Symmetra™ PX

20 kW 208 V

Technical Specifications

7/2014





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As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this publication.

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Important Safety Information

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.

A 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.

AWARNING

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.

A 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.

A 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.

A 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.

AWARNING

HAZARD OF OVERHEATING

Respect the space 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 death, serious injury, or equipment damage.

AWARNING

HAZARD 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 death, serious injury, or equipment damage.

20 kW 208 V Technical Data

Technical Data

Model List

Symmetra PX 20 kW InfraStruXure 20kW, 208V

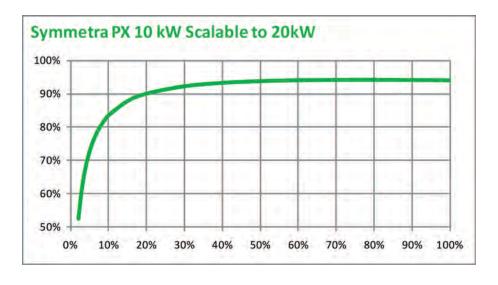
Input Power Factor

Input Power Factor	0.99 @ full load

Efficiency

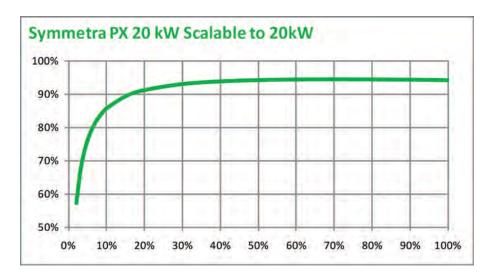
System	25% load	50% load	75% load	100% load
Symmetra PX 10 kW	91.6%	93.8%	94.2%	94%
Symmetra PX 20 kW	92.5%	94.3%	94.6%	94.3%

Efficiency Curve – 10 kW



Technical Data 20 kW 208 V

Efficiency Curve – 20 kW



Batteries

Efficiency DC to AC

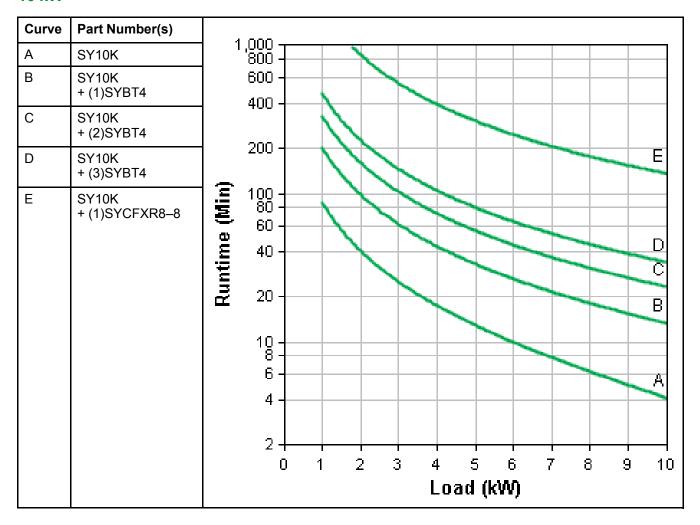
DC-AC at nominal battery voltage	94%	Minimum from 75% to Full load when configured as 20kVA n+0
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Battery Runtimes

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

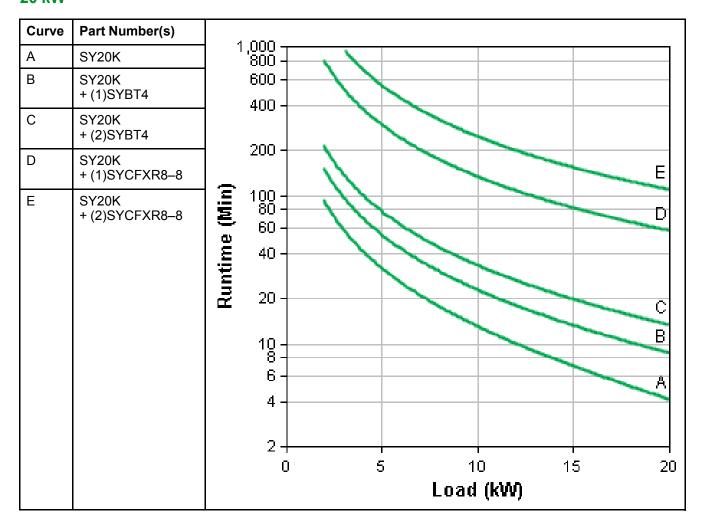
20 kW 208 V Technical Data

10 kW

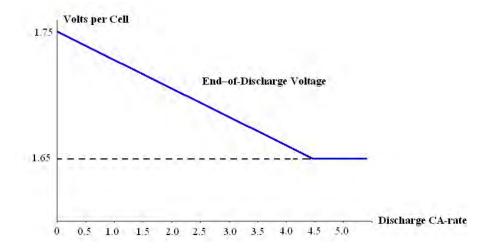


Technical Data 20 kW 208 V

20 kW



End of Discharge Voltage



Battery Material Safety Data Sheet

NOTE: For Material Safety Data Sheet (MSDS), go to the Knowledge Base http://www.apc.com/site/support/index.cfm/faq/index.cfm and type "MSDS" to get the latest MSDS information.

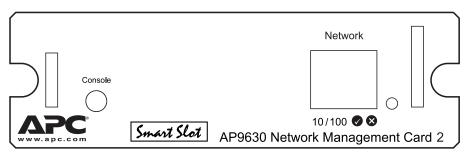
20 kW 208 V Technical Data

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 Technical Data 20 kW 208 V

Compliance

Regulatory Approvals	UL Listed per UL 1778, CSA Certified per standard CSA 107.1, FCC Verified Class A per standard FCC 47 CFR Part 15, IEC 61000-4-2 level 3, performance criteria B, IEC 61000-4-4 level 2, performance criteria A, IEC 1000-4-5 test voltages double those required for class 3, IEC 61000-4-3 level 2, performanc criteria A
Standard Warranty	1 year on-site repair or replace with factory authorized Start-Up

20 kW 208 V Facility Planning

Facility Planning

AC Input Specifications

Connection type	3PH + N + PE
Nominal input current ¹ (A)	61.3
Maximum input current ² (A)	70.9
Input Current Limitation ³ (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)	1664–2405
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)

^{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

Facility Planning 20 kW 208 V

	1000% for 500 milliseconds (bypass operation)
Crest Factor	2.76
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)
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) ⁷	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) ⁸	+/- 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 ⁹ (kW)	2 (N system — 2 power modules)
Maximum Charging Power ⁹ (kW)	3 (N+1 system — 3 power modules)
Re-charge Time	3 hours — to 90% capacity after full discharge
DC Ripple Current ¹⁰	<0.05 C
External Battery Input — Full load DC Input Current	55.4 A @ +/-192 V
External Battery Input — Maximum DC Input Current	66.5 A @ 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):

6. No limit on applied crest factor, but the UPS regulates it down to 2.7

^{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

20 kW 208 V Facility Planning

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.

System DC Input Protection

A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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.

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

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

Facility Planning 20 kW 208 V

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)

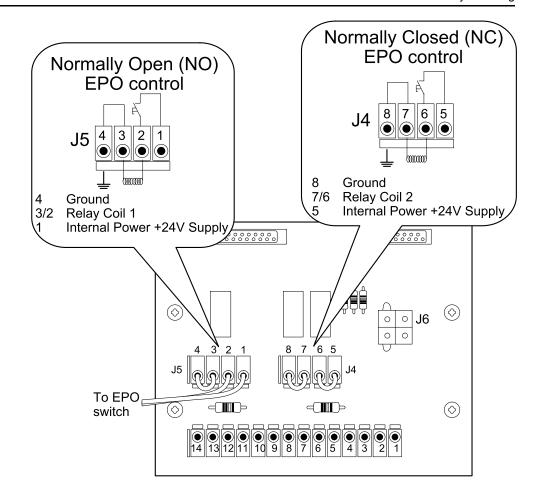
EPO Type

Normally open dry contact closure or applied 24 VDC.

EPO Wiring

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

20 kW 208 V Facility Planning



Physical

Weight and Dimensions

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

Shipping Weight and Dimensions

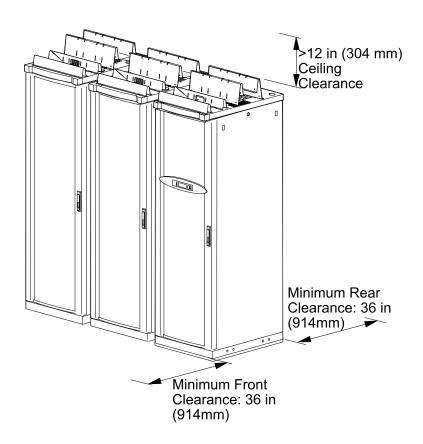
UPS Model	Weight kg	Height mm	Width mm	Depth mm
	(lbs)	(in)	(in)	(in)
Symmetra PX 20 kW, 208 V	842.27 (1853)	2311 (91)	749 (29.5)	1054 (41.5)

^{11.} Without power or battery modules inside

^{12.} Including battery and power modules

Facility Planning 20 kW 208 V

Clearance



Environmental

Operating Temperature	0 to 40 °C (32 to 104 °F)
Storage Temperature	Storage with batteries: -15 to 45 °C (5 to 104 °F) ¹³ 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

20 kW 208 V Facility Planning

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

 $\ensuremath{\text{NOTE:}}$ 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.

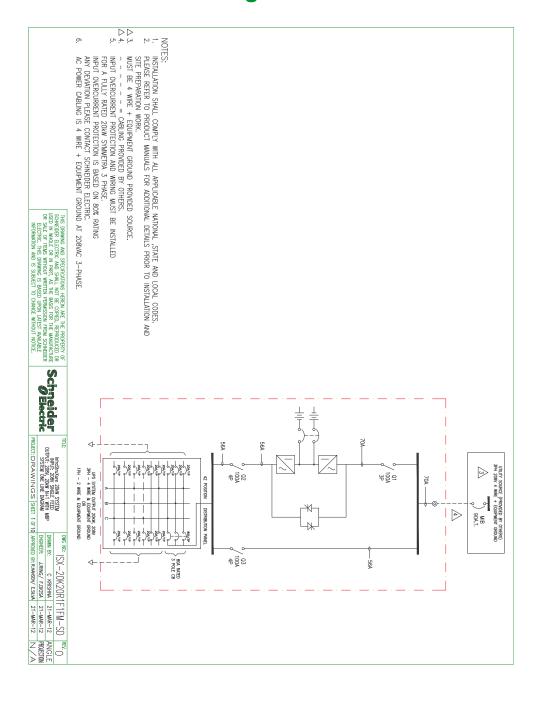
Drawings 20 kW 208 V

Drawings

NOTE: A comprehensive set of drawings is available on the engineering website at engineer.apc.com.

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

Single Feed with MBP One Line Diagram



20 kW 208 V Options

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

Schneider Electric Limited Factory Warranty

Three Phase Power Products or Cooling Solutions 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.

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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.

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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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