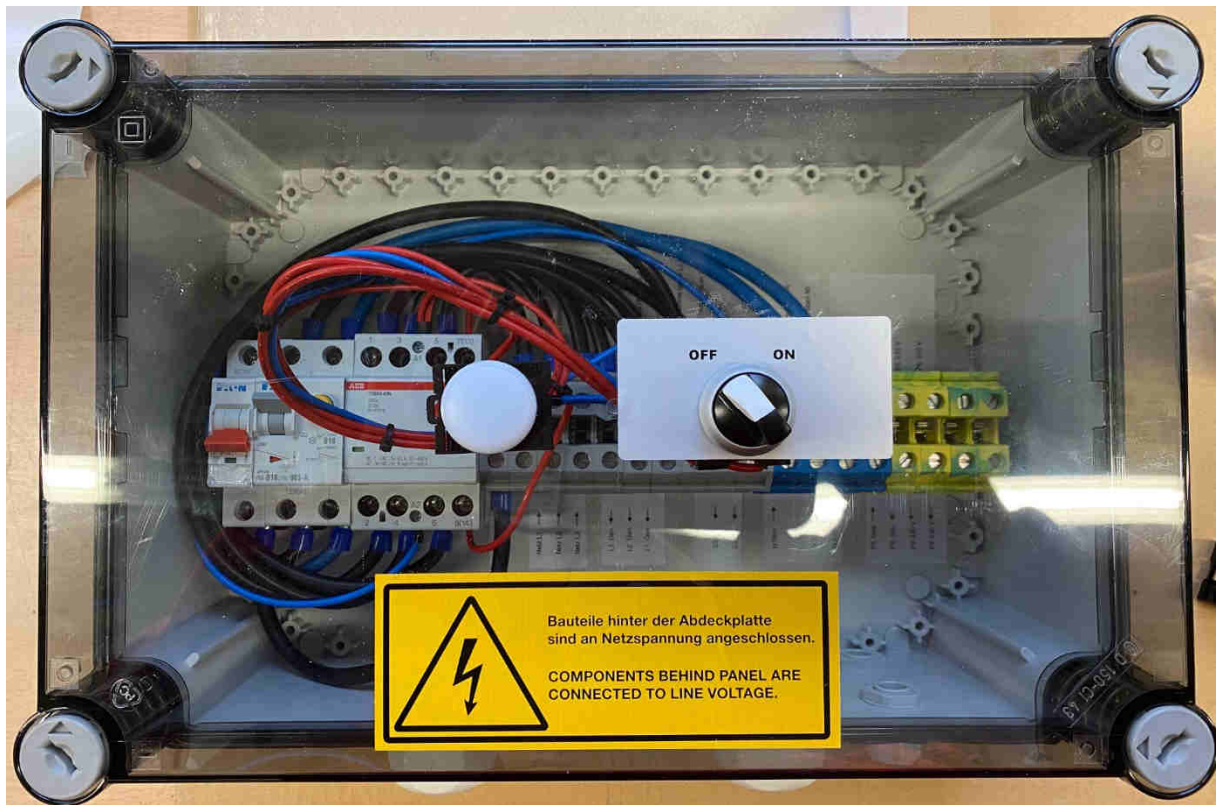


# Power Box

Model/ID: 7021-0-0000

## Technical Description

Ident. No. 5021-0-0004



**NOTE**

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**NOTE**

The information contained in this document conforms to the configuration of the equipment as of the date of manufacture. Revisions to the equipment subsequent to the date of manufacture will be addressed in service updates distributed to the PROTEC Technical Service Organization.

**Revision Status**

<b>Revision-No.</b>	<b>Date</b>	<b>List of effective pages</b>	<b>Comments</b>
1.0	18-02-2021	all	Original Issue
2.0	16-12-2021	Page 10,11	Changing description
3.0	2025-07-01	All	First edition PROTEC X-ray Systems GmbH

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## General Notes

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**WARNING!**

No changes of the ME device!

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## Mechanical – Electrical Warning

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**WARNING!**

All of the movable assemblies and parts of this equipment should be operated with care and routinely inspected in accordance with the manufacturer's recommendations contained in the equipment Accompanying Documents. Maintenance and service is only to be performed by Customers authorized by PROTEC X-ray Systems GmbH. Live electrical terminals are deadly. Failure to comply with the foregoing may result in serious or fatal bodily injuries to the operator or those in the area.

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## Radiation Warning

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**WARNING!**

The component of the equipment described within this Document is part of a system for the intended generation of X-rays for medical diagnosis. X-rays generate a potential risk for both patients and operators. For this reason, the application of X-rays for a given medical purpose must aim at the minimization of radiation exposition to any persons. Those persons responsible for the application must have the specific knowledge according to legal requirements and regulations and must establish safe exposure procedures for these kinds of systems. Those persons, responsible for the planning and installation of this equipment, must observe the national regulations.

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## To the User

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### NOTE

The user of this document is directed to read and carefully review the instructions, warnings and cautions contained herein prior to beginning operation, installation or service activities.

While you may have previously operated equipment similar to that described in this document, changes in design, manufacture or procedure may have occurred which significantly affect the present operation. Although the product was subject to a risk analysis and the design corresponds to the current state of the art, residual risk will remain in clinical use. These are displayed in the following user manual by application limitations, contraindications, warnings and precautions.

The installation and service of equipment described herein is to be performed by authorized, qualified **PROTEC X-ray Systems GmbH** customers. Assemblers and other customers not employed by nor directly affiliated with **PROTEC X-ray Systems GmbH** technical services are directed to contact the local **PROTEC X-ray Systems GmbH** office before attempting installation or service procedures. For installation and service jobs is necessary to use the „Technical description“ of the product and to observe any containing point.

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### NOTE

The use of the product with attachments or accessories or other components not authorized by PROTEC is not permitted.

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## 1 Product Description

The power box ensures that generators without a 230V connection can be operated. The required 230V voltage for the components (power supply for the X-ray system and charging options for the DR panel) is separately fused and made available.

With the ON/OFF switch the power supply of the generator can be powered-off.



### NOTE

All instructions supplied with the system must be followed and all contained safety instructions must be kept exactly.

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## 2 Technical information

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### WARNING!

Before starting to replace individual components, note the following:

- Disconnect the power
  - Secure against being switched on again
  - Check that there is no voltage
- 



### WARNING!

Before putting the appliance back into operation, observe the following:

- Remove tools and accessories
  - Refit the removed protective coverings
  - Do not remove protective measures at the switching points until you have been cleared from the work areas.
  - When working with several employees, make sure that no one is still in the danger zone
- 

### 2.1 Dimensions

In the following picture you can see the dimensions of the Power Box (37,5cm x 25cm x 17,5cm)



 The Power Box has a total weight of 7kg.

### 2.2 Power supply

**Input:** 3-Phase x 380/400 Vac +1N +1PE

**Output 1:** 3-Phase x 380/400 Vac + 1PE to the generator

**Output 2:** 1-Phase 230 Vac + 1N +1PE to X-ray system and auxiliary devices

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### WARNING!

To avoid the risk of electric shock, this appliance must only be connected to a supply mains with a protective earth conductor.

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## 2.3 Components



On/Off switch



Indicator light LED 230V



FI/LS Switch B16A/30mA



Power contactor, 4 Closed contacts  
63A, 230V ac coil

### 3 Installation requirements

The room intended for the installation of the X-ray system must be prepared.

This may need to include modifications for routing electrical connections to a central distribution cabinet. The electrical and structural design of the room intended for the generator must comply with local regulations (electrical and floor weight load).

An AC / DC ELCB universal current sensitive earth leakage circuit breaker with a leakage current of 30 mA is recommended for the X-ray system.

For the supply line to the Power BOX, 3 phases, L1, L2, L3, neutral conductor N and the earthed conductor PE are required.

Generator fuse protection (F1) See figure 4-1.

The fuses are small compared to the operating current and the operating power.

This affects the cross-sectional diameter of the power cables, as this must be adjusted according to the required power supply resistance.

It must be considered here that the X-ray generator only needs this high current for a short time.

The cross-sectional diameter of the power cables is influenced by various factors (e.g. current consumption, the length of the supply cable, ...), so all factors should be taken into account in a calculation.

However, in the case of power supply companies, the calculations are carried out according to the installed power, which can lead to different results for the cross-sectional diameters of the power cables.

Control fuse (F2) See figure 4-1

The auxiliary circuit for controlling the main contactor must be protected with a 10 A fuse or circuit breaker.

System switch / emergency stop switch (S0) See figure 4-1.

Note: The switch must be mounted near the generator control panel.

Main contactor (K1) See figure 4-1.

A 63 A contactor with an auxiliary contact and a 230 V AC coil is recommended for the X-ray generator.

Residual current circuit breaker (F3) See figure 4-1.

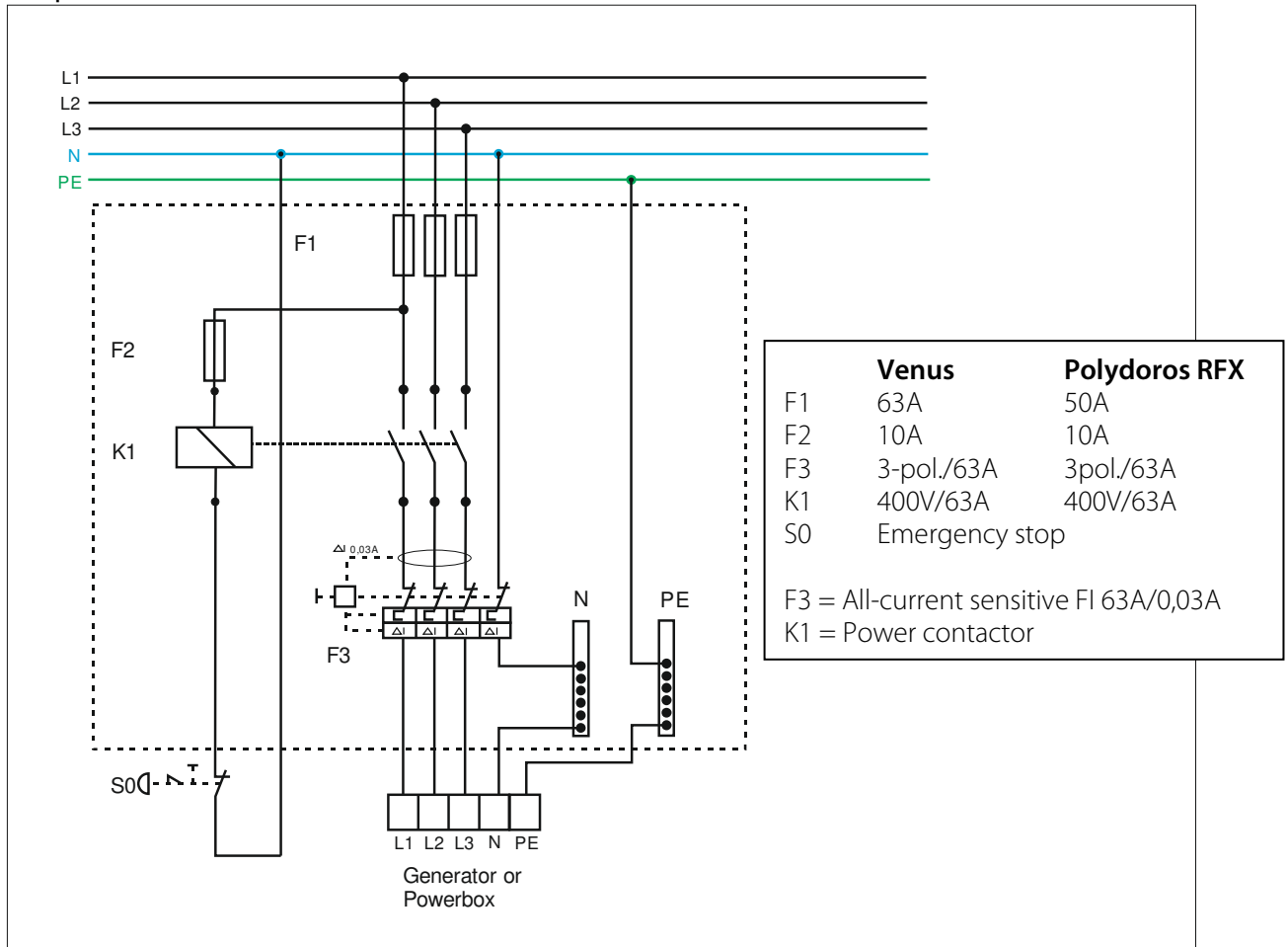
An AC/DC ELCB (earth leakage circuit breaker) with a leakage current of 30 mA is recommended for the X-ray generator.

Transmission terminal block

The power cable from the distribution box to the Power Box must not exceed 16 mm<sup>2</sup> due to the input terminals inside the Power Box.

**Figure 4-1: Power supply connection of the X-ray system with X-ray generator**

**Main power line**



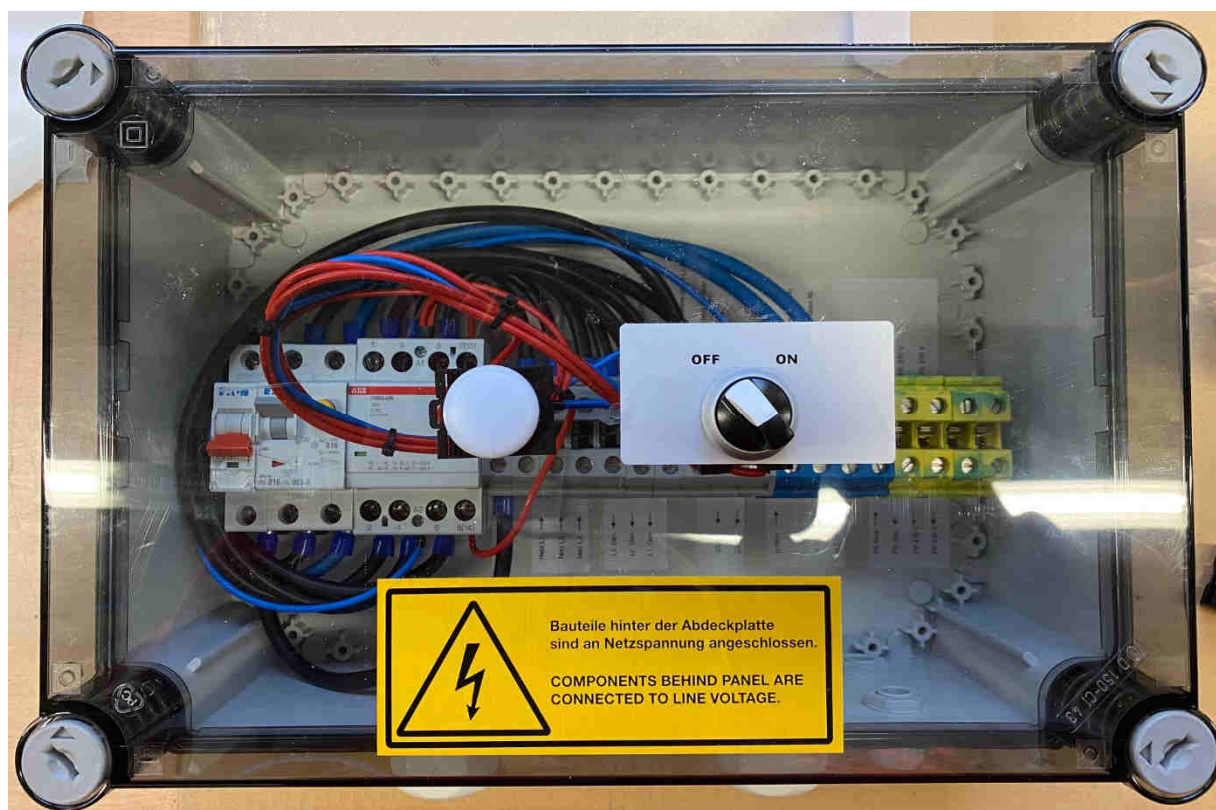
## 4 Installation of the Power Box

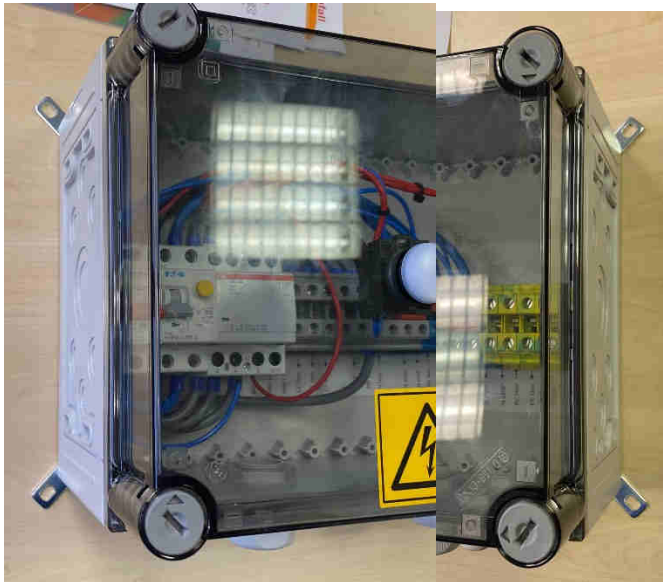
The power box supplies power to the X-ray generator (400V) and the associated components (230V). The power box contains a fuse and an FI circuit breaker. If these circuit breakers trip, the system must be checked by a technician.

The connection of the power box must be done like in the following description. Special settings are not necessary. The spare part list can be found in chapter 6.

Find a proper place where the power box has to be installed. We recommend to install the power box in the control room. The power box is connected with a 2,5m cable to the generator.

After you have found a suitable place for the power box, fix it to the wall with 4 screws (6 mm screw diameter).





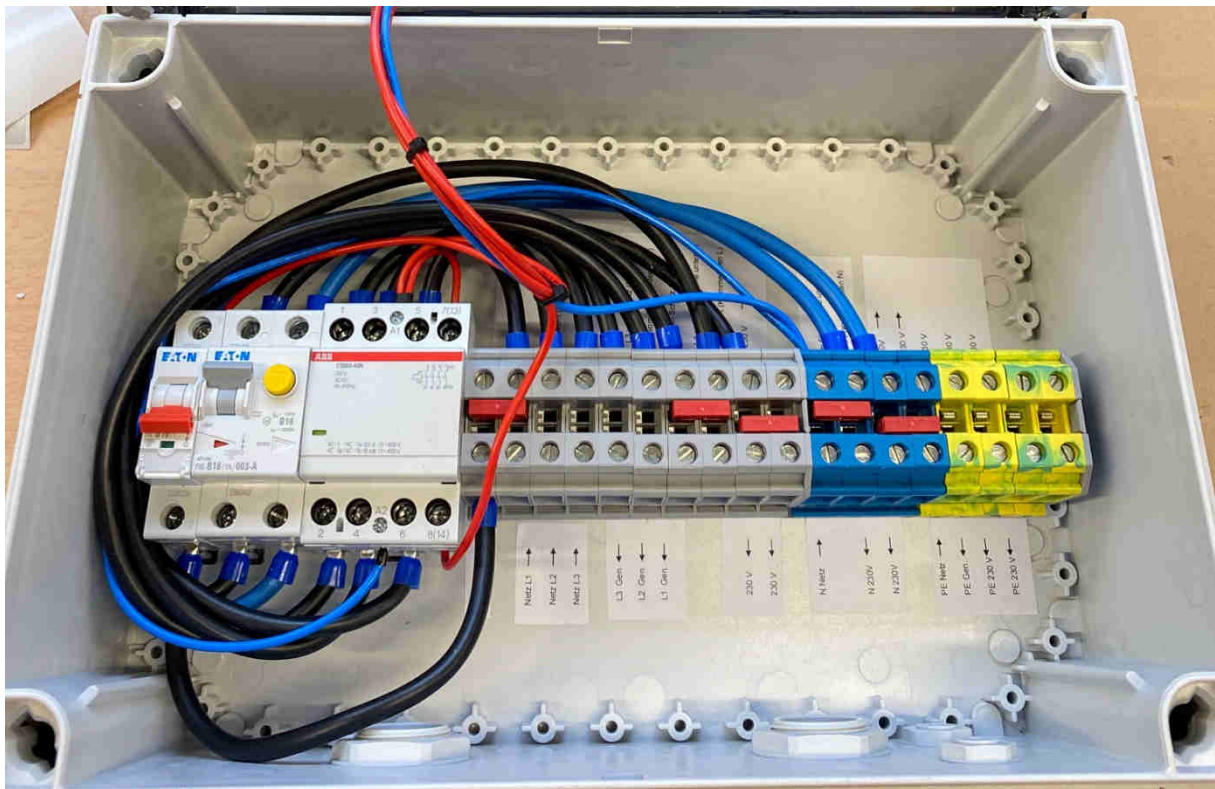
Left side

Right side

Please make sure that the power box is hanging tightly on the wall.  
When you have finished this step, you can connect the power box.

**Before connecting the supply line, make sure that it is disconnected from the power supply.**

Subsequent is described how the power box is connected.



The necessary connections are labelled, connect the wires as described.

**Before switching on, check again that all cables are connected correctly and that all connection screws are tightened.**

Switch on the fuse B 10A and the FI / LS and close the box.

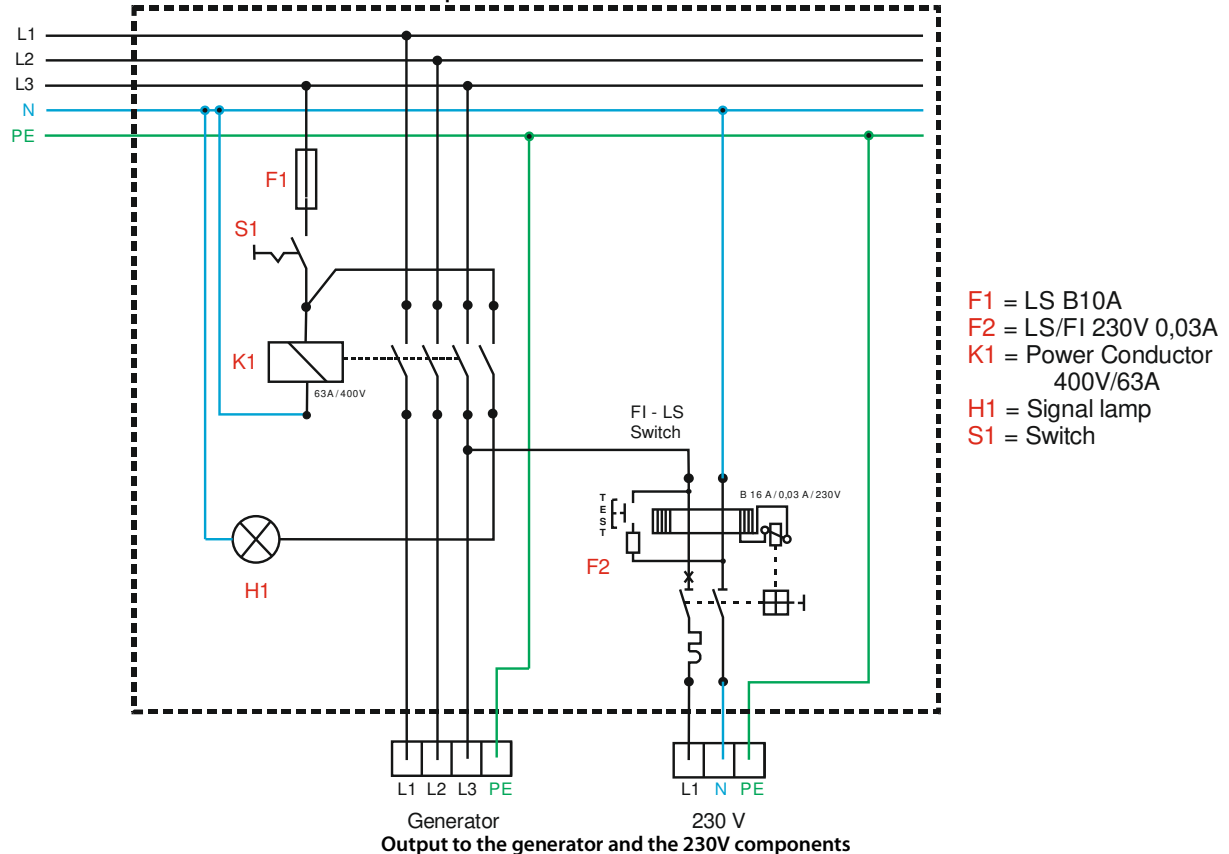
**The cover of the power box must always be closed if the supply line has power.**

Now you can switch on the fuse of the supply line and switch on the generator at the power box.

If everything is connected correctly and you press the switch, the LED must light up and the connected 230 V devices are supplied with voltage.

## 5 Internal wiring diagram Power Box

Connection "Generator or Power Box" from chapter 4



## 6 Spare part list

Pos.	Article	Order number
1	Mounting rail 360mm long for fixing the clamps and components	2015-0-0035
2	Housing of Power Box	2015-0-0036
3	Circuit breaker B10A	2010-0-0038
4	FI – Switch (Ground fault circuit interrupter)	2010-0-0038
5	Power contactor	2010-0-0037
6	Terminal block grey 1 pcs.	2028-0-0138
7	Terminal block blue 1 pcs.	2028-0-0137
8	Terminal block green/yellow 1 pcs.	2028-0-0136
9	Side cover grey for terminal block	2028-0-0140
10	Connector for two terminal blocks	2028-0-0139
11	Light signal - cover side	2007-0-0041
12	Command device adapter Indicator lamp for mounting the lamp socket block LED	2007-0-0042
13	Lamp holder LED	2007-0-0043
14	ON/OFF Switch – cover side	2007-0-0045
15	Auxiliary switch block for ON/OFF switch	2007-0-0045
16	Cable gland M32 for 5x16mm <sup>2</sup> cable	2027-0-0038
17	Lock nut M32	2027-0-0039
18	Cable gland M16 for 230V cable	2027-0-0040
19	Lock nut M16	2027-0-0041
20	Warning sticker housing yellow	01030106