

# Symmetra™ PX 96 and 160 kW

380/400/415 V

## Technical Specifications

11/2023



# Legal Information

The information provided in this document contains general descriptions, technical characteristics and/or recommendations related to products/solutions.

This document is not intended as a substitute for a detailed study or operational and site-specific development or schematic plan. It is not to be used for determining suitability or reliability of the products/solutions for specific user applications. It is the duty of any such user to perform or have any professional expert of its choice (integrator, specifier or the like) perform the appropriate and comprehensive risk analysis, evaluation and testing of the products/solutions with respect to the relevant specific application or use thereof.

The Schneider Electric brand and any trademarks of Schneider Electric SE and its subsidiaries referred to in this document are the property of Schneider Electric SE or its subsidiaries. All other brands may be trademarks of their respective owner.

This document and its content are protected under applicable copyright laws and provided for informative use only. No part of this document may be reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), for any purpose, without the prior written permission of Schneider Electric.

Schneider Electric does not grant any right or license for commercial use of the document or its content, except for a non-exclusive and personal license to consult it on an "as is" basis.

Schneider Electric reserves the right to make changes or updates with respect to or in the content of this document or the format thereof, at any time without notice.

**To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this document, as well as any non-intended use or misuse of the content thereof.**

# Table of Contents

Important Safety Instructions — SAVE THESE	
INSTRUCTIONS .....	5
Safety Precautions .....	6
Technical Data .....	8
Model List .....	8
Input Power Factor .....	10
Efficiency (TÜV certified) .....	10
Efficiency Curves .....	10
Derating due to Load Power Factor .....	11
Batteries .....	11
Efficiency DC to AC .....	11
Battery Runtimes – Schneider Electric Battery Solutions .....	11
Battery Runtimes — Third Party Classic Battery Solution .....	15
Battery Discharge Current .....	17
End of Discharge Voltage at 100% Load .....	17
Electrolyte Values .....	17
Communication and Management .....	17
Features .....	17
EPO and Input/Output Contacts .....	18
Compliance .....	20
Facility Planning .....	21
Input Specifications .....	21
Bypass Specifications .....	21
Output Specifications .....	22
Modular Battery Specifications .....	22
Classic Battery Specifications .....	23
Recommended Cable, Bolt and Lug Sizes .....	24
Required Upstream and Downstream Protection for Building	
Installation .....	25
Single and Dual Mains Systems .....	25
Physical .....	25
Weights and Dimensions .....	25
Shipping Weights and Dimensions .....	26
Clearance Symmetra PX 96 and 160 kW .....	26
Environmental .....	26
Heat Dissipation .....	26
Drawings .....	27
Symmetra PX Single System with PDU with Modular Batteries .....	28
Options .....	29
Hardware Options .....	29
Configuration Options .....	32
Limited Factory Warranty .....	33



# 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.

Per IEC 62040-1: "Uninterruptible power systems (UPS) -- Part 1: Safety Requirements," this equipment, including battery access, must be inspected, installed and maintained by a skilled person.

The skilled person is a person with relevant education and experience to enable him or her to perceive risks and to avoid hazards which the equipment can create (reference IEC 62040-1, section 3.102).

## 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-flammable, 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 96 kW 400 V

#### Symmetra PX 96 kW



- Symmetra PX 32 kW Scalable to 96 kW (SY32K96H)
- Symmetra PX 32 kW Scalable to 96 kW with Integrated Modular Distribution (SY32K96H-PD)
- Symmetra PX 32kW Scalable to 96kW, without Bypass, Distribution, or Batteries, 400V (SY32K96H-NB)
- Symmetra PX 64 kW Scalable to 96 kW (SY64K96H)
- Symmetra PX 64 kW Scalable to 96 kW with Integrated Modular Distribution (SY64K96H-PD)
- Symmetra PX 64kW Scalable to 96kW, without Bypass, Distribution, or Batteries, 400V (SY64K96H-NB)
- Symmetra PX 96 kW (SY96K96H)
- Symmetra PX 96 kW with Integrated Modular Distribution (shown) (SY96K96H-PD)
- Symmetra PX 96kW, without Bypass, Distribution, or Batteries, 400V (SY96K96H-NB)



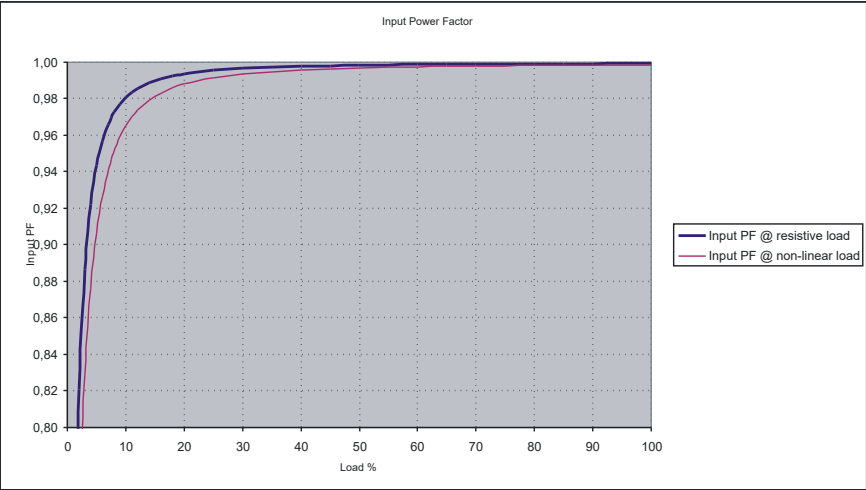
## Symmetra PX 160 kW 400 V

### Symmetra PX 160 kW with Integrated Modular Distribution



- Symmetra PX 32 kW Scalable to 160 kW (SY32K160H)
- Symmetra PX 32 kW Scalable to 160 kW with Integrated Modular Distribution (SY32K160H-PD)
- Symmetra PX 32kW Scalable to 160kW, without Bypass, Distribution, or Batteries, 400V (SY32K160H-NB)
- Symmetra PX 64 kW Scalable to 160 kW (SY64K160H)
- Symmetra PX 64 kW Scalable to 160 kW with Integrated Modular Distribution (SY64K160H-PD)
- Symmetra PX 64kW Scalable to 160kW, without Bypass, Distribution, or Batteries, 400V (SY64K160H-NB)
- Symmetra PX 96 kW Scalable to 160 kW (SY96K160H)
- Symmetra PX 96 kW Scalable to 160 kW with Integrated Modular Distribution (SY96K160H-PD)
- Symmetra PX 96kW Scalable to 160kW, without Bypass, Distribution, or Batteries, 400V (SY96K160H-NB)
- Symmetra PX 128 kW Scalable to 160 kW (SY128K160H)
- Symmetra PX 128 kW Scalable to 160 kW with Integrated Modular Distribution (SY128K160H-PD)
- Symmetra PX 128kW Scalable to 160kW, without Bypass, Distribution, or Batteries, 400V (SY128K160H-NB)
- Symmetra PX 160 kW (SY160K160H)
- Symmetra PX 160 kW with Integrated Modular Distribution (shown) (SY160K160H-PD)
- Symmetra PX 160kW, without Bypass, Distribution, or Batteries, 400V (SY160K160H-NB)

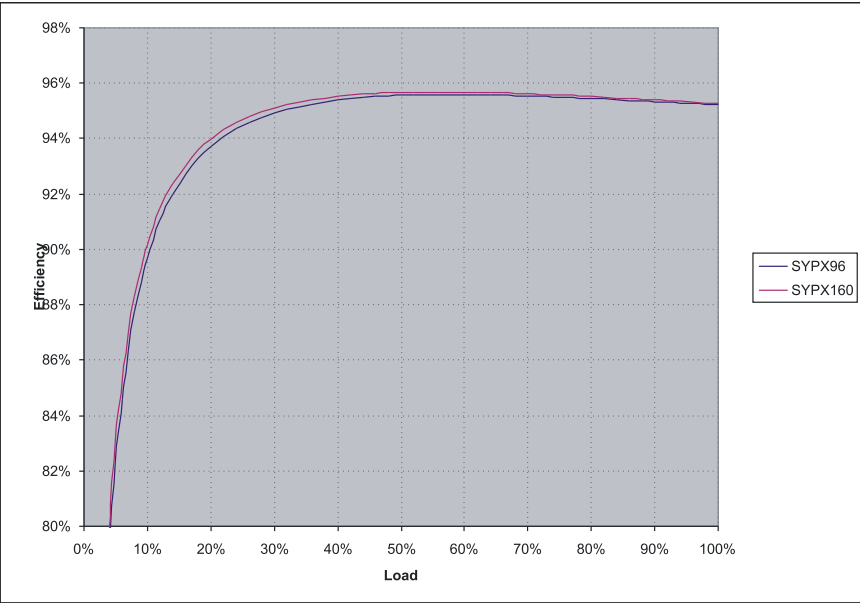
# Input Power Factor



# Efficiency (TÜV certified)

System	25% load	50% load	75% load	100% load
Symmetra PX 96 kW 400 V	94.5	95.6	95.5	95.2
Symmetra PX 160 kW 400 V	94.7	95.7	95.6	95.3

# Efficiency Curves



## Derating due to Load Power Factor

The Symmetra PX 96/160 kW exhibits no derating due to leading or lagging load power factor

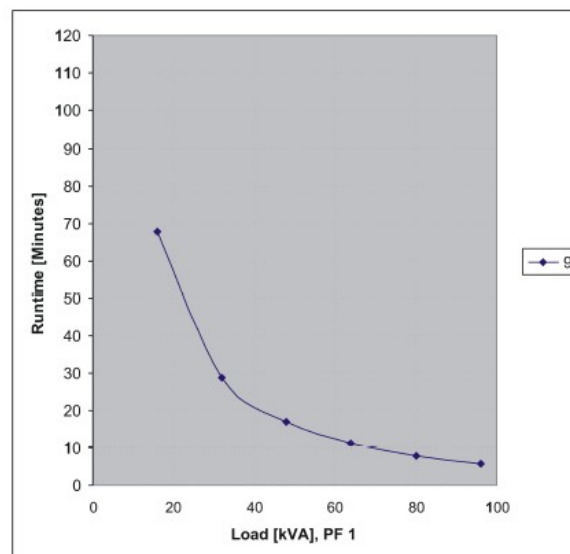
## Batteries

### Efficiency DC to AC

	96 kW			160 kW		
	380 V	400 V	415 V	380 V	400 V	415 V
Efficiency at nom battery voltage (%)	95%	95%	95%	95%	95%	95%

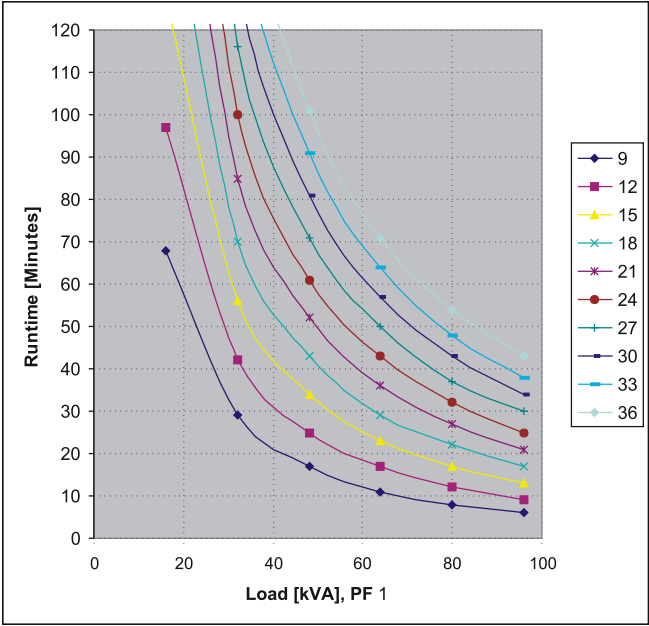
## Battery Runtimes – Schneider Electric Battery Solutions

### Symmetra PX 96 kW Battery Runtimes (Minutes) – Modular Battery Solution



	Load kW					
Number of bat shelves	16	32	48	64	80	96
9	68	29	17	11	8	6

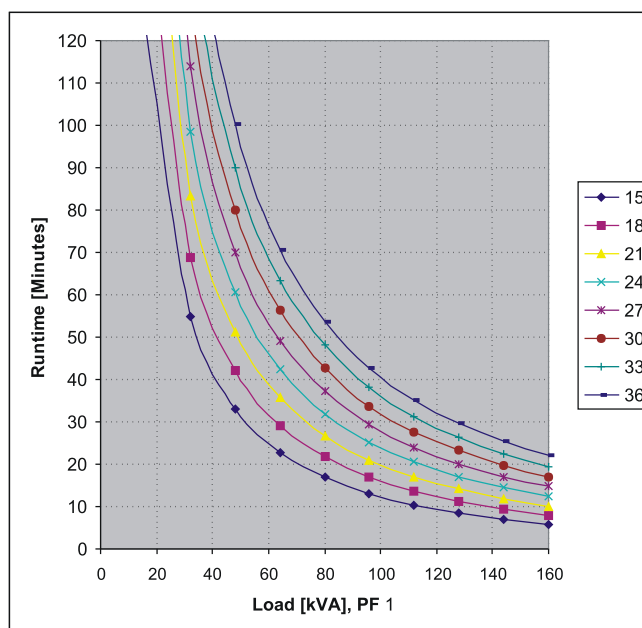
Symmetra PX 96 kW Battery Runtimes (Minutes) – Extended Modular Battery Solution



		Load kW					
Number of modular battery cabinets	Number of bat shelves	16	32	48	64	80	96
1	9	68	29	17	11	8	6
2	10	77	33	20	13	9	7
	11	87	38	22	15	11	8
	12	97	42	25	17	12	9
	13	107	47	28	19	14	11
	14	117	51	31	21	15	12
	15	128	56	34	23	17	13
	16	138	61	37	25	19	14
	17	149	65	40	27	20	16
	18	160	70	43	29	22	17
3	19	171	75	46	32	24	18
	20	182	80	49	34	25	20
	21	193	85	52	36	27	21
	22	204	90	55	38	29	23
	23	216	95	58	41	30	24
	24	227	100	61	43	32	25
	25	238	106	64	45	34	27
	26	250	111	68	47	36	28
	27	262	116	71	50	37	30
4	28	274	121	74	52	39	31
	29	286	127	78	54	41	33
	30	298	132	81	57	43	34
	31	310	137	84	59	45	35
	32	322	143	88	62	47	37
	33	334	148	91	64	48	38

		Load kW					
Number of modular battery cabinets	Number of bat shelves	16	32	48	64	80	96
	34	346	154	95	66	50	40
	35	359	160	98	69	52	42
	36	371	165	101	71	54	43

## Symmetra PX 160 kW Battery Runtimes (Minutes) – Modular Battery Solution



		Load kW									
Number of modular battery cabinets	Number of bat shelves	16	32	48	64	80	96	112	128	144	160
PDU with modular batteries and 1 modular battery cabinet	15	123	55	33	23	17	13	10	8	7	6
	16	133	59	36	25	18	14	11	9	8	7
	17	144	64	39	27	20	16	13	10	9	7
	18	154	69	42	29	22	17	14	11	9	8
PDU with modular batteries and 2 modular battery cabinets	19	165	74	45	31	23	18	15	12	10	9
	20	175	79	48	33	25	20	16	13	11	9
	21	186	83	51	36	27	21	17	14	12	10
	22	197	88	54	38	28	22	18	15	13	11
	23	208	93	57	40	30	24	19	16	14	12
	24	219	98	60	42	32	25	20	17	14	12
	25	230	104	64	45	34	27	22	18	15	13
	26	241	109	67	47	35	28	23	19	16	14
PDU with modular batteries and 3 modular battery cabinets	27	252	114	70	49	37	29	24	20	17	15
	28	264	119	73	52	39	31	25	21	18	16
	29	275	124	77	54	41	32	26	22	19	16
	30	287	130	80	56	43	34	28	23	20	17
	31	298	135	83	59	44	35	29	24	21	18
	32	310	140	87	61	46	37	30	25	22	19

		Load kW									
Number of modular battery cabinets	Number of bat shelves	16	32	48	64	80	96	112	128	144	160
	33	322	146	90	63	48	38	31	26	23	20
	34	334	151	93	66	50	40	33	27	23	20
	35	346	156	97	68	52	41	34	28	24	21
	36	358	162	100	71	54	43	35	30	25	22

## Symmetra PX 160 kW Battery Runtimes (Minutes) – Classic Batteries

Additional details can be found on the ISX designer

### Power Factor: 0.8

Battery Configuration	32 kVA	64 kVA	96 kVA	128 kVA	160 kVA
A	30 min	11 min	6 min	N/A	N/A
B	41 min	17 min	10 min	6 min	N/A
AA	74 min	30 min	17 min	11 min	8 min
BB	92 min	41 min	25 min	17 min	12 min
AAA	116 min	50 min	30 min	20 min	15 min
BBB	147 min <sup>1</sup>	66 min	41 min	29 min	22 min
AAAA	164 min <sup>1</sup>	71 min	43 min	30 min	22 min
BBBB	204 min <sup>1</sup>	92 min	58 min	41 min	31 min

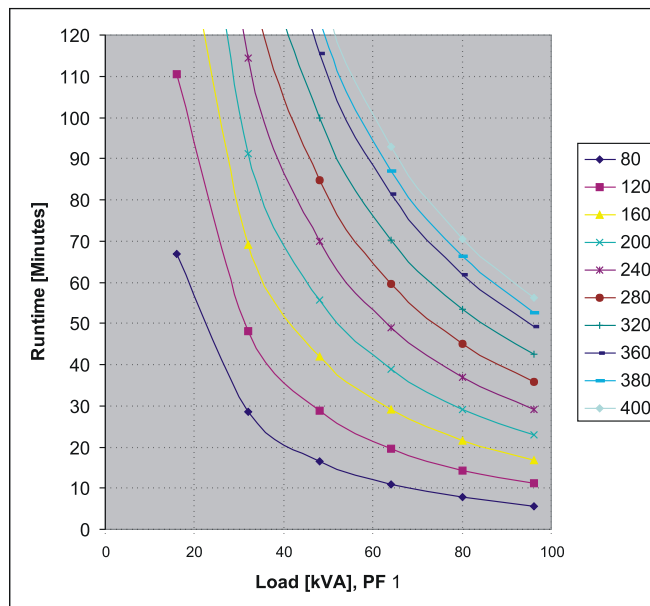
### Power Factor: 1.0

Battery Configuration	32kVA	64kVA	96kVA	128kVA	160kVA
A	22 min	8 min	4 min	N/A	N/A
B	31 min	12 min	7 min	4 min	N/A
AA	54 min	22 min	13 min	8 min	6 min
BB	72 min	31 min	18 min	12 min	9 min
AAA	88 min	37 min	22 min	15 min	11 min
BBB	115 min <sup>1</sup>	51 min	31 min	22 min	16 min
AAAA	125 min <sup>1</sup>	54 min	32 min	22 min	16 min
BBBB	160 min <sup>1</sup>	72 min	44 min	31 min	23 min

1. Recharge time may be too long – check with customer requirements.

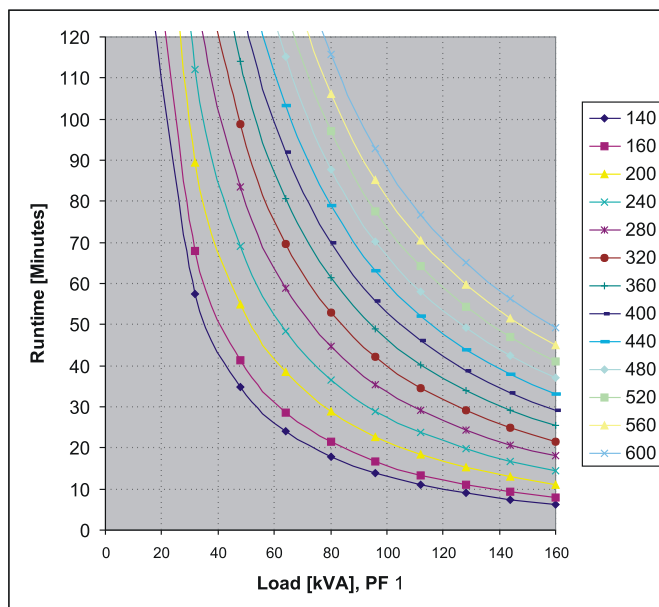
## Battery Runtimes — Third Party Classic Battery Solution

### Symmetra PX 96 kW Battery Runtimes (Minutes) — Classic Batteries



Battery Ah		Load kW					
20 hr rate Ah	Approx. Equivalent 10 hr rate Ah	16	32	48	64	80	96
80	74	67	29	17	11	8	6
100	93	88	38	23	15	11	8
120	112	111	48	29	20	14	11
140	130	134	59	35	24	18	14
160	149	157	69	42	29	22	17
180	167	182	80	49	34	25	20
200	186	207	91	56	39	29	23
220	205	323	103	63	44	33	26
240	223	258	114	70	49	37	29
260	242	284	126	77	54	41	32
280	260	311	138	85	60	45	36
300	279	338	150	92	65	49	39
320	298	366	163	100	70	53	42
340	316	393	175	108	76	58	46
360	335	421	188	116	81	62	49
380	353	450	201	124	87	66	53
400	372	479	213	132	93	71	56

## Symmetra PX 160 kW Battery Runtimes (Minutes) — Classic Batteries



Battery Ah		Load kW									
20 hr rate Ah	Approx. Equivalent 10 hr rate Ah	16	32	48	64	80	96	112	128	144	160
140	130	129	57	35	24	18	14	11	9	7	6
160	149	152	68	41	29	21	17	13	11	9	8
180	167	175	79	48	33	25	20	16	13	11	9
200	186	199	90	55	38	29	23	18	15	13	11
220	205	224	101	62	43	33	26	21	18	15	13
240	223	249	112	69	48	37	29	24	20	17	14
260	242	274	124	76	54	41	32	26	22	19	16
280	260	300	135	84	59	45	35	29	24	21	18
300	279	326	147	91	64	49	39	32	27	23	21
320	298	352	160	99	70	53	42	35	29	25	22
340	316	379	172	106	75	57	45	37	31	27	23
360	335	406	184	114	81	61	49	40	34	29	25
380	353	434	197	122	86	66	52	43	36	31	27
400	372	461	209	130	92	70	56	46	39	33	29
420	391	489	222	138	98	74	59	49	41	36	31
440	409	518	235	146	103	79	63	52	44	38	33
460	428	546	248	154	109	83	67	55	47	40	35
480	446	575	261	162	115	88	70	58	49	42	37
500	465	604	275	171	121	92	74	61	52	45	39
520	484	633	288	179	127	97	78	64	54	47	41
540	502	663	301	187	133	102	81	67	57	49	43
560	521	692	315	196	139	106	85	70	60	52	45
580	539	722	329	204	145	111	89	74	62	54	47
600	558	752	342	213	151	116	93	77	65	56	49

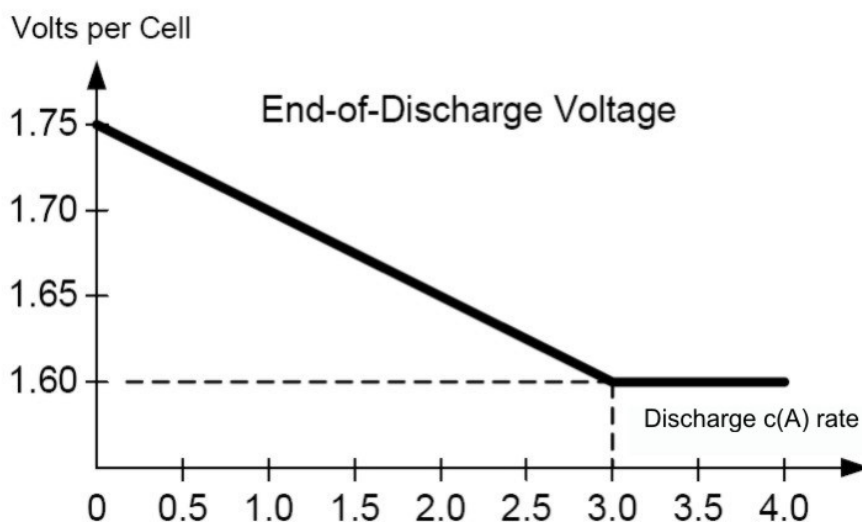


## Battery Discharge Current

	96 kW	160 kW
I bat at bat nominal , 100% load	265	441
I bat at bat min , 100% load	330	550
I bat at bat min , 150% load	495	825

## End of Discharge Voltage at 100% Load

**NOTE:** The voltage is 1.6 to 1.75 per cell depending on load.



**NOTE:** C equals  $I_{\text{discharge}}$  divided by the battery Ah capacity.

## Electrolyte Values

	Battery unit	String of batteries (4 battery units)
Electrolyte volume L (gal)	2.78 (0.61)	11.14 (2.45)
Electrolyte weight kg (lbs)	3.62 (7.98)	14.46 (31.90)
Sulfuric acid weight kg (lbs)	1.43 (3.16)	5.73 (12.6)

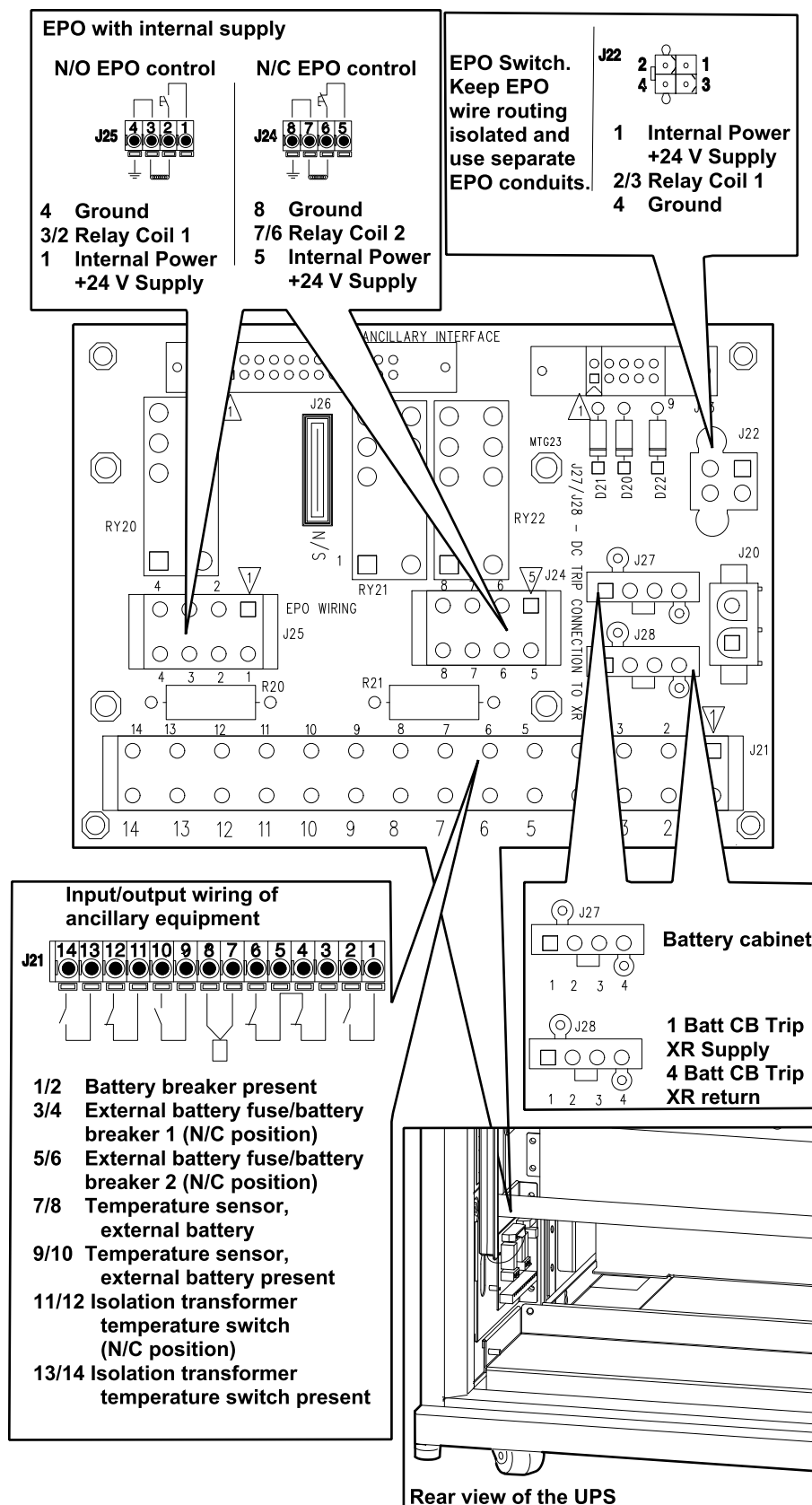
## Communication and Management

### Features

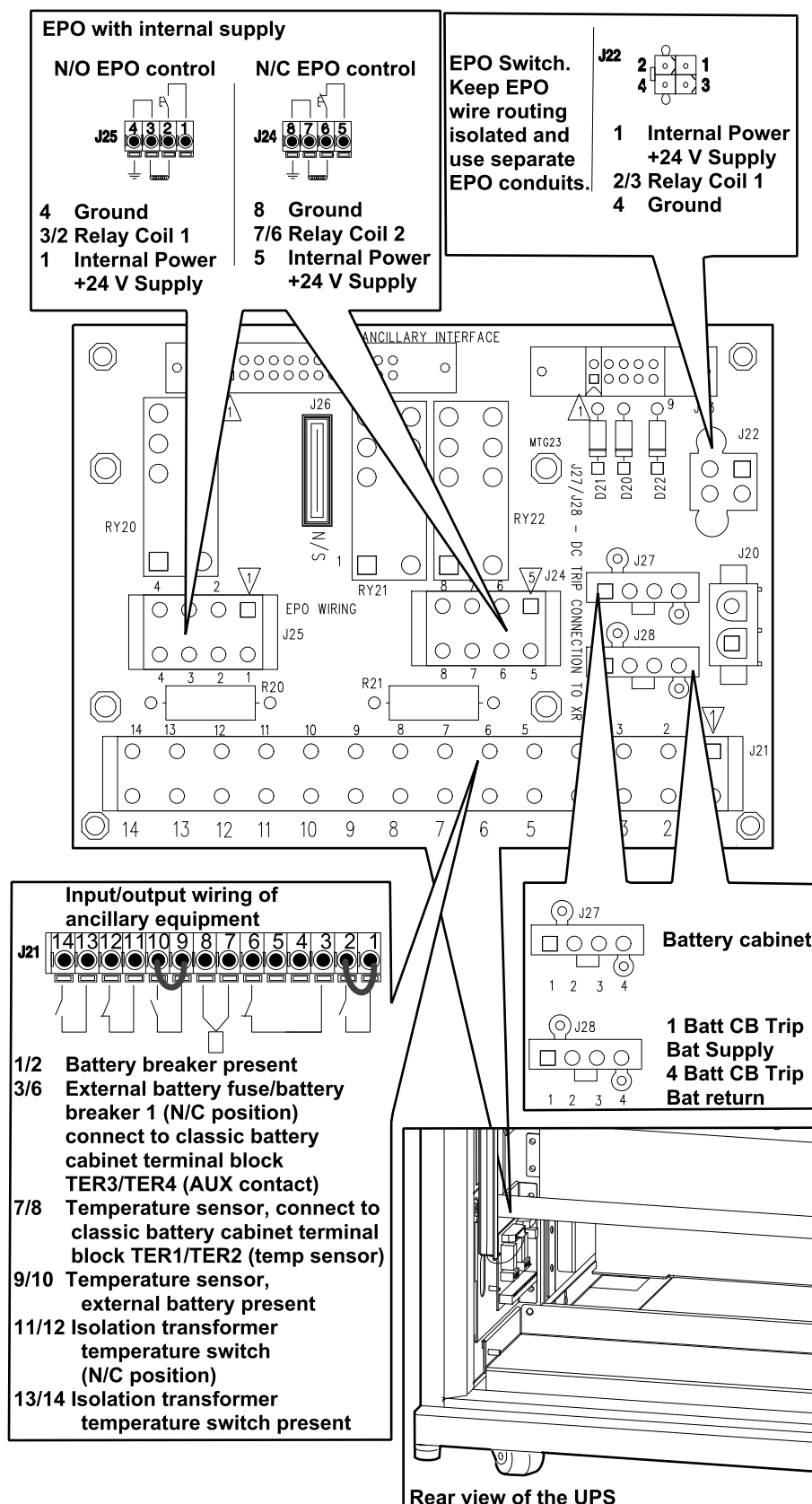
Available SmartSlot™ Interface Quantity	2
Control panel	Multi-function LCD status and control console
Audible alarm	Alarm when on battery : distinctive low battery alarm : configurable delays
Emergency Power Off (EPO)	Yes

## EPO and Input/Output Contacts

### EPO Switch Wiring Diagram for Modular Battery Cabinet



## EPO Switch Wiring Diagram for Classic Battery Cabinet



## Compliance

Safety	IEC 62040-1: 2017, Edition 2.0, Uninterruptible Power Systems (UPS) - Part 1: Safety requirements
Safety for MBP	IEC 61439-1: 2020, Edition 3.0, Low-voltage switchgear and control gear assemblies - Part 1: General rules IEC 61439-2: 2020, Edition 3.0, Low-voltage switchgear and control gear assemblies - Part 2: Power switchgear and controlgear assemblies
EMC/EMI/RFI	IEC 62040-2: 2016-11, 3rd edition Uninterruptible Power Systems (UPS) - Part 2: Electromagnetic compatibility (EMC) requirements C3
Performance	Performance in accordance with: IEC 62040-3: 2011 Uninterruptible Power Systems (UPS). Method of specifying the performance and test requirements. 2001 Classifications: VFI-SS-111
Transportation	ISTA 2B (2006)
Seismic	SE CoC in accordance with AC 156 protocol
Earthing system	TN, TT, IT
Overvoltage category	This UPS is OVCII compliant.
Protective class	I
Pollution degree	2

# Facility Planning

## Input Specifications

	96 kW			160 kW		
	380 V	400 V	415 V	380 V	400 V	415 V
Connection type	3PH + N + PE <sup>2</sup>					
Input frequency (Hz)	40–70					
Total harmonic distortion (THDI)	< 5% at full load					
Nominal input current (A) <sup>3</sup>	154	146	141	256	243	234
Maximum input current (A) <sup>4</sup>	169	160	155	287	268	258
Input current limitation (A) <sup>5</sup>	197	197	197	295	295	295
Minimum short circuit current rating	Dependent on upstream protection. See section Required Upstream and Downstream Protection for details.					
Input power factor correction	> 0.98 at load > 50%					
Maximum short circuit level Icc (kA)	Rated conditional short-circuit current Icc: 30 kA. Rated peak withstand current Ipk: Icc x 1.7.					

## Bypass Specifications

	96 kW			160 kW		
	380 V	400 V	415 V	380 V	400 V	415 V
Connection type	3PH + N + PE <sup>2</sup>					
Input frequency (Hz)	40–70					
Nominal input current (A)	147	139	134	248	236	227
Minimum short circuit current rating	Dependent on upstream protection. See section Required Upstream and Downstream Protection for details.					
Maximum short circuit level Icc (kA)	Rated conditional short-circuit current Icc: 30 kA. Rated peak withstand current Ipk: Icc x 1.7.					

2. TN, TT, and IT power distribution systems with no earthed line conductors are supported.
3. Input current is based on nominal voltage and rated load, batteries fully charged
4. Input current is based on nominal voltage, rated load and full battery charge current.
5. Integrated electronic current limitation functionality.

## Output Specifications

	96 kW			160 kW		
	380 V	400 V	415 V	380 V	400 V	415 V
Connection type	3PH + N + PE					
Output capacity	150% for 60 seconds (normal operation) 125% for 10 minutes (normal operation) 150% for 60 seconds (battery operation) 125% for 10 minutes (battery operation) 100% load (bypass operation) 1000% for 100 ms (bypass operation)					
Nom output current (A)	147	139	134	248	236	227
Output frequency (sync to bypass)	47–53 Hz for 50 Hz nominal <sup>6</sup>					
Slew rate (Hz/sec)	Programmable to 0.25, 0.5, 1, 2, 4, and 6					
Total harmonic distortion (THDU)	< 2% linear < 5% non-linear					
Output power factor	0.5 leading to 0.5 lagging without derating					
Dynamic load response	+/- 5%					
Output voltage regulation	+/- 1%					
Crest factor	2.7					
Minimum short circuit current rating	Dependent on upstream protection. See section Required Upstream and Downstream Protection for details.					
Maximum short circuit level I <sub>cc</sub> (kA)	Rated conditional short-circuit current I <sub>cc</sub> : 30 kA. Rated peak withstand current I <sub>pk</sub> : I <sub>cc</sub> x 1.7.					

## Modular Battery Specifications

**NOTE:** The batteries must be connected to a DC rated circuit breaker.

Battery Type	Sealed lead–acid
Nominal voltage (VDC)	+/- 192 (96 cells at 2 V)
Float voltage (VDC)	+/- 218 (96 cells at 2.27 V)
End of discharge voltage at full load (VDC)	+/- 154 (96 cells at 1.6 V)
End of discharge maximum battery current (A)	96 kW: 332 160 kW: 550
Maximum charging power <sup>7</sup>	96 kW: 9.6/19.2 kW (selected via the display) 160 kW: 16/32 kW (selected via the display)

**NOTE:** Battery specifications are based on VRLA batteries.

6. The following options can be selected: 40–60 Hz, 47–53 Hz, 49.9–50.1 Hz.

7. Input current limit may lower charging capability in some line and load conditions.

## Classic Battery Specifications

### NOTICE

#### HAZARD OF EQUIPMENT DAMAGE

Do not mix battery types in the same installation.

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

Pre-installed batteries	XP12V1800	XP12V2500
Battery Type	Sealed lead-acid	
Nominal voltage (V)	12	12
Power <sup>8</sup>	1370	1870
Nominal capacity <sup>9</sup>	56.4	69.5
Internal resistance (mOhm)	8.6	6.2
Short circuit current (A)	1521	2030

## DC Power Levels for Battery Sizing with Output Power Factor = 1

DC power in kW				
Load	25%	50%	75%	100%
32 kVA	8.5	16.9	25.4	33.9
64 kVA	16.9	33.9	50.8	67.7
96 kVA	25.4	50.8	76.2	101.6
128 kVA	33.9	67.7	101.6	135.4
160 kVA	42.3	84.7	127.0	169.3

## DC Power Levels for Battery Sizing with Output Power Factor = 0.8

DC power in kVA				
Load	25%	50%	75%	100%
32 kVA	6.8	13.5	20.3	27.1
64 kVA	13.5	27.1	40.6	54.2
96 kVA	20.3	40.6	61.0	81.3
128 kVA	27.1	54.2	81.3	108.4
160 kVA	33.9	67.7	101.6	135.4

## Maximum Current with Battery at End of Discharge (A)

Load	25%	50%	75%	100%
32 kW	27.6	55.1	82.7	110.2
64 kW	55.1	110.2	165.3	220.5

8. 15 min 1.60 VDC 25 °C W/block

9. C<sub>10</sub> 1.80 VDC 25 °C Ah

96 kW	82.7	165.3	248.0	330.7
128 kW	110.2	220.5	330.7	440.9
160 kW	137.8	275.6	413.4	551.1

## Recommended Cable, Bolt and Lug Sizes

**NOTE:** All wiring must comply with all applicable local and/or national electrical codes.

The recommended cable sizes are based on an environment with an ambient temperature of 30 °C (86 °F) .

Temperature of the conductors: 90 °C (104 °F).

Refer to IEC 60364-5-52 for installation methods. The cable sizes are recommendations for maximum configurations and copper cables.

Cable	Terminal bolt diameter	Cable size	Cable lug type
Input	M10	2 x 120 mm <sup>2</sup>	LCA4/0-12H-X
Bypass	M10	250 mm <sup>2</sup>	LCA500-12H-X
Battery 1	M10	150 mm <sup>2</sup>	LCA300-12H-X
Battery 2	M10	150 mm <sup>2</sup>	LCA300-12H-X
Output	M10	250 mm <sup>2</sup>	LCA500-12H-X



# Required Upstream and Downstream Protection for Building Installation

The specified upstream breakers below are required to obtain the conditional short-circuit current rating,  $I_{cc}$  at 30 kA symmetrical rms.

## ⚠️ DANGER

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

- Circuit breakers must have instantaneous trip time of maximum 60 ms.
- Circuit breakers must have instantaneous override values set according to the table below.

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

## Single and Dual Mains Systems

### Input and Bypass

With Breaker PowerPact NLGF36400U3XTW

	96 kW		160 kW	
	Input	Bypass	Input	Bypass
Trip setting	96 kW	96 kW	160 kW	160 kW
$I_r$ (A)	225	160	400	250
$I_r$ (@ 6 $I_r$ ) <sup>10</sup>	0.5–16	0.5–16	0.5–16	0.5–16
$I_i$ (x $I_n$ )	1.5–12	1.5–12	1.5–12	1.5–12

### Output

	96 kW 400 V		160 kW 400 V	
	Fuse	Breaker (A)	Fuse	Breaker (A)
Battery breaker (max value) <sup>11</sup>	—	550	—	550
UPS output Q2	160 A gL type fuse	160	250 A gL type fuse	250

## Physical

### Weights and Dimensions

	Part number	Weight kg	Height mm	Width mm	Depth mm
96 and 160 kW UPS cabinet <sup>12</sup>	(SYCF160KH)	325	2011	600	1070

10.  $I_r$  and  $I_{sd}$  must be set by the installer based on the installation coordination

11. For more information see .

12. Not including power modules.

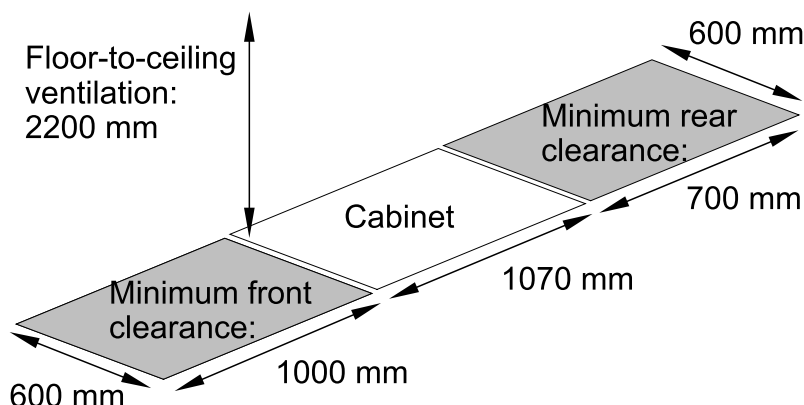
## Shipping Weights and Dimensions

	Part number	Weight kg	Height mm	Width mm	Depth mm
96 and 160 kW UPS cabinet <sup>13</sup>	(SYCF160KH)	358	2140	848	1210

## Clearance Symmetra PX 96 and 160 kW

**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.

**NOTE:** Rear clearance can only be reduced to 300 mm for ventilation when the UPS cabinet is used in push-to-wall installations, typically together with the classic battery cabinet.



## Environmental

	Operation	Storage
Temperature	0 to 40 °C	-15 to 40 °C
Relative humidity	0 - 95%	0 - 95%
Elevation	0-1000 m: 100% load 1000-1500 m: 95% load 1500-2000 m: 91% load 2000-2500 m: 86% load 2500-3000 m: 82% load	0-15000 m
Audible noise at 1 meter from surface of unit	63.00 dBA	
Protection class	NEMA 1	
Colour	Black	

## Heat Dissipation

**NOTE:** Full load heat loss at nominal mains and fully charged batteries.

UPS rating	32 kW	64 kW	96 kW	128 kW	160 kW
Heat dissipation kWh (BTU/hr)	1.68 (5748)	3.37 (11496)	5.05 (17244)	6.73 (22992)	8.42 (28741)

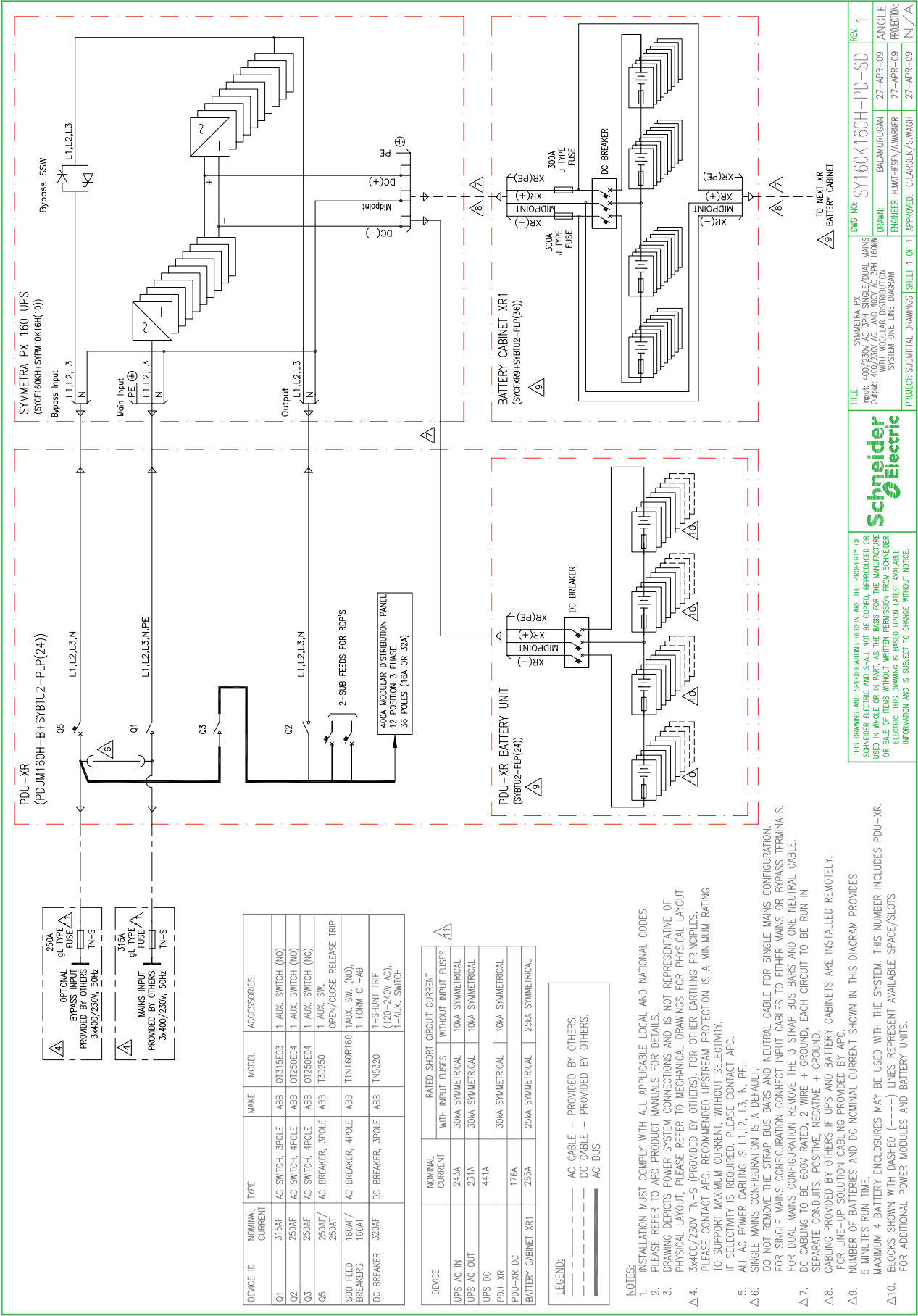
13. Not including power modules.

# Drawings

**NOTE:** A comprehensive set of drawings is available on [www.se.com](http://www.se.com).

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

Symmetra PX Single System with PDU with Modular Batteries



THIS DRAWING AND SPECIFICATIONS HEREIN ARE THE PROPERTY OF SCHNEIDER ELECTRIC AND SHALL NOT BE COPIED, REPRODUCED OR USED IN WHOLE OR IN PART, AS THE BASIS FOR THE MANUFACTURE OR SALE OF ITEMS WITHOUT WRITTEN PERMISSION FROM SCHNEIDER ELECTRIC. THIS DRAWING IS BASED UPON LATEST AVAILABLE INFORMATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

TITLE: SYMMETRA PX  
Input: 400/230V AC 3PH SINGLE/DUAL MAINS  
Output: 400/230V AC AND 480V AC 3PH 600W  
WITH MODULAR DISTRIBUTION SYSTEM ONE LINE DIAGRAM

DWG NO: SY160K160H-PD-SD  
REV. 1

DRWN: BALAJURUGAN  
ENGR: HATHISEEN/AWARRER  
PROJECT: SUBMITTAL DRAWINGS

SHEET 1 OF 1  
27-APR-09  
27-APR-09  
N/A

# Options

## Hardware Options

### Modular Battery Cabinets

High-performance battery module for 400V Symmetra PX 48/96/160KW & 208V Symmetra PX 100 KW	SYBT9–B4
High-performance long-life battery module for 400V Symmetra PX 48/96/160KW & 208V Symmetra PX 100 KW	SYBT9–B4LL
Symmetra PX Modular battery cabinet for 400V PX 96/160kW & 208V PX 100kW for 9 Battery Modules	SYCFXR9
Symmetra PX Modular battery cabinet for 400V PX 96/160kW & 208V PX 100kW with 9 Battery Modules & Startup	SYCFXR9–9
Symmetra PX Modular battery cabinet for 400V PX 96/160kW & 208V PX 100kW for 9 Battery Modules & Startup	SYCFXR9–S

### Classic Battery Cabinets

Symmetra PX 96/160kW Classic battery cabinet with classic batteries A <sup>14</sup>	SYPBV96K160HA
Symmetra PX 96/160kW Classic battery cabinet with classic batteries B <sup>14</sup>	SYPBV96K160HB
Symmetra PX 96/160kW Classic battery cabinet (empty) for third party batteries <sup>14</sup>	SYPBV96K160H

### Power Module

Symmetra PX Power Module, 10/16kW, 400V	SYPM10K16H
---	------------

### Modular Power Accessories

Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 1080cm	PDX316IEC-1080
Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 120cm	PDX316IEC-120
Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 1200cm	PDX316IEC-1200
Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 240cm	PDX316IEC-240
Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 360cm	PDX316IEC-360
Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 480cm	PDX316IEC-480
Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 600cm	PDX316IEC-600
Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 720cm	PDX316IEC-720
Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 840cm	PDX316IEC-840
Modular IT Power Distribution Cable Extender 3 Wire 16A IEC309 960cm	PDX316IEC-960
Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 1080cm	PDX332IEC-1080
Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 120cm	PDX332IEC-120

14. Product availability may depend on geographical location

Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 1200cm	PDX332IEC-1200
Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 240cm	PDX332IEC-240
Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 360cm	PDX332IEC-360
Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 480cm	PDX332IEC-480
Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 600cm	PDX332IEC-600
Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 720cm	PDX332IEC-720
Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 840cm	PDX332IEC-840
Modular IT Power Distribution Cable Extender 3 Wire 32A IEC309 960cm	PDX332IEC-960
IT Power Distribution Module 3x1 Pole 3 Wire 16A 3xIEC309 300cm, 360cm, 420cm	PDM1316IEC-3P
IT Power Distribution Module 3x1 Pole 3 Wire 32A 3xIEC309 300cm, 360cm, 420cm	PDM1332IEC-3P
IT Power Distribution Module 3x1 Pole 3 Wire 32A 3xIEC309 480cm, 540cm, 600cm	PDM1332IEC-3P-2
IT Power Distribution Module 3x1 Pole 3 Wire 32A 3xIEC309 660cm, 720cm, 780cm	PDM1332IEC-3P-3
Power Dist. Mod. 3x1 POLE 3 WIRE RCD 32A 3xIEC309 300CM, 360CM, 420CM	PDM2332IEC-3P30R-1
Power Dist. Mod. 3x1 POLE 3 Wire RCD 32A 3xIEC309 480CM, 540CM, 600CM	PDM2332IEC-3P30R-2
Power Dist. Mod. 3x1 POLE 3 Wire RCD 32A 3xIEC309 660CM, 720CM, 780CM	PDM2332IEC-3P30R-3
Power Dist. Mod. 3 Pole 5 Wire RCD 16A 30mA IEC309 1040CM	PDM316IEC-30R-1040
Power Dist. Mod. 3 Pole 5 Wire RCD 16A 30mA IEC309 140CM	PDM316IEC-30R-140
Power Dist. Mod. 3 Pole 5 Wire RCD 16A 30mA IEC309 320CM	PDM316IEC-30R-320
Power Dist. Mod. 3 Pole 5 Wire RCD 16A 30mA IEC309 500CM	PDM316IEC-30R-500
Power Dist. Mod. 3 Pole 5 Wire RCD 16A 30mA IEC309 680CM	PDM316IEC-30R-680
Power Dist. Mod. 3 Pole 5 Wire RCD 16A 30mA IEC309 860CM	PDM316IEC-30R-860
Power Dist. Mod. 3 Pole 5 Wire RCD 32A 30mA IEC309 1040CM	PDM332IEC-30R-1040
Power Dist. Mod. 3 Pole 5 Wire RCD 32A 30mA IEC309 140CM	PDM332IEC-30R-140
Power Dist. Mod. 3 Pole 5 Wire RCD 32A 30mA IEC309 320CM	PDM332IEC-30R-320
Power Dist. Mod. 3 Pole 5 Wire RCD 32A 30mA IEC309 500CM	PDM332IEC-30R-500
Power Dist. Mod. 3 Pole 5 Wire RCD 32A 30mA IEC309 680CM	PDM332IEC-30R-680
Power Dist. Mod. 3 Pole 5 Wire RCD 32A 30mA IEC309 860CM	PDM332IEC-30R-860
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 1040cm	PDM3516IEC-1040
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 140cm	PDM3516IEC-140
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 200cm	PDM3516IEC-200
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 260cm	PDM3516IEC-260
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 320cm	PDM3516IEC-320
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 380cm	PDM3516IEC-380
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 440cm	PDM3516IEC-440
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 500cm	PDM3516IEC-500
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 560cm	PDM3516IEC-560
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 620cm	PDM3516IEC-620
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 680cm	PDM3516IEC-680
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 740cm	PDM3516IEC-740
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 80cm	PDM3516IEC-80

IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 800cm	PDM3516IEC-800
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 860cm	PDM3516IEC-860
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 920cm	PDM3516IEC-920
IT Power Distribution Module 3 Pole 5 Wire 16A IEC309 980cm	PDM3516IEC-980
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 1040cm	PDM3532IEC-1040
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 140cm	PDM3532IEC-140
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 200cm	PDM3532IEC-200
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 260cm	PDM3532IEC-260
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 320cm	PDM3532IEC-320
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 380cm	PDM3532IEC-380
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 440cm	PDM3532IEC-440
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 500cm	PDM3532IEC-500
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 560cm	PDM3532IEC-560
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 620cm	PDM3532IEC-620
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 680cm	PDM3532IEC-680
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 740cm	PDM3532IEC-740
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 800cm	PDM3532IEC-800
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 860cm	PDM3532IEC-860
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 920cm	PDM3532IEC-920
IT Power Distribution Module 3 Pole 5 Wire 32A IEC309 980cm	PDM3532IEC-980
Modular IT Power Distribution Cable Extender 5 Wire 16A IEC309 300cm	PDX516IEC-300
Modular IT Power Distribution Cable Extender 5 Wire 16A IEC309 600cm	PDX516IEC-600
Modular IT Power Distribution Cable Extender 5 Wire 32A IEC309 300cm	PDX532IEC-300
Modular IT Power Distribution Cable Extender 5 Wire 32A IEC309 600cm	PDX532IEC-600

## Modular Power Distribution

Modular Rack Distribution Panel, 138kW, 200A, 400V, 18 Pole, 5U	PDPM138H-5U
Modular Rack-mounted Distribution Panel, 138kW, 200A, 400V, 18 Pole, 5U	PDPM138H-R
Modular Remote Power Panel, 277kW, 400A, 400V, 72 Pole, 300mm	PDPM277H

## External Maintenance Bypass

Symmetra PX 96/160kW External maintenance bypass enclosure	SYMBP160H
Symmetra PX 96/160kW External maintenance bypass enclosure	SYWMP96K160H2

## UPS Network Management Cards

UPS Network Management Card with Environmental Monitoring and Out of Band Management	AP9618
--	--------

## Configuration Options

- Unity power factor corrected
- TÜV-verified high efficiency (95% at 30% load)
- Internal N+1 redundancy
- Swappable battery and power modules
- Main and redundant intelligence modules
- Service
- Automatic internal bypass
- Dual mains input
- Top or bottom feed
- Line-up/remote modular battery cabinets
- Extended battery runtime available
- Service included
- Generator compatible
- Network manageable
- StruxureWare Central compatible
- Secondary network management card
- SmartSlot device management cards
- Optional modular PDU with maintenance bypass and power distribution modules



# 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.

## Exclusions

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 caused by end user or any third person misuse, negligence, improper installation or testing. Further, Schneider Electric shall not be liable under the warranty for unauthorized attempts to repair or modify wrong or inadequate electrical voltage

or connection, inappropriate on-site operation conditions, corrosive atmosphere, repair, installation, start-up by non-Schneider Electric designated personnel, a change in location or operating use, exposure to the elements, Acts of God, fire, theft, or installation contrary to Schneider Electric recommendations or specifications or in any event if the Schneider Electric serial number has been altered, defaced, or removed, or any other cause beyond the range of the intended use.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, BY OPERATION OF LAW OR OTHERWISE, OF PRODUCTS SOLD, SERVICED OR FURNISHED UNDER THIS AGREEMENT OR IN CONNECTION HERewith. SCHNEIDER ELECTRIC DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY, SATISFACTION AND FITNESS FOR A PARTICULAR PURPOSE. SCHNEIDER ELECTRIC EXPRESS WARRANTIES WILL NOT BE ENLARGED, DIMINISHED, OR AFFECTED BY AND NO OBLIGATION OR LIABILITY WILL ARISE OUT OF, SCHNEIDER ELECTRIC RENDERING OF TECHNICAL OR OTHER ADVICE OR SERVICE IN CONNECTION WITH THE PRODUCTS. THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES AND REMEDIES. THE WARRANTIES SET FORTH ABOVE CONSTITUTE SCHNEIDER ELECTRIC SOLE LIABILITY AND PURCHASER'S EXCLUSIVE REMEDY FOR ANY BREACH OF SUCH WARRANTIES. SCHNEIDER ELECTRIC WARRANTIES RUN ONLY TO PURCHASER AND ARE NOT EXTENDED TO ANY THIRD PARTIES.

IN NO EVENT SHALL SCHNEIDER ELECTRIC, ITS OFFICERS, DIRECTORS, AFFILIATES OR EMPLOYEES BE LIABLE FOR ANY FORM OF INDIRECT, SPECIAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, ARISING OUT OF THE USE, SERVICE OR INSTALLATION, OF THE PRODUCTS, WHETHER SUCH DAMAGES ARISE IN CONTRACT OR TORT, IRRESPECTIVE OF FAULT, NEGLIGENCE OR STRICT LIABILITY OR WHETHER SCHNEIDER ELECTRIC HAS BEEN ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES, SPECIFICALLY, SCHNEIDER ELECTRIC IS NOT LIABLE FOR ANY COSTS, SUCH AS LOST PROFITS OR REVENUE, LOSS OF EQUIPMENT, LOSS OF USE OF EQUIPMENT, LOSS OF SOFTWARE, LOSS OF DATA, COSTS OF SUBSTITUANTS, CLAIMS BY THIRD PARTIES, OR OTHERWISE.

NO SALESMAN, EMPLOYEE OR AGENT OF SCHNEIDER ELECTRIC IS AUTHORIZED TO ADD TO OR VARY THE TERMS OF THIS WARRANTY. WARRANTY TERMS MAY BE MODIFIED, IF AT ALL, ONLY IN WRITING SIGNED BY AN SCHNEIDER ELECTRIC OFFICER AND LEGAL DEPARTMENT.

## Warranty Claims

Customers with warranty claims issues may access the SCHNEIDER ELECTRIC worldwide customer support network through the SCHNEIDER ELECTRIC web site: <http://www.schneider-electric.com>. Select your country from the country selection pull-down menu. Open the Support tab at the top of the web page to obtain contact information for customer support in your region.



Schneider Electric  
35 rue Joseph Monier  
92500 Rueil Malmason  
France

+ 33 (0) 1 41 29 70 00

[www.schneider-electric.com](http://www.schneider-electric.com)

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

© 2013 – 2023 . All rights reserved.

990–3879F-001