# EPS 7000 480 - 600 V

# 300 - 500 kVA

# Installation

Single and Parallel Systems

11/2015





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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.

# 

**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** 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** 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**

# 

### 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.

# 

### 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.

## 

### 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.

# 

### 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 breakers, battery 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.

# 

### 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, or
- Canadian Electrical Code (C22.1, Part 1)

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

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

### 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-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.

# **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.

# **A**DANGER

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

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

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

# 

### 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.

# **A**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.

#### 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**

# 

#### 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 utility/mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that utility/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.

# 

#### 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):

#### 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.

## **Battery Safety**

# 

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

- Battery circuit breakers must be installed according to the specifications and requirements as defined by Schneider Electric.
- Servicing of batteries must only be performed or supervised by qualified personnel knowledgeable of batteries and the required precautions. Keep unqualified personnel away from batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
- Do not dispose of batteries in a fire as they can explode.
- Do not open, alter, or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

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

# **A**DANGER

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

Batteries can present a risk of electric shock and high short-circuit current. The following precautions must be observed when working on batteries

- · Remove watches, rings, or other metal objects.
- · Use tools with insulated handles.
- · Wear protective glasses, gloves and boots.
- · Do not lay tools or metal parts on top of batteries.
- Disconnect the charging source prior to connecting or disconnecting battery terminals.
- Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electric shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

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

# 

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

When replacing batteries, always replace with the same type and number of batteries or battery packs.

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

### **RISK OF EQUIPMENT DAMAGE**

- Wait until the system is ready to be powered up before installing batteries in the system. The time duration from battery installation until the UPS system is powered up must not exceed 72 hours or 3 days.
- Batteries must not be stored more than six months due to the requirement of recharging. If the UPS system remains de-energized for a long period, we recommend that you energize the UPS system for a period of 24 hours at least once every month. This charges the batteries, thus avoiding irreversible damage.

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

# **Specifications**

# **Input Specifications**

	300 kVA/270 kW	300 kVA/270 kW 400 kVA/360 kW		500 kVA/450 kW				
Input voltage (V)	480	600	480	600	480	600		
Connection type	3PH+G							
Input frequency (Hz)	60 +/- 3	60 +/- 3						
THDI	10%		8% 7%			8%		
Nominal input current (A)	371	322	508	441	656	569		
Maximum input current (A)	453	404	590	523	738	652		
Input current limitation (A)	Programmable – set at 150% of nominal input current							
Maximum short circuit withstand (kA)	65 KAIC							
Q1 rating (A)	1000AT/1200AF		1000AT/1200AF		1000AT/1200AF			

# **Bypass Specifications**

	300 kVA/270 kW	A/270 kW 400 kVA/360 kW 5		500 kVA/450 kW		
Input voltage (V)	480	600	480	600	480	600
Connection type	3PH+N, 3PH+N+G					
Input frequency (Hz)	60					
Nominal input current (A)	361	289	481	385	601	481
Q4S rating (A)	800AT/ 800AF	700AT/ 800AF	800AT/ 800AF	700AT/ 800AF	800AT/ 800AF	700AT/ 800AF

# **AC Output Specifications**

	300 kVA/270 kW		400 kVA/360 kW		500 kVA/450 kW	
Output Voltage (V)	480	600	480	600	480	600
Connection type	(3PH + G) (3PH + N + G)					
Overload capacity <sup>1</sup>	10 minutes at 125% 60 seconds at 150	% %				
Nom output current (A)	361	289	481	385	601	481
Output frequency (sync to mains) (Hz)	60					
Slew rate (Hz/ Sec)	Programmable 0.5 to 2. Default: • Single System:1.0 • Parallel System:0.5					
THDU (phase to phase)	< 2% linear load < 4% non-linear load					
Output power factor	0.9 lagging					
Output voltage regulation (RMS)	+/- 1% balanced load, +/- 2% unbalanced load					
Q5N rating (A)	800AT/ 800AF	700AT/ 800AF	800AT/ 800AF	700AT/ 800AF	800AT/ 800AF	700AT/ 800AF

# **Battery Specifications**

	300 kVA/270 kW	400 kVA/360 kW	500 kVA/450 kW		
Туре	VRLA or flooded (wet cell)				
Nominal voltage (VDC)	480				
Float voltage (VDC) <sup>2</sup>	545				
End of discharge voltage (VDC) <sup>2</sup>	401 / 240 cells (1.67 VDC per cell.)				
Battery current (at full load) (A)	600	802	996		
Maximum current at Vbat = 400 VDC (end of discharge)	721	962	1195		
Maximum charging power (kW) at full load	27	36	45		
Typical recharge time	C10	C10	C10		

# **Recommended Cable Sizes**

**NOTE:** The installer is responsible for supplying upstream protective devices and downstream distribution circuits and protective devices as appropriate to the installation and distribution requirements.

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

Cable sizes in this manual are based on table 310-16 of the National Electrical Code (NEC) with the following assertions:

<sup>1.</sup> Contact Schneider Electric for bypass and inverter overload details.

<sup>2.</sup> Programmable. Contact Schneider Electric for details.

- 90 °C conductors (THHN) for 75 °C termination
- Use of copper conductors

Ground wires are sized in accordance with NEC Article 250-122 and Table 250-122.

Power and control cables must be routed in separate conduits.

Upstream and downstream bypass cable type and lengths must be equal for all UPSs installed in each integrated parallel system. Any deviation will create an unequal sharing of the load currents in bypass mode.

#### 300 kVA/270 kW

	480 V 6		600 V		
	80% rated breakers	100% rated breakers	80% rated breakers	100% rated breakers	
Input	2 x 300	2 x 4/0	2 x 300	2 x 4/0	
Bypass	2 x 4/0	2 x 3/0	2 x 3/0	1 X 300	
Battery	2 X 350	N/A	2 X 350	N/A	
Output	2 x 4/0	2 x 3/0	2 x 3/0	1 X 300	

#### 400 kVA/360 kW

	480 V 6		600 V	
	80% rated breakers	100% rated breakers	80% rated breakers	100% rated breakers
Input	3 X 250	2 x 300	2 x 350	2 x 300
Bypass	2 X 350	2 x 4/0	2 x 4/0	2 x 3/0
Battery	2 X 350	N/A	2 X 350	N/A
Output	2 X 350	2 x 4/0	2 x 4/0	2 x 3/0

#### 500 kVA/450 kW

	480 V 6		600 V		
	80% rated breakers	100% rated breakers	80% rated breakers	100% rated breakers	
Input	3 x 350	3 x 250	3 x 300	2 x 350	
Bypass	3 x 250	2 x 350	2 x 350	2 x 4/0	
Battery	2 X 350	N/A	2 X 350	N/A	
Output	3 x 250	2 x 350	2 x 350	2 x 4/0	

# **Recommended Bolt and Lug Sizes**

Cable Size	Terminal Bolt Diameter	Crimping Tool/Die	Cable Lug Type
3/0	3/8	Penduit CT-720-CD-720-2	Penduit LCA3/0-38-X
4/0	3/8	Penduit CT-720-CD-720-3	Penduit LCA4/0-38-X
250	3/8	Penduit CT-720-CD-720-3	Penduit LCA250-38-X
300	3/8	Penduit CT-720-CD-720-4	Penduit LCA300-38-X
350	3/8	Penduit CT-720-CD-720-5	Penduit LCA350-38-X
500	3/8	Penduit CT-720-CD-720-7	Penduit LCA500-38-X

# **Torque Specifications**

Bolt size	Torque
3/8	350 in–lb

# **Recommended Upstream Protection**

### 300 kVA/270 kW

	480 V 6		600 V	
	80% rated breakers	100% rated breakers	80% rated breakers	100% rated breakers
Input (A)	600A	500A	600A	500A
Bypass (A)	500A	400A	400A	300A
Battery QF1 (A)		700AT/ 1000AF		700AT/ 1000AF

#### 400 kVA/360 kW

	480 V 6		600 V	
	80% rated breakers	100% rated breakers	80% rated breakers	100% rated breakers
Input (A)	800A	600A	700A	600A
Bypass (A)	700A	500A	500A	400A
Battery QF1 (A)		1000AT/ 1000AF		1000AT/ 1000AF

#### 500 kVA/450 kW

	480 V		600 V		
	80% rated breakers	100% rated breakers	80% rated breakers	100% rated breakers	
Input (A)	1000A	800A	900A	700A	
Bypass (A)	800A	700A	700A	500A	
Battery QF1 (A)		1200AT/ 1200AF		1200AT/ 1200AF	

## Clearance

The UPS requires front and top clearance of minimum 1000 mm (36 in) for maintenance. 38 mm (1.5 in) minimum clearance from the rear panel of the UPS to the wall. Additional clearance required depends on the floor anchoring hardware specifications. Consult with the local safety codes and standards for additional requirements in your local area.

**NOTE:** Side or rear access is not required, but can be necessary for installations where cable restraints are needed.



**NOTE:** For seismic considerations, rear clearance must be 80 mm (3.125 in) minimum.

# Weights and Dimensions

UPS	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
300 kVA	3130 (6900)	2083 (82)	1753 (69)	991 (39)
400 kVA				
500 kVA				
Cabinet	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)

Cabinet	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
Maintenance Bypass	1091 (2000)	2083 (82)	914 (36)	991 (39)
Transformer	1640 (3600)		1138 (45)	991 (39)
Static Switch	1317 (2900)		1829 (72)	1219 (48)

# Environmental

Operating Temperature	<ul> <li>UPS recommended: 20 to 25 °C (68 to 77 °F) at sea level</li> <li>UPS extreme: 0 to 40 °C (32 to 104 °F) at sea level with redundant fans</li> </ul>
Storage Temperature	<ul> <li>UPS: -20 to 50 °C (-4 to 122 °F)</li> <li>Battery -17 to 25 °C (0 to 77 °F)</li> <li>Higher storage temperature decreases battery storage life</li> </ul>
Humidity	0- 95% non-condensing

Operating Elevation	No derating at < 914.4 meters (3000 feet), > 914.4 meters (3000 feet) derate by 1.2 °C per 91.44 meters (300 feet) See elevation derating table below
Storage Elevation	0-9144 meters (0-30000 feet)
Audible noise at 100% load – 1 meter (3.3 feet) from the front of the unit	74 dBA
Color	Light grey (RAL 9002)

## **Elevation Derating Table**

Elevation		Power derating
Meters	Feet	
914.4	3000	1.00
1371.6	4500	0.85
1828.8	6000	0.79
2103.12	6900	0.75
2743.2	9000	0.69
3657.6	12000	0.61

## **Heat Dissipation**

	300 kVA/270 kW		400 kVA/360 kW		500 kVA/450 kW	
	480 V	600 V	480 V	600 V	480 V	600 V
Heat dissipation (BTU/hr)	59 400		78 100		110 750	

# Introduction

## **Overview of Breakers in a Single System**



## **Overview of Breakers in a Single System with Maintenance Bypass Cabinet**



## **Overview of Breakers in a Parallel System**



# Installation

# **Mechanical Assembly**

## **Examples of Systems Setup**

### **Single System**



## **Parallel System**



## **Install Seismic Anchoring**

**NOTE:** The structural engineer or design engineer of record is responsible for detailing the equipment anchorage requirements for the given installation. The installer and manufacturers of the anchorage system are responsible for assuring that the mounting requirements are met. Schneider Electric is not responsible for the specification and performance of anchorage systems.

**NOTE:** The anchor bolts are not provided. Use anchor bolts that suit the floor material. The minimum requirement is 1/2 in grade 5 hardware.

**NOTE:** Example is given for UPS with transformer cabinet. Refer to submittal drawings for your configuration.

For seismic installation, make sure that all cabinets are aligned on the rear side seismic alignment line as shown.







Front

#### Hole Positions for Transformer Cabinet



Front

#### Hole Positions for Maintenance Bypass Cabinet



Front

# Hole Positions for Bottom Entry Cabinet/ Critical Bus Synchronization Cabinet



Front

**NOTE:** The illustrations show the UPS and maintenance bypass cabinet, but all cabinets are anchored in the same way.

- 1. Drill anchoring holes in the floor according to the hole positions given for each cabinet to be seismically anchored (anchoring bolts not provided).
- 2. Install the rear seismic straps on the floor.



3. Remove the rear kickplate or rear panel of the cabinet.



4. Install the seismic bracket(s) on the rear side of the cabinet. Torque to 70 ft-lb.



5. Slide the cabinet rear seismic brackets under the seismic straps.



6. Install the seismic kickplate or the seismic rear panel of the cabinet.



7. Remove the front kickplate or front panel of the cabinet.



8. Install the seismic brackets on the front of the cabinet. Torque to 70 ft-lb.



9. Anchor the cabinet to the floor.



10.Install the seismic kickplate or the seismic front panel on the front of the cabinet.



11. If OSHPD review is required, position all OSHPD certification labels on the UPS.



**NOTE:** For EPS 7000 range, OSHPD Application # : OSP-0251-10, Special Seismic certification valid up to 1.41 g.

### **Interconnect the Cabinets**

NOTE: Example given is for UPS and bottom entry cabinets.

- 1. Align the cabinets.
- 2. Remove all panels where brackets will be installed.
- 3. Pull cabinets together using a C-clamp or similar tool.
- 4. Position brackets as shown
- 5. Install brackets behind and between the vertical structure profiles of each cabinet.





- 6. Remove clamping tools.
- 7. Reinstall all panels.

# **Connect the Power Cables in Single Systems**

# 

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

Before making any electrical connections, verify that all circuits breakers are in the OFF (open) positions.

- Q1
- Q4S
- Q5N (if present)
- Q3BP (if present)
- Q4S (if present)
- QF1
- All other distribution circuit breakers and downstream protective devices.

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

Install the conduits and cables starting from the rear of the cabinet working your way to the front. Cables can be routed through the top or the bottom of the optional maintenance bypass cabinet.

### **Connect the Input Cables in Single Systems**



- 1. Route the input cables through the dedicated top conduits on the UPS cabinet.
- 2. Connect the ground cable.
- 3. Connect the input cables (L1, L2, L3).

### **Connect the Bypass Cables in Single Systems**

- 1. Route the bypass cables through the dedicated top conduits on the UPS cabinet.
- 2. Connect the ground cable.
- 3. Connect the bypass cables (L1, L2, L3).

4. Connect the neutral cable, if required.



**NOTE:** In single utility/mains installations, a factory-installed jumper connects the input and bypass terminals. Do not remove.



Connect the Output Cables in Single Sytems

- 1. Route the output cables through the dedicated top conduits on the UPS cabinet.
- 2. Connect the ground cable.
- 3. Connect the neutral cable if required.
- 4. Connect the output cables (L1, L2, L3).

## **Connect the Power Cables in Parallel Systems**

# 

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

Before making any electrical connections, verify that all circuits breakers:

- Q1
- Q4S
- Q5N (if present)
- Q3BP (if present)
- Q4S (if present)
- QF1
- All other distribution circuit breakers and downstream protective devices.

are in the OFF (open) positions.

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

Install the conduits and cables starting from the rear of the cabinet working your way to the front. Cables can be routed through the top or the bottom of the static switch cabinet and the optional maintenance bypass cabinet.

### **Connect the Input Cables in Parallel Systems**

- 1. Route the input cables through the dedicated top conduits on the UPS cabinet.
- 2. Connect the ground cable.
- 3. Connect the input cables (L1, L2, L3).



### **Connect the Bypass Cables in Parallel Systems**

**NOTE:** Termination of the connections within the static switch cabinet are marked on the installation drawings supplied with the equipment.



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

An upstream bypass circuit breaker with 24 VDC shunt trip and aux contact must be installed and connected to the terminal block in the static switch cabinet.

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

- 1. Connect the bypass cables (L1, L2, L3), ground and optional neutral cables from the bypass power source to the bypass terminals in the static switch cabinet.
- 2. Connect the bypass cables (L1, L2, L3), ground and optional neutral cables from the maintenance bypass AC input power and from the interconnection busbar in the static switch cabinet to the maintenance bypass cabinet.



## **Connect the Output Cables in Parallel Systems**

- 1. Route the cables through the dedicated top conduits on the UPS cabinet.
- 2. Connect the neutral cable if required.
- 3. Connect the ground cable.

4. Connect the three output cables from UPS to the static switch cabinet.



- 5. Connect the maintenance bypass cabinet to the static switch cabinet via busbar.
- 6. Connect the three output cables to the load.

# **Connect the Battery Cables**



- 1. Route the battery cables through the dedicated top conduits on the UPS cabinet.
- 2. Connect the ground cable.
- 3. Connect the battery cables (BAT+, BAT-).

# **Connect the Signal Cables**

## **Routing Rules**

The following rules must be followed to ensure sufficient isolation of signal cables:

- Run and secure signal cables separately from the power cables.
- Keep a minimum of four inches between power and signal cables.
- Keep excess cables lengths to a minimum.

### **Connect the Battery Communication Cables**

The UPS system must be installed according to local and national regulations.





- 1. Connect terminal 7 of the XR3 terminal on IBEZ PCA in the UPS cabinet 2 to terminal 1 on the terminal block in the battery cabinet 1.
- 2. Connect the other battery cabinets in a daisy chain from terminal 1 to terminal 1.
- 3. Connect terminal 8 of the XR3 terminal on IBEZ PCA in the UPS cabinet 2 to terminal 2 on the terminal block in the battery cabinet 1.
- 4. Connect the other battery cabinets in a daisy chain from terminal 2 to terminal 2.
- 5. Connect terminal 11 of the XR3 terminal on IBEZ PCA in the UPS cabinet 2 to terminal 3 on the terminal block in the battery cabinet 1.
- 6. Connect the other battery cabinets in a daisy chain from terminal 3 to terminal 3.
- 7. Connect terminal 12 of the XR3 terminal on IBEZ PCA in the UPS cabinet 2 to terminal 4 on the terminal block in the battery cabinet 1.
- 8. Connect the other battery cabinets in a daisy chain from terminal 4 to terminal 4.

### **Overview of Printed Circuit Boards**

The following printed circuit boards provide all the different interfaces:

Interfaces	Boards
Control cables for parallel systems	ACPZ
	APOZ
	RAUZ
Dry contact interface	IBEZ
	OBEZ
Telecommunication capability	RAUZ
Temperature monitor connection	IBEZ
Remote EPO Connection	IBEZ



Front

### **Connect the Control Cables**

The cables and hardware are supplied by Schneider Electric.

Requirements vary according to the system configuration.

Plug ribbon and control connectors into corresponding receptacles located in the UPS cabinet.

1. Connect the display connections in a daisy chain from the RAUZ board in the static switch cabinet to the RAUZ board in each UPS cabinet.



2. Connect the ACPZ board in the static switch cabinet to the ACPZ board in each UPS cabinet forming a star connection.



- Connect the APOZ boards in UPS cabinet 1 to the APOZ board in UPS cabinet 2.
- 4. Connect the APOZ boards in UPS cabinet 2 to UPS cabinet 3.
- 5. Connect the APOZ boards in UPS cabinet 3 to UPS cabinet 4.
- 6. Connect the APOZ boards in UPS cabinet 4 back to UPS cabinet 1 in a loop type connection.



7. Verify that all connectors are locked in properly.

## **Connect Dry Contacts**

**NOTE:** Maximum wire size is 16 AWG.

## **Dry Contact Information**

Information	Туре	Board
Bypass out of tolerance	Output	OBEZ
Inverter inoperable	Output	OBEZ
Low battery imminent	Output	IBEZ
Overload	Output	OBEZ
Rectifier/charger function inoperable	Output	OBEZ
Rectifier/charger ON	Output	OBEZ
Static switch inoperable	Output	OBEZ
UPS on battery	Output	IBEZ
UPS on bypass/on line	Output	IBEZ
UPS summary alarm	Output	IBEZ
QF1 battery circuit breaker aux	Output or input	IBEZ
QF1 battery circuit breaker UV coil	Output or input	IBEZ
Temperature information	Output or input	IBEZ
UPS on maintenance	Output or input	IBEZ
2nd step battery charged current	Input <sup>3</sup>	OBEZ
2nd step input current limit	Input <sup>3</sup>	OBEZ
Break transfer prohibited	Input <sup>3</sup>	OBEZ
Bypass transfer prohibited	Input <sup>3</sup>	OBEZ
Forced inverter stop	Input <sup>3</sup>	OBEZ
Inverter desynchronization with bypass	Input <sup>3</sup>	OBEZ
Progressive rectifier charger shutdown	Input <sup>3</sup>	OBEZ
Remote UPS off	Input	OBEZ
Remote UPS on	Input	OBEZ

### **IBEZ Board Information**

Contacts shown with all power off.

<sup>3.</sup> These inputs require enabling at the factory, or by field service engineer on site.



For detailed information on the communication features, contact Schneider Electric.

### **OBEZ Board Information**

Some received information requires enabling at the factory, or by field service engineer on site. Consult table above.

Contacts shown with all power off.

XR8 and XR9 connectors output voltage is +24 VDC.



### **Connect Remote EPO**

#### **IBEZ** board XR4 information

Remove factory–installed jumper when remote EPO (emergency power off) is installed.



### **Connect the Temperature Monitor**

### **IBEZ Board XR4 Information**

Connection of temperature monitor requires enabling at the factory or by field service engineer on site.



### **Connect Telecommunication**

NOTE: Used wire must be shielded twisted pair . Maximum wire size is 16 AWG.

### **RAUZ** Information

RS422/485 requires switch setting by factory or field service engineer. For detailed information, contact Schneider Electric.

#### Traditional 2 wire and shielding method for RS485 multipoint

Shield is grounded at converter.



#### Traditional 4 wire and shielding method for RS485 multipoint

Shield is grounded at converter.



# **Checklist after Installation**

After installation and before start-up, check that the following conditions are met (as applicable to your installation):

- All power and communication cables have been properly connected and securely tightened.
- The upstream and downstream protective devices are not tripped, and have been sized properly for the UPS inrush and load requirements.
- The input voltage is the same as indicated on the UPS nameplate, located inside the right door of the EPS 7000 module.
- The air filters located inside each EPS 7000 module front door are properly installed and free of dust, dirt, and debris. Make certain that no objects block the air intake around the front bottom of the cabinets, and that the air exhaust at the top rear of the cabinet is free of obstructions.
- The UPS input isolation circuit breaker Q1 is in the OFF (open) position.
- The bypass circuit breaker Q4S is in the OFF (open) position.
- The optional maintenance bypass circuit breaker Q3BP (if present) is in the OFF (open) position.
- The optional UPS isolation circuit breaker Q5N (if present) is in the OFF (open) position.
- The battery disconnect circuit breaker QF1 is in the OFF (open) position.

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

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