

# Symmetra™ PX 160

## Maintenance Bypass Enclosure

### Installation

05/2014



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

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.

<b>⚠ DANGER</b>
<p><b>DANGER</b> indicates a hazardous situation which, if not avoided, <b>will result in death or serious injury.</b></p> <p><b>Failure to follow these instructions will result in death or serious injury.</b></p>
<b>⚠ WARNING</b>
<p><b>WARNING</b> indicates a hazardous situation which, if not avoided, <b>could result in death or serious injury.</b></p> <p><b>Failure to follow these instructions can result in death, serious injury, or equipment damage.</b></p>
<b>⚠ CAUTION</b>
<p><b>CAUTION</b> indicates a hazardous situation which, if not avoided, <b>could result in minor or moderate injury.</b></p> <p><b>Failure to follow these instructions can result in injury or equipment damage.</b></p>
<b>NOTICE</b>
<p><b>NOTICE</b> is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.</p> <p><b>Failure to follow these instructions can result in equipment damage.</b></p>

## 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**

All safety instructions in this document must be read, understood and followed.

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

### **⚠ DANGER**

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

Read all instructions in the Installation Manual before installing or working on this UPS system.

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

### **⚠ DANGER**

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

Do not install the UPS system until all construction work has been completed and the installation room has been cleaned.

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

### **⚠ 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. Startup 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 environment 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.**

**⚠ DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Do not drill/punch holes for cables or conduits with the gland plates installed and do not drill/punch in close proximity to the UPS.

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

**⚠ WARNING****HAZARD OF ARC FLASH**

Do not make mechanical changes to the product (including removal of cabinet parts or drilling/cutting of holes) that are not described in the Installation Manual.

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

**⚠ WARNING****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.**

**⚠ WARNING****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.**

**Electrical Safety****⚠ DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH**

- Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
- The UPS system must be installed in a room with restricted access (qualified personnel only).
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Turn off all power supplying the UPS system before working on or inside the equipment.
- Before working on the UPS system, check for hazardous voltage between all terminals including the protective earth.
- The UPS contains an internal energy source. Hazardous voltage can be present even when disconnected from the mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that mains and batteries are disconnected. Wait five minutes before opening the UPS to allow the capacitors to discharge.
- A disconnection device (e.g. disconnection circuit breaker or switch) must be installed to enable isolation of the system from upstream power sources in accordance with local regulations. This disconnection device must be easily accessible and visible.
- The UPS must be properly earthed/grounded and due to a high leakage current, the earthing/grounding conductor must be connected first.

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

**⚠ DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

In systems where backfeed protection is not part of the standard design, an automatic isolation device (backfeed protection option or other device meeting the requirements of IEC/EN 62040-1 or UL1778 4th Edition – depending on which of the two standards apply to your local area) must be installed to prevent hazardous voltage or energy at the input terminals of the isolation device. The device must open within 15 seconds after the upstream power supply fails and must be rated according to the specifications.

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

When the UPS input is connected through external isolators that, when opened, isolate the neutral or when the automatic backfeed isolation is provided external to the equipment or is connected to an IT power distribution system, a label must be fitted at the UPS input terminals, and on all primary power isolators installed remote from the UPS area and on external access points between such isolators and the UPS, by the user, displaying the following text (or equivalent in a language which is acceptable in the country in which the UPS system is installed):

**⚠ DANGER****HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH**

Risk of Voltage Backfeed. Before working on this circuit: Isolate the UPS and check for hazardous voltage between all terminals including the protective earth.

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

# Specifications

## Electrical

UPS rating	96 kVA			160 kVA		
Input voltage (V)	380	400	415	380	400	415
Nominal input current (A)	154	146	141	256	243	234
Maximum rated input current (340 V input )(A)	169	160	155	281	267	258
Input frequency (Hz)	50/60					
Maximum short-circuit withstand (kA) Icc	Rated conditional short-circuit current Icc: 30 kA symmetrical rms Rated peak withstand current Ipk: 63 kA Device: NSX400F Mic2.3 3P 320 A setting (manufacturer: Schneider Electric) for 160 kVA, or NSX250F TMD200 3P (manufacturer: Schneider Electric) for 96 kVA					
Maximum short-circuit withstand (kA) Icw	Rated short-time withstand current Icw: 13 kA symmetrical rms Rated peak withstand current Ipk: 26 kA Short-circuit withstand time: 3 cycles					

## Switch Sizes

Mains input switch Q1 (A)	400
UPS output switch Q2 (A)	250
Maintenance bypass switch Q3 (A)	250

## Upstream Protection

<b>NOTICE</b>
<p>For a maximum short-circuit withstand higher than 13 kA, it is mandatory to install a circuit breaker (NSX250F TMD200 3P or NSX400F Mic2.3 3P 320 A setting) upstream of the maintenance bypass enclosure.</p> <p><b>Failure to follow these instructions can result in equipment damage.</b></p>

UPS rating	Required protection	Max input current
96 kVA	NSX250F TMD200 3P	169 A
160 kVA	NSX400F Mic2.3 3P 320 A setting	281 A

## Recommended Cable Sizes

**NOTE:** Use only copper conductors with a minimum rating for 90 °C.

**NOTE:** 30 °C ambient temperature, IEC standard 60364-5-52, Table A.52-4 (52-C3), "C" method of installation. If the ambient room temperature is higher than 30 °C, larger conductors are to be selected in accordance with the correction factors of the IEC.

UPS rating	96 kVA UPS	160 kVA UPS
Input cable (L1, L2, L3, N, PE) (mm <sup>2</sup> )	70	120
Output cable (L1, L2, L3, N, PE) (mm <sup>2</sup> )	50	95
Maintenance bypass to UPS input cable (mm <sup>2</sup> )	70	120
UPS output to maintenance bypass cable (mm <sup>2</sup> )	50	95

## Weights and Dimensions

	Weight (kg)	Height (mm)	Width (mm)	Depth (mm)
Without packaging	90	1200	800	300
With packaging	105	1230	830	350

## Environmental

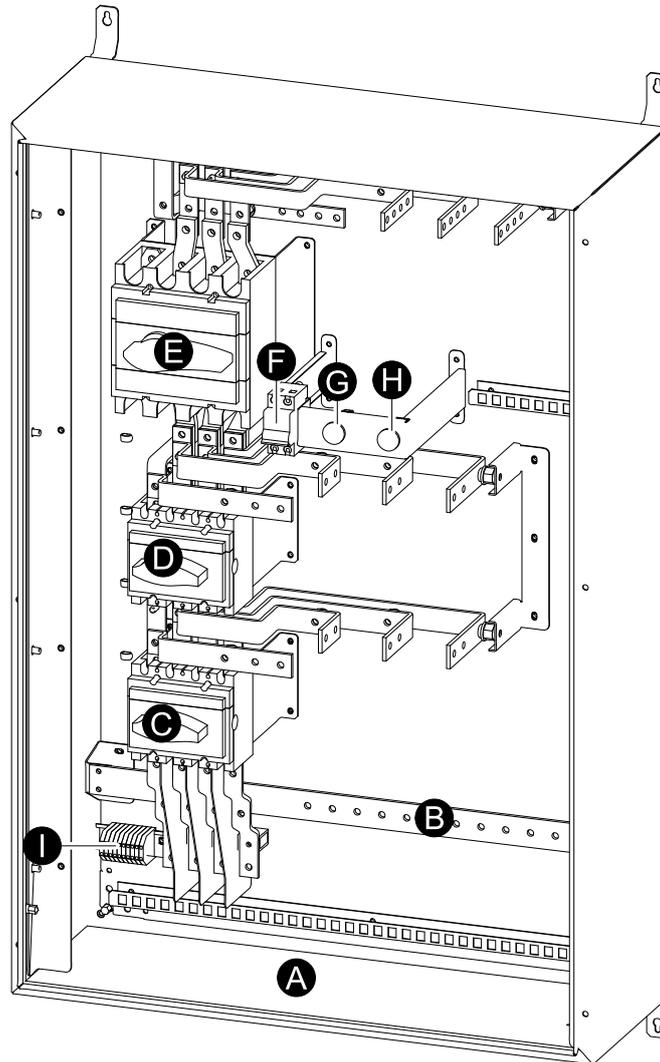
	Storage	Operation
Temperature	-25 °C to 55 °C	0 °C to 40 °C
Relative humidity	0 to 95% non-condensing	
Elevation	0 to 15000 m	0 to 3000 m
Protection class	IP20	
Color	Black	

## Torque

	Torque (Nm)	Screws
Mains input terminal block	23	M8 X 25 MSC HXG STL
Mains input to UPS terminal block	23	M8 X 25 MSC HXG STL
UPS output terminal block	23	M8 X 25 MSC HXG STL
System output terminal block	23	M8 X 25 MSC HXG STL

# Product Overview

Front view (interior)



- A. Cable entry
- B. PE busbar
- C. Q2 – UPS output switch
- D. Q3 – Maintenance bypass switch
- E. Q1 – Mains input switch
- F. Q10 – LED protection breaker
- G. LED H3 – OK to operate Q3 when light is ON
- H. LED H2 – OK to operate Q2 when light is ON
- I. Terminal block – signal connection to UPS

## Site Planning

**NOTE:** Select a location for the maintenance bypass enclosure which provides easy access to all breakers and internal components.

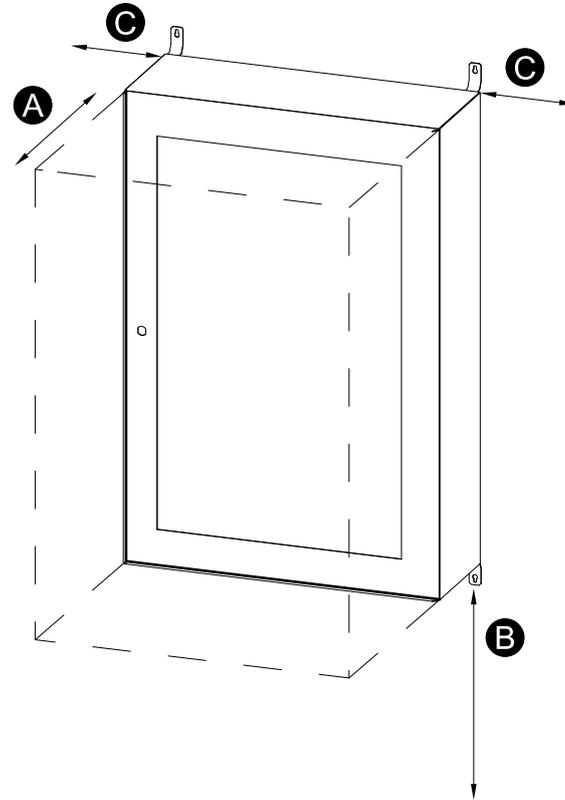
**NOTE:** Select a wall that is structurally sound and able to support the size and weight of the maintenance bypass enclosure.

## Clearance

Follow the listed clearance requirements and consult local codes for any additional requirements.

The best location for the maintenance bypass enclosure is close to the UPS.

### Front view



- A. Minimum front clearance: 650 mm
- B. Minimum enclosure-to-floor clearance: 600 mm
- C. Minimum side clearance: 100 mm

# Installation

## Prepare for Cables

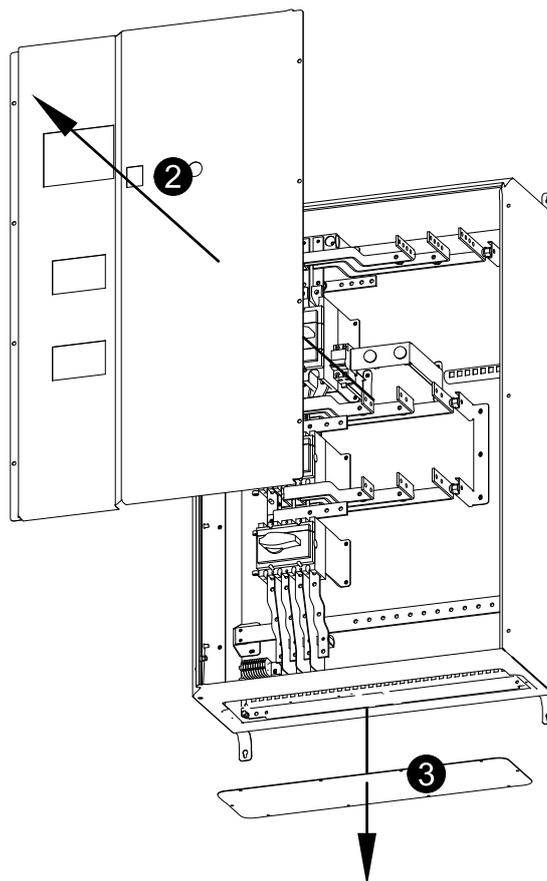
**NOTE:** All power cables must be connected on site. External power cables are not supplied with the maintenance bypass enclosure.

**NOTE:** Schneider Electric recommends to create the necessary holes for cable access before mounting the maintenance bypass enclosure to the wall.

**NOTE:** The size of the holes and glands must be adapted to fit the size of the cables.

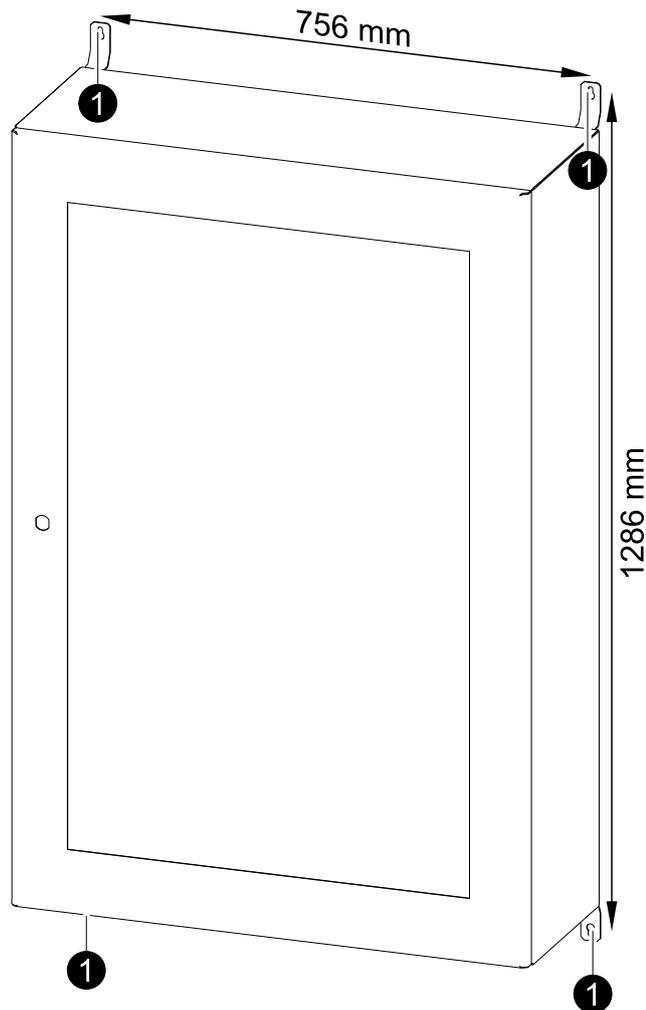
1. Open the front door of the enclosure.
2. Remove the front panel.
3. Remove the bottom plate.
4. Drill holes for cables in the bottom plate. Make sure that the hole locations correspond to the connector locations in the enclosure.
5. Reinstall the bottom plate.

**Front view**



## Mount the Maintenance Bypass Enclosure to the Wall

1. Measure and mark the four mounting hole locations on the wall.



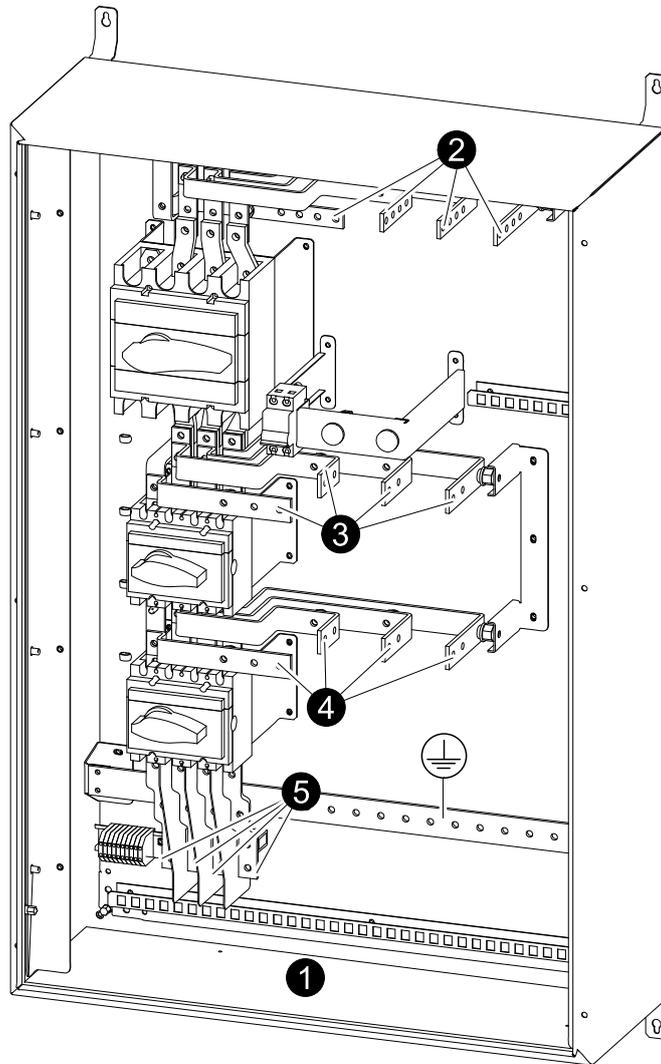
2. Drill holes in each of the four marked locations and mount the anchor bolts.
3. Lift the maintenance bypass enclosure, position it against the backing and line it up with the four holes/anchor bolts. Secure the enclosure with the four bolts and flat washers.

## Connect the Power Cables

### **NOTICE**

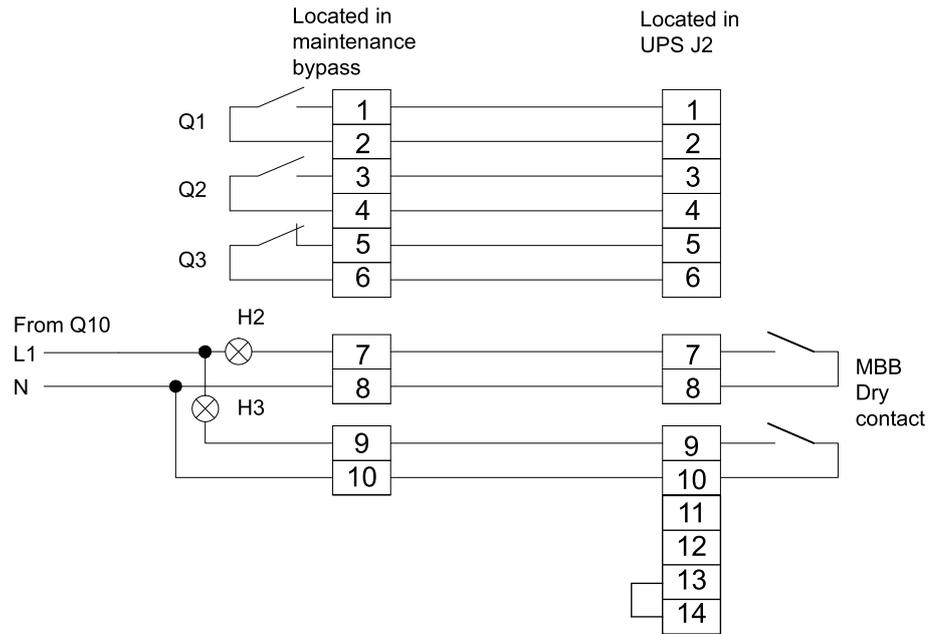
For a maximum short-circuit withstand higher than 13 kA, it is mandatory to install a circuit breaker (NSX250F TMD200 3P or NSX400F Mic2.3 3P 320 A setting) upstream of the maintenance bypass enclosure.

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



1. Route the cables through the holes in the bottom plate of the maintenance bypass enclosure.
2. Connect the UPS input cables (L1, L2, L3, N) to the UPS input terminals and the PE cable to the PE bar.
3. Connect the AC input cables (L1, L2, L3, N) to the AC input terminal block and the PE cable to the PE bar.
4. Connect the system output cables from the UPS (L1, L2, L3, N) to the system output terminals and the PE cable to the PE bar.
5. Connect the UPS output cables (L1, L2, L3, N) to the UPS output terminals and the PE cable to the PE bar.

# Connect the Communication Cables

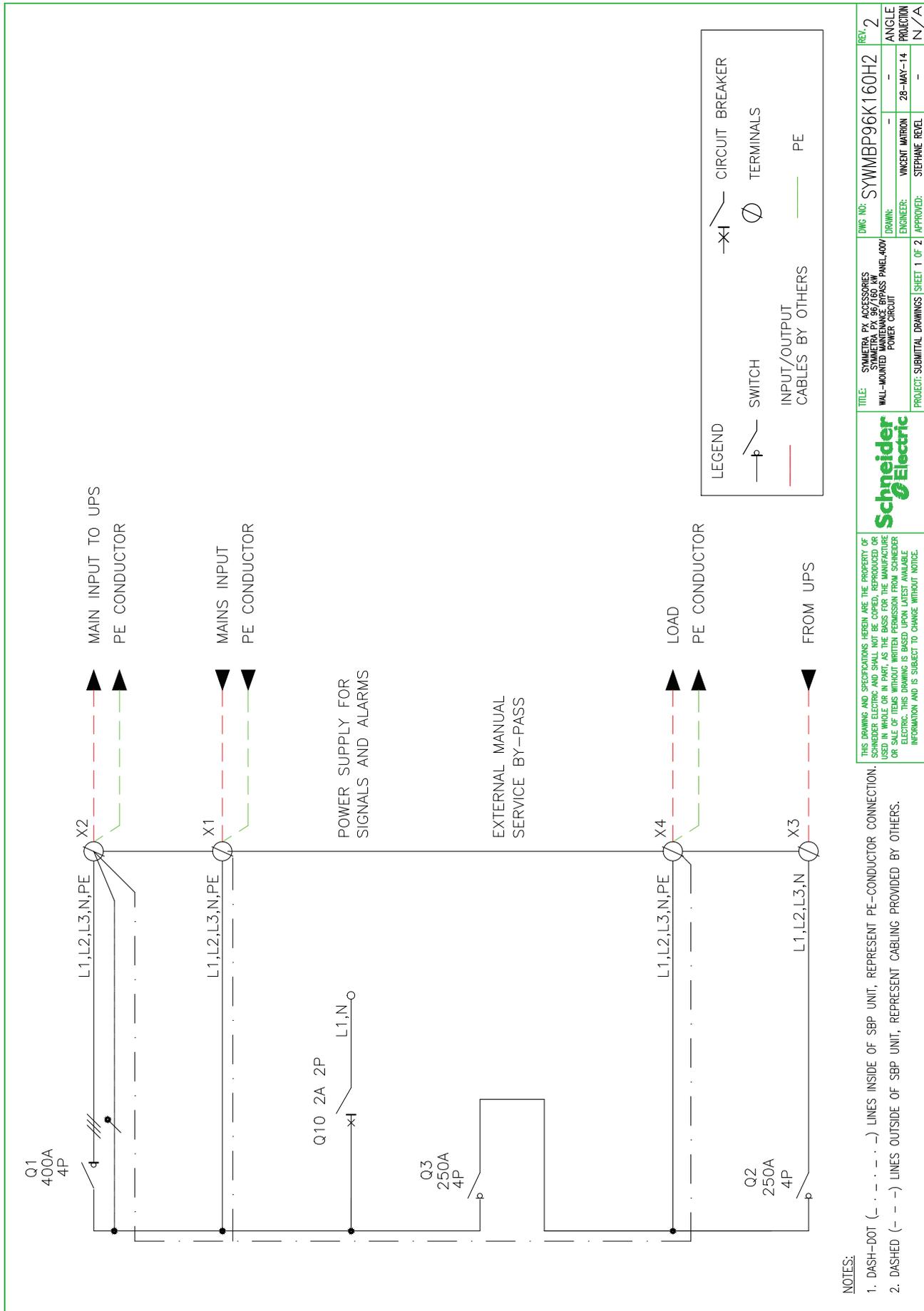


## Diagram

### **NOTICE**

For a maximum short-circuit withstand higher than 13 kA, it is mandatory to install a circuit breaker (NSX250F TMD200 3P or NSX400F Mic2.3 3P 320 A setting) upstream of the maintenance bypass enclosure.

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



NOTES:  
 1. DASH-DOT (--- · ---) LINES INSIDE OF SBP UNIT, REPRESENT PE-CONDUCTOR CONNECTION.  
 2. DASHED (---) LINES OUTSIDE OF SBP UNIT, REPRESENT CABLING PROVIDED BY OTHERS.

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		TITLE: SYMMETRA PX ACCESSORIES WALL-MOUNTED MAINTENANCE BYPASS PANEL-400V POWER CIRCUIT PROJECT: SUBMITTAL DRAWINGS SHEET 1 OF 2	DWG. NO.: SYWMBP96K160H2 REV. 2 DRAWN: _____ ENGINEER: VINCENT MATRON APPROVED: STEPHANE REVEL
			ANGLE PROTECTION: N/A



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