

Symmetra™ Site Preparation Guide

All Models

Symmetra™ Site Preparation Checklist

Purchase of System:

- 1. Determined the load (datacenter) power requirements.
- 2. Determined minimum run time requirements for existing and future loads.
- 3. Evaluated additional run time available with XR Extended Run frame(s).
- 4. Purchased a Symmetra™ Power Array system that will meet minimum requirements.
- 5. Purchased at least one redundant power module.
- 6. Evaluated and selected a service plan.
- 7. Notified building and maintenance departments that Symmetra™ will be arriving.

Site Preparation:

- 1. Determined where the Symmetra™ Power Array will be installed.
- 2. Installation site will support a fully loaded Symmetra™ frame and additional XR frames.
- 3. Installation site meets minimum environmental requirements.
- 4. Datacenter HVAC system can accommodate heat output of the Symmetra™.

Electrical Preparation:

- 1. Required input voltage is available.
- 2. Determined all output wiring configurations to be installed.
- 3. Scheduled an electrician to install the Symmetra™ Power Array.
- 4. Delivered a copy of this document to the electrician. (Important.)
- 5. Made electrician aware of the electrician's checklist in the User Manual.

Site Requirements

Operating Space Requirements

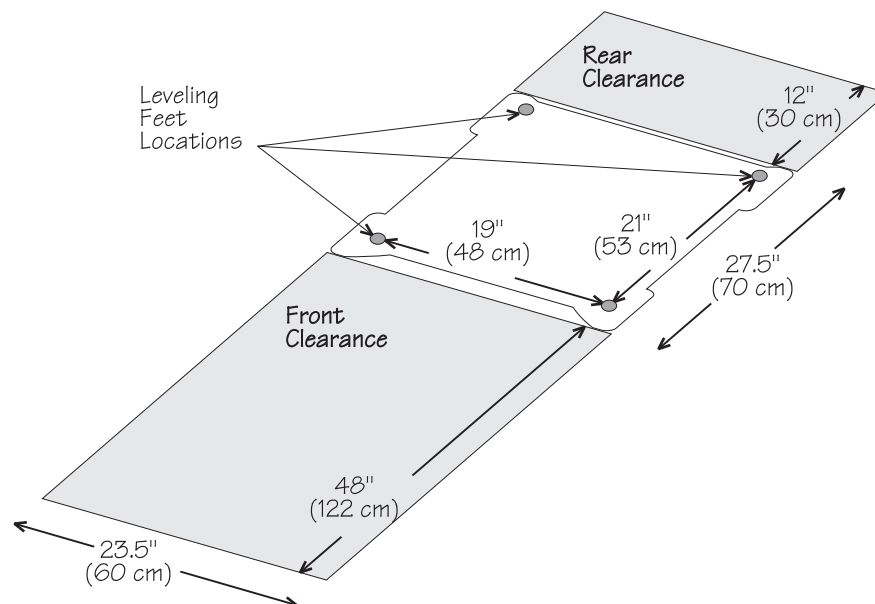
The Symmetra™ is 60cm (23.5") wide, and 70cm (27.5") deep. No space is required on the sides of the Symmetra™ frame.

Rear Clearance

- A minimum of 30 cm (12") of clearance is required behind the frame for adequate airflow.
- The system enable switch must remain accessible.
- The back of the Symmetra™ must be accessible for the electrician to install wiring.

Front Clearance

- A minimum of 122 cm (48") of clearance is required in front of the frame.
- The PowerView interface must remain accessible.
- The front of the Symmetra™ must be accessible to install and replace power and battery modules.



Notice!

- The voltage transformer in the SYMINIF, SYMINIFJ, SYMSTRF and SYMSTRFJ models emits an electro magnetic field (EMF) that can interfere with the normal function of a computer monitor. Do not install these models in close proximity to a computer monitor. The EMF is not of sufficient magnitude to cause interference with other equipment.

Structural Requirements

Symmetra™ components are heavy. Use this table to determine the total weight of the system.

Symmetra™ Component		Weight kg (lb)	Product Dimensions W x D x H cm (inches)
<i>Note: Weights shown are for frames fully loaded with modules.</i>			
North American Models	SYMINIF	229 kg (490 lb)	60 x 70 x 86 (23.5" x 27.5" x 34")
	SYMINIF-PD	225 kg (495 lb)	
	SYMSTRF	414 kg (910 lb)	60 x 70 x 140 (23.5" x 27.5" x 55")
	SYMSTRF-PD	420 kg (925 lb)	
Japanese Models	SYMINIFJ	220 kg (485 lb)	60 x 70 x 86 (23.5" x 27.5" x 34")
	SYMSTRFJ	411 kg (905 lb)	60 x 70 x 140 (23.5" x 27.5" x 55")
International 1:1 Models	SYMINIFI	164 kg (360 lb)	60 x 70 x 86 (23.5" x 27.5" x 34")
	SYMSTRFI	295 kg (650 lb)	60 x 70 x 122 (23.5" x 27.5" x 48")
3:1 Model	SYMSTRF3I	298 kg (655 lb)	
	SY-BPXFMR	91 kg (200 lb)	46 x 64 x 64 (18" x 25" x 25")
Extended Run Battery Frame Options	SYXR4-BM SYXR4J-BM	145 kg (320 lb)	60 x 70 x 51 (23.5" x 27.5" x 20")
	SYXR12-BM	423 kg (930 lb)	60 x 70 x 122 (23.5" x 27.5" x 48")
	SYXRBC1	391 kg (860 lb)	61 x 84 x 109 (24" x 33" x 43")
	SYXRBC2	709 kg (1,560 lb)	102 x 84 x 109 (40" x 33" x 43")
	SYXRBC3	1,045 kg (2,300 lb)	102 x 84 x 152 (40" x 33" x 60")



Caution!

- The weight of the Symmetra™ frames rest on four 1.5" (3.8 cm) diameter leveling feet. Ensure the floor and subfloor is structurally sound to support the weight of the Symmetra™ frame(s) when concentrated on the leveling feet. Also, make sure the structure can support the *total* weight of all Symmetra™ frames, extended run battery frames, and all other options.

Environmental Requirements

Install Symmetra™ in a temperature controlled, clean, dry, and protected indoor area that is free of conductive contaminants. The environment must have adequate airflow, and be free of corrosive fumes.

Environmental Condition	Acceptable Range
Temperature	0°C - 40°C (32°F - 104°F)
Relative Humidity	0 - 95% non-condensing
Elevation	0 to 3,048 m (0 to 10,000 feet above mean sea level)

Heat Output

Heat output of the Symmetra™ is significantly increased when batteries are charging. Battery recharge periods are relatively infrequent.

Symmetra™ Component		Heat Output (Batteries Charged)	Heat Output (Batteries Charging)
North American Models	SYMINIF	3,600 kJ (3,413 BTU)	9,147 kJ (8,670 BTU)
	SYMINIF-PD		
	SYMSTRF	7,201 kJ (6,826 BTU)	16,500 kJ (15,640 BTU)
	SYMSTRF-PD		
Japanese Models	SYMINIFJ	3,600 kJ (3,413 BTU)	9,147 kJ (8,670 BTU)
	SYMSTRFJ	7,201 kJ (6,826 BTU)	16,500 kJ (15,640 BTU)
International 1:1 Models	SYMINIFI	2,449 kJ (2,321 BTU)	7,995 kJ (7,578 BTU)
	SYMSTRFI	4,897 kJ (4,642 BTU)	14,197 kJ (13,456 BTU)
3:1 Model	SYMSTRF3I		

Short-Term Battery Module Storage Requirements

Battery modules must be temporarily stored until the electrical wiring is connected and the Symmetra™ is ready to be powered.

- Batteries should be stored at 0°F to 77°F (-18°C to 25°C) to preserve battery life.
- Storage environment can be within 0 to 100% relative humidity , *non-condensing*.

Note: Condensation will cause corrosion of electronic and chassis parts.



Caution!

- Installing battery modules in a Symmetra™ that is not powered will discharge the batteries and could damage them permanently. Do not install battery modules into the Symmetra™ frame until after the electrical wiring connections have been made, and the system is ready to be powered.

Electrical Requirements - Input/Output

Symmetra™ Component	Wiring	Voltage (VAC)	Current Full Load	Overcurrent Protection (External)	Minimum Wire Size	
North American Models	SYMINIF	Input	208V	40A	50Amp 2-Pole	#8 AWG (10mm ²)
			240V	35A		
	Output	120V/240V	40A	50Amp 3-Pole		
		120V/208V/240V				
	SYMINIF-PD	Input	208V	40A	50Amp 2-Pole	#8 AWG (10mm ²)
			240V	35A		
	Output	120V/240V	40A	Overcurrent protection built into power distribution panel.		
		120V/208V/240V				
SYMSTRF	Input	208V	80A	100Amp 2-Pole	#3 AWG (25mm ²)	
		240V	70A			
Output	120V/240V	80A	100Amp 3-Pole			
	120V/208V/240V					
SYMSTRF-PD	Input	208V	80A	100Amp 2-Pole	#3 AWG (25mm ²)	
		240V	70A			
Output	120V/240V	80A	Overcurrent protection built into power distribution panel			
	120V/208V/240V					
Japanese Models	SYMINIFJ	Input	200V	40A	50Amp 2-Pole	#8 AWG (10mm ²)
		Output	100V/200V			
	SYMSTRJF	Input	200V	80A	100Amp 2-Pole	#3 AWG (25mm ²)
		Output	100V/200V			
International Models	SYMINIFI	Input	220V, 230V or 240V	40A	50Amp 1-Pole	#8 AWG (10mm ²)
		Output				
	SYMSTRFI	Input	220V, 230V or 240V	80A	100Amp 1-Pole	#3 AWG (25mm ²)
		Output				
	SYMSTRF3I	Input with Bypass Transformer	380V, 400V or 415V	26A/Phase when online, 50A on L1 and L2 in bypass	60Amp 3-Pole	#8 AWG (10mm ²)
		Input without Bypass Transformer		26A/Phase when online, 80A on L1 in bypass	100Amp 3-Pole	#3 AWG (25mm ²)
		Output	220V, 230V or 240V	80A	100Amp 1-Pole	#3 AWG (25mm ²)
	Bypass Balancing Transformer	Input	Controlled by system frame.			#8 AWG (10mm ²)*
Output		#3 AWG (25mm ²)*				
<p>* Install the bypass balancing transformer no further than 50' (15 m) from the Symmetra™. If a greater distance is required, factor in voltage drop when selecting wire gauge.</p>						

Electrical Requirements - EPO Switch

The Symmetra™ Power Array can be connected to either a dry contact or 24Vdc Emergency Power Off switch. The terminal connections for the EPO switch are physically isolated from the primary circuitry of the Power Array system.

EPO Specifications

The EPO circuit is considered a Class 2 and SELV circuit.

SELV is an acronym for “Safety Extra Low Voltage.” SELV is a common term in Europe and IEC standards. A SELV circuit is isolated from primary circuitry through an isolating transformer and designed so that under normal conditions, the voltage is limited to 42.4 V_{peak} or 60 Vdc.

A Class 2 Circuit is a common term in North America and in UL and CSA standards. It is defined in the Canadian Electrical Code (C22.1, Section 16) and in the National Electrical Code (NFPA 70, Article 725).

SELV and Class 2 circuits must be isolated from all primary circuitry. Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is SELV or Class 2. If there is a question, use a contact closure switch. Use one of the following cable types to connect the Symmetra™ to the REPO switch:

CL2 - Class 2 cable for general purpose use.

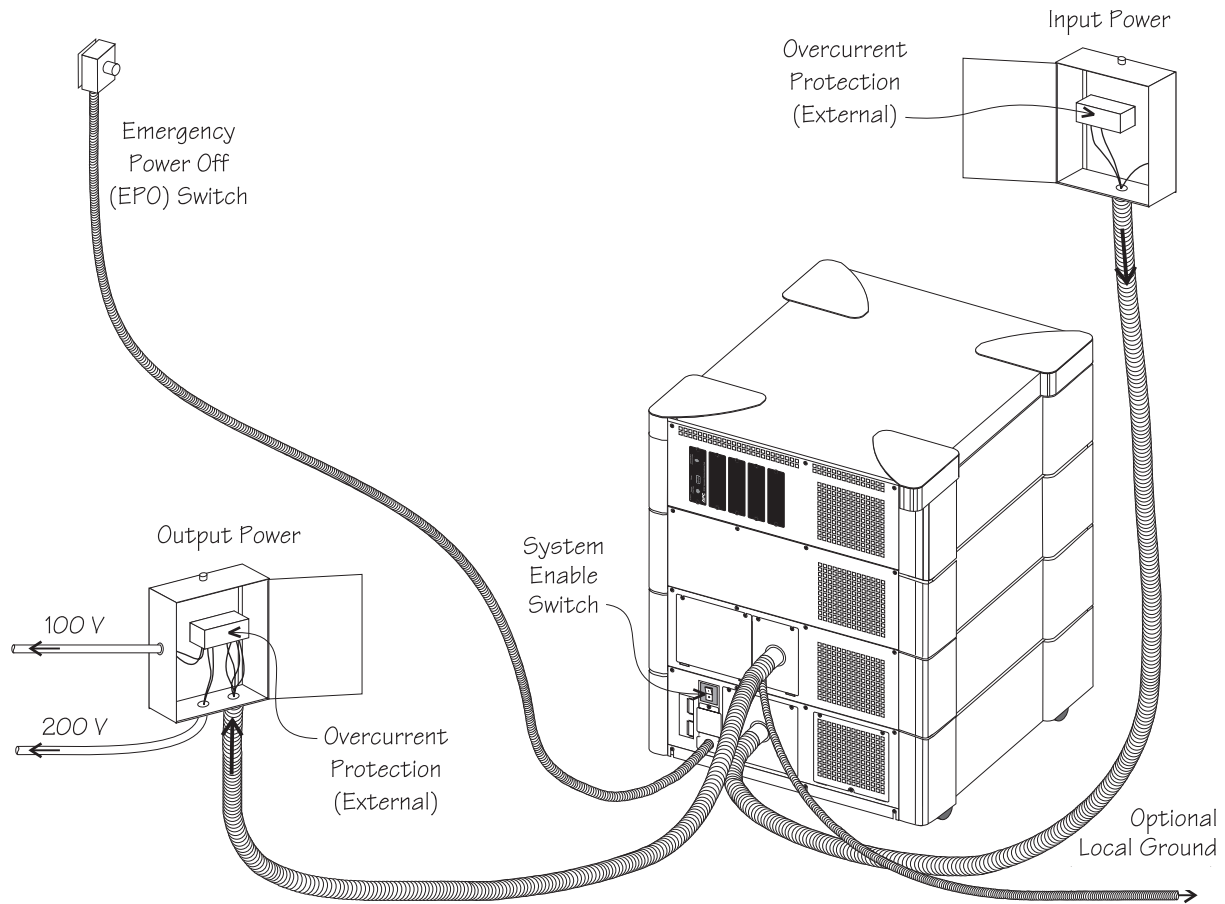
CL2P - Plenum cable for use in ducts, plenums, and other space used for environmental air.

CL2R - Riser cable for use in a vertical run in a shaft or from floor to floor.

CL2X - Limited Use cable for use in dwellings and for use in raceway.

For installation in Canada, the cable should be CSA Certified, type ELC (Extra-Low-Voltage Control Cable).

Electrical Wiring Overview (SYMINIFJ Shown)



Receiving and Unpacking

Receiving the Symmetra™

The Symmetra™ Power Array frame and modular components are shipped on a number of pallets, dependant on the configuration ordered. Verify that labeled boxes match the purchase order. Consider the system component shipping weights and dimensions before moving them.

Inspect Packaging

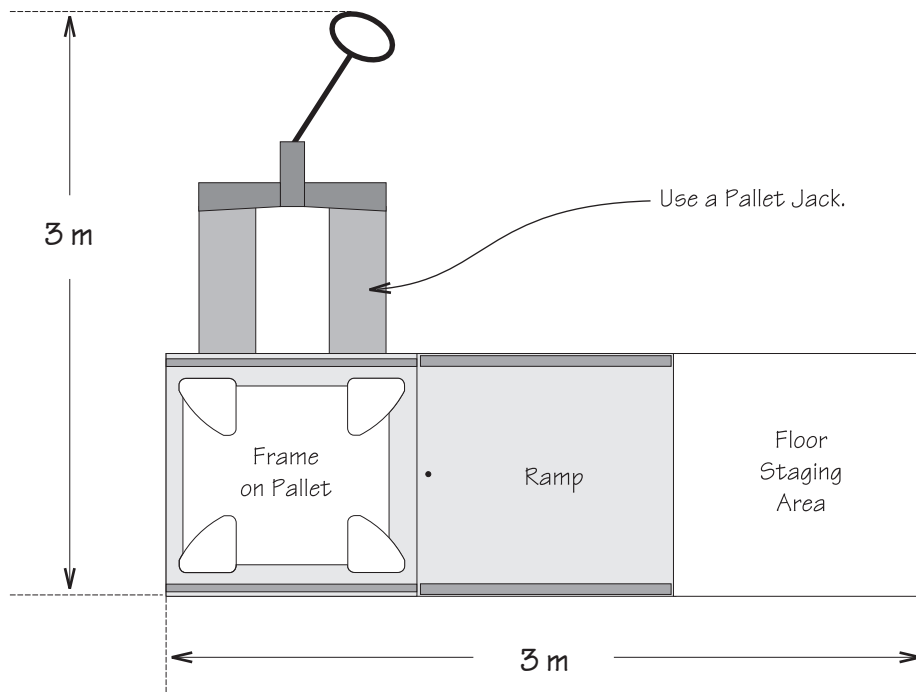
Inspect packaging for signs of mishandling. If damage is detected:

1. Note the damage on the Bill of Lading.
2. File a damage claim with the shipping agent within 24 hours.
3. Notify APC of the damage claim, and condition of the equipment.

Symmetra™ Component		Shipping Weight kg (lb)	Shipping Dimensions W x D x H cm (inches)
<i>Note: Shipping weights shown are for frames with no modules.</i>			
North American Models	SYMINIF	152 kg (335 lb)	84 x 76 x 107 (33" x 30" x 42")
	SYMSTRF	264 kg (580 lb)	84 x 76 x 160 (33" x 30" x 63")
Japanese Models	SYMINIFJ	150 kg (330 lb)	84 x 76 x 107 (33" x 30" x 42")
	SYMSTRFJ	261 kg (575 lb)	84 x 76 x 160 (33" x 30" x 63")
International 1:1 Models	SYMINIFI	93 kg (205 lb)	84 x 76 x 107 (33" x 30" x 42")
	SYMSTRFI	143 kg (315 lb)	84 x 76 x 142 (33" x 30" x 56")
3:1 Model	SYMSTRF3I	145 kg (320 lb)	
Battery Module	SYBATT SYBATTJ	32 kg (70 lb)	33 x 79 x 43 (13" x 31" x 17")
Power Module	SYPM	18 kg (40 lb)	

Moving The Symmetra™ Frame and Modules

The frame (bolted to the pallet), should be positioned with a pallet jack or a fork lift. Leave enough space to unpack the frame, install the ramp, and for two people to roll it onto the floor. The Symmetra™ frame can be moved over a flat, smooth floor surface by rolling it on the frame casters. The individually boxed power and battery modules should be stacked close to the installation site.

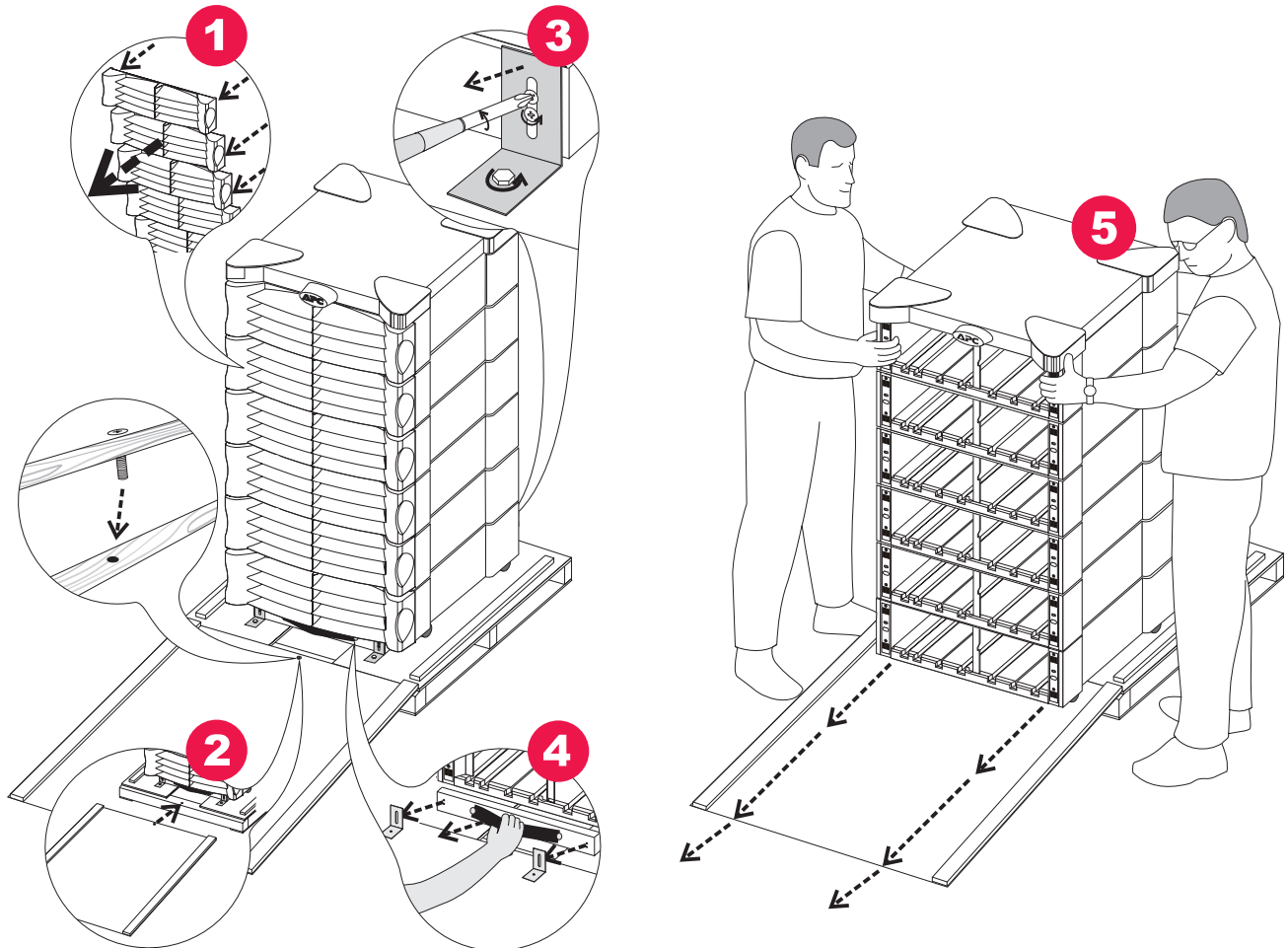


Caution!

- Do not install battery modules into the Symmetra™ frame until after electrical wiring connections have been made, and the system is ready to be powered.
- If battery modules are to be stored for an extended time, store them in a dry, cool environment.
- Battery modules are heavy (32 kg / 70 lb). Two people are required to carry, move and install them.

Unpacking the Symmetra™ Frame

1. Remove packaging materials and the grill covers. Use care to prevent scratching the surface of the frame.
2. Locate the pallet ramp that is shipped beneath the top corrugated shipping cover.
3. Follow the steps below to remove the frame from the pallet. After unpacking, carefully roll the Symmetra™ to the installation site. It is now ready to be wired.



Caution!

- Two people are required to remove the frame from the pallet.
- All four leveling feet at the base of the Symmetra™ frame must be fully retracted before rolling the frame from the pallet.
- If rolling the frame on the casters over objects such as door thresholds or floor irregularities, be careful to prevent the frame from tipping.

Symmetra™



Power Array™