ITYS PRO

10-15-20 kVA

Installations- und bedienungsanleitung DE

Installation and operating manual EN

Manual de instalación y uso ES

Manuel d'installation et d'utilisation FR

Manuale di installazione e uso IT

安装及操作手册 ZH

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CERTIFICATE AND CONDITIONS OF WARRANTY

This SOCOMEC continuous power system is guaranteed against any manufacturing or material defects.

The warranty is valid for 12 (twelve) months from the commission date, provided activation is carried out by SOCOMEC personnel or personnel from a support centre authorised by SOCOMEC, and no more than 15 (fifteen) months from being shipped from SOCOMEC.

The warranty is valid throughout national territory. If the UPS is exported abroad, the warranty will only cover the parts used to repair defects.

The warranty is valid ex-works and covers labour and parts used to repair the defects.

The warranty shall not apply in the following cases:

- Failure due to unforeseen circumstances or force majeure (lightning, floods, etc.);
- Failure due to negligence or improper use (use outside limits: temperature, humidity, ventilation, electric power supply, applied load, batteries);
- Insufficient or inappropriate maintenance;
- When maintenance, repairs or modifications have not been carried out by SOCOMEC personnel, or personnel from a support centre authorised by SOCOMEC.
- If the battery has not been recharged in accordance with the terms indicated on the packaging and in the manual, in the event of long periods of storage or UPS inactivity.

SOCOMEC may, at its own discretion, opt for the repair of the product or the replacement of faulty or defective parts with new parts, or with used parts of equivalent quality to new parts with regard to function and performance.

Defective or faulty parts replaced free of charge must to be made available to SOCOMEC, which becomes the sole owner.

Replacement or repair of parts, or any modifications to the product during the warranty period, will not extend the duration of the warranty.

SOCOMEC will not be responsible for damages under any circumstances (including, without limitations, damage for loss of earnings, interruption of activity, loss of information or other financial losses) arising from the use of the product.

SUMMARY

1. SAFETY STANDARDS

This user manual specifies installation and maintenance procedures, technical data and safety instructions for SOCOMEC. For further information visit the Socomec website: www.socomec.com.

NOTE!
Any work carried out on the equipment must be performed by qualified technicians.

NOTE!
Before carrying out any operations on the unit read the installation and operating manual carefully.
Keep this manual safe for future reference.

DANGER!
Failure to observe safety standards could result in fatal accidents or serious injury, and damage equipment or the environment.

NOTE!
The models are not available for all markets. Contact Socomec for further information.

CAUTION!
If the unit is found to be damaged externally or internally, or any of the accessories are damaged or missing, contact SOCOMEC. Do not operate the unit if it has suffered a violent mechanical shock of any kind.

NOTE!
Install the unit in accordance with clearances in order to prevent access to handling devices and guarantee sufficient ventilation (see 'Environmental requirements' chapter).

NOTE!
Only use accessories recommended or sold by the manufacturer.

NOTE!
When the equipment is transferred from a cold to a warm place wait approx. two hours before putting the unit into operation.

Connect the protective earth (PE) conductor before making any other connections.

The UPS requires three-phase plus neutral input connections (3P+N). The neutral input connection is not required only in case of input transformer.

The installer is responsible for implementing the backfeed protection with the use of AC input line isolation devices external to the UPS. Refer to ‘Electrical requirements’ chapter.

DANGER! RISK OF ELECTRIC SHOCK!
Before carrying out any operations on the unit (cleaning and maintenance, connection of appliances, etc.) disconnect all power sources.

DANGER! RISK OF ELECTRIC SHOCK! After disconnecting all power sources wait approx. 5 minutes for the complete discharge of the unit.

The UPS may be powered from an IT distribution system with a neutral conductor.

WARNING! This is a category C2 UPS product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures.

NOTE: any use other than the specified purpose will be considered improper. The manufacturer/supplier shall not be held responsible for damage resulting from this. Risk and responsibility lies with the system manager.

Note: the product you have chosen is designed for environments that include all commercial, light industry and industrial establishments other than those directly connected to a low-voltage mains that supplies buildings used for residential purposes. In order to be used for particular “critical applications” such as life support systems, medical applications, commercial transportation, nuclear facilities or any other application or systems where product failure is likely to cause substantial harms to person or property, the products may have to be adapted. For such uses we would advise you to contact SOCOMEC beforehand to confirm the ability of these products to meet the requested level of safety, performance, reliability and compliance with applicable laws, regulations and specifications.

1.1. DESCRIPTION OF THE SYMBOLS

All interior and exterior precautions and warnings on labels and plates on the equipment should be complied with.

ACCUMULATORS ARE HEAVY! USE SUITABLE TRANSPORT AND LIFTING EQUIPMENT TO WORK SAFELY.

DANGER! HIGH VOLTAGE (BLACK/YELLOW)

READ THE USER INSTRUCTIONS CAREFULLY.
READ THE USER MANUAL BEFORE PERFORMING ANY OPERATIONS.

PROTECTIVE EARTH TERMINAL (PE)

BATTERIES AND RELATED PARTS CONTAIN LEAD. LEAD IS DANGEROUS TO HEALTH IF INGESTED. WASH HANDS AFTER HANDLING!

We advise you to contact SOCOMEC beforehand to confirm the ability of these products to meet the required level of safety, performance, reliability and compliance with applicable laws, regulations and specifications.

2. ENVIROMENTAL REQUIREMENTS AND HANDLING

NOTE!
Before carrying out any operations on the unit read the Safety standards chapter carefully.

2.1. ENVIRONMENTAL REQUIREMENTS

Install the unit in an equipment room where only skilled technicians have access. The room must be:

- clean and dry;
- of a suitable size;
- free from conductive, inflammable and corrosive items;
- not exposed directly to sunlight.

The floor must support the weight of the unit and guarantee its stability.

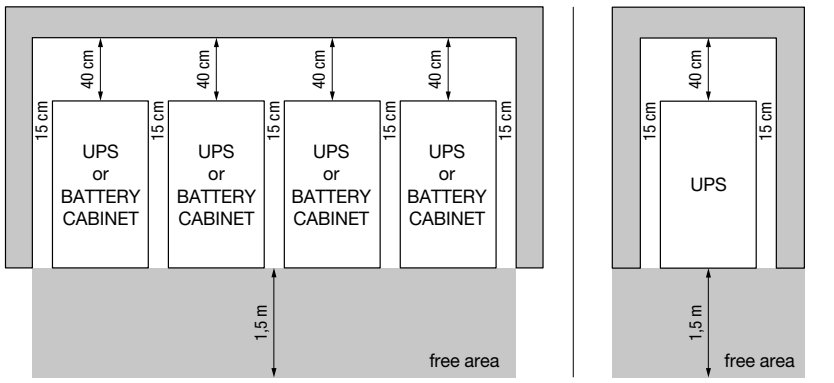
The unit is designed for indoor rooms only.

For information regarding ambient temperature, dimensions and weights refer to the Technical specification chapter.

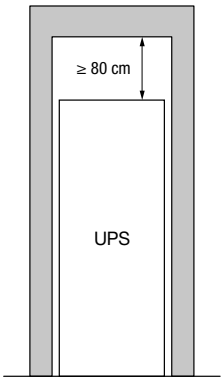
The connections and the UPS breakers need to be accessible from the rear; a space of at least 1.5 meters should be left at the front of the UPS for maintenance purposes. It is also advisable to ensure that cable connections are sufficiently long and flexible so that the unit can be extracted during maintenance, if necessary.

A space at least 40 cm must be left at the back for adequate ventilation (see figure 2.1-1 and 2.1-2).

2.1-1 Top view



2.1-2 Front view



2.2. HANDLING

- The packaging guarantees the stability of the unit during shipping and handling.
- The unit must remain in a vertical position during all shipping and handling operations.
- Ensure that the floor is strong enough to support the weight of the unit.
- Carry the packaged unit as close as possible to the installation site.

The unit MUST be handled by at least two people. The people MUST take position at the sides of the UPS with respect to the direction of movement.

When moving the unit on even slightly sloping surfaces, use the locking equipment and braking devices to ensure that the unit does not tip over.

3. ELECTRICAL INSTALLATION

NOTE!
Before carrying out any operations on the unit read the Safety standards chapter carefully.

3.1. ELECTRICAL REQUIREMENTS

The installation and system must comply with national plant regulations.

The electrical distribution panel must have a sectioning and protection system installed for input and auxiliary mains.

Ensure a type-B RCD (residual current detector) is installed on the mains power switch and that this is inserted upstream of the distribution panel.

Size of input protection devices				
Model rating	Magneto-thermal input(1)	Magneto-thermal Aux. Mains(1)	Differential input(2)	Battery protection(3)
(kVA)	(A)	(A)	(A)	(A)
	Single unit	Single unit	Selective type	Fuse
10 3/1	25	80	0.5	50 Gr
15 3/1	32	100	0.5	100 Gr
20 3/1	40	125	0.5	100 Gr
10 3/3	25	25	0.5	50 Gr
15 3/3	32	32	0.5	100 Gr
20 3/3	40	40	0.5	100 Gr

Cable core size				
Model rating	Type of cable core size	Input cable core size	Auxiliary/Output cable core size	Battery cable core size
(kVA)		mm² (AWG)	mm² (AWG)	mm² (AWG)
		flexible cable	flexible cable	flexible cable
10 3/1	min	6 (AWG10)	16 (AWG5)	6 (AWG10)
	max(4)	25 (AWG3)	25 (AWG3)	25 (AWG3)
15 3/1	min	6 (AWG10)	25 (AWG3)	6 (AWG10)
	max(4)	25 (AWG3)	25 (AWG3)	25 (AWG3)
20 3/1	min	10 (AWG7)	25 (AWG2)	10 (AWG7)
	max(4)	25 (AWG3)	25 (AWG3)	25 (AWG3)
10 3/3	min	6 (AWG10)	6 (AWG10)	6 (AWG10)
	max(4)	25 (AWG3)	25 (AWG3)	25 (AWG3)
15 3/3	min	6 (AWG10)	6 (AWG10)	6 (AWG10)
	max(4)	25 (AWG3)	25 (AWG3)	25 (AWG3)
20 3/3	min	10 (AWG7)	10 (AWG7)	10 (AWG7)
	max(4)	25 (AWG3)	25 (AWG3)	25 (AWG3)

(1) Recommended magneto-thermal switch: with intervention threshold≥10In (Curve C), it is necessary to use a D curve selective breaker in case of UPS with transformer. For backfeed protection use a magneto thermal switch with 220 V - 240 V release coil.

(2) Use a single type-B selective (S) breaker installed upstream of the inputs power supply.

(3) Protection on the external battery cabinet. Recommended magneto thermal switch: two poles with intervention threshold = 3 In suited for DC applications.

(4) Determined by the size of the terminals.

WARNING!
The UPS is designed for transient overvoltages in category II installations. If the UPS is part of the building's electrical circuit, or is likely to be subject to transient overvoltages in category III installations, additional external protection must be provided, either on the UPS or in the AC power supply network powering the UPS.

WARNING!
As specified in EN62040-3 Attachment 3: Non-linear Load Reference, in the event of three-phase non-linear loads connected downstream of the UPS, the neutral current on the load can be 1.5 - 2 times higher than the phase current. This must be considered when estimating the correct size of the output and the auxiliary neutral cables.

WARNING!
Protective earthing conductor (PE) must have sufficient current-carrying capacity. The PE cable core size has to be chosen according to the PROTECTIVE CURRENT RATING of the earth circuit that depends on the provision and location of over-current protective devices. We suggest 16 mm^2 (AWG4) for ITYS PRO 3/3 version and 25 mm^2 (AWG2) for ITYS PRO 3/1 version using the protective devices in the table above.

WARNING!
Do not excede the maximum tightening torque of 2.5 Nm for the terminals.

BACKFEED (BKF) PROTECTION

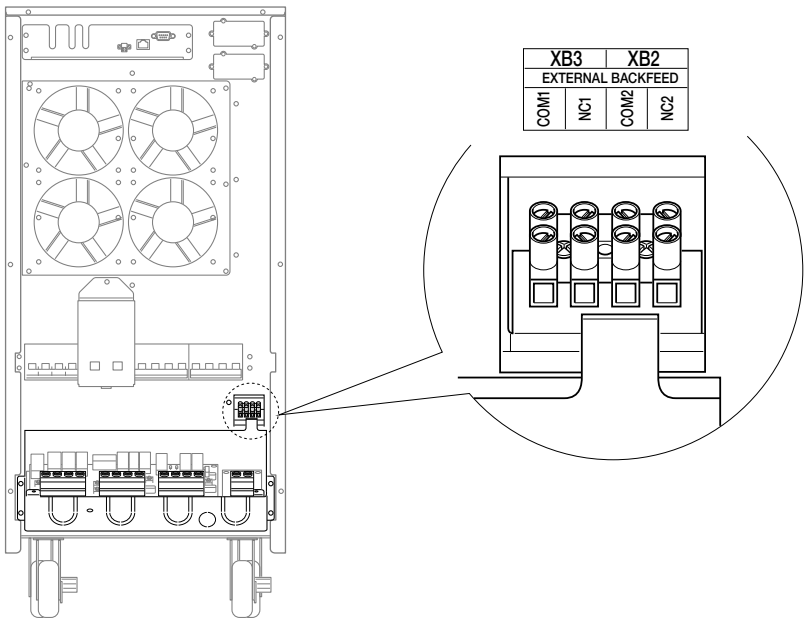
The UPS protects two power isolation devices against the backfeed of dangerous voltages.

The two power isolation devices are dedicated:

- one for the input line (MAINS SUPPLY);
- one for the auxiliary line (AUX MAINS SUPPLY).

The power isolation devices must be installed externally to the UPS.

3.1-1 Backfeed outputs



DANGER! RISK OF ELECTRIC SHOCK!
The installer must attach the warning label in order to warn electrical technicians about dangerous backfeed situations (not caused by the UPS).

The label must be affixed:

- to all primary power isolators installed remotely from the UPS area;
- to all external access points, if present;
- between the isolators and the UPS.

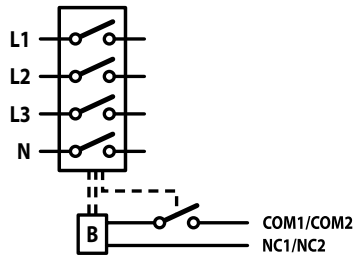
Refer to CEI EN 62040-1 2009-05, paragraph 4.7.3.

3.1-2 Warning label (supplied with the equipment)

Before working on this circuit
- Isolate the Uninterruptible Power System (UPS)
- Then check for Hazardous Voltage between all terminals including the protective earth

Risk of Voltage Backfeed

3.1-3 Backfeed electrical diagram



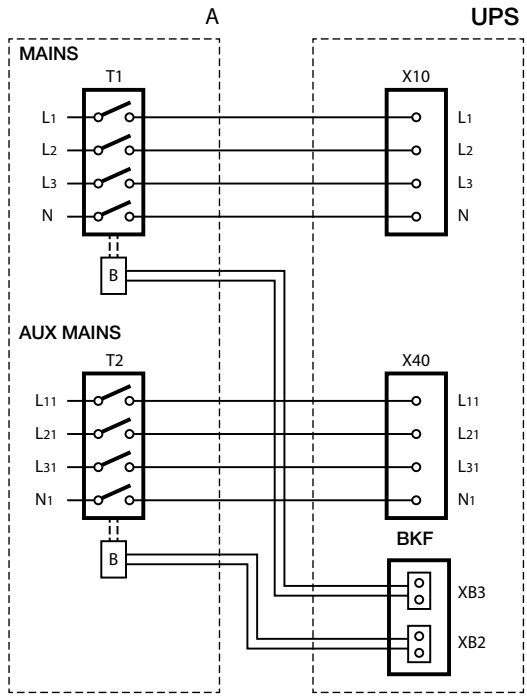
NOTE!
Use a 220-240 V release coil with integrated travel limit contact to pilot the input protection systems. If a trip coil without an integrated end-of-travel contact is used, add an early auxiliary contact (see figure). Electrical data of the contacts: 1.6 A 250 Vac.

Function	Connector name	V OUT	Internal fuse	Detail
BKF AUX	XB2	220-240 V rms	1.6 A time delay	COM 2(1) NC2
BKF MAINS	XB3	220-240 V rms	1.6 A time delay	COM1(1) NC1

(1). COM1 and COM2 are connected to the neutral.

PROTECTION WITH MAINS AND AUX MAINS CONNECTED SEPARATELY

3.1-4 3/3 models

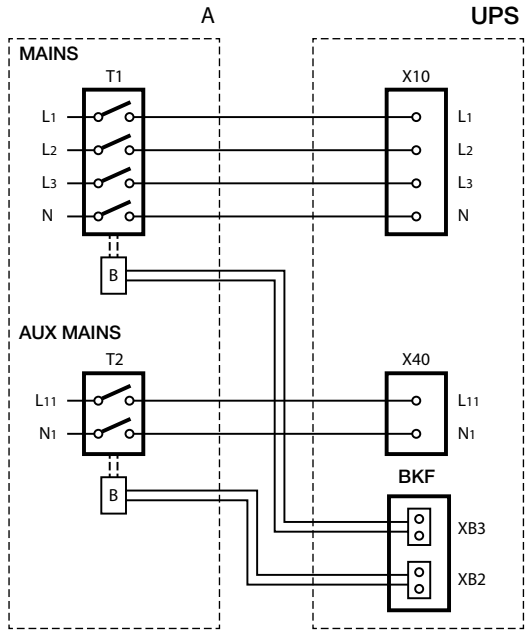


Key

A	Distribution panel
B	Trip coil
X10	Mains terminal block
X40	Aux Mains terminal block
T1	Mains BKF power isolation device
T2	Aux Mains BKF power isolation device
XB2	Aux Mains BKF connector
XB3	Mains BKF connector

Remote switches – rated current		
Model	**T1 (A)**	**T2 (A)**
10 3/3	25	25
15 3/3	32	32
20 3/3	40	40

3.1-5 3/1 models



Key

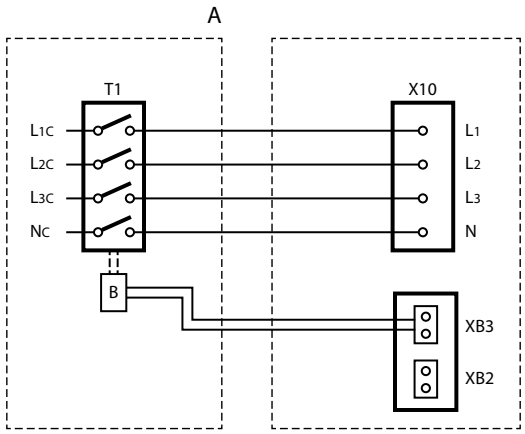
A	Distribution panel
B	Trip coil
X10	Mains terminal block
X40	Aux Mains terminal block
T1	Mains BKF power isolation device
T2	Aux Mains BKF power isolation device
XB2	Aux Mains BKF connector
XB3	Mains BKF connector

Remote switches – rated current		
Model	**T1 (A)**	**T2 (A)**
10 3/1	25	80 (TWO POLES)
15 3/1	32	100 (TWO POLES)
20 3/1	40	125 (TWO POLES)

Activating UPS protection: from mimic panel access the **MAIN MENU > SETTINGS > UPS SETTINGS > BACKFEED** and set the **BACKFEED TYPE** parameter to **SEPARATE MAINS**.

PROTECTION WITH MAINS AND AUX MAINS CONNECTED TOGETHER

3.1-6 3/3 models



Key

A	Distribution panel
B	Trip coil
X10	Mains terminal block
T1	Mains BKF power isolation device
XB2	Not connected
XB3	Mains BKF connector

Remote switches – rated current	
Model	**T1 (A)**
10 3/3	25
15 3/3	32
20 3/3	40

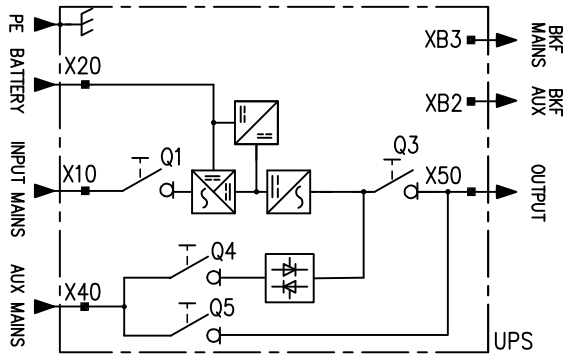
Activating UPS protection: from mimic panel access the **MAIN MENU > SETTINGS > UPS SETTINGS > BACKFEED** and set the **BACKFEED TYPE** parameter to **COMMON MAINS**.

4. OVERVIEW

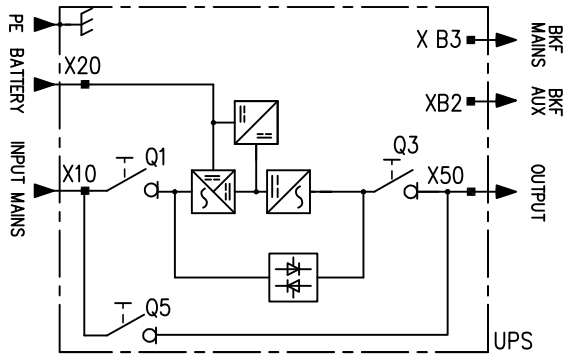
NOTE!
Before carrying out any operations on the unit read the Safety standards chapter carefully.

BLOCK DIAGRAMS

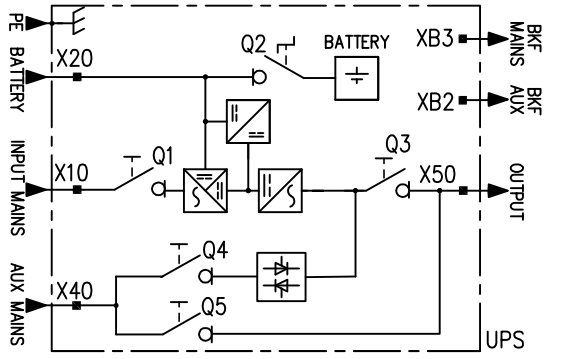
4-1 Mains and Auxiliary mains connected separately (with external batteries)



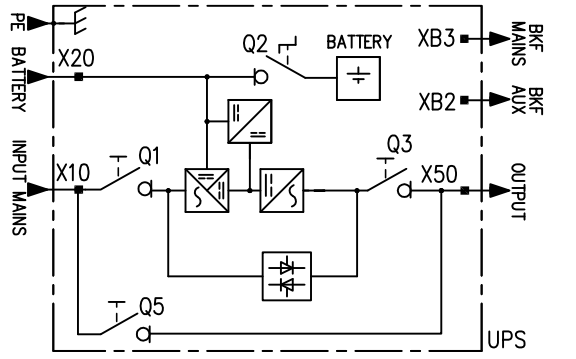
4-2 Mains and Auxiliary mains connected in common (with external batteries)



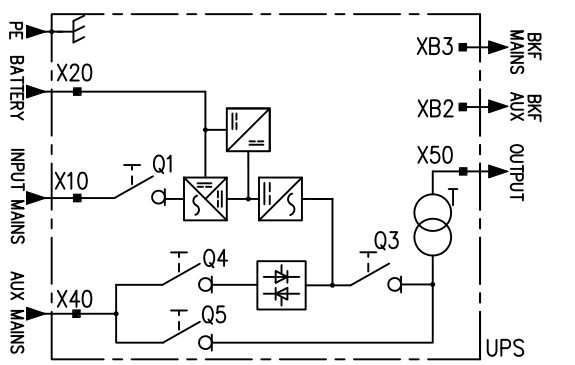
4-3 Mains and Auxiliary mains connected separately (with internal batteries)



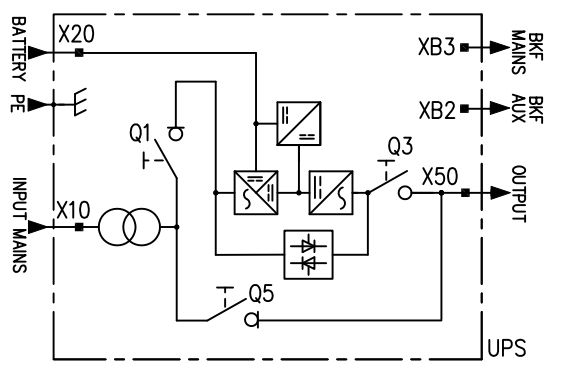
4-4 Mains and Auxiliary mains connected in common (with internal batteries)



4-5 Mains and Auxiliary mains connected separately (with output transformer)



4-6 Mains and Auxiliary mains connected in common (with input transformer)



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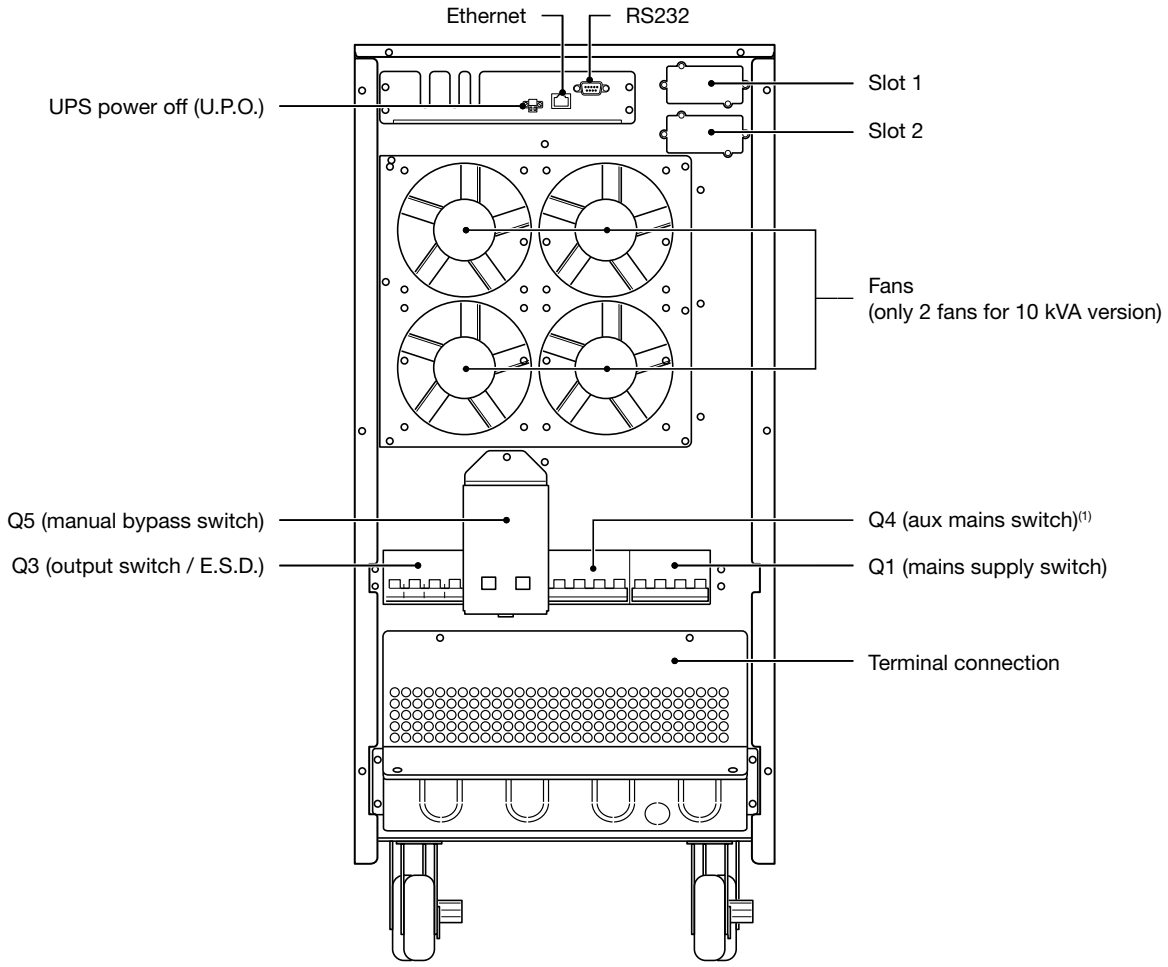
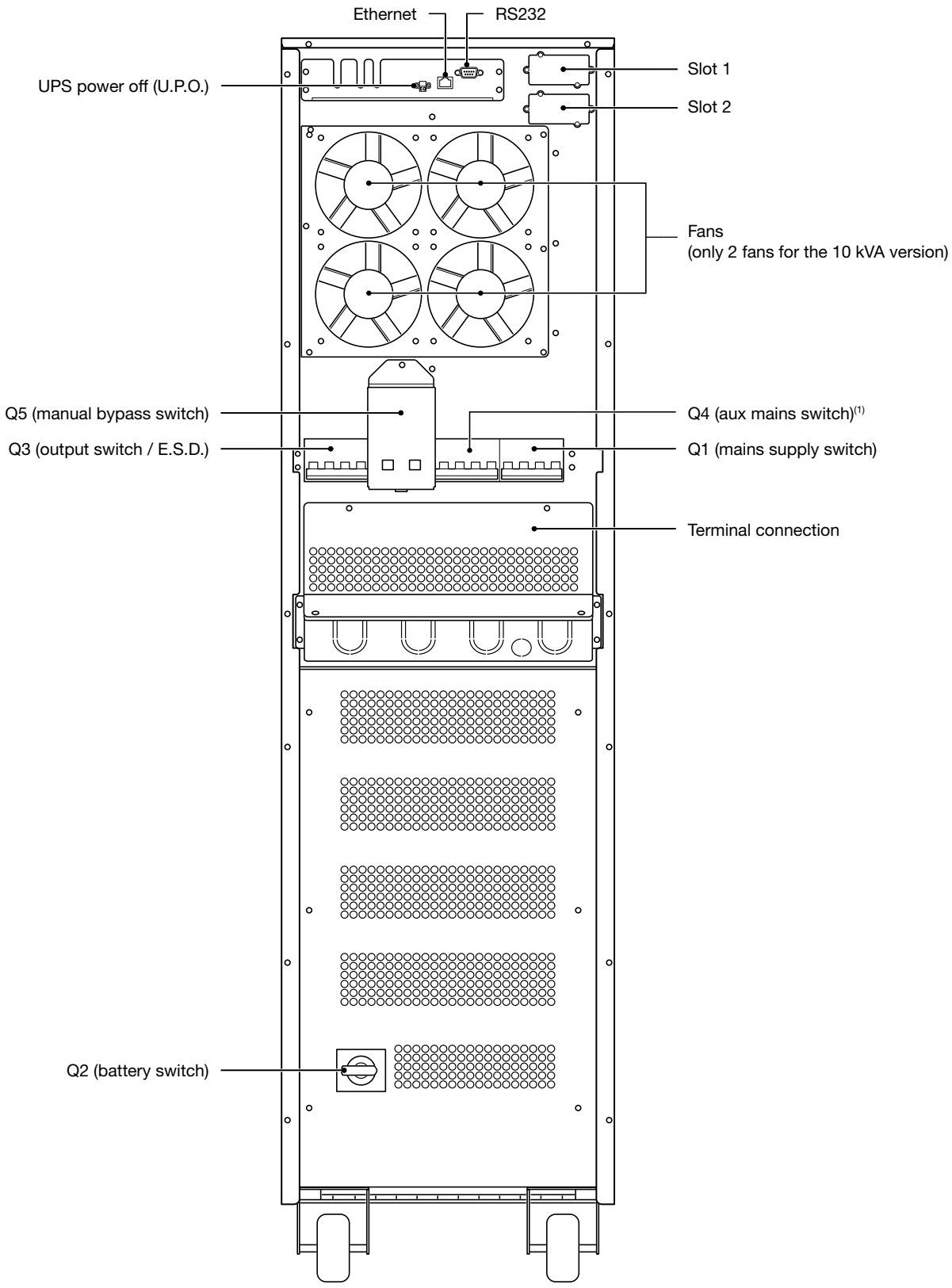
4-7 Transformer-less version without battery inside

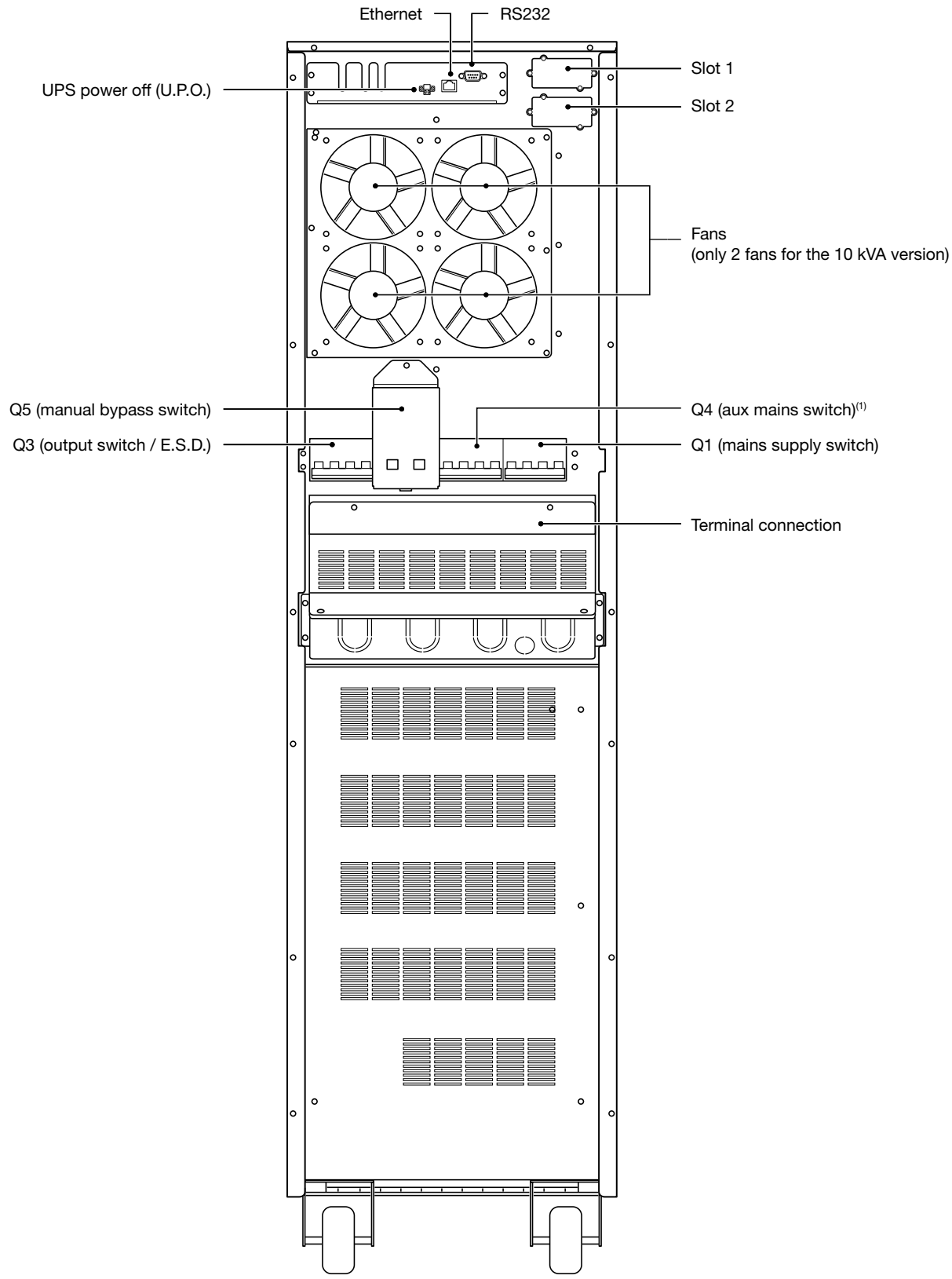


(1). Only installed on separate mains version.

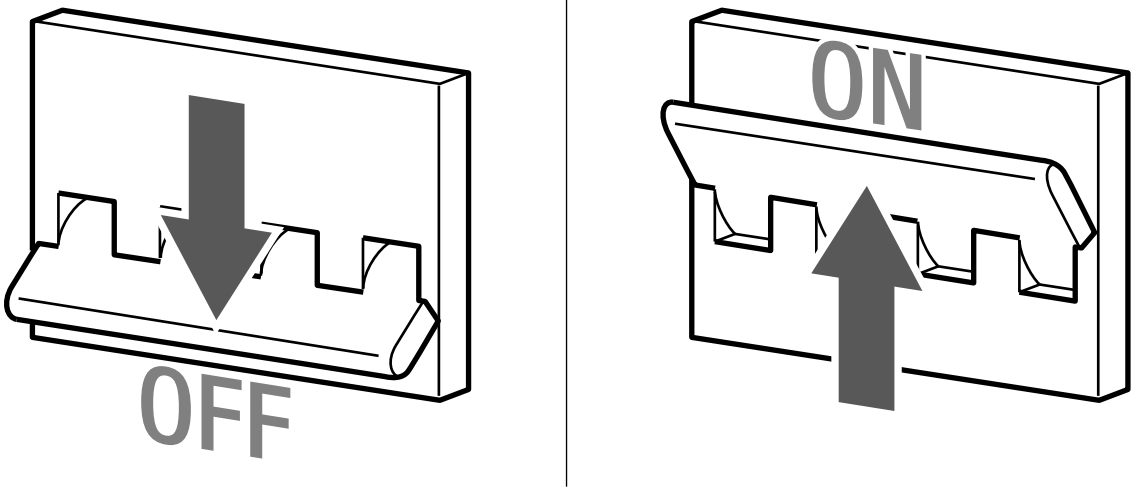
4-8 Transformer-less version with battery inside



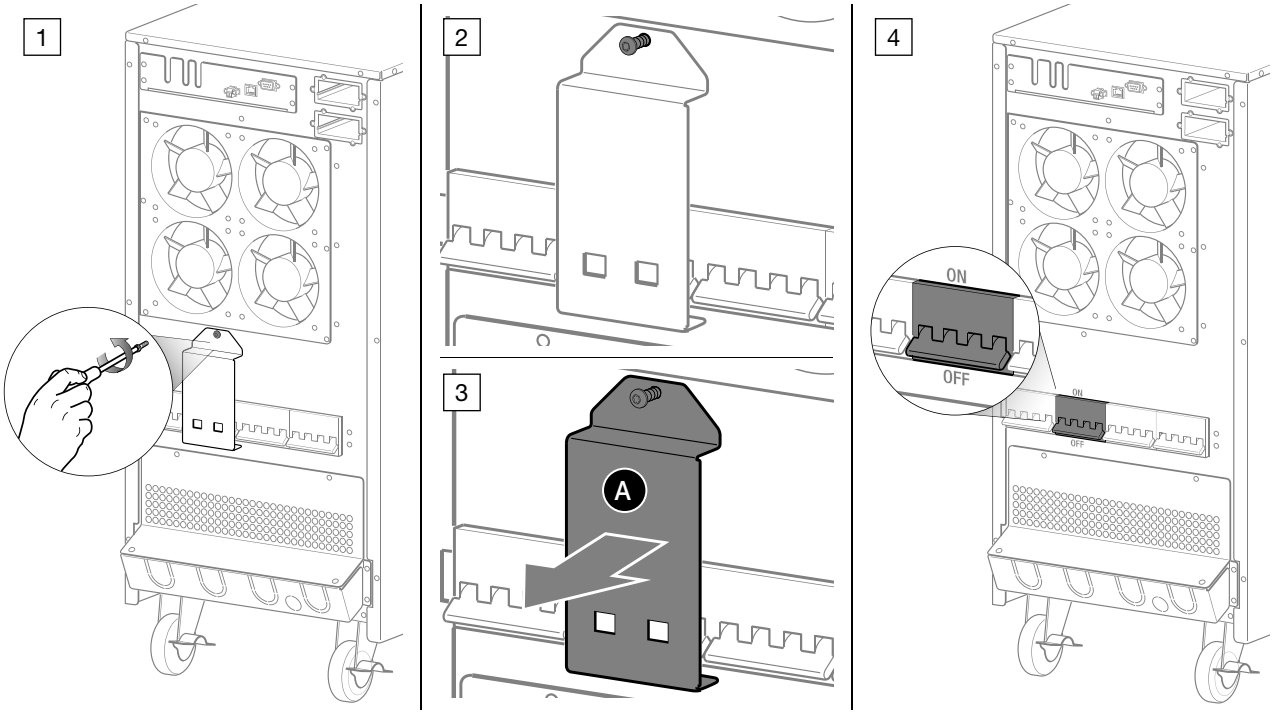
4-9 Transformer based version



4-10 Position of the switches



4-11 Q5 manual bypass switch



Follow the bypass procedure (chapter 8) before removing the bypass switch protection cover (A).

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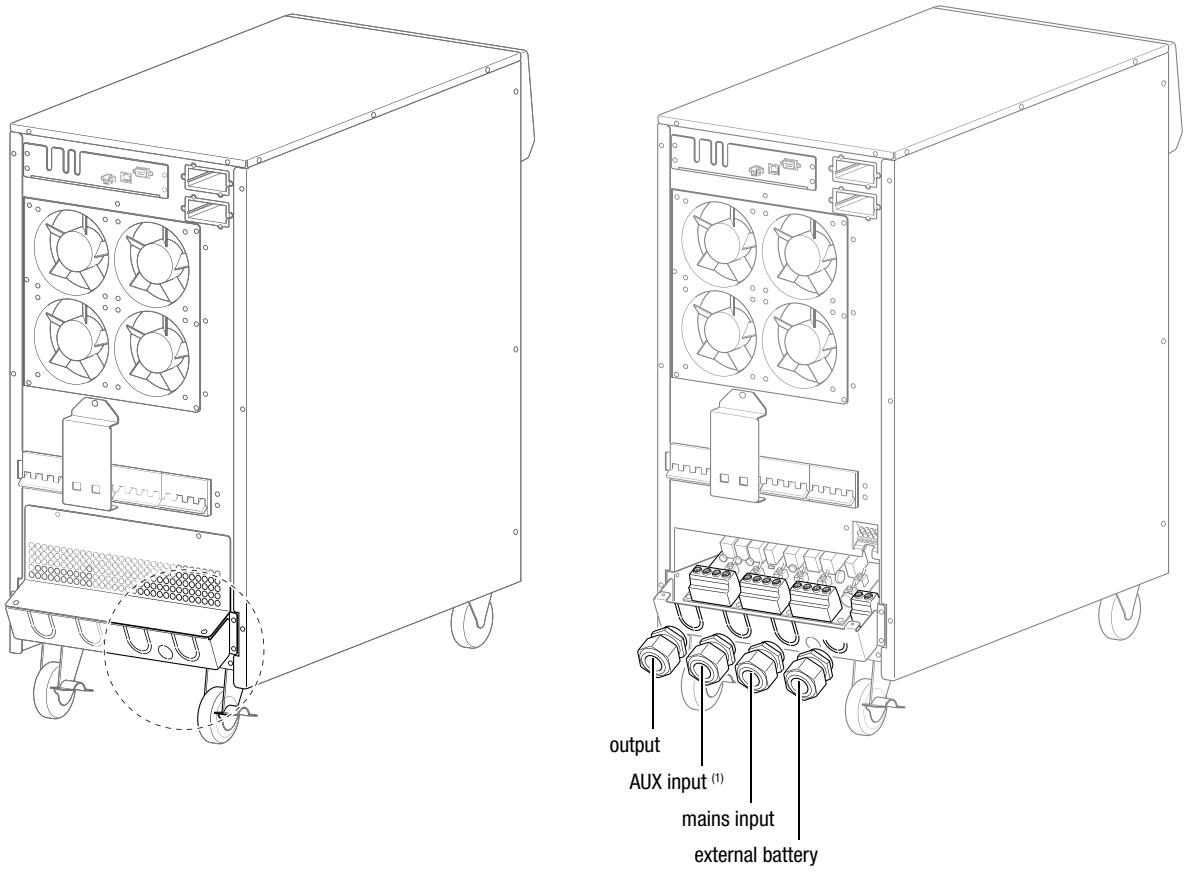
5. CONNECTIONS

NOTE!
Before carrying out any operations on the unit read the Safety standards chapter carefully.

CABLES WITH ANTI INTRUSION FERRULE

- Remove the protection;
- Remove the pre-cut cable entry slot;
- Loosen the cable gland;
- Cross the cable to the cable gland;
- Carry out all the required connection;
- Once the connection is done, fix the cable gland;
- Insert and fix the cable gland in the protection hole;
- Fix the protection.

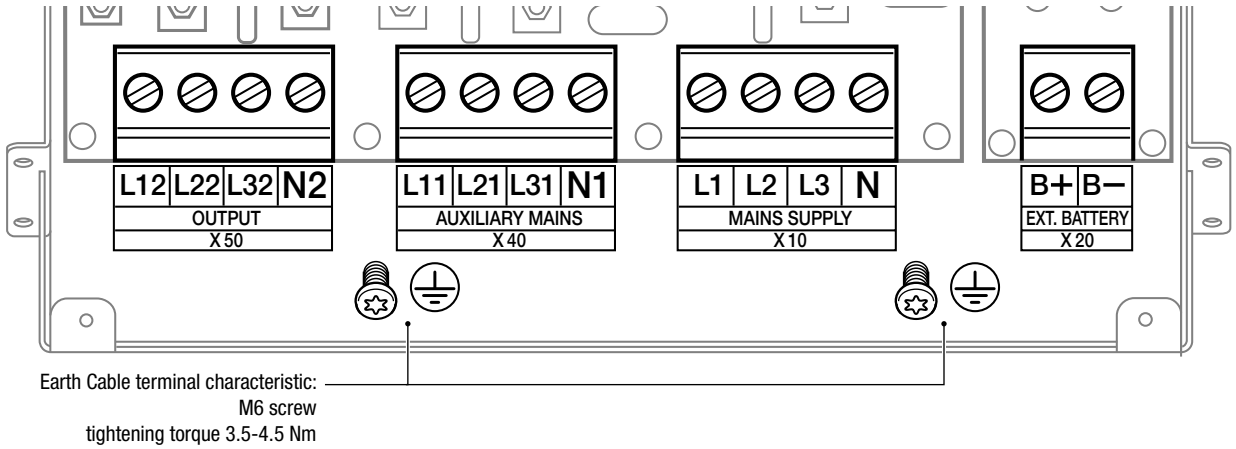
5-1 Q5 manual bypass switch



(1). Only available for separate mains version.

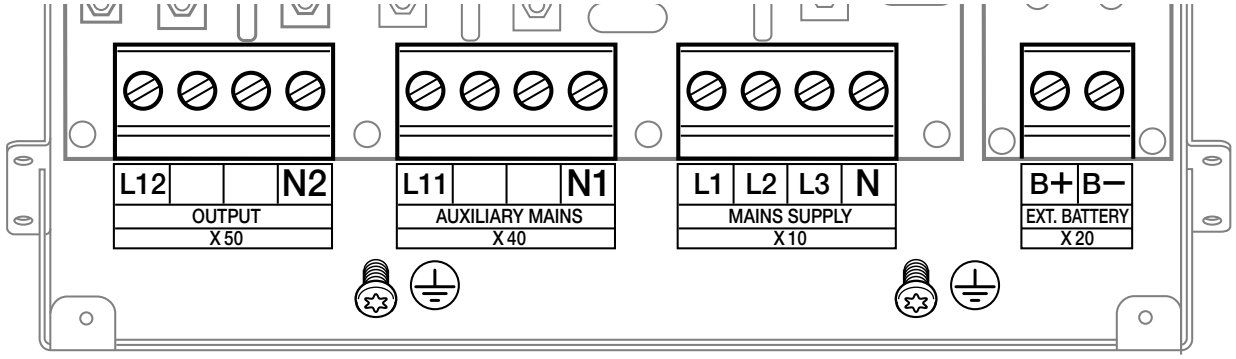
5.1. MAINS AND AUXILIARY MAINS CONNECTED SEPARATELY (3/3 MODELS)

5.1-1



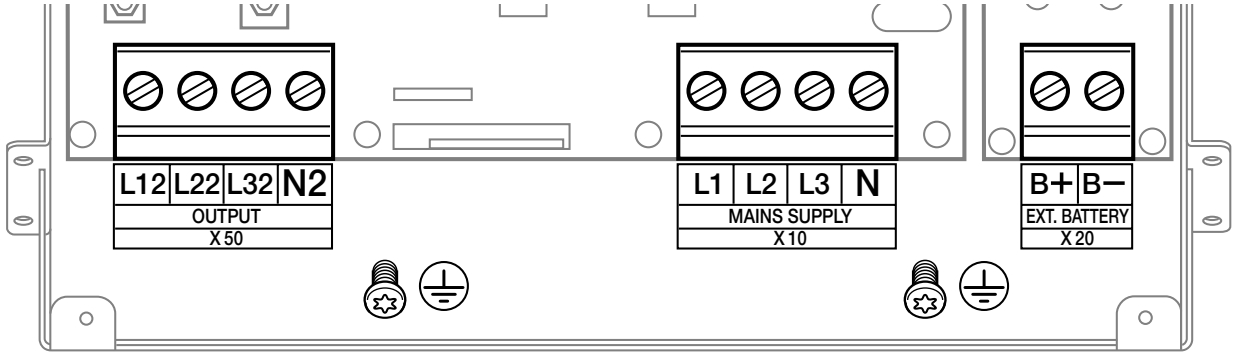
5.2. MAINS AND AUXILIARY MAINS CONNECTED SEPARATELY (3/1 MODELS)

5.2-1



5.3. MAINS AND AUXILIARY MAINS CONNECTED IN COMMON (3/3 MODELS)

5.3-1



In case of input trasformer version the mains neutral is not necessary.

5.4. EXTERNAL BATTERY CONNECTION

See chapter 2, 'Environmental requirements'.

For further information refer to the battery cabinet manual.

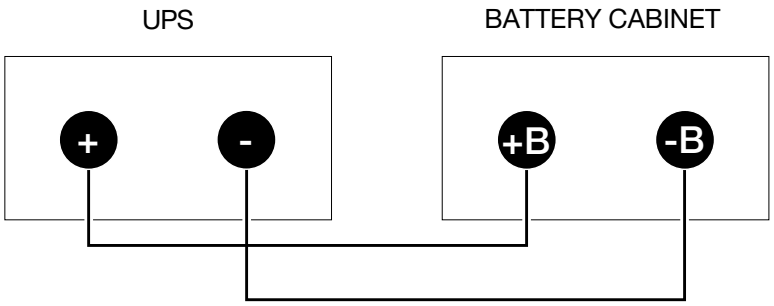
- Position the battery cabinet next to the UPS.
- Remove the plastic terminal block protection.
- Connect the protective earth (PE) cable.
- Connect the cables between the UPS terminals and the battery cabinet terminals.

WARNING!
Observing strictly:
- the polarity of each individual string (refer to the diagram below);
- the cable cross section (refer to 'Electrical requirements' chapter).

WARNING!
Cabling errors with inversion of battery polarity may cause permanent damage to the equipment.

- Reassemble the plastic terminal block protection.

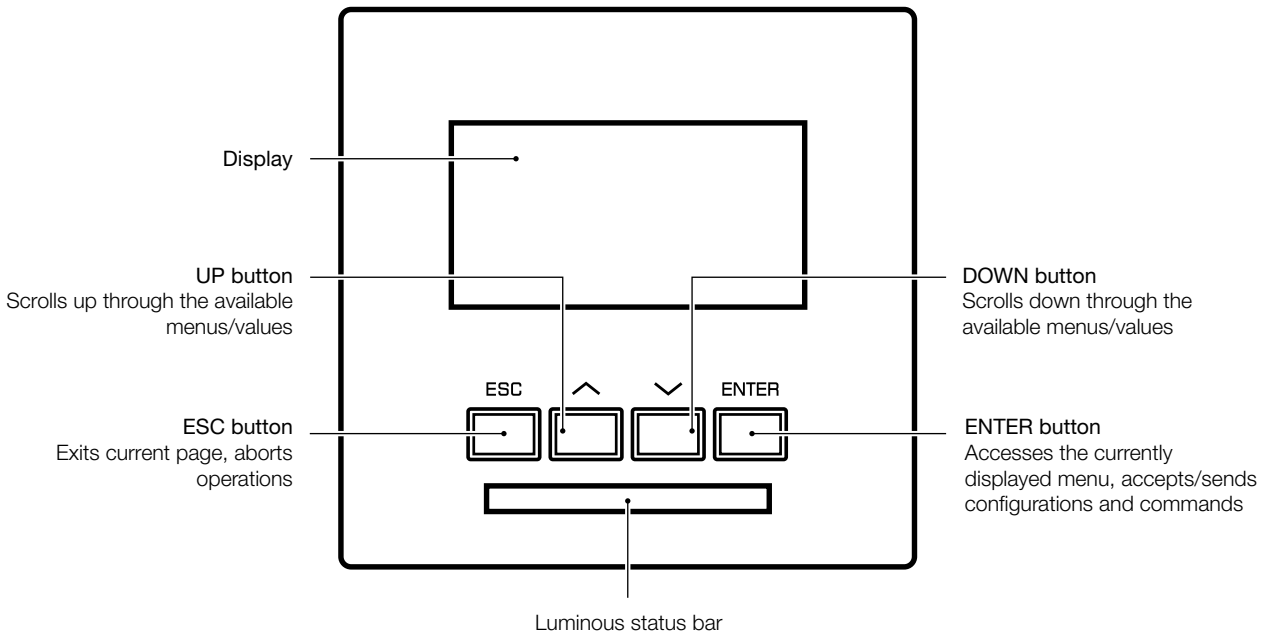
5.4-1



NOTE!
When battery cabinets not supplied by Socomec are used the installer is responsible for:
- checking electrical compatibility;
- checking the presence of appropriate protective devices (fuses and switches that ensure the cables are protected from the UPS to the battery cabinet).
Once the UPS is switched on – before closing the battery switches – check the battery parameters on the mimic panel menu. For further information, refer to 'Menu' chapter.

6. CONTROL PANEL

6-1



Control panel with LED status bar indicator	
Colour	**Description**
Flashing green	Start-up procedure in progress / Battery test in progress
Flashing green-yellow	Maintenance alert / An alarm is present with load supplied by the inverter
Yellow	On battery / Forced on bypass (with eco mode off) / Maintenance alert / Redundancy lost
Flashing yellow	Maintenance period expired / In maintenance mode / On bypass with an alarm present / Bypass procedure in progress
Flashing yellow-red	A critical alarm occurs / Load supplied / But no longer protected
Red	The load is not supplied due to an alarm
Flashing red	Stop/shut-down procedure in progress / Output supply switch-off is imminent
Flashing green-yellow-red	No communication with local communication board: no information available
Grey (OFF)	Unit off / Unit in standby / Unit off for energy saver / Unit isolated (output breaker open)

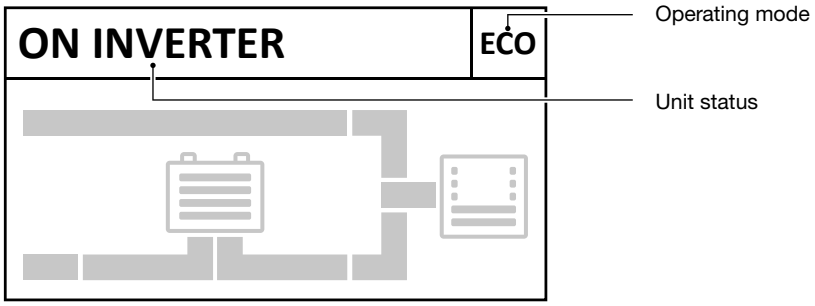
KEYPAD LOCK

The keypad can be locked by pressing the buttons in the following sequence:
ESC > UP > DOWN > ENTER
To unlock the keypad the buttons must be pressed in the reverse sequence:
ENTER > DOWN > UP > ESC
These sequences work only on MIMIC PANEL page.
When the keypad is locked the key symbol is shown (see figure below).

7. MENU

7.1. DISPLAY OVERVIEW

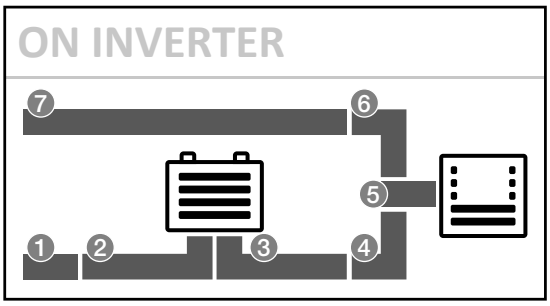
7.1-1 Status bar



Unit status	Description
UPS STARTING	The start procedure is in progress
UPS STOPPING	The stop procedure is in progress
ON MAINT. BYPASS	The manual bypass is active
IMMINENT STOP	The output supplying switch-off is imminent
ON BATTERY	The output load is on battery
BATTERY TEST	Battery test in progress
ON INVERTER	The output load is on inverter (normal mode)
ON AUTO BYPASS	The output load is on static bypass
UNIT AVAILABLE	Energy saver is active (inverter is off temporarily)
STANDBY	Unit in standby
LOAD OFF	The output load is off

Functioning mode	Description
SERV	The UPS is on maintenance mode
ISO	Output breaker / output relays open
ECO AUTO	Eco mode schedule enabled
ECO	An eco mode command has been carried out
STBY	A remote stand-by command has been carried out
ENSV	The energy-saver mode has been enabled
<NOTHING DISPLAYED>	Normal mode

7.1-2 Mimic panel



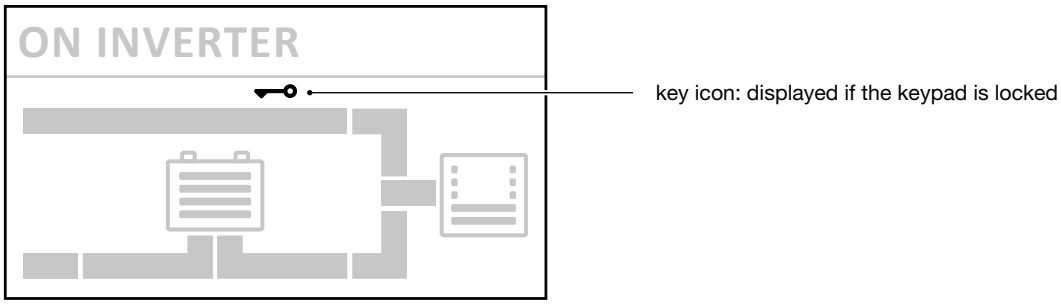
SEGMENT	DESCRIPTION
1	INPUT MAINS
2	RECTIFIER INPUT
3	INVERTER INPUT OR BATTERY OUTPUT
4	INVERTER OUTPUT
5	UNIT OUTPUT
6	OUTPUT FROM STATIC SWITCH
7	BYPASS INPUT

NOTE!
When in converter mode, 6 and 7 are not shown.

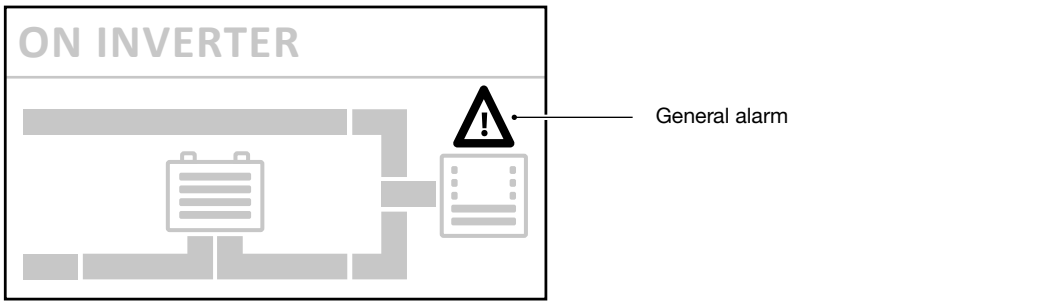
Bar styles identify the energy flow:
- solid: enabled
- dotted: disabled

ADDITIONAL ICONS

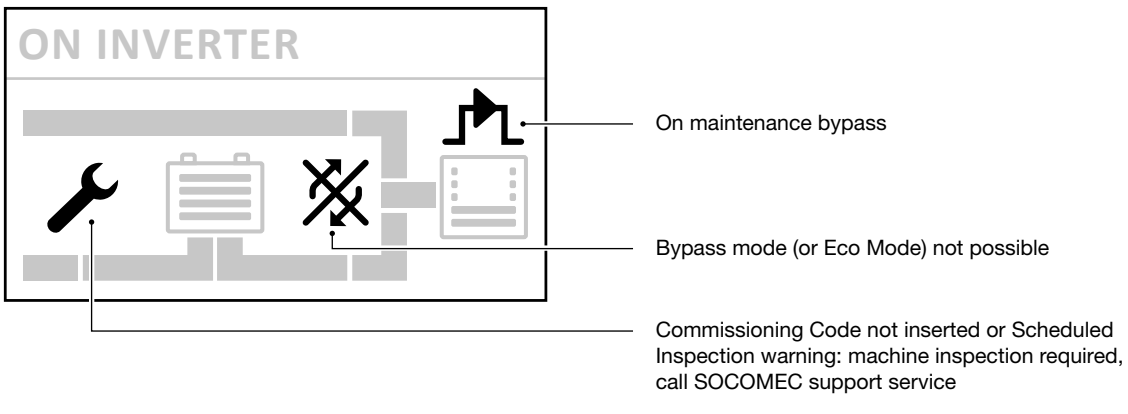
7.1-3



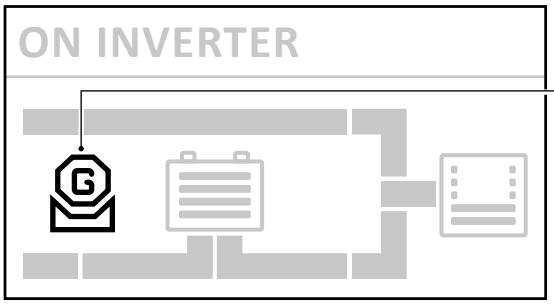
7.1-4



7.1-5

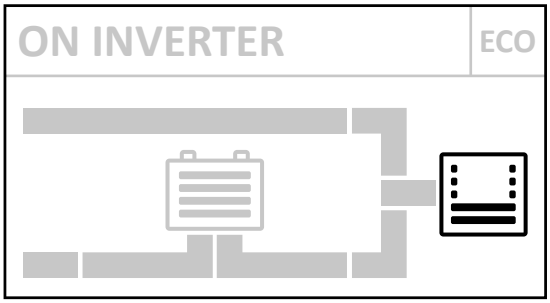


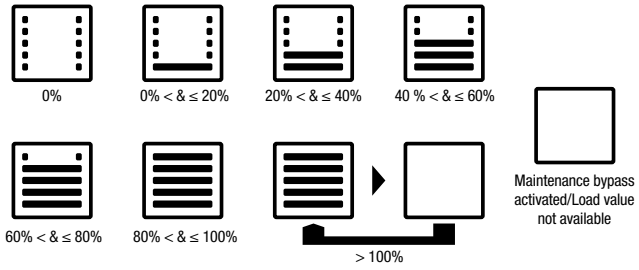
7.1-6



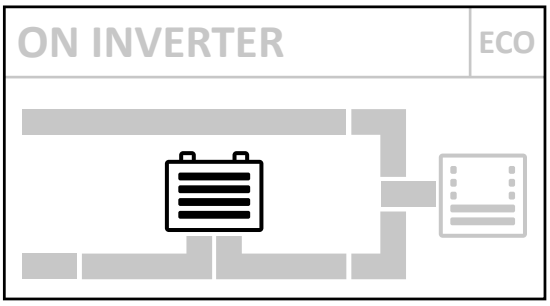
Operating on GenSet
NOTE! Available only with ADC+SL option board.

7.1-7 Load level





7.1-8 Battery status



NOTE: Battery symbol is shown only if battery available

Charged battery

Battery charging
Upper level flashing

Battery discharging
Level reached is flashing

Battery open

Battery discharged

Battery in alarm

7.2. MENU TREE

FIRST LEVEL	SECOND LEVEL	THIRD LEVEL
ALARMS		
STATES		
MEASUREMENTS	OUTPUT	
	BATTERY(1)	
	INPUT	
	BYPASS(2)	
CONTROLS	ALARMS RESET	
	START PROCEDURE	
	STOP PROCEDURE	
	BYPASS PROCEDURE	
	ECO MODE ON	
	ECO MODE OFF	
	BATTERY TEST(1)	
	LED TEST	
SETTINGS	PREFERENCES	LANGUAGE
		DATE
		TIME
		BUZZER
		PASSWORD
		REMOTE CONTROLS
	UPS SETTINGS(3)	OUTPUT
		BATTERY SETTINGS
		BACKFEED
	CONNECTIVITY	NETWORK PARAMETERS
		NETWORK SERVICES
		RS232 PORT
	SLOT OPTIONS	TEMPERATURE PROBE
		RS485 PORT SLOT 1
		RS485 PORT SLOT 2
	UPO CONFIGURATION (U.P.O.)	
SERVICE	DEVICE IDENTIFICATION	
	FIRMWARE VERSION	
	COMMISSIONING CODE	
	SERVICE CODE	
	SERVICE COMMANDS	

(1) If battery available.

(2) If not in converter mode.

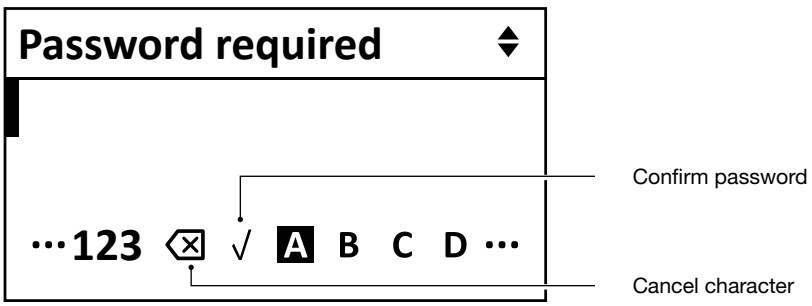
(3) Password required.

7.3. MENU FUNCTIONS DESCRIPTION

ENTERING PASSWORDS

Some operations and settings require a password in order to be performed. The default password is **SOCO**.

7.3-1



Press **UP** and **DOWN** to scroll the letters. Press **ENT** to confirm the selection or **ESC** to abort.

ALARMS MENU

This menu displays all pending UPS alarms. Use the **ALARMS RESET** command in the **CONTROLS** menu to reset alarms.(1)

STATES MENU

This menu displays all UPS states that are on.(1)

MEASUREMENTS MENU

This menu displays all UPS measurements relating to the input stage, output stage, batteries and auxiliary mains (bypass).(1)

CONTROLS MENU

This menu contains the commands that can be sent to the UPS. Some of them are password protected. If a command is not available, a **COMMAND FAILURE** message appears.

- **ALARM RESET**: this function clears the alarm history
- **START/STOP/BYPASS PROCEDURES**: see **OPERATING PROCEDURES PARAGRAPH**
- **ECO MODE ON/OFF**: this function sets/resets the **ECO MODE**
- **BATTERY TEST**: this function checks first if the conditions to do the tests are available, and after it returns the results.
- **LED TEST**: this function activates the LED blinking for few seconds

SETTINGS MENU

This menu contains all the machine settings. These are the following sub-menus:

- **PREFERENCES**: user preferences such as language, date and time, buzzer.

To reset the language back to English, press the **ESC** button for 5 seconds.

- **UPS SETTINGS**: critical machine settings for output, batteries and backfeed. Some parameters cannot be modified when the UPS is **ON** or in converter mode.

Wrong configuration in UPS SETTINGS could damage the load or the batteries.

- **CONNECTIVITY**: configurations of communication options, Ethernet and serial link.
- **SLOT OPTIONS**: configurations of available optional boards, which can be mounted on the rear slots.
- **U.P.O. CONFIGURATION**: refer to the **UPS POWER OFF** chatper

System critical parameters are password protected and should be modified by specialist personnel only.

(1) Press UP/DOWN to scroll pages.

BATTERY MENU

This is the menu for battery configuration. The list can be scrolled down to see the full list of battery settings. If batteries are not available, only the first element of the list is shown. When one of the battery settings is edited, all settings below in the list have to be checked and confirmed. The battery settings are saved only when the last battery setting is confirmed. To change battery configurations enter the menu: **MAIN MENU > SETTINGS > UPS SETTINGS > BATTERIES**.

These parameters for battery settings are critical: number of cells, capacity, charge current. Risk of damage to load or batteries.

SERVICE MENU

This menu is reserved for support service personnel and holds UPS identification data and utilities for software upgrades.

COMMISSIONING CODE

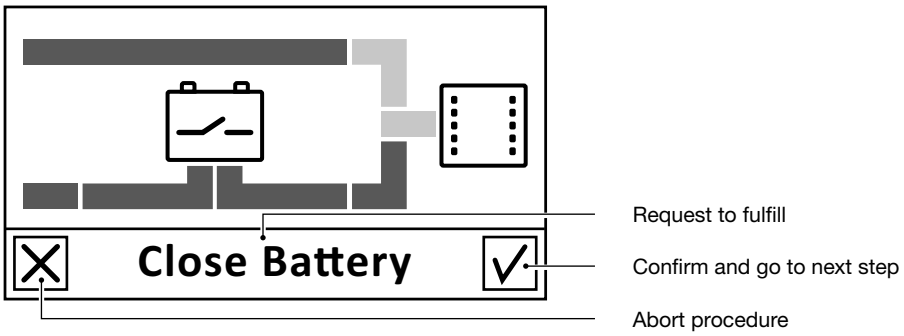
To complete equipment activation, a warranty activation code is required. To insert the **Commissioning Code** go to **MAIN MENU > SERVICE > COMMISSIONING CODE**. If the **Commissioning Code** is not inserted an alert symbol is shown on the mimic panel (🔧). The **Commissioning Code** is provided directly by the relevant Support Centre upon communication of the serial number. When the Support Centre is contacted for the **Commissioning Code**, detailed information can be obtained on the UPS functions available and on scheduled preventive maintenance programmes.

8. OPERATING PROCEDURES

NOTE!
Before carrying out any operations on the unit read the Safety standards chapter carefully.

NOTE!
While a procedure is being performed, the switches' closing/opening need to be confirmed by pressing the ENTER button.

8-1 Example of procedure step



NOTE!
For the position of the switches refer to the OVERVIEW chapter.

NOTE!
For the cabling of the UPS refer to the CONNECTION chapter.

8.1. SWITCHING ON

- Supply power to the UPS
- Put switch **Q1** into position **ON**.
- Wait for the display to switch on.
- Enter **MAIN MENU > CONTROLS > START PROCEDURE**.
- Carry out the operations indicated on the display.

8.2. SWITCHING OFF

This operation interrupts the power supply to the load. The UPS and the battery charger will be shut down.

- Enter **MAIN MENU > CONTROLS > STOP PROCEDURE**.
- Wait 2 minutes for the UPS shutdown. A countdown shows the remaining seconds.

NOTE!
The controlled shutdown of each server connected to the LAN can be managed by shutdown software. Refer to the NETVISION chapter.

- Carry out the operations indicated on the display.

8.3. BYPASS OPERATIONS

NOTE!
For the operation with manual bypass switch (Q5) refer to the OVERVIEW chapter.

SWITCHING ONTO MAINTENANCE BYPASS

This operation creates a direct connection between the UPS input and output, excluding the equipment control part. This operation is performed to emergency supply the load in the event of:

- standard maintenance
- serious failure has occurred.

WARNING! LOAD POWERED BY BYPASS MAINS!
Your load is exposed to mains disturbances.

- Enter **MAIN MENU > CONTROLS > BYPASS PROCEDURE**
- Carry out the operations indicated on the display.

NOTE!
When an external manual bypass is present:

- carry out the procedure described above;
- put the external switch to position **ON**.

SWITCHING ON FROM MAINTENANCE BYPASS

- Put switch **Q1** into position **ON**.
- Wait for the display to switch on.
- Enter **MAIN MENU > CONTROLS > START PROCEDURE**.
- Carry out the operations indicated on the display.

8.4. OPERATION IN HIGH EFFICIENCY MODE

The UPS makes it possible to select a programmable economy operating mode that can increase overall efficiency up to 98% for energy saving purposes. If the power supply fails, the UPS will automatically switch onto the inverter and continue to supply power to the load by drawing energy from the battery. This mode does not provide perfect stability in frequency and voltage like the ON LINE mode. Thus the use of this mode should be carefully evaluated according to the level of protection required by the application. Eco Mode operation provides very high efficiency, since the application is powered directly from the auxiliary mains via the automatic bypass in normal operating conditions.

8.5. OPERATION IN CONVERTER MODE

ITYS PRO can operate as a frequency converter. For such use please contact SOCOMEC.

WARNING!
SOCOMEC recommends using the converter mode only for UPS with separate auxiliary mains and auxiliary mains disconnected from the power source.

8.6. EXTENDED 'OUT OF SERVICE'

When the UPS is off for some time, the batteries must be periodically recharged regularly.
They have to be recharged every three months or as requested by the battery supplier.

- Connect the mains and auxiliary mains to the UPS.
- Put switch **Q1** into position **ON**.
- Wait for the display to switch on.
- Enter **MAIN MENU > CONTROLS > START PROCEDURE**.
- Carry out the operations indicated on the display.
- Be sure that the external battery breaker/fuse are closed.
- Put switch **Q3** into position **OFF**
- The battery must be charged for at least ten hours.
- Once ten hours have elapsed, carry out the Stop procedure to deactivate the UPS.

8.7. EMERGENCY SHUTDOWN (E.S.D.)

Put switch **Q3** into position **OFF** when it's necessary to interrupt the power supply quickly.

NOTE!
This operation interrupts the supply to the output load from both inverters and automatic bypass.

If the UPS is operating from the maintenance bypass with the mains present, the emergency shutdown does not interrupt the power supply to the load.

When an emergency condition occurs, all power supplies upstream of the UPS (also batteries) must be disconnected.

8.8. UPS POWER OFF (U.P.O.)

A Power Off button can be installed outside the unit when it's necessay to interrupt the UPS quickly (see diagrams 4.5 and 4.6).
The electrical characteristic of the signal are:

UPS POWER OFF		
max cable section	voltage (SELV)	current
AWG 16	15V	5mA

To configure enter **MAIN MENU > SETTINGS > UPO CONFIGURATION**.
There are three different configuration modes:

- **DISABLED** (the 'UPS Power Off' doesn't work. Default mode).
- **NORMALY CLOSED** (the UPS is powered off when the button/switch connected to the UPO is open)
- **NORMALY OPEN** (the UPS is powered off when the button switch connected to the UPO is closed)

9. STANDARD FEATURES AND OPTIONS

NOTE!
The features are not available for all markets. Contact Socomec for further information.

Features	Type	Availability
Modbus RTU (RS232)	Communication	Available as standard
Modbus TCP (Ethernet)	Communication	Available as standard
Standard web pages	Communication	Available as standard
Web firmware update	Communication	Available as standard
ADC + SL card	Communication	Available as option
Net Vision	Communication	Available as option
Software option	Communication	Available as option
IP31 option kit	Mechanical	Available as stardand

NOTE!
For slots positions see figures 4-5 and 4-6.

MODBUS

MODBUS is a Master/Slaves protocol, in which the UPS is one of the slaves. The Master sends a request to a slave, the slave sends the data or an ACK to the Master.

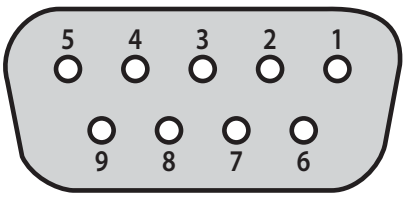
For further information about protocol and UPS mapping visit these websites:

www.socomec.com.

www.modbus.org

MODBUS RTU (RS232)

9-1



RS232 pinout

1 Not connected
2 RX for RS232
3 TX for RS232
4 Not connected
5 GND
6 Not connected
7 Not connected

MODBUS TCP (ETHERNET)

To configure the MODBUS TCP, enter **MAIN MENU > SETTINGS > CONNECTIVITY > NETWORK SERVICES**.

MODBUS TCP can be configured in three different transmission modes:

- Disabled
- Standard TCP (available at port 502)
- Tunneling (available at port 1025)

STANDARD WEB PAGES

The UPS can be remotely monitored using an Internet browser(1).

To remotely monitor the UPS, connect the browser to the UPS IP on port 80.

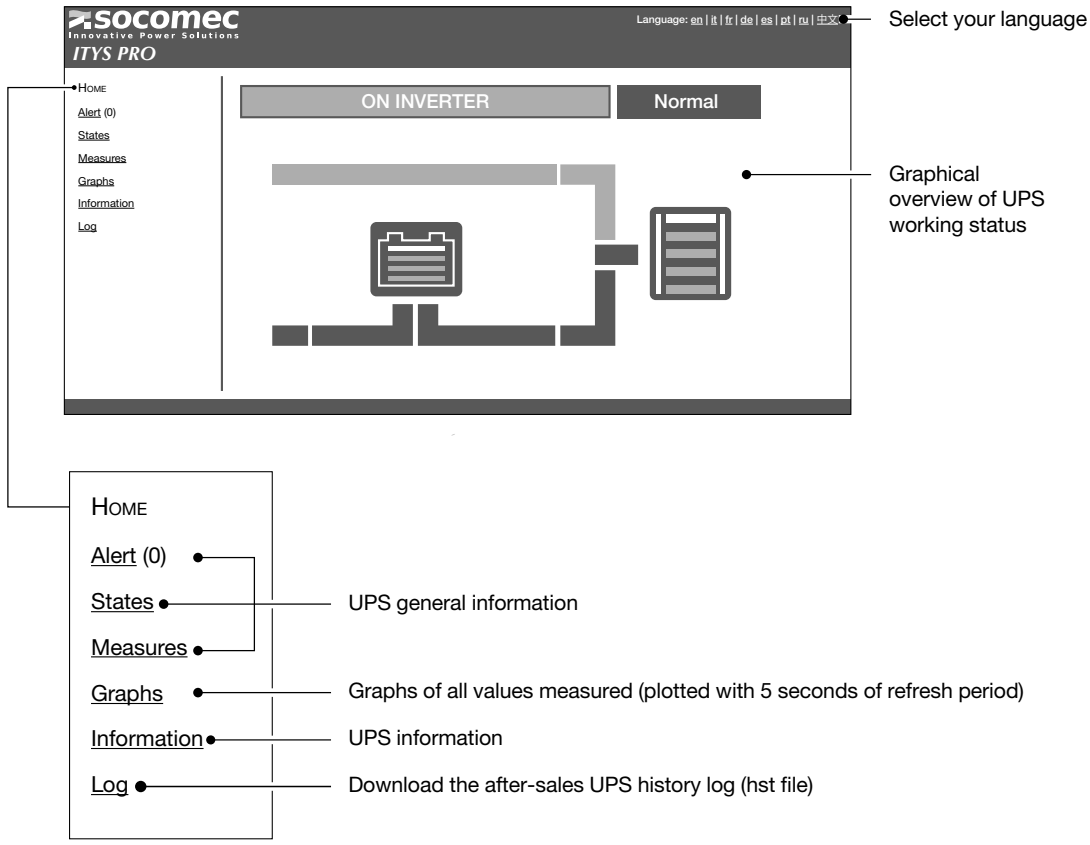
The IP can be found into **MAIN MENU > SETTINGS > CONNECTIVITY > NETWORK PARAMETERS > IP ADDRESS**.

NOTE!
The web server is a read-only interface, no commands/settings can be sent to the UPS remotely.

To set the network configuration enter **SETTINGS > CONNECTIVITY > NETWORK PARAMETERS**.

In this menu it's possible to manage the DHCP and set the static IP address, subnet mask and gateway.

9-2



9-3

(1) Tested on Windows 7 with IE 9, Chrome 36, Firefox 24, Safari 5.0 with javascript enabled through a standard Ethernet connection.

ADC+SL CARD

The ADC+SL (Advanced Dry Contact + Serial Link) is a optional slot board that provides 4 relays for external device activation, 3 free inputs to report external contacts to UPS and one connector for external temperature sensor. There is also an RS485 insulated serial link that provides MODBUS RTU protocol. A maximum of two cards can be installed on each unit.

This card can be configured to control four outputs and three digital inputs. The first output can be configured as normally open (NO) or normally closed (NC). The other three outputs are configured as normally open (NO).

Available configurations:

OPTIONS SUPERVISOR DIP1:ON - DIP2:OFF		
IN/OUT	**Description**	**Filter (s)**
In1	UPS Power Off	1
In2	Fan Failure	10
In3	Battery disconnected	10
Out1	General Alarm	10
Out2	Battery Discharging	30
Out3	Redundancy lost	10
Out4	Battery disconnected	1

SAFETY DIP1:OFF - DIP2:ON		
IN/OUT	**Description**	**Filter (s)**
In1	UPS Power Off	1
In2	Insulation Fault	1
In3	Charger Disable/Enable	1
Out1	General Alarm	10
Out2	UPS Power Off activated	1
Out3	Battery Low or Imminent UPS stop alarm	10
Out4	Insulation Fault (A026)	1

ENVIROMENTAL DIP1:ON - DIP2:ON		
IN/OUT	**Description**	**Filter (s)**
In1	UPS Power Off	1
In2	Programmable Alarm	10
In3	Battery Temperature Alarm	10
Out1	General Alarm	10
Out2	Battery Temperature Alarm	10
Out3	Overload or Redundancy lost	10
Out4	Programmable Alarm	10

NOTE!
For further information refer to the ADC+SL manual.

NET VISION CARD

NET VISION is a communication and management interface designed for business networks. The UPS behaves exactly like a networked peripheral, it can be managed remotely, and allows the shutdown of network workstations.

NET VISION allows a direct interface between the UPS and LAN network avoiding dependence on the server and support SMTP, SNMP, DMCP and many other protocols. It interacts via the web browser.

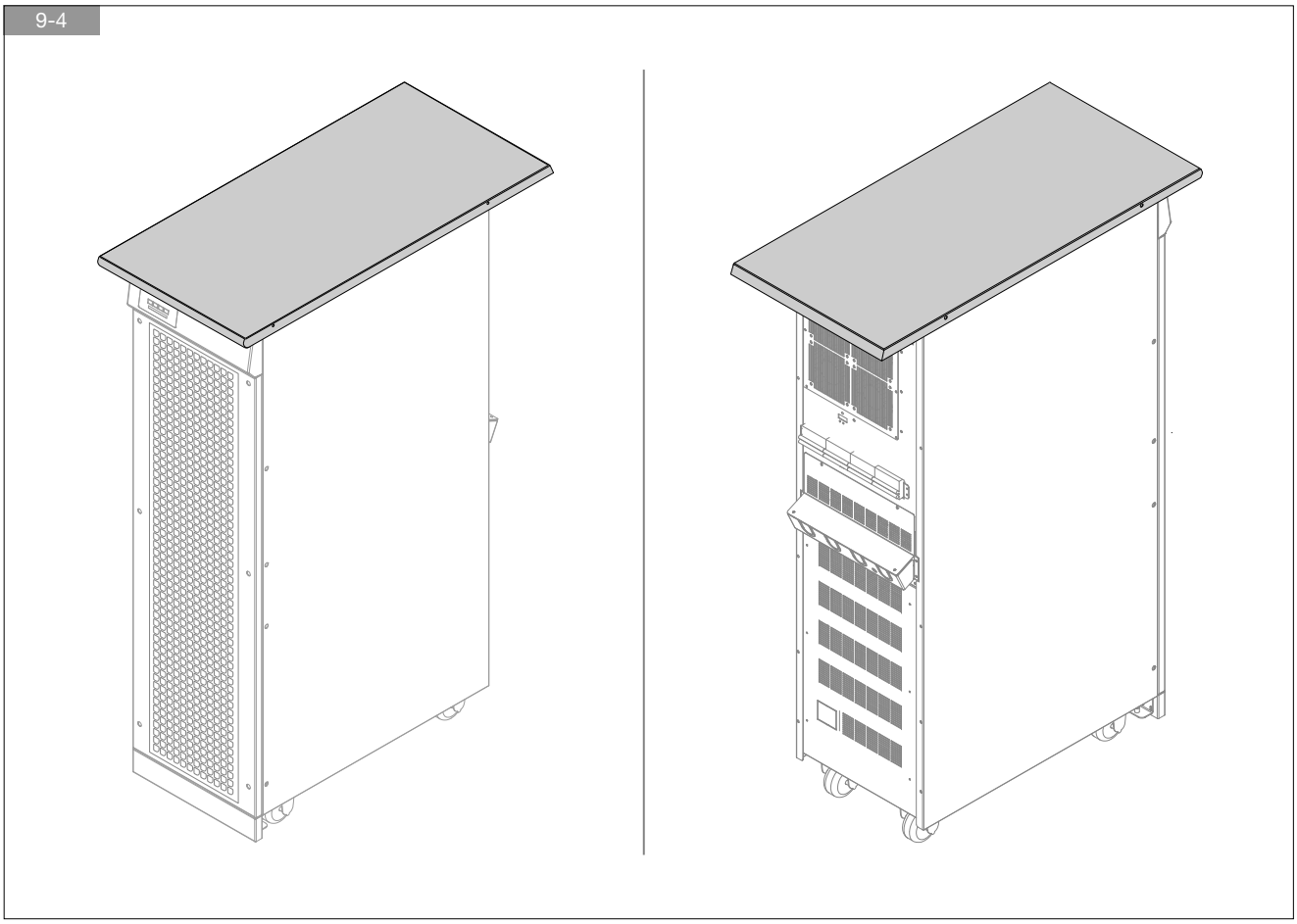
SOFTWARE OPTION

Visit www.socomec.com and enter **DOWNLOAD > SOFTWARE > UPS SOFTWARE** to find the communication software suitable for your requirements.

NOTE!
Before making any operation, check that the software is compatible with your UPS model.

IP31 ROOF

9-4

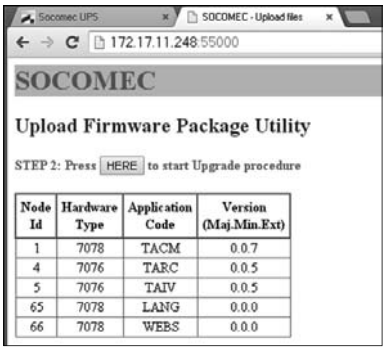


NOTE!
For further information, refer to the IP31 assembling instruction.

10. WEB FIRMWARE UPDATE

- Switch off the UPS or switch the UPS onto maintenance bypass;
- Connect to the Upgrading Web Page through a standard Internet browser (i.e Internet Explorer, Chrome, etc.): using the UPS IP address at port 55000:
  http://UPS_IP_ADDRESS:55000
  To get UPS IP address enter **MAIN MENU > SETTINGS > CONNECTIVITY > NETWORK PARAMETERS > IP ADDRESS**.
- Wait until the Upgrading Web Page shows you the UPS firmware versions

10-1

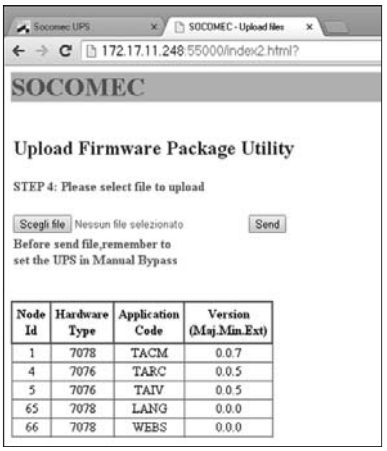


- Press '**HERE**' button to start the upgrade procedure

10-2

- Wait until the flash memory has been reset.

10-3

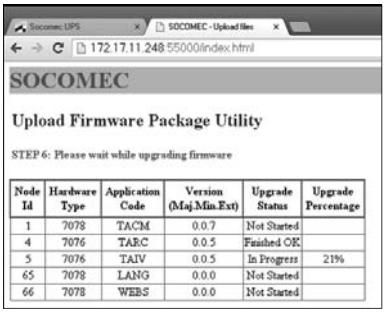


• Select the firmware package (filename.pkg) and press 'SEND' button to start programming.

10-4

• Wait until the firmware package has been uploaded.

10-5



Node Id	Hardware Type	Application Code	Version (Maj.Min.Ext)	Upgrade Status	Upgrade Percentage
1	7078	TACM	0.0.7	Not Started	
4	7076	TARC	0.0.5	Finished OK	
5	7076	TAIV	0.0.5	In Progress	21%
65	7078	LANG	0.0.0	Not Started	
66	7078	WEBS	0.0.0	Not Started	

• Wait until all the firmware items in the table have been upgraded (Finished OK)

• Once the upgrading procedure has been completed the Communication board will be reset, so you will lose the ethernet communication. In case of DHCP enabled, IP address may change; check the UPS IP address again.

NOTE!
Visit us at www.socomec.com for more info.

11. MAINTENANCE

NOTE!
Before carrying out any operations on the unit read the Safety standards chapter carefully.

NOTE!
Any work carried out on the equipment must be performed by qualified technicians authorised by SOCOMEC.

Routine maintenance carried out annually is recommended in order to provide optimum operating efficiency and avoid equipment downtime.

Maintenance consists of thorough functionality checks on:

- electronic and mechanical parts;
- dust removal;
- battery inspection;
- software updating;
- environmental checks.

BATTERIES

The condition of the battery is fundamental to UPS operation.

During the operating lifetime of the battery, the UPS stores statistics on the conditions of use of the battery for analysis.

The expected life time of the batteries is very much dependent on operating conditions:

- number of charging and discharging cycles;
- load rate;
- temperature.

NOTE!
Batteries must only be replaced with batteries recommended or sold by the manufacturer. Batteries must only be replaced by qualified technicians.

BEWARE!
Used batteries contain harmful substances. Do not open the plastic cover!

NOTE!
Used batteries must be placed in the appropriate containers to avoid leakage acid.
They should only be entrusted to a specialist waste disposal company.

FANS & CAPACITORS

The lifespan of consumable parts such as fans and capacitors (AC and DC) depends on whether or not the use and environmental conditions (premises, usage or load type) are abnormal or harsh for the equipment.

It is advisable to replace consumables as follows(1):

Consumable part	Years
Fan	5
DC capacitor	10
AC capacitor	10

(1). Based on operation of the unit according to the manufacturer's specification.

12. TROUBLESHOOTING

For other alarms that may appear please contact Service.

Alarm	Name	Description
A000	Imminent Stop	An imminent stop is about to happen. In two minutes the UPS will be shut down. This can be provoked by a critical alarm or a user request.
A001	UPS overload	The load is exceeding the UPS power specification. The machine will turn off. Reduce the load immediately.
A003	Transfer locked	The UPS is unable to transfer the load between bypass and inverter.
A004	Transfer impossible	Bypass is not available.
A008	Eco mode disabled by UPS	Eco mode is disabled due to bypass failure.
A012	Maintenance alarm	UPS needs ordinary maintenance. Please contact Service.
A013	Remote service alarm	UPS needs immediate maintenance. Please contact Service.
A014	Remote service preventive alarm	A non-critical alarm is present.
A015	General alarm	An alarm is present.
A016	Battery disconnected	The battery is not connected to the UPS.
A017	Battery discharged	The battery charge level is under the minimum value.
A019	Operating on battery	The UPS is running on battery.
A021	Battery room alarm	The battery temperature is too high.
A022	Battery test failed	The battery has failed the last battery test.
A027	Battery alarm	A battery alarm is present.
A032	Rectifier critical	There is a problem on the rectifier. Please contact Service.
A035	Rectifier input supply not ok	The input mains supply is out of tolerance. Verify that the input voltage and frequency are within the UPS ratings.
A037	Charger critical alarm	There is a problem on the battery charger. Please contact Service.
A040	Inverter critical	There is a problem on the inverter. Please contact Service.
A041	Inverter preventive	There is a non-critical problem on the inverter. Please contact Service.
A048	Bypass critical	There is a problem on the bypass. Please contact Service.
A049	Bypass preventive	There is a non-critical problem on the bypass. Please contact Service.
A050	Bypass Input supply not ok	The auxiliary supply is out of tolerance. Verify that the input voltage and frequency are within the UPS ratings.
A051	Phase detection fault	The auxiliary mains are not connected properly. Please check the phases connection.
A052	Bypass backfeed detection	There is a backfeed problem on the bypass. Please contact Service.
A057	Internal backfeed detection	There is a backfeed problem on the rectifier. Please contact Service.
A059	UPS power off (UPO)	The UPO emergency button was pressed.
A060	Wrong configuration	UPS is not properly configured. Please check the configurations or contact Service.
A061	Communication failure	There is an internal communication problem. Please contact Service.
A062	Option Board Alarm	There is a communication problem with the option board. Please check that the board is properly inserted.

13. TECHNICAL SPECIFICATIONS

NOTE!
Read the Safety standards chapter carefully.

TRANSFORMER-LESS VERSION

Models			10	15	20
Input/Output phases			3/1 and 3/3	3/1 and 3/3	3/1 and 3/3
Electrical specification - Input mains					
Input mains voltage		V	3P+N 400 V ± 20% (- 40% @ 70% of nominal load)		
Input mains frequency		Hz	50-60 ±10%		
Input mains power factor			0.99		
Total input current harmonic distortion (THDi)			< 3%		
Electrical specification - Auxiliary mains					
Auxiliary mains voltage		V	3/1 1P+N 230V ±15% (± 20% with generator - selectable) 3/3 3P+N 400V ±15% (± 20% with generator - selectable)		
Auxiliary mains frequency		Hz	50/60 Hz ± 2 Hz (selectable from ±1 Hz to ±3 Hz) 50/60 Hz ±3 Hz (selectable from ±1 Hz to ±5 Hz) with GENSET		
Electrical specification - External battery					
Battery voltage range		V	From 240[1] up to 380[2] (Equivalent to 25 x 12 V SLA battery)		
Electrical specification - Output					
Output voltage (three-phase + neutral)		V	3/1 230 single phase (selectable: 208[3]/220/230/240) ±1% 3/3 400 three-phase (selectable: 360[3]/380/400/415) ±1%		
Frequency		Hz	50-60 ±2 Hz (from ±1 Hz to ±5 Hz with GENSET)		
Nominal apparent power (Sn) (0 °C to 40 °C)		kVA	10	15	20
Nominal active power (Pn) (0 °C to 40 °C)		kW	9	13.5	18
Overload (@ 25 °C; Vin ≥ 207 Vrms ; Vbat ≥ 300 V) [4]	10 minutes 5 minutes 1 minute 30 seconds	kW	10 11.34 12.24 13.5	15 17 18.36 20.25	20 22.68 24.48 27
Crest factor at 25 °C			≥ 2.7		
Total output voltage harmonic distortion (THDv)			≤ 1 with linear load		
Environment					
Operating temperature		°C	0-40 (15-25 recommended for longer battery life)		
Storage temperature		°C	-5; + 50		
Relative humidity		%	0-95 condensation free		
Altitude (max)		m	1000 without de-rating; 3000 max		
Acoustic noise at 1 m (ISO 7779) (@: Pn, Vn, resistive linear load, 25°C)		dBA	≤ 58	≤ 60	≤ 60
Required cooling capacity		m^3/h	408	816	816
Dissipated power (Vin=400Vrms, Pn)		W	510	690	920
Dissipated power (Vin=400Vrms,Pn)		BTU/h	1740	2354	3139
Dimensions and Weight - single cabinet					
Models	T	Dimensions (W x D x H)	mm	370 x 780 x 1385	
		Weight	kg	82 - 318	
	M	Dimensions (W x D x H)	mm	370 x 780 x 1170	
		Weight	kg	75 - 230	
	S	Dimensions (W x D x H)	mm	370 x 780 x 810	
		Weight	kg	58 - 68	

Models		10	15	20
Input/Output phases		3/1 and 3/3	3/1 and 3/3	3/1 and 3/3
Standards				
Safety		EN 62040-1, EN 60950-1		
Type and performance		EN 62040-3 (VFI-SS-111)		
EMC		EN 62040-2 (CLASS C2)		
Product certification		CE		
Protection level		IP20, IP31 on request (compliant with 60529)		

(1) With batteries fully discharged. Call SOCOMEC support service for details.

(2) With batteries fully charged. Call SOCOMEC service for details.

(3) Pout=90% Pnom

(4) Initial condition 80%Sn

INPUT TRASFORMER BASED VERSION

Models			10	15	20
Input/Output phases			3/3	3/3	3/3
Electrical specification - Input mains					
Input mains voltage		V	3P 400V +-20% (-40% @ 70% of nominal load)		
Input mains frequency		Hz	50-60 ±10%		
Input mains power factor			0.99		
Total input current harmonic distortion (THDi)			< 3%		
Electrical specification - External battery					
Battery voltage range		V	From 240(1) up to 380(2) (Equivalent to 25 x 12 V SLA battery)		
Electrical specification - Output					
Output voltage (three-phase + neutral)		V	3/3 400 three-phase (selectable: 360(3)/380/400/415) ±1%		
Frequency		Hz	50-60 Hz (from ±1 to ±5 Hz with GENSET)		
Nominal apparent power (Sn) (0 °C to 40 °C)		kVA	10	15	20
Nominal active power (Pn) (0 °C to 40 °C)		kW	8	12	16
Overload (@ 25 °C; Vin ≥ 207 Vrms; Vbat ≥ 300 V) (4)	10 minutes 5 minutes 1 minute 30 seconds	kW	8.9 10 10.9 12	13.3 15.1 16.3 18	17.8 20.2 21.8 24
Crest factor at 25 °C			≥ 2.7		
Total output voltage harmonic distortion (THDv)			≤ 1% with linear load		
Environment					
Operating temperature		°C	0-40 (15-25 recommended for longer battery life)		
Storage temperature		°C	-5; + 50		
Relative humidity		%	0-95 condensation free		
Altitude (max)		m	1000 without de-rating; 3000 max		
Acoustic noise at 1 m (ISO 7779) (@: Pn, Vn, resistive linear load, 25°C)		dBA	≤ 59	≤ 61	≤ 61
Required cooling capacity		m3/h	571	1142	1142
Dissipated power (Vin=400Vrms, Pn)		W	782	1173	1565
Dissipated power (Vin=400Vrms,Pn)		BTU/h	2668	4000	5340
Dimensions and Weight - single cabinet					
Models	Dimensions (W x D x H)	mm	370 x 780 x 1385		
	Weight	kg	134-162	178-203	195-208
Standards					
Safety			EN 62040-1, EN 60950-1		
Type and performance			EN 62040-3 (VFI-SS-111)		
EMC			EN 62040-2		
Product certification			CE		
Protection level			IP31 (compliant with 60529)		

(1) With batteries fully discharged. Call SOCOMEC support service for details.

(2) With batteries fully charged. Call SOCOMEC service for details.

(3) Pout=90% Pnom

(4) Initial condition 80%Sn

OUTPUT TRASFORMER BASED VERSION

Models			10	15	20
Input/Output phases			3/1 and 3/3	3/1 and 3/3	3/1 and 3/3
Electrical specification - Input mains					
Input mains voltage		V	3P+N 400 V ± 20% (- 40% @ 70% of nominal load)		
Input mains frequency		Hz	50-60 ±10%		
Input mains power factor			0.99		
Total input current harmonic distortion (THDi)			< 3%		
Electrical specification - Auxiliary mains					
Auxiliary mains voltage		V	3/1 1P+N 230V ±15% (± 20% with generator - selectable) 3/3 3P+N 400V ±15% (± 20% with generator - selectable)		
Auxiliary mains frequency		Hz	50/60 Hz ± 2 Hz (selectable from ±1 Hz to ±3 Hz) 50/60 Hz ±3 Hz (selectable from ±1 Hz to ±5 Hz) with GENSET		
Electrical specification - External battery					
Battery voltage range		V	From 240[1] up to 380[2] (Equivalent to 25 x 12 V SLA battery)		
Electrical specification - Output					
Output voltage (three-phase + neutral)		V	3/1 230 single phase (selectable: 208[3]/220/230/240) ±2% 3/3 400 three-phase (selectable: 360[3]/380/400/415) ±2%		
Frequency		Hz	50-60 Hz (from ±1 Hz to ±5 Hz with GENSET)		
Nominal apparent power (Sn) (0 °C to 40 °C)		kVA	10	15	20
Nominal active power (Pn) (0 °C to 40 °C)		kW	9	13.5	18
Overload (@ 25 °C; Vin ≥ 207 Vrms; Vbat ≥ 300 V) [4]	10 minutes 5 minutes 1 minute 30 seconds	kW	10 11.34 12.24 13.5	15 17 18.36 20.25	20 22.68 24.48 27
Crest factor at 25 °C			≥ 2.7		
Total output voltage harmonic distortion (THDv)			≤ 1% with linear load		
Environment					
Operating temperature		°C	0-40 (15-25 recommended for longer battery life)		
Storage temperature		°C	-5; +50		
Relative humidity		%	0-95 condensation free		
Altitude (max)		m	1000 without de-rating; 3000 max		
Acoustic noise at 1 m (ISO 7779) (@: Pn, Vn, resistive linear load, 25°C)		dBA	≤ 59	≤ 61	≤ 61
Required cooling capacity		m3/h	571	1142	1142
Dissipated power (Vin=400Vrms, Pn)		W	782	1173	1565
Dissipated power (Vin=400Vrms,Pn)		BTU/h	2668	4000	5340
Dimensions and Weight - single cabinet					
Models	Dimensions (W x D x H)	mm	370 x 780 x 1385		
	Weight	kg	134-162	178-203	195-208
Standards					
Safety			EN 62040-1, EN 60950-1		
Type and performance			EN 62040-3		
EMC			EN 62040-2		
Product certification			CE		
Protection level			IP31 (compliant with 60529)		

(1) With batteries fully discharged. Call SOCOMEC support service for details.

(2) With batteries fully charged. Call SOCOMEC service for details.

(3) Pout=90% Pnom

(4) Initial condition 80%Sn

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