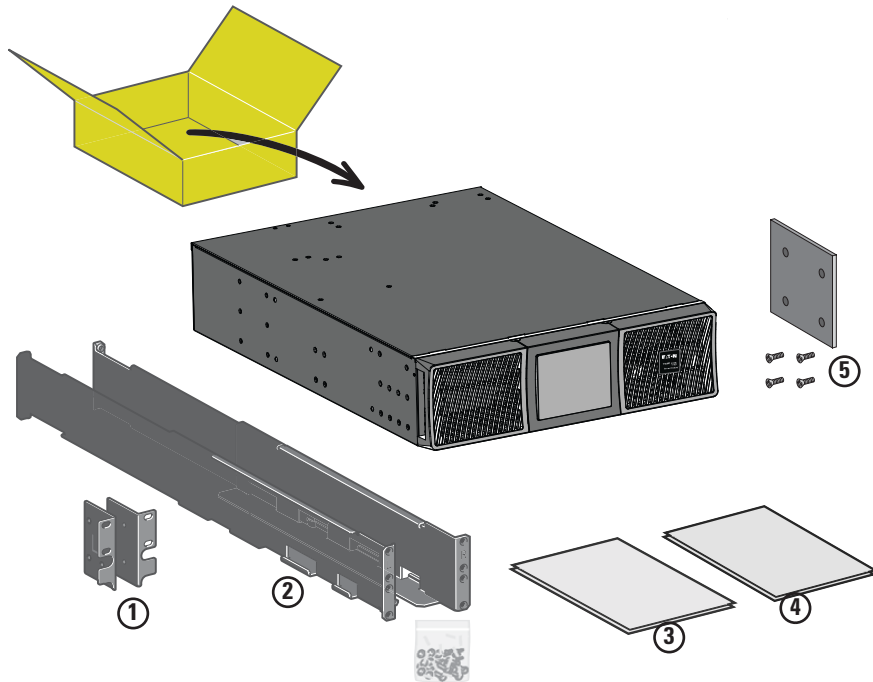
Discard or recycle the packaging responsibly, or store it for future use. Place the cabinet in a protected area with adequate airflow that is free of humidity, flammable gas, and corrosive elements.

Packing materials must be disposed of in compliance with all local regulations concerning waste. Recycling symbols are printed on the packing materials to facilitate sorting.

### 3.3 Checking the Accessory Kit

Verify that the following additional items are included with the Transformer:

**Figure 3. SUTFMR**



- ① Rackmount mounting brackets
- ② Rack kit for 19-inch enclosures
- ③ Quick start
- ④ Safety instructions
- ⑤ Stabilizer bracket




**NOTE**

If you ordered other UPS accessories, refer to their specific user manuals to check the packing contents.

### 3.4 Tower Installation



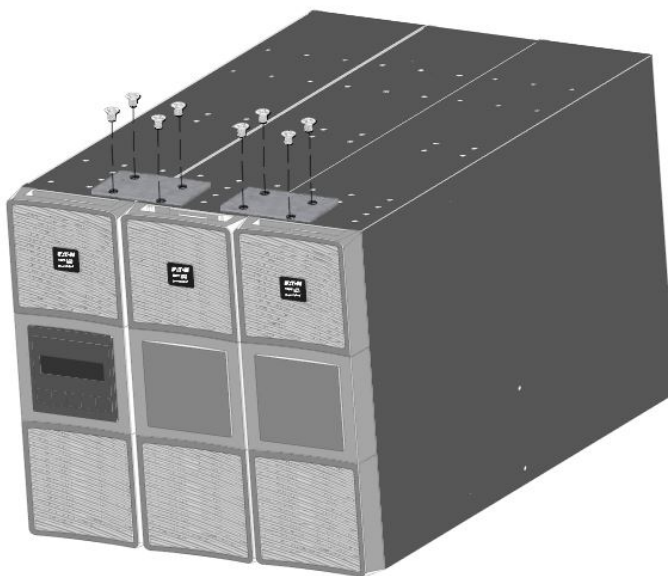
DO NOT install the transformer in a hermetically-closed environment without any exchange of air. The transformer is heavy. A minimum of two people are required to lift the cabinet.

- 
- NOTE 1** The order of a tower installation, from left to right, is the SmartOnline Transformer, SmartOnline EBM (If applicable), and the SmartOnline 5000 / 6000 UPS.
- NOTE 2** Eaton recommends a minimum of 150 mm (5.9") of free space behind the UPS rear panel.
-  **NOTE 3** Joining brackets are required to stabilize the upright cabinets in installations with two or more cabinets. A joining bracket is provided in the transformer accessory box in the shipping carton.
- NOTE 4** If you are adding a cabinet to an existing tower configuration, only add a single joining bracket between the transformer and the next cabinet in the configuration.
- 

To set up a tower configuration:

1. **Do this only if the UPS is already installed and operating:** Shut down the UPS before installing the SmartOnline Transformer. Refer to shutdown instructions in the appropriate SmartOnline UPS user's guide for your system configuration.
2. Position the cabinet upright. Turn the Eaton logo to align with the top of the cabinet. Ensure additional cabinets are upright.
3. Group the cabinets in the correct order.
4. Locate the joining bracket in the rail kit box.
5. Align each joining bracket with the adjacent cabinet screw holes and secure with the supplied screws.

**Figure 4. Joining Brackets**



### 3.5 Rack Installation

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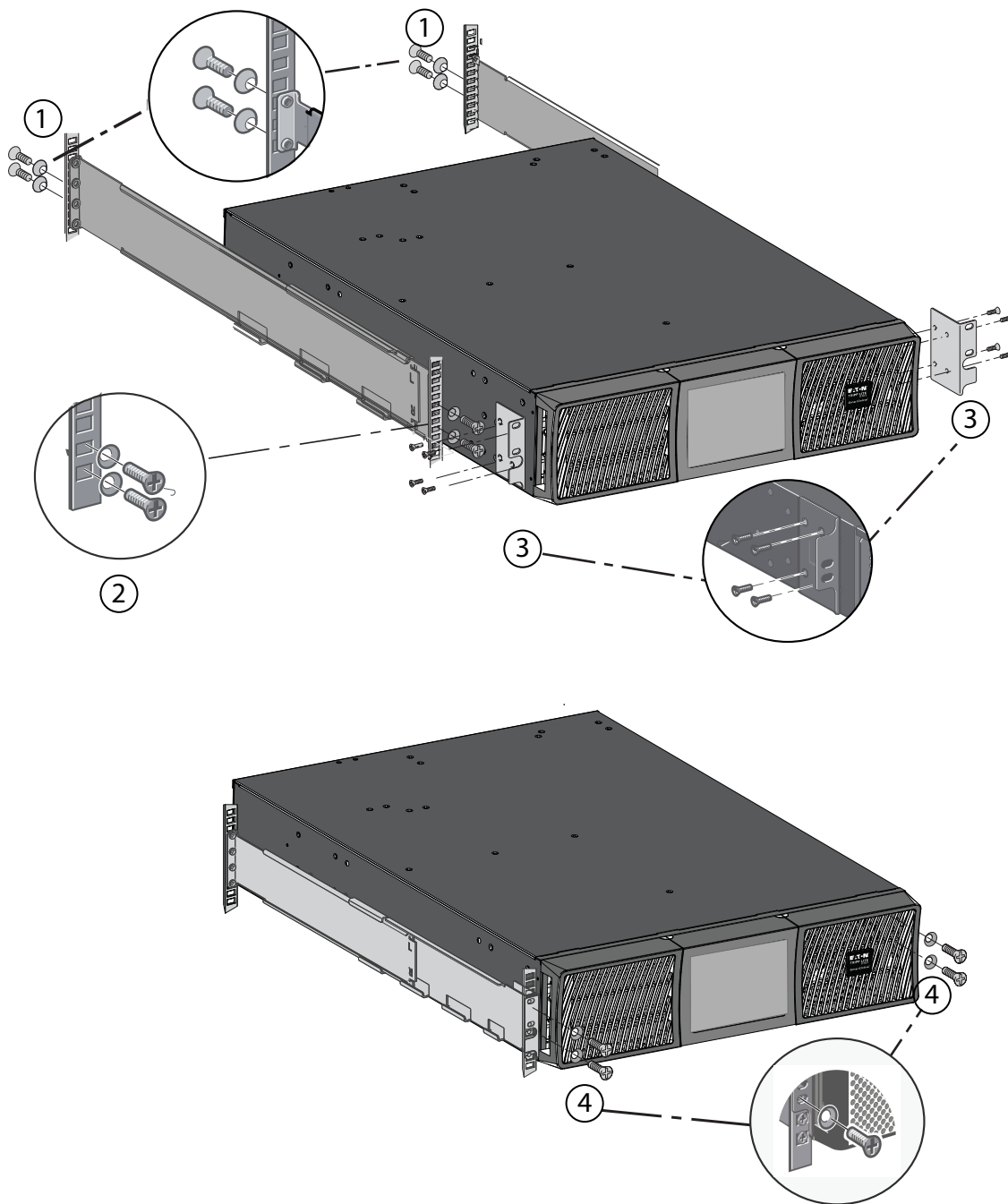
#### **WARNING**

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Shut down the UPS before installing transformer. Refer to the shutdown instructions in the appropriate SmartOnline UPS User's Guide for your system configuration.

---

Follow these steps to mount the SmartOnline Transformer on the rails.

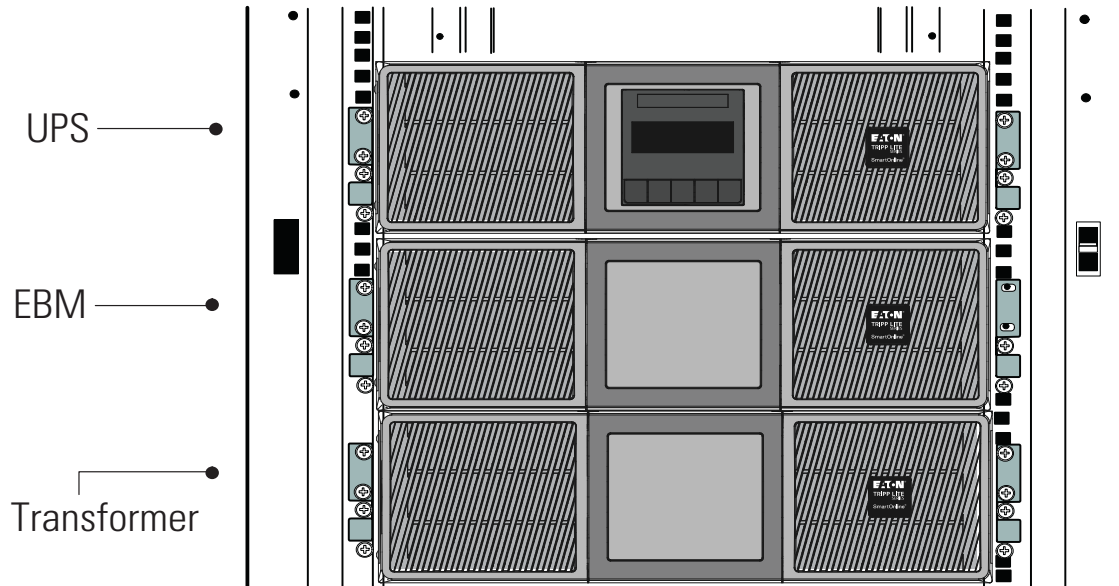


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**NOTE**  If you have other accessories, the order of a rack-mount installation, from top to bottom, is the SmartOnline UPS, SmartOnline EBM, and the SmartOnline Transformer. Refer to the UPS or EBM documentation to check the rack-mounted installation procedure for those products.

---

Figure 5. Order of Installation







## Chapter 4 Electrical Installation

### 4.1 Transformer Electrical Connections

#### ⚠ WARNING

Risk of electrical shock. Only qualified service personnel (such as a licensed electrician) shall perform the electrical installation.

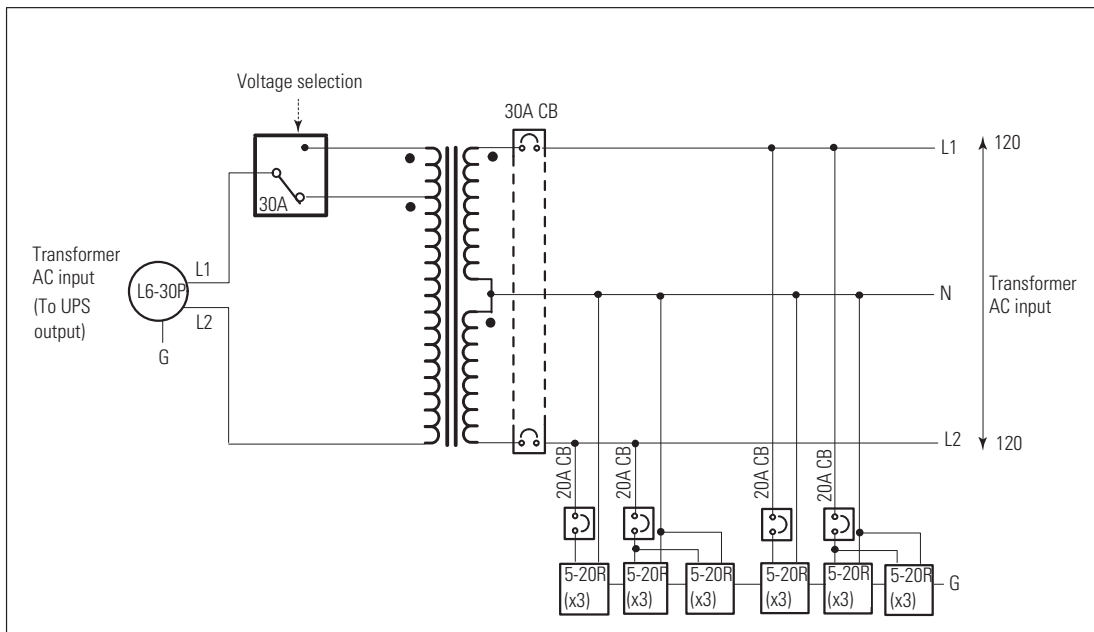
Do not make unauthorized changes to the SmartOnline Transformer Module. This may damage your equipment and void your warranty.

#### ⚠ CAUTION

For pluggable equipment, the socket-outlet shall be installed near the equipment and easily accessible.

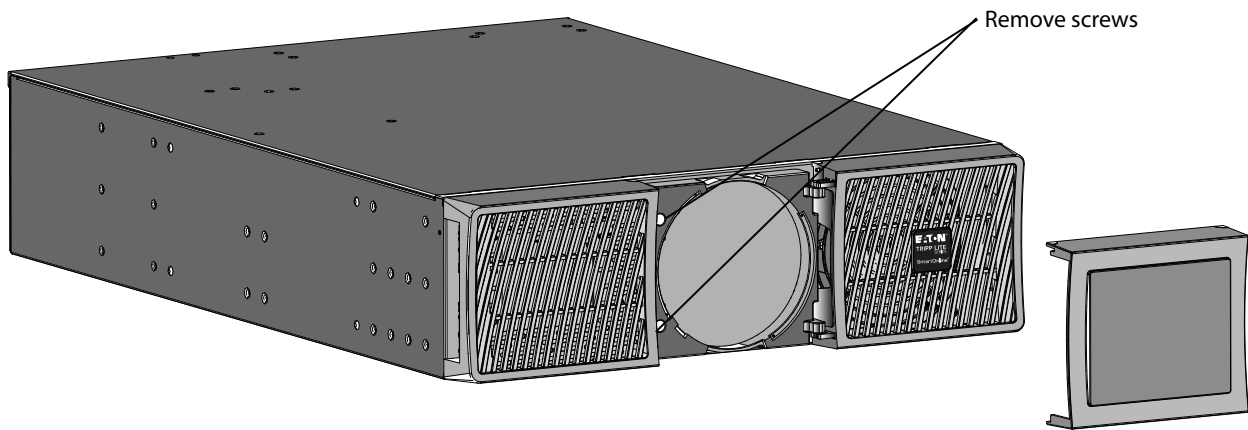
The SmartOnline transformer module requires a 30A circuit with short circuit and overcurrent protection. For SmartOnline transformer configurations, the AC input from the transformer connects to the UPS, then the UPS connects to the mains.

**Figure 6. SmartOnline Transformer Block Diagram**



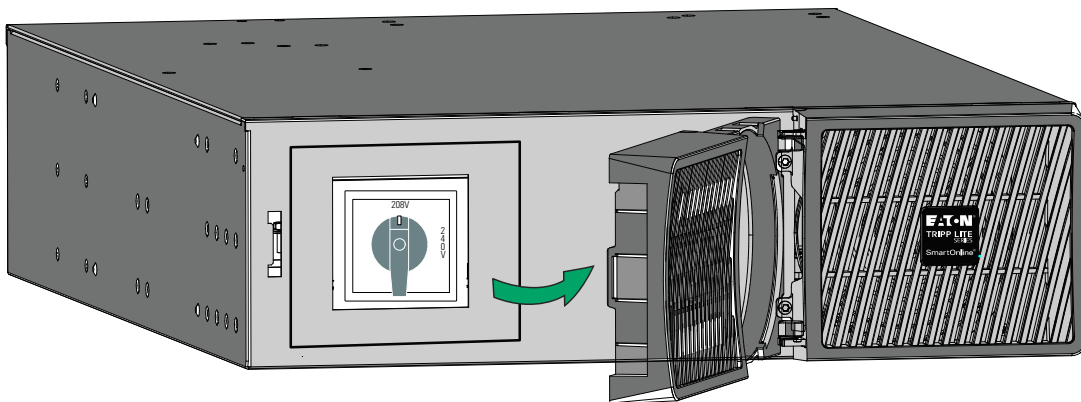
1. Verify that the transformer output circuit breaker is in the OFF position.
2. On the transformer front cover, unsnap and remove the square center cover.

**Figure 7. Remove Center Cover**



3. Remove and retain the two left-side Phillips-head screws that secure the front cover.
4. Open the front cover from the left side.

**Figure 8. Open Left Cover**



5. Turn the voltage select switch to the proper voltage setting. See [Table 3](#).

---

**NOTE** All high-voltage outlets on the back of the transformer use the UPS output voltage. All low-voltage receptacles use the transformer, and the voltage switch determines the voltage.

---

**NOTE** When the transformer voltage selection switch is set to the 240V position with 240V input, the output voltage is 240/120V. When the voltage selection is set to 208V, with 208V input, the output voltage is 240/120V.

---

**Table 3. SmartOnline Transformer I/O Output Voltage**

Input voltage (from UPS)	SmartOnline transformer output voltage	
	208V Switch position	240V Switch position
	5-20R	5-20R
200	115	100
208	120	104
220	127	110
230	133	115
240	138	120
250	144	125

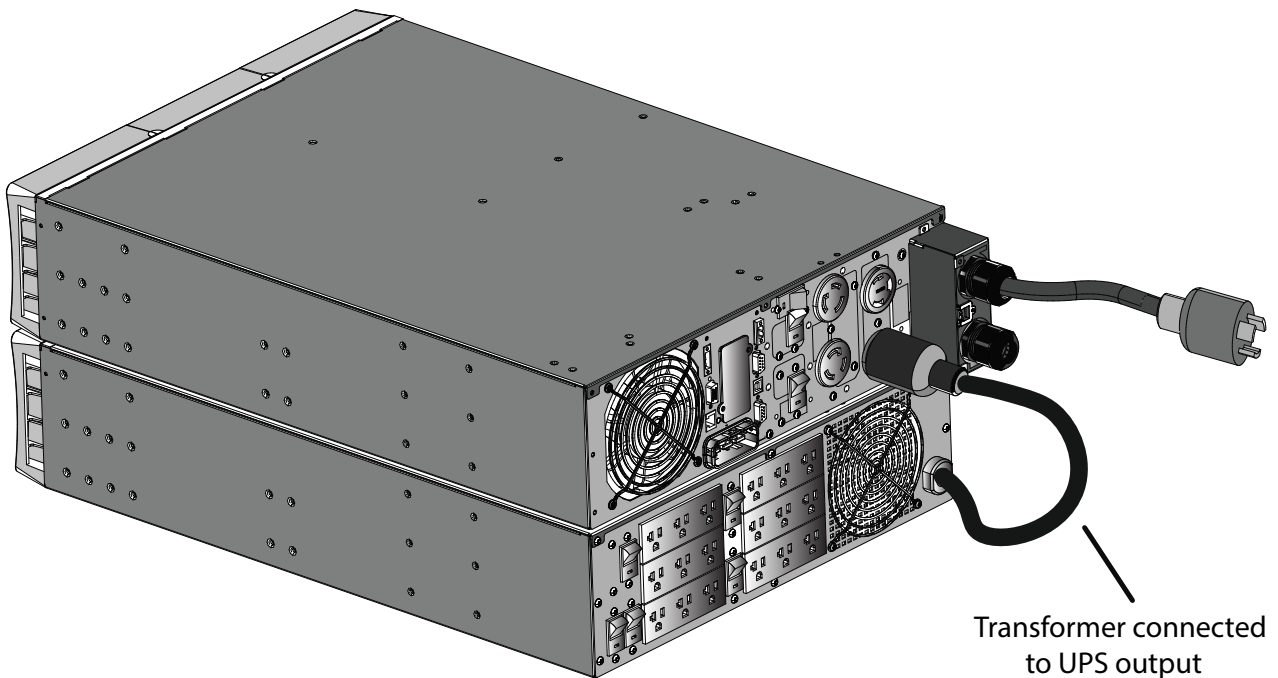
6. Close the front cover and secure it with the two phillips-head.
7. Replace the square center cover.
8. Plug the transformer into one of the L6-30 receptacles on the back of the UPS. See [Figure 9](#) and [Figure 10](#)



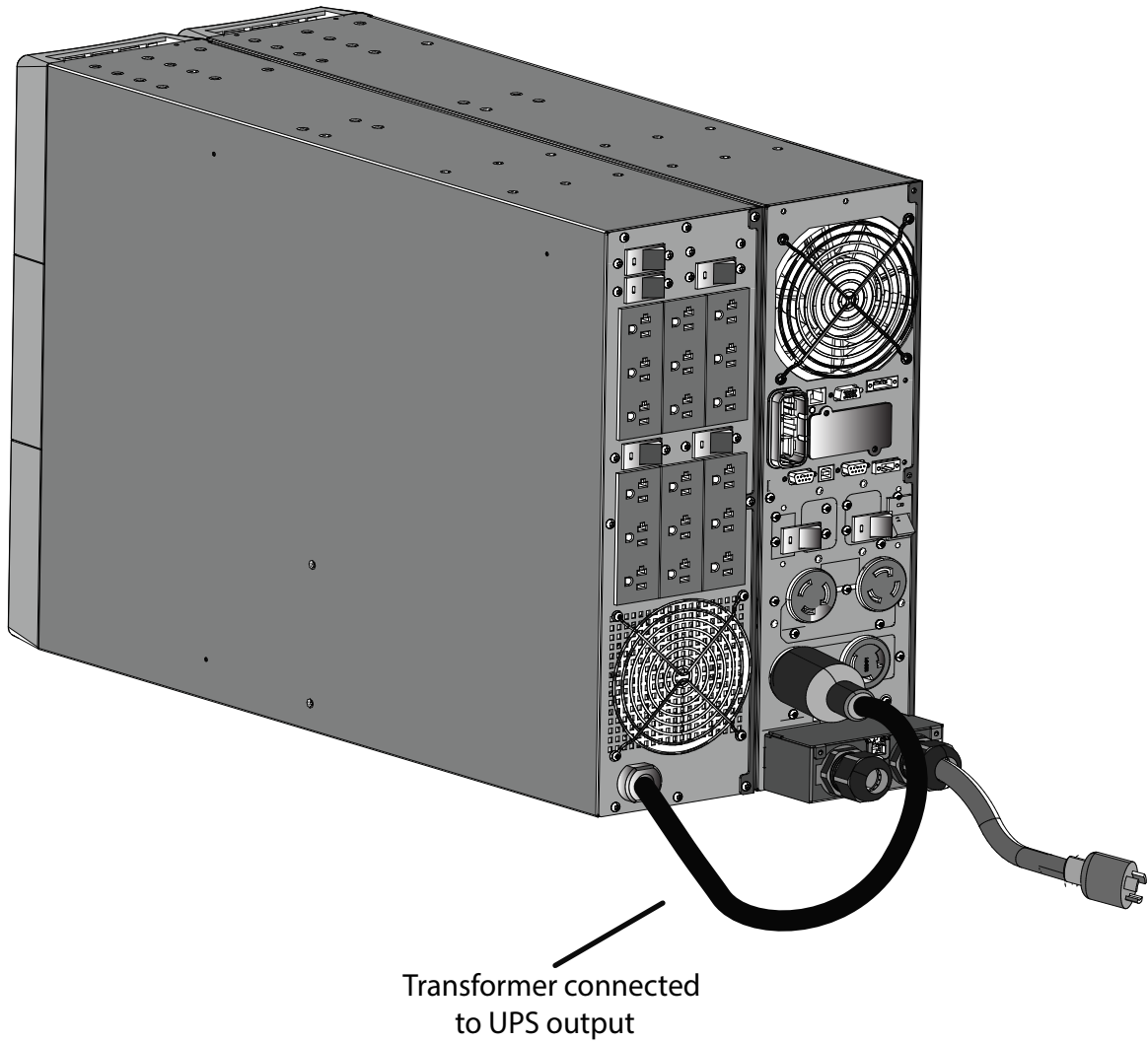
**NOTE**

Refer to the UPS User's Guide for additional installation and system configuration information.

**Figure 9. Rack-mounted Transformer Electrical Connection**



**Figure 10. Tower Transformer Electrical Connection**



## Chapter 5 Service and Support

### 5.1 Service and Support

If you have any questions or problems with the UPS, call your **Local Distributor** or **Eaton Support** at one of the following telephone numbers and ask for a UPS technical representative.

United States:	<b>1-800-356-5737</b>
Canada:	<b>1-800-461-9166 ext 260</b>
All other countries:	<b>Call your local service representative</b>

Please have the following information ready when you call Eaton Support:

- Model number
- Serial number
- Version number (if available)
- Date of failure or problem
- Symptoms of failure or problem
- Customer return address and contact information

If repair is required, you will be given a Returned Material Authorization (RMA) number. This number must appear on the outside of the package and on the Bill Of Lading (if applicable). Use the original packaging or request packaging from Eaton Support or your local distributor. Units damaged in shipment as a result of improper packaging are not covered under warranty. A replacement or repair unit will be shipped, and freight prepaid for all units within the warranty period.

**NOTE**

For critical applications, immediate replacement may be available. Call **Eaton Support** for the dealer or distributor nearest you.

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## Chapter 6 Specifications

### 6.1 Model Specifications

**Table 4. Mechanical and Environmental**

SUTFMR	
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-22°C to 55°C (-7°F to 131°F)
Relative humidity	0–95% noncondensing
Altitude	10% derating over 1000m (The altitude shall not exceed 3000m.)
Dimensions (W x D x H)	24.5 x 17.3 x 5.1 / 622 x 440 x 130
Weight	48 kg (95 lb)

**Table 5. Input Specifications**

Input ( Sine wave waveform)					
	Input voltage	Input current	Input voltage range (UPS on bypass AC mode)	Frequency range	Input protection
SUTFMR	208V/240V	24A	Full load above 200V	60 Hz (± 3 Hz)	none

**Table 6. Output Specifications**

Output ( Sine wave waveform)						
	Nominal power	Output voltage	Efficiency	Voltage adjustable	Frequency range	Output protection
SUTFMR	5000 VA, 5000W	120V (2) isolated	>92% Linear load	4%	60Hz (± 3 Hz)	(1) UL 489 type, 30A double-pole CB (4) UL 489 type, 20A CB

**Table 7. Standards**

Safety conformance	IEC 62040-1:2008, UL 1778 4th; CSA C22.2
Agency markings	cULus, CE, NOM
EMC (Class A)	IEC 62040-2:2006 categories C2, CISPR22 Class A, FCC Part 15, Class A
Insulation	EN 61558-1-2-4 (TFMR 1.5kV/5MOhms)

**Table 8. Power Connection**

Model	Input connection	Output outlets
SUTFMR	One L6-30P power cord 0.9m (2.3 ft)	(18) 5-20R



614-40206 01