

User & Operation Manual

PremiumTower™ S2



PremiumTower™ S2 | 400V

English
Version
centiel.com

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Table of Content

1	Information on this Document	5
1.1	Validity.....	5
1.2	Symbols.....	5
1.3	Nomenclature	6
2	Foreword.....	6
3	Safety.....	7
3.1	Intended Use	7
3.2	Qualified Personnel Skills	7
3.3	Safety Precautions	7
3.4	Environmental, Disposal and Recycling Considerations	8
3.5	Declarations of Conformity, Safety and CE Marking.....	9
4	Product Description	10
4.1	General System Description	10
5	Delivery Transportation and Storage	11
5.1	Material and UPS Receipt.....	11
5.2	Storage	11
5.3	External Visual Inspection.....	12
5.4	Unpacking.....	12
5.5	General Inspections after Unpacking.....	14
6	Mechanical Dimensions and Installation	15
6.1	Dimensions and Weight	15
6.2	Mechanical Footprint.....	18
6.3	Location and Positioning.....	19
6.4	Battery Installation and Configuration	21
6.5	Block Diagram	28
6.6	Rear View	32
6.7	Distribution and Wiring.....	34
7	Electrical Installation	37
7.1	Preparation for Electrical Installation.....	37
7.2	Cables, Sections and Fuses Ratings	38
7.3	Single input feed (STD) for UPS2-PT010-I080-D1 and UPS2-PT020-I080-D1.....	42
7.4	Dual input feed (OPTIONAL) for UPS2-PT010-I080-D1 and UPS2-PT020-I080-D1	43
7.5	Single input feed (STD) for UPS2-PT010-I120-D0, UPS2-PT020-I120-D0 and UPS2-PT030-I120-D0.....	44
7.6	Dual input feed (OPTIONAL) UPS2-PT010-I120-D0, UPS2-PT020-I120-D0 and UPS2-PT030-I120-D0..	45
7.7	Single input feed (STD) for UPS2-PT040-I120-D0	46
7.8	Dual input feed (OPTIONAL) for UPS2-PT040-I120-D0	47

7.9	Single input feed (STD) for UPS2-PT060-E-D0.....	48
7.10	Dual input feed (OPTIONAL) for UPS2-PT060-E-D0	49
7.11	Single input feed (STD) for UPS2-PT080-E-D0.....	50
7.12	Dual Input Feed distribution (OPTIONAL) for UPS2-PT080-E-D0	51
7.13	Single input feed (STD) UPS2-PT010-I240-E0, UPS2-PT020-I240-E0 and UPS2-PT030-I240-E0.....	52
7.14	Dual input feed (OPTIONAL) UPS2-PT010-I240-E0, UPS2-PT020-I240-E0 and UPS2-PT030-I240-E0....	53
7.15	Single input feed (STD) UPS2-PT040-I240-E0 and UPS2-PT060-I240-E0	54
7.16	Dual input feed (OPTIONAL) UPS2-PT040-I240-E0 and UPS2-PT060-I240-E0.....	55
7.17	Single input feed (STD) UPS2-PT080-I240-E0.....	56
7.18	Dual input feed (OPTIONAL) UPS2-PT080-I240-E0.....	57
8	Interfacing.....	58
8.1	RS485.....	60
8.2	Input Spring Terminal Blocks CN11: 1-15	60
8.3	Dry-Output Port (CN14).....	62
8.4	USB connection	62
8.5	LED Functionality Description	62
8.6	Multidrop Input/Output (CN1/CN2).....	63
8.7	Bluetooth	63
9	Multicabinet connection	63
10	Operation	64
10.1	3" User Interface (Control Panel).....	64
10.2	System Operation Modes	65
10.3	Display Navigation Overview	67
10.4	Manual Bypass Switch.....	74
11	Operation Procedures.....	75
11.1	Start-Up Procedure for single unit.....	75
11.2	Shutdown Procedure for single unit.....	77
11.3	Start-Up Procedure for parallel units	77
11.4	Shutdown Procedure for parallel units	79
12	Options	81
12.1	Battery Temperature Probe	81
12.2	SNMP	81
12.3	Parallel Kit (Optional).....	84
12.4	Dual Input Feed (Optional).....	84
12.5	Battery cabinets	84
13	Maintenance	88

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Product Warranty

Download or ask the manufacturer for the latest version of the warranty policy and procedures, document POL-0002-EN.

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Changes Revision Table

Revision	Date	Notes	Author/Checked
REV01	01.09.25	First English version released	MT/NM



1 Information on this Document

1.1 Validity

This document is valid for the following device types:

UPS	UPS2-PT010-I080-D1, UPS2-PT020-I080-D1
	UPS2-PT010-I120-D0, UPS2-PT020-I120-D0, UPS2-PT030-I120-D0, UPS2-PT040-I120-D0, UPS2-PT060-E-D0, UPS2-PT080-E-D0
	UPS2-PT010-I240-E0, UPS2-PT020-I240-E0, UPS2-PT030-I240-E0, UPS2-PT040-I240-E0, UPS2-PT060-I240-E0, UPS2-PT080-I240-E0

1.2 Symbols

Symbol	Explanation
 Warning	Indicates that operations have to be performed accurately and following this User Manual
 	Indicates that the weight of the equipment is higher than 25 kg and it has to be handled by 2 persons
 Danger	Indicates that operations have to be carried out by authorized technical personnel only: "Qualified personnel" THE RISK OF ELECTRICAL SHOCK IS HIGH
 Notice	Used to highlight important information that does not relate to personal safety. It draws the user's attention to helpful tips, best practices.
 	Indicates that the batteries could release acid and gas.
 	Indicates ground (PE or PEN) connection
 	Indicates that parameters and/or values need to be verified
 	Article Order Code

1.3 Nomenclature

Complete Designation	Designation in this Document
PremiumTower™ Series 2	PT S2
Uninterruptible Power Supply	UPS
Circuit Breaker	CB

2 Foreword

Dear Customer,

Thank you for choosing a PremiumTower™ S2 Uninterruptible Power Supply and a warm welcome to Centiel™ world.

Our company's mission is to contribute to the success of your business by protecting your critical applications and by ensuring a continuous power availability.

The innovative technology of our products and the constant support offered by our after-sales team are a guarantee of maximal performance. We will provide you with high-quality products and assistance in each phase of your PremiumTower™ S2 UPS life.

To help you grow and succeed, we need your contribution. A kind feedback would be highly appreciated. It will allow us to supply you with the most advanced products and solutions.

Sincerely,

CENTIEL™ TEAM

3 Safety

3.1 Intended Use

This User Manual contains all the detailed instructions concerning the handling, installation and operation procedures of this PremiumTower™ S2 UPS. Therefore, it is strongly recommended to read it carefully before starting the installation. The manufacturer assumes no responsibility for errors and misinterpretations mentioned in this User Manual.

This document may be subject to modifications without notice.

This document must not be copied and imparted to a third party for use in unauthorized purposes.

The enclosed documentation is an integral part of this product. Keep the documentation in a convenient place for future reference.

3.2 Qualified Personnel Skills

The UPS can be installed, commissioned and serviced only by technicians and engineers certified by the manufacturer.

Only qualified personnel are allowed to perform the activities marked with the symbol described in section 1.2.

The UPS has been designed to be used in restricted access areas only. If the mentioned conditions are not respected, the manufacturer might be able to invalidate the warranty.

3.3 Safety Precautions

This section describes the safety precautions that must be observed when working with the product.



Danger

Operations inside the UPS must be performed only by qualified personnel, service technicians certified by the manufacturer or by an agent authorized by the manufacturer.



Danger

**In operation mode
In order to avoid electrical shocks, in operation mode do not remove any screws or protection panels from the UPS and the Battery Cabinet.**



Warning

Operator precautions

The UPS has been designed to be used in restricted access areas and can be operated by authorized personnel only. Therefore, the user has the permission to operate as follows:

- Use the management display as described in this manual;
- Start up and shut down the UPS as described in this manual;
- Perform the connections on the Customer Interface;
- Install and manage the SNMP adapter;
- Install and manage Multidrop communication for parallel configuration.

The manufacturer does not take any responsibility for damages caused by manipulation not conform to the procedures described in this manual.



Notice

Damage to internal components due to electrostatic discharge

Touching electronic components can cause damage and destroy parts of the UPS due to electrostatic discharge. Ground yourself before touching any internal electronic board or component.

3.4 Environmental, Disposal and Recycling Considerations

In accordance with the standard IEC 62040-4, the UPS has been designed by taking into account all environmental aspects.



Notice



This unit makes use of components dangerous for the environment (electronic cards, electronic components and batteries). At the end of life, Batteries and UPS must be taken to specialized collection and disposal centers.



Notice



In case of complete unit dismantling, this operation shall be carried out by specialized personnel and the unit must be taken to centers specialized in collection and disposal of dangerous substances.

3.4.1 Battery and UPS Disposal and Recycling

Since the batteries contain dangerous substances that will harm the environment if thrown away, the replaced batteries must be delivered to an entity qualified for disposal and recycling.

The similar situation is the disposal of the UPS at the end of life. It is necessary to deliver the equipment to a local disposing and recycling treatment facility. They disassembling the complete apparatus assuring the recycling and disposal of each specific part.

3.5 Declarations of Conformity, Safety and CE Marking

The UPS complies with CE standards and with the IEC concerning Uninterruptible Power Supply Systems (UPS).

3.5.1 CE Marking

The UPS is provided with CE marking according to:

Type	Directive
Low Voltage Directive	(2014/35/EU)
EMC Directive	(2014/30/EU)



3.5.2 Declarations of Conformity

The Declarations of Conformity with regard to Safety, EMC, Performance and Environmental aspects are available.

Type	Standard
Safety (General Requirements)	IEC 62477-1
Safety (UPS Requirements)	IEC 62040-1
EMC (UPS Requirements)	IEC 62040-2
Performance (UPS Requirements)	IEC 62040-3

4 Product Description

4.1 General System Description

PremiumTower™ S2 is a Swiss made 3-phase, online double-conversion Uninterruptible Power Supply.

From three phases output 10 to 80kW, PremiumTower™ S2 provides the best solution for small and medium data centers, comms rooms, IT networks and any mission critical application demanding high availability and unbeatable energy efficiency.

PremiumTower™ S2 offers built-in internal batteries from 10 to 80kW minimizing the footprint utilization, eliminating extra costs for external battery frames and avoiding complex installation.

The flexibility in the number of battery blocks (30 to 50) allows the system designer to optimize costs vs autonomy time.

At the same time, the high efficiency of 97.1% in double conversion (VFI) and 99.4% in Ultra-safe ECO mode guarantees maximum energy savings and the lowest Total Cost of Ownership.

5 Delivery Transportation and Storage

5.1 Material and UPS Receipt

The equipment must be transported in an upright position, as indicated by the labels on the package.

Please ensure that the received material corresponds to the indications reported on the delivery note.

The UPS, batteries and accessories are delivered on a specific pallet and they are packed with adequate indications (FRAGILE and position arrows) and protections.



Handle the UPS, the Battery Cabinet and the batteries carefully. The heavy weight can cause injury to persons or damage to facilities in the surrounding area.

5.2 Storage

The UPS should be stored in the original packing. If the UPS is stored unpacked, a protection against dust has to be applied and the environment has to be dry and clean.

5.2.1 Storage without Batteries

If the UPS is not equipped with batteries, the ambient temperature can vary between (-) 25 °C and (+) 70 °C, and the ambient humidity should not exceed 95%, non-condensing.

5.2.2 Storage with Batteries (only for Complete Enclosure)

The ambient temperature can compromise the battery life.

For sealed maintenance-free Lead-Acid batteries, it is suggested to keep them stored at a room temperature varying between (-) 15 °C and (+) 40 °C. Since Lead-Acid batteries have to be stored fully charged, for long term storage it is strongly recommended to recharge the batteries individually every 6 months.

The Ni-Cd batteries can be stored in discharged or charged state. The typical storage temperature is between (-) 20 °C and (+) 45 °C. During long-period storage, a charged battery is subject to self-discharge.

For Lithium-Ion batteries, the storage temperature can range from (-) 20 °C to (+) 60 °C. However, for prolonged storage periods it is recommended to keep it constant to (+) 20 °C. Cells should be stored with a partial charge ranging between 30% and 50%, but cell voltage should not drop below 2.8 V and it should be topped up to prevent over-discharge. The maximum voltage should not exceed 3.4 V.

5.3 External Visual Inspection

The UPS and the Battery Cabinet packages are provided with labels indicating the center of gravity, and with a “Tilt watch” label indicating whether the packages have been overturned during transportation.



Correct indication, proceed to unpack.



Do not unpack if the indication on the “Tilt watch” is red. Immediately inform the manufacturer and the transportation company.

During transportation, the UPS could be damaged, but no evident signs are visible. Therefore, it is suggested to unpack the UPS carefully, make a detailed visual inspection and notify the manufacturer of any visible damage.

5.4 Unpacking

Unpack the equipment by removing the shipping materials and verify the status of the equipment by removing the sides.

For wooden box packages, remove the screws from the box and peel off the sides.

Standard Package



Sea Freight Light

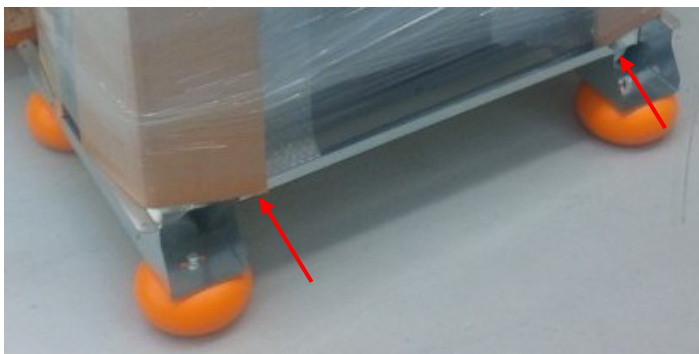


Sea Freight

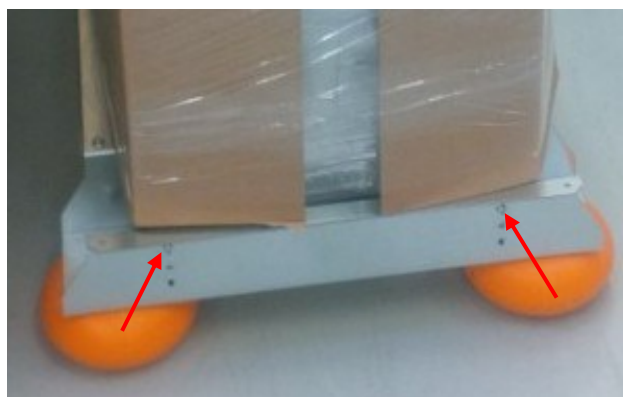


5.4.1 How to Remove the Anti-Shock Bars

Remove the 2 x screws of the protection bars located on the bottom of the sides:



Remove the bars fixing screws, lift the cabinet with a trans-pallet, and pull out the bars.



Notice

All accessories are located in a box on top of the cabinet.

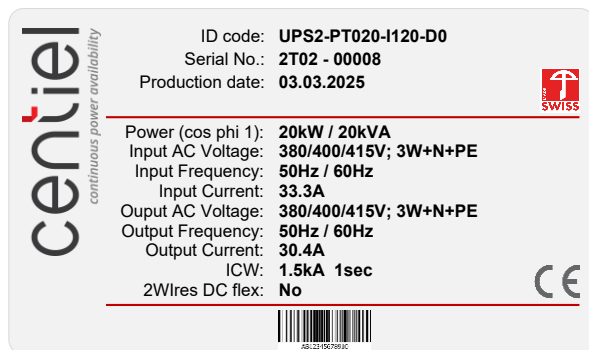
The UPS is equipped with wheels which allows to move it easily. It is recommended to move it without batteries because, if installed, it becomes more difficult due to the high weight.

5.5 General Inspections after Unpacking

5.5.1 Nameplates and Identifications

The nameplates, indicating technical specifications and serial numbers, are located inside the UPS cabinet.

Cabinet's Nameplate



5.5.2 Documentation

Each UPS comes with user manual, ID cards including factory commissioning report. These documents are placed in the glove compartment upon delivery.

For service purposes, these documents shall be kept close to the installation.

5.5.3 Internal Visual Inspection

Before positioning the UPS and the Battery Cabinets, remove all panels and perform a visual inspection of all mechanical parts. Pay particular attention to the wirings: they must not have undergone damages during transportation.

5.5.4 Delivered Options

Check the delivery note and verify that all requested options have been added to the box located on top of the UPS cabinet.

The ordered battery links are located inside the accessories box. Make sure that they correspond to the requested battery configuration.



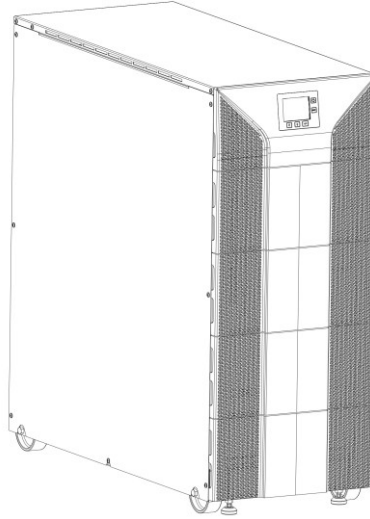
Notice

If parts are missing or wrong parts are delivered, notify the manufacturer for prompt action.

6 Mechanical Dimensions and Installation

6.1 Dimensions and Weight

6.1.1 Cabinets Dimensions and weight

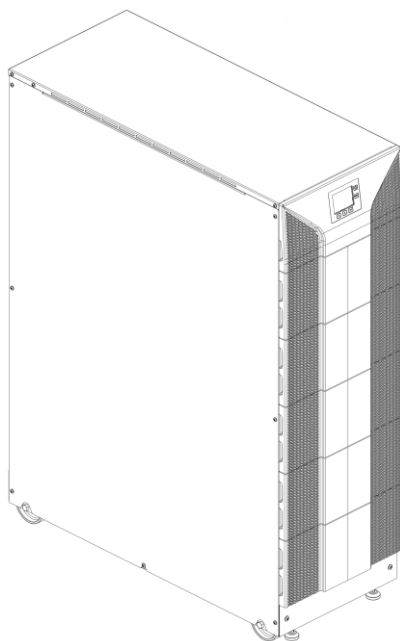


Model	UPS2-PT010-I080-D1	UPS2-PT020-I080-D1
Max Power kVA/kW	10/10	20/20
Internal batteries***	80	80
Dimensions (WxHxD) mm	349 x 842 x 840	
Weight empty frame*	52kg	52kg
Weight frame**	293kg	293kg
Color	Body: RAL 9017 Traffic black / Frontal: RAL 9011 OP	

* w/o Batteries

** with 7Ah batteries

*** 7/8/9 Ah

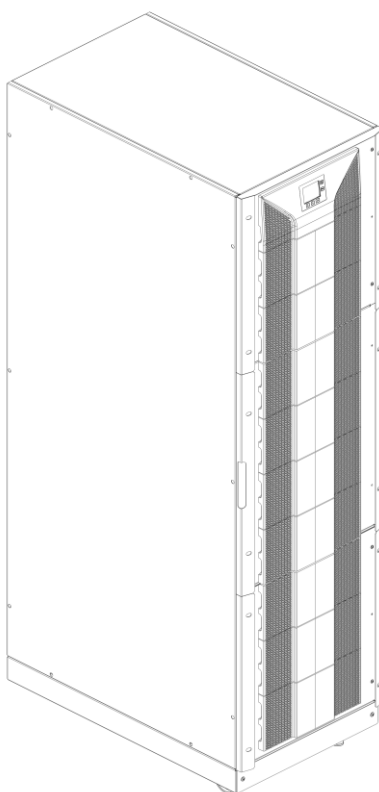


Model	UPS2-PT010 -I120-D0	UPS2-PT020 -I120-D0	UPS2-PT030 -I120-D0	UPS2-PT040 -I120-D0	UPS2-PT060- E-D0	UPS2-PT080- E-D0
Max Power kVA/kW	10/10	20/20	30/30	40/40	60/60	80/80
Internal batteries***	120	120	120	120	No internal Batt.	No internal Batt.
Dimensions (WxHxD) mm	349 x 1'077 x 840				349 x 1'077 x 913	
Weight empty frame*	56kg	56kg	60kg	60kg	83kg	87kg
Weight frame**	417kg	417kg	421kg	421kg	---	---
Color	Body: RAL 9017 Traffic black / Frontal: RAL 9011 OP					

* w/o Batteries,

** with 7Ah batteries

*** 7/8/9 Ah



Model	UPS2-PT010-I240-E0	UPS2-PT020-I240-E0	UPS2-PT030-I240-E0	UPS2-PT040-I240-E0	UPS2-PT060-I240-E0	UPS2-PT080-I240-E0
Max Power kVA/kW	10/10	20/20	30/30	40/40	60/60	80/80
Internal batteries***	240	240	240	240	240	240
Dimensions (WxHxD) mm	510 x 1'780 x 850				510 x 1'780 x 905	
Weight empty frame*	120kg	120kg	120kg	120kg	144kg	144kg
Weight frame**	842kg	842kg	842kg	842kg	866kg	866kg
Color	Body: RAL 9017 Traffic black / Frontal: RAL 9011 OP					

* w/o Batteries,

** with 7Ah Batteries

*** 7/8/9 Ah

6.2 Mechanical Footprint

Drawing	Model	X2 (mm)	Z2 (mm)	X3 (mm)	Z3 (mm)	X4 (mm)
	UPS2-PT010-I080-D1	305	693	305	773	30
	UPS2-PT020-I080-D1					
	UPS2-PT010-I120-D0					
	UPS2-PT020-I120-D0					
	UPS2-PT030-I120-D0					
	UPS2-PT040-I120-D0					
	UPS2-PT060-E-D0					
	UPS2-PT080-E-D0					
	UPS2-PT010-I240-E0	396	697	358	777	71
	UPS2-PT020-I240-E0					
	UPS2-PT030-I240-E0					
	UPS2-PT040-I240-E0					
	UPS2-PT060-I240-E0					
	UPS2-PT080-I240-E0					

6.2.1 Mechanical Drawings

Mechanical drawings, indicating all quotes, are necessary to move the cabinets through corridors and doors. Pay attention to the weight, especially if batteries are installed (see section 6.1), because some floors cannot support excessive load.

A footprint drawing is also available (see section 6.2). It allows the user to design a support frame in case the cabinets are installed on a floating floor.

The cabinets are also equipped with wheels which allows to easily move the cabinet without using a transportation means.



6.3 Location and Positioning

6.3.1 Operating Environment

The UPS is intended to be installed indoor, in a dustless room and with adequate clean air ventilation in order to keep the temperature within the specifications reported in section 6.3.2.

The Premium Tower™ S2 10-20kW are air-cooled by means of one fan, whereas 30/40/60 and 80kW are air-cooled by means of three fans. Air inlets are in the front of the cabinet and outlets in the rear. Please refer to section 6.3.4 for the recommended clearance distances.

When installed at a maximum altitude of 1000 m above sea level, the UPS will provide the nominal power. For operation between 1000 and 2000 m a.s.l., a power de-rating of 1% for each 100 m over 1000 m has to be applied. If the UPS is installed over 2000 m, please contact the manufacturer to get information about the specific installation conditions.

6.3.2 UPS Room

Installation Room Requirements

Ambient temperature range	0 °C to +40 °C (32 °F to 104 °F)
Recommended operating temperature range (in particular if the UPS is equipped with internal batteries or batteries located in the same room as the UPS)	+20 °C to +25 °C (68 °F to 77 °F)
Maximum relative humidity	95% (non-condensing)
Protected against dust	
Fire protection standard has to be fulfilled	
Corrosive or explosive gases must be absent	

6.3.3 Battery Room

During operation, the battery room has to be kept at a constant temperature in order to avoid damage to the batteries which might cause a drastic loss of their capacity.

Typically, the maximal lifetime of the batteries is reached at a temperature of 20-25 °C. The manufacturer kindly recommends providing a room able to maintain this temperature. Even PT S2 equipped with internal batteries must operate at temperatures below 25°C. If it is not possible, an air conditioning system has to be installed.



Notice

Review specifications of your battery manufacturer for better results.

6.3.4 Positioning Clearances

The UPS is designed to be located in restricted access areas only.

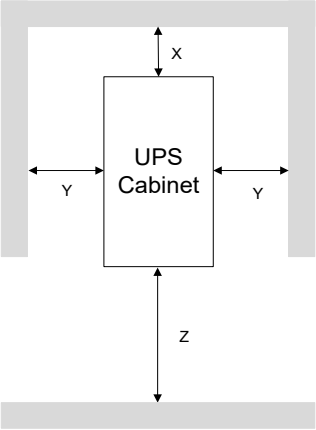
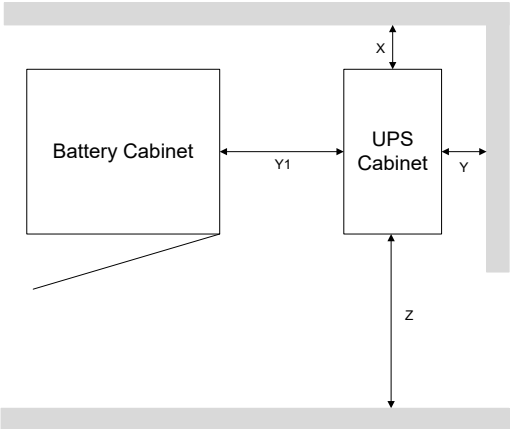
For UPS with internal batteries it is suggested to keep a side distance of at least 500mm in order to facilitate battery control to service personnel.

For UPS without internal batteries, it is recommended to provide at least 200 mm clearance between the sides and back of the Premium Tower™ S2 UPS and any wall of the room.

It is possible to reduce the side clearances if the room is provided with rear air extraction, or if the warm air can be easily evacuated on the rear of the UPS.

If a Battery Cabinet is installed, it is recommended to keep a distance of at least 600 mm between the Battery Cabinet and the UPS sides. This will avoid an increase in the battery temperature caused by the influence of the warm air ejected by the UPS.

It is possible to reduce the distance between the UPS and the Battery Cabinet sides if the room is provided with rear air extraction, or if the warm air can be easily evacuated on the rear.

Drawing	X(mm)	Y(mm)	Z(mm)	Y1(mm)
	200	500	800	
	200	200	800	600

6.4 Battery Installation and Configuration



Danger

Battery installation has to be performed by qualified personnel since the exposure to dangerous DC voltage is high.



Warning

Special gloves and glasses have to be worn while working on the batteries.



Warning

To prevent involuntary risk of arc during the wiring, only insulated tools have to be used.

6.4.1 About Battery Trays and Cable Links for UPS with internal batteries

The PremiumTower S2 (PTS2) 10/20kW in cabinet D1 can hold up to 80 internal batteries of 7/8/9 Ah for a maximum of 2 strings. If only one string is installed it is recommended to put the batteries on the left column (see 6.4.2).

The battery kits have to be ordered separately according to the battery configuration.



Batt trays and cables kit	Order Code
BAT-KIT01 (1 x 40: 7/8/9Ah)	00-00949
BAT-KIT02 (2 x 40: 7/8/9Ah)	00-00950

The PremiumTower S2 (PTS2) 10/20/30/40kW in cabinet D0 can hold up to 120 internal batteries of 7/8/9 Ah for a maximum of 3 strings. If only one string is installed it is recommended to put the batteries on the left column (see 6.4.3).



Batt trays and cables kit	Order Code
BAT-KIT03 (1 x 40: 7/8/9Ah)	00-00936
BAT-KIT04 (2 x 40: 7/8/9Ah)	00-00937
BAT-KIT05 (3 x 40: 7/8/9Ah)	00-00938
BAT-KIT11 (2 x 50: 7/8/9Ah)	00-00951

For PTS2 10/20/30/40/60kW and 80kW in cabinet E0 can hold up to 240 internal batteries of 7/8/9 Ah for a maximum of 6 strings of 40 battery blocks. If only one string is installed it is recommended to put the batteries on the left column (see 6.4.4).



Batt trays and cables kit	Order Code
BAT-KIT06 (2 x 40: 7/8/9Ah)	00-00939
BAT-KIT07 (3 x 40: 7/8/9Ah)	00-00940
BAT-KIT08 (4 x 40: 7/8/9Ah)	00-00941
BAT-KIT09 (5 x 40: 7/8/9Ah)	00-00942
BAT-KIT10 (6 x 40: 7/8/9Ah)	00-00943
BAT-KIT12 (2 x 50: 7/8/9Ah)	00-00952
BAT-KIT13 (3 x 50: 7/8/9Ah)	00-00953
BAT-KIT14 (4 x 50: 7/8/9Ah)	00-00954

General Concept



**UPS2-PT010-I080-D1 and
UPS2-PT020-I080-D1**

Cabinets can hold 2 strings of 40 battery blocks.
1 and 1/2 string, right (from the front),
60 blocks, and left 1/2 string 20 blocks.





**UPS2-PT010-I120-D0, UPS2-PT020-I120-D0
UPS2-PT030-I120-D0, UPS2-PT040-I120-D0**

Cabinets can hold 3 strings of 40 battery blocks.

2 strings, right (from the front), 80 blocks, and left 1 string 40 blocks.



**UPS2-PT010-I240-E0,
UPS2-PT020-I240-E0,
UPS2-PT030-I240-E0,
UPS2-PT040-I240-E0**

Cabinet can hold up to 6 strings of 40 battery blocks.

3 and 1/2 strings, right (from the front), 140 blocks, and left 2 1/2 string 100 blocks.



UPS2-PT060-I240-E0, UPS2-PT080-I240-E0

Cabinet can hold up to 6 strings of 40 battery blocks.
2 and 1/2 strings, right (from the front), 100 blocks, and left 3 1/2 string 140 blocks.

6.4.2 Battery Configuration and Autonomies cabinet D1

UPS2-PT010-I080-D1 (10kW cosφ 1 load) and 7.2 Ah batteries @ 25 °C				
Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
7	1	40	BAT-KIT01	(1 x 40: 7/8/9Ah)
21	2	40	BAT-KIT02	(2 x 40: 7/8/9Ah)
UPS2-PT020-I080-D1 (20kW cosφ 1 load) and 7.2 Ah batteries @ 25 °C				
Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
7	2	40	BAT-KIT02	(2 x 40: 7/8/9Ah)
UPS2-PT020-I080-D1 (20kW cosφ 0.9 load) and 9 Ah batteries @ 25 °C				
Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
4.5	1	40	BAT-KIT01	(1 x 40: 7/8/9Ah)
10	2	36*	BAT-KIT02	(2 x 40: 7/8/9Ah)
12	2	40	BAT-KIT02	(2 x 40: 7/8/9Ah)

*Based on 1.75Vmin/cell



Notice

Calculations based on 1.67Vmin/Cell if not differently specified.

The values presented in these tables are for guidance purposes only, be sure to verify these values with the manufacturer of the chosen batteries.



Please ask your distributor for specific cabling diagrams and battery configurations

6.4.3 Battery Configuration and Autonomies cabinet D0

To increase the battery configuration flexibility, the PTS2 from 10 to 40kW in cabinet D0 can hold up to 120 batteries in the size of 7/8/9 Ah.

The frame's battery lines connections are protected with CBs as seen in section 6.6.

The following table illustrates different examples of autonomy time.



Warning

PT 40 is not able to manage up to 46 (23 + 23) battery blocks. Please install the batteries consequently



Notice

It is strictly recommended never connect in parallel battery strings with different battery types and capacity.

UPS2-PT020-I120-D0 (20kW cosφ 1 load) and 9 Ah batteries @ 25 °C

Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
5	1	50	BAT-KIT11	(1 x 50: 7/8/9Ah)
11	2	40	BAT-KIT04	(2 x 40: 7/8/9Ah)
18	3	40	BAT-KIT05	(3 x 40: 7/8/9Ah)

UPS2-PT030-I120-D0 (30kW cosφ 0.9 load) and 9 Ah batteries @ 25 °C

Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
5	2	36*	BAT-KIT04	(2 x 40: 7/8/9Ah)
7	2	40	BAT-KIT04	(2 x 40: 7/8/9Ah)
9	2	50	BAT-KIT11	(2 x 50: 7/8/9Ah)
10	3	36*	BAT-KIT05	(3 x 40: 7/8/9Ah)
12	3	40	BAT-KIT05	(3 x 40: 7/8/9Ah)

UPS2-PT040-I120-D0 (40kW cosφ 1 load) and 9 Ah batteries @ 25 °C

Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
4	2	46*	BAT-KIT11	(2 x 50: 7/8/9Ah)
5	2	50	BAT-KIT11	(2 x 50: 7/8/9Ah)

UPS2-PT040-I120-D0 (40kW cosφ 0.9 load) and 9 Ah batteries @ 25 °C

Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
5	2	46*	BAT-KIT11	(2 x 50: 7/8/9Ah)
6	2	50	BAT-KIT11	(2 x 50: 7/8/9Ah)

*Based on 1.75Vmin/cell

6.4.4 Battery Configuration and Autonomies cabinet E0

To increase the battery configuration flexibility, the PTS2 from 10 to 80kW in cabinet E0 can hold up to 240 batteries in the size of 7/8/9 Ah.

The frame's battery lines connections are protected with CBs as seen in section 6.6.

The following table illustrates different examples of autonomy time for 30, 40 and 60 kW.



Warning

**PT 40 and 80 is not able to manage up to 46 (23 + 23) battery blocks.
Please install the batteries consequently**

UPS2-PT030-I240-E0 and 7.2 Ah batteries @ 25 °C (cosφ 0.9 load)				
Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
7	3	36*	BAT-KIT07	(3 x 40: 7/8/9Ah)
9.5	3	40	BAT-KIT07	(3 x 40: 7/8/9Ah)
13	3	50	BAT-KIT13	(3 x 50: 7/8/9Ah)
14	4	40	BAT-KIT08	(4 x 40: 7/8/9Ah)
20	5	40	BAT-KIT09	(5 x 40: 7/8/9Ah)
25	6	40	BAT-KIT10	(6 x 40: 7/8/9Ah)
UPS2-PT030-I240-E0 and 9 Ah batteries @ 25 °C (cosφ 0.9 load)				
Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
6	2	36*	BAT-KIT06	(2 x 40: 7/8/9Ah)
12.5	3	40	BAT-KIT07	(3 x 40: 7/8/9Ah)
17	3	50	BAT-KIT13	(3 x 50: 7/8/9Ah)
18	4	40	BAT-KIT08	(4 x 40: 7/8/9Ah)
24	5	40	BAT-KIT09	(5 x 40: 7/8/9Ah)
30	6	40	BAT-KIT10	(6 x 40: 7/8/9Ah)
UPS2-PT040-I240-E0 and 7.2 Ah batteries @ 25 °C (cosφ 0.9 load)				
Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
6	3	42*	BAT-KIT13	(3 x 50: 7/8/9Ah)
8	3	50	BAT-KIT13	(3 x 50: 7/8/9Ah)
9	4	42*	BAT-KIT14	(4 x 50: 7/8/9Ah)
13	4	50	BAT-KIT14	(4 x 50: 7/8/9Ah)

*Based on 1.75Vmin/cell

UPS2-PT040-I240-E0 and 9 Ah batteries @ 25 °C (cosφ 0.9 load)

Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
8	3	42*	BAT-KIT13	(3 x 50: 7/8/9Ah)
11	3	50	BAT-KIT13	(3 x 50: 7/8/9Ah)
13	4	42*	BAT-KIT14	(4 x 50: 7/8/9Ah)
17	4	50	BAT-KIT14	(4 x 50: 7/8/9Ah)

UPS2-PT060-I240-E0 and 9 Ah batteries @ 25 °C (cosφ 0.9 load)

Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
4.8	3	44	BAT-KIT13	(3 x 50: 7/8/9Ah)
6	3	50	BAT-KIT13	(3 x 50: 7/8/9Ah)
7	4	40	BAT-KIT08	(4 x 40: 7/8/9Ah)
9.5	4	50	BAT-KIT14	(4 x 50: 7/8/9Ah)
9.5	5	40	BAT-KIT09	(5 x 40: 7/8/9Ah)
12.5	6	40	BAT-KIT10	(6 x 40: 7/8/9Ah)

UPS2-PT080-I240-E0 and 9 Ah batteries @ 25 °C (cosφ 0.9 load)

Autonomy (min)	Strings	Blocks/String	Set of Batt Tray	Batt Links
4.8	4	44*	BAT-KIT13	(3 x 50: 7/8/9Ah)
6.5	4	50	BAT-KIT14	(4 x 50: 7/8/9Ah)

*Based on 1.75Vmin/cell

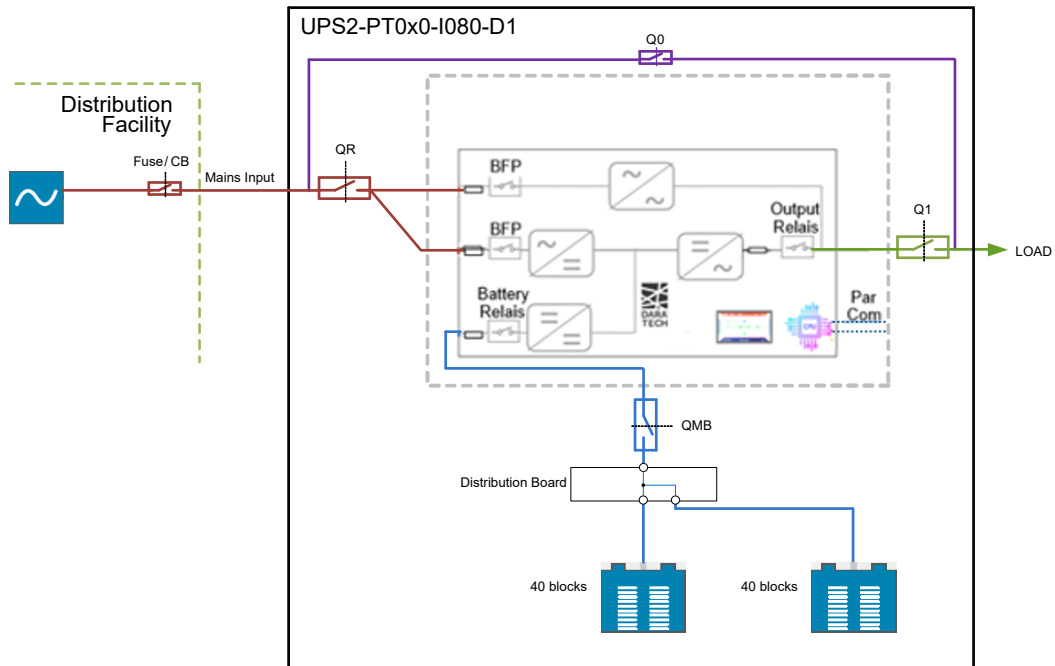


Notice

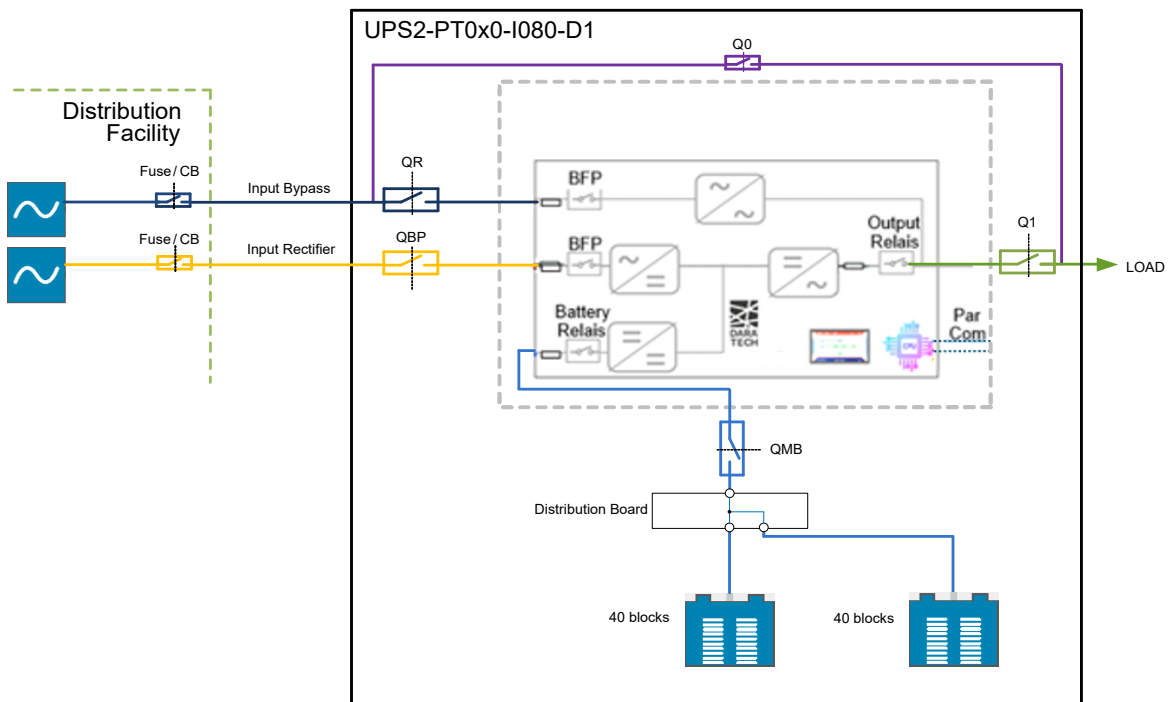
It is strictly recommended never connect in parallel battery strings with different battery types and capacity.

6.5 Block Diagram

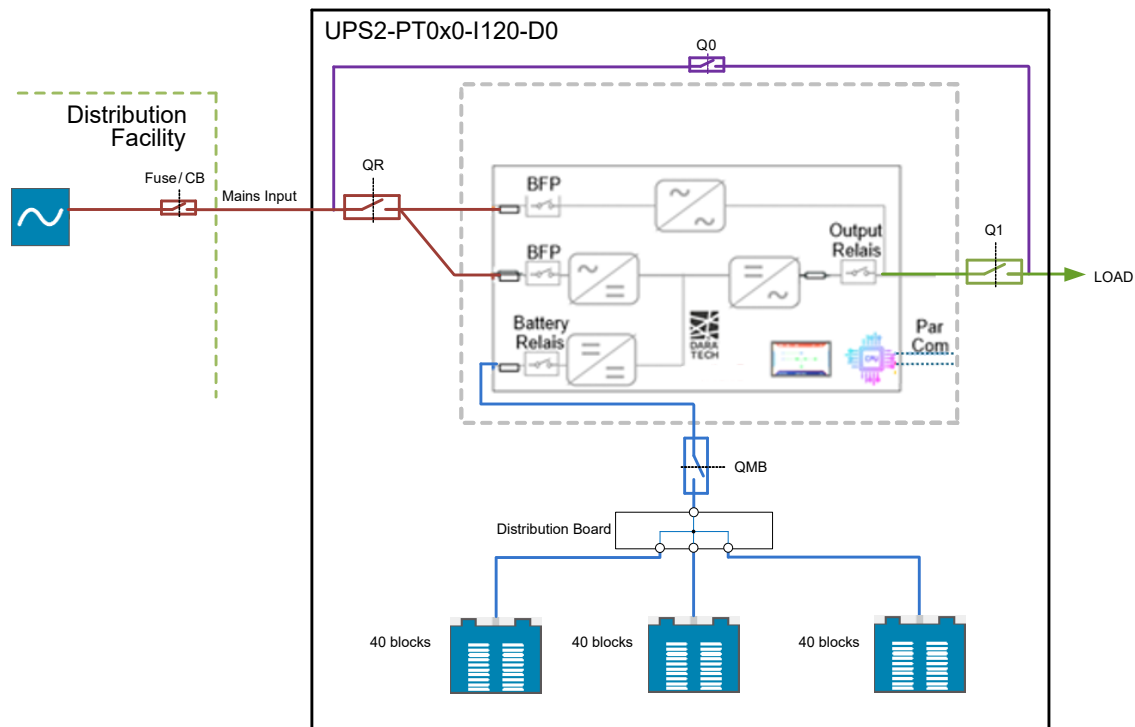
UPS2-PT010/20 cabinet D1 Single input feed



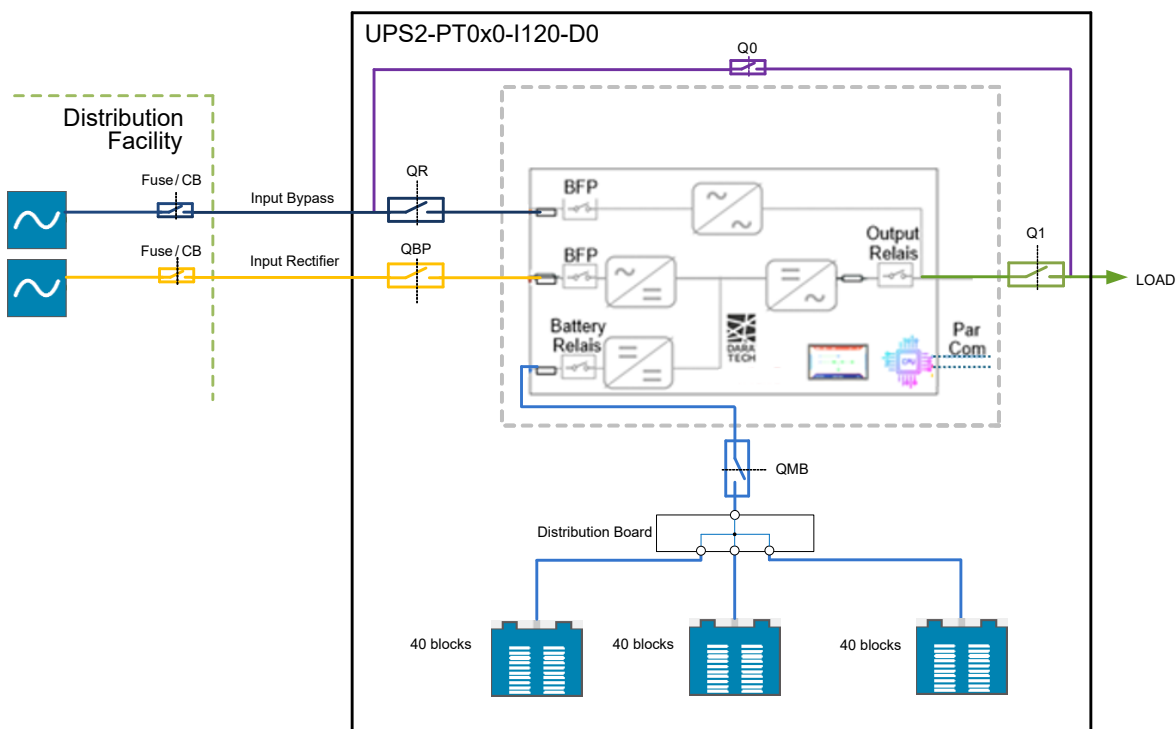
UPS2-PT010/20 cabinet D1 Dual input feed



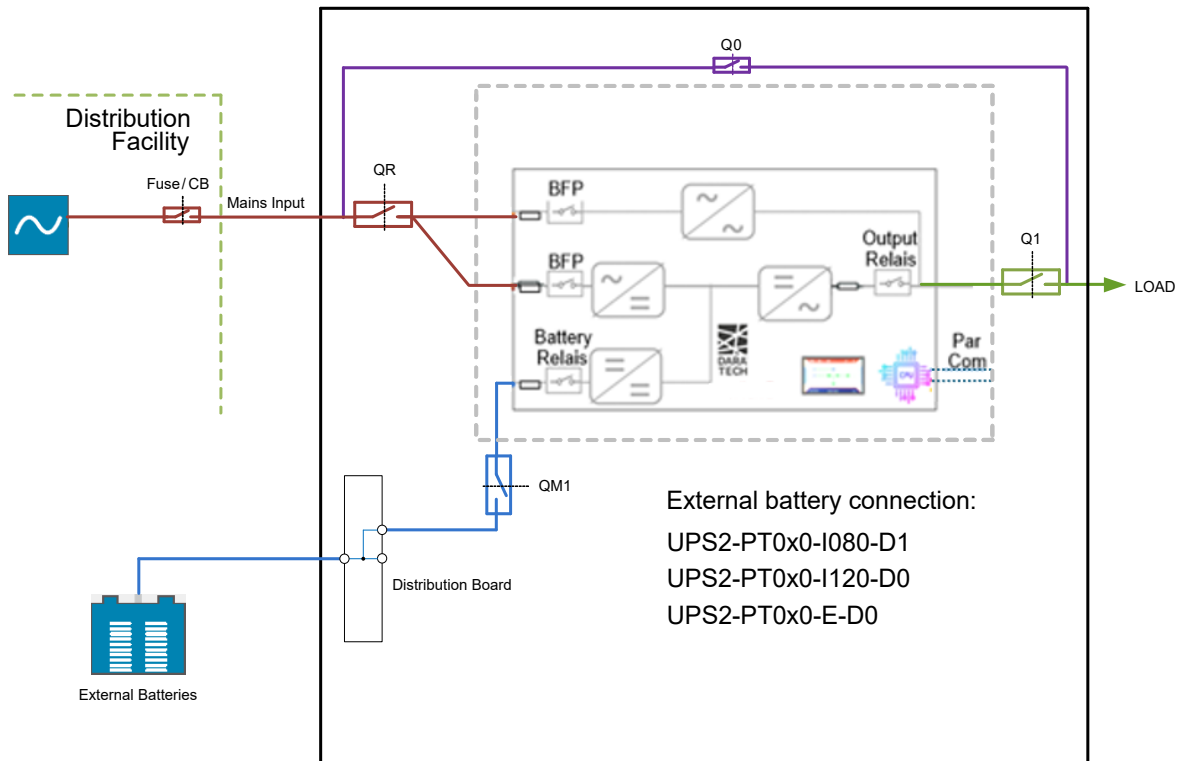
UPS2-PT010/20/30/40 cabinet D0 Single input feed



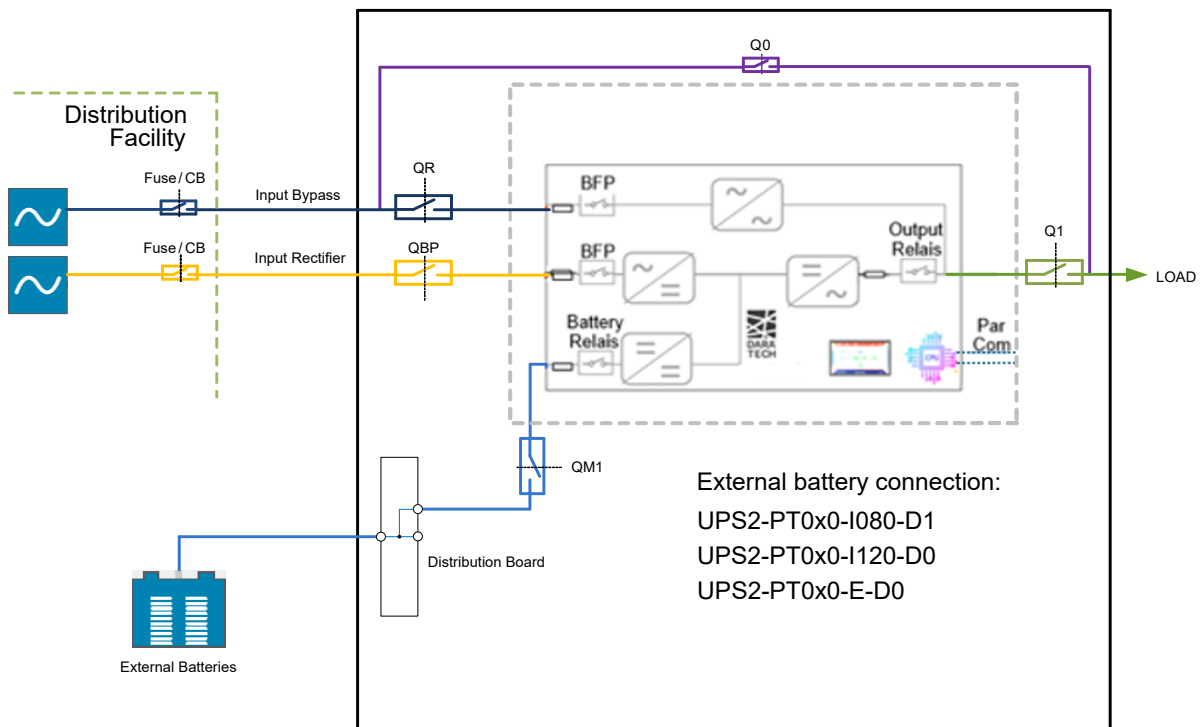
UPS2-PT010/20/30/40 cabinet D0 Dual input feed



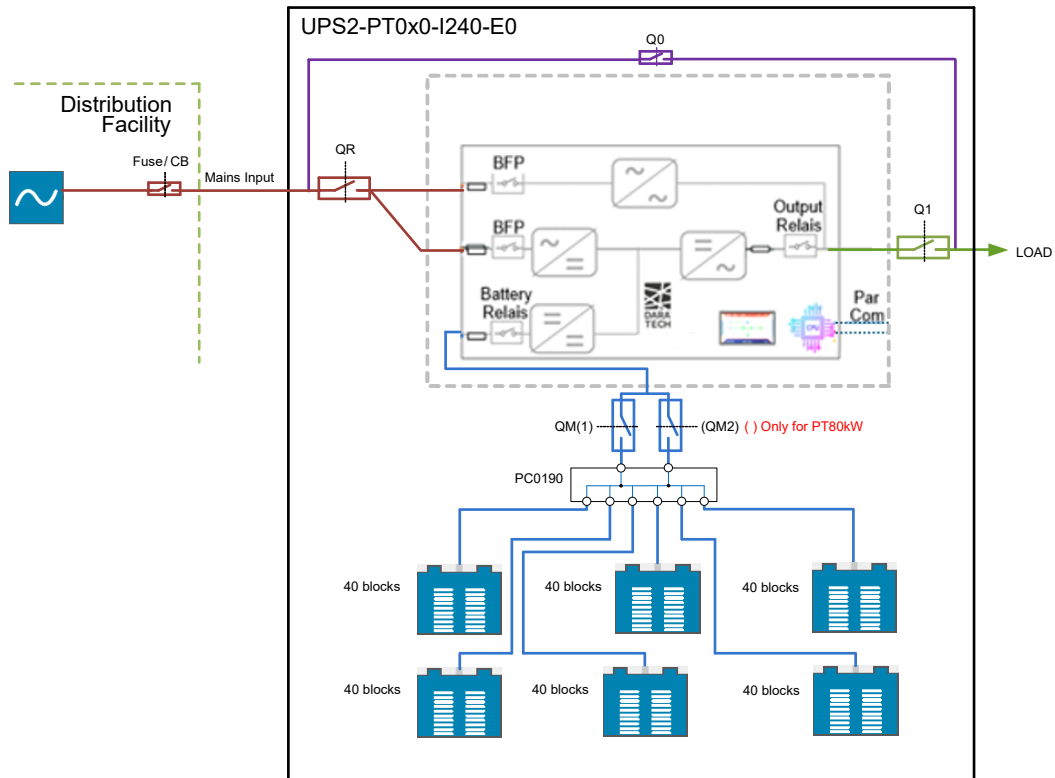
UPS2-PT010/20/30/40/60/80 External battery cabinet D1/D0 Single input feed



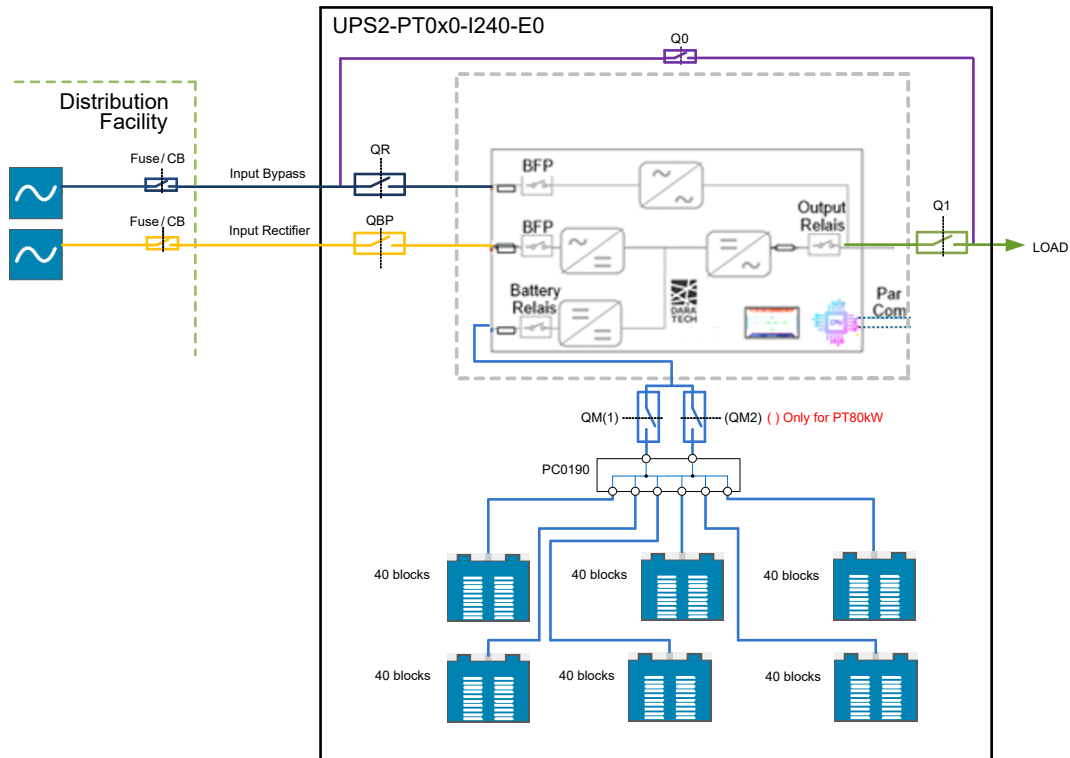
UPS2-PT010/20/30/40/60/80 External battery cabinet D1/D0 Dual input feed



UPS2-PT010/20/30/40/60/80 cabinet E0 Single input feed

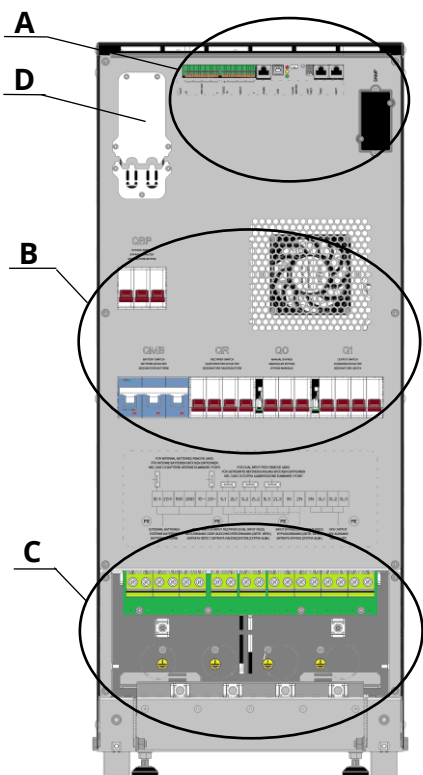


UPS2-PT010/20/30/40/60/80 cabinet E0 Dual input feed



6.6 Rear View

UPS2-PT010-I080-D1 and UPS2-PT020-I080-D1



A) Connectivity:

- Dry ports + USB + RS485 + Multidrop
- 1 x Slots: SNMP

B) Fuses and CB:

- QR => Input or Rectifier fuses (for dual input)
- QMB Battery CB
- Bypass CB (Optional, only for dual input feed)
- Manual Bypass (Q0)
- Output Circuit Breaker (Q1)

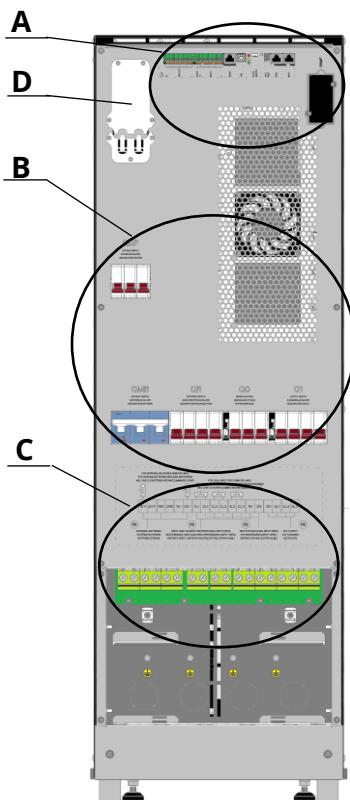
C)

- Input, Output and Battery distribution

D)

- Parallel communication (Optional)

UPS2-PT010-I120-D0, UPS2-PT020-I120-D0, UPS2-PT030-I120-D0, UPS2-PT040-I120-D0



A) Connectivity:

- Dry ports + USB + RS485 + Multidrop
- 1 x Slots: SNMP

B) Fuses and CB:

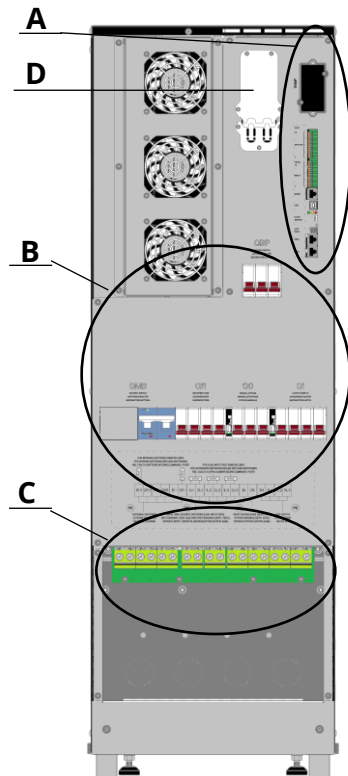
- QR => Input or Rectifier fuses (for dual input)
- QMB Battery CB
- Bypass CB (Optional, only for dual input feed)
- Manual Bypass (Q0)
- Output Circuit Breaker (Q1)

C)

- Input, Output and Battery distribution

D)

- Parallel communication (Optional)

UPS2-PT060-E-D0 and UPS2-PT080-E-D0 (PTS2 60 drawing)**A) Connectivity:**

- Dry ports + USB + RS485 + Multidrop
- 1 x Slots: SNMP

B) Fuses and CB:

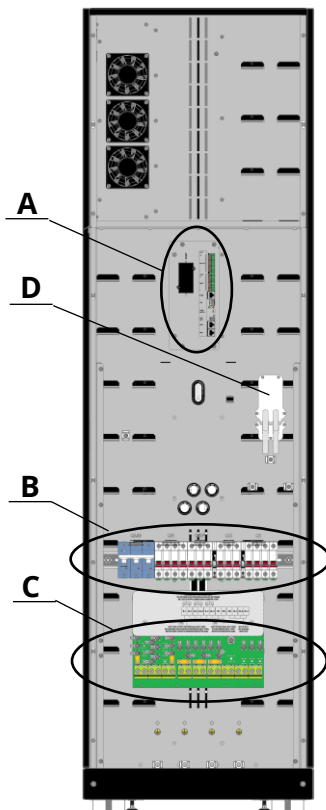
- QR => Input or Rectifier fuses (for dual input)
- QMB Battery CB
- Bypass CB (Optional, only for dual input feed)
- Manual Bypass (Q0)
- Output Circuit Breaker (Q1)

C)

- Input, Output and Battery distribution

D)

- Parallel communication (Optional)

UPS2-PT010, 020, 030, 040-I240-E0 (front view without panels) and UPS2-PT060-I240-E0**A) Connectivity:**

- Dry ports + USB + RS485 + Multidrop
- 1 x Slots: SNMP

B) Fuses and CB:

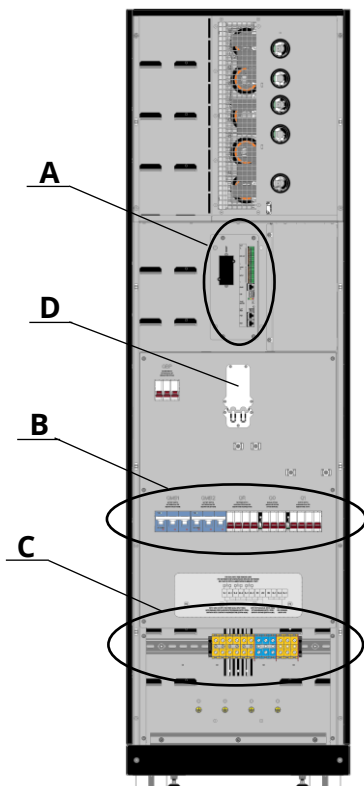
- QR => Input or Rectifier fuses (for dual input)
- QMB Battery CB
- Bypass CB (Optional, only for dual input feed)
- Manual Bypass (Q0)
- Output Circuit Breaker (Q1)

C)

- Input, Output and Battery distribution

D)

- Parallel communication (Optional)

UPS2-PT080-I240-E0 (front view without panels)**A) Connectivity:**

- Dry ports + USB + RS485 + Multidrop
- 1 x Slots: SNMP

B) Fuses and CB:

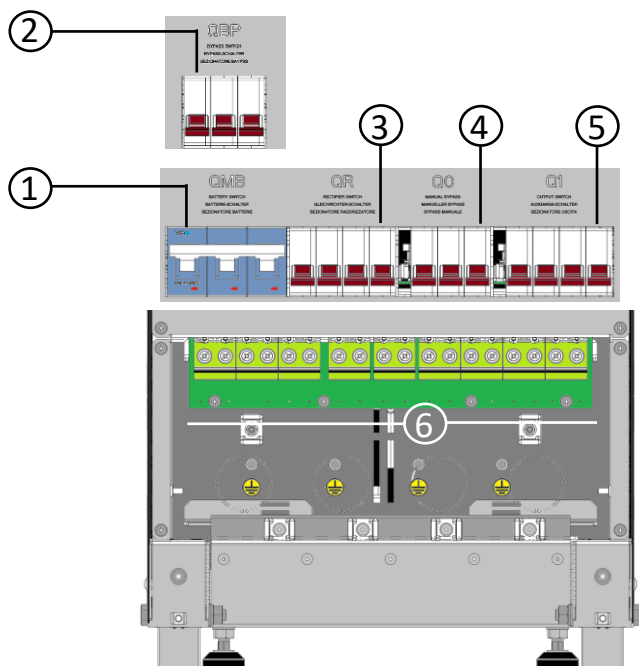
- QR => Input or Rectifier fuses (for dual input)
- QMB Battery CB
- Bypass CB (Optional, only for dual input feed)
- Manual Bypass (Q0)
- Output Circuit Breaker (Q1)

C)

- Input, Output and Battery distribution

D)

- Parallel communication (Optional)

6.7 Distribution and Wiring**UPS2-PT010-I080-D1 and UPS2-PT020-I080-D1**

1: Battery MCCB
QMB

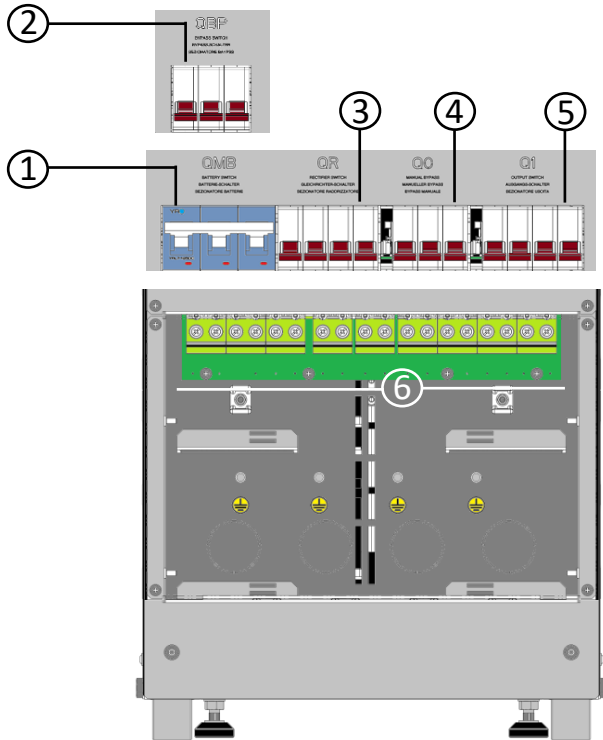
2: Bypass Switch QMB (If provided with dual input feed option)

3: Input Switch QR (equipped also with neutral isolator)

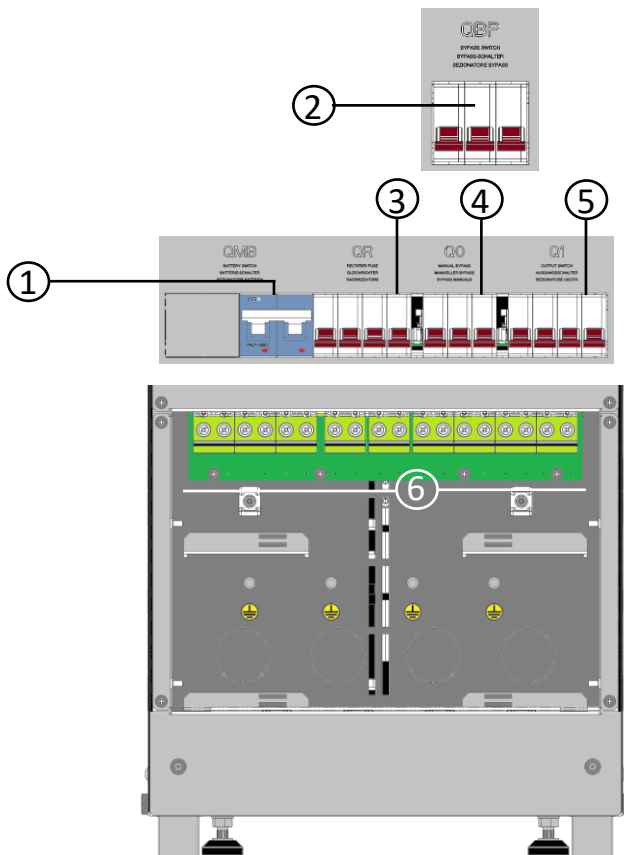
4: Manual Bypass Switch Q0

5: Output Switch Q1 (also equipped with neutral switch)

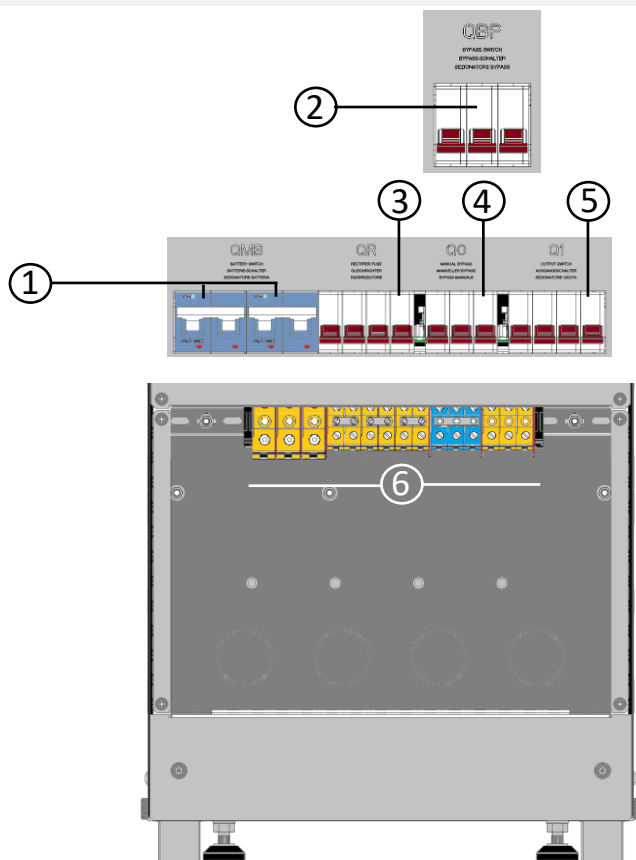
6: Connections and Wiring (see 7.3)

UPS2-PT010-I120-D0, UPS2-PT020-I120-D0, UPS2-PT030-I120-D0, UPS2-PT040-I120-D0

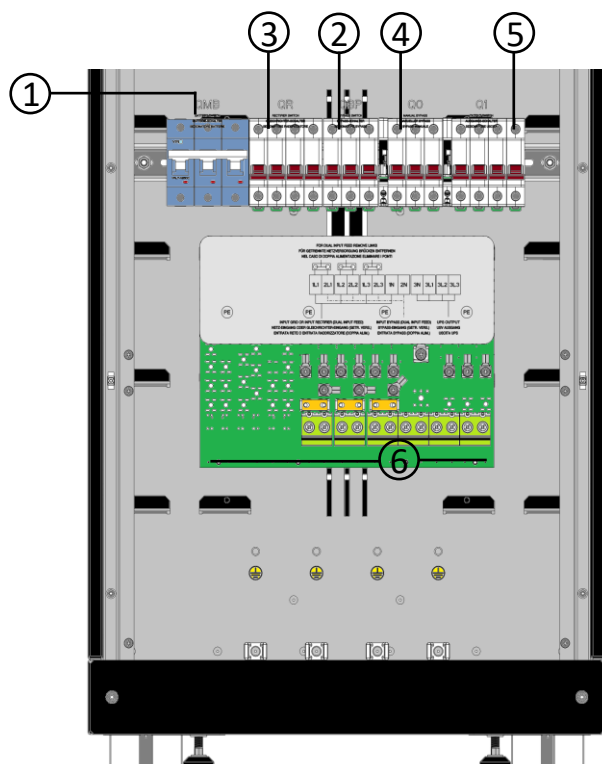
- 1: Battery MCCB QMB
- 2: Bypass Switch QBP (If provided with dual input feed option)
- 3: Input Switch (QR) (also equipped with neutral switch)
- 4: Manual Bypass Switch Q0
- 5: Output Switch Q1 (also equipped with neutral isolator)
- 6: Connections and Wiring (see 7.7)

UPS2-PT060-E-D0

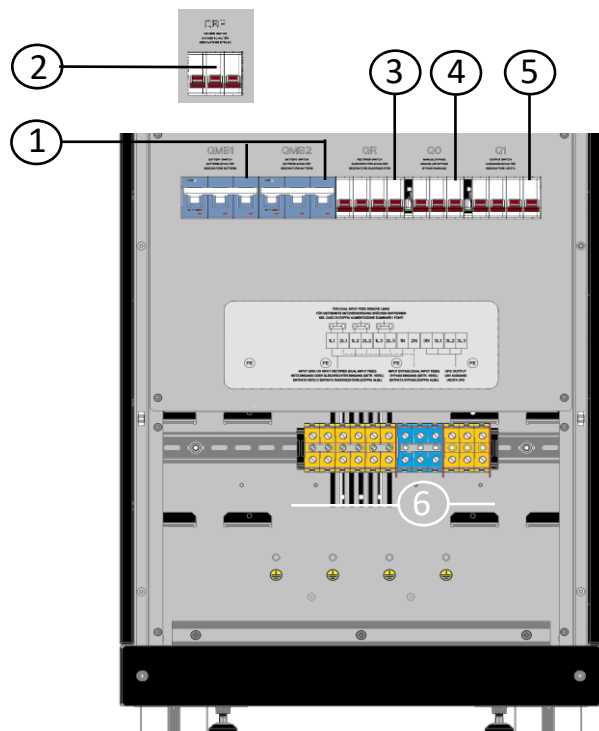
- 1: Battery MCCB QMB
- 2: Bypass Switch QBP (If provided with dual input feed option)
- 3: Input Switch (QR) (also equipped with neutral switch)
- 4: Manual Bypass Switch Q0
- 5: Output Switch Q1 (also equipped with neutral switch)
- 6: Connections and Wiring (see 7.11)

UPS2-PT080-E-D0

- 1: Battery MCCB
QMB (1 and 2 in parallel)
- 2: Bypass Switch QBP (If provided with dual input feed option)
- 3: Input Switch (QR) (also equipped with neutral switch)
- 4: Manual Bypass Switch Q0
- 5: Output Switch Q1 (also equipped with neutral switch)
- 6: Connections and Wiring (see 7.11)

UPS2-PT010-I240-E0, UPS2-PT020-I240-E0, UPS2-PT030-I240-E0, UPS2-PT040-I240-E0, UPS2-PT060-I240-E0

- 1: Battery MCCB
QMB
- 2: Bypass Switch QBP (If provided with dual input feed option)
- 3: Input Switch (QR) (equipped also with neutral isolator)
- 4: Manual Bypass Switch Q0
- 5: Output Switch Q1 (equipped also with neutral isolator)
- 6: Connections and Wiring (see 7.8)

UPS2-PT080-I240-E0

- 1: Battery MCCB (PFB)
QMB1 and QMB2 in parallel
- 2: Bypass Switch QBP (If provided with
dual input feed option)
- 3: Input Switch (QR) (equipped also with
neutral isolator)
- 4: Manual Bypass Switch Q0
- 5: Output Switch Q1 (equipped also
with neutral isolator)
- 6: Connections and Wiring (see 7.7)

7 Electrical Installation

7.1 Preparation for Electrical Installation



Warning

Prior to connecting the power cables, make sure that all the Circuit Breakers and Fuses of the UPS, as well as the protections of the distribution facility and of the external batteries, are open.



Warning

Input neutral is required to operate the UPS.

The UPS has been designed to work with the following AC power distribution systems: TT, TN-C, TN-S. For IT power distribution systems without neutral, it is necessary to install a 3-poles/4-poles converter transformer in order to recreate a reference PEN on the secondary windings connected to the input of the UPS. It is suggested to restart the power distribution in TN-S configuration.

7.2 Cables, Sections and Fuses Ratings

7.2.1 Single Input Feed connection

Single input feed is the most common connection, and it implies the installation of one group of fuses or Circuit Breakers (CBs) in the customer's input distribution facility.

Below the table with the minimum recommended cable to be use:



Warning

Always refer to the cable datasheet, the local standard to follow and site conditions for the cable cross section to use.

Feed	Description	UPS2-PT010-I080-D1 UPS2-PT010-I120-D0 UPS2-PT010-I240-E0	UPS2-PT020-I080-D1 UPS2-PT020-I120-D0 UPS2-PT020-I240-E0	UPS2-PT030-I120-D0 UPS2-PT030-I240-E0	UPS2-PT040-I120-D0 UPS2-PT040-I240-E0	UPS2-PT060-E-D0 UPS2-PT060-I240-E0	UPS2-PT080-E-D0 UPS2-PT080-I240-E0
Input voltage 3 x 230/400V	Maximum input current with batteries charging	16 A	32 A	49,5 A	66 A	99 A	133 A
	Input fuses 3 x gl-gG or CB	16 A	32 A	50 A	80 A	100 A	160 A
	Input cables (mm²) (VDE0298)	5 x 2.5	5 x 6	5 x 10	5 x 16	5 x 35	5 x 50
Output voltage 3 x 230/400V	Nominal output current (In)	14.5 A	29 A	43.5 A	58 A	87 A	116 A
	Output cables (mm²) (VDE0298)	5 x 2.5	5 x 6	5 x 10	5 x 16	5 x 35	5 x 50
	Max battery current (A @ min voltage with 40 batt.)	I080 or I120 or I240	I080 or I120 or I240	Ext. I080 or I120	Ext. I080 or I120	Ext. D0	Ext. D0
Battery		25 A	50 A	75 A	100 A	150 A	200 A
	External battery fuses or CB (1000V/1dc)	25 A	50 A	80 A	100 A	160 A	200 A
	External battery cables (mm²)	3 x 4	3 x 10	3 x 16	3 x 25	3 x 50	3 x 95

7.2.2 Dual Input Feed connection

The dual feed connection, with separate protections, is used with the aim of increasing the safety in case of batteries discharge. It should have two different power supply grids with neutrals connected together.

If the Rectifier Mains fails, the UPS switches over to batteries. As soon as the batteries are fully discharged, the load will be transferred to Bypass without interruption, and it will be continuously supplied by the Bypass Mains until the Rectifier Mains is again available.

If the Bypass Mains fails, the UPS will work as normal, but the Bypass will not be available anymore.

Below the table with the minimum recommended cable to be use:



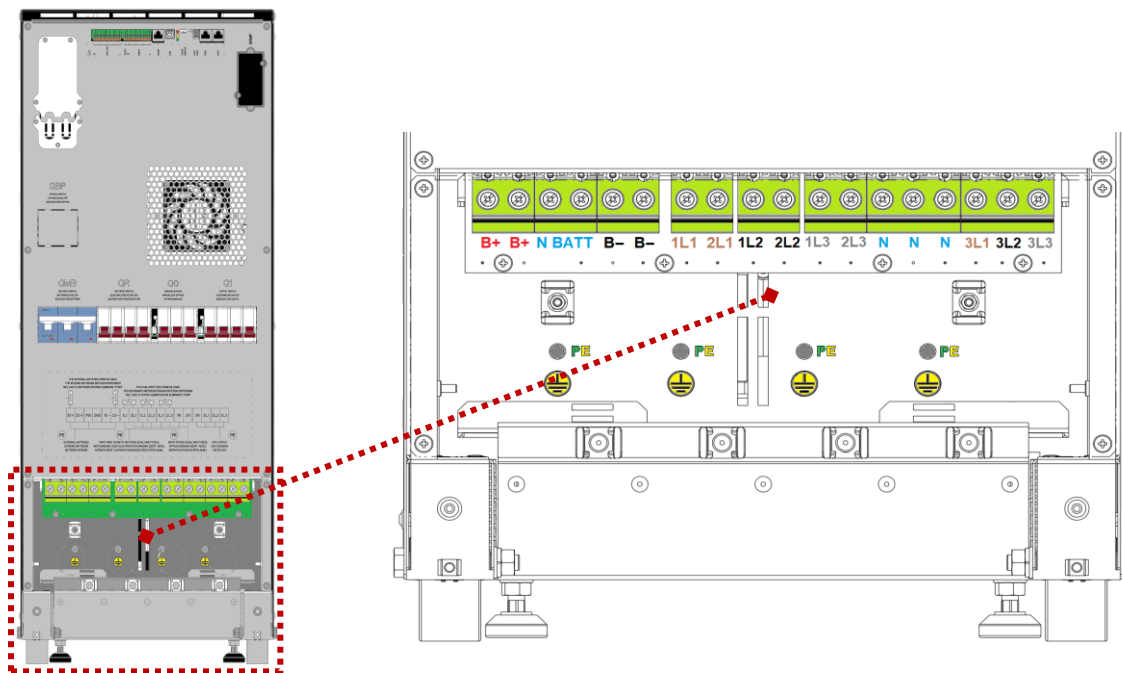
Warning

Always refer to the cable datasheet, the local standard to follow and site conditions for the cable cross section to use.

Feed	Description	UPS2-PT010-I080-D1 UPS2-PT010-I120-D0 UPS2-PT010-I240-E0	UPS2-PT020-I080-D1 UPS2-PT020-I120-D0 UPS2-PT020-I240-E0	UPS2-PT030-I120-D0 UPS2-PT030-I240-E0	UPS2-PT040-I120-D0 UPS2-PT040-I240-E0	UPS2-PT060-E-D0 UPS2-PT060-I240-E0	UPS2-PT080-E-D0 UPS2-PT080-I240-E0
Input Rectifier 3 x 230/400V	Maximum input current with batteries charging	16 A	32 A	49.5 A	66 A	99 A	133 A
	Input rectifier fuses 3 x gl-gG or CB	16 A	32 A	50 A	80 A	100 A	160 A
	Input rectifier cables (mm ²) (VDE0298)	5 x 2.5	5 x 6	5 x 10	5 x 16	5 x 35	5 x 50
Input Bypass 3 x 230/400V	Input bypass fuses 3 x gl-gG or CB	16 A	32 A	50 A	80 A	100 A	125 A
	Input bypass cables (mm ²) (VDE0298)	5 x 2.5	5 x 6	5 x 10	5 x 16	5 x 35	5 x 50
Output voltage 3 x 230/400 V	Nominal output current (In)	14.5 A	29 A	43.5 A	58 A	87 A	116 A
	Output cables (mm ²) (VDE0298)	5 x 2.5	5 x 6	5 x 10	5 x 16	5 x 35	5 x 50
Battery	Max battery current (A @ min voltage with 40 batt.)	I080 or I120 or I240	I080 or I120 or I240	Ext. I080 or I120	Ext. I080 or I120	Ext. D0	Ext. D0
	External battery fuses or CB (1000V/oc)	25 A	50 A	75 A	100 A	150 A	200 A
	External battery cables (mm ²)	3 x 4	3 x 10	3 x 16	3 x 25	3 x 50	3 x 95

7.3 Single input feed (STD) for UPS2-PT010-I080-D1 and UPS2-PT020-I080-D1

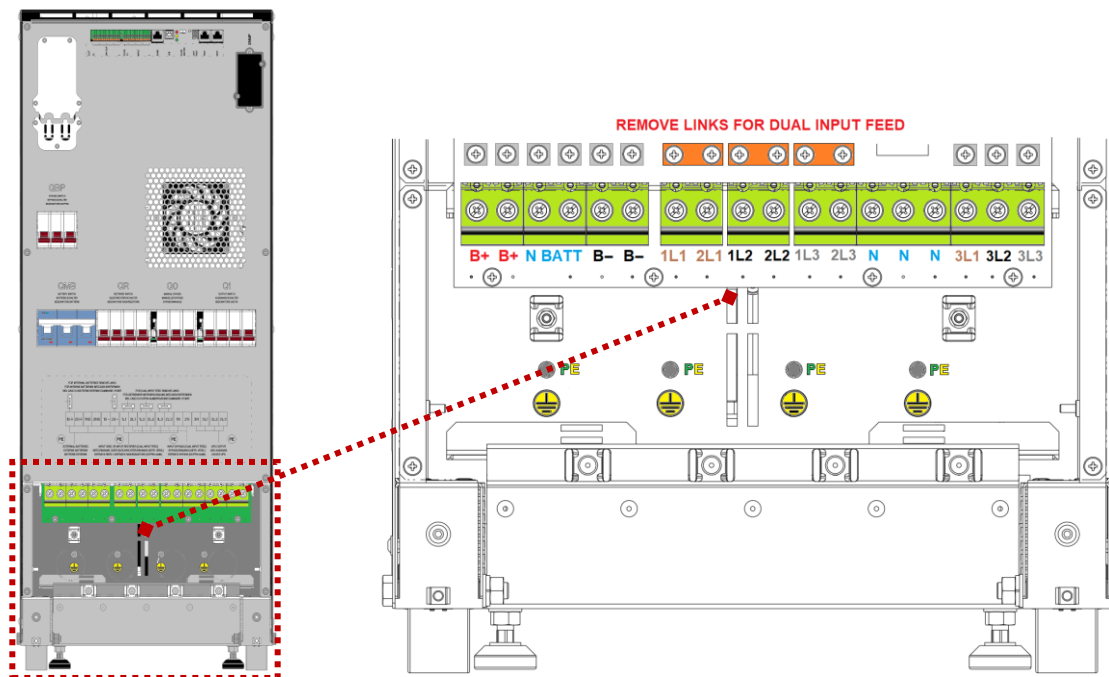
**Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm;
PE M6 Nuts: 7Nm)**



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
2 x (+)	Battery Positive	2 x connections each up to 35mm ²
2 x N-BATT	Battery Middle Point	2 x connections each up to 35mm ²
2 x (-)	Battery Negative	2 x connections each up to 35mm ²
Input		
1L1	Input Rectifier and Bypass L1	Up to 35mm ²
1L2	Input Rectifier and Bypass L2	Up to 35mm ²
1L3	Input Rectifier and Bypass L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.4 Dual input feed (OPTIONAL) for UPS2-PT010-I080-D1 and UPS2-PT020-I080-D1

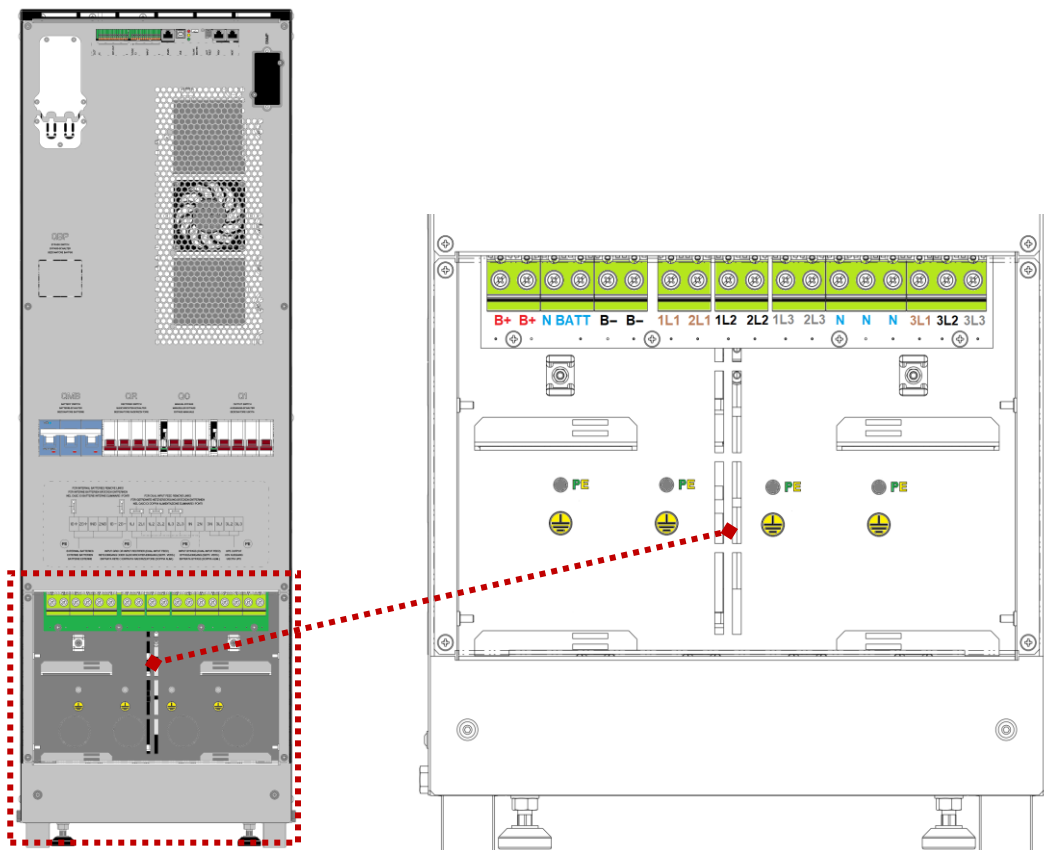
**Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm;
PE M6 Nuts: 7Nm)**



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
2 x (+)	Battery Positive	2 x connections each up to 35mm ²
2 x N-BATT	Battery Middle Point	2 x connections each up to 35mm ²
2 x (-)	Battery Negative	2 x connections each up to 35mm ²
Input		
1L1	Input Rectifier L1	Up to 35mm ²
2L1	Input Bypass L1	Up to 35mm ²
1L2	Input Rectifier L2	Up to 35mm ²
2L2	Input Bypass L2	Up to 35mm ²
1L3	Input Rectifier L3	Up to 35mm ²
2L3	Input Bypass L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.5 Single input feed (STD) for UPS2-PT010-I120-D0, UPS2-PT020-I120-D0 and UPS2-PT030-I120-D0

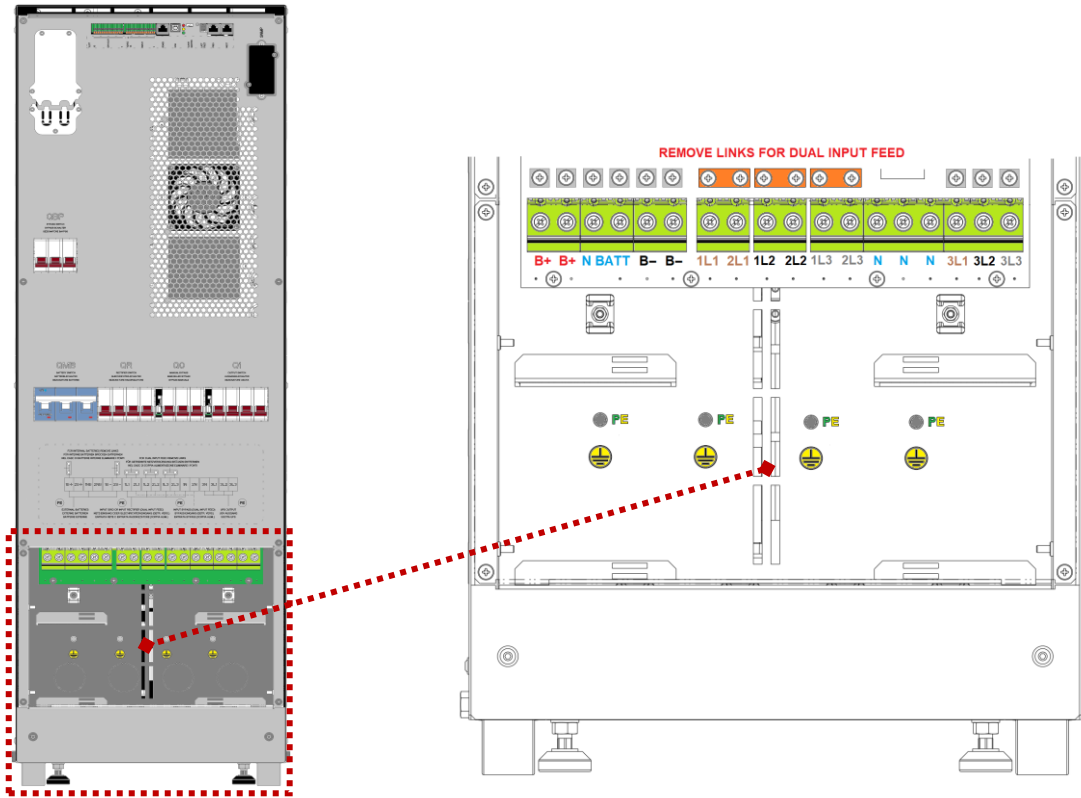
**Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm;
PE M6 Nuts: 7Nm)**



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
2 x (+)	Battery Positive	2 x connections each up to 35mm ²
2 x N-BATT	Battery Middle Point	2 x connections each up to 35mm ²
2 x (-)	Battery Negative	2 x connections each up to 35mm ²
Input		
1L1	Input Rectifier and Bypass L1	Up to 35mm ²
1L2	Input Rectifier and Bypass L2	Up to 35mm ²
1L3	Input Rectifier and Bypass L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.6 Dual input feed (OPTIONAL) for UPS2-PT010-I120-D0, UPS2-PT020-I120-D0 and UPS2-PT030-I120-D0

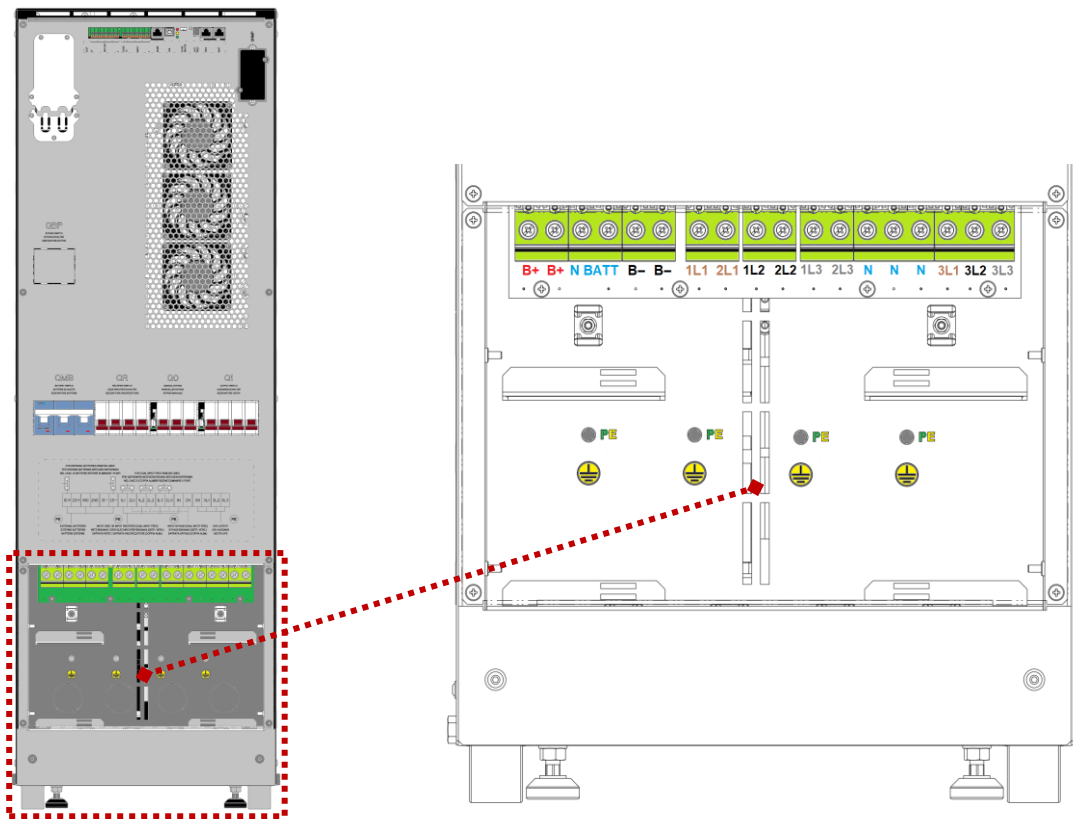
**Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm;
PE M6 Nuts: 7Nm)**



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
2 x (+)	Battery Positive	2 x connections each up to 35mm ²
2 x N-BATT	Battery Middle Point	2 x connections each up to 35mm ²
2 x (-)	Battery Negative	2 x connections each up to 35mm ²
Input		
1L1	Input Rectifier L1	Up to 35mm ²
2L1	Input Bypass L1	Up to 35mm ²
1L2	Input Rectifier L2	Up to 35mm ²
2L2	Input Bypass L2	Up to 35mm ²
1L3	Input Rectifier L3	Up to 35mm ²
2L3	Input Bypass L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.7 Single input feed (STD) for UPS2-PT040-I120-D0

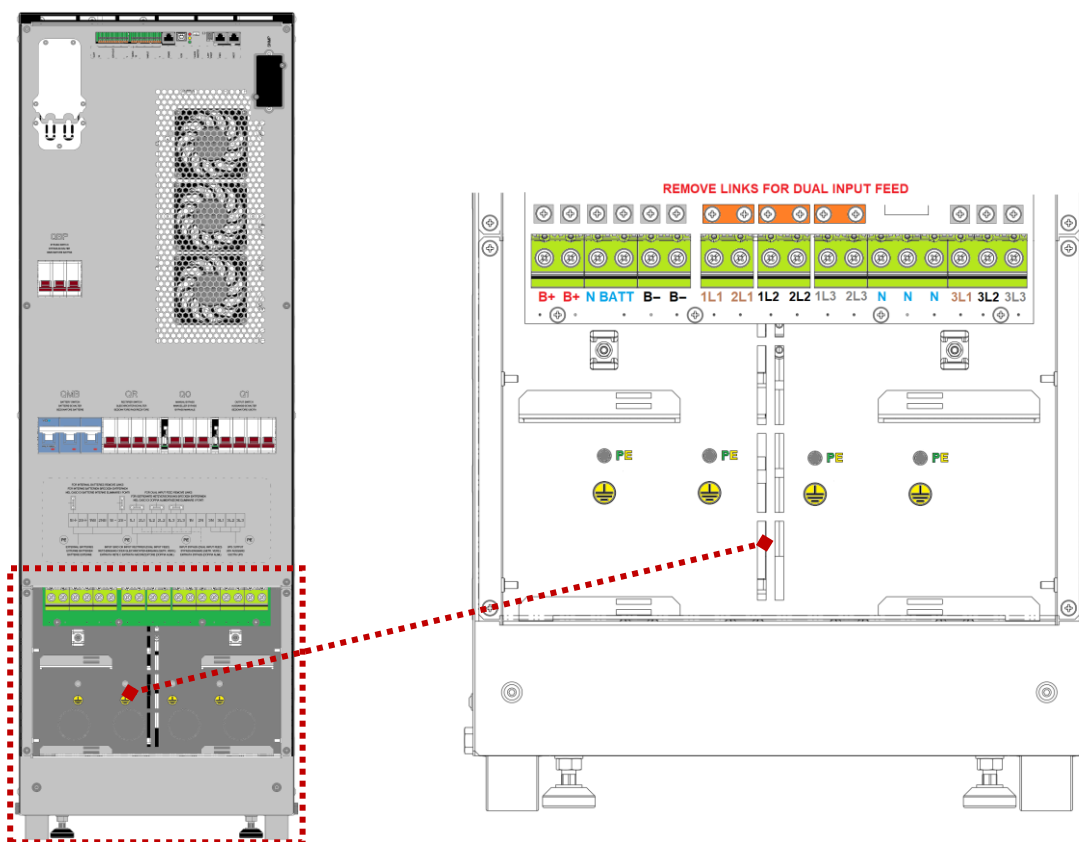
Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm; PE M6 Nuts: 7Nm)



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
2 x (+)	Battery Positive	2 x connections each up to 35mm ²
2 x N-BATT	Battery Middle Point	2 x connections each up to 35mm ²
2 x (-)	Battery Negative	2 x connections each up to 35mm ²
Input		
1L1	Input Rect. and Byp. L1	Up to 35mm ²
1L2	Input Rect. and Byp. L2	Up to 35mm ²
1L3	Input Rect. and Byp. L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.8 Dual input feed (OPTIONAL) for UPS2-PT040-I120-D0

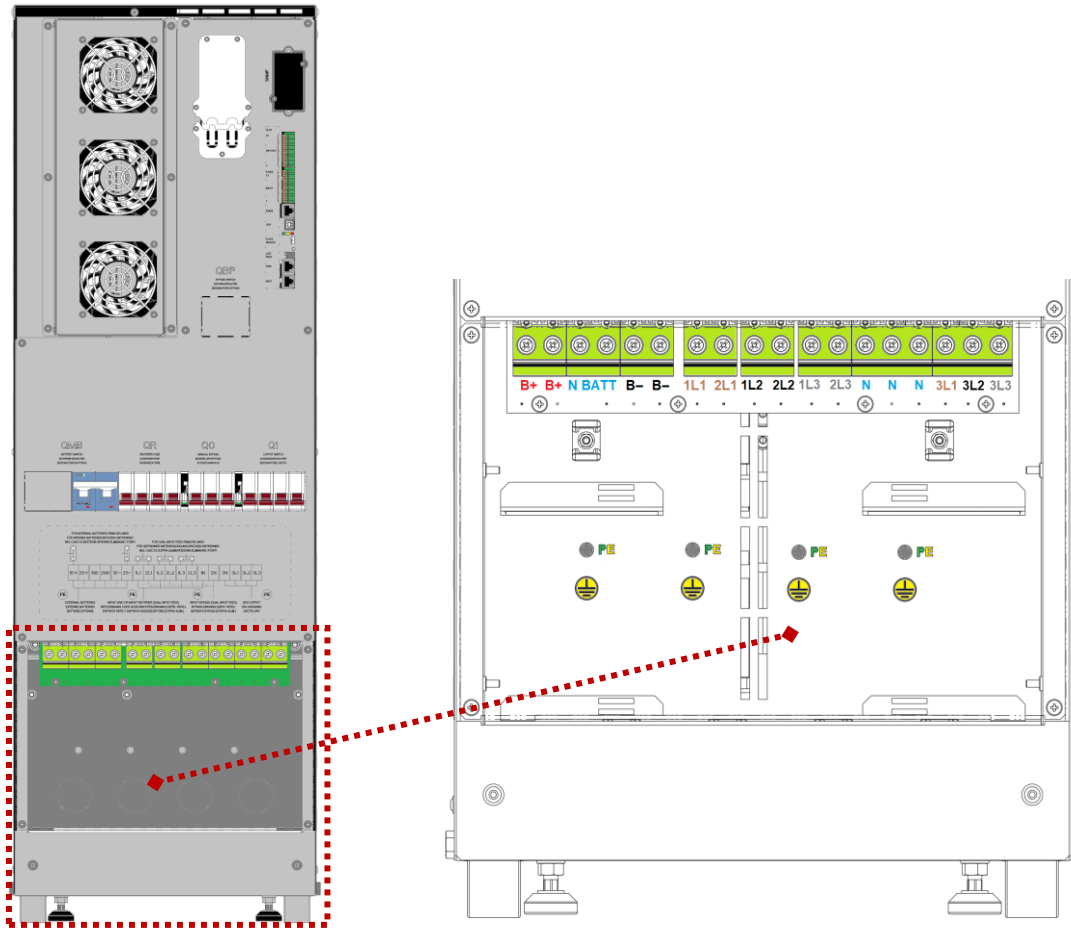
Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm; PE M6 Nuts: 7Nm)



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
2 x (+)	Battery Positive	2 x connections each up to 35mm ²
2 x N-BATT	Battery Middle Point	2 x connections each up to 35mm ²
2 x (-)	Battery Negative	2 x connections each up to 35mm ²
Input		
1L1	Input Rectifier L1	Up to 35mm ²
2L1	Input Bypass L1	Up to 35mm ²
1L2	Input Rectifier L2	Up to 35mm ²
2L2	Input Bypass L2	Up to 35mm ²
1L3	Input Rectifier L3	Up to 35mm ²
2L3	Input Bypass L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.9 Single input feed (STD) for UPS2-PT060-E-D0

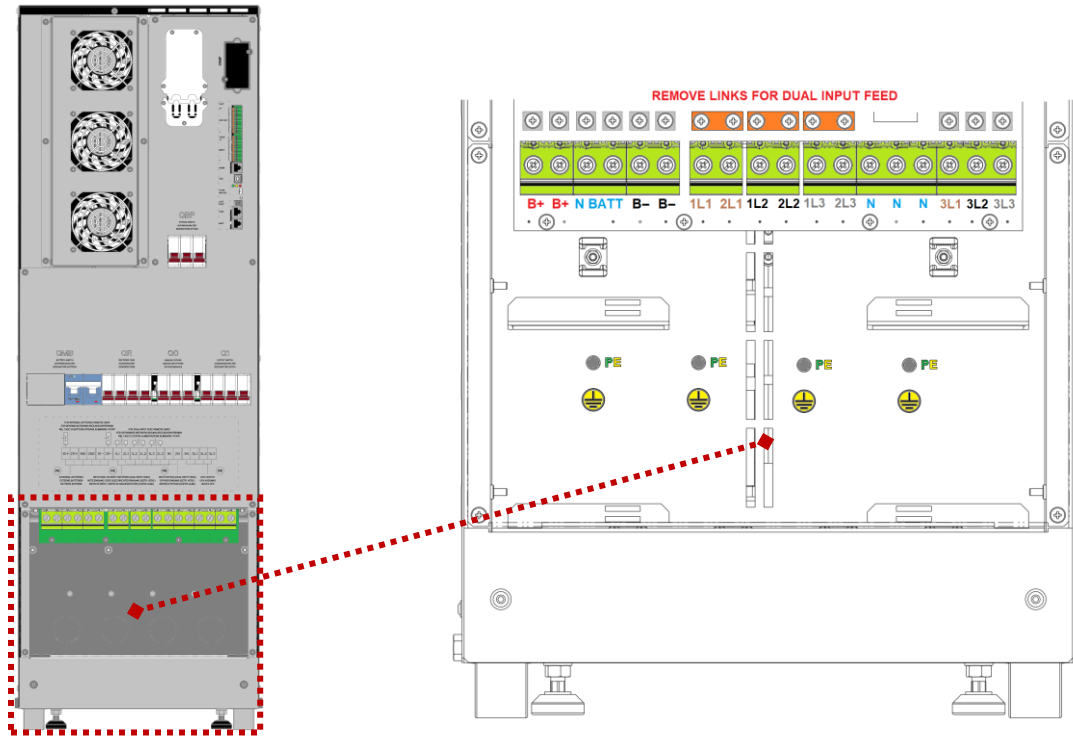
**Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm;
PE M6 Nuts: 7Nm)**



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
2 x (+)	Battery Positive	2 x connections each up to 35mm ²
2 x N-BATT	Battery Middle Point	2 x connections each up to 35mm ²
2 x (-)	Battery Negative	2 x connections each up to 35mm ²
Input		
1L1	Input Rect. and Byp. L1	Up to 35mm ²
1L2	Input Rect. and Byp. L2	Up to 35mm ²
1L3	Input Rect. and Byp. L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.10 Dual input feed (OPTIONAL) for UPS2-PT060-E-D0

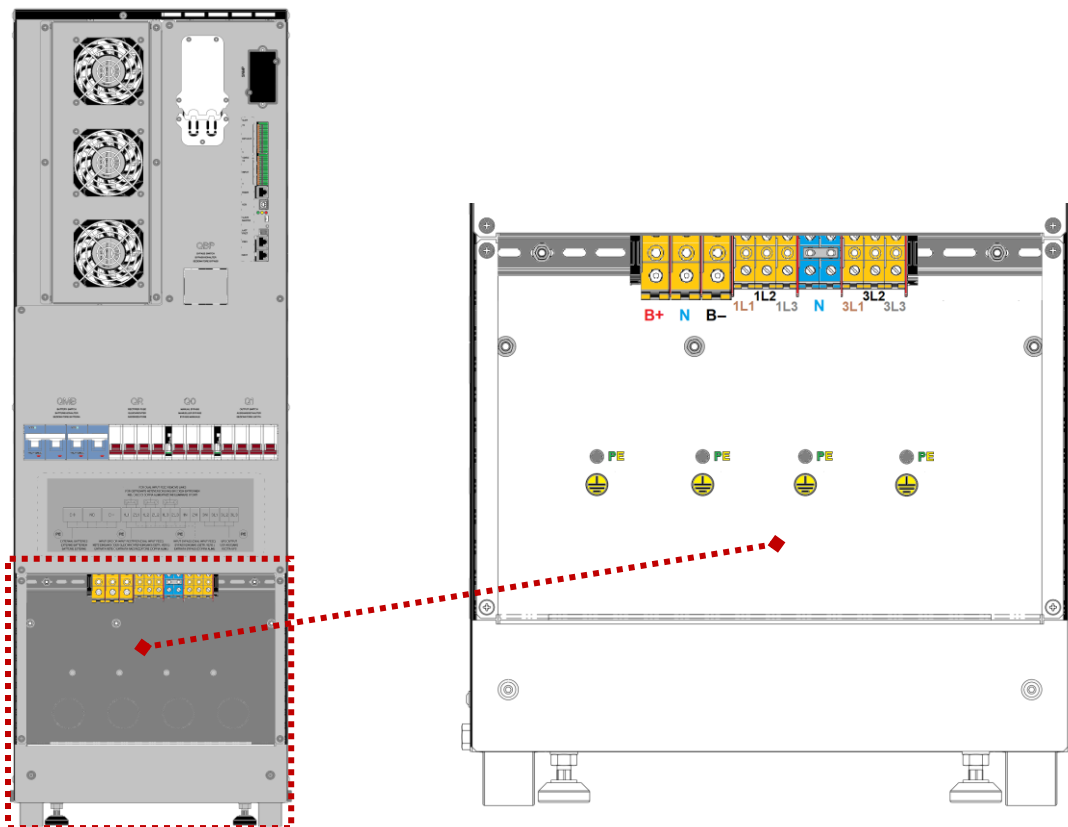
**Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm;
PE M6 Nuts: 7Nm)**



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
2 x (+)	Battery Positive	2 x connections each up to 35mm ²
2 x N-BATT	Battery Middle Point	2 x connections each up to 35mm ²
2 x (-)	Battery Negative	2 x connections each up to 35mm ²
Input		
1L1	Input Rectifier L1	Up to 35mm ²
2L1	Input Bypass L1	Up to 35mm ²
1L2	Input Rectifier L2	Up to 35mm ²
2L2	Input Bypass L2	Up to 35mm ²
1L3	Input Rectifier L3	Up to 35mm ²
2L3	Input Bypass L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.11 Single input feed (STD) for UPS2-PT080-E-D0

Electrical Connection (Maximum permitted torque for battery terminals: 7Nm; Input and Output terminals: 4Nm; PE M6 Nuts: 7Nm)



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
(+)	Battery Positive	Up to 70 mm ² (without ferrule for 95 mm ² wires)
N	Battery Middle Point	Up to 70 mm ² (without ferrule for 95 mm ² wires)
(-)	Battery Negative	Up to 70 mm ² (without ferrule for 95 mm ² wires)
Input		
1L1	Input Rect. and Byp. L1	35 mm ² (without ferrule for 50 mm ² wires)
1L2	Input Rect. and Byp. L2	35 mm ² (without ferrule for 50 mm ² wires)
1L3	Input Rect. and Byp. L3	35 mm ² (without ferrule for 50 mm ² wires)
2 x N	Input and Output N	35 mm ² (without ferrule for 50 mm ² wires)
Output		
3L1	Output L1	35 mm ² (without ferrule for 50 mm ² wires)
3L2	Output L2	35 mm ² (without ferrule for 50 mm ² wires)
3L3	Output L3	35 mm ² (without ferrule for 50 mm ² wires)

7.12 Dual Input Feed distribution (OPTIONAL) for UPS2-PT080-E-D0

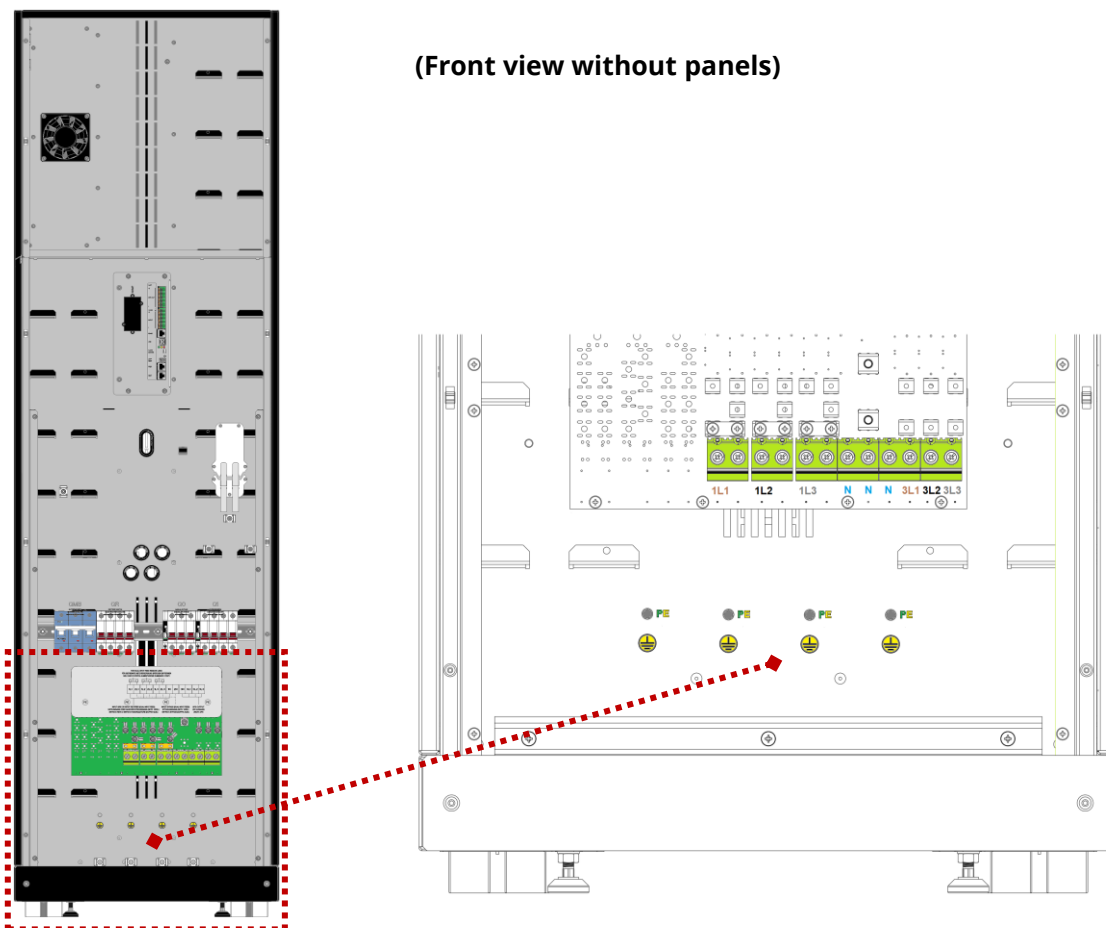
Electrical Connection (Maximum permitted torque for battery terminals: 7Nm; Input and Output terminals: 4Nm; PE M6 Nuts: 7Nm)



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
(+)	Battery Positive	Up to 70 mm ² (without ferrule for 95 mm ² wires)
N	Battery Middle Point	Up to 70 mm ² (without ferrule for 95 mm ² wires)
(-)	Battery Negative	Up to 70 mm ² (without ferrule for 95 mm ² wires)
Input		
1L1	Input Rectifier L1	35 mm ² (without ferrule for 50 mm ² wires)
2L1	Input Bypass L1	35 mm ² (without ferrule for 50 mm ² wires)
1L2	Input Rectifier L2	35 mm ² (without ferrule for 50 mm ² wires)
2L2	Input Bypass L2	35 mm ² (without ferrule for 50 mm ² wires)
1L3	Input Rectifier L3	35 mm ² (without ferrule for 50 mm ² wires)
2L3	Input Bypass L3	35 mm ² (without ferrule for 50 mm ² wires)
3 x N	Input and Output N	35 mm ² (without ferrule for 50 mm ² wires)
Output		
3L1	Output L1	35 mm ² (without ferrule for 50 mm ² wires)
3L2	Output L2	35 mm ² (without ferrule for 50 mm ² wires)
3L3	Output L3	35 mm ² (without ferrule for 50 mm ² wires)

7.13 Single input feed (STD) UPS2-PT010-I240-E0, UPS2-PT020-I240-E0 and UPS2-PT030-I240-E0

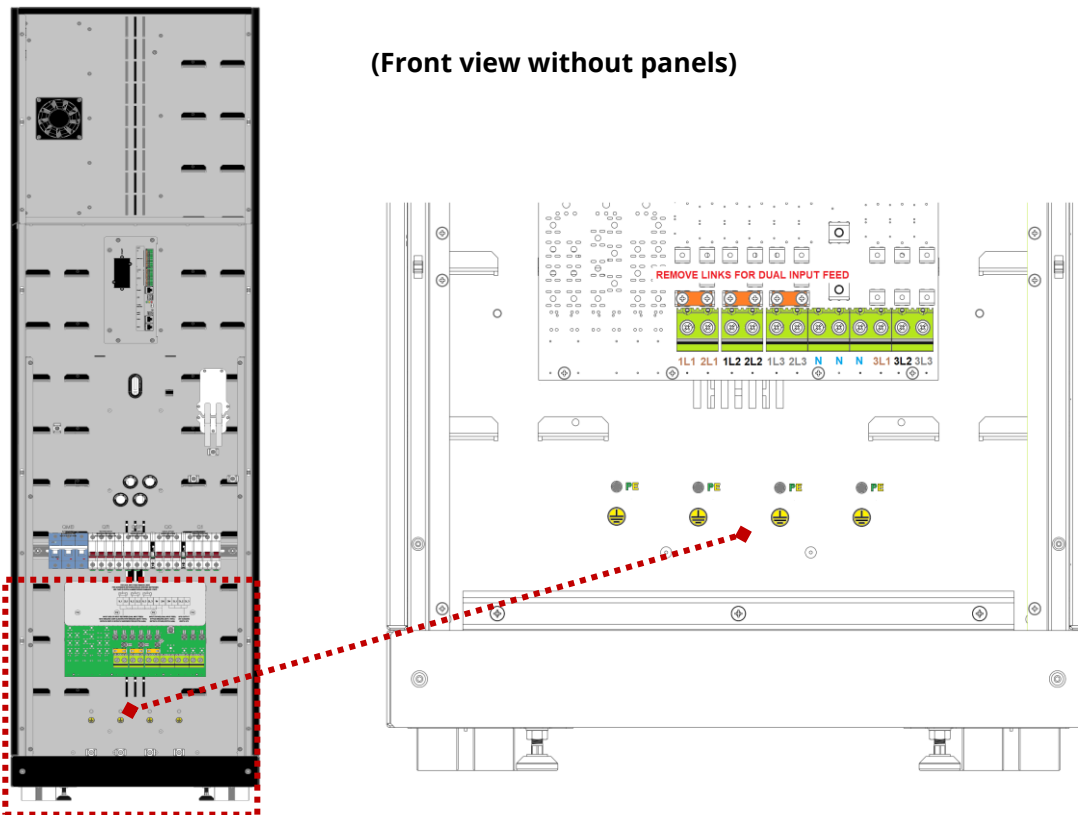
**Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm;
PE M6 Nuts: 7Nm)**



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
(+)	Battery Positive	Only internal connection
N-BATT	Battery Middle Point	Only internal connection
(-)	Battery Negative	Only internal connection
Input		
1L1	Input Rect. and Byp. L1	Up to 35mm ²
1L2	Input Rect. and Byp. L2	Up to 35mm ²
1L3	Input Rect. and Byp. L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

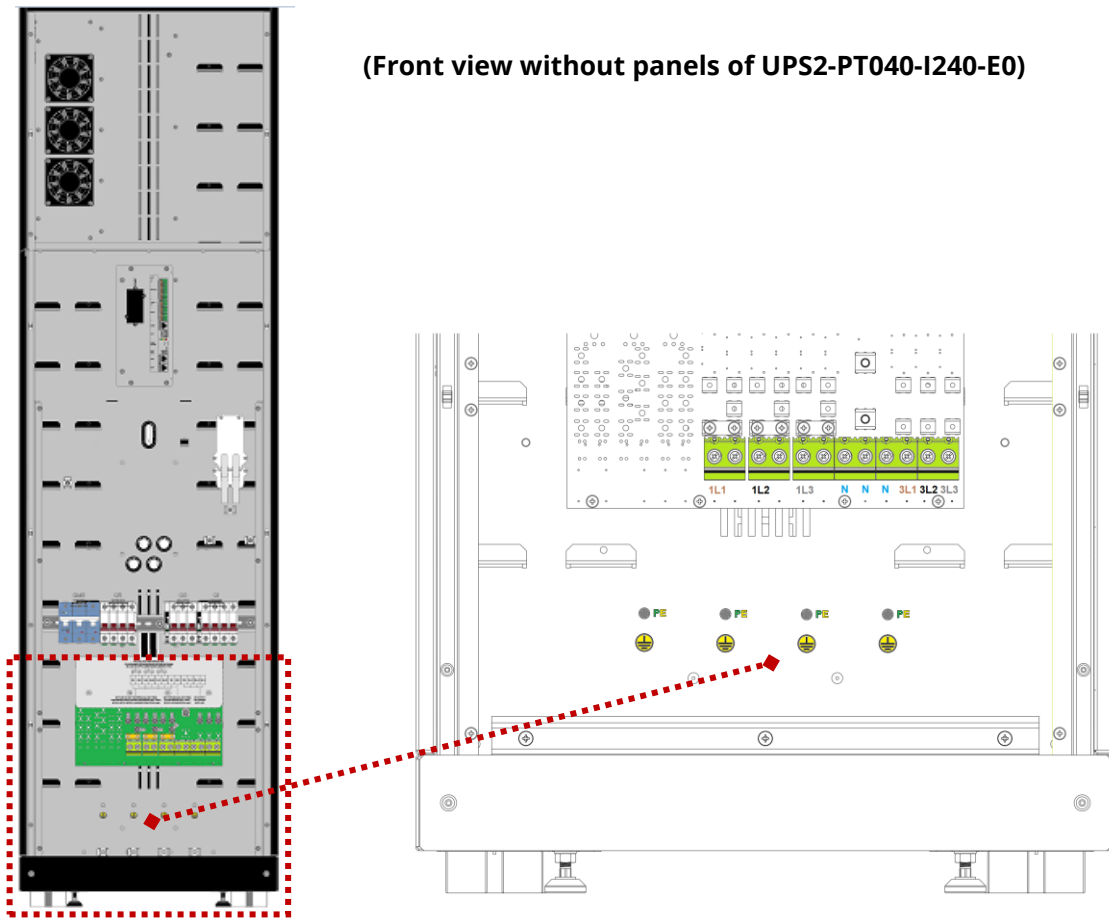
7.14 Dual input feed (OPTIONAL) UPS2-PT010-I240-E0, UPS2-PT020-I240-E0 and UPS2-PT030-I240-E0

Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm; PE M6 Nuts: 7Nm)



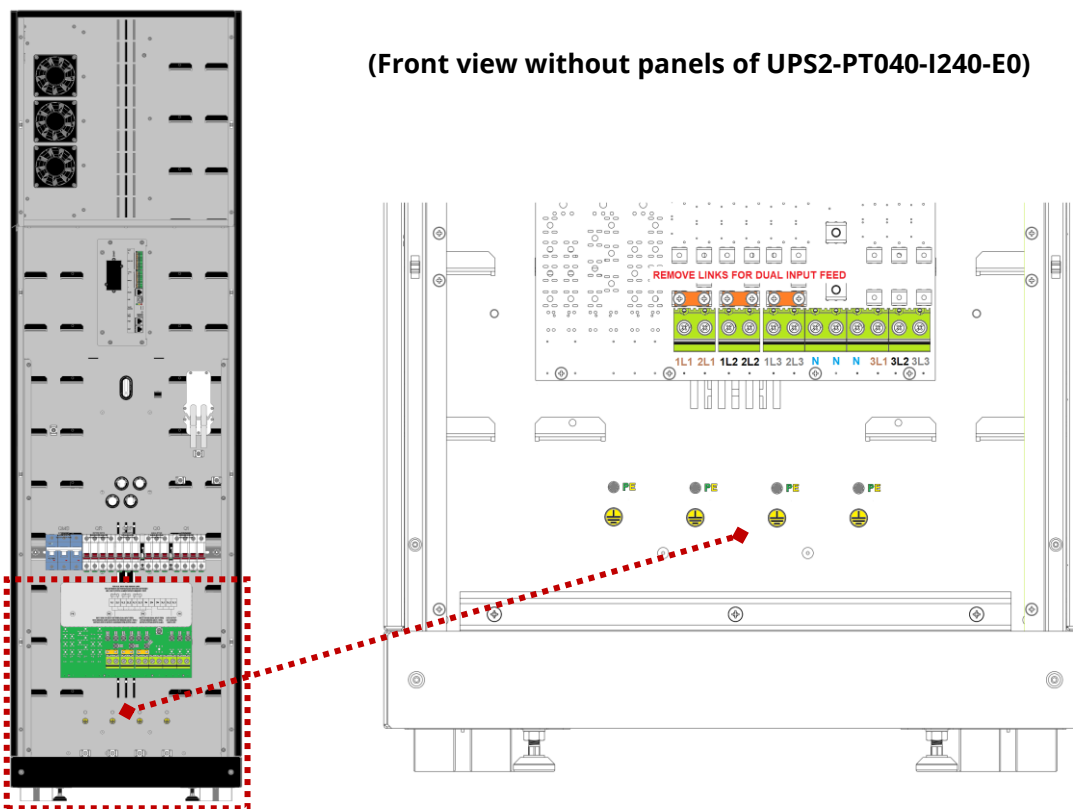
Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
(+)	Battery Positive	Only internal connection
N-BATT	Battery Middle Point	Only internal connection
(-)	Battery Negative	Only internal connection
Input		
1L1	Input Rectifier L1	Up to 35mm ²
2L1	Input Bypass L1	Up to 35mm ²
1L2	Input Rectifier L2	Up to 35mm ²
2L2	Input Bypass L2	Up to 35mm ²
1L3	Input Rectifier L3	Up to 35mm ²
2L3	Input Bypass L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.15 Single input feed (STD) UPS2-PT040-I240-E0 and UPS2-PT060-I240-E0

**Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm;
PE M6 Nuts: 7Nm)**

Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
(+)	Battery Positive	Only internal connection
N-BATT	Battery Middle Point	Only internal connection
(-)	Battery Negative	Only internal connection
Input		
1L1	Input Rect. and Byp. L1	Up to 35mm ²
1L2	Input Rect. and Byp. L2	Up to 35mm ²
1L3	Input Rect. and Byp. L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

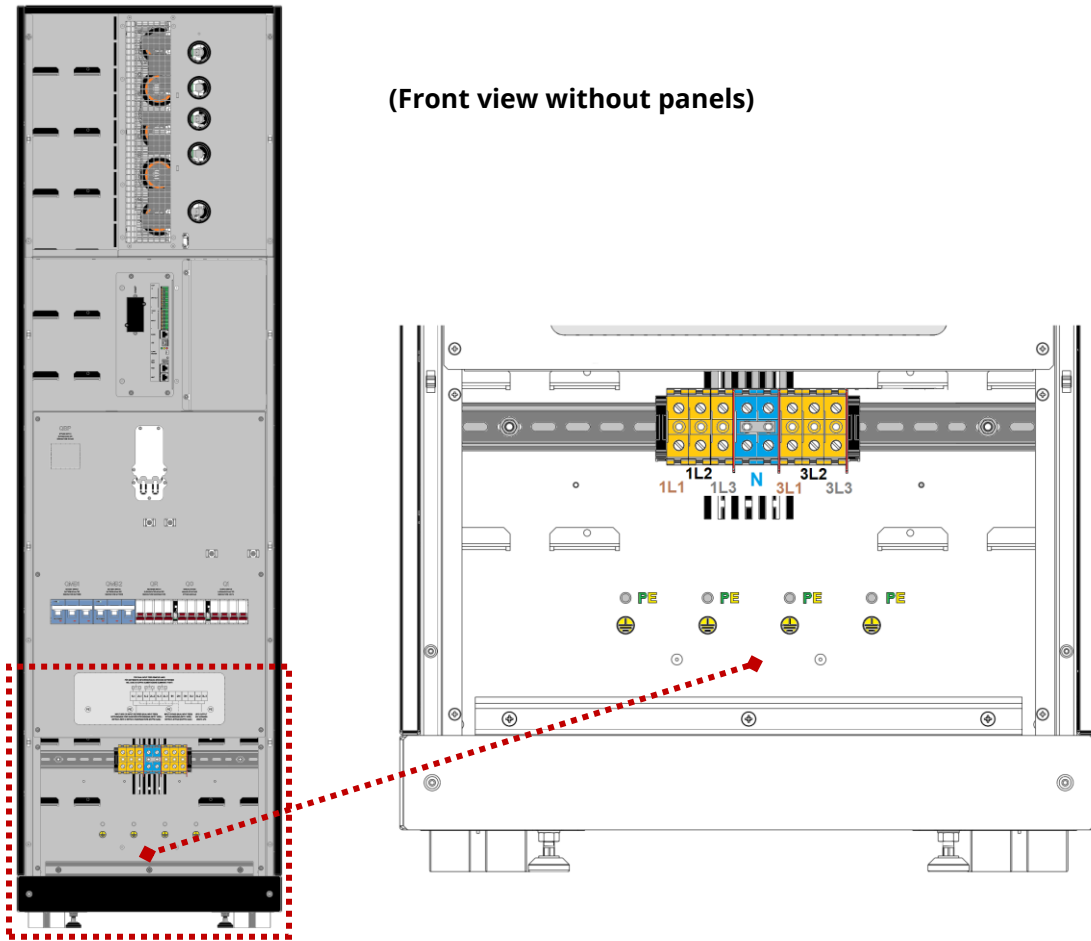
7.16 Dual input feed (OPTIONAL) UPS2-PT040-I240-E0 and UPS2-PT060-I240-E0

**Electrical Connection for single input feed (Maximum permitted torque: 2.0Nm;
PE M6 Nuts: 7Nm)**

Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
(+)	Battery Positive	Only internal connection
N-BATT	Battery Middle Point	Only internal connection
(-)	Battery Negative	Only internal connection
Input		
1L1	Input Rectifier L1	Up to 35mm ²
2L1	Input Bypass L1	Up to 35mm ²
1L2	Input Rectifier L2	Up to 35mm ²
2L2	Input Bypass L2	Up to 35mm ²
1L3	Input Rectifier L3	Up to 35mm ²
2L3	Input Bypass L3	Up to 35mm ²
3 x N	Input and Output N	Up to 35mm ²
Output		
3L1	Output L1	Up to 35mm ²
3L2	Output L2	Up to 35mm ²
3L3	Output L3	Up to 35mm ²

7.17 Single input feed (STD) UPS2-PT080-I240-E0

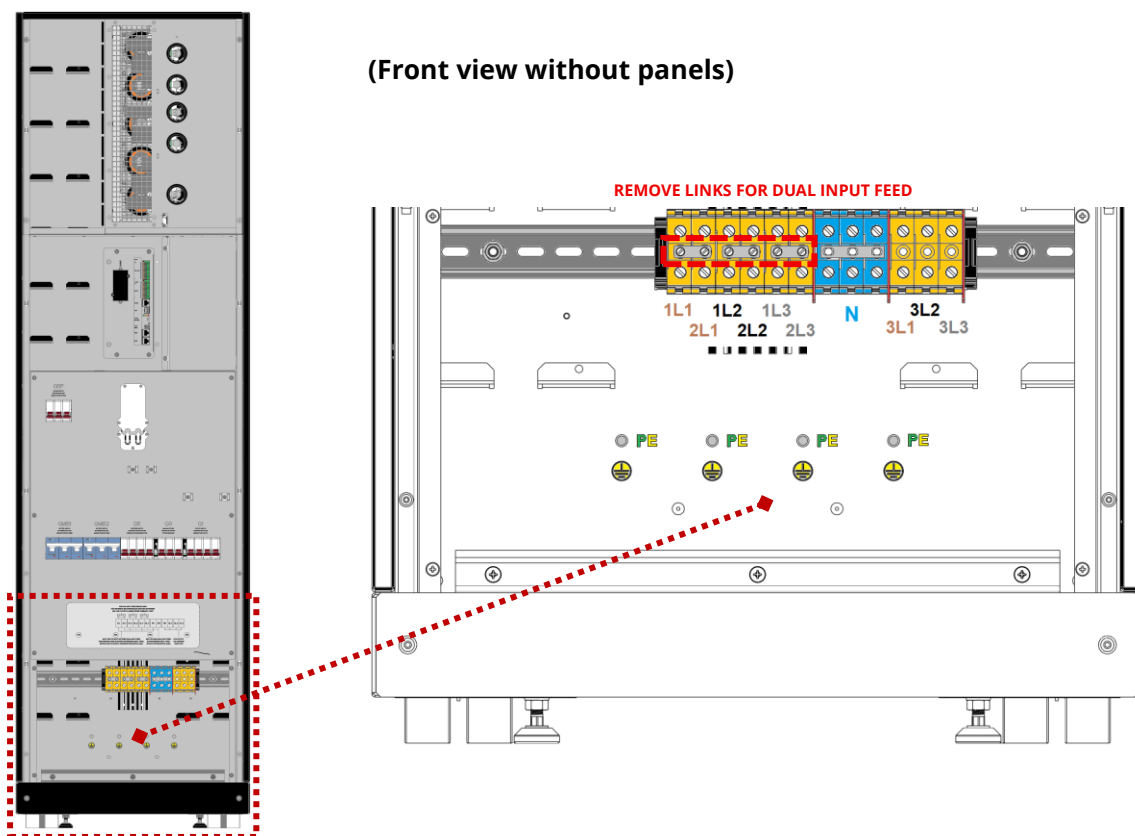
Electrical Connection (Maximum permitted torque for Input and Output terminals: 4Nm; PE M6 Nuts: 7Nm)



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
(+)	Battery Positive	Only internal connection
N-BATT	Battery Middle Point	Only internal connection
(-)	Battery Negative	Only internal connection
Input		
1L1	Input Rect. and Byp. L1	35 mm ² (without ferrule for 50 mm ² wires)
1L2	Input Rect. and Byp. L2	35 mm ² (without ferrule for 50 mm ² wires)
1L3	Input Rect. and Byp. L3	35 mm ² (without ferrule for 50 mm ² wires)
2 x N	Input and Output N	35 mm ² (without ferrule for 50 mm ² wires)
Output		
3L1	Output L1	35 mm ² (without ferrule for 50 mm ² wires)
3L2	Output L2	35 mm ² (without ferrule for 50 mm ² wires)
3L3	Output L3	35 mm ² (without ferrule for 50 mm ² wires)

7.18 Dual input feed (OPTIONAL) UPS2-PT080-I240-E0

Electrical Connection (Maximum permitted torque for Input and Output terminals: 4Nm; PE M6 Nuts: 7Nm)



Label	Description	Wires on Terminals
4 x PE	Connect earth cable	With ring terminal for M6 nut
Battery		
(+)	Battery Positive	Only internal connection
N-BATT	Battery Middle Point	Only internal connection
(-)	Battery Negative	Only internal connection
Input		
1L1	Input Rectifier L1	35 mm ² (without ferrule for 50 mm ² wires)
2L1	Input Bypass L1	35 mm ² (without ferrule for 50 mm ² wires)
1L2	Input Rectifier L2	35 mm ² (without ferrule for 50 mm ² wires)
2L2	Input Bypass L2	35 mm ² (without ferrule for 50 mm ² wires)
1L3	Input Rectifier L3	35 mm ² (without ferrule for 50 mm ² wires)
2L3	Input Bypass L3	35 mm ² (without ferrule for 50 mm ² wires)
3 x N	Input and Output N	35 mm ² (without ferrule for 50 mm ² wires)
Output		
3L1	Output L1	35 mm ² (without ferrule for 50 mm ² wires)
3L2	Output L2	35 mm ² (without ferrule for 50 mm ² wires)
3L3	Output L3	35 mm ² (without ferrule for 50 mm ² wires)

8 Interfacing

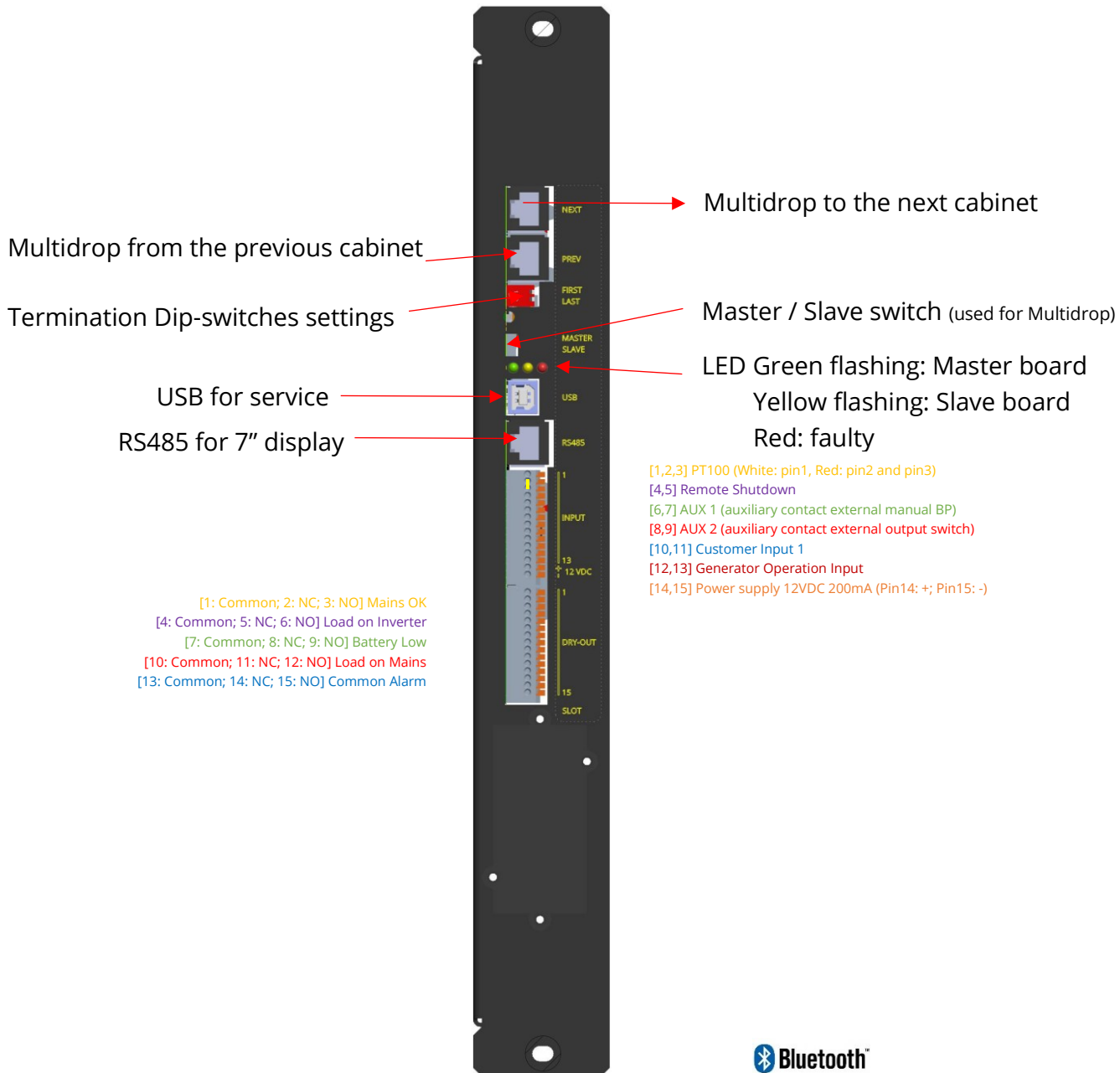
Each UPS cabinet is equipped with a Customer Interface (PC0610), which allows the user to monitor the condition of the system with different communication devices.

The PremiumTower™ S2 can be equipped with several options, specific for customer applications.

The available options are:

- Multidrop for parallel multi-cabinet configuration (typically used for parallel UPS);
- Dry port with NC or NO contact for “MAINS OK”, “LOAD ON INVERTER”, “LOAD ON BYPASS”, “BATTERY LOW” and “COMMON ALARM”;
- Bluetooth communication for iOS/Android mobile devices.
- Battery Temperature Probe (Optional)
- SNMP (Optional)
- Wavemon (Optional)
- 7" TFT system Display (Optional)

Function	Signal	I/O	Connector	PC0610
Programmable Dry Output	RL1	OUT	Spring type	✓
Programmable Dry Output	RL2	OUT	Spring type	✓
Programmable Dry Output	RL3	OUT	Spring type	✓
Programmable Dry Output	RL4	OUT	Spring type	✓
Programmable Dry Output	RL5	OUT	Spring type	✓
Battery Temperature Probe	PT100	IN	Spring type	✓
Voltage Source 12 V (200 mA)	12V	OUT	Spring type	✓
Emergency Power Off	EPO	IN	Spring type	✓
Generator Operation Input	GEN OP	IN	Spring type	✓
Programmable Dry Input	CUST IN1	IN	Spring type	✓
Options Slot	SNMP	I/O	Slot	✓
USB connector	USB	I/O	Type B	✓
AUX_IN1 (Ext Bypass Switch)	AUX1 NO	IN	Spring type	✓
AUX_IN2 (Ext Output Switch)	AUX2 NC	IN	Spring type	✓
Bluetooth	BTLE	I/O		✓
RS485 Channel	DISPLAY	I/O	RJ45	✓
Multidrop (1 x In / 1 x Out)	Mdrop	I/O	RJ45	✓
R Bus Terminator (RS485)	Rclose(RS485)	IN	Dip SW	✓
Master/Slave Configuration	M/Slave	IN	Dip SW	✓



Notice

Input and Dry-Output connectors are provided with spring terminal blocks for a cable section between 0.25 and 0.5 mm².

Note: Refer to the PremiumTowerS2 Commissioning Guidelines WI-4-00273 for further details.

NO (Normally Open) means the contact is open when at rest and only closes when activated, allowing current to pass.

NC (Normally Closed) means the contact is closed at rest and opens when activated, stopping current flow.

8.1 RS485

This communication port allows the user to get information through the RS485 serial communications standard. The RJ45 connector also provides a 15 V power supply with a maximum current of 200 mA, protected by means of an internal fuse.

8.2 Input Spring Terminal Blocks CN11: 1-15

Terminal	PIN	Signal	Description
CN11	1	_____	PT100 Batt. temperature Probe (PWR [white])
CN11	2	←_____	PT100 Batt. temperature Probe (MEAS 2 [red])
CN11	3	←_____	PT100 Batt. temperature Probe (MEAS 1 [red])
CN11	4	←_____	Remote Shutdown
CN11	5	_____↓	Remote Shutdown (GND)
CN11	6	←_____	Input AUX_IN1 (External B-P Switch Monitor)
CN11	7	_____↓	Input AUX_IN1 (GND)
CN11	8	←_____	Input AUX_IN2 (External Q_out Switch Monitor)
CN11	9	_____↓	Input AUX_IN2 (GND)
CN11	10	←_____	Customer Input 1
CN11	11	_____↓	Customer Input 1 (GND)
CN11	12	←_____	Generator Operation Input
CN11	13	_____↓	Generator Operation Input (GND)
CN11	14	←_____	Auxiliary + 12 V (max 200 mA)
CN11	15	_____↓	Auxiliary GND

8.2.1 Battery temperature Probe (PT100)

A Battery Temperature Probe is strongly recommended to avoid degradation of battery life caused by using batteries in environments with varying temperature. The Battery Charger voltage will adapt to the room temperature, guaranteeing a longer battery life.



Battery Temperature Probe order code 00-00013

A recharge floating voltage of 2.27 V/cell is applied to the batteries as standard. The UPS assumes a 25 °C ambient temperature.

When the ambient temperature of the battery or UPS rooms varies from that value, especially when it is higher, it is strongly recommended to install a Battery Temperature Probe.

The recharge floating voltage is compensated according to the sensed temperature by applying the following:

- 2.3 V/cell @ 15 °C linear to 2.23 V/cell @ 35 °C (step of 3.5 mV/cell x °C)

For Battery Cabinets, it is suggested to install the Battery Temperature Probe on top of the cabinet and in case of separate battery room, in the hottest point of the room.

8.2.2 Remote Shutdown

The Remote Shutdown allows the user to remotely turn off the full UPS system by using a linked contact installed in the customer facilities. Typically, and for safety reasons, a NC contact has to be used. This contact must open to operate the shutdown.

8.2.3 Input Auxiliary 1: External Manual Bypass Switch

This port allows the user to connect the auxiliary contact of an **external Manual Bypass Switch**, usually installed in customer facilities. This **NO** contact will provide to the UPS system the information about the status of the external Manual Bypass Switch. The operation of the external manual Bypass is the same as the one of the manual Bypass located on the UPS cabinet.

8.2.4 Input Auxiliary 2: External Output Breaker

This port allows the user to connect the auxiliary contact of an **external Output Breaker**.

Similar to AUX_IN1, but with **NC** logic, AUX_IN2 is typically used for parallel systems by which a parallel unit can be disconnected from the parallel system.

8.2.5 Customer Input 1

This is a generic input port which can be customized according to customers' needs. Ask the manufacturer for more details.

8.2.6 Generator Operation

This port allows the user to provide information to the UPS system about when it is supplied by the generator. An external normally open (NO) contact, which will close as soon as the UPS is supplied by the gen-set, has to be used. In this operation mode, two options can be selected by means of the control panel in the "Set-up User" menu:

- Block Bypass synchronization: in order to avoid output frequency oscillations caused by the generator, the UPS will not synchronize with input Bypass Mains.
- Block Battery Charger: in order to avoid waste of energy of the generator, the UPS will not charge the batteries when supplied by it.



Notice

It is strictly recommended to install a generator with at least the same kW power as the UPS.



Notice

If in doubt, it is advisable to inform the manufacturer about the generator's characteristics.

8.2.7 Auxiliary 12 V (200 mA)

The Customer Interface provides a 12 V (DC) power supply with a maximum of 200 mA for any customer application.

8.3 Dry-Output Port (CN14)

The interface has a Dry-Output port contact for the information “Common Alarm”. The contact is connected with spring terminal blocks for cable size from 0.25 to 0.5 mm², and it allows maximum 30W(VA) switching power by rated voltage and current of 125VAC/60VDC/1A

Terminal	PIN	Signal	Description	Pos
CN14	1		Mains OK dry port (Common)	(RL1)
CN14	2		Mains OK dry port (NC)	
CN14	3		Mains OK dry port (NO)	
CN14	4		Load on Inverter dry port (Common)	(RL2)
CN14	5		Load on Inverter dry port (NC)	
CN14	6		Load on Inverter dry port (NO)	
CN14	7		Battery Low dry port (Common)	(RL3)
CN14	8		Battery Low dry port (NC)	
CN14	9		Battery Low dry port (NO)	
CN14	10		Load on Mains dry port (Common)	(RL4)
CN14	11		Load on Mains dry port (NC)	
CN14	12		Load on Mains dry port (NO)	
CN14	13		Common Alarm dry port (Common)	(RL5)
CN14	14		Common Alarm dry port (NC)	
CN14	15		Common Alarm dry port (NO)	

8.4 USB connection

The USB (TypeB) port allows the user to connect a PC and to communicate with the Interface Board itself or with the control board.

This port is intended to be used only by service engineers for service purposes.

8.5 LED Functionality Description

The aim of the external visible LED is to provide information about the operating status of the Customer Interface.

LED	Description
Green	The status of the Interface is OK, it is working as Master board
Yellow	The status of the Interface is OK, it is working as Slave board
Red	The Communication Board is blocked, contact service support

8.6 Multidrop Input/Output (CN1/CN2)

Multidrop input and output communication plugs.

They are used for parallel frames, and they allow the user to communicate through the Master Interface Board with all units that make up the system

For the installation and the correct settings, please refer to the Commissioning Guideline.

8.6.1 Master/Slave Switch for Multidrop Application (SW3)

This switch sets the working behavior of the Communication Board.

Status	Description
Master	The Communication Board is active and can access the UPS modules, collect system information and provide the UPS status through the Dry-Output port or through any other communication channel.
Slave	The Communication Board is in “Active-sleep mode”. The board is active and ready to be Master. While in this state, the board does not communicate with the UPS modules, nor does it provide any system status through the Dry-Output port, and it does not collect any Dry-Input information.

8.7 Bluetooth

The interface can be connected to a device equipped with Bluetooth communication. The communication characteristic will be the same as RS485

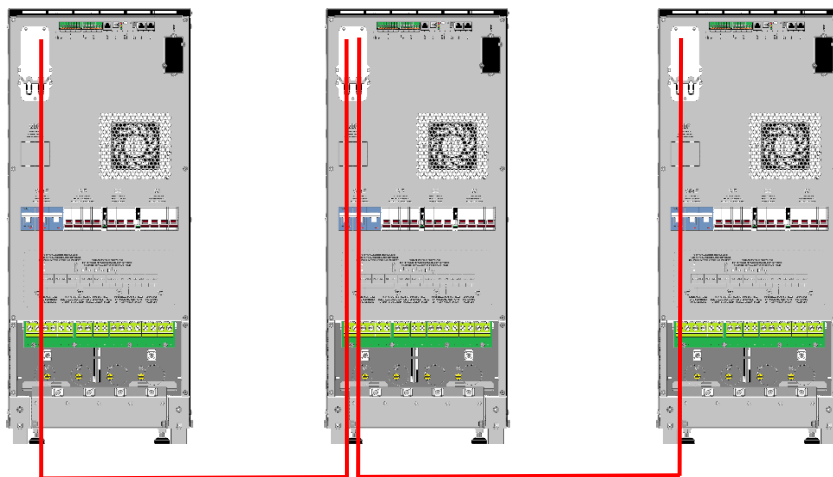
9 Multicabinet connection

PremiumTower™ S2, 10-80kW is also available with the option for parallel configuration (see also section 12.5). This allows the end user to connect up to 40 units in parallel.

Each cabinet is equipped with input and output sockets for parallel communication.

On cabinets **D1** and **D0** (10/20/30/40/60 and 80kW) the sockets are located on the back of the cabinet while for cabinet **E0** they are on the front.

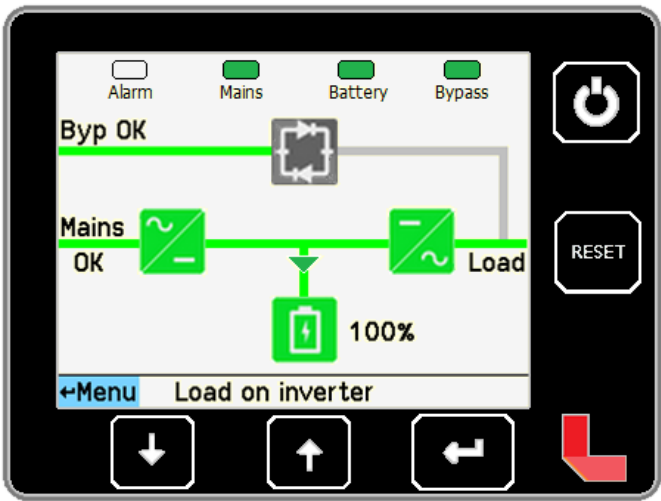
Example of parallel communication connection with 3 x UPS cabinet type D1 installation:



10 Operation

10.1 3" User Interface (Control Panel)

The UPS is provided with a 3" graphical color display



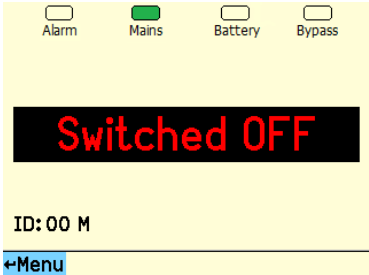
10.1.1 Keyboard Buttons Description

Button	Description
	Navigate the menus DOWN The first press turns the backlight on
	Navigate the menus UP The first press turns the backlight on
	Enter The first press turns the backlight on
	Turn module ON/OFF (To turn off the UPS, hold the button for 4 seconds)
	Allows the user to silence the buzzer (only if the synoptic is displayed) and to exit the active menu If pressed, the backlight turns on (if there are no active alarms)



10.2 System Operation Modes

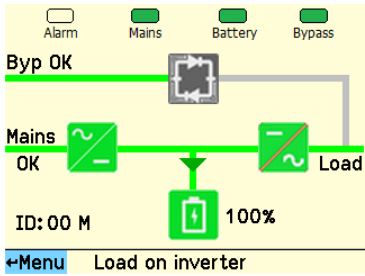
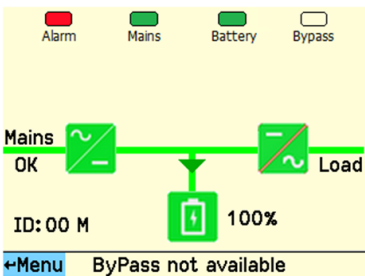
As soon as the Mains power supply is available, the display shows the status of the equipment.

Operation Mode	Display Mimic
UPS is Off	

10.2.1 On-line Operation Mode

In accordance with the classification mode VFI-SS-111.

The Inverter constantly supplies the load, so that it is fully protected from any Mains abnormal event, such as utility disturbances, surges, failures and out-of-tolerance conditions.

Operation Mode	Display Mimic
On-line (VFI-SS-111) Bypass line present	
On-line (VFI-SS-111) Bypass line <u>not</u> present	

10.2.2 Off-line Operation Mode

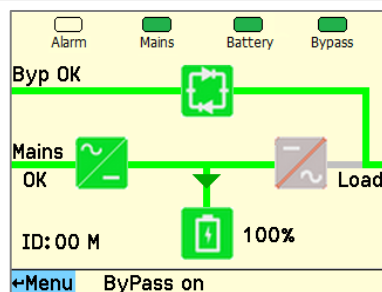
In accordance with the classification mode VFD-SS-311.

The load is transferred to static Bypass and it is protected from Mains failures and out-of-tolerance (voltage and frequency) conditions according to the technical datasheet. The off-line mode (ECONOMY MODE) is highly efficient, and in case of Mains failure, the UPS is able to transfer the load to the Inverter in a very short time.



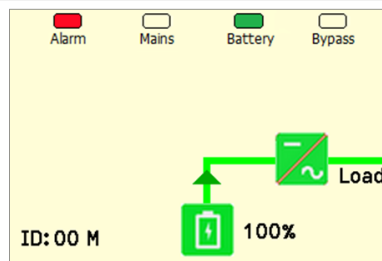
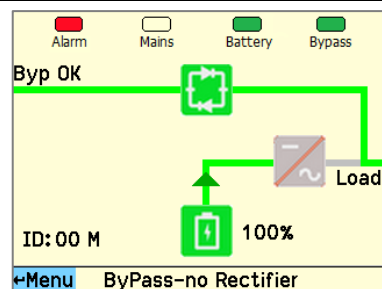
Operation Mode**Display Mimic**

Off-line (VFD-SS-311)

**10.2.3 Battery Operation Mode**

In battery operation mode, the load is supplied through batteries because of Mains Rectifier failure or out-of-tolerance voltage.

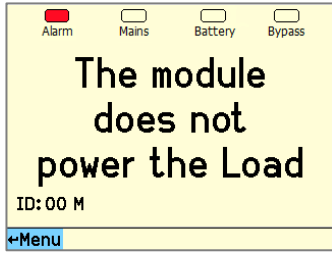
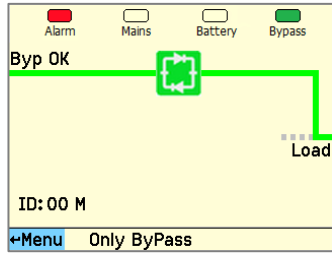
In battery mode, the display will show the following mimic:

Operation Mode**Display Mimic**Battery operation with single
input feedBattery operation with dual input
feed

Each input line (Mains Rectifier and Bypass) has its own tolerance controls (see technical specifications for details).

When any of these lines are out of tolerance, the line is declared “unavailable” (the respective indication is turned off, see [10.1.1](#)). In a system with dual input feed, in the event of Mains Rectifier failure the Bypass line is available (as seen in the mimic shown before).

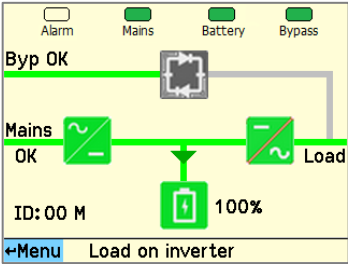
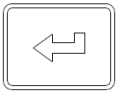
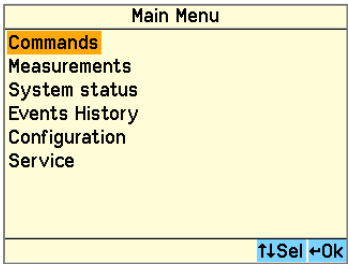
At the end of the battery discharge, the following conditions will be displayed:

Operation Mode	Display Mimic
End of battery discharge with <u>single input feed</u> (the Inverter is off and the load is not supplied)	
End of battery discharge with <u>dual input feed</u> (the load is transferred to Static Bypass)	

10.3 Display Navigation Overview

The 3" module display shows the operation mode of the system as described in previous chapters. Moreover, it allows the visualization of a series of parameters, commands and configurations of the specific module.

10.3.1 Main Menu

Current View	B. Pressed	Next View
		

Main Menu	Description
Commands (see 10.3.1.1)	Lists a series of commands to be executed by the UPS
Measurements (see 10.3.1.2)	Visualizes a series of measurements of the UPS
System Status (see 10.3.1.3)	Provides a quick view of the system status
Events History (see 10.3.1.4)	Visualizes the recorded event log
Configuration (see 10.3.1.5)	Is a first level password-protected area reserved for service personnel
Service (see 10.3.1.6)	Is a second level password-protected area reserved for service personnel

Every sub-menu mentioned before is detailed in the next chapters.

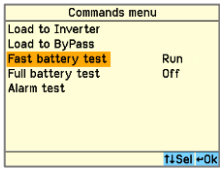
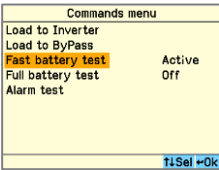
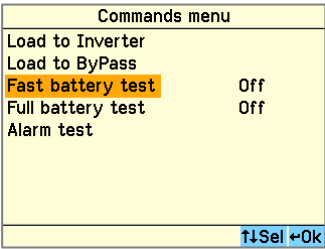
10.3.1.1 Commands Menu

Current View	B. Pressed	Next View
Main Menu Commands Measurements System status Events History Configuration Service ↑↓Sel ←Ok	←	Commands menu Load to Inverter Load to ByPass Fast battery testOff Full battery testOff Alarm test ↑↓Sel ←Ok

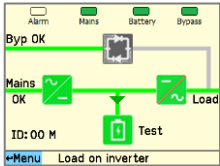
Commands Menu	Description
Load to Inverter	Transfers the load from Bypass to Inverter
Load to Bypass	Transfers the load from Inverter to Bypass
Fast Battery Test	Verifies the status of the batteries (1-minute test)
Full Battery Test	Performs a complete battery discharge in order to check the health of the batteries
Alarm Test	This function allows to check if the alarm Indication and buzzer are working

Current View	B. Pressed	Next View
Commands menu Load to Inverter Load to ByPass Fast battery testOff Full battery testOff Alarm test ↑↓Sel ←Ok	←	Alarm Mains Battery Bypass Byp OK Mains OK ID: 00 M 100% ←Menu Load on inverter
↓		
Commands menu Load to Inverter Load to ByPass Fast battery testOff Full battery testOff Alarm test ↑↓Sel ←Ok	←	Alarm Mains Battery Bypass Byp OK Mains OK ID: 00 M 100% ←Menu ByPass on
↓		

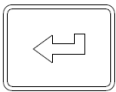
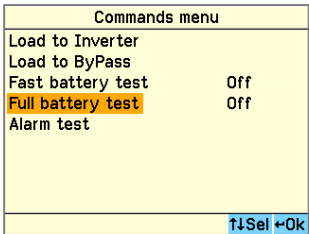
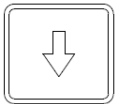
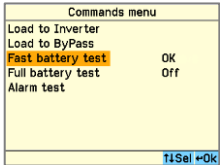




The mimic shows as follows



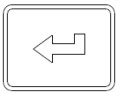
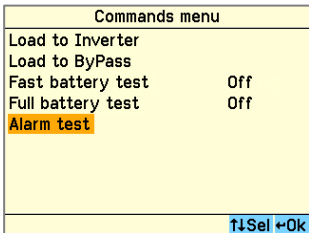
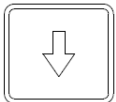
The test result must be verified



The behaviour of the “Full battery test” is similar to the “Fast battery test”, but it can be stopped at any time by pressing

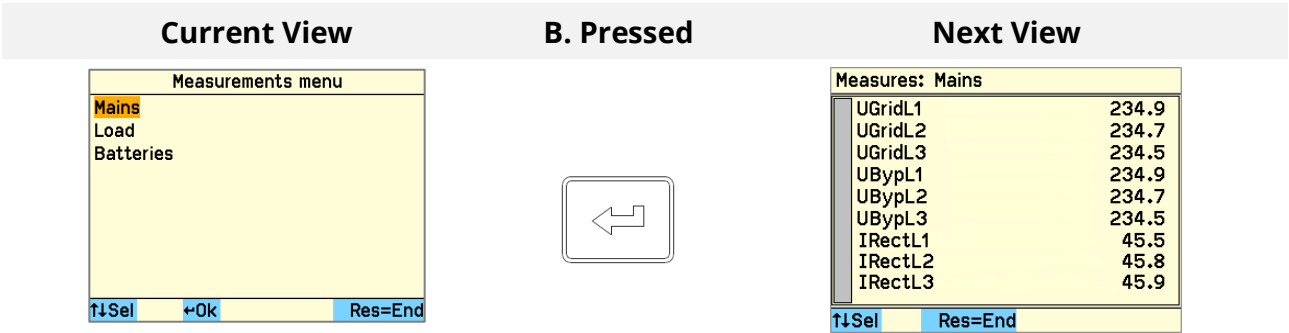
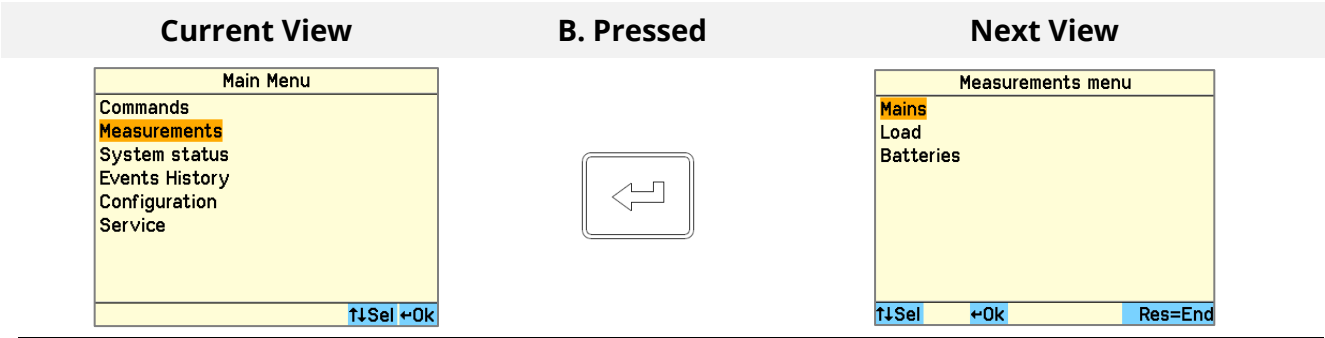


Note: If not stopped, the battery will be discharged until the alarm “BattLow 3Min” appears



By pressing  the alarm LED and buzzer will be checked

10.3.1.2 Measurements Menu



UGridL1 Mains Input Voltage L1

UGridL2 Mains Input Voltage L2

UGridL3 Mains Input Voltage L3

UBypL1 Bypass Input Voltage L1

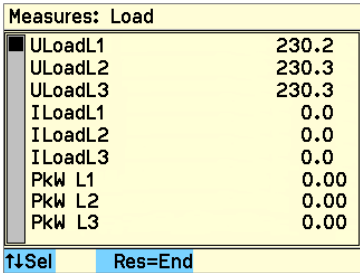
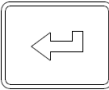
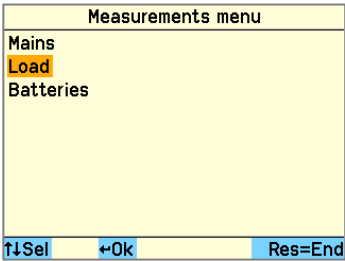
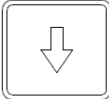
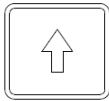
UBypL2 Bypass Input Voltage L2

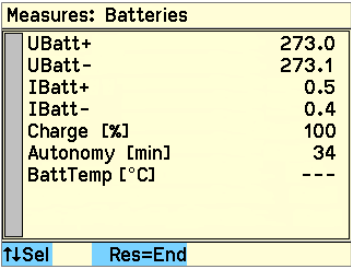
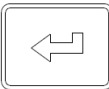
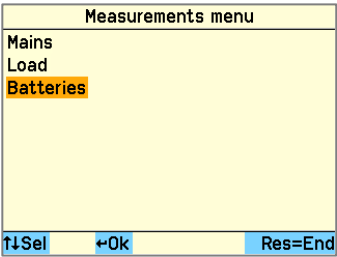
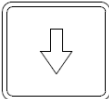
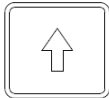
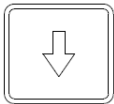
UBypL3 Bypass Input Voltage L3

IRectL1 Input Rectifier Current L1

IRectL2 Input Rectifier Current L2

IRectL3 Input Rectifier Current L3





ULoadL1	Output Voltage L1
ULoadL2	Output Voltage L2
ULoadL3	Output Voltage L3
ILoadL1	Output Current L1
ILoadL2	Output Current L2
ILoadL3	Output Current L3
PkWL1	Output Active Power L1
PkWL2	Output Active Power L2
PkWL3	Output Active Power L3
PkVAL1	Out Reactive Power L1
PkVAL2	Out Reactive Power L2
PkVAL3	Out Reactive Power L3
PkW%L1	Output Load % L1
PkW%L2	Output Load % L2
PkW%L3	Output Load % L3
FreqLoad	Output Frequency (Hz)

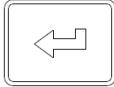
UBattPos	Battery Voltage (+)
UBattNeg	Battery Voltage (-)
IBattPos	Charge/Discharge Battery Current (+)
IBattNeg	Charge/Discharge Battery Current (-)
Charge%	Battery Charged %
Autonomy	Autonomy Available
TempBatt	Battery Temperature*



When the Battery Temperature Probe is not connected, no measurement is shown on the display under “TempBatt”.



10.3.1.3 System Status Menu

Current View	B. Pressed	Next View
Main Menu Commands Measurements System status Events History Configuration Service ↑Sel ←Ok		System Status Mains: On Mode: OnLine Batt%: 100 ByPass: Off Alarm: Active Comm: Active 00:00:00 Res=End

The following table describes the meaning of every parameter in this view:

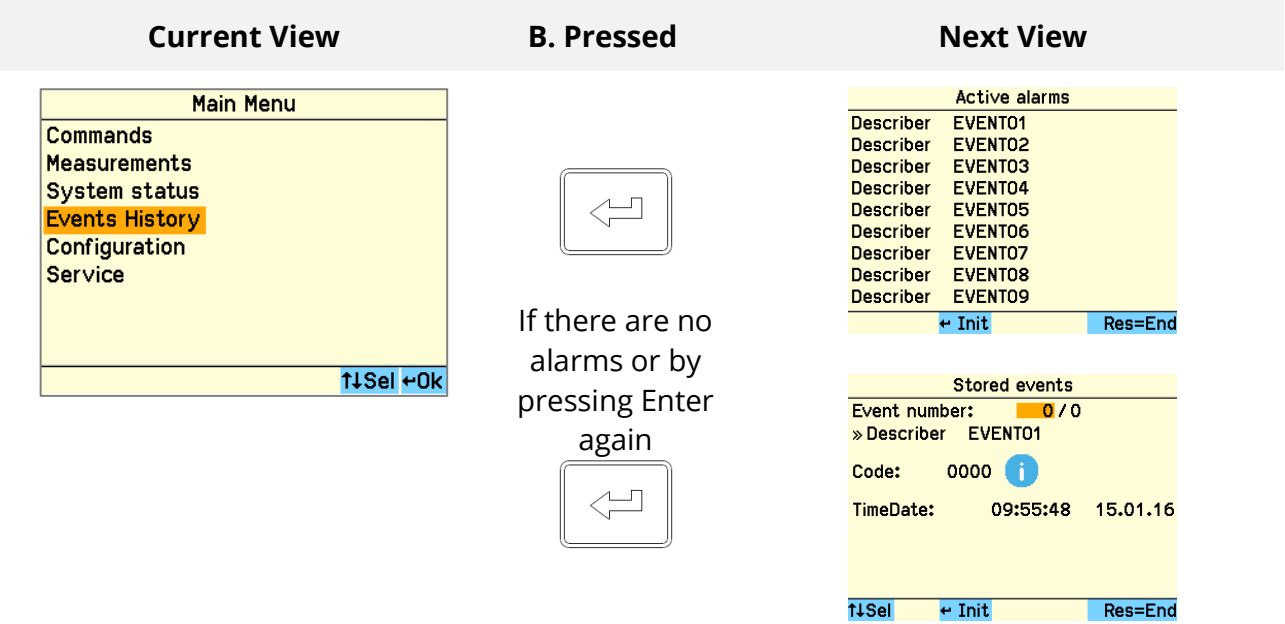
Parameter	Status	Description
Mains	On	Rectifier Input Voltage is present and within tolerances
	Off	Rectifier Input Voltage is out of range or not present
Mode	On-line	UPS is running on Inverter (VFI-SS-111)
	Off-line	UPS is running on Bypass (VFD-SS-311)
Battery	%	Battery Capacity Available
Bypass	On	Bypass Input Voltage is present and within tolerances
	Off	Bypass Input Voltage is out of range or not present
Alarm	Active	An alarm is active and has not been acknowledged
	Off	No alarm is present
Comm	Active	Interface Communication detected and OK
	Off	Interface Communication not detected, verify

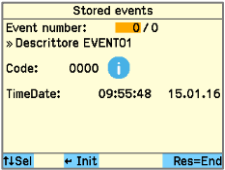
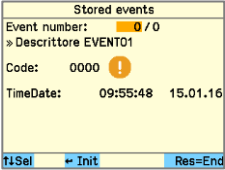
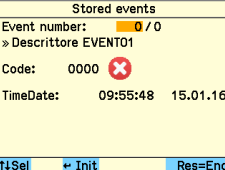
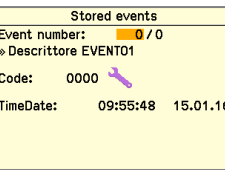
10.3.1.4 Events History Menu

As soon you enter in the “Event History” menu and the alarm condition is present (red indication on) the module will show the active alarms (max 9; event 9 is the last). By

pressing  you will enter in the “Stored Events” menu where you can explore all detailed information.

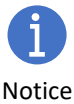
If the alarm indication on the display is off you will enter directly in the “Stored Events” menu



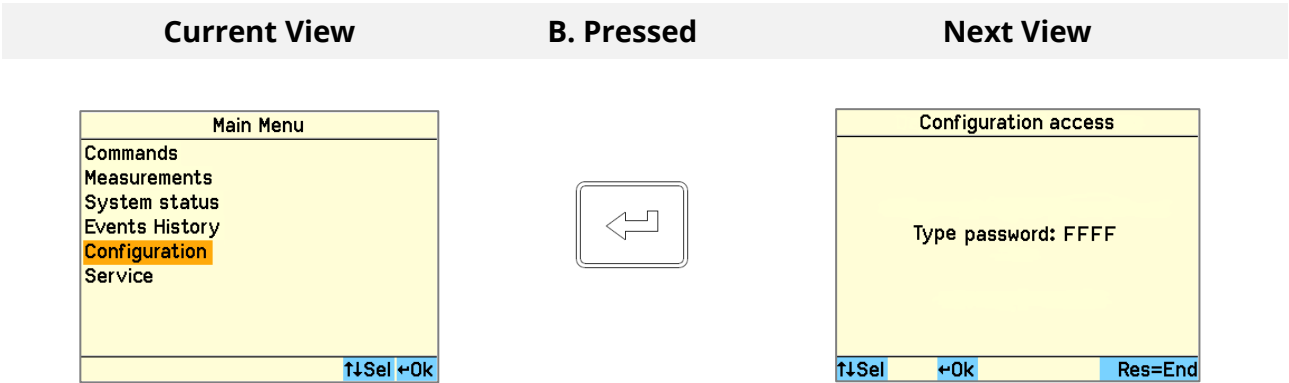
Event Conditions	Description	Action to take
	Information Event	No action required
	Warning Event	Pay attention to the indication
	Alarm Event	Verify troubleshooting
	Technician Intervention	Call your service provider or manufacturer



10.3.1.5 Configuration Menu



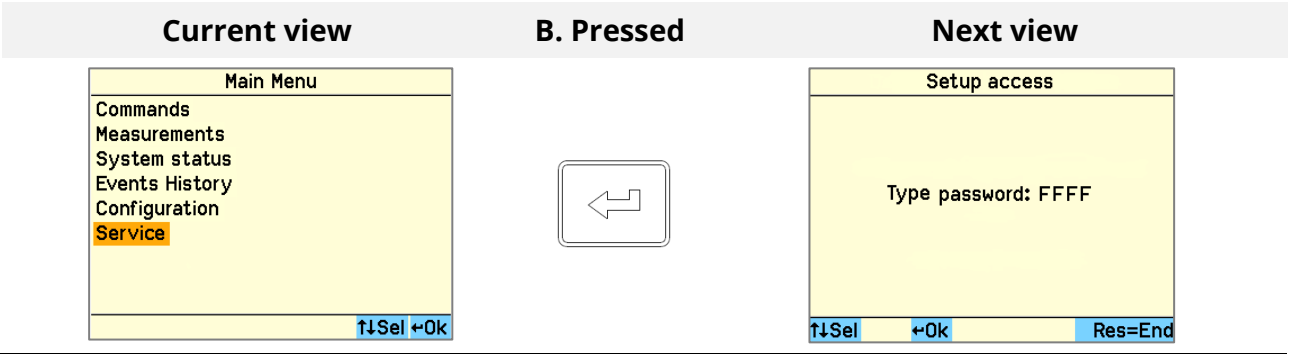
Only service personnel are allowed to access the “Configuration” menu in a first level service, therefore a password is needed.



10.3.1.6 Service Menu



Only service personnel are allowed to access the “Service” menu in a second level service, therefore a password is needed.



10.4 Manual Bypass Switch

Sometimes it is called “Maintenance Bypass Switch”. When the load is transferred to the manual Bypass, **it will not be protected anymore**. Normally, this operation is used only during the installation maintenance.



Transfer the load to the manual Bypass is a critical operation. The load is not protected anymore.
Be sure to inform and have permission from the customer before performing this operation.



11 Operation Procedures

The procedure has to be performed only when all configuration parameters (Battery, Output voltage, customer requirements, and so on) have been done.

11.1 Start-Up Procedure for single unit



Danger

The commissioning of the UPS, as well as shutdown and start-up, must be performed only by authorized service engineers. Control panel operations can be performed by trained persons only.



Warning

Before commissioning the UPS, verify that all electrical facilities, including battery connections and environmental conditions, comply with the instructions reported in this manual.

11.1.1 Preparation for Start-Up Procedure

Make sure that the Bypass Fuses (PFBP if provided), battery fuses (PFB), Output switch (Q1) and the Manual Bypass Switch (Q0) of the UPS are open.

Make sure that all inputs, outputs and Battery Fuses or CBs on customer facilities are open.

11.1.2 Start-Up Procedure

- Insert Fuses or close Circuit Breakers (CBs) on customer grid distribution facilities and close the input switch QMR
- Verify the correctness of the phase rotation.



If the phase rotation is wrong, the alarm “PhSequenceError” will be activated. The UPS will not start up because of Mains not available.

- The display will turn on and the “Mains” LED will light up green.

Action Performed

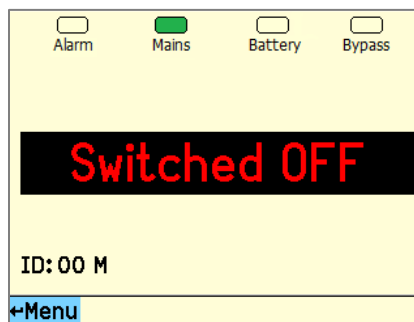
Display Mimic

The UPS power supply is ON

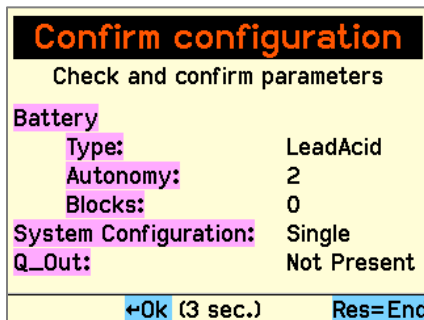
centiel
continuous power availability

Rev: 1.0.0
PC0600 rev.C

The UPS completed its own checks and is in OFF condition



First Startup
The UPS ask to verify the important parameters to avoid strange alarms.
If OK press and hold the ENTER button for 3 seconds and turn on the module



- d) Close the Manual Bypass Switch (Q0), bypass fuses or switches (QBP, if provided) and all output Fuses or CBs on customer facilities, turn on the load and verify the maximum current applied on each output phase of the UPS by means of a current probe.
- e) Switch on the UPS. It starts up on bypass and on the synoptic the Inverter symbol is off. Unexpected alarms should not appear. Verify that the indication "Manual Byp Closed" is listed in the event log.
- f) Close the Battery CB (QMB or QMB1 and QMB2) and check in the "Measurements" menu the correctness of the Battery Charger current.
Pay attention that on 80kW UPS with internal batteries both, QM1 and QM2, must be closed.
- g) Close Q1 and open Q0. The inverter symbol will be displayed dashed and the load will be supplied through the static Bypass and transferred automatically to inverter. Pay attention by handling Q1 because, for single UPS, the status of this switch is not controlled.
- h) If the facility is provided with a not monitored external manual bypass, which is closed, open Q0 without closing Q1 and as soon the inverter is on, give the order "Load to Bypass", close Q1 and open the external manual bypass switch.
- i) Verify on the display that the output currents are the same as previously measured with the current probe.
- j) By giving the command "Load to Inverter", the UPS will transfer the load to the Inverter.
- k) Check on the measurements menu of the UPS if all voltages and currents are correct.

11.2 Shutdown Procedure for single unit

If the load does not need power for an extended period, the full UPS can be switched off by applying the following procedure:

- a) By giving the command “Load to Bypass”, the UPS will transfer the load to static Bypass.
- b) Close the Manual Bypass Switch (Q0) and open the output switch (Q1). The Inverter symbol will disappear from the display.
- c) Turn off the UPS by pressing the ON/OFF button for 4 seconds.
- d) When the UPS is off, open the Bypass Input Fuses (if provided with dual input feed) and battery CB located on the rear of UPS cabinet. Open the input rectifier switch to turn off completely the UPS. The remaining load is supplied through manual Bypass.



Warning

Whenever opening the battery fuses, pay attention to open all bipolar or bipolar fuse holders because all of them are connected in parallel.



Danger

Beware: the load is not protected anymore since it is supplied directly through manual Bypass. However, the UPS cabinet is still powered and the shock hazard is high.

- e) If for sure no load is connected to the UPS, the input Fuses or CBs on the customer facilities can be opened as well. In this case the UPS will not be fed anymore.



Notice

To restart the system, please follow the indications described in section 11.1.

11.3 Start-Up Procedure for parallel units



Danger

The commissioning of the UPS, as well as shutdown and start-up, must be performed only by authorized service engineers. Control panel operations can be performed by trained persons only.



Warning

Before commissioning the UPS, verify that all electrical facilities, including battery connections and environmental conditions, comply with the instructions reported in this manual.

11.3.1 Preparation for Start-Up Procedure

Make sure that the Bypass Switches (QBP), battery CB (QMB or QMB1 and QMB2), Parallel Isolators (Q1) and the Manual Bypass Switch (Q0) of all UPS are open.

Make sure that all inputs, outputs and Battery Fuses or CBs on customer facilities are open.

Check the correct settings of the parallel configuration dip switches (refer to document “PremiumTower Installation Guideline”)

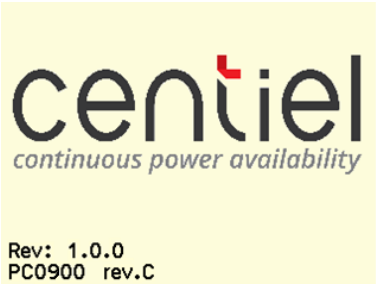
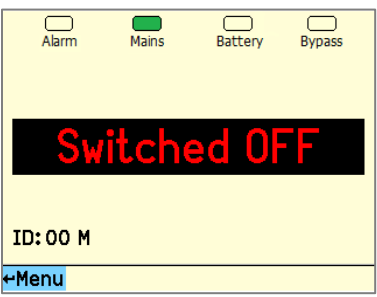
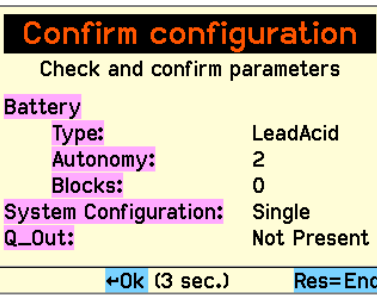
11.3.2 Start-Up Procedure

- a) Insert Fuses or close Circuit Breakers (CBs) on customer distribution facilities and close input switch QR
- b) Verify the correctness of the phase rotation.



If the phase rotation is wrong, the alarm “PhSequenceError” will be activated. The UPS will not start up because of Mains not available.

- c) The display will turn on and the “Mains” LED will light up green.

Action Performed	Display Mimic
The UPS power supply is ON	 Rev: 1.0.0 PC0900 rev.C
The UPS completed its own checks and is in OFF condition	
First Startup The UPS ask to verify the important parameters to avoid strange alarms. If OK press and hold the ENTER button for 3 seconds and turn on the module	



- d) Close the Manual Bypass Switch (Q0), bypass switch (QBP, if provided) and all output Fuses or CBs on customer facilities. Turn on the load and verify the maximum current applied on each output phase of the UPS by means of a current probe.
- e) While keeping the Output switch or, in this case, Parallel Isolator (Q1) open, turn on each unit one by one, beginning from UPS 1 to UPS n, and verify that they are properly functioning. Unexpected alarms should not appear. Verify that the indication “Manual Byp Closed” is listed in the event log of each module.
- f) Close the Battery CBs (QMB or QMB1 and QMB2) and check in the “Measurements” menu the correctness of the Battery Charger current.
Pay attention that on 80kW UPS with internal batteries both, QM1 and QM2, must be closed.
- g) Switch off all UPS (hold the button for 4 secs) and close Q1 of each unit one by one. Note: as soon as the Parallel Isolator is handled, the information “Q_out state changed” will appear blinking.

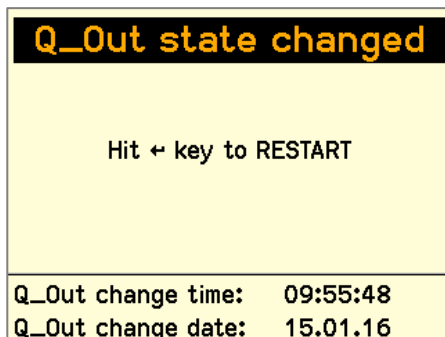
Action Performed



Warning

Whenever closing or opening any Q_out, this message MUST appear on the display. Do not turn on the UPS if the message is not shown. Risk of malfunction.

Display Mimic



- h) In this condition, the Inverter of the unit is locked. Press ENTER  to unlock it.
- i) As soon as all UPS are switched on (on the display the Inverter symbol is off), open one by one the Manual Bypass Switches (Q0) (on the display the Inverter symbol will appear as soon the last Q0 has been opened) and verify on the display that the sum of the currents of the UPS is the same as previously measured with the current probe.
- j) By giving the command “Load to Inverter” on one of the UPS, the full system will transfer the load to Inverter.
- k) Check that the measures on each unit are correct and similar.

11.4 Shutdown Procedure for parallel units

If the load does not need power for an extended period of time, the full system can be switched off by applying the following procedure:

- a) By giving the command “Load to Bypass” on one unit, the full system will transfer the load to static Bypass.

- b) Close all Manual Bypass Switches (Q0). The Inverter symbol will disappear from the display.
- c) Turn off each UPS one by one by pressing the ON/OFF button for 4 seconds and open the corresponding Output Switch or Parallel Isolator (Q1). The information indicating that the output switch has been handled will appear blinking. In this case as well, the



key must be pressed to unlock the Inverter.

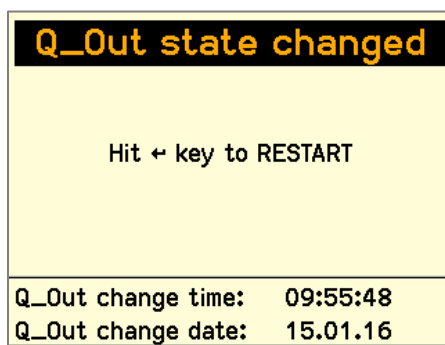
Action Performed



Warning

Whenever closing or opening any Q_out, this message MUST appear on the display. Do not turn on the module if the message is not shown. Risk of malfunction.

Display Mimic



- d) When the UPS is off, open the Bypass switch (QBP, if provided) and battery CBs (all QMB) located on the rear of UPS cabinet. Open the input rectifier switch (QR) to turn off completely the UPS. The remaining load is supplied through manual Bypass.



Warning

Whenever opening the battery fuses, pay attention to open all bipolar fuse holders (tripolar for 10 and 20kW) because all of them are connected in parallel.



Danger

Beware: the load is not protected anymore since it is supplied directly through manual Bypass. However, the UPS cabinet is still powered, and the shock hazard is high.

- e) If for sure no load is connected to the UPS, the input Fuses or CBs on the customer facilities can be opened as well. In this case the UPS will be completely off.



Notice

To restart the system, please follow the indications described in section 11.3

12 Options

The PremiumTower™ S2 UPS can be equipped with several options, specific for customer applications.

The available options are:

- Battery Temperature Probe
- SNMP
- Wavemon
- Parallel Kit
- Dual Input Feed

The Battery Temperature Probe and the SNMP can be easily installed on site after the commissioning.



Notice

If dual input feed is necessary, we kindly recommend to include these options in the Purchase Order.

12.1 Battery Temperature Probe



Notice

Read also section 8.2.1

12.2 SNMP

The Simple Network Management Protocol (SNMP) is a typical worldwide standardized communication protocol, and it is used to monitor the status of the UPS in the network via simple control language. The SNMP adapter can act as interface for environmental monitoring of devices installed in the UPS room, such as open doors detectors, ambient temperature probes, emergency system controls and so on (PRO version). Typically, it is also used as Remote Console Command Module (RCCMD) for a multi-server shutdown.

The UPS is equipped with a slot allowing for an easy installation of the SNMP card, which may be configured via serial connection, Telnet or HTTP (Web Browser). The SNMP adapter can manage the full parallel system; each single module or the whole system as a stand-alone UPS can be monitored.

Three types of SNMP adapters are available:

- CS141 BDG slot in adapter
- CS141 Professional
- CS141 Professional with MODBUS RS485 and I/O options



Notice

For SNMP configuration and installation, review the dedicated documentation.

12.2.1 SNMP CS141 BDG

The CS141 BDG includes the UPSMAN server with SNMP agent RFC 1628 with SNMP V and V 3 support, the CS141 Webserver and supports IPv6, HTTP, HTTPS, DNS, NTP, FTP, UPSTCP (UNMS), RADIUS, PPP, SMTP (email client) and MODBUS-over IP server is on board. The full qualified RCCMD server is integrated and cares for the shutdown and messaging on all computers and OS in your network.



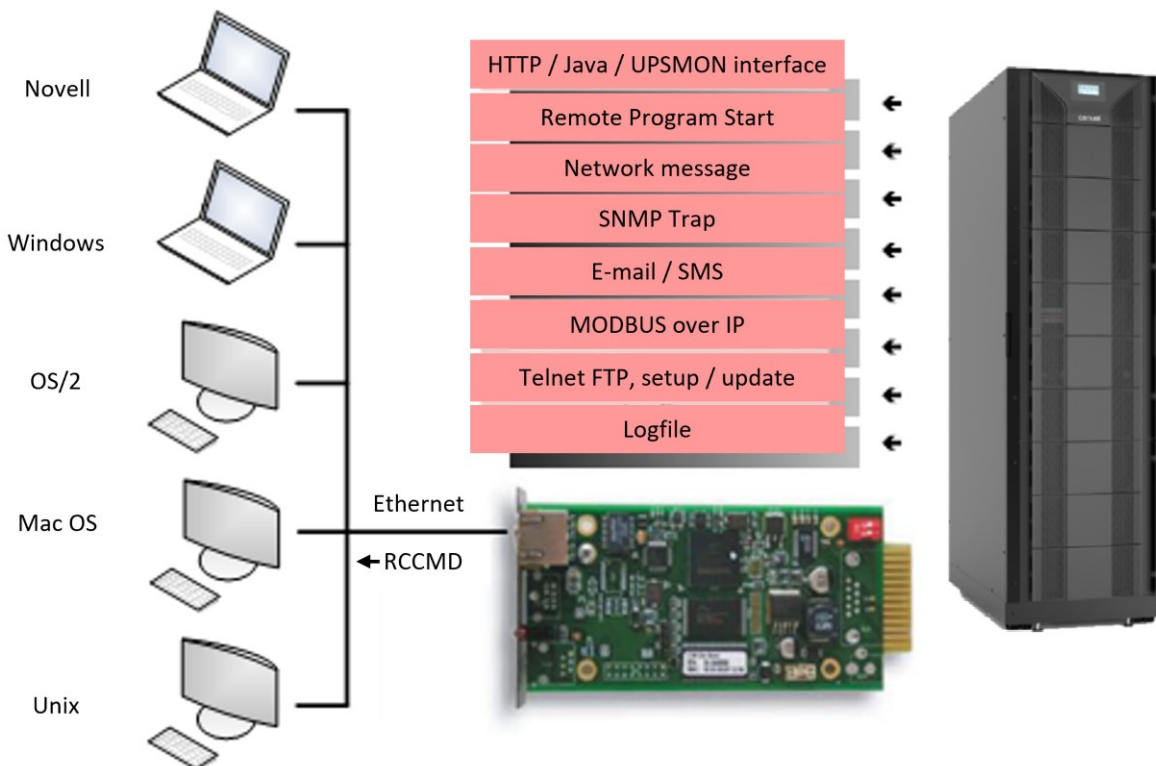
CS141 Basic order code 00-00015



Notice

CS141 BDG does not support environmental and external sensors.

CS141 BDG



12.2.2 SNMP CS141 Professional

In addition to the features of CS141 BDG, CS141 Professional allows the user to install and control accessories for environmental and building alarm management, such as sensors, actuators and detectors.



CS141 Professional order code 00-00014

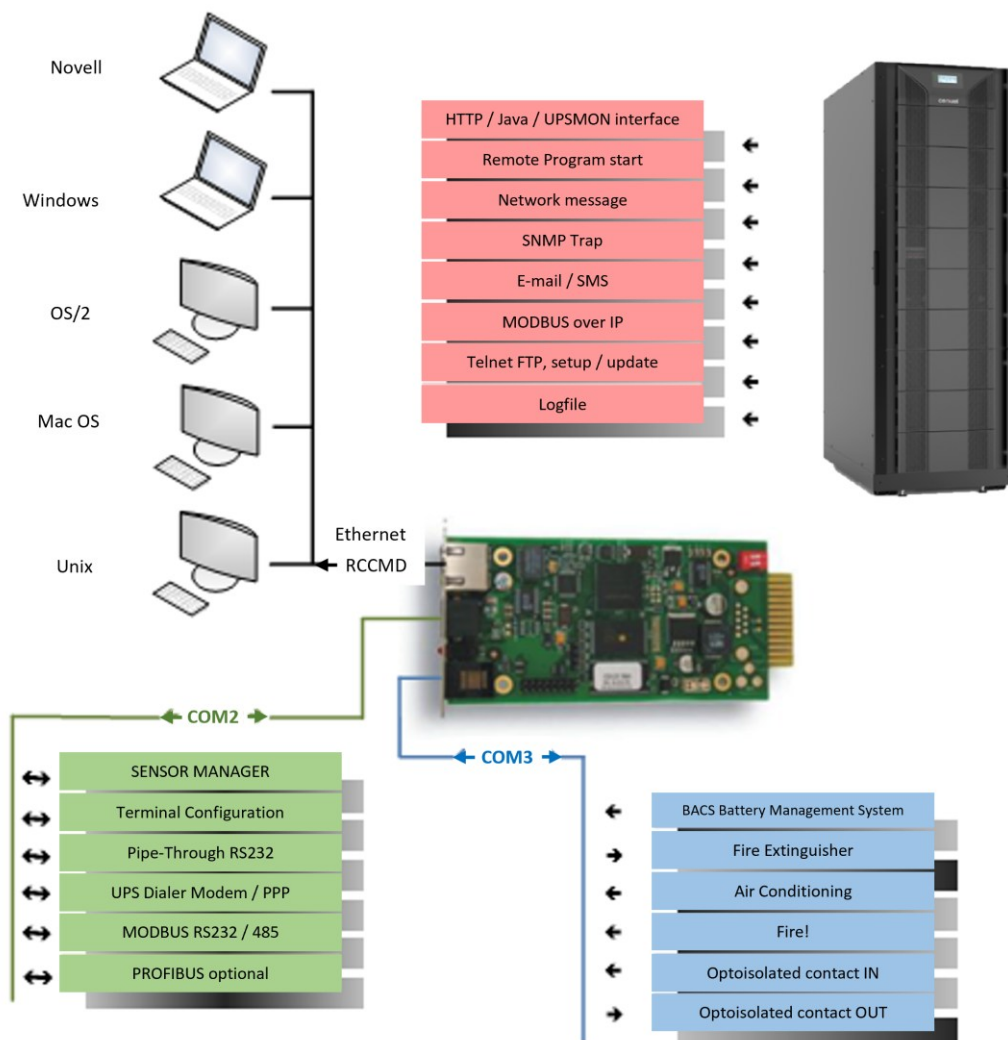
12.2.3 SNMP CS141 Professional with MODBUS RS485

CS141 Professional with MODBUS RS485 with 3-pole screw terminal connectors.



CS141 Professional with MODBUS order code 00-00016

CS141 Professional



12.3 Parallel Kit (Optional)

This kit is used to equip the UPS with parallel functionality and allows up to 40 units to be connected in parallel. The position of the UPS in the parallel system must be set by configuring the dip switches on the parallel communication connection board. For more information, see the "PremiumTower™ S2 Commissioning Guideline".

12.4 Dual Input Feed (Optional)

The dual feed connection, with separate protections, is used with the aim of increase the safety in case of battery discharge. It should have two different power supply grids with neutrals connected together.



Warning

It is not allowed to connect 2 neutrals of 2 different sources to each other on the UPS terminals; this must be done on the distribution facilities.



Notice

The dual input feed option has to be chosen during the ordering of the PT S2. This is a factory installed option.



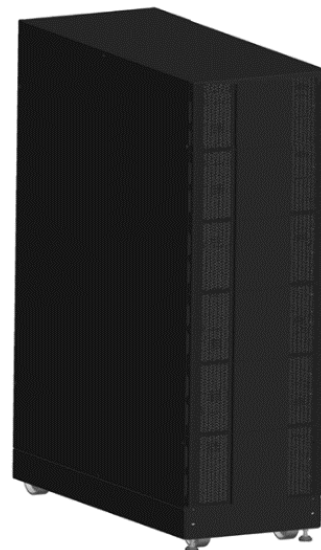
Dual Input Feed option order code

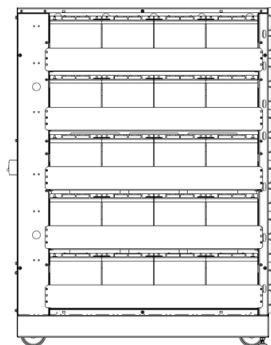
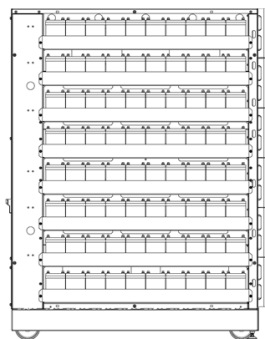
00-00946	Dual Input feed	10-40 kW
00-00947	Dual Input feed	60 kW
00-00948	Dual Input feed	80 kW

12.5 Battery cabinets

Two matching battery cabinets for PremiumTower™ S2 UPS are available, MBC-PT160-009-D0 and MBC-PT040-028-D0, which allow to connect up to 160 battery blocks 7 / 9Ah respectively up to 40 28Ah battery blocks.

Cabinet	Batt. Type	Batt. configuration
MBC-PT160-009-D0	7/8/9Ah	2 x 20/30/40
		3 x 20/30/40
		4 x 20/30/40
		2 x 42 to 50
		3 x 42 to 50
MBC-PT040-028-D0	24/28Ah	1 x 20/30/40





General Data	PT_BATT 160	PT-BATT 40
Dimensions (WxHxD) mm	350 x 1'075 x 800	
Weight empty frame with trays	67kg	58kg
Frame weight with all batteries installed	467kg	498kg
Accessibility	Left and Right	
Colour	Body: RAL 9017 Traffic black / Frontal: RAL 9011 OP	
Battery		
Battery type and dimensions in mm (WxHxD)	VRLA 7-9Ah (64.5 x 100 x 151)	VRLA 24 or 28Ah (165 x 175 x 125)
Number of trays	16	10
Number of batteries per tray	10	4
Maximal number of battery blocks	160 (7-9Ah)	40 (24 or 28Ah)
Maximal strings number	4	1
Distribution		
Battery connection	3 x terminals 35mm ²	
Fuse Protection	4 x fuse holders (12 x 32A DC1000V gPV)	PV MCB 125A

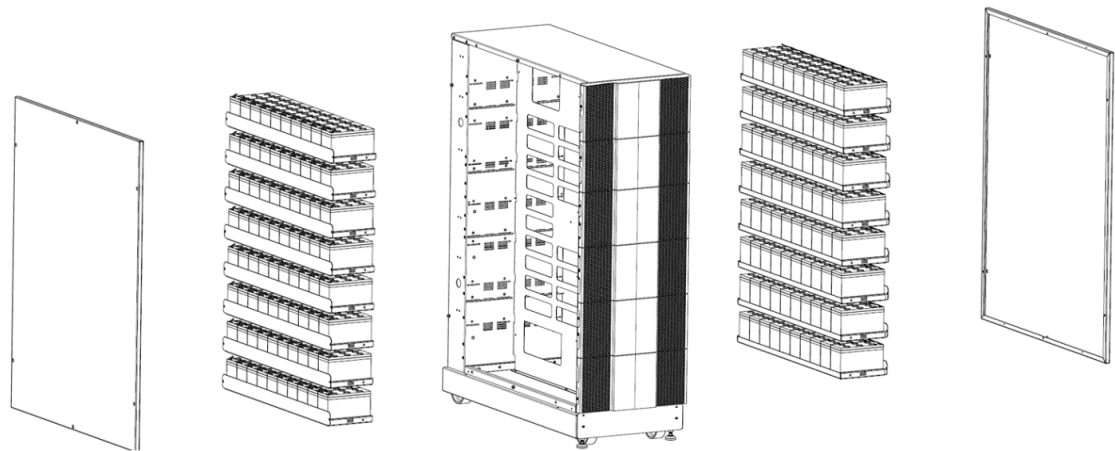


Battery Cabinet MBC-PT160-009-D0 order code 00-00371
(Trays and cables are not included)

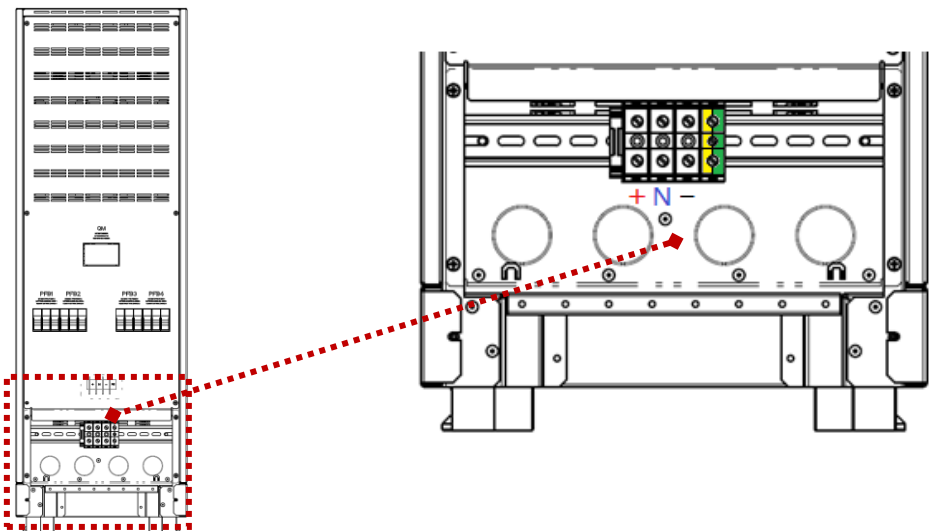


Battery Cabinet MBC-PT040-028-D0 order code 00-00375
(Trays and cables are not included)

12.5.1 CAB-BT160-009-D0



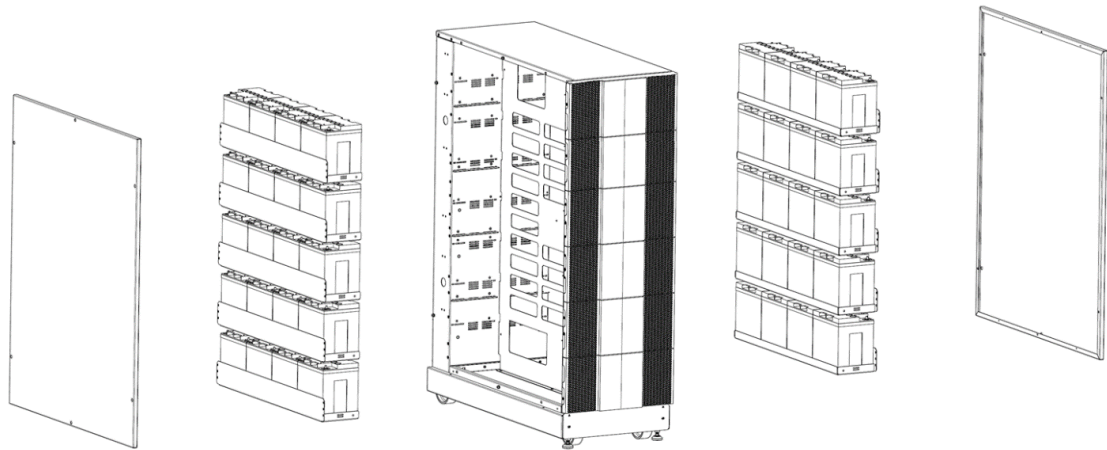
Electrical Connection



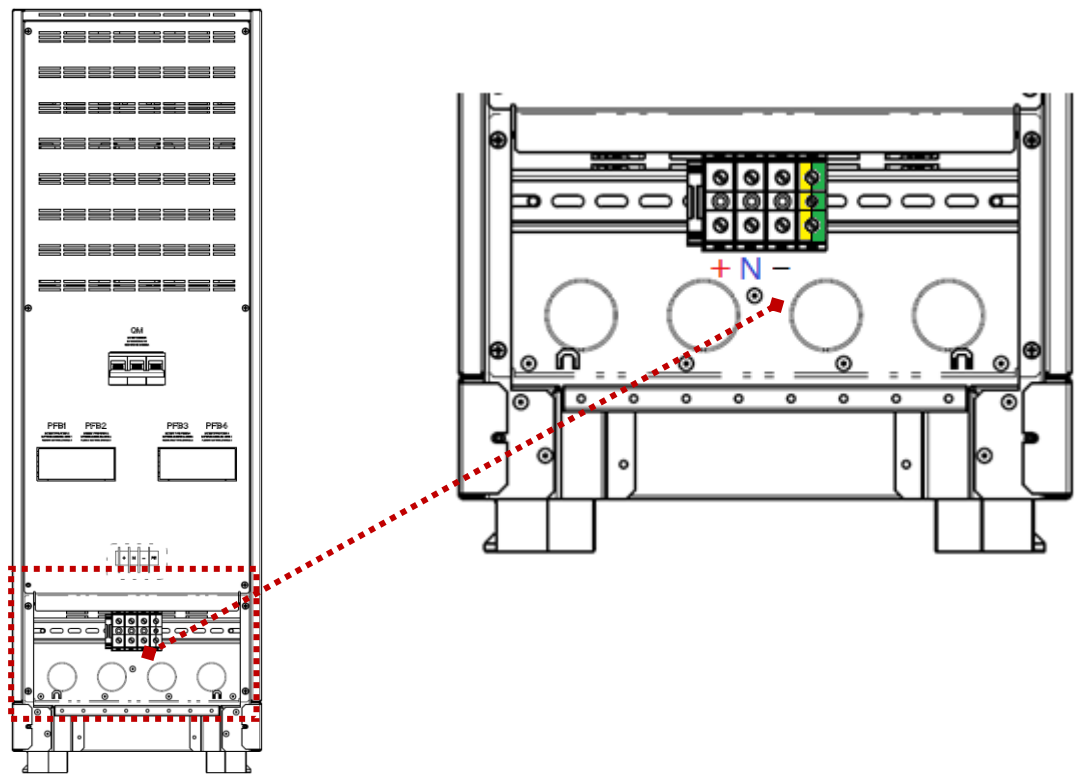
Battery

(+)	Battery Positive	35 mm ² (without ferrule for 50 mm ² wires)
N	Battery Middle Point	35 mm ² (without ferrule for 50 mm ² wires)
(-)	Battery Negative	35 mm ² (without ferrule for 50 mm ² wires)
PE	Connect earth cable	35 mm ² (without ferrule for 50 mm ² wires)

12.5.2 CAB-BT040-028-D0



Electrical Connection



Battery

(+)	Battery Positive	35 mm ² (without ferrule for 50 mm ² wires)
N	Battery Middle Point	35 mm ² (without ferrule for 50 mm ² wires)
(-)	Battery Negative	35 mm ² (without ferrule for 50 mm ² wires)
PE	Connect earth cable	35 mm ² (without ferrule for 50 mm ² wires)



13 Maintenance

The user is not allowed to carry out any maintenance of the UPS. This will be performed only by authorized service personnel.

The PremiumTower™ S2 UPS shall be installed in an environment condition dry, dust free and with an ambience temperature not exceeding the limits described in this manual. If the UPS is equipped with internal batteries the temperature limits shall not exceed 25°C.

It is recommended to perform annually a maintenance inspection to maintain the reliability and prevent malfunction on the equipment. In this circumstance the status of the batteries must be checked.

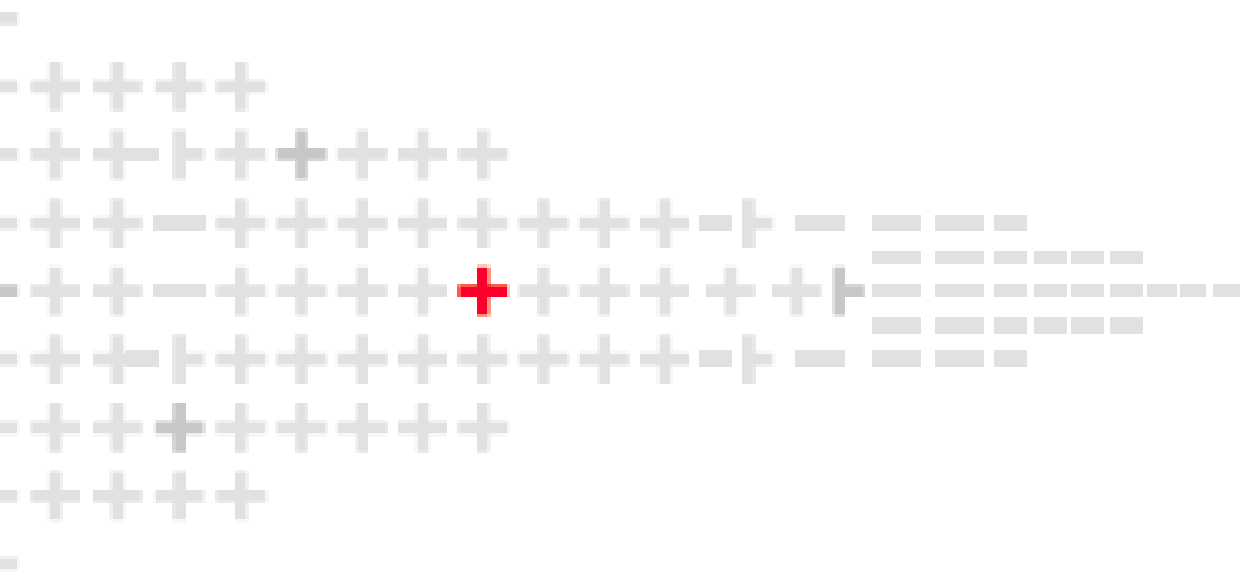
As follow the activities suggested for a correct maintenance:

1. Visual inspection of the UPS system and batteries
2. Check the environment of the UPS (dust, humidity, air conditioning, and so on)
3. Verify the “Events history” menu if no strange alarms have been recorded. If Ok delete the events.
4. Verify the status of the fans, especially if the UPS is very dusty.
5. Battery discharge test using the “Full Battery Test” command on the UPS
6. If the UPS is dusty use a vacuum cleaner to clean the equipment
7. In this case verify the status of the fans

The UPS has been designed without the intervention of replacing the AC and DC capacitors during the first 15 years.

The service engineer only has to check the condition of the fans and if necessary proceed with the replacement, the work of which is very simple.

For further information, please consult the manufacturer.



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