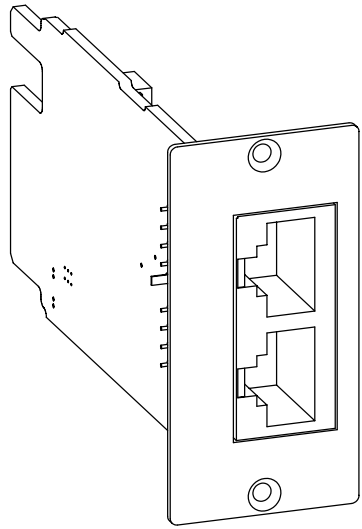
PARALLEL KIT KEOR DK RACK 3 113 78

Installation Manual



LE15562AA (Rev. 02 – 08/25)

Table of Contents

1. Introduction

The information provided in this manual complement those provide for the Keor DK Rack UPS.

You can download the full manual from the UPservice App.

1.1 General remarks

The purpose of this manual is to provide to the skilled technician with instructions to safely install a parallel system of two ore more Keor DK Rack UPS units.

The intended use and configurations envisaged for the equipment as shown in this manual are the only ones allowed by LEGRAND (also called "Manufacturer" in the rest of the manual).
Any other use or configuration must be previously agreed with the Manufacturer in writing and the written agreement will become part of the installation and user manuals.

This manual is not a specification; therefore, LEGRAND reserves the right to make any changes to data without prior notice. It also complies with the directives and standards in force at the time of its release.
The version of the manual updated to its latest release is available at ups.legrand.com.
The original text of this publication, drafted in English, is the only reference for the resolution of disputes of interpretation linked to translations into other languages.

Some operations are shown in graphic symbols that draw the attention of the reader to the danger or the importance they imply:

This symbol indicates a danger entailing a high degree of risk that, if not avoided, will lead to death or serious injury or considerable damage to the equipment, people and things around it.

This symbol indicates a danger entailing a level of risk that, if not avoided, could lead to minor or moderate injury or material damage to the equipment, people and things around it.

This symbol indicates important information which should be read carefully.

The manual must be kept in a safe, dry place and must always be available for its entire lifetime. It is recommended to make a copy of it and file it away. In case of need (for example in case of damage that even partially compromises its consultation) the skilled technician is required to get a new copy from the Manufacturer.
If information is exchanged with the Manufacturer or the authorized assistance personnel, it is essential to refer to the equipment's rating plate data and serial number.

1.2 Manufacturer's liability and guarantee

The skilled technician and the operator shall scrupulously comply with the precautions and installation instructions indicated in the manuals. They must:
- always work within the operating limits of the equipment.
- always carry out constant and careful maintenance through a skilled technician who complies with all the procedures indicated in the installation and maintenance manual.

The Manufacturer declines all indirect or direct responsibility arising from:
- assembly and cabling made by personnel not fully qualified according to national standards to work on equipment presenting electrical hazards.
- assembly and cabling made without using safety equipment and tools required by national safety standards.
- failure to observe the installation and maintenance instructions and use of the equipment which differs from the specifications in the manuals.
- use by personnel who have not read and thoroughly understood the content of the user manual.
- use that does not comply with the specific standards used in the country where the equipment is installed.
- modifications made to the equipment, software, functioning logic unless they have been authorized by the Manufacturer in writing.
- repairs that have not been authorized by the LEGRAND Technical Support Service.
- damage caused intentionally, through negligence, by acts of God, natural phenomena, fire or liquid infiltration.
- damage caused using batteries and protections not specified in the manual.
- accidents caused by a wrong assembly of the safety protections or due to the lack of application of the safety labels.

The transfer of the equipment to others also requires handing over all the manuals. Failure to do it will automatically nullify any right of the buyer, including the terms of the guarantee where applicable.
If the equipment is sold to a third party in a country where a different language is spoken, the original owner shall be responsible for providing a faithful translation of this manual in the language of the country where the equipment will be used.

1.3 Copyright

2. Regulatory and safety requirements

Before carrying out any operation, it is mandatory to read carefully the Keor DK Rack UPS manual, especially chapter 2 about regulatory and safety requirements.

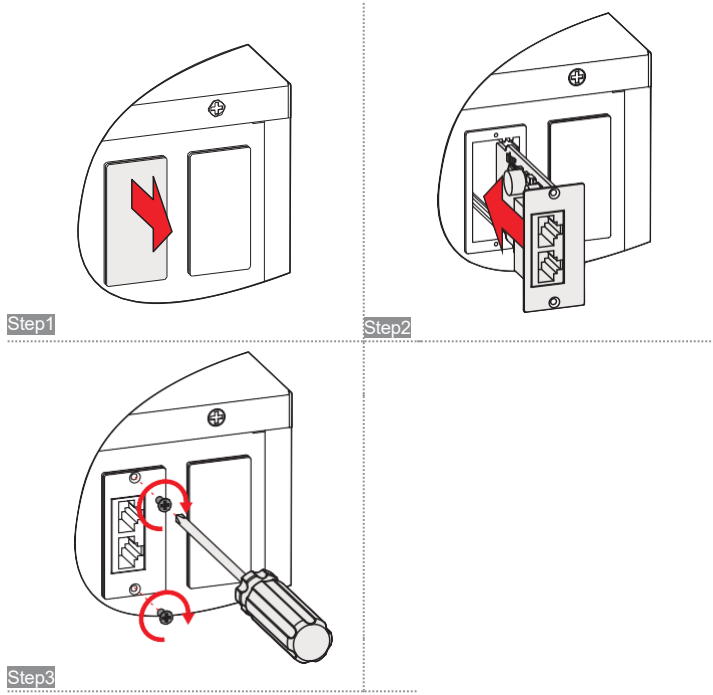
3. Installation

All UPS installation operations must be carried out exclusively by a SKILLED TECHNICIAN

The parallel card 3 113 78 can be installed only with the Keor DK Rack UPS units (3 113 53, 3 113 54, 3 113 55).

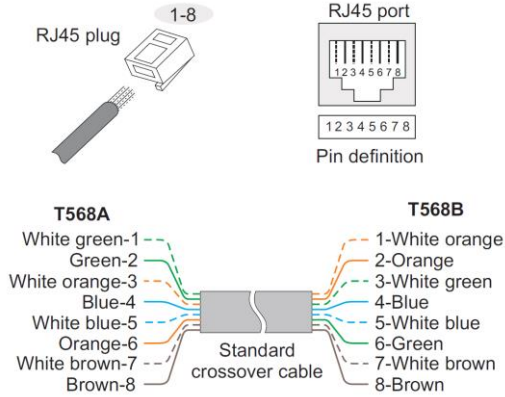
3.1 Mechanical Installation

Check the position of the slot for the parallel card on the UPS and follow the pictures provided for reference:



ⓘ When the port sealing plate is removed or the card is inserted, pay attention to avoid damaging the port.

ⓘ The network cable to be used for connecting the parallel port is a standard crossover cable, and both terminals are connected by RJ45 joints (crystal joints). The RJ45 joints at both terminals comply with T568A and T568B standards respectively. It is recommended to use the factory configuration parallel cable (with shielding function). If you need to prepare your own cable, do it according to the parallel interface configuration, and the network cable used must have shielding function.

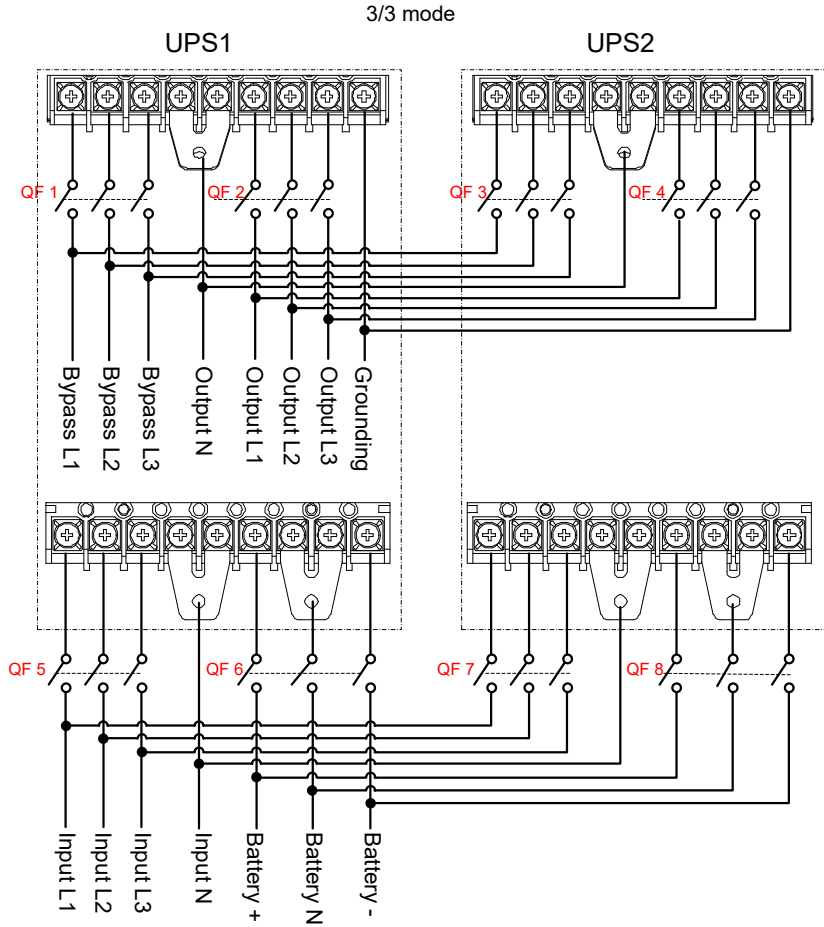


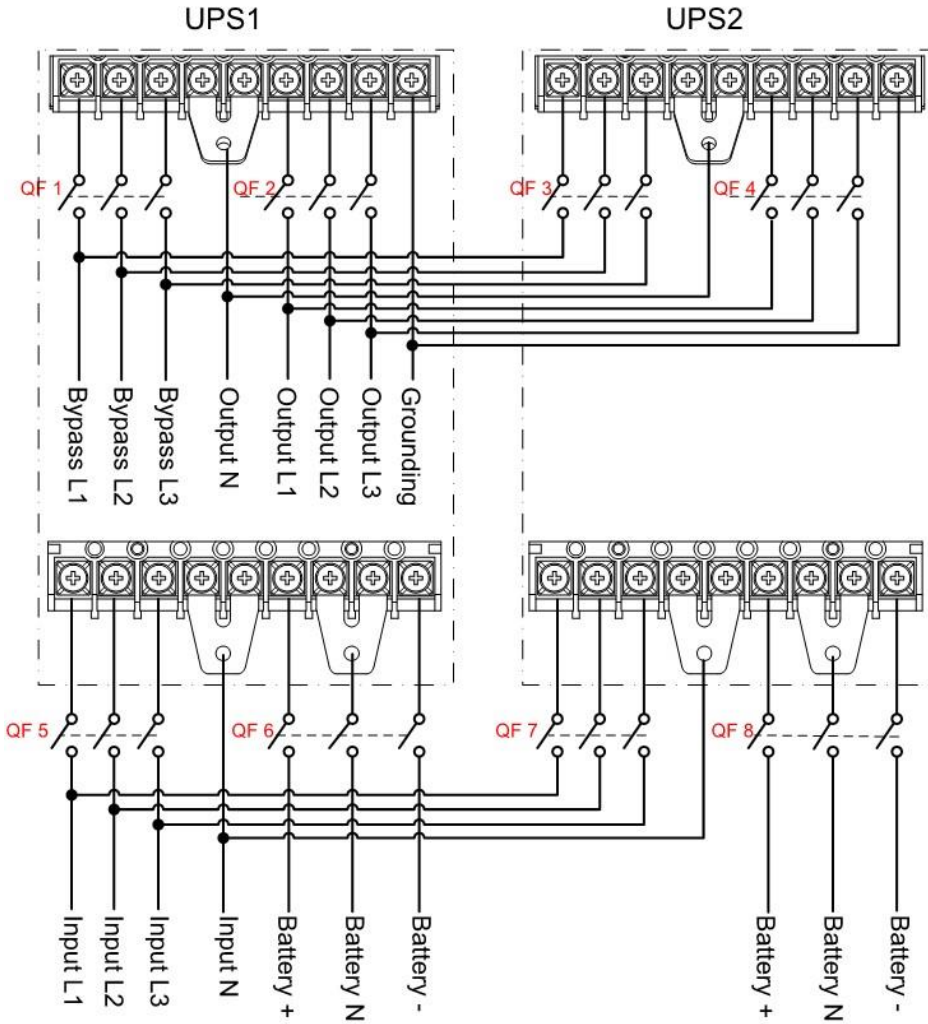
3.2 Electrical connection

The models and power of each UPS to be connected in parallel must be the same.

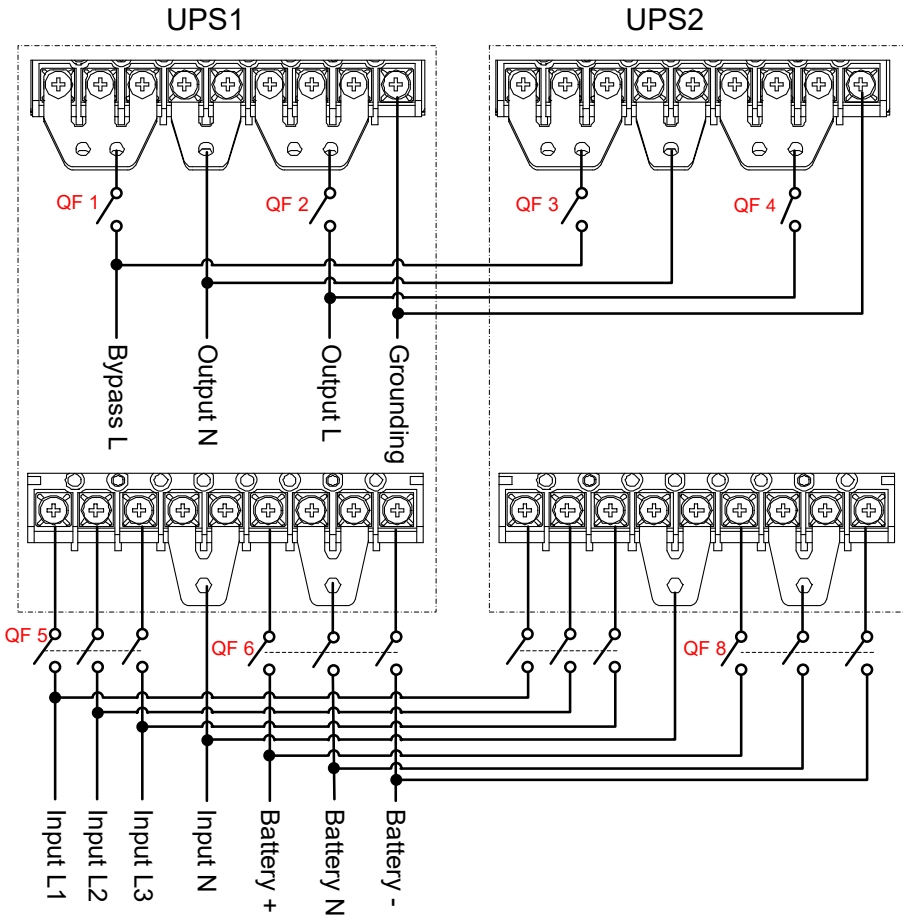
Apart from the specific instructions provided in this manual to install and configure the parallel system, strictly follow all the instructions in the UPS Keor DK Rack Installation and Maintenance Manual.

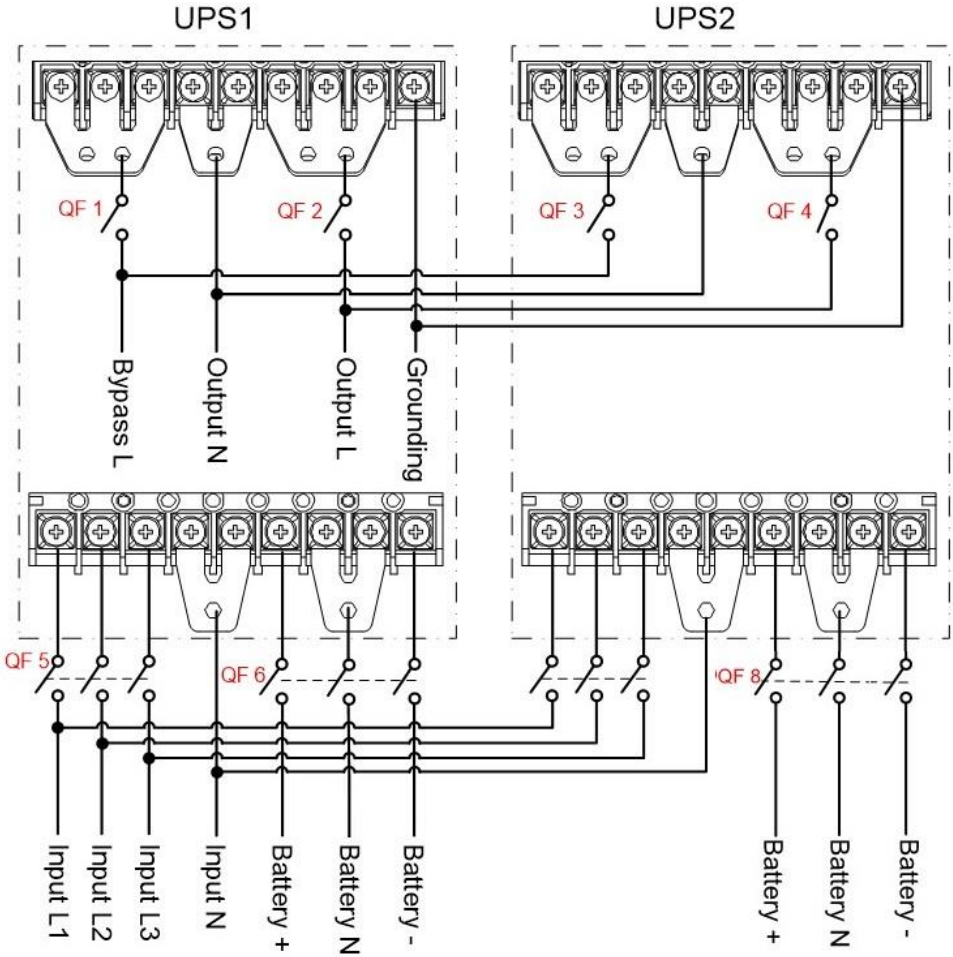
1) Connect the wires of input, output, battery and grounding in parallel (the battery can be configured as common or distributed)



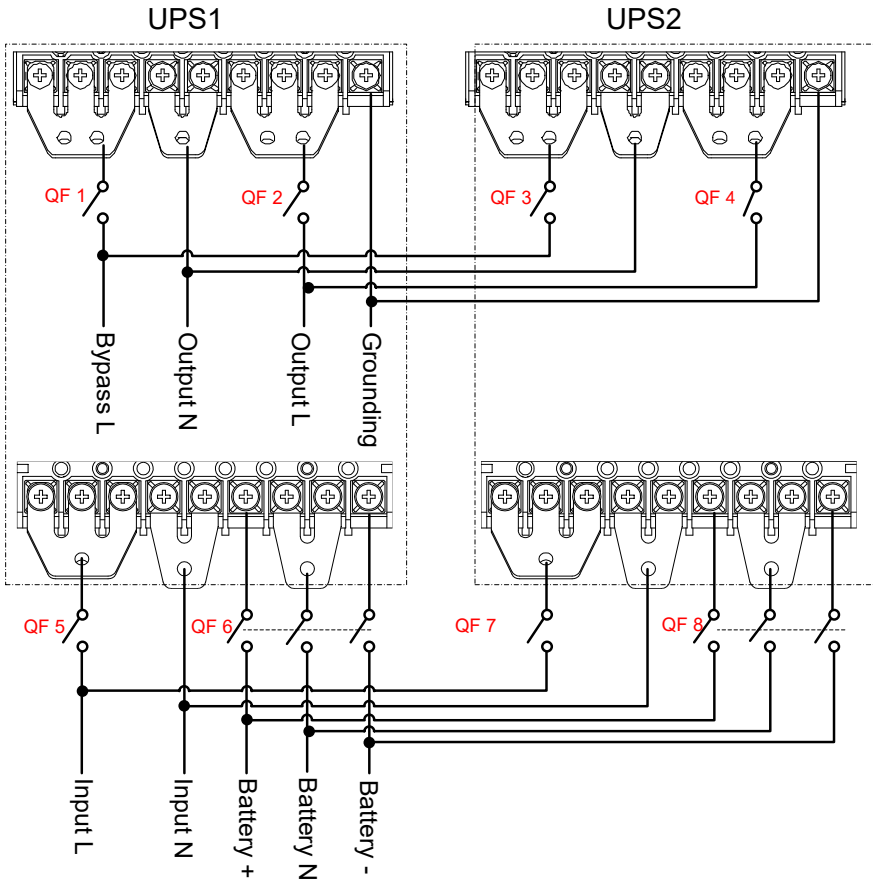

UPS1
UPS2
QF 1
QF 2
QF 3
QF 4
Bypass L1
Bypass L2
Bypass L3
Output N
Output L1
Output L2
Output L3
Grounding
QF 5
QF 6
QF 7
QF 8
Input L1
Input L2
Input L3
Input N
Battery +
Battery N
Battery -
Battery +
Battery N
Battery -

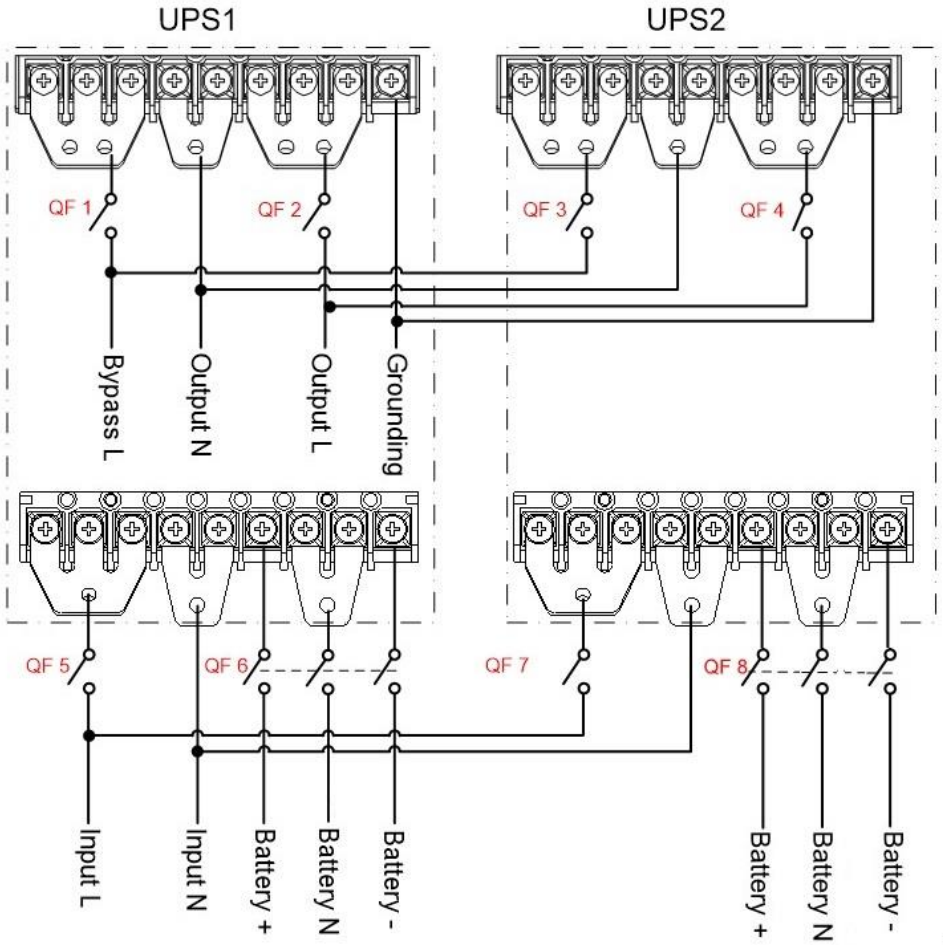
3/1 mode


UPS1
UPS2
QF 1
QF 2
QF 3
QF 4
Bypass L
Output N
Output L
Grounding
QF 5
QF 6
QF 8
Input L1
Input L2
Input L3
Input N
Battery +
Battery N
Battery -


UPS1
UPS2
QF 1
QF 2
QF 3
QF 4
Bypass L
Output N
Output L
Grounding
QF 5
QF 6
QF 8
Input L1
Input L2
Input L3
Input N
Battery +
Battery N
Battery -
Battery +
Battery N
Battery -

1/1 mode


UPS1
UPS2
QF 1
QF 2
QF 3
QF 4
Bypass L
Output N
Output L
Grounding
QF 5
QF 6
QF 7
QF 8
Input L
Input N
Battery +
Battery N
Battery -



2) Connect the parallel ports of each unit in parallel. The two RJ45 parallel ports are the same; they are redundant to increase the reliability of the system. If one of them is not connected, the UPS will promptly send an alarm.

4. Configuration and starting-up

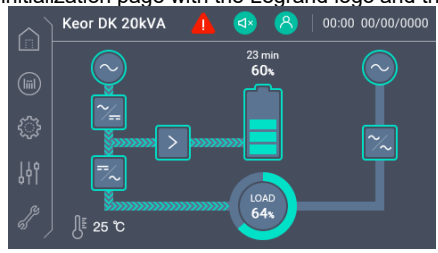
All configurations and start-up operations must be carried out exclusively by a SKILLED TECHNICIAN

4.1 Pre-start-up checks

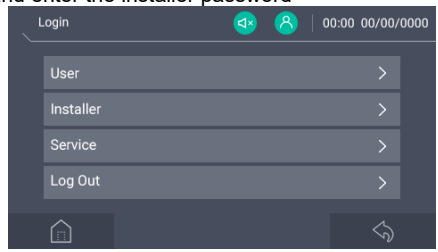
Before powering the equipment, carry out the following checks:
1. Check that the mains, bypass, output, and battery disconnectors are open (OFF position).
2. Check that all wiring has been done and that all connections have been tightened up properly.
3. Check if the installation and wiring are good for transformation, expansion and maintenance in future.
4. Check the correct phase sequence of the input and bypass line.
5. Check that the parameters (voltage and frequency) of the mains input are compatible with those shown on the UPS rating plate.
6. Check if the voltage between the neutral wire and grounding wire is less than 5Vac.
7. Check that there is no short-circuit in the output of the UPS and the load capacity isn't beyond the rated capacity of the UPS.
8. Check that the IN.1 and EPO ports are properly configured and connected.

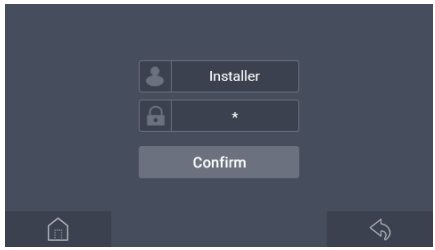
4.2 Start-up procedure

1. Turn on the external mains, bypass and battery disconnectors.
2. The display will enter the initialization page with the Legrand logo and then will show the homepage.



3. Tap the *Login* icon on the top 
4. Select the user *Installer* and enter the installer password



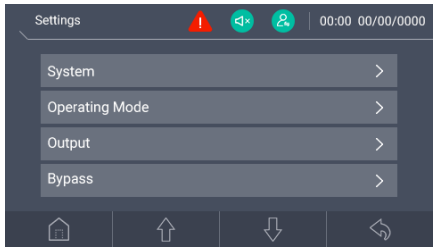


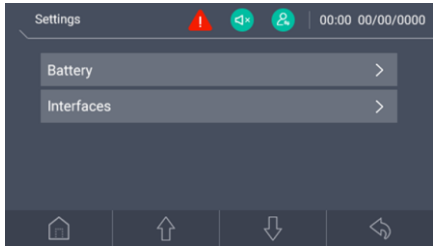
The default installer password is 222222.

The skilled technician must change the default password for the installer.

5. The screen will show the homepage and the *Login* icon on the top will change to as a confirmation.

6. On the homepage, tap the *Settings* icon
7. Configure each function page of the *Settings* page as indicated in the tables of the UPS Keor DK Rack Installation and Maintenance Manual. The parameters dedicated to the parallel system are those indicated in the following table:





Function page	Set item1	Set item2	Set value	Function instructions
System	Parallel Configuration	Parameters	No. Redundancy / Expand / Parallel bus	-
		Rectifier delay start	0-60 seconds	-

8. Go back to the homepage by tapping the  icon.
9. Long press the ON/OFF button for 3 seconds to start the UPS. When the display shows the message “Confirm to power on?”, press the button “Confirm”.
10. After each unit in parallel system works in normal mode (inverter), measure the output voltage of each unit. The voltage difference should be within 15V. Close the breaker of paralleled unit in the parallel distribution cabinet and measure the circulating current of parallel unit, which should be less than 3A
11. Switch on the total output breaker of the output distribution cabinet, each output branch breaker, and then start the load one by one.

 Start the load according to "high power device→small power device" to avoid overload protection when starting high power devices.

 When the system adopts the N+1 redundancy design, the total output power cannot be greater than N times the single unit's rated power. When one paralleled unit is faulty, it will not affect the operation of the system, enhancing its reliability. If the output power exceeds N times the single unit's rated power, the overload unit (exceeding N/(N+1) times the single unit's rated power) will send an alarm. For example, for a parallel system of two UPS units, if one UPS is loaded with more than 50% of its rated power, it will show an overload alarm.

 When closing the output breaker, the UPS could show the “Bus overvoltage” alarm and switch to bypass. Wait for the UPS to return to normal mode (inverter).

 When there is a fault in one of the UPS units in parallel, the UPS will exit from parallel system automatically, indicating it with an alarm. When it happens, shutdown the faulty UPS and turn off the breaker connected to the faulty UPS in the distribution box.

4.3 Shutdown

Generally, it is not recommended to start or shut down parallel system frequently.
1. Shut down all loads.
2, Shut down the paralleled units one by one.
3. Turn off the related breakers of each unit.

4.4 Adding a new UPS into a parallel system online

If you want to add one or more UPS units into a parallel system already online, follow these steps:
1. Install the new UPS.
2. Turn on the breaker of the distribution box connected to the added UPS.
3. Start the added UPS according to the startup procedure.
3. Turn off the related breakers of each unit

5 Troubleshooting

5.1 Common faults

Fault	Possible reason
The display alarm shows the error “Two-end fault”	Check whether the parallel kit is inserted properly or whether the UPS is set to parallel mode.
The display alarm shows the error “One-end on parallel system fault”	Only one parallel cable is inserted properly. Check both the parallel cables.
The two parallel cables are connected correctly, but the display shows the error “Parallel system set mismatch”	Check whether the parameter settings of both UPS units are identical.
There is a large voltage deviation	1. Check whether the phase sequence between the output of both UPS units corresponds. 2. Check whether the parallel cables and the parallel card are connected properly.
If any of the above faults occur and there is no wiring problem	Contact the LEGRAND Technical Support Service.

5.2 Faults symbols and buzzer status

Fault symbol	Buzzer status	Meaning
Output configuration mismatch	Long beep	The UPS output mode in parallel does not match the actual system
Inverter voltage mismatch	Long beep	The UPS output voltage in parallel does not match the actual system
Inverter frequency mismatch	Long beep	The UPS frequency in parallel does not match the actual system
Bypass voltage range mismatch	Long beep	The UPS bypass voltage in parallel does not match the actual system
Bypass frequency range mismatch	Long beep	The UPS bypass frequency in parallel does not match the actual system
Parallel mode mismatch	Long beep	The UPS parallel mode setting does not match the actual system

Fault symbol	Buzzer status	Meaning
Power mismatch	Long beep	The UPS output power setting in parallel does not match the actual system
Battery quantity mismatch	Long beep	The UPS battery number settings in parallel do not match the actual system
Parallel parameter mismatch	Long beep	The UPS parameter settings in parallel do not match the actual system
Short to bypass mismatch	Long beep	The UPS short turn to bypass setting in parallel does not match the actual system
Parallel cable double-end disconnected	Long beep	Fall-off fault at both ends of the parallel wire.
Parallel cable single-end disconnected	Slow beep	Fall-off fault at one ends of the parallel wire.
CAN communication abnormal	Slow beep (alarm once about every 2.0s)	CAN communication of the parallel system is abnormal. Check if the parallel wire is damaged or if there is only one UPS working in the parallel system.
Parallel UPS without redundancy alarm	Slow beep (alarm once about every 2.0s)	The total output load of the UPS parallel system exceeds the full load of a single unit. Check that the output load meets the requirements for redundant backups.

PARALLEL KIT KEOR DK RACK 3 113 78

LEGRAND
Pro and Consumer Service
BP 30076 - 87002
LIMOGES CEDEX FRANCE
www.legrand.com

Installer stamp