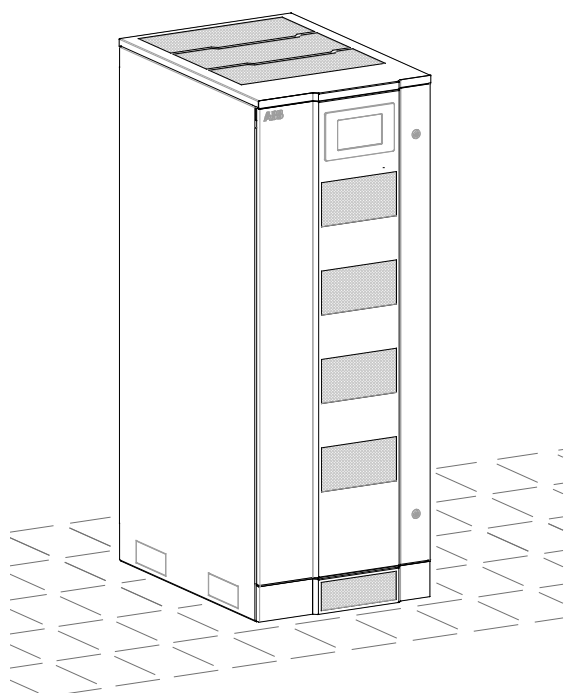

UPS INSTALLATION GUIDE

TLE Scalable Series

40 to 150 kVA UL S1



Model	TLE Scalable Series 40 to 150 UL S1 TLE Scalable Series 150/40 UL S1 TLE Scalable Series 150/50 UL S1 TLE Scalable Series 150/80 UL S1 TLE Scalable Series 150/100 UL S1 TLE Scalable Series 150/120 UL S1 TLE Scalable Series 150/150 UL S1
Issued by	ABB Product Document Department – Quartino - CH
Approved by	ABB R&D Department – Riazzino - CH
Date of issue	03/15/2020
File name	ABB_UPS_ISG_TLE_SUL_40K_M15_1US_REV-C
Revision	REV-C
Document number	4NWD005332
Article number	4NWP106146R0001

Up-dating

Revision	Concern	Date
REV-B	ECN 2771 (IM0305 - UVR Control Board) & UPS weights	04/25/2018
	Battery Cabinet(s) position	01/09/2019
REV-C	Manual update	11/20/2023

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The illustrations and plans describing the equipment are intended as general reference only and are not necessarily complete in every detail.

The content of this publication may be subject to modification without prior notice.

Dear Customer,

We thank you for selecting our products and are pleased to count you amongst our very valued customers at **ABB**.

We trust that the use of the **TLE Scalable Series 40 to 150** Uninterruptible Power Supply System, developed and produced to the highest standards of quality, will give you complete satisfaction.

Please read carefully the Installation Guide, which contains all the necessary information and describes all you need to know about the installation of the UPS.

Thank you for choosing **ABB**!



Start-up and commissioning!

An ABB Global Services Field Engineer must perform start-up and commissioning of the UPS.

Please contact ABB Service Center at least two weeks prior to schedule start-up and commissioning at 1-800-292-3739.



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ABB Service Center



To get important information on all equipment warranties, please contact the ABB Service Center or request service follow-up or by scanning the QR code.

<http://new.abb.com/ups/service-ups>

Preface

Congratulations on your choice of a TLE Scalable Series 40 to 150 Uninterruptible Power Supply (UPS). It will keep you away from any trouble due to unexpected power problems.

This Installation Guide describes how to prepare the installation site and it provides weight and dimensions and procedures for moving, installing and connecting the UPS

Please refer to the accompanying User Manual, which describes the function of the UPS module, the purpose and location of the switches, the meaning of the system events related to the front panel indication and provides procedures for starting and stopping the equipment.

While every care has been taken to ensure the completeness and accuracy of this manual, ABB assumes no responsibility or liability for any losses or damages resulting from the use of the information contained in this document.

**Note!**

TLE Scalable Series 40 to 150 is a Category C3 UPS Product (according to IEC 62040-2).

This is a product for commercial and industrial application in the second environment – installation restrictions or additional measures may be needed to prevent disturbances.

We recommend that this manual be kept next to the UPS for future references.

If any problems are encountered with the procedures contained in this manual, please contact your ABB Service Center before you proceed.

This document shall not be copied or reproduced without the permission of ABB.

Due to technical improvements, some of the information contained in this manual may be changed without notice.

Safety instructions

Carefully read the safety instructions contained on the following page before the installation, start-up and maintenance of the UPS, options and Battery.

Pay attention to the rectangular boxes included in the text:

They contain important information and warning concerning electrical connections and personnel safety.

RPA

Redundant Parallel
Architecture

Parallel System secured with “RPA – Redundant Parallel Architecture”

When included in the text, this symbol refers to operation needed only for the RPA Parallel System.

Table of content

	Page
1 Safety rules	6
1.1 Safety symbols and warnings	8
1.2 Cyber security	8
2 Layout	9
2.1 Layout TLE Scalable Series 40 to 150	9
3 Environment	11
3.1 Recycling instructions	11
4 Installation	12
4.1 Transport	12
4.1.1 Dimensions and weights TLE Scalable Series 40 to 150	13
4.2 Delivery	15
4.3 Storage	15
4.3.1 Storage of the UPS	15
4.3.2 Storage of Battery	15
4.4 Place of installation	16
4.4.1 UPS location	16
4.4.2 Battery location	18
4.5 Ventilation and cooling	19
4.6 Unpacking	20
4.7 Electrical wiring	22
4.7.1 Utility input connection	22
4.7.2 Input/output over current protection and wire sizing	23
4.7.3 Data for Input/output and Battery over current protection and wire sizing	24
4.7.4 Installation requirements	27
4.8 Wiring connection	30
4.8.1 TLE Scalable Series 40 to 150 - Power connection with Common Input Utility	31
4.8.2 TLE Scalable Series 40 to 150 - Power connection with Dual Input Utility	33
4.8.3 Battery cabinet connection to TLE Scalable Series 40 to 150	35
4.8.4 Use of TLE Scalable Series 40 to 150 in SEM Operation Mode (Super Eco Mode)	37
4.8.5 Use of TLE Scalable Series 40 to 150 as Frequency Converter	38
4.9 RPA Parallel System connection	39
4.9.1 Power wiring of Parallel Units	39
4.9.2 Parallel Control Bus connection	40
4.9.3 Control bus cable location	42
4.10 "EPO - Emergency Power OFF" command connection	44
5 Connectivity interface	45
5.1 Serial port J35μP - RS232 (Sub D, Female 9 pin)	46
5.2 Customer interface board	47
5.2.1 X1 terminal block - Output signals on voltage-free contacts	48
5.2.2 X1 terminal block - Programmable input free contacts	48
5.2.3 X1 terminal block - Gen Set Signaling (GEN ON)	49
5.2.4 X1 terminal block - AUX External Maintenance Bypass	49
5.2.5 X1 terminal block - SEM/IEMi control signal	50
5.3 "3-ph SNMP/WEB plug-in adapter" board	50
5.4 "IM0305 - UVR control" board for CB3 Battery Breaker Box	50
6 Options	51
6.1 Top Cable Entry/Exit Sidecar (TCE) and Top Hat Fascia (THF)	51
7 Notes	54
7.1 Notes form	54

1 Safety rules

Save these instructions!

This manual contains important instructions for models TLE Scalable Series 40 to 150 that should be followed during installation and maintenance of the UPS and Battery.

General

- Move the UPS in an upright position in its original package to the final destination room.
To lift the cabinets, use a forklift or lifting belts with spreader bars.
- Check for sufficient floor and elevator loading capacity.
- Check the integrity of the UPS equipment carefully.
If you notice visible damage, do not install or start the UPS.
Contact your ABB Service Center immediately.
- **WARNING! RISK OF ELECTRICAL SHOCK!**
Do not remove covers, there are no user serviceable parts inside.
- After switching off takes 5 minutes for the DC capacitors to discharge because a lethally high voltage remains at the terminals of the electrolytic capacitors.
- UPS's and Battery system require a 12 months periodic maintenance to operate reliably and safely.
This should be performed by qualified service personnel. The UPS contains its own energy source (Battery).
- The field-wiring outlets may be electrically live, even when the UPS is disconnected from the Utility.
- Dangerous voltages may be present during Battery operation.
- The Battery must be disconnected during maintenance or service work.
- This UPS contains potentially hazardous voltages.
- Be aware that the Inverter can restart automatically after the Utility voltage is restored.
- End user must follow applicable regional occupational safety codes/regulations during installation, operation and equipment maintenance. This may require additional field marking or labelling defining appropriate level of PPE (Personal Protection Equipment) to reduce the risk of Arc-flash related injuries.
Contact our ABB Service Center for product specific information.

Installation

- This UPS must be installed and connected only by trained personnel.
- Verify accurately during Commissioning and Maintenance of the UPS, for the following:
Damaged components, squeezed wires and cables, or not correctly inserted plugs.
- After removing the sidewalls of the UPS, make sure that all earth connections when reassembling, are correctly reattached.
- This UPS is intended for use in a controlled indoor environment free of conductive contaminants and protected against animals intrusion.
- **WARNING! HIGH LEAKAGE CURRENT TO GROUND:**
Ground connection is essential before connecting to AC input!
- Switching OFF the Unit does not isolate the UPS from the Utility.
- Do not install the UPS in an excessively humid environment or near water.
- Avoid spilling liquids on or dropping any foreign object into the UPS.
- The Unit must be placed in a sufficiently ventilated area; the ambient temperature should not exceed 104°F (40°C).
- Optimal Battery life is obtained if the ambient temperature does not exceed 77°F (25°C).
- It is important that air can move freely around and through the Unit. Do not block the air vents.
- Avoid locations in direct sunlight or near heat sources.

Storage

- Store the UPS in a dry location; storage temperature must be within -13°F (-25°C) to 131°F (+55°C).
- The optimal temperature for Battery storage is 68°F (20°C) to 77°F (25°C) and shall never exceed the range -4°F (-20°C) to 104°F (40°C).
- If the Unit is stored for a period exceeding 3 months, the Battery must be recharged periodically (time depending on storage temperature).

Battery

- The Battery-voltage is dangerous for person's safety.
- When replacing the Battery, use the same number, voltage (V) and capacity (Ah).
- Proper disposal or recycling of the Battery is required.
Refer to your local codes for disposal requirements.
- Never dispose of Battery in a fire: they may explode.
- Do not open or mutilate Battery: their contents (electrolyte) may be extremely toxic.
If exposed to electrolyte, wash immediately with plenty of water.
- Avoid charging in a sealed container.
- Never short-circuit the Batteries.
When working with Batteries, remove watches, rings or other metal objects and only use insulated tools.
- In case of air shipment, the cables +/- going to the Battery fuses/terminals shall be disconnected and isolated.

Safety instructions when working with Battery

**Danger!**

**External Battery must be installed and connected to the UPS by Qualified Service Personnel.
Installation Personnel must read this entire section before handling the UPS and Battery.**

Full voltage and current are always present at the Battery terminals.

The Battery used in this system can provide dangerous voltages, extremely high currents and a risk of electric shock.

If the terminals are shorted together or to ground they may cause severe injury.

You must be extremely careful to avoid electric shock and burns caused by contacting Battery terminals or shorting terminals during Battery installation.

Do not touch uninsulated Battery terminals.

A qualified service person, who is familiar with Battery systems and required precautions, must install and service the Battery.

The installation must conform to national and local codes.

Keep unauthorized personnel away from the Battery.

The qualified service person must take these precautions:

- 1 Wear protective clothing, such as rubber gloves and boots and protective eye wear.
Battery contain caustic acids and toxic materials and can rupture or leak if mistreated.
Remove rings and metal wristwatches or other metal objects and jewellery.
Do not carry metal objects in your pockets where the objects can fall into the Battery cabinet. High energy through conductive materials could cause severe burns.
- 2 Tools must have insulated handles and must be insulated so that they will not short Battery terminals.
Do not allow a tool to short between individual or separate Battery terminals or to the cabinet or rack.
Do not lay tools or metal parts on top of the Battery and do not lay them where they could fall onto the Battery or into the cabinet.
- 3 Disconnect charging source prior to connecting or disconnecting Battery terminals.
Install the Battery as shown on the drawing provided with the Battery.
When connecting cables, never allow a cable to short across a Battery's terminals, the string of Battery, or to the cabinet or rack.
- 4 Align the cables on the Battery terminals so that the cable lug will not contact any part of the cabinet or rack, even if the Battery is moved.
Keep the cable away from any sharp metal edges.
- 5 Install the Battery cables in such a way that the UPS or Battery cabinet doors cannot pinch them.
- 6 Do not connect the Battery terminal to Ground.
If any Battery terminal is inadvertently grounded, remove the source of the ground.
Contacting any part of a grounded Battery can cause a risk of electric shock.
- 7 Determine if Battery is inadvertently grounded. If inadvertently grounded, remove source from ground.
Contact with any part of a grounded Battery can result in electrical shock.
The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance.
- 8 To reduce the risk of fire or electric shock, install the Battery in a temperature and humidity controlled indoor area, free of contaminants.
- 9 Battery system chassis ground (earth) must be connected to the UPS chassis ground (earth).
If you use conduits, this ground conductor must be routed in the same conduit as the Battery conductors.
- 10 Where conductors may be exposed to physical damage, protect the conductors in accordance with all applicable codes.
- 11 If you are replacing the Battery or repairing Battery connections, shut OFF the UPS and remove the Battery fuses.

1.1 Safety symbols and warnings

Safety warnings

The text of this manual contains some warnings to avoid risk to the persons and to avoid damages to the UPS system and the supplied critical loads.

The non-observance of the warnings reminding hazardous situations could result in human injury and equipment damages.

Please pay attention to the meaning of the following warnings and symbols.

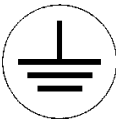
Throughout this manual the following symbols are defined:



Warning, if instruction is not followed injury or serious equipment damage may occur!



**Caution, internal parts have dangerous voltage present.
Risk of electric shock!**



**PE (Earth) – GND (Ground)
Protective Grounding terminal:
A terminal which must be connected to earth ground prior to making any other connection to the equipment.**



A terminal to which or from which an alternating (sine wave) current or voltage may be applied or supplied.



A terminal to which or from which a direct current or voltage may be applied or supplied.



This symbol indicated the word “phase”.



This symbol indicates the principal ON/OFF switch in the on position.



This symbol indicates the principal ON/OFF switch in the off position.

1.2 Cyber security



**UPS must be protected in a Security Restricted Area.
UPS must be installed in a location/room with mechanical lock.
Limit access to authorized personnel only and it shall stay under Authorized Personnel Operator to manage the accesses.**

2 Layout

2.1 Layout TLE Scalable Series 40 to 150

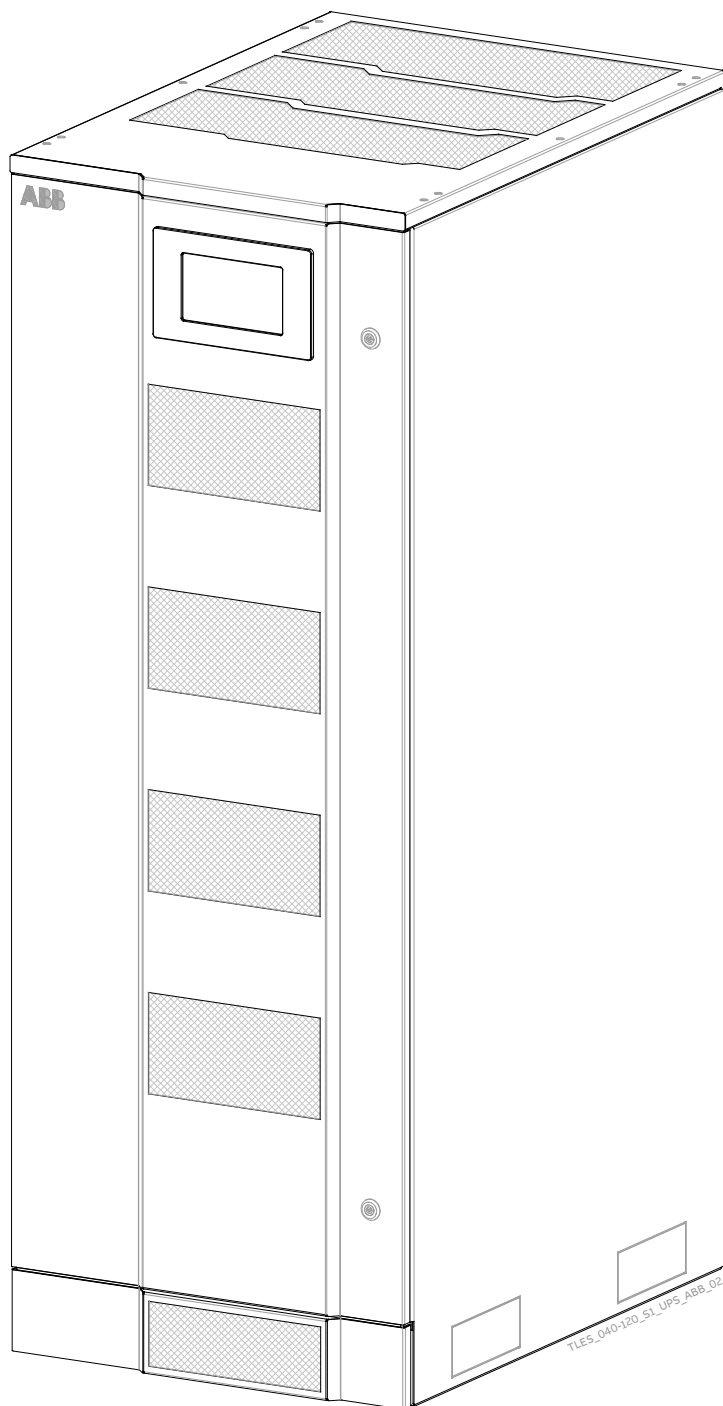


Fig. 2.1-1 TLE Scalable Series 40 to 150 - General view



Fig. 2.1-2 Control panel

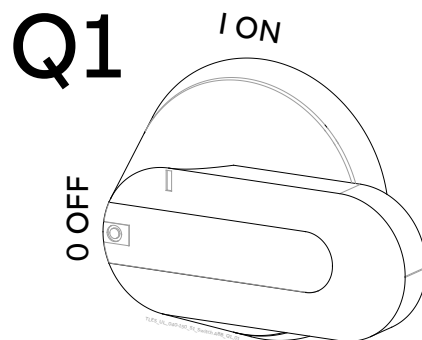


Fig. 2.1-3 Q1 - UPS Output switch

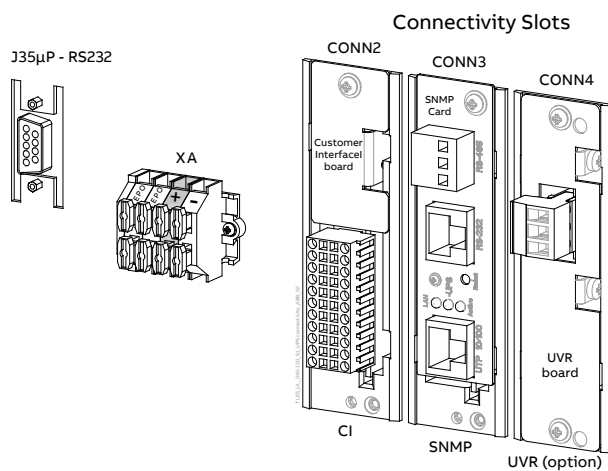


Fig. 2.1-4 Connectivity Slots

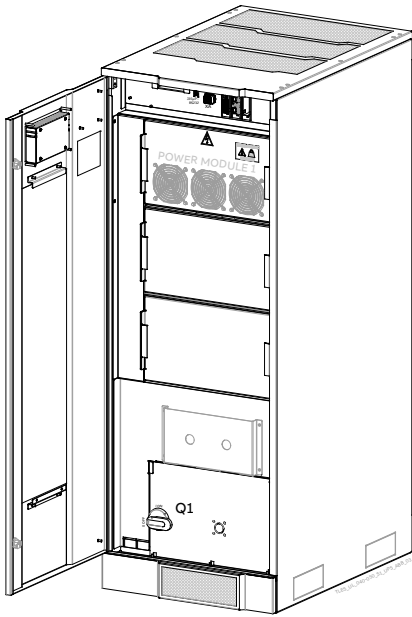


Fig. 2.1-5 TLE Scalable Series 40 & 50
General view with open door

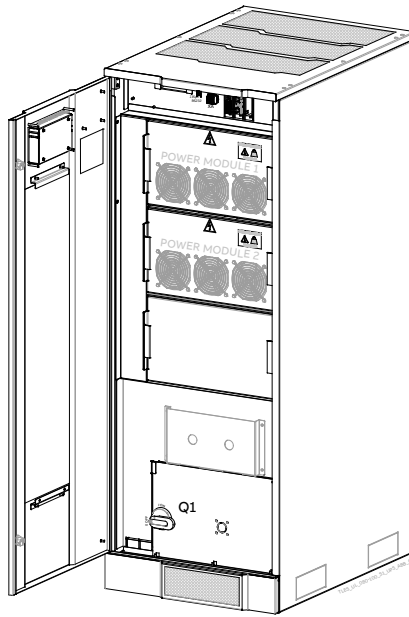


Fig. 2.1-6 TLE Scalable Series 80 & 100
General view with open door

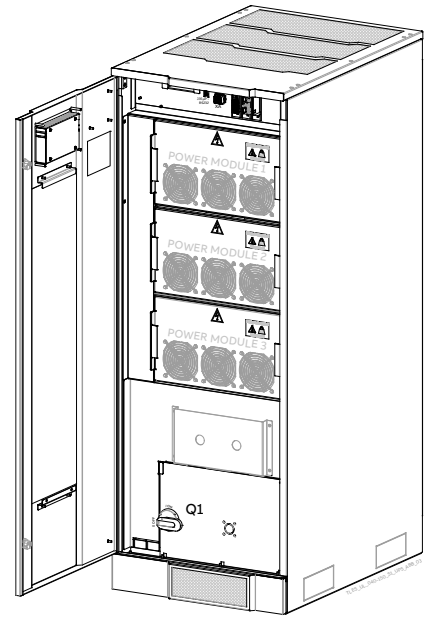


Fig. 2.1-7 TLE Scalable Series 120 & 150
General view with open door

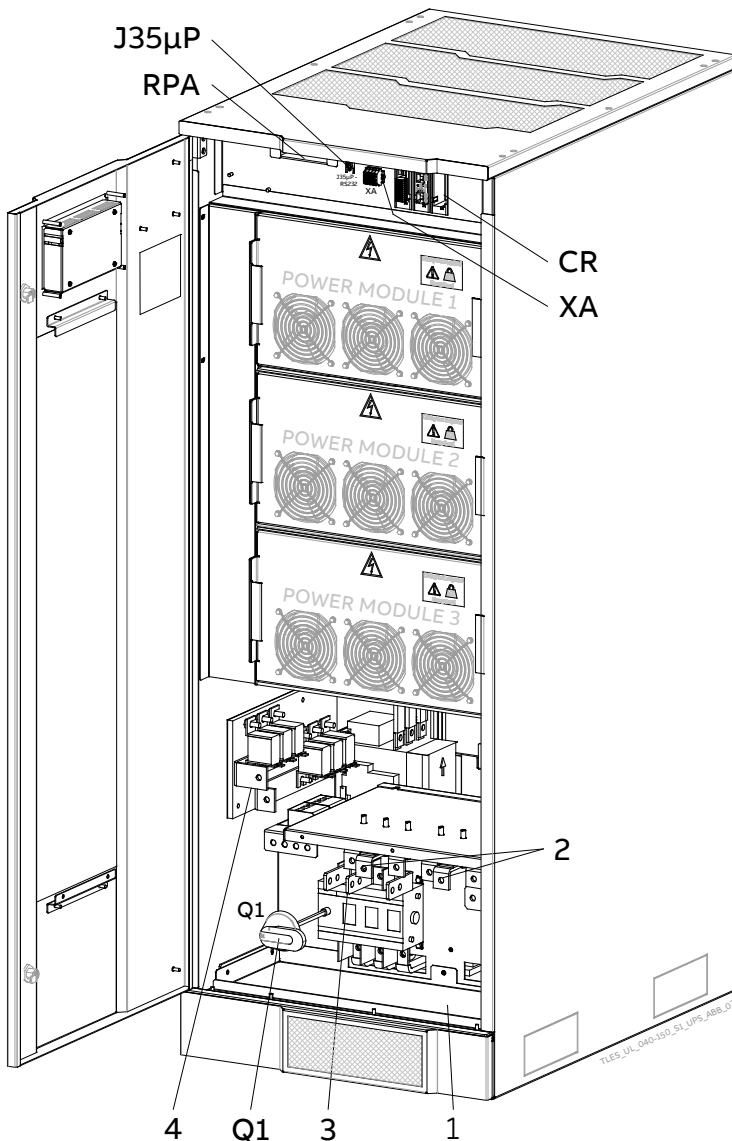


Fig. 2.1-8 TLE Scalable Series 40 to 150 - General front view without protection panels

- 1** Opening for bottom cables entry (*)
- 2** Bus bars for Utility Input connection
- 3** Bus bars for Load Output connection
- 4** Bus bars for external Battery connection
- CI** Customer Interface Board (see Fig. 2.1-4)
- CR** Connectivity Slots
- J35µP** Serial port RS232 for IMV protocol
- Q1** UPS Output switch
- RPA** RPA board (Redundant Parallel Architecture) for Parallel System (option)
- SNMP** 3-ph SNMP/WEB plug-in adapter (see Fig. 2.1-4)
- XA** Terminals for EPO (Emergency Power Off) and 24Vdc connection

***)** Remove this panel or provide means to capture metal filings from cutting conduit entry holes

3 Environment

3.1 Recycling instructions

**Note!**

This product has been designed to respect the environment, using materials and components respecting eco-design rules.

It does not contain CFCs (Carbon Fluor Clorid) or HCFCs (Halogen Carbon Fluor Clorid).

**Packing material recycling!**

ABB, in compliance with environment protection, uses only environmentally friendly material at the end of its service life, must be recovered conforming to the local applicable regulations.

UPS packing materials must be recycled in compliance with all applicable regulations.

**Recycling at the end of service life!**

ABB, in compliance with environment protection recommends to the User that the UPS equipment, at the end of its service life, must be recovered conforming to the local applicable regulations.

**Battery disposal!**

Leads contained in the Batteries is a dangerous substance for the environment, therefore it must be correctly recycled by specialized companies.



4 Installation

4.1 Transport

The UPS is packaged on a pallet suitable for handling with a forklift.

The UPS must be moved in **upright position**.

Do not tilt cabinets **more than $\pm 10^\circ$** during handling.

Move the UPS in its original package to the final destination site.

Do not stack other packages on top: This could damage the UPS.

Forklift

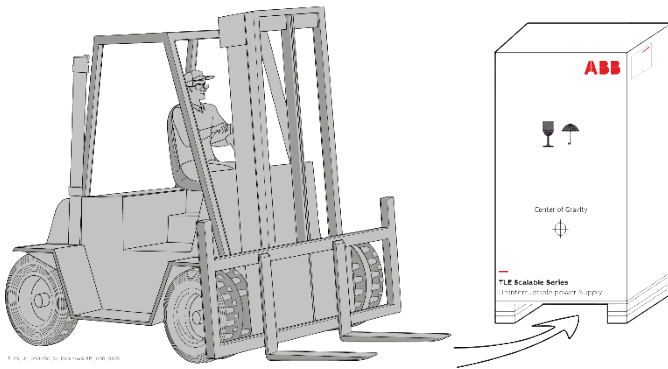


Fig. 4.1-1 Position of the forklift when moving the unpacked UPS

Crane

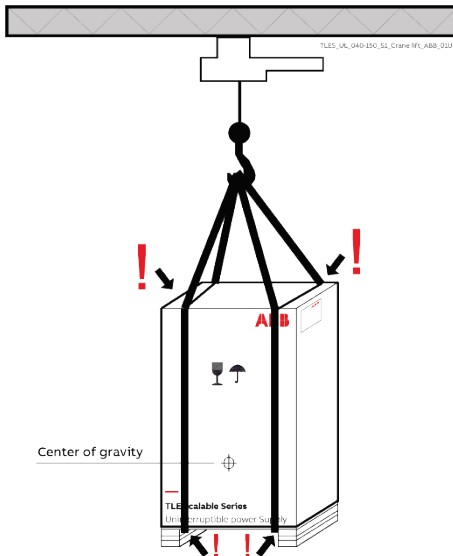


Fig. 4.1-2 Position of the carrying belts when moving the unpacked UPS

Forklift

The UPS must be lifted with a forklift in upright position.

Take note of the **Center of Gravity** marked on the package.



Warning!

Check for sufficient floor and elevator loading capacity.

Transport UPS only in upright position.

Do not stack other package on top of the UPS.

Crane

If the UPS has to be lifted by crane, use suitable carrying belts taking note of the **Center of Gravity** marked on the package.

Take all necessary precautions to avoid damage to the cabinet while hoisting the UPS.



Warning!

When loading / unloading and when moving the UPS, it is forbidden:

When loading / unloading and when moving the UPS, pay attention to:



4.1.1 Dimensions and weights TLE Scalable Series 40 to 150

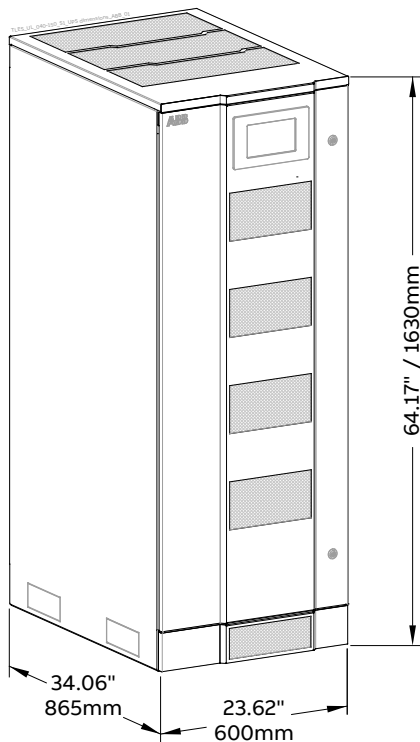


Fig. 4.1.1-1 TLE Scalable Series 40 to 150
Standard UPS cabinet dimensions

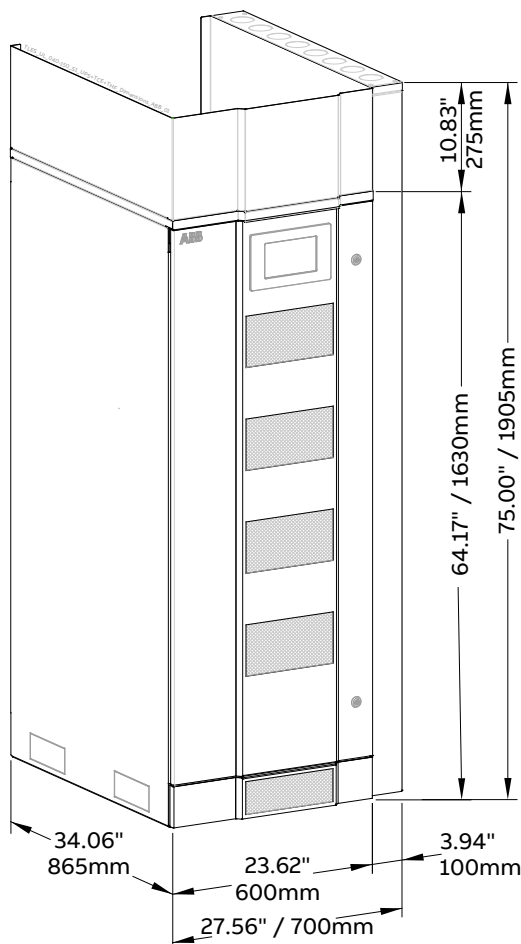


Fig. 4.1.1-2 TLE Scalable Series 40 to 150 with options
"Top Cable Entry" & "Top Hat Fascia"

TLE Scalable Series 40 & 50

Dimensions and weights

Dimensions (W x D x H)	Standard UPS	23.62 x 34.06 x 64.17 inches 600 x 865 x 1630 mm
	UPS with options "TCE" & "THF"	27.56 x 34.06 x 75.00 inches 700 x 865 x 1905 mm
Weight	Standard UPS	630 lbs / 286 kg
	UPS with options "TCE" & "THF"	740 lbs / 336 kg
Floor loading	Standard UPS	113 lbs/sq.ft - 551 kg/m ²
	UPS with options "TCE" & "THF"	133 lbs/sq.ft - 648 kg/m ²

TLE Scalable Series 80 & 100

Dimensions and weights

Dimensions (W x D x H)	Standard UPS	23.62 x 34.06 x 64.17 inches 600 x 865 x 1630 mm
	UPS with options "TCE" & "THF"	27.56 x 34.06 x 75.00 inches 700 x 865 x 1905 mm
Weight	Standard UPS	785 lbs / 356 kg
	UPS with options "TCE" & "THF"	895 lbs / 406 kg
Floor loading	Standard UPS	141 lbs/sq.ft - 686 kg/m ²
	UPS with options "TCE" & "THF"	160 lbs/sq.ft - 782 kg/m ²

TLE Scalable Series 100 & 150

Dimensions and weights

Dimensions (W x D x H)	Standard UPS	23.62 x 34.06 x 64.17 inches 600 x 865 x 1630 mm
	UPS with options "TCE" & "THF"	27.56 x 34.06 x 75.00 inches 700 x 865 x 1905 mm
Weight	Standard UPS	940 lbs / 426 kg
	UPS with options "TCE" & "THF"	1050 lbs / 476 kg
Floor loading	Standard UPS	168 lbs/sq.ft - 821 kg/m ²
	UPS with options "TCE" & "THF"	188 lbs/sq.ft - 917 kg/m ²

Battery cabinets

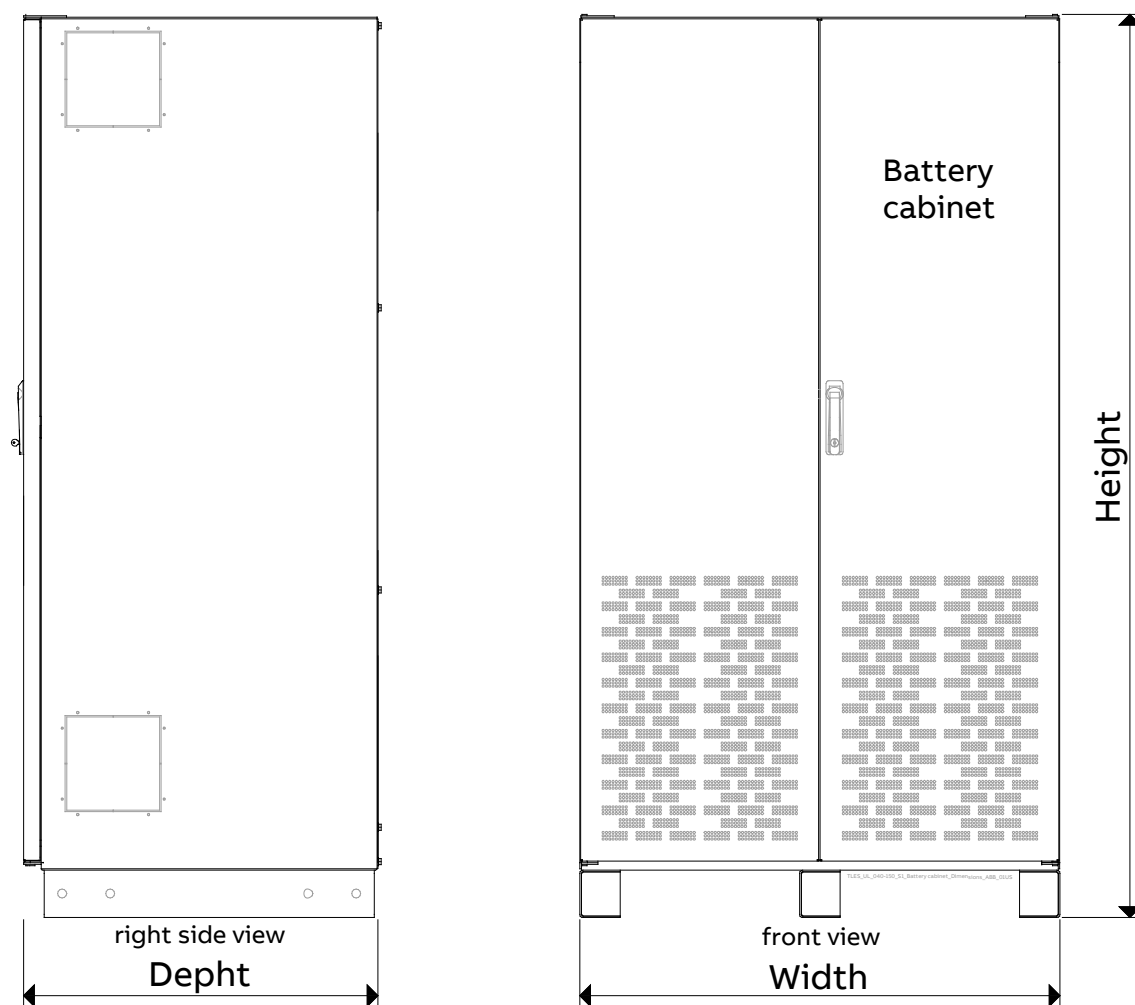


Fig. 4.1.1-3 Battery cabinet

Battery table

UPS	Battery capacity	Autonomy time	Dimensions (W x D x H)	Weights	Floor loading
TLE Scalable Series 150/40					
TLE Scalable Series 150/50			29.80 x 29.50 x 75.00 inches 757 x 750 x 1905 mm	*)	*)
TLE Scalable Series 150/80	*)	*)		Lbs	lbs/sq.ft
TLE Scalable Series 150/100	Ah HR	min.	40.00 x 29.50 x 75.00 inches	kg	kg/m ²
TLE Scalable Series 150/120			1016 x 750 x 1905 mm		
TLE Scalable Series 150/150					

*) For this and further information please consult the "Installation, Operation & Maintenance Manual" of the "Battery cabinet".



Note!

The weight of each single piece is marked outside the package!

4.2 Delivery

When delivered, inspect the **package integrity** and **the physical conditions of the cabinets** carefully.

In case of any damage sustained during transport, immediately inform the carrier and contact your local **ABB Service Center**.

A **detailed report** of the damage is necessary for any insurance claim.



Note!

A damaged UPS must never be installed or connected to Utility or Battery!

4.3 Storage

4.3.1 Storage of the UPS



The equipment is carefully packed for transport and storage so that it is in a perfect condition when eventually installed.

Never leave an UPS outside the building and do not store the UPS one on top of the other.

It is advisable to store the UPS in its original package in a dry, dust-free room, away from chemical substances, and with a temperature range not exceeding **-13°F (-25°C)** to **131°F (55°C)**.

In case the Battery is included please refer to Section 4.3.2.

Some important functions of the UPS, such as the customized functions, are defined by parameters stored in a **RAM memory**.

A small backup Battery located on the Control Unit board supplies the RAM.

If the storage time of the UPS exceeds **1 year**, these functions **should be verified** by an authorized Service Center before putting the UPS into operation.

4.3.2 Storage of Battery

When the delivery includes a maintenance free Battery, keep in mind that they are subject to self-discharge and therefore you must recharge the Battery.

The storage time without Battery recharge depends on the temperature of the storage site.

The optimal room temperature for Battery storage is **68°F (20°C)** to **77°F (25°C)** and shall never exceed the range **-4°F (-20°C)** to **104°F (40°C)**.



Recharge stored maintenance free Battery every:

6 months when the storage temperature is 68°F (20°C)

3 months when the storage temperature is 86°F (30°C)

2 months when the storage temperature is 95°F (35°C)

4.4 Place of installation

4.4.1 UPS location



Note!

UPS installation and connections must be performed by a qualified electrician.

If optional cabinets and accessories are included with the UPS, please refer to those accompanying manuals for installation and operating instructions.

The UPS is intended for use in electrical rooms.

Do not locate or stock easily flammable materials in the same room as the UPS.

It is important to have a clean, dust-free environment provided with proper ventilation and air-conditioning to keep the ambient temperature within the specified operating range.

The recommended air inlet temperature is from **68°F (20°C)** to **77°F (25°C)** (**max. 104°F / 40°C**). Refer to Section 4.5.

Check for **sufficient floor load capacity** before installing the UPS and the Battery. Refer to Section 4.1.1.

For Battery installation follow the local codes and the recommendation of the Battery supplier.



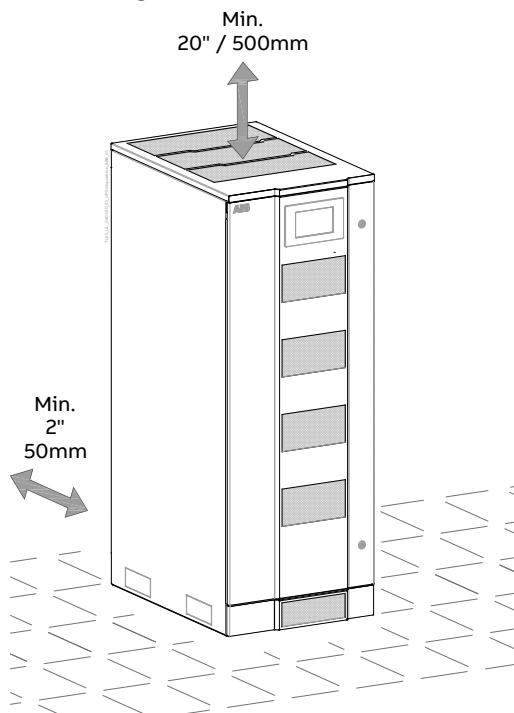
Note!

Operation at temperatures higher than **77°F (25°C)** will reduce Battery life.

Potential consequences are explained in the User Manual to Section 9.1.4: read and understand them.

The TLE Scalable Series 40 to 150 UPS can radiate radio frequency energy. Although some RFI (Radio Frequency Interference) filtering is inherent to the UPS there is no guarantee that the UPS will not influence sensitive devices such as cameras and monitors that are positioned close by. If interference is expected, the UPS should be moved away from the sensitive equipment.

Positioning of the UPS TLE Scalable Series 40 to 150



Clearance around the front of the unit should be sufficient to enable free passage of personnel with the doors fully open and to allow sufficient airflow to the door vents.

Check section 110-26(A) of the NEC code for specific requirements.

To guarantee proper cooling and exhausted air exchange, **it is mandatory** to maintain the following minimum distances:

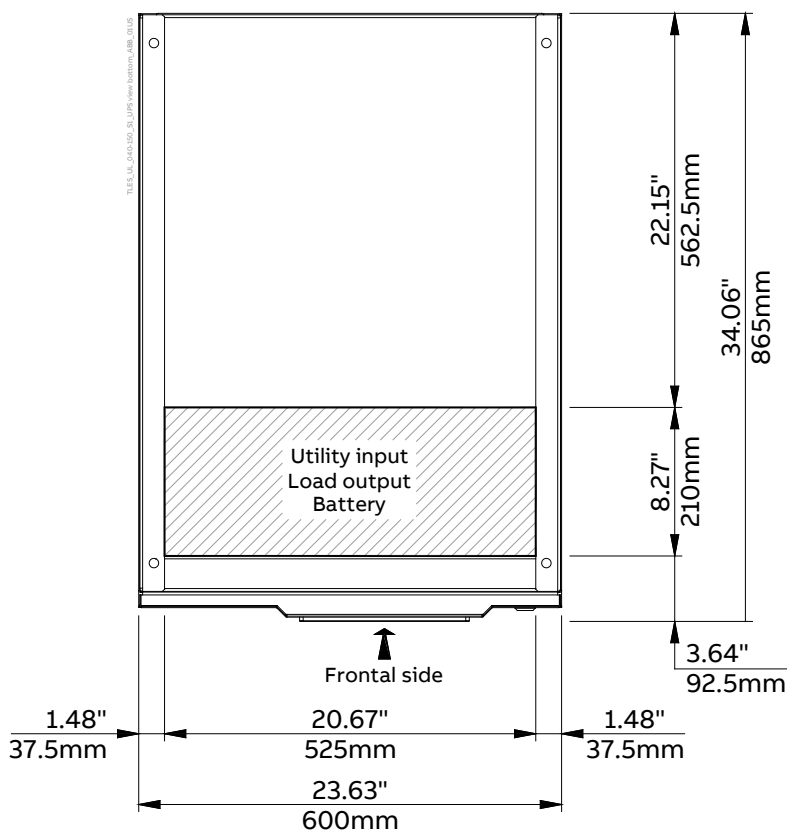
Rear side: **2" (50mm)**

Top of the UPS: **20" (500mm)**

A single-phase power outlet (120Vac) should be provided near the UPS for connection of power tools, test equipment or connectivity devices. This outlet must be grounded.

Fig. 4.4.1-1 TLE Scalable Series 40 to 150 – Positioning of the UPS

TLE Scalable Series 40 to 150 Opening for input and output cable connections



TLE Scalable Series 40 to 150 provided an opening on the bottom of the cabinet for the connection of input and output cables.

Pay attention to the position of this opening when choosing the placement of the UPS.

Fig. 4.4.1-2 TLE Scalable Series 40 to 150
Opening on the bottom of the cabinet for input and output cable connections

Fixing of the UPS cabinet TLE Scalable Series 40 to 150 on the floor

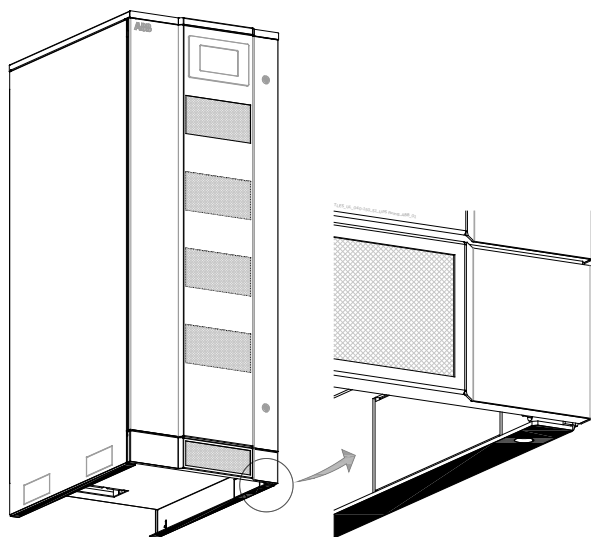


Fig. 4.4.1-3 TLE Scalable Series 40 to 150
UPS cabinet floor fixing points

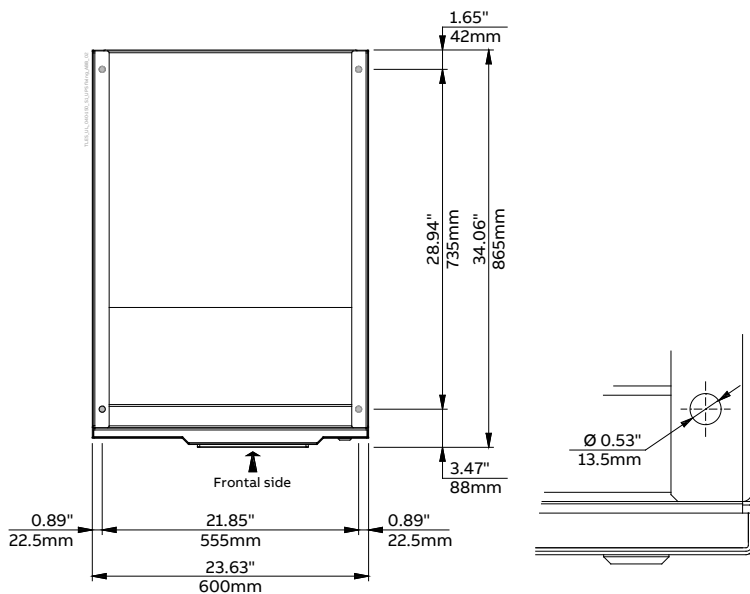


Fig. 4.4.1-4 TLE Scalable Series 40 to 150 – UPS cabinet floor fixing points

The UPS cabinet is free standing and normally does not require to be bolted to the floor.
The UPS cabinet can be fixed however to the floor by bolting it with the supporting blocks to the floor.

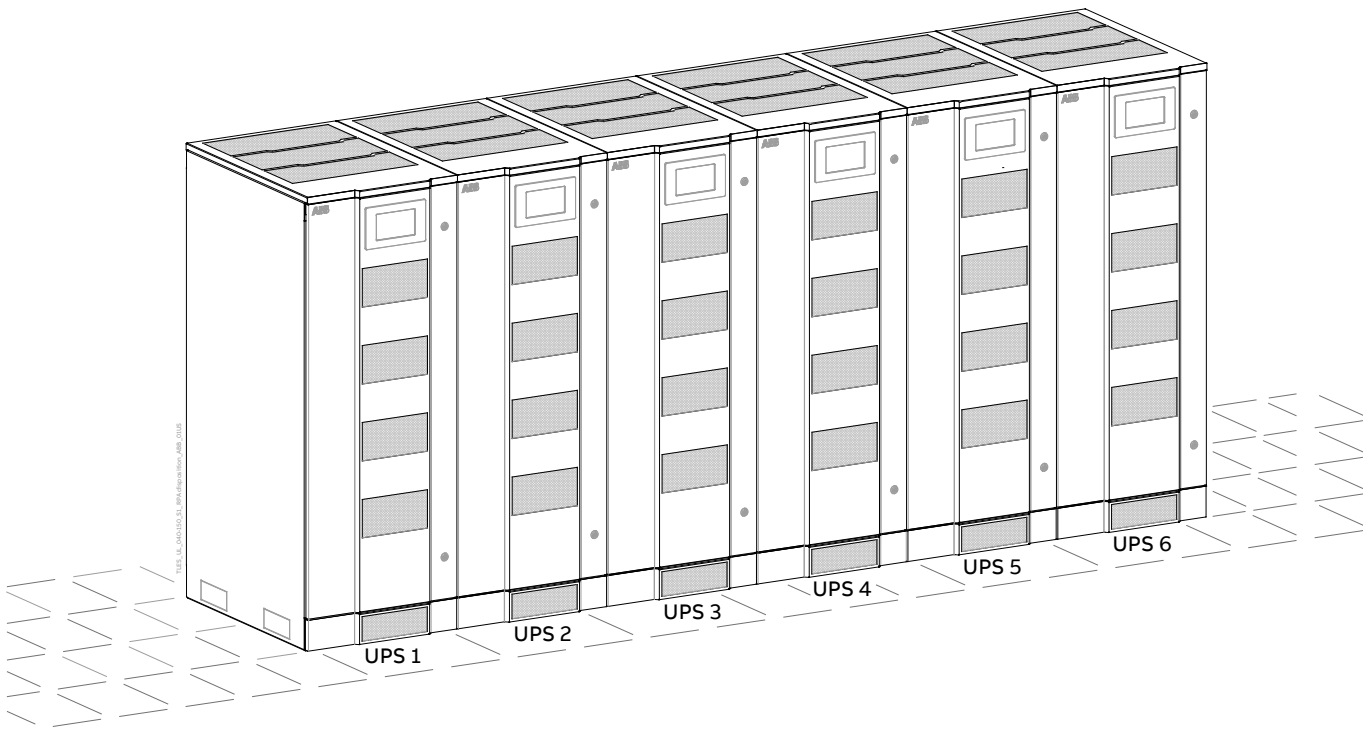


Fig. 4.4.1-5 TLE Scalable Series 40 to 150 – RPA Parallel System disposition



In case of RPA Parallel System, try to place the UPS modules in sequence of their numbers (marked on the packing).

If the units are positioned “side by side”, the side panels must be mounted on all units.

Remove the side air inlet grids on the intermediate units to run the control bus cable connections.

4.4.2 Battery location

Battery require a well-ventilated room with controlled temperature to obtain reliable operation.

The Battery can be installed immediately adjacent to the UPS (left or right side) or remotely from the UPS.

If the Battery is installed remotely from the UPS, a wall mounted DC disconnect device must be installed within line-of-site to both the UPS and the Battery.

The optimal room temperature for Battery location is **68°F (20°C) to 77°F (25°C)** and shall never exceed the range - **4°F (-20°C) to 104°F (40°C)**.

The life of valve-regulated Battery will be reduced by 50% for each additional **18°F (10°C)** that the Battery ambient temperature is above **77°F (25°C)**.

The Battery system associated with larger UPS is usually either rack mounted or installed in multiple Battery cabinets.

Installation and assembly must be made according to the local standards and Battery system manufacturer's recommendations.

The Battery circuit breaker or Battery fuse box must be mounted as near as possible to the Battery.

Warning!



Battery installation and connection must be performed by Qualified Personnel only.

Read all safety instructions before proceeding with the installation (see Chapter 1).

Battery discharging and/or charging activities may cause the emission of hydrogen gas; therefore, the room requires proper ventilation and fresh air.

Comply with the UL1778-CSAC22.2no170.3 UPS safety standard, ANSI/IEEE P1184 Guide for Batteries for Uninterruptible Power Supply Systems and applicable codes and governmental regulations.

4.5 Ventilation and cooling

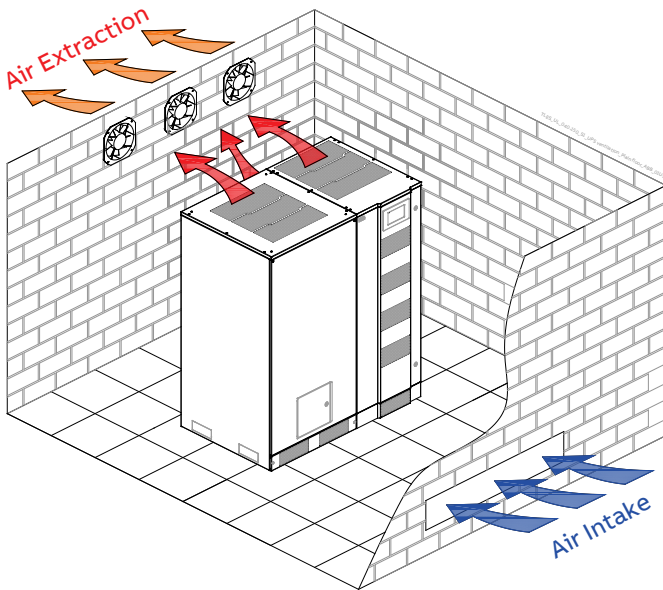


Fig. 4.5-1 Installation on plain floor

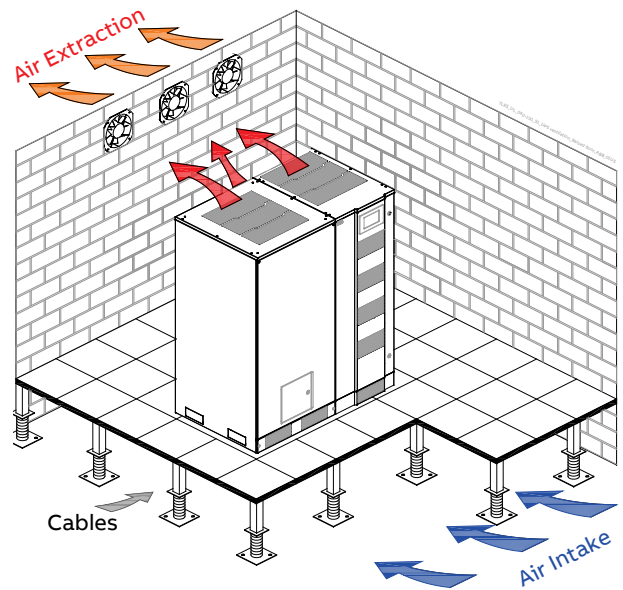


Fig. 4.5-2 Installation on raised floor

The heat produced by the UPS is transferred to the environment by its ventilation.

Air inlets for UPS ventilation are located on the front of the UPS, while air outlets are on top and rear of the cabinet.

A suitable ventilation or cooling system must be installed to extract the heat from the UPS room.



Note!

Do not put anything on the top of the cabinet.

20" (500mm) of air clearance from the top must be left free of any object for a sufficient exhausted air exchange, proper cooling, service access and safety.

Air filtering systems could be required when the UPS operates in a dirty environment.

In order to prevent overheating of the UPS, the available air intake flow rate must exceed the total air exhaust flow rate requirement of the UPS system.

Contact your **ABB Service Center** for appropriate solutions.

The below table indicates the heat dissipation at full Load at **PF = 0.9 & 1** and charged Battery, up to **3280 ft (1000 m)** altitude, for cooling air **77°F (25°C) to 86°F (30°C)**.

UPS model	Losses				Cooling air flow	
	VFI		SEM (Super Eco Mode)		VFI	
	PF = 0.9	PF = 1	PF = 0.9	PF = 1	PF = 0.9	PF = 1
TLE Scalable Series 150/40	6005 BTU/hr 1.760 kW	6142 BTU/hr 1.800 kW	1841 BTU/hr 0.540 kW	1911 BTU/hr 0.560 kW	872 CFM 513 m ³ /h	892 CFM 525 m ³ /h
TLE Scalable Series 150/50	7507 BTU/hr 2.200 kW	7677 BTU/hr 2.250 kW	1962 BTU/hr 0.575 kW	2047 BTU/hr 0.600 kW	1090 CFM 642 m ³ /h	1115 CFM 656 m ³ /h
TLE Scalable Series 150/80	11738 BTU/hr 3.440 kW	12011 BTU/hr 3.520 kW	3139 BTU/hr 0.920 kW	3276 BTU/hr 0.960 kW	1705 CFM 1003 m ³ /h	1744 CFM 1027 m ³ /h
TLE Scalable Series 150/100	15013 BTU/hr 4.400 kW	15355 BTU/hr 4.500 kW	3583 BTU/hr 1.050 kW	3753 BTU/hr 1.000 kW	2180 CFM 1283 m ³ /h	2230 CFM 1313 m ³ /h
TLE Scalable Series 150/120	18016 BTU/hr 5.280 kW	18426 BTU/hr 5.400 kW	4299 BTU/hr 1.260 kW	4504 BTU/hr 1.320 kW	2616 CFM 1540 m ³ /h	2676 CFM 1575 m ³ /h
TLE Scalable Series 150/150	22520 BTU/hr 6.600 kW	23544 BTU/hr 6.900 kW	5374 BTU/hr 1.575 kW	5630 BTU/hr 1.650 kW	3271 CFM 1925 m ³ /h	3419 CFM 2013 m ³ /h



Note!

The ventilation and cooling system shall be rated as for operation in VFI mode.

4.6 Unpacking

Move the equipment in it's original packing, wooden case, until the place of installation and remove the packing and the transport sockets only just before installing the UPS.

Be aware of the heavy weight of the UPS, pay attention when moving the UPS cabinet.



White color = without any anomaly
Red color = anomaly evidence



Fig. 4.6-1 ShockWatch device

The package of the TLE Scalable Series 40 to 150 is equipped with ShockWatch (indicator for shock) and TiltWatch (indicator for overthrow) on the outside.

These devices indicate an eventual shock or overthrow during transport.



Fig. 4.6-2 TiltWatch device



Note!

Whenever these devices show a possible anomaly, the UPS shall not be commissioned before consulting an ABB Service Centre.



Note!

Be aware of the heavy weight of the UPS, pay attention when moving the UPS cabinet.

Take care not to damage the UPS when moving by forklift.



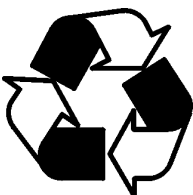
A damaged UPS must never be installed or connected to Utility or Battery!

In case of any damage sustained during the transport, immediately inform the shipping agent!

A detailed report of the damage is necessary for any indemnity claim.

Included in the delivery you can find the following parts:

- An accessory bag.
- Air inlet grids, which must be mounted on the bottom of the cabinet UPS with the screws included.
- Control Bus cables for inter-connecting the UPS modules (only for the RPA Parallel System).
- The documentation includes the "Installation Guide & User Manual" and the "UPS Safety Rules".



Packing material recycling

ABB, in compliance with environment protection, use only environmentally friendly material.

UPS packing materials must be recycled in compliance with all applicable regulations.

Anti-humidity & corrosion devices

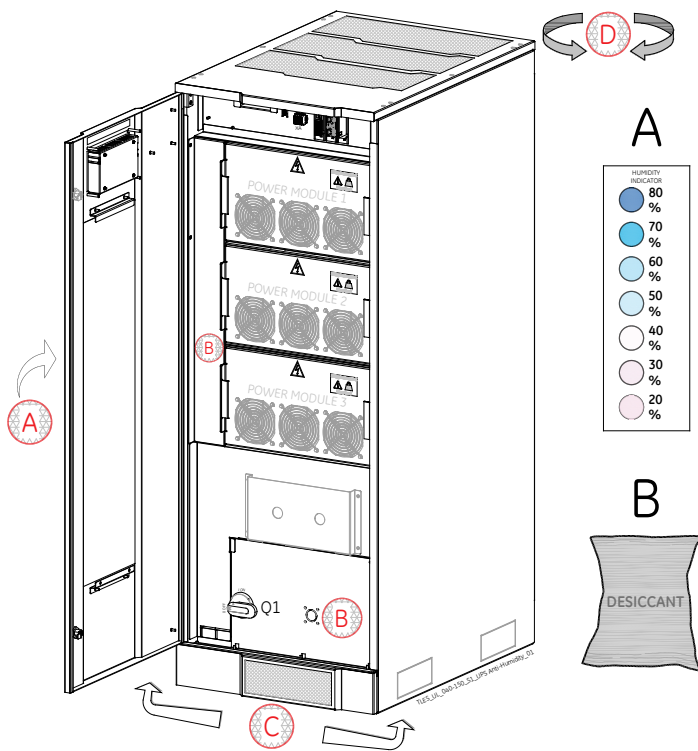


Fig. 4.6-3 TLE Scalable Series 40 to 150
Location of the "Anti-Humidity & Corrosion devices"

The package of the TLE Scalable Series 40 to 150 includes the "Anti-Humidity & Corrosion devices" against the formation of humidity and corrosion during the transportation and the storage of the UPS.

"Anti-Humidity & Corrosion devices" components:

- A Humidity indicator
- B Desiccant bag (2 pcs.)
- C VCI foil base
- D PE stretch foil

Warning!

It's **mandatory** to remove the "Anti-Humidity & Corrosion devices" during the unpacking of the UPS!

Humidity indicator

Before removing the devices "C - VCI foil base" & "D - PE stretch foil", check the status of the "A - Humidity indicator".

10% to 70%:

The UPS can be commissioned.

80%:

The UPS shall not be commissioned.

Please contact your ABB Service Center.

Protective foil

TLE Scalable Series 40 to 150 is provided with a "Protective Foil", on the roof and door/front panels, to prevent material from falling into UPS.

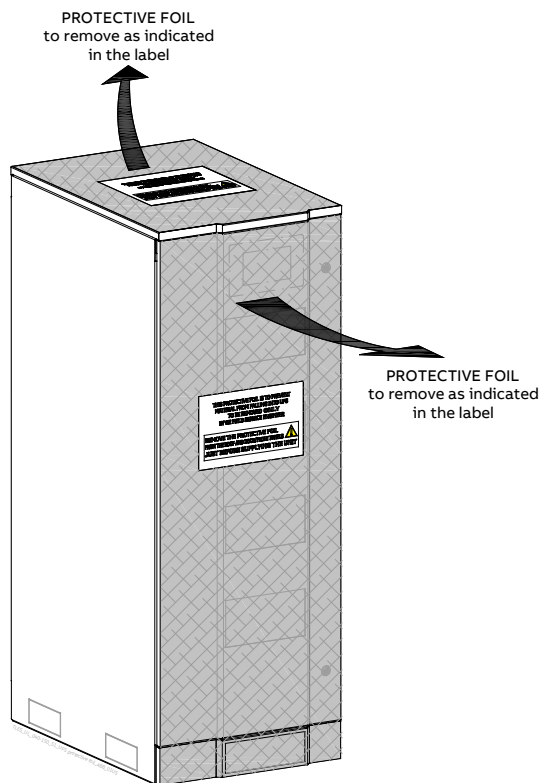


Fig. 3.6-4 TLE Scalable Series 40 to 150
Location of the "Protective Foil"

Warning!

It's **mandatory** to remove the "Protective Foil" but only just before the first startup of the UPS as indicated on the labeling. However, if UPS is installed where the rear of the unit is not accessible, the installing contractor shall remove the rear foil **ONLY** prior to unit installation.

Continued protection of the unit from foreign debris entering the back of the unit must be observed."

Packing material recycling!

ABB, in compliance with environment protection, uses only environmentally friendly material.

UPS packing materials must be recycled in compliance with all applicable regulations.

4.7 Electrical wiring



Warning!

UPS installation and connections must be performed by a qualified electrician.

Refer to the “Safety prescriptions - Installation” described on Chapter 1.

It is the responsibility of the installation technician to ensure that all local and national electric codes are adhered to.

4.7.1 Utility input connection



Note!

Ensure that the AC and DC external isolators are OFF and locked out to prevent their inadvertent operation.

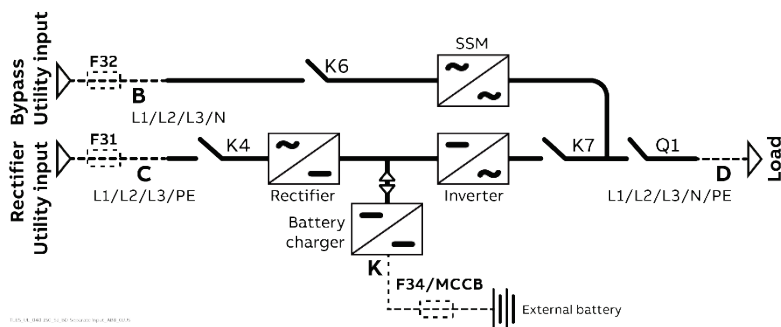
Do not apply power to the equipment prior to the commissioning by an ABB Service Technician.

Before any other input connection, connect and check the grounding wire.

The UPS has available input terminations for the Rectifier and Bypass.

The unit may be powered from a Common Input source or Dual Input sources if desired.

Dual Input Utility Rectifier & Bypass



The Bypass and Rectifier use different power sources (F31 and F32 inputs).

In this case, when the Rectifier-input fuses are opened, the Automatic Bypass is supplied by the other connection.

Fig. 4.7.1-1 Dual Input Utility Rectifier & Bypass



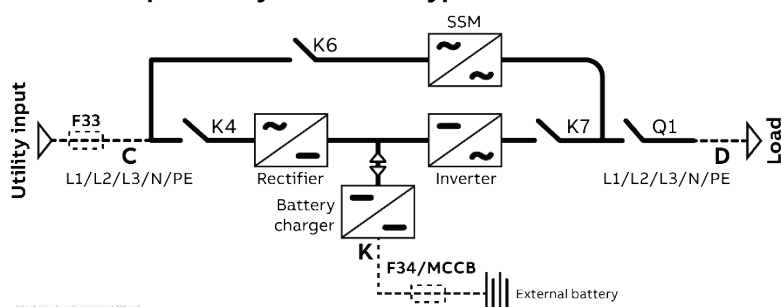
Note!

Always verify that the received UPS is as per the configuration ordered.

While installing UPS dual source, the interconnection links BR1, BR2 and BR3 must be removed. See Fig. 4.8.2-2.

Connect a single input Neutral to Bypass Utility (inside the UPS, common Neutral for Bypass and Rectifier).

Common Input Utility Rectifier & Bypass



The **same power source** is to be used for both Bypass supply and Rectifier input (input F3).

Bear in mind that when the Utility fuses are opened there is a supply failure to the Rectifier as well as to the Automatic Bypass.

Fig. 4.7.1-2 Common Input Utility Rectifier & Bypass



Note!

In this case, the interconnection links BR1, BR2 and BR3 on the input bus bars must remain connected.

4.7.2 Input/output over current protection and wire sizing

The cabling of the UPS system has to be sized according to the UPS power rating.

Sizing of circuit Breakers, Fuses and cables for Input Utility, output load and Battery must meet the requirements of local and national electrical codes.

Before connecting the UPS, verify that the Utility Voltage and Frequency, the Output Load Voltage and Frequency and Battery Data (cells number, floating voltage, autonomy) are according to the required data.

The protection of the UPS Utility input must be exclusively with 3 pole breakers.

In 4-wire distributions (3-phase, 4-wire plus ground):

- Disconnection of the Neutral is not permitted.
The UPS needs the connection of the Neutral to the input, to guarantee the function in TN mode (Neutral-Earth).
- Caution when using Four-Pole Circuit Breakers as protection to the UPS Load.
A potential problem exists for situations with non-linear Loads, causing the Neutral Current to be higher than the Phase Current.

Avoid to run the input cables in parallel with the output cables to prevent them from noise induction.

The Three-Phase Utility Power supply must be symmetrical with respect to Ground (wye-connected and grounded solidly), due to the existence of voltage surge protection devices inside the UPS.

The connection of the Battery to the UPS must be protected with fuses or similar devices according to technical specifications and in accordance with local standards.

Note!



If you use ELCB breaker (Earth Limiting Circuit Breaker) to protect the input connections, consider the high leakage current generated by the noise suppression capacitors.

If these ELCB breakers are strictly necessary, we suggest using the largest type suitable for non-linear current and for delayed operations.

Specific prescriptions apply for 3-wire (3-phase plus ground) distributions; refer to the specific section for details.

To ensure the circuit selectivity in case of **Short- Circuit in the Load equipment**, special care must be taken in choosing the **Fuse or Circuit Breaker ratings** installed in the output distribution circuits.

Due to the relatively low short-circuit capability of the UPS Inverter, a short-circuit in the Load will cause an immediate transfer to Utility.

The largest fuse in the output distribution should be **at least 1.6 time** smaller than the Fuses supplying the Bypass line.

If circuit selectivity is required while the Load is fed from the Inverter (Bypass Utility not available), the Largest Fuse or Circuit Breaker should be rated at no more than **20%** of the UPS Output Current Rating.

Note!



The delivery and installation of fuses and input/output connections of the UPS are at the customer's expense, unless agreed otherwise.

4.7.3 Data for Input/output and Battery over current protection and wire sizing

Note!

- Please read the safety precautions at the front of this guide carefully, and thoroughly review the Battery manufacturers installation and maintenance manual before connecting the Battery to the UPS.
- Remote Battery cabinet is external and not provided with UPS.
- For Battery and AC input and output circuits the disconnect device is not provided inside the UPS. It shall be part of the building installation.
- Protect Battery and AC input and output circuits with an appropriate UL489 Branch Circuit Protection (DC fuse or circuit breaker), using the current data in the chart below.
- Minimum Battery cable requirement is based on the current data below.
- The maximum available fault current from the Battery supply is: 20kA.
- The minimum breaker voltage rating is 540V.

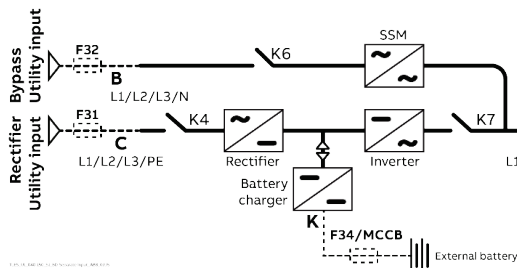


Fig. 4.7.3-1 Dual Input Utility Rectifier & Bypass

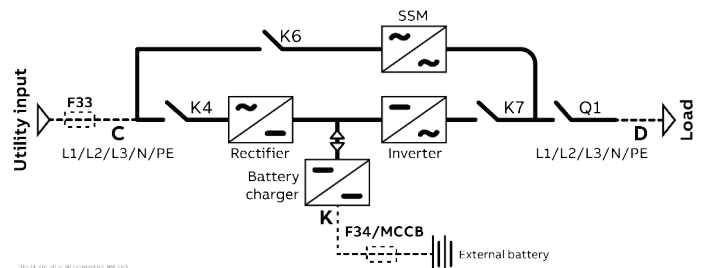


Fig. 4.7.3-2 Common Input Utility Rectifier & Bypass

The AC values below are current ratings per phase.

These maximum and nominal ratings should be considered when choosing the appropriate AC over current protection device.

NEC (National Electric Code) Section 210-20 a rule must be applied.

DC current rating is the nominal Battery discharge current which the UPS allows (see Fig. 4.7.3-1 & Fig. 4.7.3.2).

UPS rating	AC Input Rectifier		AC Input Bypass	AC Input		DC Input
	F31 Nom.	Max.	F32	F33 Nom.	Max.	F4
TLE Scalable Series 150/40	51 A	59 A	48 A	51 A	59 A	106 A
TLE Scalable Series 150/50	64 A	71 A	60 A	64 A	71 A	120 A
TLE Scalable Series 150/80	102 A	132 A	96 A	102 A	117 A	193 A
TLE Scalable Series 150/100	128 A	142 A	120 A	128 A	142 A	241 A
TLE Scalable Series 150/120	153 A	175 A	158 A	153 A	175 A	289 A
TLE Scalable Series 150/150	192 A	213 A	198 A	192 A	213 A	361 A

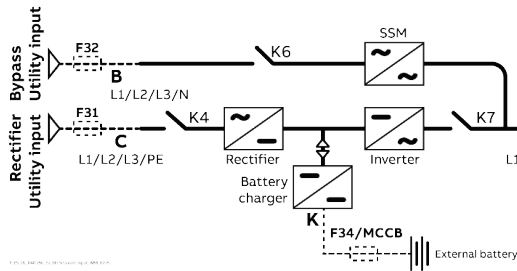


Fig. 4.7.3-3 Dual Input Utility Rectifier & Bypass

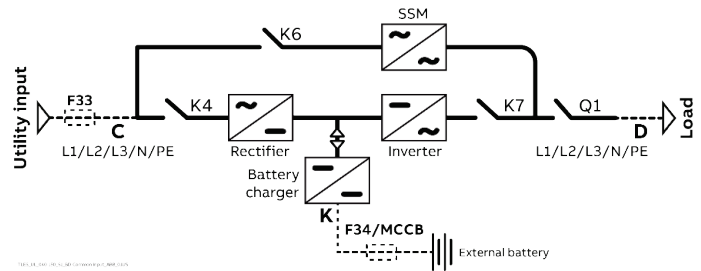


Fig. 4.7.3-4 Common Input Utility Rectifier & Bypass

Size of Branch Circuit Over Current Protection - All Models: - "CAUTION - To reduce the risk of fire, only connect UPS to a circuit provided with (See below) maximum amperes branch circuit over current protection in accordance with the NEC (National Electric Code), NSI / NFPA 70

UPS rating	F31 AC Input Rectifier	F32 AC Input Bypass	F33 AC Input	F4 DC Input
TLE Scalable Series 150/40	80 A	60 A	80 A	110 A
TLE Scalable Series 150/50	90 A	90 A	90 A	125 A
TLE Scalable Series 150/80	175 A	175 A	175 A	200 A
TLE Scalable Series 150/100	175 A	175 A	175 A	250 A
TLE Scalable Series 150/120	225 A	200 A	225 A	300 A
TLE Scalable Series 150/150	300 A	250 A	300 A	400 A

Wiring!

Wire sizing according to

NEC Section 210-20 (a) Table 310-16

Use 194°F (90°C) copper or aluminum wire.



Wiring requirements:

AC Input Rectifier	3-Phase, 4 wire plus Ground
AC Input Bypass	3-Phase, 4 wire plus Ground
AC Output	3-Phase, 4 wire plus Ground
DC Input	2 wire (positive and negative) plus Ground.

Maximum recommended cable size

UPS rating	Rectifier Input	Bypass Input	DC Input	AC Output	GND
TLE Scalable Series 150/40	1x AWG 2	1x AWG 4	1x AWG 1	1x AWG 4	AWG 6
TLE Scalable Series 150/50	1x AWG 1	1x AWG 1	1x AWG 1/0	1x AWG 1	AWG 6
TLE Scalable Series 150/80	1x AWG 4/0	1x AWG 4/0	1x AWG 4/0	1x AWG 3/0	AWG 4
TLE Scalable Series 150/100	1x AWG 4/0	1x AWG 4/0	2x AWG 2/0	1x AWG 4/0	AWG 4
TLE Scalable Series 150/120	2x AWG 2/0	2x AWG 1/0	2x AWG 3/0	2x AWG 1/0	AWG 4
TLE Scalable Series 150/150	2x AWG 3/0	2x AWG 3/0	2x AWG 4/0	2x AWG 3/0	AWG 3

NEC Section 210-20 (a)

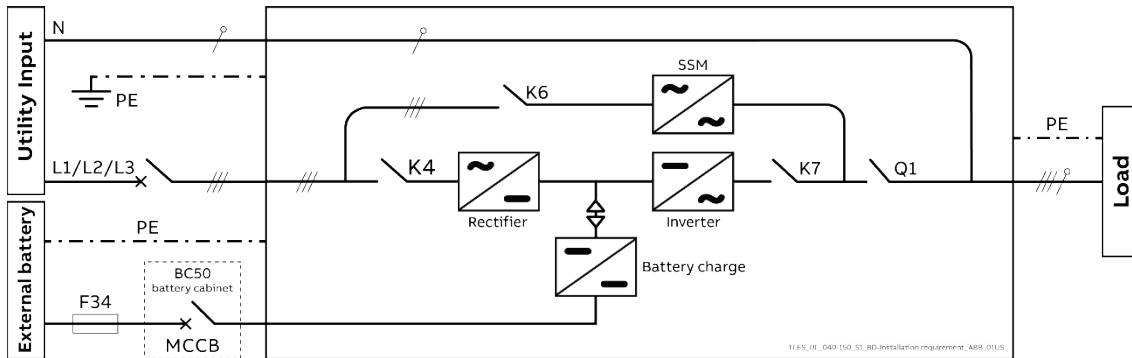
Table 310-16. Allowable Ampacities of Insulated Conductors Rated 0 Through 2000 Volts, 140°F Trough 194°F (60°C Trough 90°C) Not More than Three Current-Carrying Conductors in Raceway, Cable, or Earth (Directly Buried), Based on Ambient Temperature of 86°F (30°C).

Temperature Rating of Conductor (See table 310-13)						
Size	140°F (60°C)	140°F (60°C)	194°F (90°C)	140°F (60°C)	167°F (75°C)	194°F (90°C)
	Types TW, UF	Types FEPW, RH, RHW, THHW, THW, THWN, XHHW, USE, ZW	Types TBS, SA, SIS, FEP, FEPB, MI, RHH, RHW-2, THHN, THHW, THW-2, THWN-2, USE-2, XHH, XHHW, XHHW-2, ZW-2	Types TW, UF	Types RH, RHW, THHW, THW, THWN, XHHW, USE	Types TBS, SA, SIS, THHN, THHW, THW-2, THWN-2, RHH, RHW-2, USE-2, XHH, XHHW, XHHW-2, ZW-2
AWG or kcmil						
	Copper			Aluminum or Copper-Clad Aluminum		
18	---	---	14	---	---	---
16	---	---	18	---	---	---
14	20	20	25	---	---	---
12	25	25	30	20	20	25
10	30	35	40	25	30	35
8	40	50	55	30	40	45
6	55	65	75	40	50	60
4	70	85	95	55	65	75
3	85	100	110	65	75	85
2	95	115	130	75	90	100
1	110	130	150	85	100	115
1/0	125	150	170	100	120	135
2/0	145	175	195	115	135	150
3/0	165	200	225	130	155	175
4/0	195	230	260	150	180	205
250	215	255	290	170	205	230
300	240	285	320	190	230	255
350	260	310	350	210	250	280
400	280	335	380	225	270	305
500	320	380	430	260	310	350
600	355	420	475	285	340	385
700	385	460	520	310	375	420
750	400	475	535	320	385	435
800	410	490	555	330	395	450
900	435	520	585	355	425	480
1000	455	545	615	375	445	500
1250	495	590	665	405	485	545
1500	520	625	705	435	520	585
1750	545	650	735	455	545	615
2000	560	665	750	470	560	630
CORRECTION FACTORS						
Ambient Temperature	For ambient temperatures other than 86°F (30°C), multiply the allowable ampacities shown above by the appropriate factor below					
70 – 77°F (21 – 25°C)	1.08	1.05	1.04	1.08	1.05	1.04
79 – 86°F (26 – 30°C)	1.00	1.00	1.00	1.00	1.00	1.00
88 – 95°F (31 – 35°C)	0.91	0.94	0.96	0.91	0.94	0.96
97 – 104°F (36 – 40°C)	0.82	0.88	0.91	0.82	0.88	0.91
106 – 113°F (41 – 45°C)	0.71	0.82	0.87	0.71	0.82	0.87
115 – 122°F (46 – 50°C)	0.58	0.75	0.82	0.58	0.75	0.82
124 – 131°F (51 – 55°C)	0.41	0.67	0.76	0.41	0.67	0.76

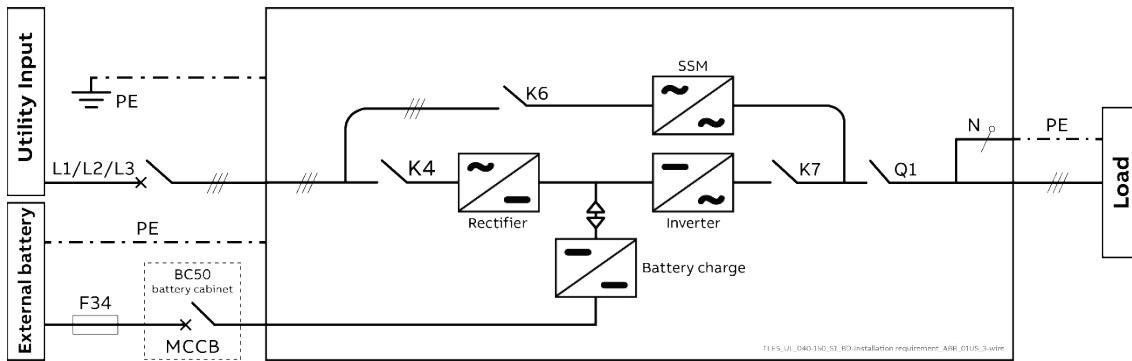
4.7.4 Installation requirements

Typical examples for the connection of the TLE Scalable Series 40 to 150.

Single UPS with Common Input Utility for Rectifier & Bypass.

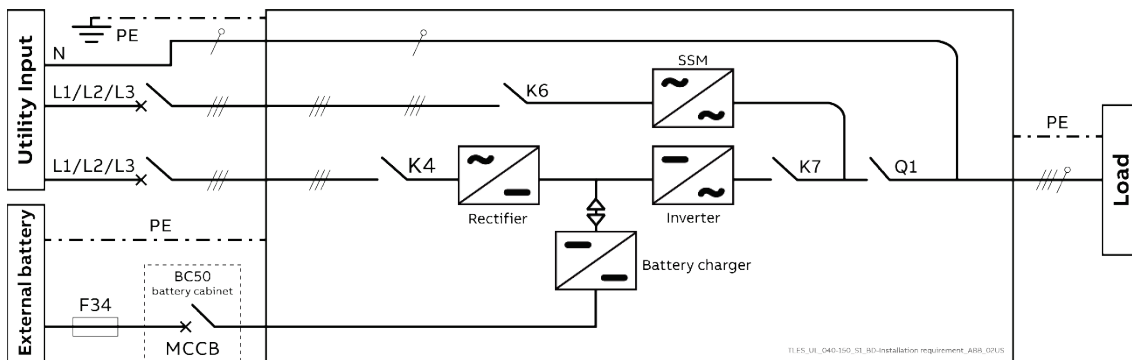


Single UPS with Common Input Utility for Rectifier & Bypass, 3-wire distribution (3-phase plus ground)

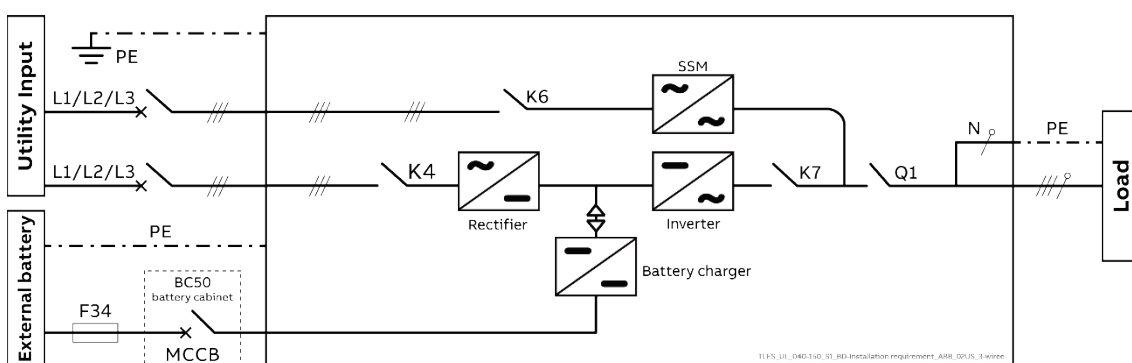


Single UPS with Dual Input Utility for Rectifier & Bypass

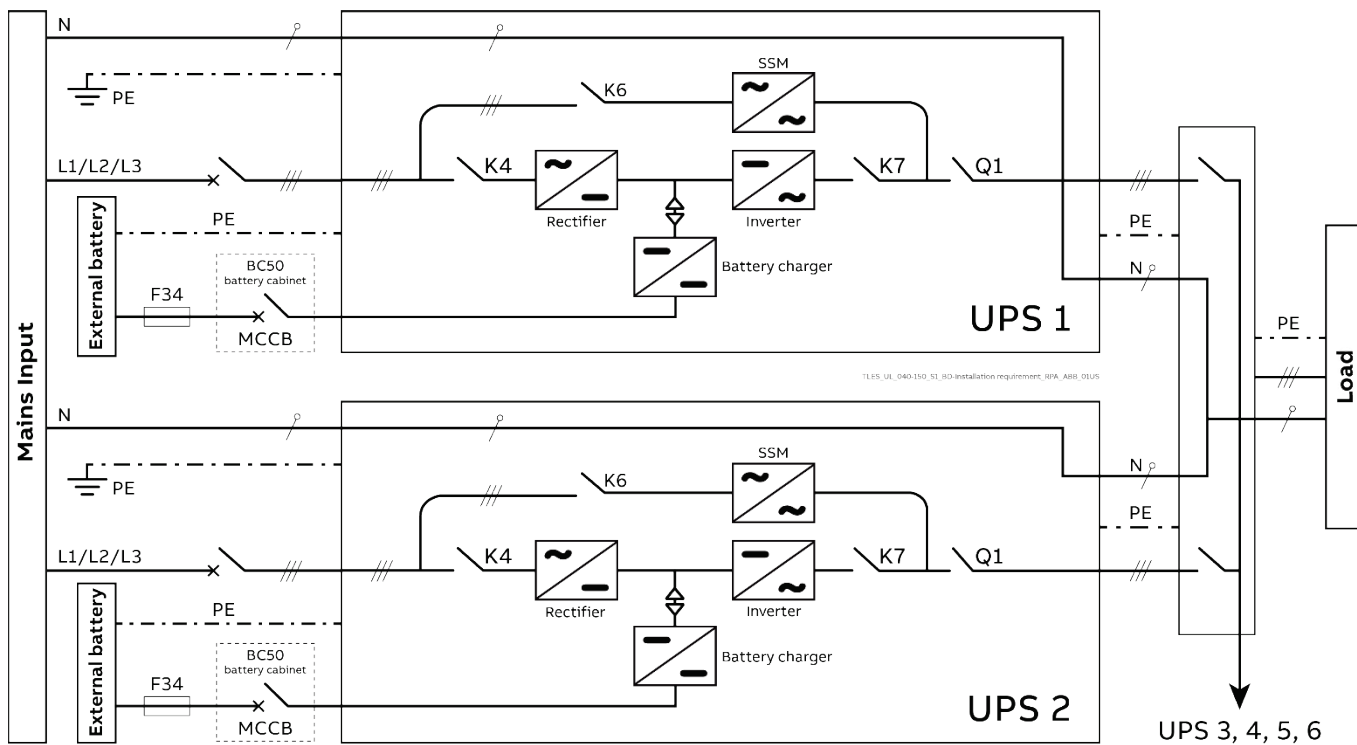
(Connect a single input Neutral to Bypass Utility (inside the UPS, common Neutral for Bypass and Rectifier))



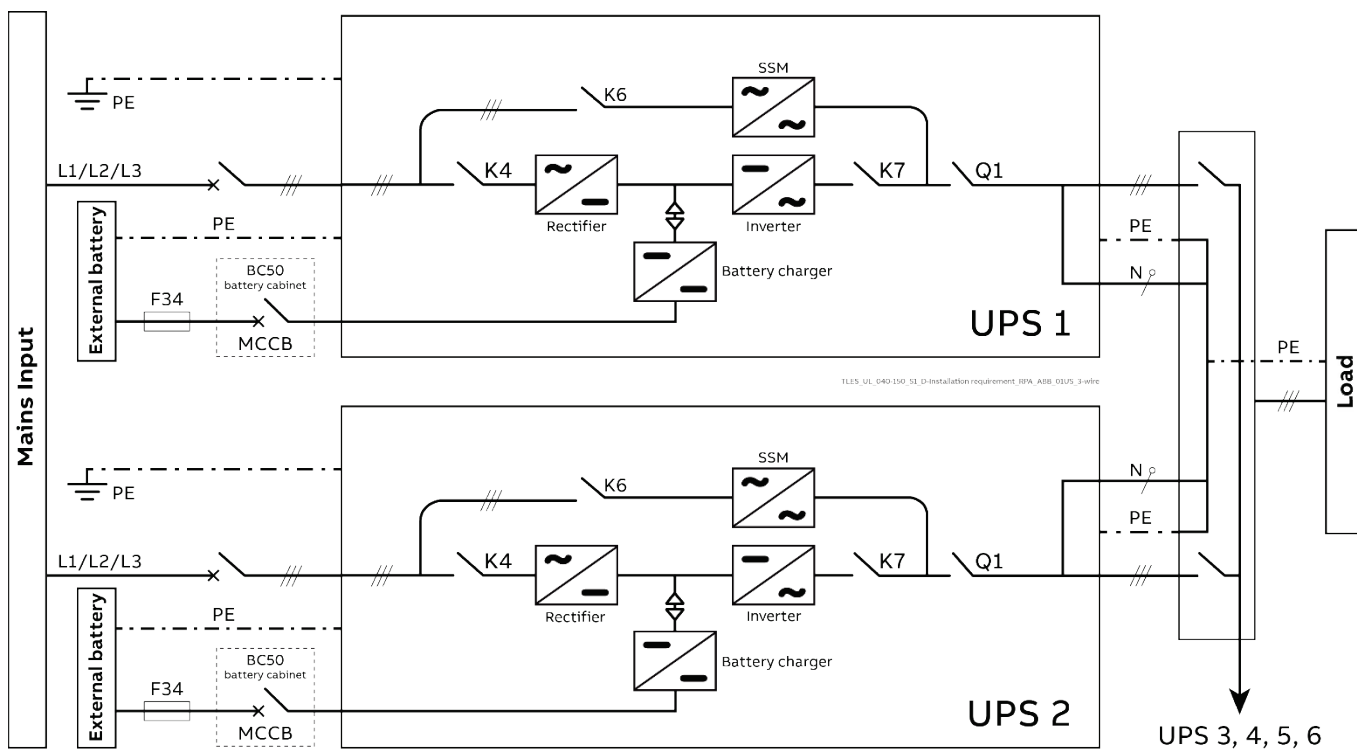
Single UPS with Dual Input Utility for Rectifier & Bypass, 3-wire distribution (3-phase plus ground)



UPS RPA Parallel System with Common Input Utility Rectifier & Bypass

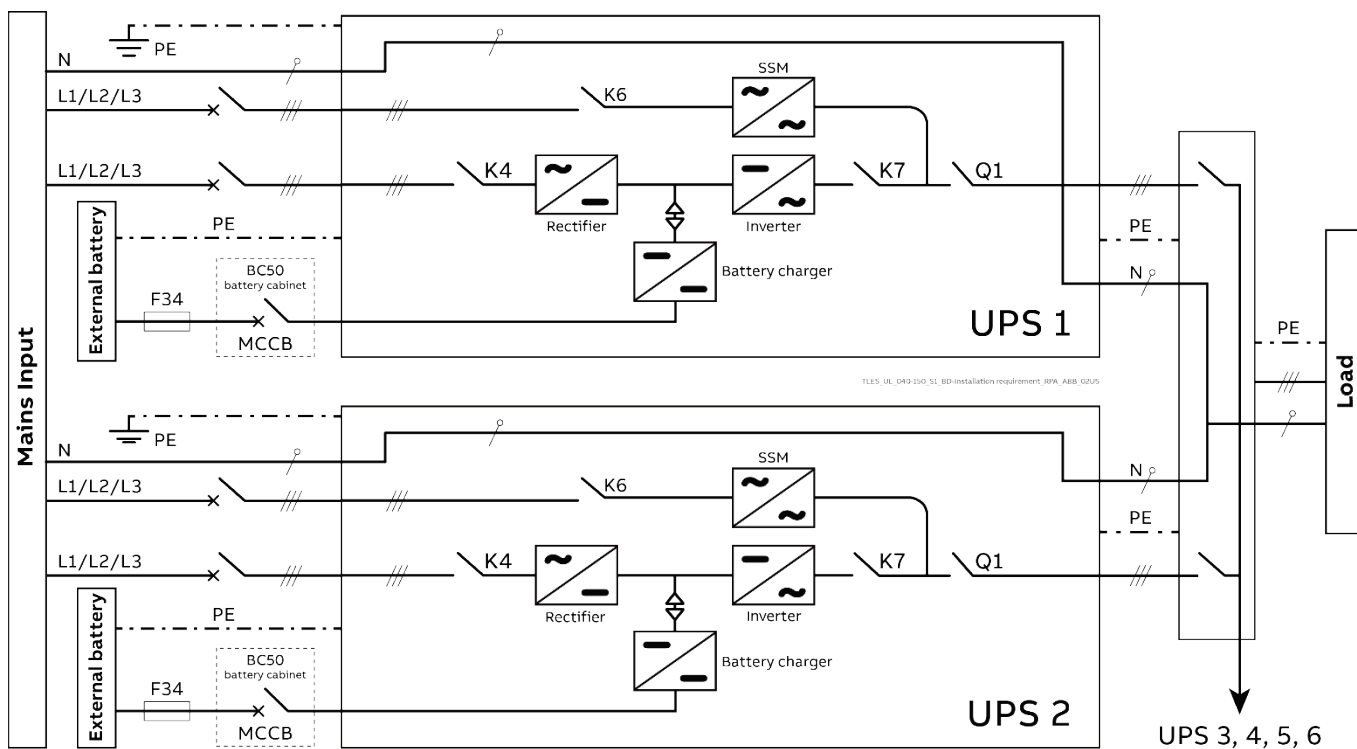


UPS RPA Parallel System with Common Input Utility Rectifier & Bypass, 3-wire distribution (3-phase plus ground)

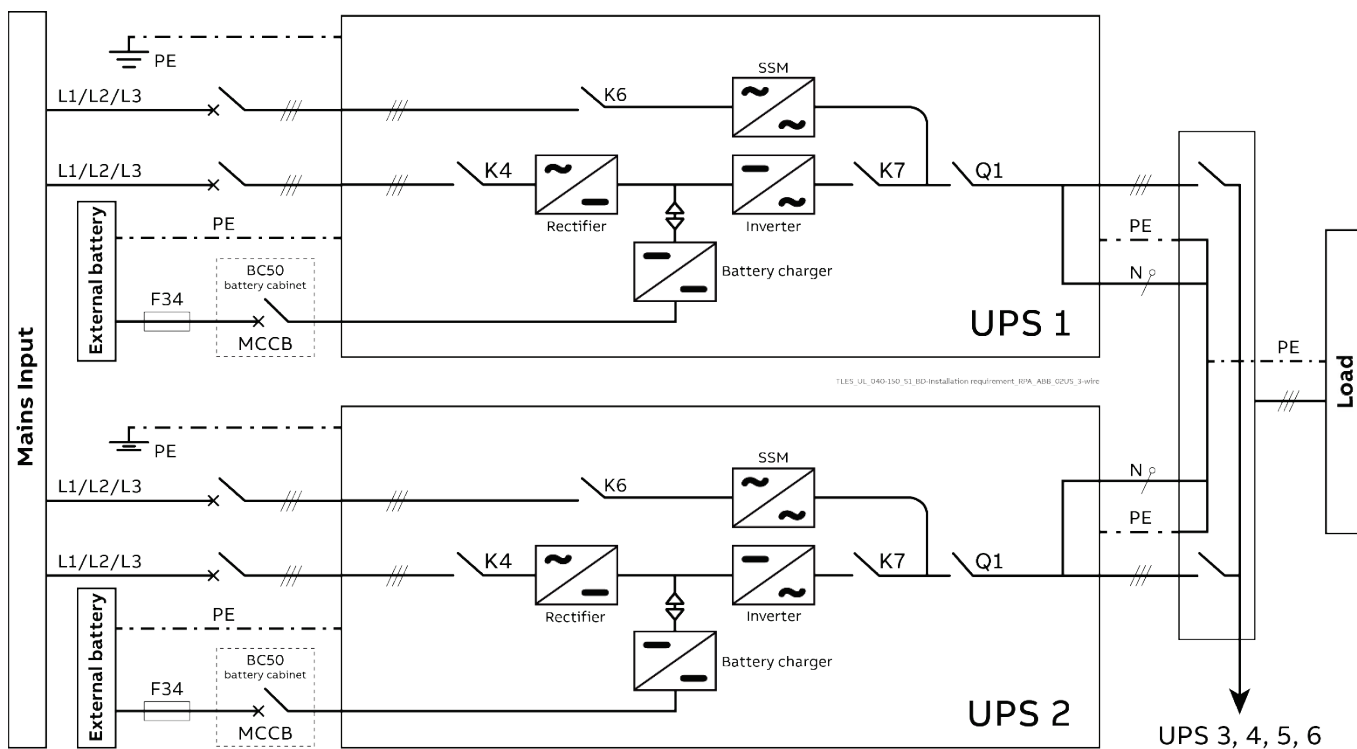


UPS RPA Parallel System with Dual Input Utility for Rectifier & Bypass

(Connect a single input Neutral to Bypass Utility (inside the UPS, common Neutral for Bypass and Rectifier))



UPS RPA Parallel System with Dual Input Utility for Rectifier & Bypass 3-wire distribution (3-phase plus ground)



4.8 Wiring connection



Note!

UPS installation and connections must be performed by a qualified electrician.

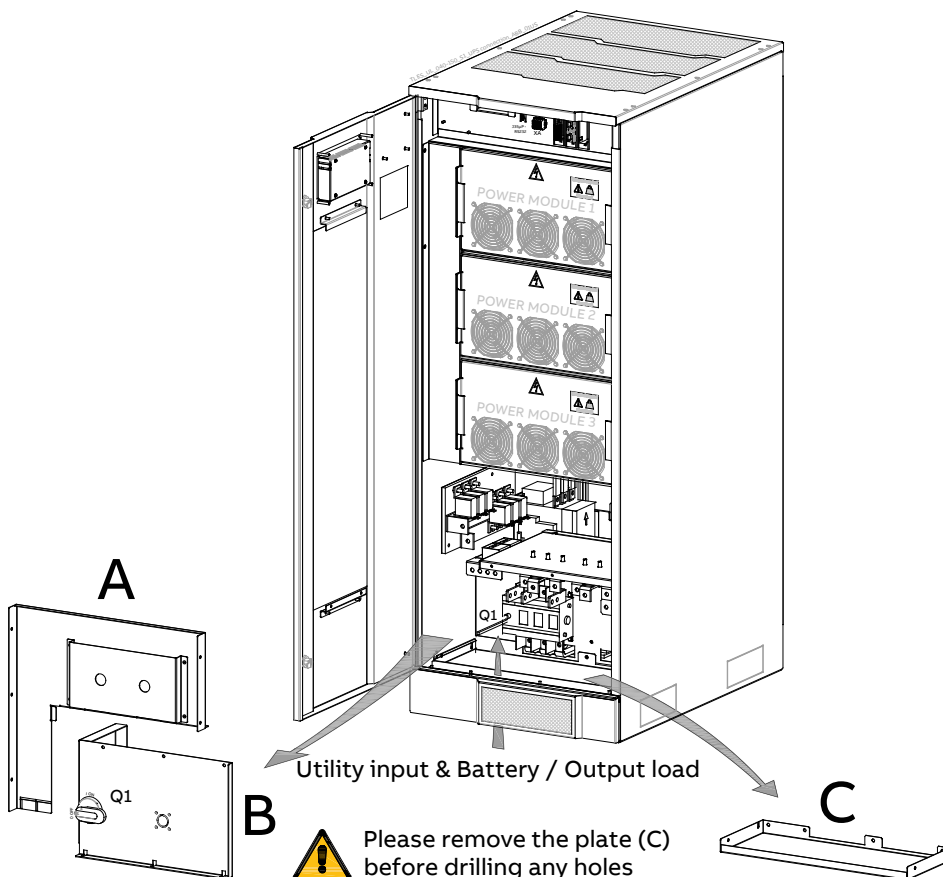
Refer to the “Safety prescriptions - Installation” described on Chapter 1.

In case of UPS equipped with options or customized parts not covered by this manual, please consult the appropriate technical documentation before proceeding with electrical connections.

Carefully read the following recommendations before proceeding:

- Ensure that the AC and DC external isolators are Off and prevent their in adverted operation.
- Do not close any external isolators prior to the commissioning of the equipment.
- The input/output cables must be connected in clockwise phase rotation for both Bypass and Rectifier Input Bars if separate, taking care to avoid risk of short circuit between different poles.
- The grounding and neutral connection of the electrical system must be in accordance with local regulations.
- In case of additional cabinets containing Batteries, input/ output transformers, etc., their ground terminals must be connected to the UPS main ground terminal.
- Once the power cables have been connected, re-install the internal safety shields and close the cabinets by re-installing all external panels.

TLE Scalable Series 40 to 150 Access to the bus bars for the cable connections



To access Input, Output and Battery connections proceed as follows:

- Remove the front protection panel “A”.
- Remove the front protection panel “B” with the handle of the switch “Q1 – UPS output”.
- Remove the plate “C” to make the holes for the input and output cables.

Fig. 4.8-1 TLE Scalable Series 40 -150 - Access to connection bus bars



Note!

For UPS correct operation, the input Utility phase rotation must be clock-wise.

Please remove the plates “C” before drilling any wholes.

4.8.1 TLE Scalable Series 40 to 150 - Power connection with Common Input Utility

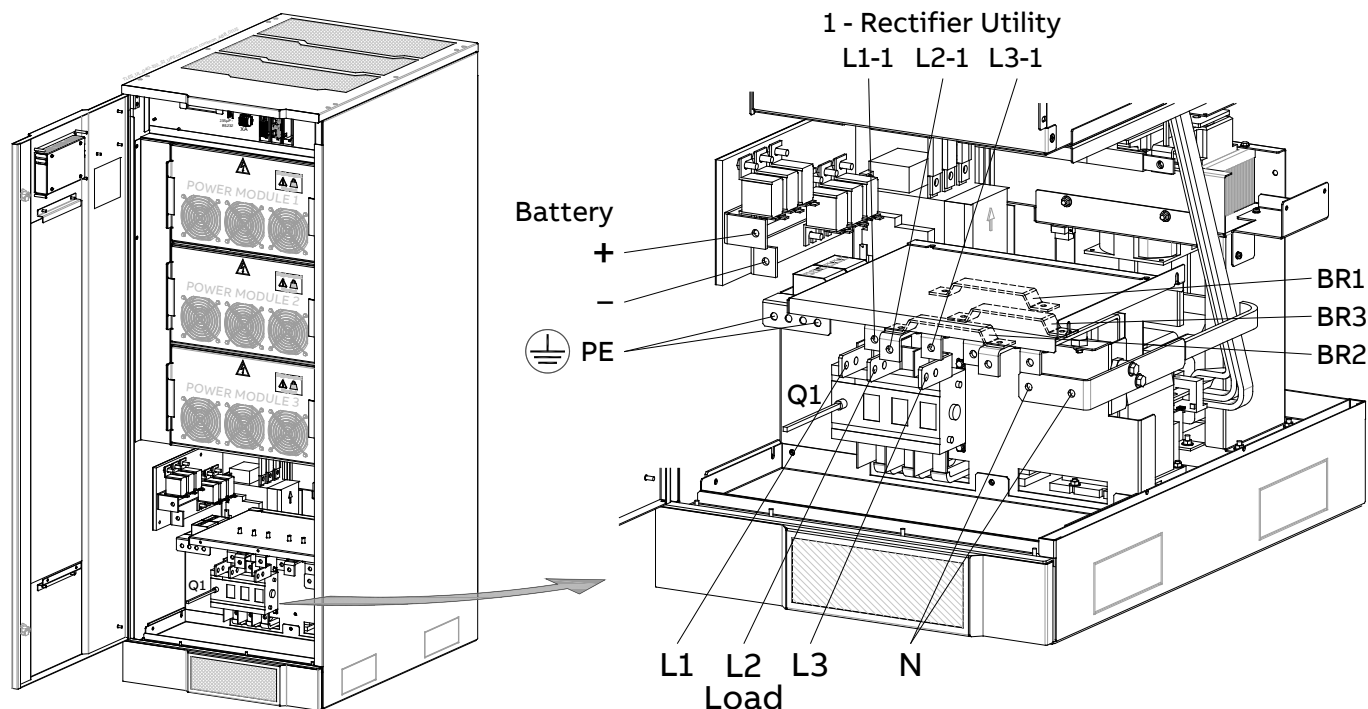


Fig. 4.8.1-1 TLE Scalable Series 40 to 150 - Power connection with Common Input Utility

Power connection cables are connected to bus bars using **M8 bolts**.

The bolts of the connection cables must be tightened with a torque wrench at **195 Lb-in / 22 Nm**.

Common Input Utility - Rectifier / Bypass

L1-1 Rectifier + Bypass Phase A (L1)

L2-1 Rectifier + Bypass Phase B (L2)

L3-1 Rectifier + Bypass Phase C (L3)

N Neutral Input Utility

PE Ground Input Utility



Note!

The interconnection links **BR1, BR2 and BR3** must remain connected (see Fig. 4.8.1-1).

Output Load

L1 Load phase A (L1)

L2 Load phase B (L2)

L3 Load phase C (L3)

N Neutral

PE Ground

External Battery connection

+ Positive pole of the Battery

- Negative pole of the Battery

PE External Battery Ground



Before closing the “External Battery Fuses”, verify for correct polarity of the Battery connection!



Note!

To meet standards concerning electromagnetic compliance, the connection between the UPS and external Battery must be done by using a shielded cable or suitable shielded (steel) conduit!

Note!

This UPS is only designed to operate in a wye-configured electrical system with a solidly grounded neutral.

The UPS cannot be operated from a mid-point or end-point grounded delta supply source.

If the UPS is equipped with an input bypass transformer, the secondary of the transformer must be wye-configured with neutral solidly grounded

If the Load requires a Neutral, a Bypass Source Neutral **MUST BE PROVIDED**.

If no Neutral Connection is available with the Bypass Input (3-wire input + ground) and the Load does not require a Neutral, solidly connect the Output Neutral of the UPS to ground with a ground bonding jumper.

For single module applications install the ground bonding jumper directly at the UPS output.

Cable size for this connection shall be per National Electric Code and applicable local regulations, but not less than AWG 1.

Attention!

With this configuration, Load can only be connected phase-phase.

Absolutely no Load Connection permitted to the Neutral of the output transformer.

DO NOT install both a source Neutral and a bonding jumper!

**RPA Parallel System**

In an RPA Parallel System configuration, it is most important to connect the Neutrals of the UPS outputs together.

The output distribution cabinet must contain a Neutral Bus (see Fig .4.8.1-2).

If no Neutral Connection is available with the Bypass Input (3-wire input + ground) and the Load does not require a Neutral, solidly connect the Output Neutral of the UPS to ground in the Output Distribution Cabinet.

Wire Neutral Conductors from the UPS to the output distribution cabinet (common point of connection) and solidly connect to ground with a ground bonding jumper.

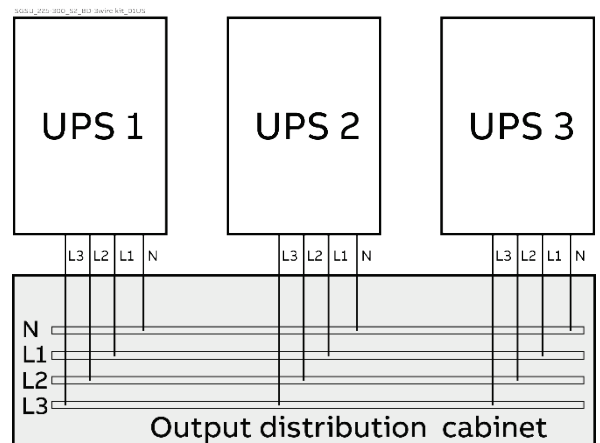


Fig. 4.8.1-2 RPA Parallel System

Cable size for the ground bonding jumper shall be per National Electric Code and applicable local regulations, but not less than the cable recommended for the ground.

Please consider the following when applying Ground Fault Circuit Interrupters (GFCIs) in 3-wire distribution:

- During transfers to and from bypass, circulating current may flow between the two AC sources (UPS Inverter and Bypass Utility). In 3-wire distribution the current flows through the ground path. In order to prevent tripping in such circumstances, proper adjustment of the GFCI is required. Particularly, the time delay should be set to at least 300ms.
- With the Neutral to ground bonding jumper installed, the UPS ground current has been verified to be less than or equal to 5% of the maximum rated input current of the unit in compliance with international safety regulations. This shall be accounted for in GFCIs settings.

**Note!**

Failure to properly adjust the GFCI settings could compromise the power delivery to the critical load!

4.8.2 TLE Scalable Series 40 to 150 - Power connection with Dual Input Utility



Note!

Connect a single input Neutral to Bypass Utility (inside the UPS, common Neutral for Bypass and Rectifier).

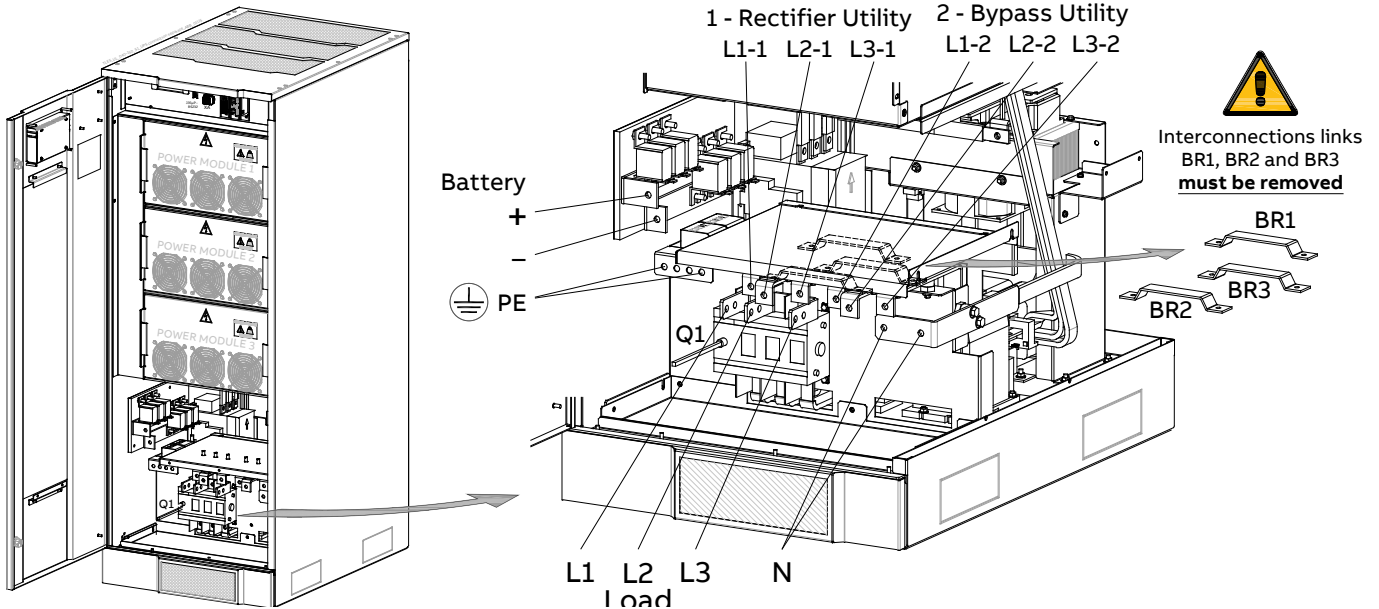


Fig. 4.8.2-1 TLE Scalable Series 40 to 150 - Power connection with Dual Input Utility

Power connection cables are connected to bus bars using **M8 bolts**.

The bolts of the connection cables must be tightened with a torque wrench at **195 Lb-in / 22 Nm**.

Dual Input Utility - Rectifier / Bypass

L1-1 Rectifier phase A (L1)
L2-1 Rectifier phase B (L2)
L3-1 Rectifier phase C (L3)
PE Ground Input Utility

L1-2 Bypass phase A (L1)
L2-2 Bypass phase B (L2)
L3-2 Bypass phase C (L3)
N Neutral Input Utility



Note!

The interconnection links BR1, BR2 and BR3 on the input bus bars must be removed (see Fig. 4.8.2-3).

Output Load

L1 Load phase A (L1)
N Neutral

L2 Load phase B (L2)
PE Ground

L3 Load phase C (L3)

External Battery connection

+ Positive pole of the Battery
- Negative pole of the Battery
PE External Battery Ground



Before closing the “External Battery Fuses”, verify for correct polarity of the Battery connection!



Note!

To meet standards concerning electromagnetic compliance, the connection between the UPS and external Battery must be done by using a shielded cable or suitable shielded (steel) conduit!

Note!

This UPS is only designed to operate in a wye-configured electrical system with a solidly grounded neutral.

The UPS cannot be operated from a mid-point or end-point grounded delta supply source.

If the UPS is equipped with an input bypass transformer, the secondary of the transformer must be wye-configured with neutral solidly grounded

If the Load requires a Neutral, a Bypass Source Neutral **MUST BE PROVIDED**.

If no Neutral Connection is available with the Bypass Input (3-wire input + ground) and the Load does not require a Neutral, solidly connect the Output Neutral of the UPS to ground with a ground bonding jumper.

For single module applications install the ground bonding jumper directly at the UPS output.

Cable size for this connection shall be per National Electric Code and applicable local regulations, but not less than AWG 1.

Attention!

With this configuration, Load can only be connected phase-phase.

Absolutely no Load Connection permitted to the Neutral of the output transformer.

DO NOT install both a source Neutral and a bonding jumper!

**RPA Parallel System**

In an RPA Parallel System configuration, it is most important to connect the Neutrals of the UPS outputs together.

The output distribution cabinet must contain a Neutral Bus (see Fig .4.8.1-2).

If no Neutral Connection is available with the Bypass Input (3-wire input + ground) and the Load does not require a Neutral, solidly connect the Output Neutral of the UPS to ground in the Output Distribution Cabinet.

Wire Neutral Conductors from the UPS to the output distribution cabinet (common point of connection) and solidly connect to ground with a ground bonding jumper.

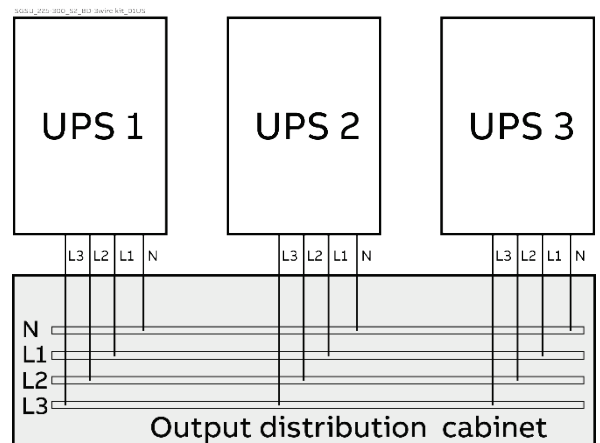


Fig. 4.8.1-2 RPA Parallel System

Cable size for the ground bonding jumper shall be per National Electric Code and applicable local regulations, but not less than the cable recommended for the ground.

Please consider the following when applying Ground Fault Circuit Interrupters (GFCIs) in 3-wire distribution:

- During transfers to and from bypass, circulating current may flow between the two AC sources (UPS Inverter and Bypass Utility). In 3-wire distribution the current flows through the ground path. In order to prevent tripping in such circumstances, proper adjustment of the GFCI is required. Particularly, the time delay should be set to at least 300ms.
- With the Neutral to ground bonding jumper installed, the UPS ground current has been verified to be less than or equal to 5% of the maximum rated input current of the unit in compliance with international safety regulations. This shall be accounted for in GFCIs settings.

**Note!**

Failure to properly adjust the GFCI settings could compromise the power delivery to the critical load!

4.8.3 Battery cabinet connection to TLE Scalable Series 40 to 150



Note!

The installation and cabling of the Battery cabinet must be performed by a qualified electrician.

Before proceeding to “Battery cabinet” connection, follow the Safety rules concerning the Battery.

Refer to the “Safety prescriptions – Installation/ Battery” described on Chapter 1.

Make sure that the UPS is not powered and the “Battery breaker” is open (Pos. O).

Battery breaker UVR and Auxiliary contact wiring must be installed between the identified battery cabinet and the UPS by a qualified contractor.

ABB Authorized Service Technician will make the final connections of the battery breaker UVR and Auxiliary contact wiring at the UPS.

Before closing the “Battery breaker” verify the correct polarity of the Battery connection.

Battery cabinet

Battery	1 Battery cabinet / 2 Battery cabinets / 3 Battery cabinets / 4 Battery cabinets
Dimensions (W x D x H)	29.80 x 29.50 x 75.00 inches / 757 x 750 x 1905 mm 40.00 x 29.50 x 75.00 inches (1016 x 750 x 1905 mm)
Type of cables connection	75°C rating; size per NEC Table 310.16 and/or all applicable national and local codes (see also Section 4.7.4).

“Battery cabinet(s)” **must be located on left side of the UPS.**

The connecting cables (+/-/PE) are supplied with the Battery cabinet.

Connect the cables to UPS bus bars “+/-/PE” using **M8 bolts** with a torque wrench at **195 Lb-in / 22 Nm**.



Note!

Check for sufficient floor loading capacity.

For further information please consult the “Installation, Operation & Maintenance Manual” of the “Battery cabinet”.

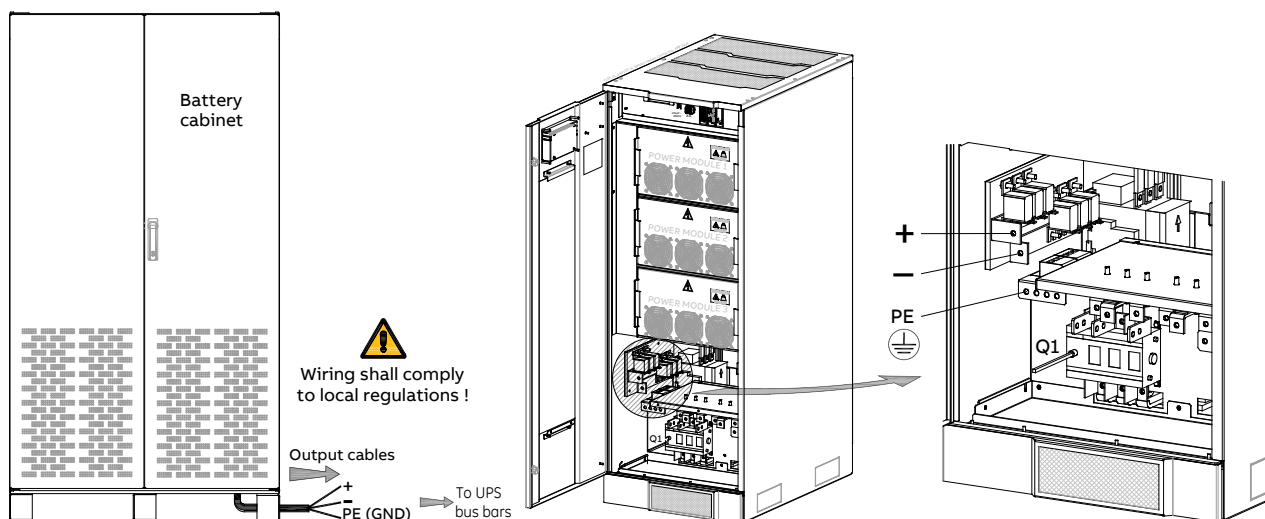


Fig. 4.8.3-1 TLE Scalable Series 40 to 150 - Battery cabinet connection to TLE Scalable Series 40 to 150

+ Positive pole

- Negative pole

PE Battery cabinet ground

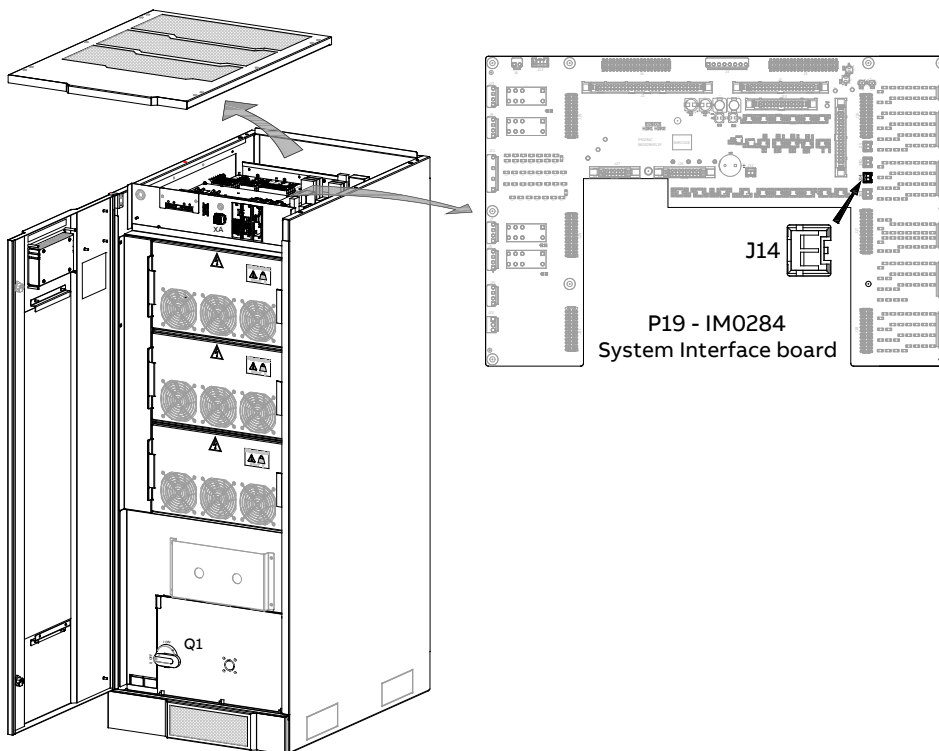


Attention!

It is mandatory to ground the Battery cabinet to UPS!

To meet standards concerning electromagnetic compliance, the connection between the UPS and external Battery cabinet must be done by using a shielded cable or suitable shielded (metal) conduit!

Battery temperature sensor



The "Battery cabinet" is supplied with a Battery temperature sensor cable (standard length: 5m).

This is to compensate the Battery charge voltage (only for type VRLA without maintenance) based on the working temperature.

The Battery temperature sensor must be mounted and fixed in the Battery cabinet while the "Connector J14" must be connected to board "P19 - IM0284 System Interface / J14" of the UPS.

Fig. 4.8.3-2 TLE Scalable Series 40 to 150 - Access to "P19 - IM0284 System Interface / J14"

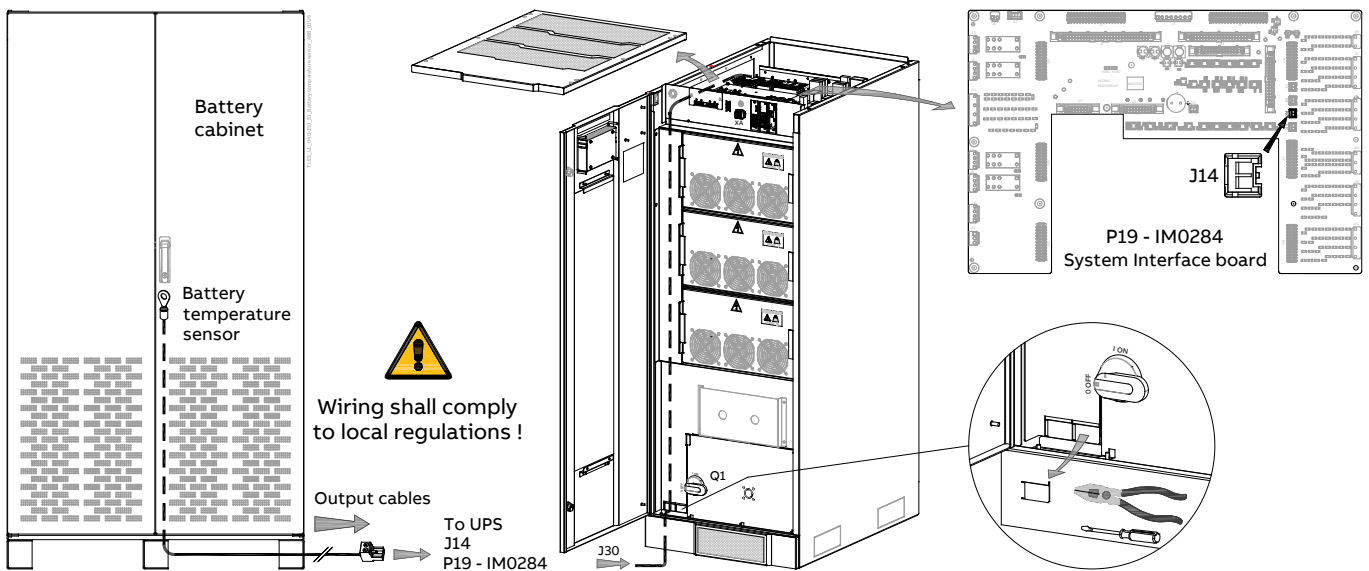


Fig. 4.8.3-3 TLE Scalable Series 40 to 150 - Battery temperature sensor connection

Danger!



RISK OF ELECTRIC SHOCK: The Battery sensor is connected to the primary circuit.

The cable must be routed under the floor or through conduit, so that it's not accessible and pulling is unlikely to happen.

Keep this cable separated from SELV cables.

4.8.4 Use of TLE Scalable Series 40 to 150 in SEM Operation Mode (Super Eco Mode)

Note!



For systems intended to be operated in SEM Operation Mode, the installation shall be protected with suitable surge protection devices (SPDs) on the AC bus feeding the UPSs.

Please contact your ABB Service Centre for more information.

Note!

In SEM Operation Mode the Inverter output filter is placed in parallel with the Load and combined with the Load current it contributes to the UPS input characteristic.



As the Inverter output filter exhibits a predominantly capacitive characteristic, it may provide some degree of reactive power compensation when combined with lagging power factor loads.

Conversely, depending on the load type and level, the UPS input characteristic may exhibit a leading power factor in SEM Operation Mode.

Please contact your ABB Service Centre for more information.

Note!



If an emergency generator set supplies the UPS in case of Utility Failure and the system is intended to be operated in SEM Operation Mode, SEM operation shall be prevented during generator operation.

This can be accomplished by either installing a “GENERATOR ON” signal (refer to Section 5.2.5) or an “SEM/IEMi CONTROL” signal (refer to Section 5.2.7).

Please contact your ABB Service Centre for more information.

4.8.5 Use of TLE Scalable Series 40 to 150 as Frequency Converter



Note!

The UPS needs the connection of the Neutral at the input Bus Bars.

Permanently running the UPS without Bypass supply requires a change of internal wiring to be performed by an ABB Service Technician only.

When the TLE Scalable Series 40 to 150 is utilized for **different output frequency compared to the input frequency**, the Automatic Bypass function is disabled, therefore the Load cannot be transferred to Utility in case of overload, short circuit, or inverter failure.

In situations where the UPS needs to be powered down for maintenance purposes, the critical Load must also be powered down during this time.

When the set-up parameters of the UPS are set for frequency converter, the **SEM Operation Mode** is automatically disabled.

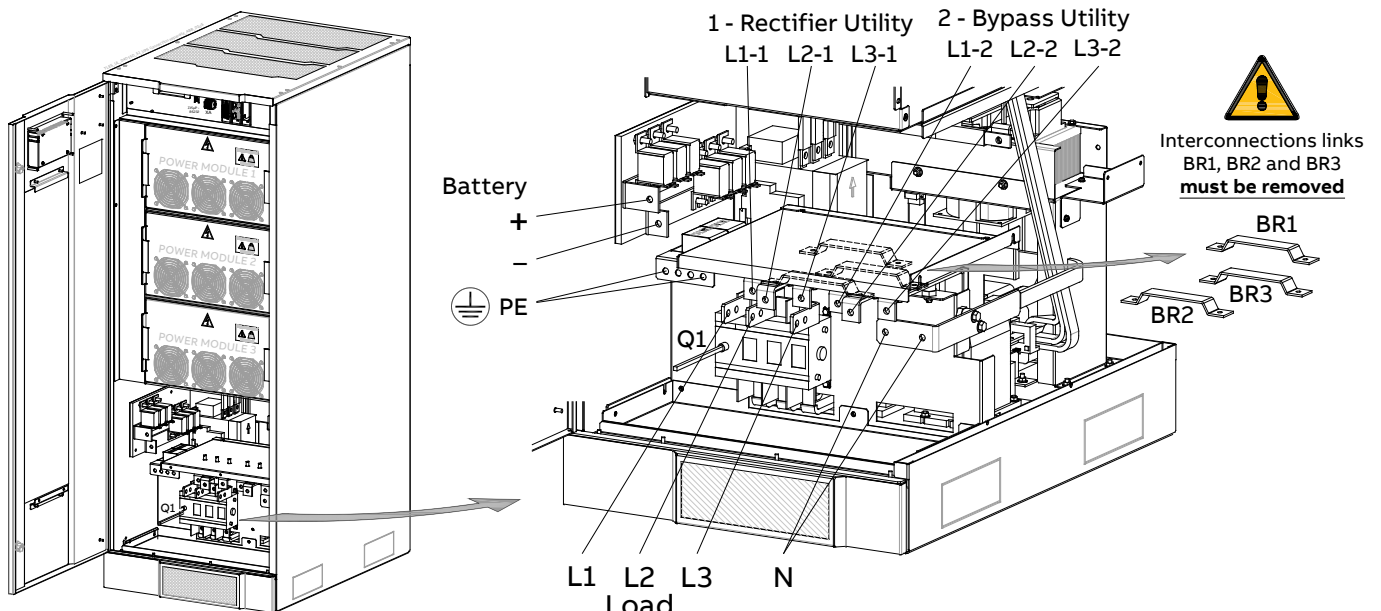


Fig. 4.8.5-1 TLE Scalable Series 40 to 150 - Interconnection links BR1, BR2 and BR3

In order to avoid improper operation, only the Rectifier input should be powered (**L1-1, L2-1 and L3-1** / Fig. 4.8.2-1), therefore the interconnection links **BR1, BR2 and BR3**, on the input bus bars, **must be removed**. See pictures above and Fig. 4.8.2-1.

Special care must be taken in choosing the **fuse ratings** installed in the output distribution (**max. 20% of the UPS rated current**).

Avoid high inrush current due to transformer magnetization or motor starting.



Note!

Only an ABB Service Technician may change a unit from Frequency Converter into a normal UPS (with Bypass) or a normal UPS to a Frequency Converter (with Bypass).



4.9 RPA Parallel System connection



Warning!

This operation must be performed only by an ABB Service Technician before the initial start-up (ensure that the UPS installation is completely powered down).

4.9.1 Power wiring of Parallel Units

To guarantee good Load sharing between the units of an RPA Parallel System, we recommend that the cable length from the input distribution board (5) to the output distribution board (9) is equal for each unit ($a+b = c+d = e+f = g+h = i+l = m+n = o+p = q+r$).

Tolerance: $\pm 10\%$.

The AC input power of the Bypass must be the same for all units of the RPA Parallel System - no phase shift allowed between units.



Note!

It is strongly recommended that no transformers, automatic circuit breakers or fuses should be inserted between the unit's output and the Load common bus bars.

However, it is recommended that a disconnection or isolation switch is installed in order to totally isolate a unit if needed.

Verify that power wiring and control wiring run in separate conduits or cable trays.

The power wiring requires two separate conduits: one for input and one for output cables.

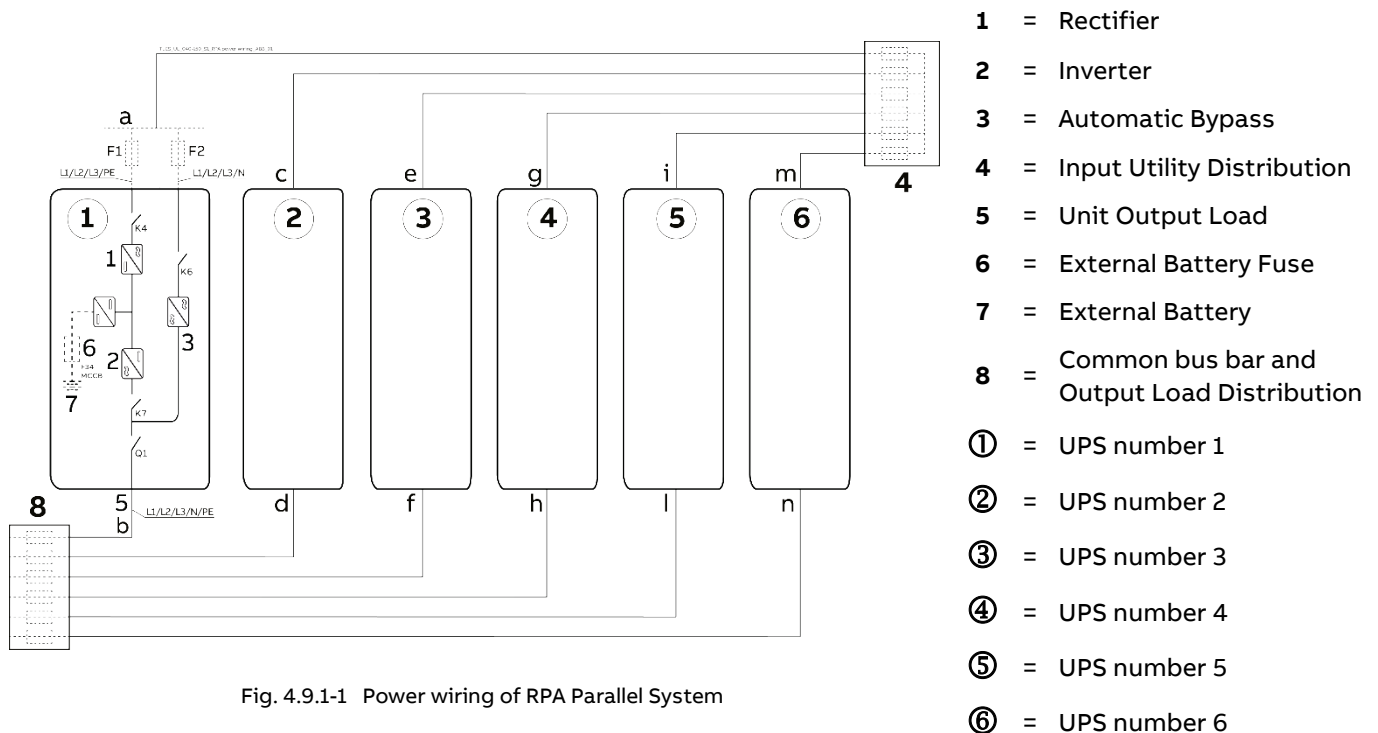


Fig. 4.9.1-1 Power wiring of RPA Parallel System

4.9.2 Parallel Control Bus connection

In case of RPA Parallel System, the communication between the units takes place through the **Control Bus Cables**.

Each Parallel Unit contains the two boards “**P13/P14 – IM0222 – Bus Interface Board**” (mounted on top of the board “**P12 – IM0196 – RPA Board**”) on which four connectors **J1A - J2A** and **J1B - J2B** are allocated.

All the parallel units are connected to the same control bus.

This connection allows:

- The microprocessors of each unit to communicate with each other.
- The oscillators of each unit to be locked together.
- The regulation loops to compare the output current of each unit in order to equally share the Load current.

For increased reliability, this connection is made with redundant cables.

In this way, communication is maintained between units in case one of the control cables should fail or be accidentally damaged or disconnected.

The standard length of the control bus cable between two parallel units is **40 ft / 12m**.

The maximal overall length of bus connection, between the first and the last unit, should not exceed **295 ft / 90m**.

Verify that control wiring run in an individual separate steel conduit.



Note!

Under no circumstance should the control bus cable connecting J1A - J2A (1/2/3/4/5) and J1B - J2B (1/2/3/4/5) be connected or disconnected after the system has been powered ON.

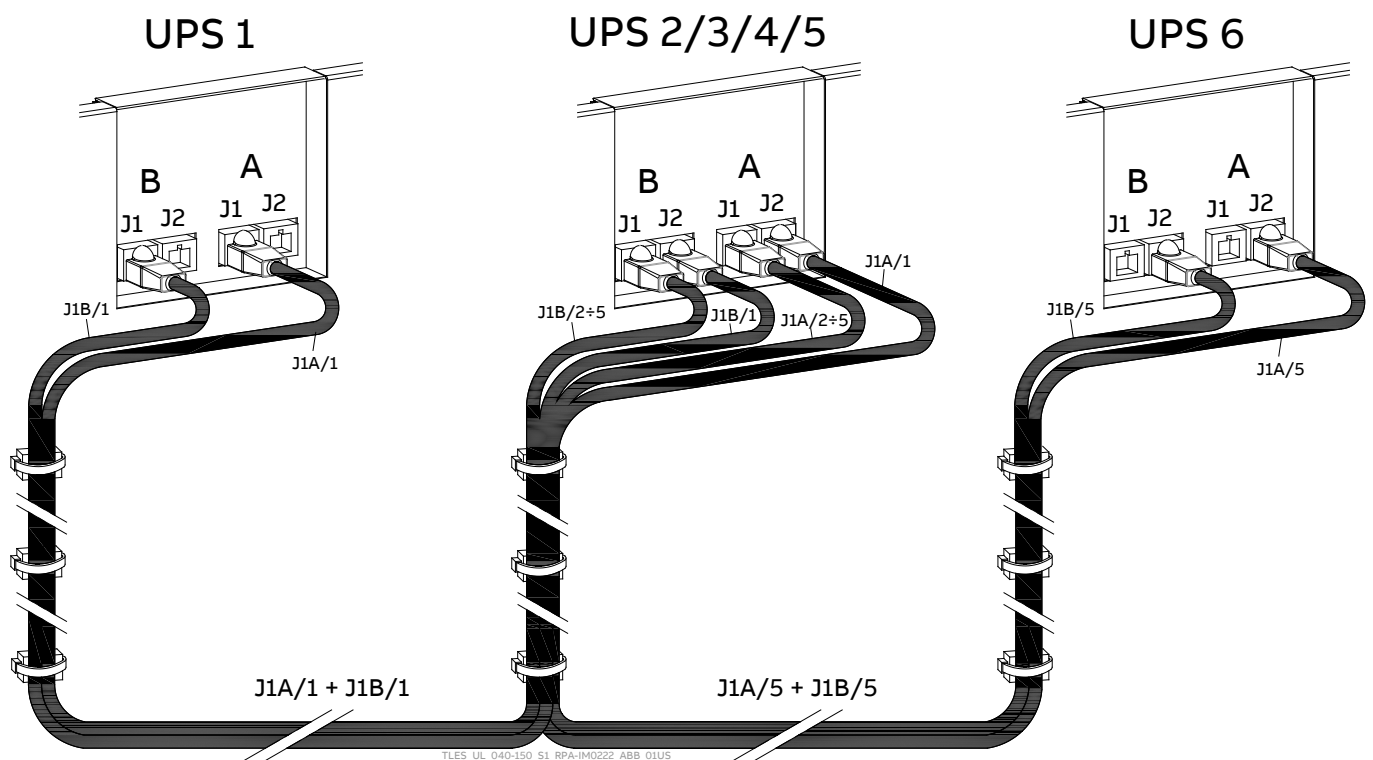


Fig. 4.9.2-1 RPA System - Control bus connection

It is important to place the units in sequence of their assigned number.

A unit number from **1** to **6** is defined by the setting of parameters and displayed on the panel (**1** to **6**).

This number is also marked inside and outside the packaging.

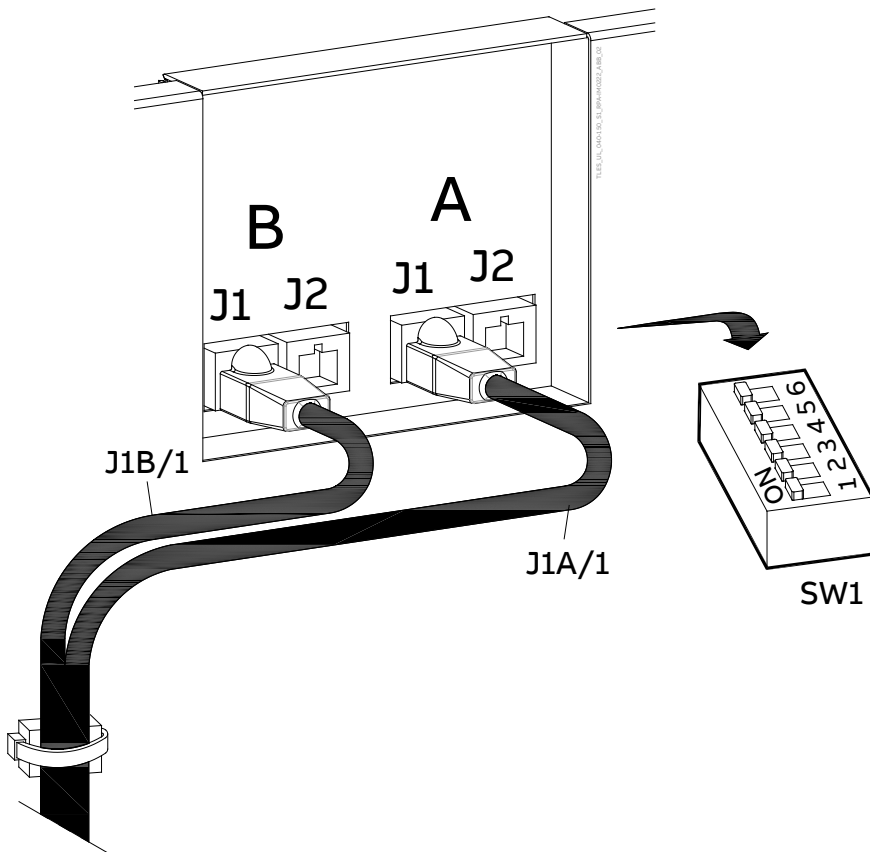


Fig. 4.9.2-2 Bus connection on first and last units

**Note!**

Final units, first and last, of an RPA Parallel System.

On the two boards P13/P14 – IM0222 – Bus Interface Board, of the first and last units of an RPA Parallel System, the switches SW1-1/2/3/4/5/6 **must be in position ON** (see Fig. 4.9.2-2).

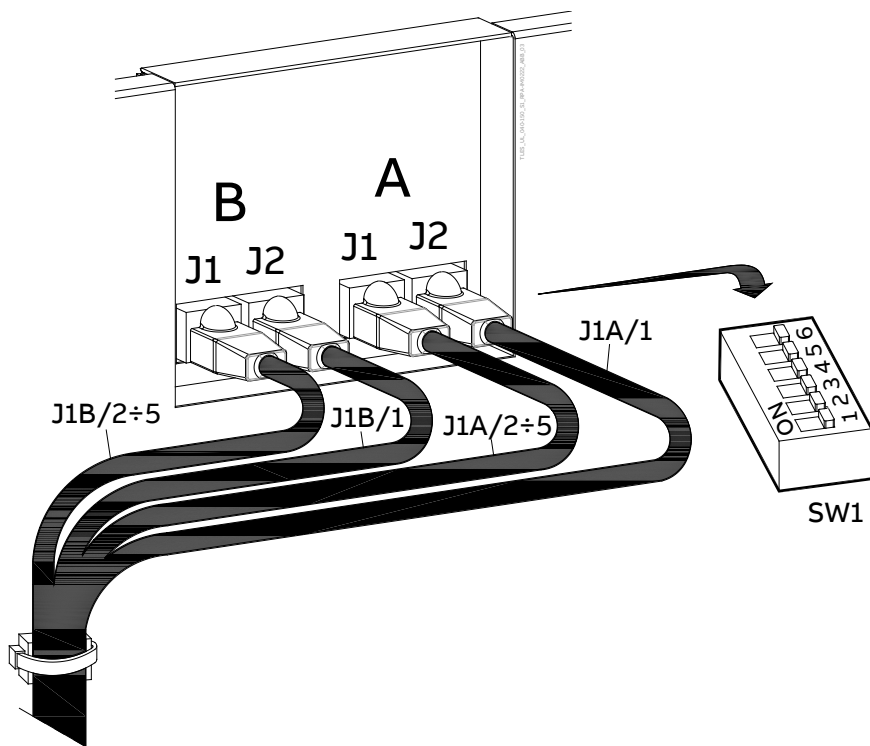


Fig. 4.9.2-3 Bus connection on intermediate units

**Note!**

Intermediate units of an RPA Parallel System.

On the two boards P13/P14 – IM0222 – Bus Interface Board, of the intermediate units of an RPA Parallel System, the switches SW1-1/2/3/4/5/6 **must be in position OFF** (see Fig.4.9.2-3).

4.9.3 Control bus cable location



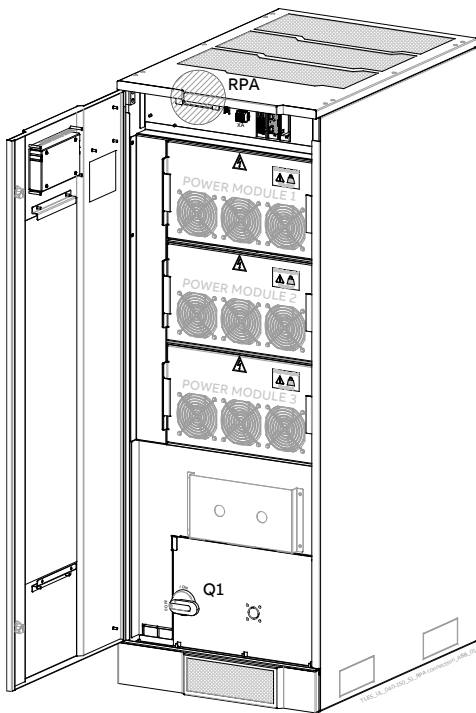
Warning!

The installation of the Control bus cabling between the different UPS modules must be performed by a qualified electrician.

ABB Authorized Service Technician will make the final connections at the P13/P14 – IM0222 – Bus Interface Board within the UPS.

Ensure that the ups installation is completely powered down.

Keep SELV cables separated from high voltage cables.



Access to the control bus connection

The communication bus cable connectors are placed on the two boards “P13/P14 – IM0222 – Bus Interface Board” (see Fig. 4.9.3-1).

Fig. 4.9.3-1 View electronic module on intermediate unit

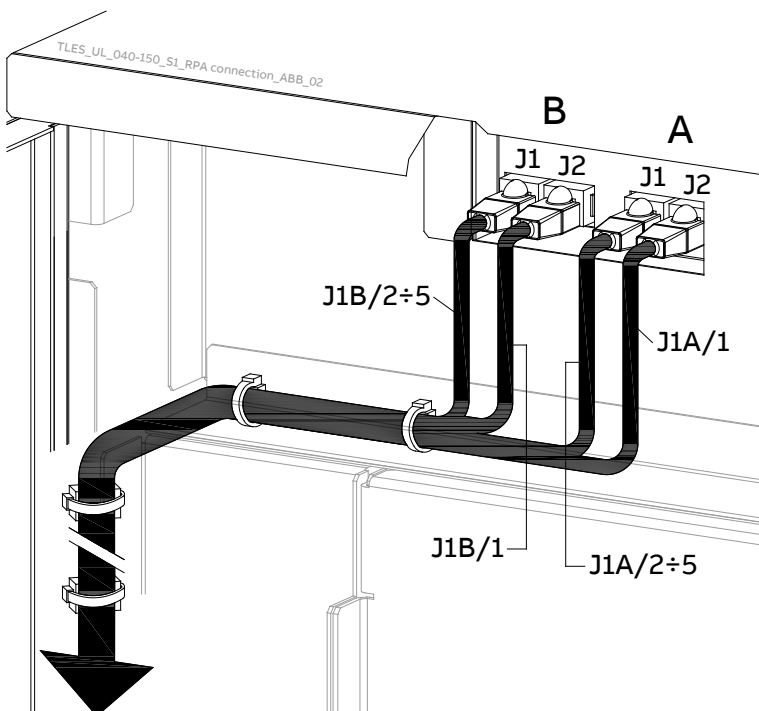


Fig. 4.9.3-2 View electronic module on intermediate unit

Control bus cables connection

- Plug the cables **J1A – J2A** (1/2/3/4/5) and **J1B – J2B** (1/2/3/4/5) on the connectors **J1A – J2A** and **J1B – J2B** placed on the two boards “P13/P14 – IM0222 – Bus Interface Board”.
- Fix the communication bus cables **J1A – J2A** (1/2/3/4/5) and **J1B – J2B** (1/2/3/4/5) with the provided cable clamps.

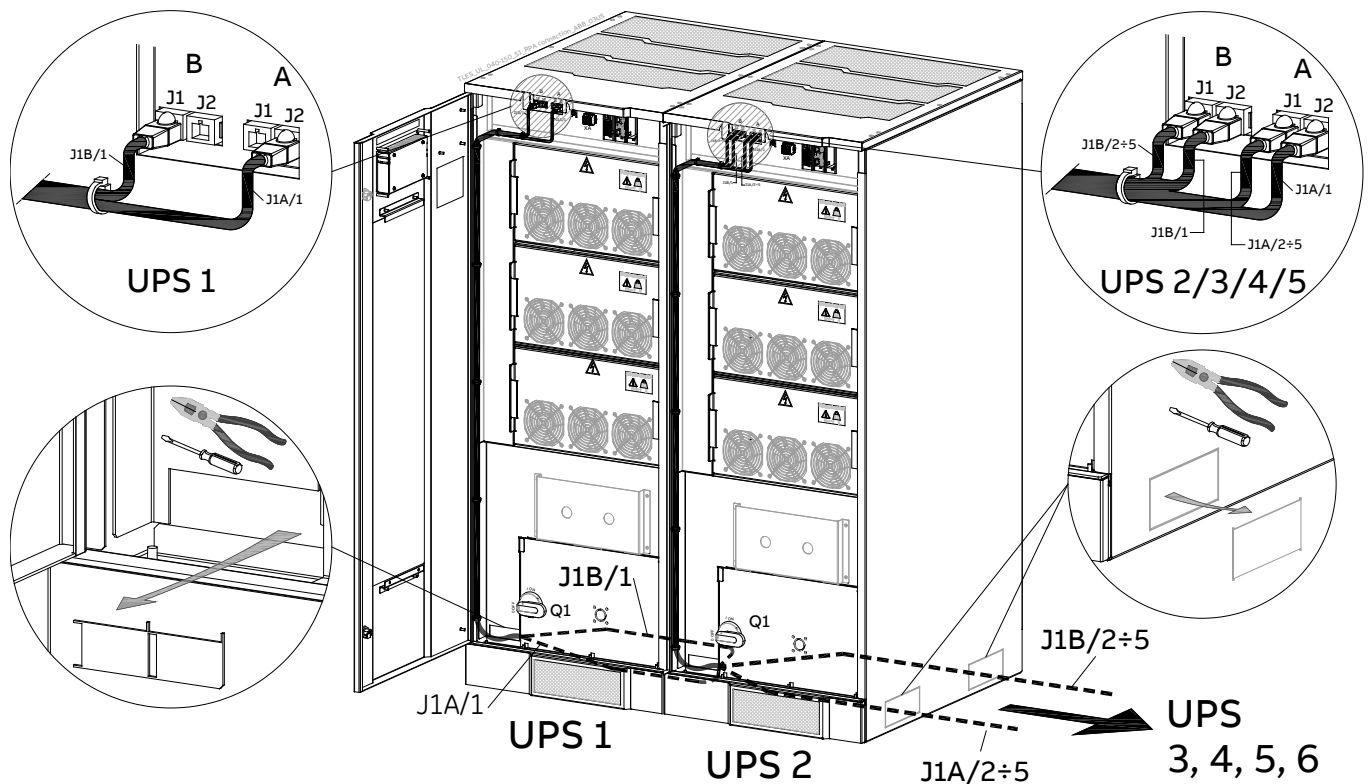


Fig. 4.9.3-3 Control Bus cable routing and connection

Control bus cables routing

Place and fix the cables **J1A – J2A** (1/2/3/4/5) and **J1B – J2B** (1/2/3/4/5) inside the UPS cabinets in the position illustrated in the drawing Fig. 4.9.3-3.

Note!



Pay attention when cabling and routing the bus cables JA and JB inside the UPS cabinet.

In case one unit must be removed from the RPA Parallel System, the communication bus cables must be taken out the UPS cabinet **WITHOUT DISCONNECTING THEM** from the two boards “P13/P14 – IM0222 – Bus Interface Board”.

For reliability reasons the cables **JA-1/2/3/4/5** and **JB-1/2/3/4/5** connecting the units should be run in separated protected conduits (as indicated in Fig. 4.9.3-3) separated from the power cables.

It is important that the cable JA must be the same length as cable JB.

Warning!



Connection of an additional UPS to an existing RPA Parallel System must be performed by a qualified electrician.

Commissioning of the UPS must be performed by an ABB Authorized Service Technician.

4.10 “EPO - Emergency Power OFF” command connection

Warning!

The installation of the cabling between the emergency button EPO (Emergency Power Off) and the UPS must be performed by a qualified electrician.

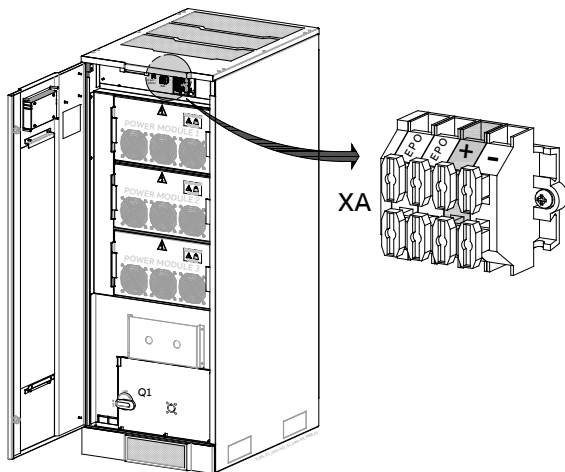
ABB Service Technician will make the final connections at UPS Customer Interface board

Note!

The reliability of the system depends on this contact NC (Normally Closed)!



An Emergency button (Normally Closed voltage-free contact) can be connected on terminals **XA / EPO-1, EPO-2**.
Max. rating XA terminals: **AWG 14 (2.5mm²)**.



An Emergency button (Normally Closed voltage-free contact) can be connected on terminals **XA / EPO-1, EPO-2**.

Max. rating XA terminals: **AWG 14 / 2.5mm²**.

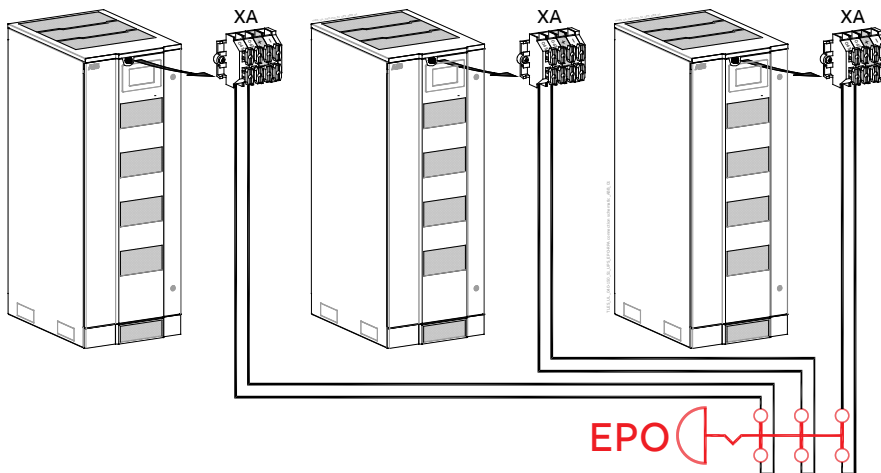
When opened, this contact causes the immediate opening of the **Contactors K6 and K7** as well as the shut-down of **Rectifier, Inverter and Static-Switch**.



Note!

This procedure could imply a Load shut-down.
Keep SELV cables separated from high voltage cables.

Fig. 4.10-1 XA terminal block for EPO command connection



RPA
Redundant Parallel
Architecture

In an RPA Parallel System, a separate NC (Normally Closed) contact must be connected individually to each unit.

Fig. 4.10-2 XA “EPO - Emergency Power Off” – RPA Parallel System connection schematics

When the “EPO - Emergency Power Off” has been activated, the system must be restored as follows:

- Realize the push-button “EPO - Emergency Power Off” (contact on XA / EPO-1, EPO-2 is closed again).
- Perform the “Inverter OFF” command from the screen:
Commands 1 / Inverter / OFF. (see User Manual to Section 6.5).

Inverter

OFF

RPA
Redundant Parallel
Architecture

In case of an RPA Parallel System perform the “Inverter OFF” command from the screen “Commands 1 / Inverter / OFF” of each unit connected on the Parallel Bus and having its switch “Q1 - UPS Output” closed.

5 Connectivity interface

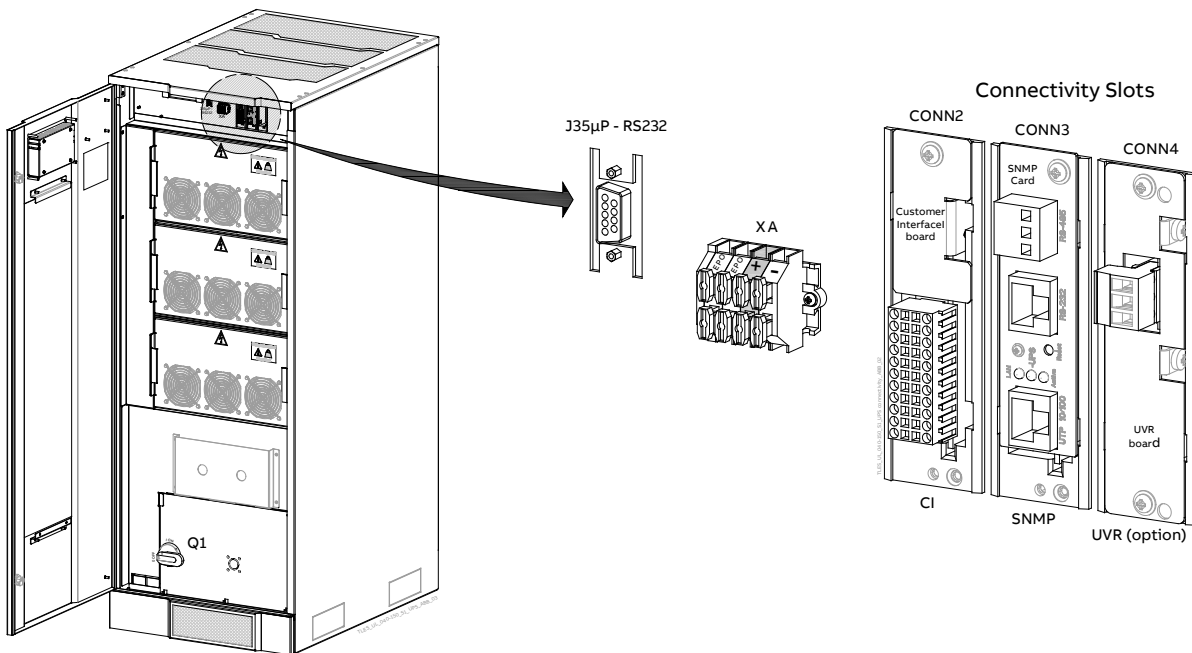


Fig. 5-1 TLE Scalable Series 40 to 150 - Connectivity Slots and Serial port J35μP – RS232

TLE Scalable Series 40 to 150 has the following equipment's:

- **Serial Port J35μP - RS232** (see Section 5.1).
- **Customer Interface** board (see Section 5.2).
- **3-ph SNMP/WEB plug-in adapter board** (see Section 5.3).
- **"IM0305- UVR Control"** board (option - see Section 5.4).
- **Connectivity Slots (CONN2, CONN3 and CONN4)** ready for the installation of three connectivity boards.

Possible connectivity configurations with TLE Series 160 to 500

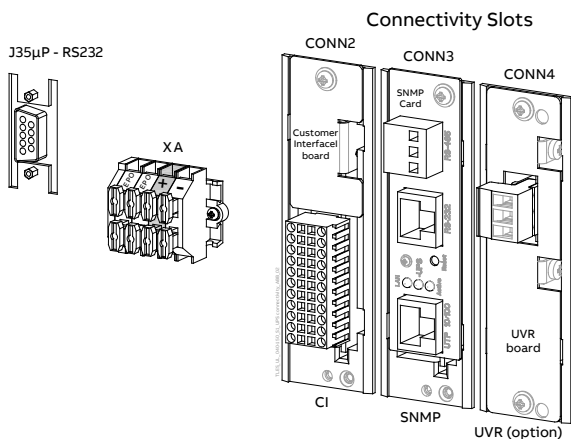


Fig. 9-2 Connectivity Slots

For a **Single UPS** it's possible to install the following connectivity boards:

- max. 3 "Customer Interface" boards;
- max. 2 "3-ph SNMP/WEB Plug-in Adapter" boards;
- max. 1 "IM0305 - UVR Control" board.

For an **RPA Parallel System** (max. 6 UPS) it's possible to install the following connectivity boards:

- max. 3 "Customer Interface" boards for each UPS;
- max. 2 "3-ph SNMP/WEB Plug-in Adapter" boards for RPA Parallel System;
- max. 1 "IM0305 - UVR Control" board for each UPS.

Note!

The installation of any option board must be performed only by an ABB Service Technician.

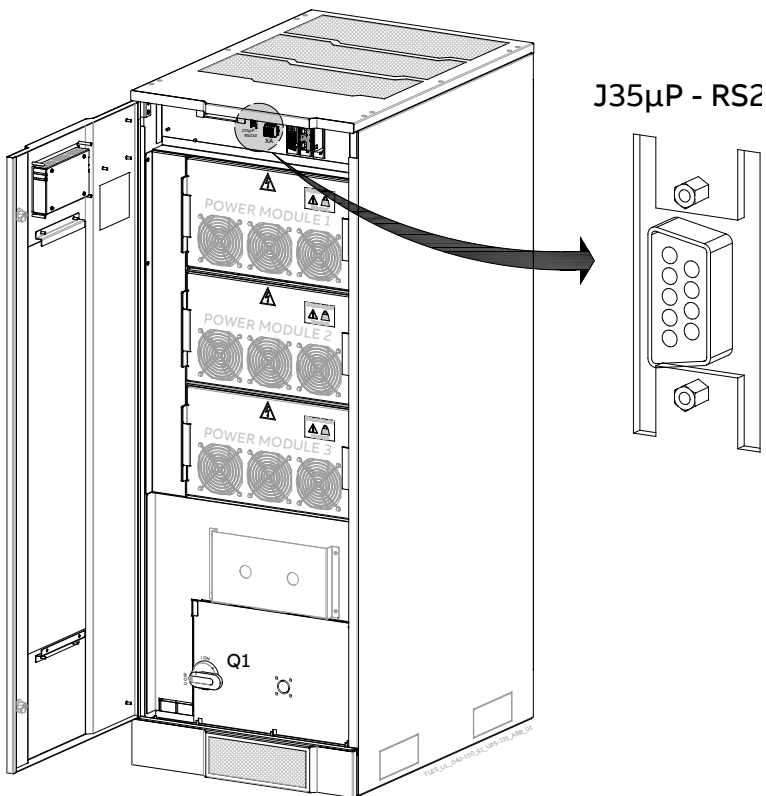
Prior to the installation, connection and cabling of any option board the UPS must be completely powered down and all the power sources that will be connected to the option board must be de-energized.

Option board shall be connected only to Safety Extra Low Voltage circuits (SELV for IEC-UL-CSA60950-1): voltage up to 30Vac / 42.4Vpk or 60Vdc maximum and galvanically separated from AC Mains supply.

Keep SELV cables separated from high voltage cables.



5.1 Serial port J35 μ P - RS232 (Sub D, Female 9 pin)



Serial Port J35 μ P - RS232 for IMV protocol

Total remote management of the system using software iUPSGuard, Data Protection or ABB Service Software for system protection and management of the UPS systems.

Fig. 5.1-1 TLE Scalable Series 40 to 150 - Serial Port J35 μ P – RS232

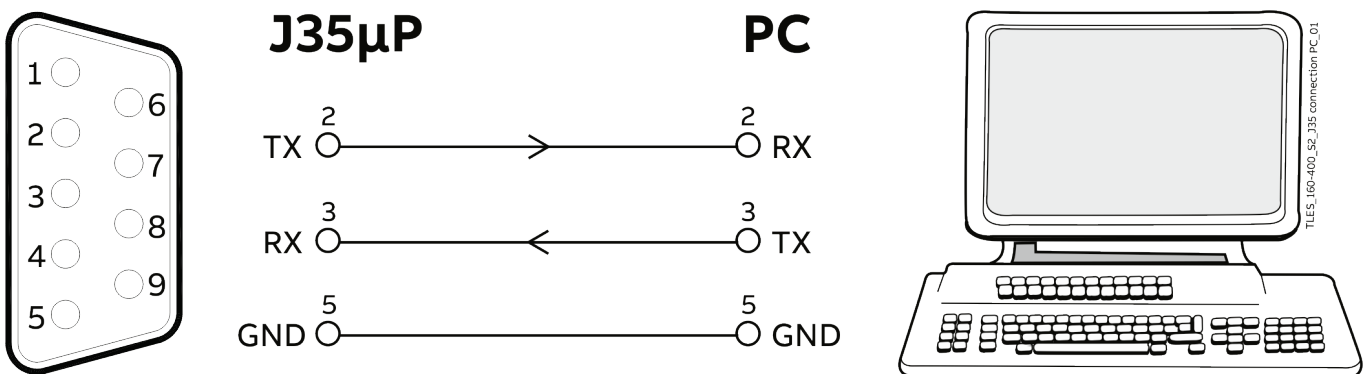
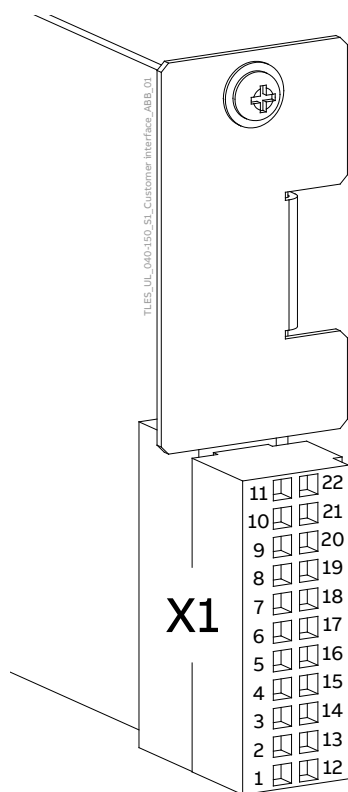


Fig. 5.1-2 Serial port J35 μ P connection to PC with RS232 1:1 cable DB9m – DB9f

Connection of a serial printer

From the display panel, it is possible to select printing of measurements, alarms and parameters (see User Manual to Section 6.4 – SETUP / PRINTER).

5.2 Customer interface board



X1 terminal block – Output signals on voltage free contacts (see Section 5.2.1)

X1 / 1, 2, 3	NO, C, NC	UTILITY FAILURE	(def. Parameter RL=1)
X1 / 4, 5, 6	NO, C, NC	LOAD ON INVERTER	(def. Parameter RL=3)
X1 / 7, 8, 9	NO, C, NC	STOP OPERATION	(def. Parameter RL=5)
X1 / 12, 13, 14	NO, C, NC	LOAD ON UTILITY	(def. Parameter RL=2)
X1 / 15, 16, 17	NO, C, NC	GENERAL ALARM	(def. Parameter RL=4)
X1 / 18, 19, 20	NO, C, NC	BUZZER (acoustic alarm)	(def. Parameter RL=6)



The programmable signals on X1 will be disabled with “Q1 – UPS output switch” open, with the exception of the signals for “16 - MANUAL BYPASS ON” and “26 – EMERGENCY OFF (EPO)”.

X1 terminal block – Input contacts (see Section 5.2.2)

X1 / 10, 21	NO	Programmable
X1 / 11, 22	NO	Programmable / GENERATOR ON

Fig. 5.2-1 Customer interface board **NO** = Normally Open

C = Common

NC = Normally Closed

Output signals on voltage-free contacts

On terminals X1, 6 of the following **27 signals** can be selected from the display, entering with the appropriate “Service Code”.

0- NO SIGNAL	14- RECTIFIER UTILITY FAILURE
1- BUZZER	15- BATTERY DISCHARGE
2- GENERAL ALARM	16- MANUAL BYPASS ON
3- LOAD ON UTILITY	17- RECTIFIER ON
4- STOP OPERATION	18- INVERTER ON
5- LOAD ON INVERTER	19- BOOST CHARGE
6- UTILITY FAILURE	20- BATTERY EARTH FAULT
7- DC OVERVOLTAGE	21- BATTERY FAULT
8- LOW BATTERY	22- RELAY INPUT 1
9- OVERLOAD	23- RELAY INPUT 2
10- OVERTEMPERATURE	24- RELAY OUTPUT ON
11- INVERTER-BYPASS NOT SYNCHR.	25- RELAY OUTPUT OFF
12- BYPASS LOCKED	26- EMERGENCY OFF (EPO)
13- BYPASS UTILITY FAILURE	27- SEM/IEMi MODE

Programmable functions on input contacts

Some UPS functions can be activated with parameters when an external Normally Open (NO) contact is closed on:

X1/10, 21 or X1/11, 22

Selectable functions by changing parameters (“Service Code” required) are:

- 0 - NO FUNCTION
- 1 - INVERTER ON
- 2 - INVERTER OFF
- 3 - PRINT ALL
- 4 - STATUS RELAY
- 5 - GENERATOR ON
- 6 - EXTERNAL BYPASS
- 7 - BATTERY FUSES OR EXTERNAL K3 (See Alarm 4104 - Battery Fuses)
- 8 - SEM/IEMi CONTROL

Voltage free contacts:

Max. 24Vac / 1A or 60Vdc / 0,5A
IEC-UL-CSA 60950-1 (SELV circuit)
Min. Signal Level: 5Vdc / 5mA

5.2.1 X1 terminal block - Output signals on voltage-free contacts

The Customer Interface board provides **6 voltage free relay contacts** giving some UPS critical alarms and operation mode.

These signals are available on terminal blocks **X1**. Max. rating terminals: **AWG 17 / 1mm²**.

The meaning of the alarms on the free contacts in standard configuration (default) is the following:

X1 / 1, 2, 3	(NO, C, NC)	UTILITY FAILURE	(def. Parameter RL=1)
X1 / 4, 5, 6	(NO, C, NC)	LOAD ON INVERTER	(def. Parameter RL=3)
X1 / 7, 8, 9	(NO, C, NC)	STOP OPERATION	(def. Parameter RL=5)
X1 / 12, 13, 14	(NO, C, NC)	LOAD ON UTILITY	(def. Parameter RL=2)
X1 / 15, 16, 17	(NO, C, NC)	GENERAL ALARM	(def. Parameter RL=4)
X1 / 18, 19, 20	(NO, C, NC)	BUZZER (ACOUSTIC ALARM)	(def. Parameter RL=6)

In case different alarms or operating status are required, they can be configured on the same terminals via software from the Control Panel.

The configuration can be changed in parameters mode by an ABB Service Technician using the appropriate “Service Code”.



Note!

The programmable signals on X1 will be disabled with “Q1 – UPS output switch” open, with the exception of the signals for “16 - MANUAL BYPASS ON” and “26 – EMERGENCY ON (EPO)”!

5.2.2 X1 terminal block - Programmable input free contacts

Some programmable UPS functions (indicated in Section 9.2), can be activated by closing an external contact, if connected, on:

X1 / 10, 21 User Input 1 (default = Not used)

X1 / 11, 22 User Input 2 (default = GENERATOR ON)

5.2.3 X1 terminal block - Gen Set Signaling (GEN ON)

If an emergency generator set supplies the UPS in case of Mains Failure and the generator is considerably unstable in frequency, it should be suitable to install the signal “**GENERATOR ON**” on **X1 / 11, 22**. See Fig. 5.2-1 / X1.

Since the Parameter for of the reading of the Generator function is password protected, call your GE Service Center for it's activation.

When this contact closes, it changes certain (programmable) functions such as:

- Enabling or disabling of synchronization and consequently the Load transfer to generator.
- Reduction or elimination or delay of Battery recharging during the generator operation.

Additionally, when the “**GENERATOR ON**” input contact is closed, the UPS will inhibit SEM Operation Mode and revert to double-conversion operation.

It is advised to contact your ABB Service Center for further details.



In an RPA Parallel System, a separate NO (Normally Open) contact must be connected to each individual unit.

5.2.4 X1 terminal block - AUX External Maintenance Bypass

If the UPS system is equipped with an external Maintenance Bypass Switch (cabinet or panel), it is required that a set of **NO (Normally Open)** voltage free auxiliary contacts be connected from the switch to the UPS Customer Interface Card (connection at the UPS will be performed by an ABB authorized service technician). UPS will indicate the switch is closed with “**Q2 – Bypass Manual**” on the display.

With this **NO (Normally Open)** contact closed, the transfer of the critical Load from internal Bypass to Inverter is inhibited to prevent out of phase transfers. This connection does not prevent incorrect operation of the external Maintenance Bypass Switch (changing switch position without the UPS on internal bypass) that can cause damage to the equipment and downstream critical load. Follow all operating instructions for correct use of the external Maintenance Bypass Switch.

This function is activated by changing a dedicated parameter (password required) within the UPS.

Without an **SKRU**, the **MBC-MBB** can be closed without the UPS having to be on internal bypass, resulting in an out-of-phase transfer. If a customer incorrectly operates the **MBC-MBB**, they can damage the UPS, downstream loads, and possible cause injury to individuals operating the breakers.

The **MCB-MBB** auxiliary contact is designed to change states a fraction of a second before the power contacts do and if that signal gets back to the UPS it may signal the transfer to internal bypass in time or at least be in the process of transferring when the power connections make contact. This may still result in a load loss, damage, or arcing if not operated properly.

In addition, the UPS operator manual only has steps for a complete shut-down, not for transferring the unit to internal bypass, which is required prior to changing the state of breakers within the MBC



In an RPA Parallel System, the input on the Customer Interface of each unit must be connected to a separate AUX contact of the External Maintenance Bypass Switch.

5.2.5 X1 terminal block - SEM/IEMi control signal

The UPS operation in either SEM (Super Eco Mode) or IEMi (Intelligent Energy Management integrated) operating modes can be controlled via a NO (Normally Open) contact by installing the “**SEM/IEMi CONTROL**” signal, routed to the programmable function contacts (see Section 5.2.3).

When this contact closes, SEM or IEMi operation mode is inhibited.
The Parameter for the activation of such function is “Service Code” protected.
Contact your ABB Service Centre for its activation.

This function is particularly useful for controlling SEM or IEMi operation following critical conditions on either the load side or the input Utility, including generator operation when the “GENERATOR ON” signal has not been installed.



When using the “SEM/IEMi control” function on the programmable user relays of the Customer Interface X1 terminals in an RPA Parallel System, a separate NO (Normally Open) contact must be connected to each individual unit.

5.3 “3-ph SNMP/WEB plug-in adapter” board

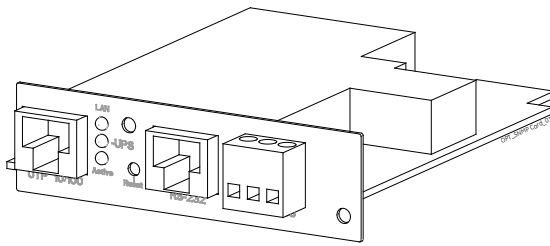


Fig. 5.3-1 “3-ph SNMP/WEB plug-in adapter” board

3-ph SNMP/WEB plug-in adapter

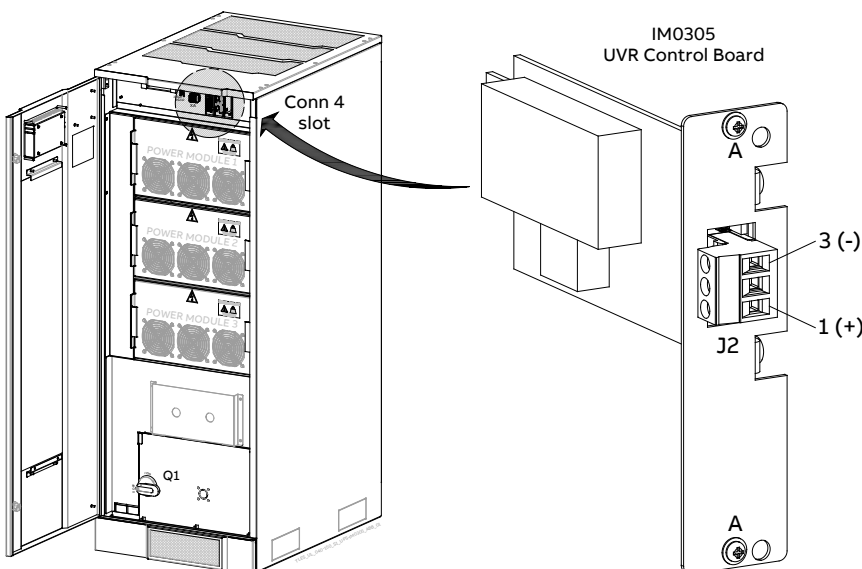
SNMP - Simple Network Management Protocol

The “3-ph SNMP/WEB plug-in adapter” is an interface to the Ethernet Network and provides UPS information via the standard SNMP Protocol (UPS-MIB (RFC-1628); Single MIB; Parallel MIB).

The UPS can therefore be monitored by a Network Management System (NMS) or by our applications (for instance iUPSGuard or Data Protection), which uses this information to determine the state of the UPS in order to guarantee safe and orderly shut-down of the server, when needed.

For additional information about “3-ph SNMP/WEB plug-in adapter” card configuration and functionalities, please refer to “3-ph SNMP/WEB plug-in adapter” manual included into CD-Rom.

5.4 “IM0305 - UVR control” board for CB3 Battery Breaker Box



“IM0305 – UVR Control” board

The “IM0305 - UVR Control” board allows the remote control of the external “CB3 Battery Breaker” (option).

Insert the “IM0305 - UVR Control” board into “CONN4 slot” of the Connectivity Slots, see Fig. 9.4-1 and Fig. 9-1/2.

The “IM0305 - UVR Control” board must be blocked with the 2 screws “A”.

Max. rating J2 terminals: **AWG14 / 2.5mm²**.

Fig. 5.4-1 “IM0305 - UVR Control” board

6 Options



Warning!

UPS installation and cabling between the optional equipment and UPS must be performed by a qualified electrician.

ABB Service Technician will make the final connections of any logic wiring at UPS Customer Interface board.

Make sure that the UPS installation is completely powered down.

Refer to the “Safety prescriptions - Installation” described on Chapter 1.

6.1 Top Cable Entry/Exit Sidecar (TCE) and Top Hat Fascia (THF)

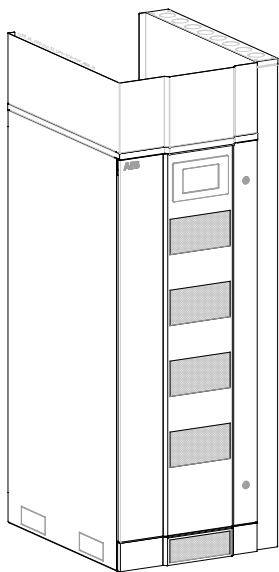


Fig. 6.1-1 UPS with “TCE & THF

“Top Cable Entry/Exit Sidecar” (TCE) and “Top Hat Fascia” (THF)

Allows the connection of input and output cables from the top of the UPS.

The “Top Cable Entry/Exit Sidecar” can be located on either side of the UPS cabinet.

The “Top Cable Entry/Exit Sidecar” is accessible from lateral panel (see panel “G” in the Fig. 6.1-3).

Dimensions (W x D x H)	TCE:	3.94”x34.06”x75.00” / 100x865x1905mm
	THF:	23.62”x34.06”x10.83” / 600x865x1237mm
Weight	TCE:	88lbs / 40kg
	THF:	22lbs / 10kg
Screw torque specifications	Tensilock / Torx M5x12:	26Lb-in / 3Nm

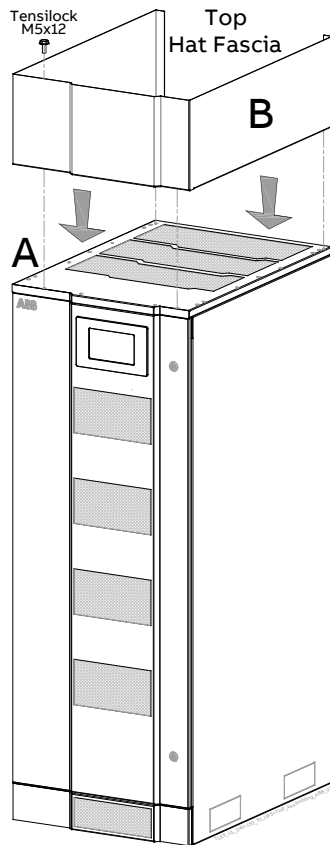


Fig. 6.1-2 Top Hat Fascia (THF) assembling

“Top Hat Fascia” (THF) assembling

- Place the structure “Top Hat Fascia - B” over the roof “A” of the UPS cabinet.
- Fix the structure “Top Hat Fascia - B” with the appropriate screws.

“Top Cable Entry/Exit Sidecar” (TCE) and “Top Hat Fascia” (THF) assembling

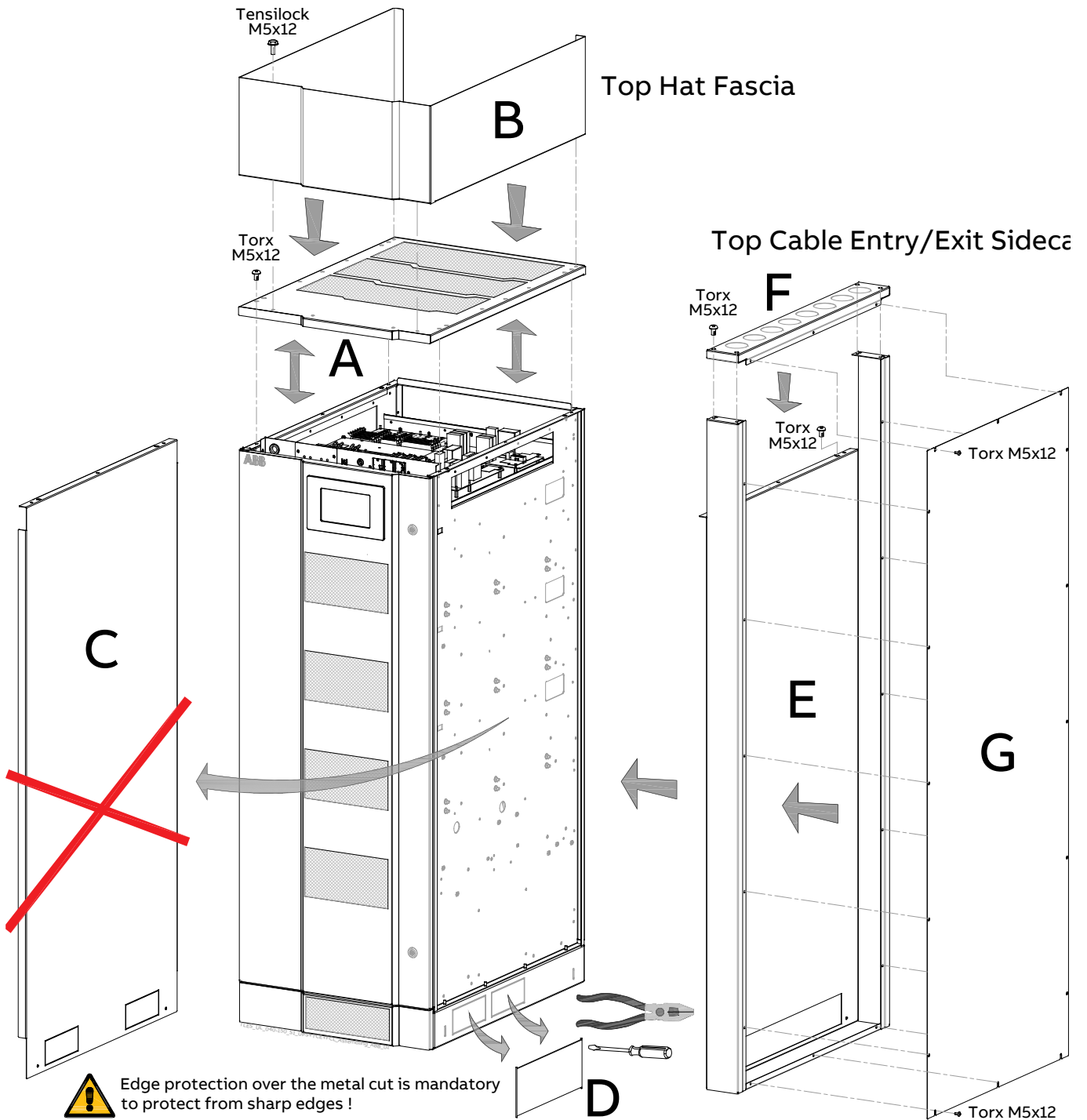


Fig. 6.1-3 Top Cable Entry/Exit Sidecar (TCE) and Top Hat Fascia (THF) assembling

- Remove the roof “A” of the UPS cabinet.
- Remove side panel “C”. This panel is no longer used.
- Remove, with appropriate tool, the two metallic windows “D” from the metal screen.
- Fix the structure “E” with the appropriate screws.
- Fix the roof “A” of the UPS cabinet.
- Fix the top plate “F” with the appropriate screws.
Knock out appropriate holes in top plate for “Top Cable Entry/Exit Sidecar”.
- Fix side panel “G” with the appropriate screws.
- Fix the structure “Top Hat Fascia - B” with the appropriate screws.

7 Notes

7.1 Notes form

It is recommended to note in this section **Notes**, with date and short description all the operations performed on the UPS, as: maintenance, components replacement, abnormal situations, etc.

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