

# Symmetra™ PX

20 kW 208 V

## Technical Specifications

08/2018



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# Table of Contents

Important Safety Instructions — SAVE THESE	
INSTRUCTIONS .....	5
Safety Precautions .....	6
Technical Data .....	8
Model List .....	8
Input Power Factor .....	8
Efficiency .....	8
Batteries .....	9
Efficiency DC to AC .....	9
Battery Runtimes .....	9
End of Discharge Voltage .....	10
Battery Material Safety Data Sheet .....	10
Communication and Management .....	11
Network Management Card AP9630CH .....	11
Compliance .....	11
Facility Planning .....	12
AC Input Specifications .....	12
AC Bypass Specifications .....	12
AC Output Specifications .....	12
Battery Specifications .....	13
Fuses and Breakers .....	13
Recommended Cable Sizes .....	14
Torque Specifications .....	14
Emergency Power Off (EPO) .....	15
Physical .....	15
Weight and Dimensions .....	15
Shipping Weight and Dimensions .....	15
Clearance .....	16
Environmental .....	16
Heat Dissipation .....	17
Drawings .....	18
Single Feed with MBP One Line Diagram .....	18
Options .....	19
Hardware Options .....	19
Configuration Options .....	19
Limited Factory Warranty .....	20



# Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety message indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

## **DANGER**

**DANGER** indicates a hazardous situation which, if not avoided, **will result in death or serious injury**.

**Failure to follow these instructions will result in death or serious injury.**

## **WARNING**

**WARNING** indicates a hazardous situation which, if not avoided, **could result in death or serious injury**.

**Failure to follow these instructions can result in death, serious injury, or equipment damage.**

## **CAUTION**

**CAUTION** indicates a hazardous situation which, if not avoided, **could result in minor or moderate injury**.

**Failure to follow these instructions can result in injury or equipment damage.**

## **NOTICE**

**NOTICE** is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

**Failure to follow these instructions can result in equipment damage.**

## Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

## Safety Precautions

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- The product must be installed according to the specifications and requirements as defined by Schneider Electric. It concerns in particular the external and internal protections (upstream circuit breakers, battery circuit breakers, cabling, etc.) and environmental requirements. No responsibility is assumed by Schneider Electric if these requirements are not respected.
- After the UPS system has been electrically wired, do not start up the system. Start-up must only be performed by Schneider Electric.

**Failure to follow these instructions will result in death or serious injury.**

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

The UPS System must be installed according to local and national regulations. Install the UPS according to:

- IEC 60364 (including 60364-4-41 - protection against electric shock, 60364-4-42 - protection against thermal effect, and 60364-4-43 - protection against overcurrent), **or**
- NEC NFPA 70

depending on which one of the standards apply in your local area.

**Failure to follow these instructions will result in death or serious injury.**

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

- Install the UPS system in a temperature controlled area free of conductive contaminants and humidity.
- Install the UPS system on a non-inflammable, level, and solid surface (e.g. concrete) that can support the weight of the system.

**Failure to follow these instructions will result in death or serious injury.**

### **⚠ DANGER**

#### **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

The UPS is not designed for and must therefore not be installed in the following unusual operating environments:

- Damaging fumes
- Explosive mixtures of dust or gases, corrosive gases, or conductive or radiant heat from other sources
- Moisture, abrasive dust, steam or in an excessively damp environment
- Fungus, insects, vermin
- Salt-laden air or contaminated cooling refrigerant
- Pollution degree higher than 2 according to IEC 60664-1
- Exposure to abnormal vibrations, shocks, and tilting
- Exposure to direct sunlight, heat sources, or strong electromagnetic fields

**Failure to follow these instructions will result in death or serious injury.**

***NOTICE***

**RISK OF OVERHEATING**

Respect the clearance requirements around the UPS system and do not cover the product's ventilation openings when the UPS system is in operation.

**Failure to follow these instructions can result in equipment damage.**

***NOTICE***

**RISK OF EQUIPMENT DAMAGE**

Do not connect the UPS output to regenerative load systems including photovoltaic systems and speed drives.

**Failure to follow these instructions can result in equipment damage.**

# Technical Data

## Model List

- Symmetra PX 20 kW InfraStruXure 20kW, 208V

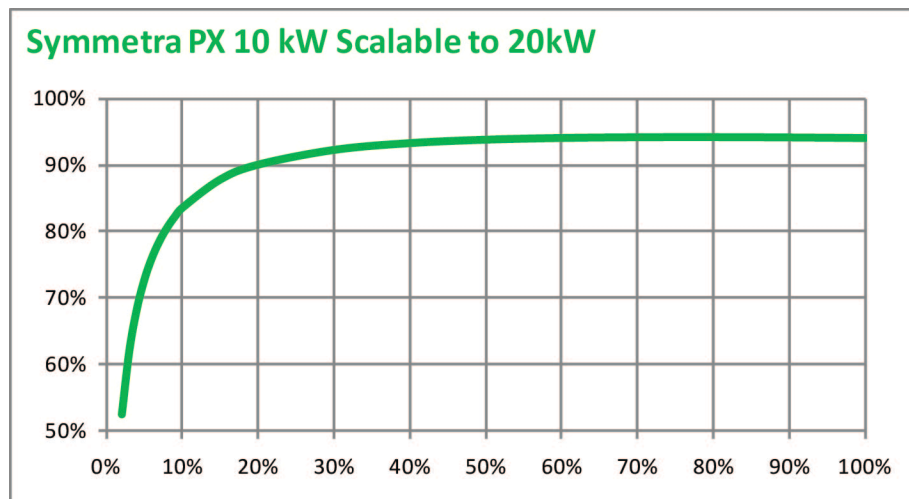
## Input Power Factor

Input Power Factor	0.99 @ full load
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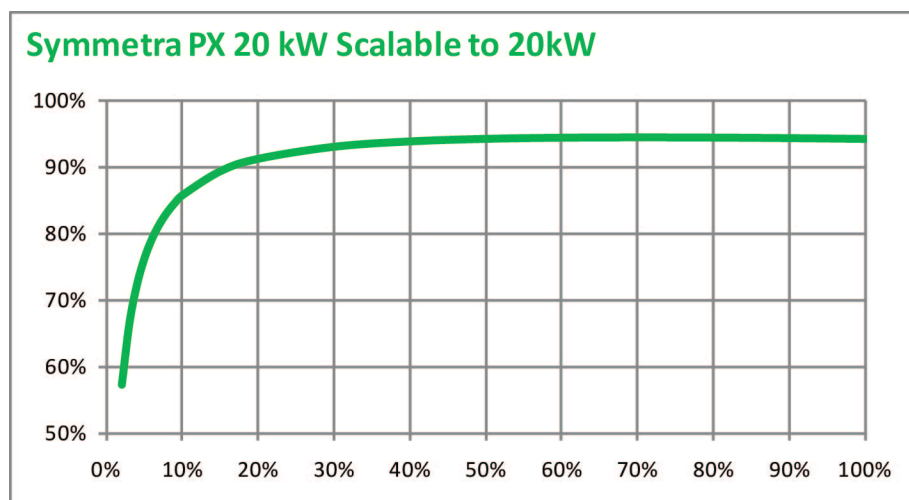
## Efficiency

System	25% load	50% load	75% load	100% load
Symmetra PX 10 kW	91.6%	93.8%	94.2%	94%
Symmetra PX 20 kW	92.5%	94.3%	94.6%	94.3%

### Efficiency Curve – 10 kW



### Efficiency Curve – 20 kW





# Batteries

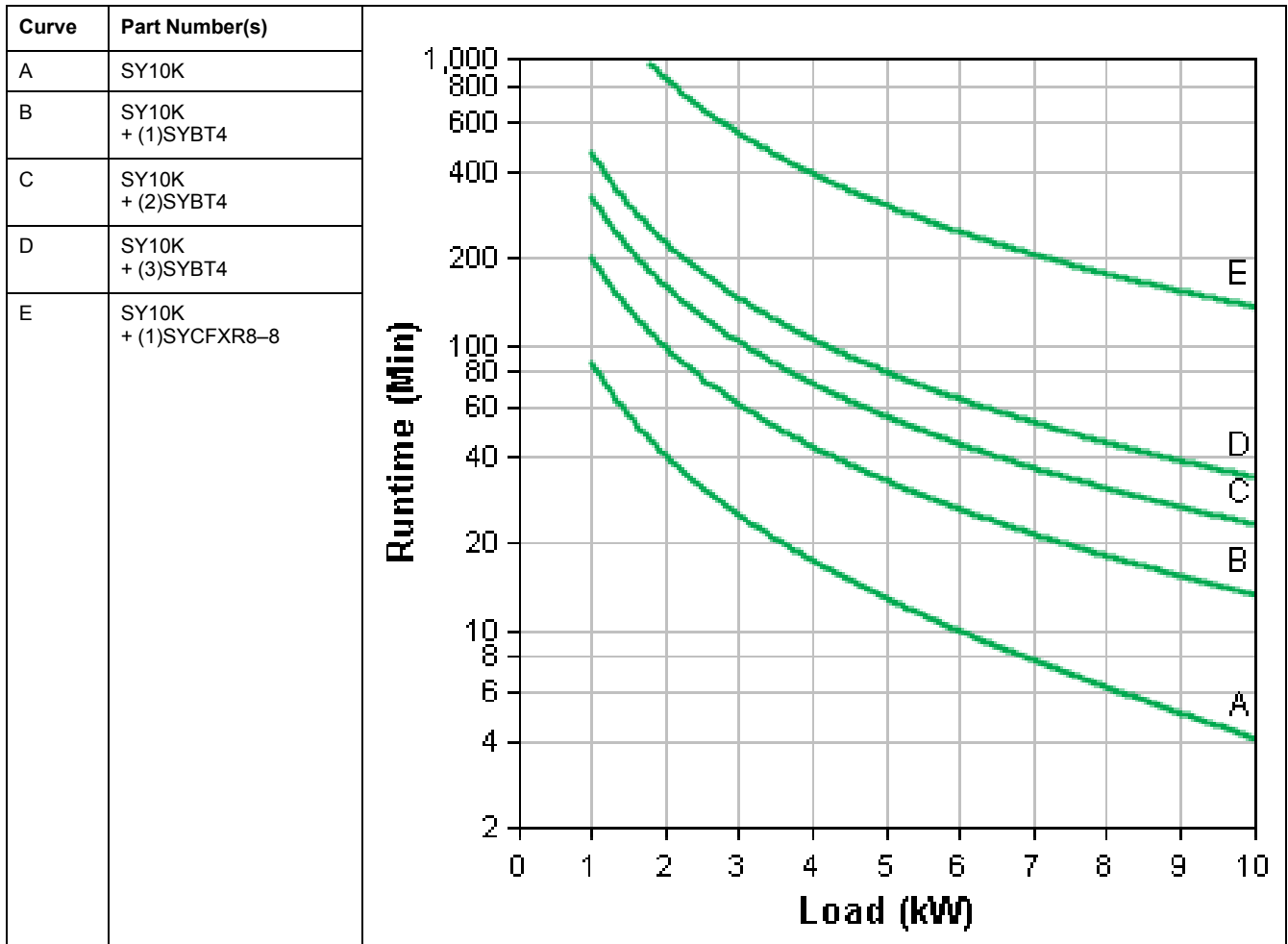
## Efficiency DC to AC

DC-AC at nominal battery voltage	94%	Minimum from 75% to Full load when configured as 20kVA n+0
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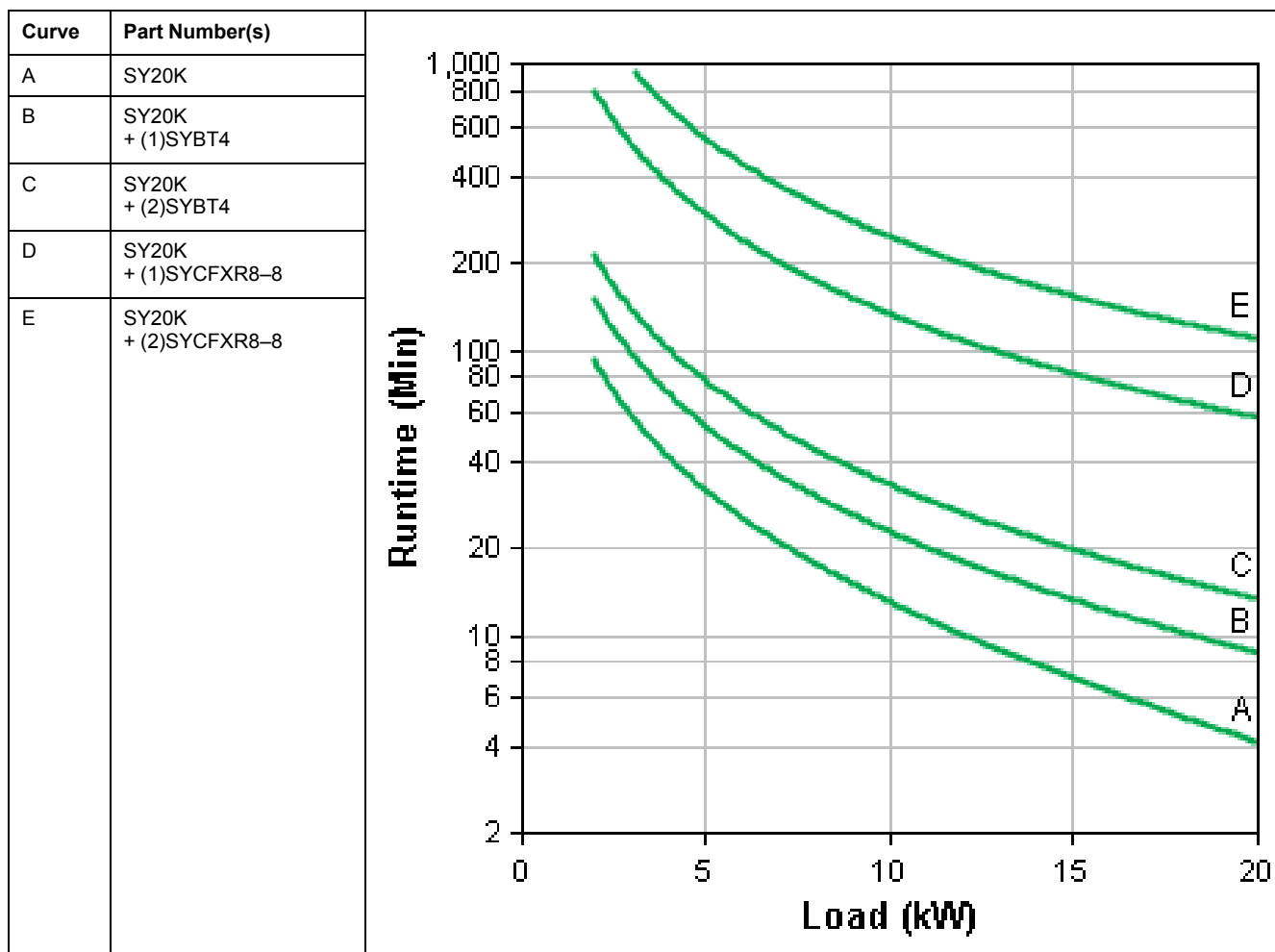
## Battery Runtimes

4.5 minutes	Two battery shelves: @ 0.1 PF load
8 minutes	Two battery shelves: @ 0.7 PF load (SMPS load according to EN50091-3/EIC62040-3)
13 minutes	Four battery shelves: @ 0.1 PF load
21 minutes	Four battery shelves: @ 0.7 PF load (SMPS load according to EN50091-3/EIC62040-3)
3 hours	To 90% capacity after full discharge
External Battery/Extended Runtime Options	Up to four modular battery cabinets can be added

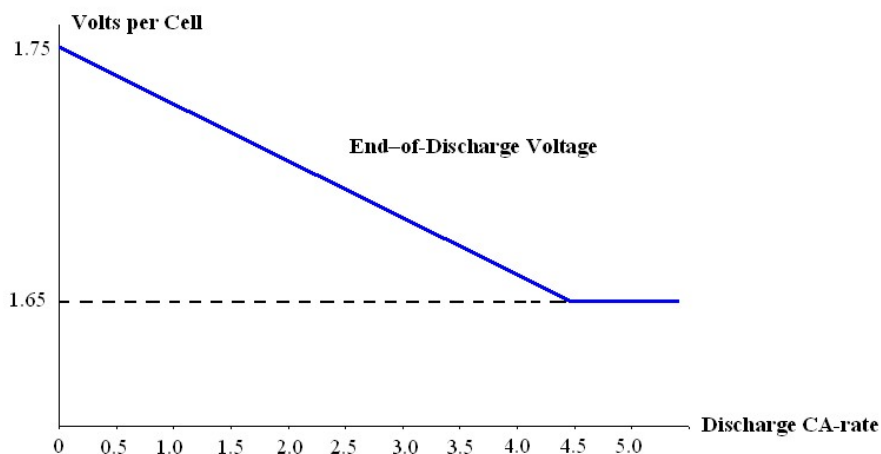
### 10 kW



20 kW



End of Discharge Voltage



Battery Material Safety Data Sheet

**NOTE:** For Material Safety Data Sheet (MSDS), go to the Knowledge Base [http://schneider-electric.com/sites/corporate/en/support/faq/faq\\_main.page](http://schneider-electric.com/sites/corporate/en/support/faq/faq_main.page) and type "MSDS" to get the latest MSDS information.

## Communication and Management

Interface port	DB-9 RS-232, RJ-45 10 Base-T Ethernet for web/SNMP, Internal Modem for out of band management
Smart Slot Interface Quantity	2
Management software included	PowerChute Symmetra Bundle
Control panel	Multi-function LCD status and control console
Audible alarm	Alarm when on battery: distinctive low battery alarm: configurable delays

### Network Management Card AP9630CH

This UPS is equipped with two Smartslots which enables the use of two Network Management Cards (NMC). By default, the UPS is shipped with the **AP9630CH** NMC.



#### AP9630CH Network Management Features:

##### Browser accessible

- View the user interface with a browser

##### Notification

- Be notified of problems to ensure that crucial situations are dealt with in a timely manner

##### Data logging

- Identify problematic trends before they escalate or export the data log for analysis

##### Event logging

- Pinpoint the timing and sequence of events leading up to an incident with the event log

##### PowerChute Network Shutdown compatible

- Reliable network-based shutdown of multiple servers on single or parallel UPS installation

##### StruxureWare Data Center Expert compatible

- An IT-ready, scalable monitoring system that collects, organizes, and distributes critical alerts, surveillance video and key information, providing a unified view of complex physical infrastructure environments from anywhere on the network

## Compliance

- UL Listed per UL 1778
- CSA Certified per standard CSA 107.1
- FCC Verified Class A per standard FCC 47 CFR Part 15

# Facility Planning

## AC Input Specifications

Connection type	3PH + N + PE
Nominal input current <sup>1</sup> (A)	61.3
Maximum input current <sup>2</sup> (A)	70.9
Input current limitation <sup>3</sup> (A)	89.4
Overload (A)	115.0 A for 30 seconds (based on 150% overload on output)
Walk-in duration	15 seconds (On retransfer from input to battery, RMS current will linearly ramp in for 10 seconds)
Input power factor	0.99 at full load
Total harmonic distortion (THDI)	< 6% at full load
Nominal input voltage (V)	208
Input voltage range (V)	166 <sup>4</sup> –240 <sup>5</sup>
Input frequency (Hz)	40–70 (Outside of this range, the UPS will operate from battery power)
Maximum short-circuit withstand (kA)	30

## AC Bypass Specifications

Connection type	3PH + N + PE
Input frequency (Hz)	40 – 70
Nominal input current (A)	55.5
Input voltage range (V)	183–233
Output current at overload (A)	69.4 A at 125% load 555.1 A 1000% load for 500 ms

## AC Output Specifications

Output voltage	208 V
Connection type	3PH + N + PE or 3PH + PE
Overload capacity	150% for 30 seconds (normal operation) 150% continuously for 30 seconds (battery operation) 100% continuously (bypass operation) 1000% for 500 milliseconds (bypass operation)
Crest factor	2.7 <sup>6</sup>
Load power factor	0.5 to 1.0
Output voltage – dynamic load response	+/-5 % (For load step 0% to 100% or 100% to 0%. Recovery back to steady state: < 60ms)
Total harmonic distortion (THDU)	< 2% (100% resistive load) < 6% (Computer load as defined by EN50091-3/ IEC 62040-3)

1. Current that flows at nominal mains with batteries fully charged
2. Current that flows at nominal mains with charging batteries
3. The maximum continuous input current limit that can be drawn at low mains with charging batteries
4. At less than full load, the UPS will operate from mains/utility power to lower voltages
5. Above 240 V, the UPS will operate from battery power
6. No limit on applied crest factor, but the UPS regulates it down to 2.7

Nominal output voltage (V)	208 V
Output voltage range (V)	205.9 V –1% to 210.1 V +1%
Output frequency (on line, in bypass) <sup>7</sup>	Synchronized to input over the range 57 Hz – 63 Hz
Output frequency – battery operation (Hz)	50/60
Slew rate (Hz/s)	Programmable to 0.25, 0.5, 1, 2, 4, and 6

## Battery Specifications

Battery type	Maintenance-free, sealed, lead-acid battery with suspended electrolyte – leakproof
Nominal voltage (VDC)	+/- 192
Float voltage (VDC)	+/- 219
End of discharge voltage (VDC) <sup>8</sup>	+/- 158 (96 cells at 1.65 V)
Temperature compensation	-320mV per °C (For temperatures greater than or equal to 20 °C) 0mV per °C (For temperatures less than 20 °C)
Battery charging <sup>9</sup> (kW)	2 (N system – 2 power modules )
Maximum charging power <sup>9</sup> (kW)	3 (N+1 system – 3 power modules)
Recharge time	3 hours – to 90% capacity after full discharge
DC Ripple current <sup>10</sup>	<0.05 C
External battery input — Full load DC input current	55.4 A at +/-192 V
External battery input — Maximum DC input current	66.5 A at end of discharge +/-160 V

## Fuses and Breakers

**NOTE:** The UPS unit’s withstand rating is 30,000 symmetrical Amps RMS

### Protection Type and Rating

Condition: The UPS plus the following options (external to the UPS):

Input Isolation Transformer	Protection Type	Notes
Present✓	90 A 3–pole breaker (30k AIC)	If available fault current is less than 30 kA, a lower AIC rated breaker may be used. Isolation transformer contains 90 A Class J fuse on primary. Each power module contains 2 pieces of 30 A fuse in parallel on its input.
Not present*	90 A Class J current limiting fuse	Current limiting fuse is required to limit fault current through static switch. Each power module contains 2 pieces of 30 A fuse in parallel on its input.

7. The following ranges can be selected: 40-60 Hz, 47-53 Hz, 49.9-50.1 Hz, 50-70 Hz, 57-63 Hz, and 59.9–60.1 Hz  
 8. May be higher at less than full load  
 9. May drop to lower values at low AC Mains  
 10. In normal operation at fully charged batteries

## System DC Input Protection

<b>⚠ DANGER</b>
<b>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</b>
For third party external battery solutions, it is mandatory to install an external MCCB supplied by Schneider Electric containing two 100 A DC breakers for battery isolation.
<b>Failure to follow these instructions will result in death or serious injury.</b>

## Wiring

	Phase conductor size	Terminal lug diameter	Notes
Mains input	3 AWG THHN	Saddle clamp- not stud	Wire AWG is recommended, copper, 194 °F (90 °C) per NEC 310-15 and 310-16 for 104 °F (40 °C) temperature environment and maximum of 3 current carrying conductors in a raceway. Local electrical codes must take precedence. Neutral conductor to be sized equal to phase current #2 AWG recommended.
DC input	1/0 AWG	8 mm	

Recommended PE conductor size is 4 AWG. The PE lug diameter is 0.250 in (8 mm).

## Wraparound Bypass Configuration / Rating

Q1	3 Pole 100 A 80% rated breaker
Q2	3 Pole 100 A 80% rated breaker
Q3	3 Pole 100 A 80% rated breaker

## Distribution

Square D QOB Panel 42 poles 3 Phase
Input via back feed 80A breaker mounted in panel
Capable of feeding 13 3-pole circuits
ATO configurable overhead whips
Internal Wiring #4AWG

## Recommended Cable Sizes

Recommended cable sizes	4 AWG THHN
	1-inch conduit

## Torque Specifications

Torque for main input terminals (in-lb)	24.6–26.1
PE lug (in-lb)	124

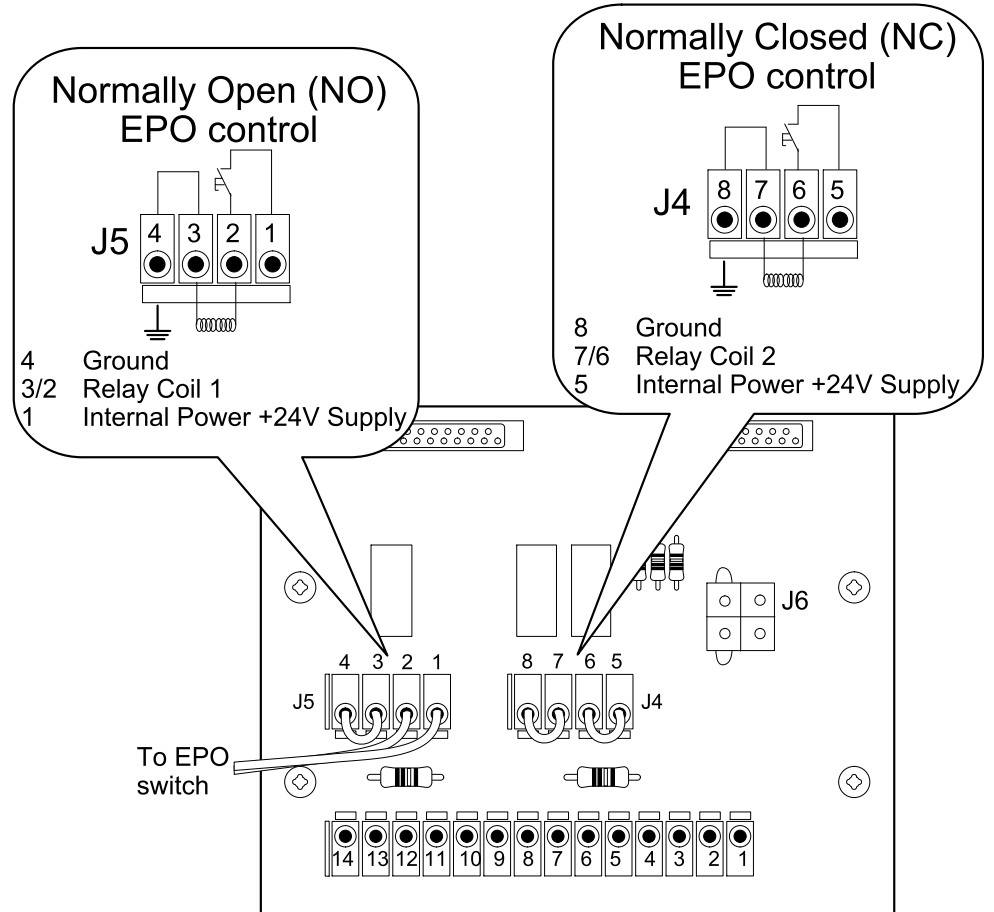
# Emergency Power Off (EPO)

## EPO Type

Normally open dry contact closure or applied 24 VDC.

## EPO Wiring

CL2 or other extra-low voltage wiring in accordance with local electrical codes.



## Physical

### Weight and Dimensions

UPS Model	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
Symmetra PX 20 kW, 208 V	275 (606) <sup>11</sup>	2068 (81.4)	597 (23.5)	905 (35.6)

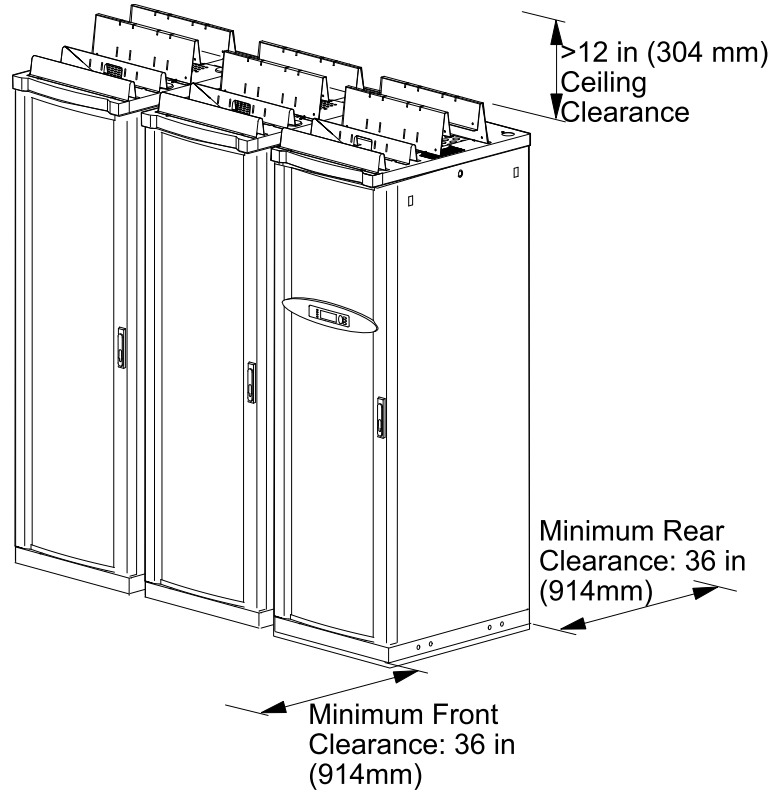
### Shipping Weight and Dimensions

UPS Model	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
Symmetra PX 20 kW, 208 V	842.27 (1853) <sup>12</sup>	2311 (91)	749 (29.5)	1054 (41.5)

11. Without power or battery modules inside  
12. Including battery and power modules

### Clearance

**NOTE:** Clearance dimensions are published for airflow and service access only. Consult with the local safety codes and standards for additional requirements in your local area.



### Environmental

Operating Temperature	0 to 40 °C (32 to 104 °F)
Storage Temperature	Storage with batteries: -15 to 45 °C (5 to 104 °F) Storage without batteries: -30 to 70 °C (-22 to 158 °F)
Relative Humidity	0–95% non-condensing
Operating Elevation	0–3000 meters (0–10000 feet)
Storage elevation	0–15000 meters (0–50000 feet)
Audible noise at 1 meter from front of unit	< 58 dBA @ < 70% load of system size when configured with 1 to 2 power modules (< 100% load with 3 power modules); 25 °C < 64 dBA @ > 70% load of system size when configured with 1 to 2 power modules; 25 °C
Protection Class	NEMA 1
Color	Black

13. Note that for storage with batteries:

- at 25 °C battery self discharge is approximately 6–8 months
- at 45 °C battery self discharge is approximately 1–2 months



### Heat Dissipation

Heat Dissipation	50% load	75% load	100% load
Batteries fully charged (BTU/hr)	2038	2946	4117
Batteries charging (BTU/hr)	4494	5402	6573

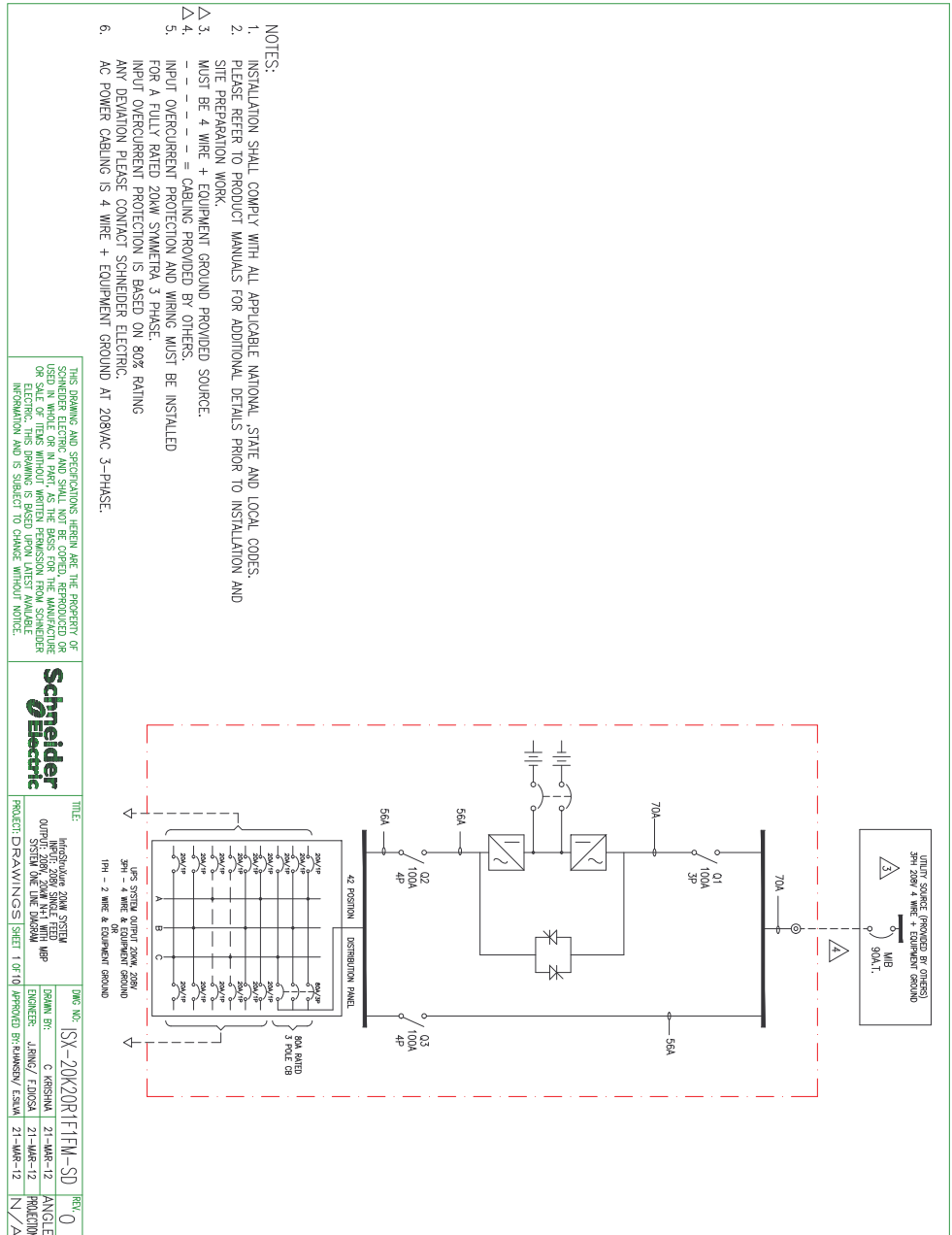
**NOTE:** Batteries fully charged is a continuous rating. Batteries charging is for 3 hours max.  
Charging losses are based on 3000 W and 95% charger electronic efficiency and 80% battery charging efficiency.

# Drawings

**NOTE:** A comprehensive set of drawings is available on the engineering website at [engineer.apc.com](http://engineer.apc.com).

**NOTE:** These drawings are for reference ONLY — subject to change without notice.

## Single Feed with MBP One Line Diagram



# Options

## Hardware Options

### Symmetra Power Module

- 10 kW Power Module, 208 V (SYPM10KF2)

### Symmetra Battery Systems

- Modular battery module (SYBT4)
- Modular battery cabinet (SYCFXR8)
- Modular battery cabinet with 8 battery modules & startup (SYCFXR8-8)
- Modular battery cabinet with startup (SYCFXR8S)

### Optional Management Devices

- 2-Port interface expander (AP9607)
- UPS network management card (AP9630CH)
- UPS network management card 2 with environmental monitoring (AP9631)
- UPS management SmartSlot card with dry contact (relay) support to monitor external triggers and initiate actions on external devices. (AP9613)

## Configuration Options

- Unity power factor corrected
- ENERGY STAR-certified
- Swappable battery and power modules
- Main and redundant intelligence modules
- Automatic internal bypass
- Service included
- Generator compatible
- Network manageable
- Internal N+1 redundancy
- Top feed
- Extended battery runtime
- Line-up/remote modular battery cabinets
- StruxureWare Data Center Expert compatible
- SmartSlot device management card
- Secondary network management card

# Limited Factory Warranty

## One-Year Factory Warranty

The limited warranty provided by Schneider Electric in this Statement of Limited Factory Warranty applies only to products you purchase for your commercial or industrial use in the ordinary course of your business.

## Terms of Warranty

Schneider Electric warrants that the product shall be free from defects in materials and workmanship for a period of one year from the date of product start-up when start-up is performed by Schneider Electric-authorized service personnel and occurs within six months of the Schneider Electric shipment date. This warranty covers repairing or replacing any defective parts including on-site labor and travel. In the event that the product fails to meet the foregoing warranty criteria, the warranty covers repairing or replacing defective parts at the sole discretion of Schneider Electric for a period of one year from the shipment date. For Schneider Electric cooling solutions, this warranty does not cover circuit breaker resetting, loss of refrigerant, consumables, or preventive maintenance items. Repair or replacement of a defective product or part thereof does not extend the original warranty period. Any parts furnished under this warranty may be new or factory-remanufactured.

## Non-transferable Warranty

This warranty is extended to the first person, firm, association or corporation (herein referred to by "You" or "Your") for whom the Schneider Electric product specified herein has been purchased. This warranty is not transferable or assignable without the prior written permission of Schneider Electric.

## Assignment of Warranties

Schneider Electric will assign you any warranties which are made by manufacturers and suppliers of components of the Schneider Electric product and which are assignable. Any such warranties are assigned "AS IS" and Schneider Electric makes no representation as to the effectiveness or extent of such warranties, assumes no responsibility for any matters which may be warranted by such manufacturers or suppliers and extends no coverage under this Warranty to such components.

## Drawings, Descriptions

Schneider Electric warrants for the warranty period and on the terms of the warranty set forth herein that the Schneider Electric product will substantially conform to the descriptions contained in the Schneider Electric Official Published Specifications or any of the drawings certified and agreed to by contract with Schneider Electric if applicable thereto ("Specifications"). It is understood that the Specifications are not warranties of performance and not warranties of fitness for a particular purpose.

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Schneider Electric shall not be liable under the warranty if its testing and examination disclose that the alleged defect in the product does not exist or was

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990–4640C–001