

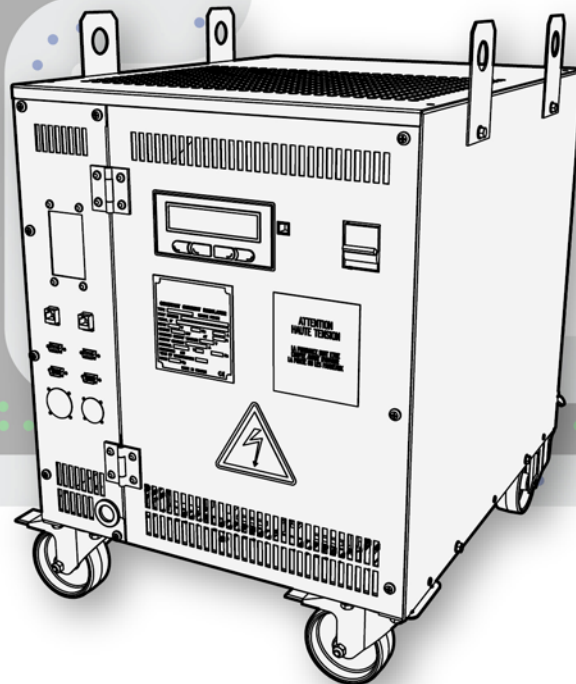
DIAM3200D

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energy

OCCEM
AirfieldTechnology

Use and Maintenance Manual

Stackable Constant Current Regulator (IGBT)



NF
LA SÉRÉNITÉ CERTIFIÉE

CERTIFICATION DE SYSTÈME QUALITÉ
DNV-GL
ISO 9001


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Editions

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1 GENERAL INFORMATION

1.1 Safety information



HIGH VOLTAGE - RISK OF DEATH

This equipment is normally used in systems using dangerous and lethal levels of voltage.

Use the utmost care when operating and maintaining the equipment and the related circuits. Consult the applicable rules and regulations on safety and work precautions:

- IEC 61820, IEC 61821
- FAA AC 150/5340-26

Always operate in compliance with all relevant standards and regulations in force in the country in which the installation and operation of the device is carried out.

Installation and commissioning of the device may only be carried out by qualified personnel who are adequately trained on the features and the use of the device.



Stay away from potentially active parts.

Disconnect the energy sources before performing operations on the device. Allow adequate discharging time for any residual energy before accessing the device. Use a suitable measuring instrument to check for residual voltage before coming into contact with potentially active parts.



Access the internal sides of the device only in cases of absolute necessity, such as maintenance or repairs.
Wait until the device is completely de-energised before opening the device or removing the panel for maintenance.



All personnel working on the device and its associated circuits must be qualified and trained in first aid and cardiopulmonary resuscitation (CPR) techniques.

1.2 EC directive

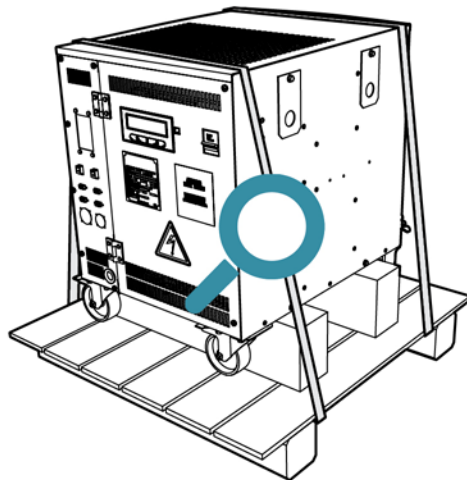
This device complies with the requirements of the EC Directives:

- 2014/30/EU with regard to electromagnetic compatibility
- 2014/35/EU with regard to low voltage devices



The information in this document is for information purposes only and cannot be considered a substitute for the declaration of conformity signed and issued by the Manufacturer or of the certificates accompanying the product.

1.3 Package content



The CCRs DIAM3200D of OCEM Airfield Technology are optimized static power supplies, controlled by IGBTs (insulated gate bipolar transistors), designed to maintain a constant output current, independent of load or power supply fluctuations.

The output current remains constant with an accuracy of 100 mA for mains voltage fluctuations $\pm 10\%$ and with all loads between 0 and 100% and up to 30% of transformers with open secondary.

Thanks to its unique power architecture, the CCRs DIAM3200D of OCEM Airfield Technology introduce no distortion or degradation of the power factor, which remains that of the load. The harmonic content reflected on the supply network is therefore particularly low, over the entire output current range and for any load.

No adaptation to the load via sockets is necessary. The digital processing capability of the DSP processor allows it to be adapted to any type of load: LED fixtures, halogen fixtures, electronic converters or combined systems.

The CCRs DIAM3200D of OCEM Airfield Technology perform an automatic calibration that avoids any analogue adjustment during maintenance. A simple and intuitive HMI user interface allows clear display of alarm indications, of the CCR status and of all relevant parameters.

These devices are specially designed for supplying airport visual aids, in compliance with all international standards. The device is designed in compliance with:

- ICAO Airport Design Manual, Part 5;
- IEC 61822 (CCR), 61821 (Maintenance).



Immediately check for visible damages of the device and of the containing parts. Carefully unpack the device and check for visible damages.



Store all the components in the original packaging until the time of installation. Take care not to damage sheet metal parts, cables and internal components.



The device described in this manual is designed to power series circuits intended for airport lighting of runways, taxiways and aircraft aprons.

1.4 Manual reference guide

This document contains all the information related to the equipment and describes the procedures to follow during the installation of the product and during ordinary maintenance. The document is intended for all operators that must intervene on the equipment.

This document does not replace in any manner applicable laws, rules or regulations, included the standards FAA and ICAO.

The precautions provided in the manual are always preceded by a symbol as illustrated below:



Indicates the warnings, the notes, the suggestions and other points on which is intended to draw the attention of the reader.



Indicates the operations to be carried out mandatorily or the information which should be carefully read to avoid possible risks.



Indicates particular risks connected with the power supply. It reports the operations to be carried out mandatorily or the information which should be carefully read to avoid possible risks.

These precautions safeguard the personal security of everyone who work on and/or are in proximity of the equipment and of the relative supply circuits.

The failure to comply with the instructions (in particular those preceded by danger, warning, caution precautions) can cause serious injury or death.

1.5 Safety instructions



CAREFULLY READ THIS DOCUMENT.

The improper use of the equipment or the failure to comply all the precautions indicated implies life danger and serious injury to persons and damages to things.



HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ELECTRIC ARC

Carefully read the enclosed documentation before installing or starting to use the equipment. Do not install the equipment until the completion of all construction works required to carry out the work.



DO NOT OPERATE ON POWERED CIRCUITS

Do not carry out any operation on powered circuits.

Before every access, inspection or intervention on the equipment, ensure to have switched off the equipment by opening the main power switch and by removing the supply from the unit (open the power switch at the beginning of the line or switch off the constant current regulator).

The failure to comply all the precautions indicated implies life danger and serious injury to persons.

1.6 Safety symbols

The symbols illustrated in the following table are used in the user and maintenance manual and on the device. These symbols indicate the existence of any dangerous situations, to indicate obligations and prohibitions in relation to the situations that may represent an hazard for the operator or indicate the behaviour to adopt to minimize the risk for the operator.

Warning signs		Prohibition and obligation signs	
	W001 General warning sign		P001 General prohibition sign
	W004 Laser beam		M001 General mandatory sign
	W005 Non-ionizing radiation		M002 Refer to instruction manual/booklet
	W006 Magnetic field		M005 Connect an earth terminal to the ground
	W012 Electricity		M009 Wear protective gloves
	W017 Hot surface		M015 Wear high visibility clothing
	W027 Optical radiation		M021 Disconnect before carrying out maintenance or repair

1.7 Definition of operator

All operations on devices and on its internal parts must be performed by professional staff, properly formed and aware of the risks connected with the power supply and to the use of low and high voltage circuits.



Take all the precautions in compliance with the safety standards for the work carried out on electrical installations and however for the works carried out using electrical installations or in buffer zones of the installations and of the electrical devices.

All operations on equipments and on its internal parts must be performed by professional staff, properly trained for Cardio Pulmonary Resuscitation (CPR) techniques.



Never operate on devices if there is not at least another operator properly trained for CPR techniques.

Check that Operators do not operate outside their own specific fields of competence and responsibility. OCEM Airfield Technology declines any and all liability arising from wrong operations carried out by untrained personnel in the use of the devices, or deriving from the non compliance of general safety standards.

1.8 Limited warranty

OCEM Airfield Technology assures that all the DIAM3200D products marketed are free of manufacturing defects at the time of shipment. This limited warranty will be valid for the period indicated in the sales agreement. **THIS LIMITED WARRANTY IMMEDIATELY DECAYS IF THE PRODUCT IS USED FOR PURPOSES OTHER THAN ORIGINALLY INTENDED.**

This limited warranty is provided by OCEM Airfield Technology to the original purchaser of DIAM3200D products as identified by the documents issued at the time of purchase. This limited warranty can be transferred to the subsequent purchasers of the Product, only on condition that this Product is resold as NEW and with the original packaging.



Each change and/or tampering made to the product immediately terminates the warranty. OCEM Airfield Technology cannot be held responsible for any damage to items or persons deriving from the failure to comply with instructions relating to installation, use and maintenance of the product, and to the installation and storage environmental conditions stipulated by the Manufacturer or by applicable rules regarding electrical devices and systems.

In case of potential defects or non-usability of the Goods supplied, the applicable warranty that excludes any other legal warranty and agreement - applies to the defects of materials, in the design, and/or in the installation of the Goods supplied. The warranty consists, depending on the Supplier, in the repair or replacement, at the expense of the Supplier, of each faulty component or malfunctioning component from the beginning, but is not extended to damages arising from negligence or wear.

This warranty lasts for at least 12 months after the date on which the received Goods are put into service, but will not in any case exceed 24 months from the shipping date.

FAA

For FAA certified products this warranty lasts for at least 4 years after the date on which the received Goods are put into service, but will not in any case exceed 5 years from the shipping date.

The Supplier undertakes to repair or replace the components in the shortest possible time without prejudice to the fact that for the so called commercial components and more generally for the components supplied by third-party manufacturers, will only be applied the terms of the respective original manufacturer's warranties.

The warranty absolves from all liability the Supplier and does not apply to the damage of any kind, caused by: improper use by the Customer or by the Customer's staff, use of inadequate materials, or incorrect or insufficient treatments; installation of equipments or spare parts not approved by the Supplier; installation and operating working of the Goods received without following the indications and the instructions provided by the Supplier's Technical staff; improper or excessive use, insufficient maintenance, and/or works not carried out in compliance with the information provided in the use and maintenance instructions; any other reason not attributable to the Supplier. The Customer must shoulder, at its own cost and employing its own staff, without involving the Supplier, those repairs that on the base of the Supplier's opinion are considered compliant at a moderate level of technical know-how.

The Customer must, under penalty of expiration, communicate the complaint concerning the defect or the non-compliance to the Supplier **within 8 days from the date of discovery of the defect**, and must send a written request to activate the intervention under warranty. The intervention request under warranty must be sent to:

**OCEM Airfield Technology | via della Solidarietà, 2/1 | 40056 Valsamoggia BO (Italia)
info@ocem.com**

The Customer must bear the travel and accommodation costs borne by the technical staff of the Supplier that must complete on the installation site any intervention associated with the guarantee.

The warranty excludes any other damage, included those resulting from economic loss and from low production capacity; direct, indirect or consequential damages; and the Contract termination.

The Supplier is not in any manner responsible for any other compensation or indemnity, including damage derived from missed or reduced production, from the loss of chance, from the missed or reduced profit, from the loss of contracts, impossibility of use or in general the partial use, in addition to indirect and/or consequential damages.

1.9 CE marking



This equipment complies with the requirements of European legislation for the CE marking. The user should carefully read this document and respect all the requirements quoted.

This equipment meet the requirements in relation to health and safety of the main EC directives, and in particular of the EMC Directive on electromagnetic compatibility (2014/30/EU) and of the LV Directive relating to electrical equipment designed for use within certain voltage limits (2014/35/EU).

1.10 Confidentiality, industrial property rights

The Customer needs to adopt the maximum confidentiality with respect to all the information of technical nature (including, by way of example and not exhaustively, plans, programmes, documentation, formulas, recipes, setting and correspondence) received by the Supplier or in any case assimilated or gained during the conclusion of the Contract of sale.

Any right regarding intellectual and industrial property connected to equipment and to any other element included in the supplied Goods as indicated in the Contract remain exclusive property of the Supplier.

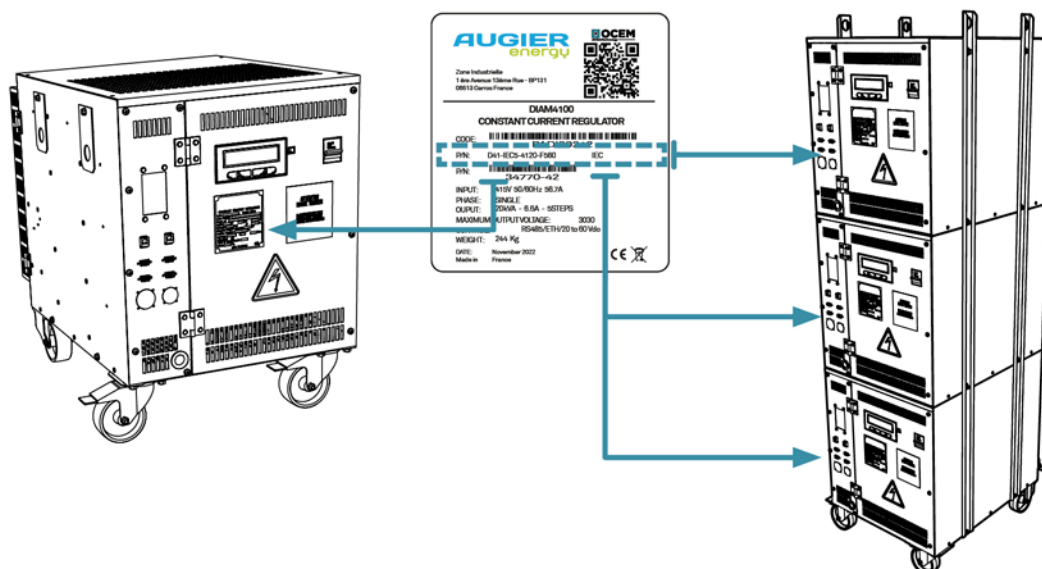
1.11 Disposal



At the end of use, the user must confer all the waste in suitable differentiated waste collection centres. It is the responsibility of the user the correct disposal of the equipment in accordance with the WEEE Directive and with the respective national laws in force at the time of disposal. These equipments must never be disposed of in the household waste.

1.12 Article identification

On each equipment there is an identification plate of the article, where the article code is reported; on the plate there are additional data: the name of the model, employments or use, power supply features, any trademarks and/or marks that attest the agreement of the equipment to specific regulations or legislations.



2 FIXTURE DESCRIPTION

2.1 General characteristics

The DIAM3200D constant current regulators are designed for the purpose of powering series circuits for luminous fixtures of airport areas: runways, taxiways and aircraft aprons.

The DIAM3200D constant current regulators (URCC) are optimized static power supplies, whose control is ensured by insulated gate bipolar transistors (IGBT), capable of maintaining constant the output steps independently from the load fluctuations and the supply voltage.

The DIAM3200D constant current regulators are stackable (max. 3 units) to optimize the space they occupy on the ground.

The DIAM3200D constant current regulators are compliant with the rules:

IEC 61822, Edition 2.0

AENA DIN/DNYM/PPT/002-05/13

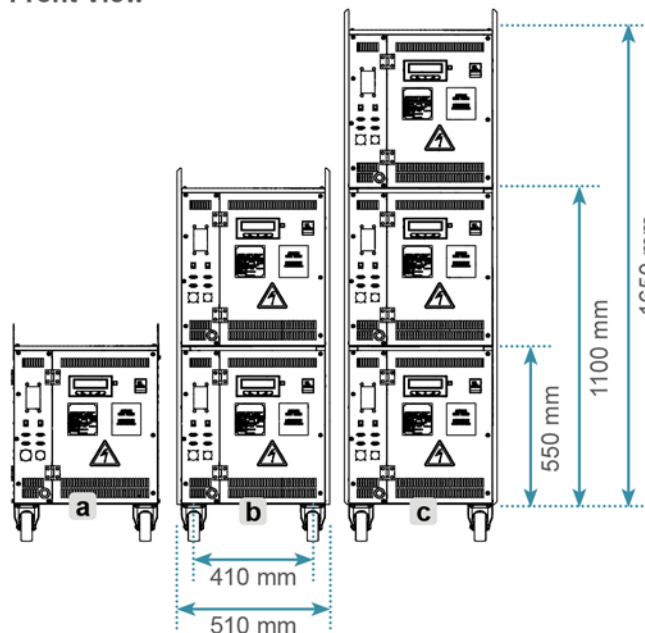


The DIAM3200D constant current regulators described in this manual have been designed to be installed on the levelled floor with adequate flatness and strength characteristics. The normal installation condition is a fixed, stable and non-slip floor, free of protuberances, hollows or inclined planes, designed and constructed with characteristics suitable to the actual operating conditions. The positioning of the unit must guarantee easy access to complete use and maintenance operations.

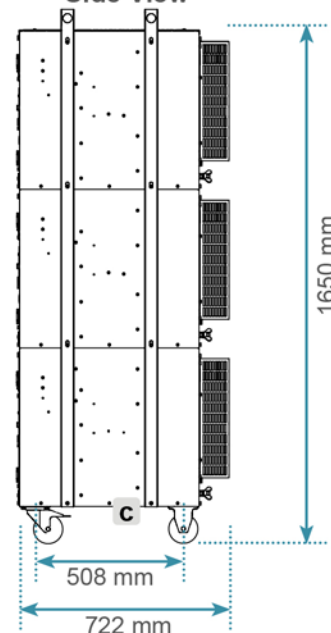


The supply circuits, of suitable technical specifications, can be positioned within pipes, ducts or cable trays that comply with the applicable regulations in force. In the same conduit, without separations, no conductors referring to different services must be laid (this prohibition is extended to all connecting lines, even if the conductors operate at the same operating voltage).

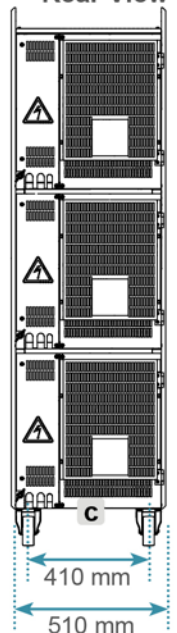
Front View



Side View



Rear View



2.2 Operating principle

The control and management system of the device is scheduled to manage the operation of the constant current regulator automatically. The unit also provides the possibility of advanced functions, which can be activated by the user if required (Wig-Wag mode and 4-20 mA mode).

When a brightness level is selected, the system activates the main contactor and adjusts the bipolar transistors to supply the output series circuit with a current value in accordance with the set value.

The device continuously measures the loop current (via a Hall effect sensor), which is compared with the set value. The detected rejection is used to correct the operating parameters via a digital regulator.

The dischargers on the output line of the device (OLA) protect the device from any overvoltages in the circuit.

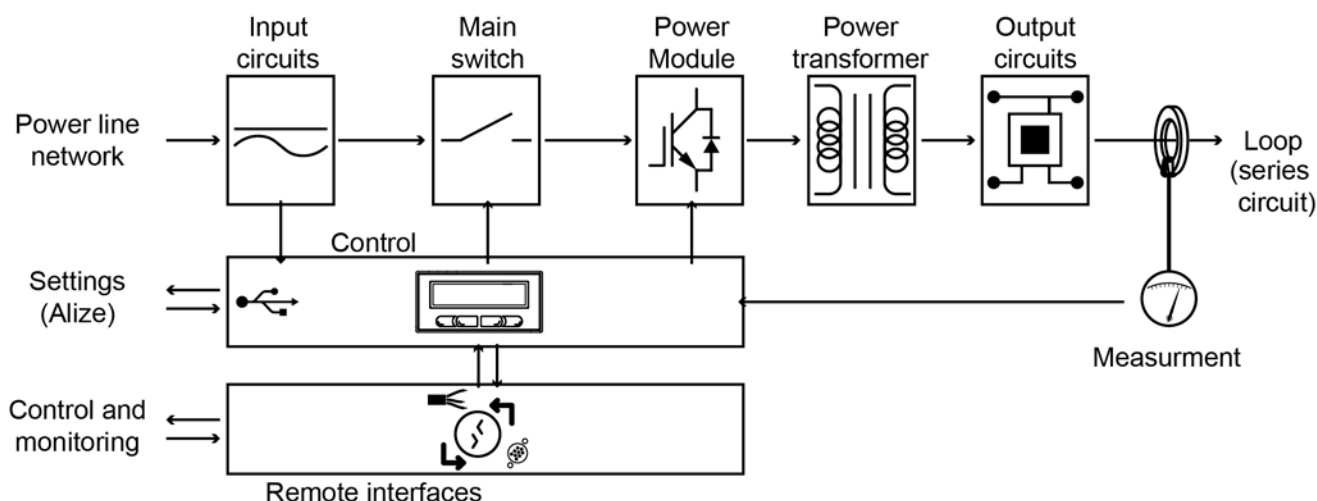
The burnt lamps detector (LFD) allows the detection of the presence of burnt lamps on the series circuit. If used, the LFD function must be properly configured and calibrated on the field.

Optional devices perform control and monitoring of the operating parameters, disconnection manoeuvres of the output circuit to the load, and input overvoltage protection, simplifying the operation and functioning of the device:

- An insulation monitoring system (EFD) allows continuous analysis of the resistance value between the series circuit and earth, signalling the exceeding of the pre-alarm and alarm thresholds.
- An output disconnection device (CUT-OUT) simplifies the maintenance on the HV side: units equipped with the disconnection device can be serviced without the need to disconnect the series circuit terminals and the earth connection.
- Input discharger (ILA) system to protect against overvoltages on the unit's supply line of the device.

In addition to local control, the constant current regulator can also be controlled remotely through suitable connection interfaces. Supervision of the constant current regulator management system can be done through the integrated display and keypad, or through the Alize software interface (using an external PC connected via USB cable to the controller).

By means of the optional integrated output circuit selector (ICS), it is possible to select which portion of the series circuit to power, in addition to the set current level.



2.3 Reference standards

The constant current regulators are manufactured in accordance with the following standard:

- IEC 61822, Edition 2.0: Electrical installations for lighting and signalling in airports and heliports - Constant current regulator.
- AENA DIN/DNYM/PPT/002-05/13: Technical specifications for constant intensity controllers.

2.4 Nb. of steps

The constant current regulators can be equipped with a number of steps varying from 1 to 8, each configurable in the range 1.8-6.6 A, to meet different end-user requirements.

According to IEC 61822, the nominal output current range is:

- Type 1: from 4.8 to 6.6 A
- Type 2: from 2.8 to 6.6 A

The table provides the normalised CCR pre-settings. These settings can be modified in accordance with the requirements of an airport.

Type	Nb. of steps	CCR
1	B3	6.6 A
	B2	5.5 A
	B1	4.8 A
2	B5	6.6 A
	B4	5.2 A
	B3	4.1 A
	B2	3.4 A
	B1	2.8 A

The tolerance is ± 0.1 A for each adjustment within the nominal output current range.



The constant current regulator can supply a low-current heating brightness level (preferably 1.8 A), which is used to remove condensation from inside the fixtures without switching on the lamps.
The symbol for the local setting is B0.

2.5 Supply voltage

The constant current regulators can be supplied with different voltage levels, depending on the network values. The single-phase power supply can be chosen from the following values: 220, 230, 240V_{AC} [$\pm 10\%$ (IEC), 50/60 Hz]. The two-phase power supply can be chosen from the following values: 380, 400 o 415V_{AC} [$\pm 10\%$ (IEC), 50/60 Hz]. Attention: The supply voltage value chosen when ordering cannot be changed.

2.6 Nominal power

The constant current regulators provide a maximum output voltage of 2,5 kVA. Attention: The nominal power value chosen when ordering cannot be changed.

2.7 Wired remote control

The constant current regulators can be configured to be controlled and monitored through dry contacts (relay 125 V_{AC}/2 A or 125 V_{DC}/2 A for resistive loads) and by an internal or external voltage (from 20 to 60 V_{DC}, positive or negative) or through wired connector (32 PIN).

2.8 Communication network

The constant current regulators can be equipped with different communication interfaces, depending on requirements. One or more RJ45 or D-Sub 9-pin (M/F) doors can be provided on the front panel to provide connectivity through the main standards:

- RS485: serial communication standard EIA.
- LonTalk: control protocol defined by the standard ISO/IEC 14908.1
- Ethernet: network technology for communication via LAN (Modbus/TCP).

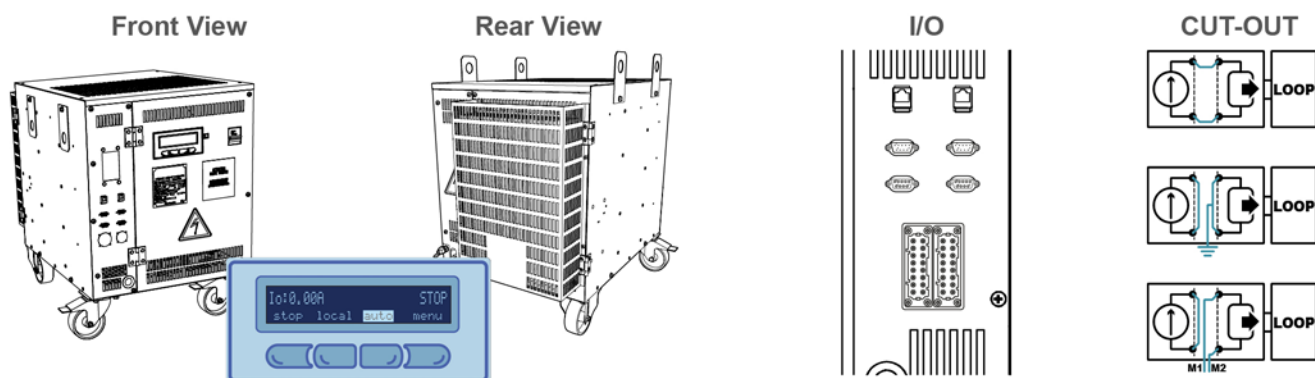
2.9 Protection systems

Depending on installation requirements, the constant current regulators can be equipped with optional protective devices in addition to the thermal-magnetic protection of the power supply provided as standard:

- Overvoltage discharger on the input line.
- Earth fault detector of the series circuit.

2.10 CUT-OUT output disconnecter

The installation of an optional CUT-OUT disconnector is a useful tool for maintenance operations on the series circuit. The main function of the device is to easily connect the poles HV1 and HV2 of the series circuit to earth without need for rewiring operations. Using the CUT-OUT disconnect it is also possible to perform a loop impedance measurement.



2.11 Product Code

example: D32 - IEC 5 - 40 D2 - F 66A - ICS2 - S2 - ...	
Reference standards¹:	
IEC = IEC (61822, Edition 2.0) (🔧)	
AEN = AENA (DIN/DNYM/PPT/002-05/13) (🌱)	
Nb. of steps (brightness - from 1,8 to 6,6 A):	
from 1 = 1 nb. of steps	to 8 = 8 nb. of steps
Supply voltage:	
22 = 220 V _{AC}	38 = 380 V _{AC}
23 = 230 V _{AC}	40 = 400 V _{AC}
24 = 240 V _{AC}	41 = 415 V _{AC}
Nominal power:	
D2 = 2,5 kVA	
(Wired) remote control:	
0 = not present (🔧)	
E = Dry contacts (auxiliary internal supply V _{DC}) (🔧)	
F = Dry contacts (auxiliary external supply V _{DC}) (🔧)	
I = 32 Pins terminal (🌱)	
Communication network (default: 1):	
1 = RS485 (x1)	5 = RS485 + Ethernet
2 = RS485 (x2)	6 = Ethernet (x2)
3 = LonTalk (x1)	7 = RS485 + LonTalk
4 = Ethernet (x1)	8 = LonTalk + Ethernet
Protection systems (sum of the figures):	
1 = Input discharger ILA	
2 = Thermal-magnetic circuit breaker CB (standard)	
4 = Earth fault detector EFD	
CUT-OUT output disconnecter:	
0 = None (🔧)	
A = Disconnector SIMALT2 (with jumper, 3 positions) (🔧)	
D = Disconnector SCC (with handle, 3 positions - on the back) (🌱)	
Options²:	
ICSx = Selector ICS wit x output (max. 6) ³	
Stacked setting up	
S2 = 2 CCR - ICS possible (connected to lower CCR)	
S3 = 3 CCR - ICS not possible	
Particular equipments⁴:	
DTxxxx = Specifications project identification code	

¹ Always check the compatibility of the options with the selected reference standard: (🔧) available only for D32-IEC version..., (🌱) available only for D32-AEN version...;

² Any additional codes identify the options integrated in the device (if no option is available, this field is absent);

³ The Selector ICS is compatible only with single CCR or with stacked setting up S2;

⁴ Any code DTxxxx is assigned by the manufacturer to identify any design specifications implemented in the device (if no particular equipment is available, this field is absent).

In the example D32 -IEC5-40D2-F66A-ICS2-S2: CCR module made up of 2 units model DIAM3200 without fans (equal to each other). The CCRs are compliant IEC 61822, 5 steps. Supply voltage 400 V_{AC}, nominal power 2.5 kVA. Wired remote control through standard dry contacts (with auxiliary external supply V_{DC}). Ethernet communication network (2 doors). Equipped with thermal-magnetic circuit breaker CB (standard) and earth fault detector (EFD). CUT-OUT disconnector SIMALT2 type with 3 positions jumper. 2 ways integrated circuit selector ICS (connected to lower CCR).

2.12 Behaviour in case of fault

If the unit detects a fault or an error, the control system applies corrections and informs the operator through a message on the display. The possible types of warning are:

- **WARNING:** the constant current regulator continues normal operation but alerts the operator that a problem is present (this is the case with EFD or LFD fault).
- **ALARM:** the constant current regulator is unable to continue normal operation and interrupts the current supply due to an internal fault (e.g. alarm of one of the overcurrent threshold levels) or an external fault (e.g. open circuit).



When a fault occurs, prompt action must be taken to identify the cause of the fault and eliminate the problem.

The system can only be reset by means of a manual reset (STOP key).

The unit preserves the memory of messages detected during operation even in the event of the supply voltage. When switching the unit back on, proceed to resolution and restoration of all messages in the memory.

2.12.1 Input voltage monitoring

The input voltage monitoring system analyses and evaluates whether the power supply value U_i allows the device to function properly. When the input voltage value goes out of the rated input voltage operating range U_{in} (-15% +20%) and remains outside the range for a certain period of time, the system interrupts the power supply and the unit goes into alarm.

In the case of overvoltages:

- $U_i > 120\% U_{in}$: if the voltage value rises above the pre-alarm threshold, the unit continues to operate for a maximum period of 60 seconds, after which the system shuts down and goes into alarm status.
- $U_i > 130\% U_{in}$: as soon as the input voltage value rises above the limit threshold, the system shuts down and goes into alarm status.

In the case of undervoltages:

- $U_i < 85\% U_{in}$: if the voltage value falls below the pre-alarm threshold, the unit continues to operate for a maximum period of 60 seconds, after which the system shuts down and goes into alarm status.
- $U_i < 75\% U_{in}$: as soon as the input voltage value falls below the limit threshold, the system shuts down and goes into alarm status.



If the error condition is temporary and the input voltage value returns within the operating range, the unit automatically resets.

If the unit shuts down and goes into alarm status, when the voltage values return to within a narrow range ($U_{in} \pm 10\%$) the unit restarts. The unit preserves the memory of the alarm message, which must be reset manually.

2.13 Wiring

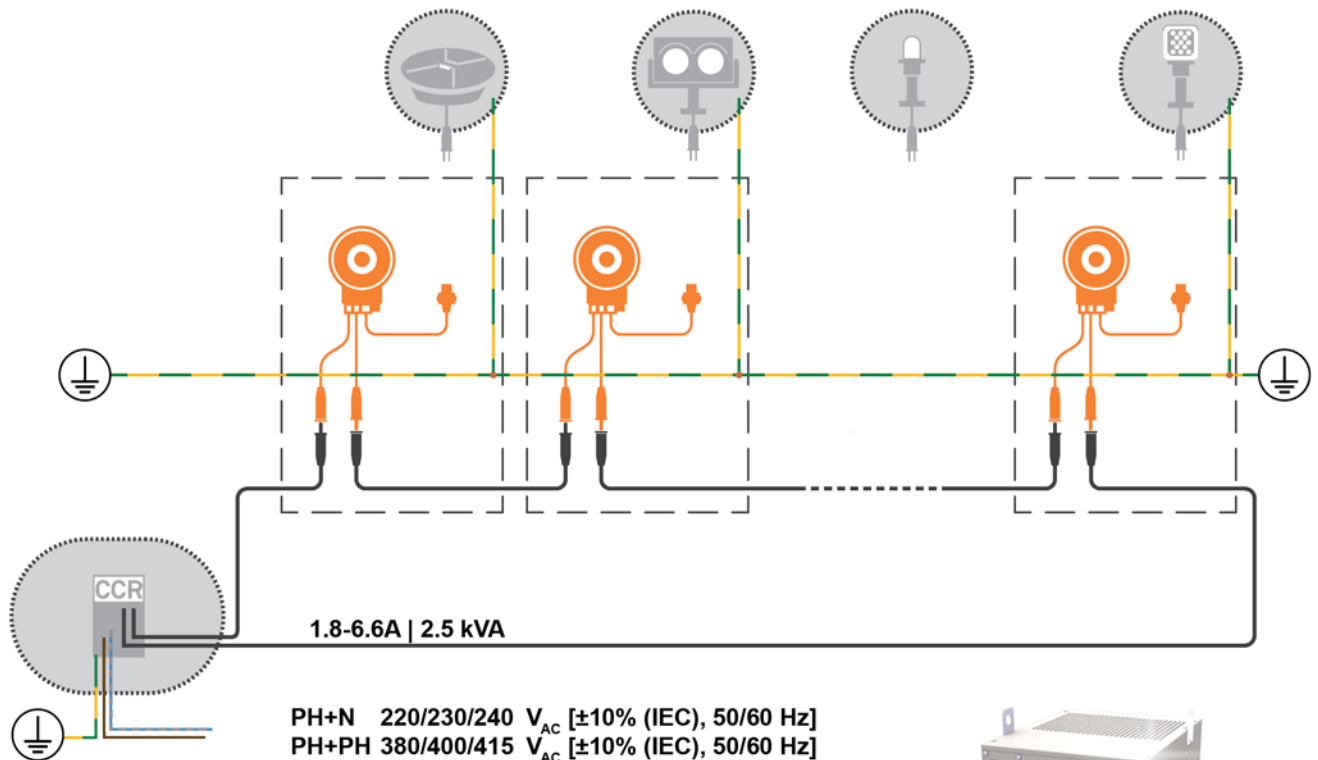
To wire the DIAM3200D system properly, use only cables compliant with the relevant technical specifications (FAA L-824, IEC/EN 60228), specially designed for airport installations and safety-critical systems.



The cables necessary for the functioning of the unit are not included in the supply. It is the customer's responsibility to arrange appropriate certified equipment to connect the units.



Before connecting the unit, check that the unit configuration is compatible with the actual system conditions.
Always check the supply voltage and the load installed on the series circuit.



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3 INSTALLATION

3.1 Constant current regulator

The DIAM3200D constant current regulators, installed to supply the series circuits, are capable of supplying current to the series circuit to provide the necessary brightness to the light fixtures installed on the circuit. The number of selectable brightness levels must be consistent with the intended functionality of the circuit design.

The features of series circuit must be compliant with the dispositions of competent bodies and with the regulations in force. The load actually supplied by the series circuit must not exceed the operating limits of the constant current regulator.



For the construction of the supply circuits and for the series circuits, refer to the requirements of the relevant Standards.

For the conformity of the light fixtures supplied by the constant current regulators through the series circuits, refer to the specific product certifications.



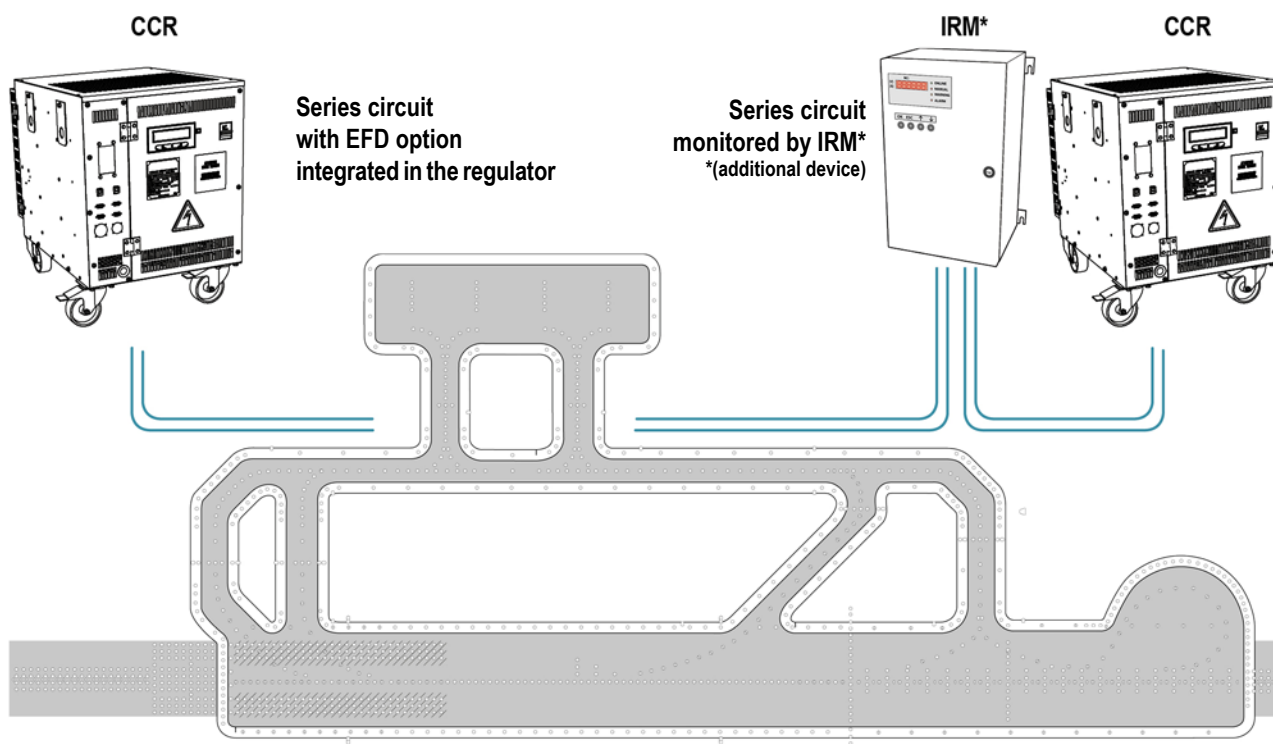
Do not connect the constant current regulator to circuits which have not previously undergone high-voltage insulation tests or to cables which show signs of damage or deformation. Before making connections, check that the series circuits and light fixtures are correctly configured and installed.



As an alternative to the earth fault detector integrated in the regulator (EFD option), optional devices are available for monitoring the series circuit (IRM), able to generate warning and alarm messages to be integrated in the mandatory reporting for the proper management and maintenance of the airport (FAA AC 150/5340-30).

These devices are a useful accessory for the management of faults and for an easier identification of the cabin problems.

For more information, contact technical support.



3.2 Handling and positioning of the device

To position the device correctly, take the following aspects into consideration:

- Access to the unit from the front side must be guaranteed to make operation and maintenance procedures easy.
- The constant current regulators can be arranged side by side or stacked one on top of the other (up to a maximum of 3) to optimise floor space. Attention: stacking is the responsibility of the Manufacturer and must be requested in the article code when ordering.
- Maintain a free space of at least 20 cm at the rear side of the unit to ensure proper ventilation of the device.



Before proceeding with the operation, check the conditions of the device:

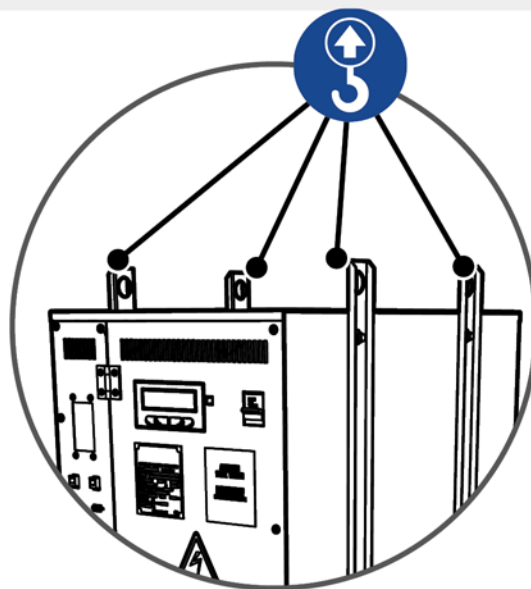
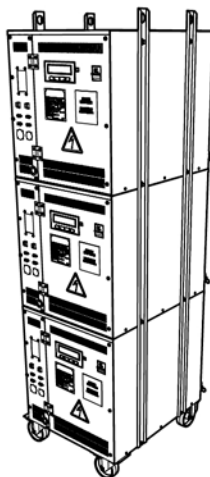
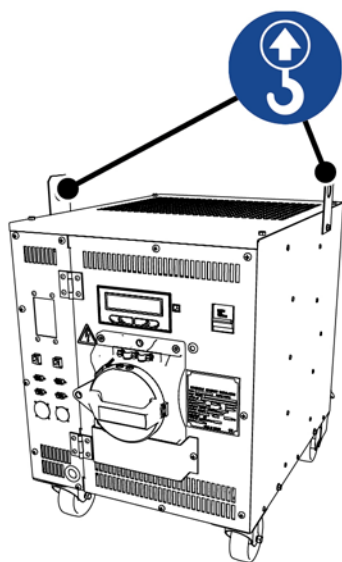
- check that the mechanical fixing of the components are steady;
- check that the internal connections are properly tightened;
- check that the internal equipotential connections are all well realized.



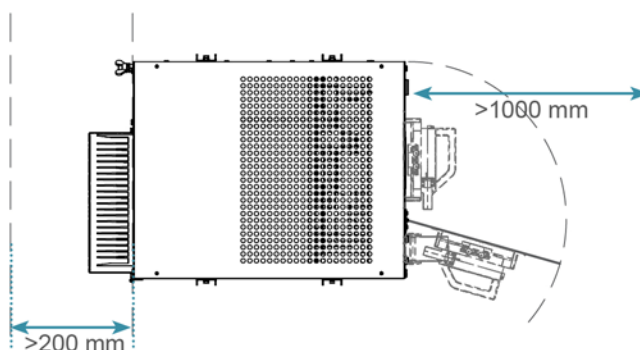
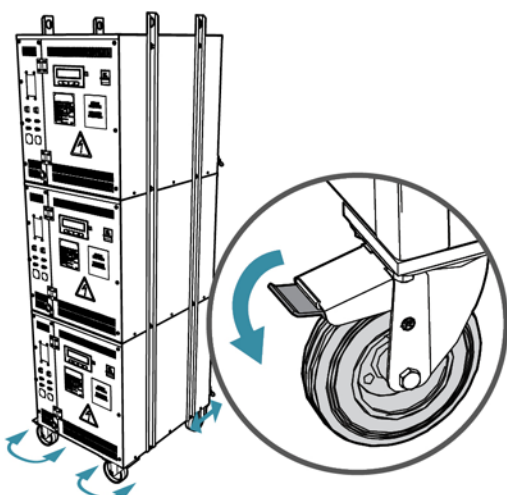
Always use lifting equipment of suitable characteristics: before handling the load, check the weight and dimensions of the load to be lifted, verifying the correct positioning of the centre of gravity.

Do not attempt to lift the machine using anchor points other than those indicated.

1



2



hr
95%
RELATIVE
HUMIDITY

IP20
INGRESS
PROTECTION

+55°C
+131°F
-40°C
-40°F
OPERATING
TEMPERATURE

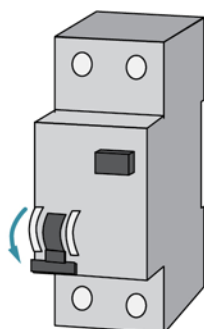
3.3 Preliminary checks



Store the device in its original packaging until the time of installation.
Check the characteristics of the electrical system into which the device must be integrated before installing the constant current regulator.

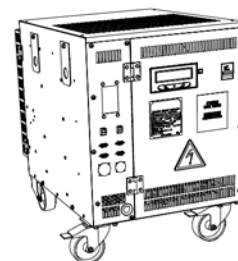
- The power supply line must be suitably dimensioned and adequately protected.
- Only use the device in combination with series circuits that comply with the standard FAA AC 150/5340-30 and ICAO Aerodrome Design Manual Part 5.
- Do not use the device to power fixtures that do not comply with the international standards. Power non-certified fixtures may cause sudden shutdowns and lamp ignition problems.
- Check that the power installed on the series circuit is compatible with the specifications of the constant current regulator.
- Perform continuity check of the series circuit and evaluate the possible presence of burnt lamps in the installed fixtures.

1



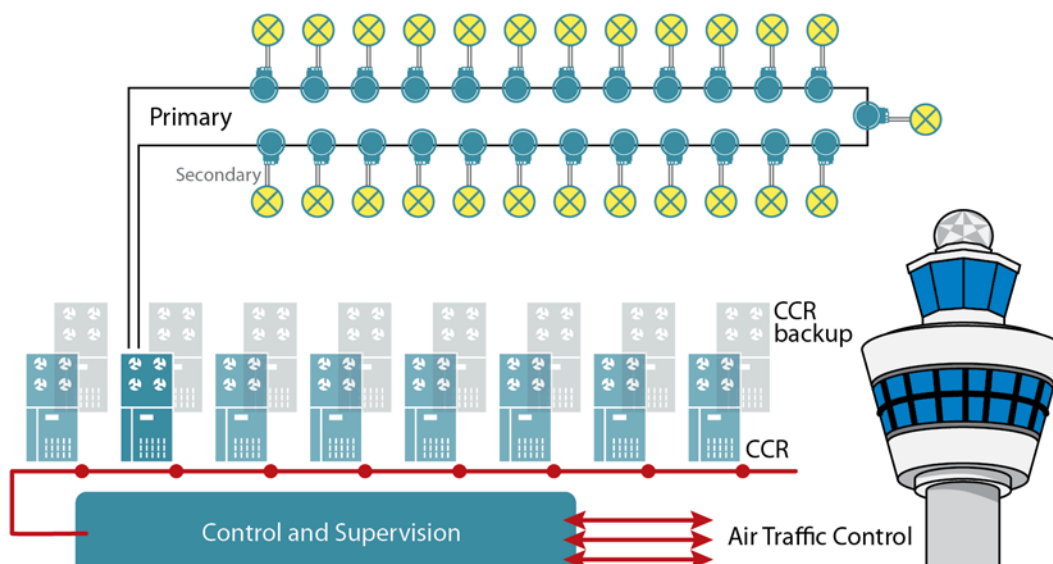
Power [kVA]	Protection/Sec. cable*	
	PH+N 220/230/240 V	PH+PH 380/400/415 V
2.5	25 A/6 mm ²	20 A/6 mm ²

**reference values, calculated for a maximum length $L \leq 30$ m. The values given in the table are merely indicative: for the installation please refer to the project data.*



← L →

2



3.4 Connection to the power supply



Before carrying out any intervention on the device, cut off all external power sources and place appropriate work-in-progress warnings on the systems. Wait for the discharging time (at least 5 min) and check using appropriate instruments that there are no residual energies before accessing the electrical equipment.

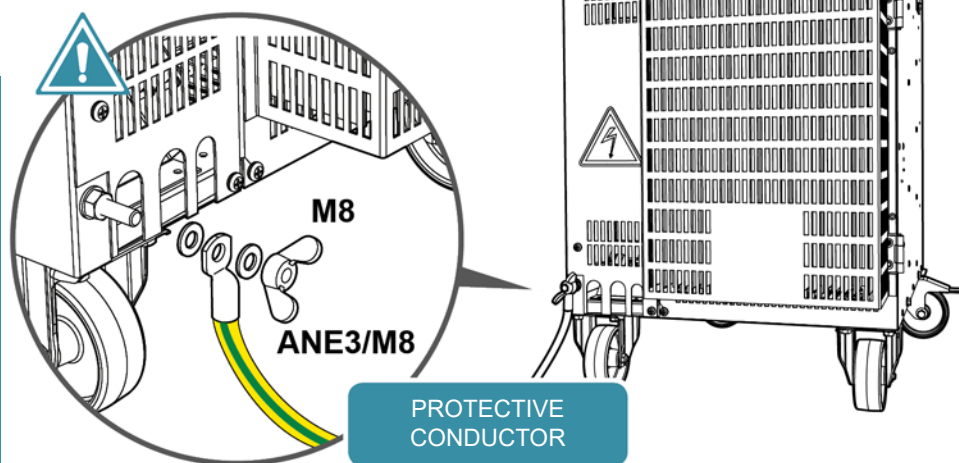
Open the rear panel and make the electrical connection to the prepared power supply line.



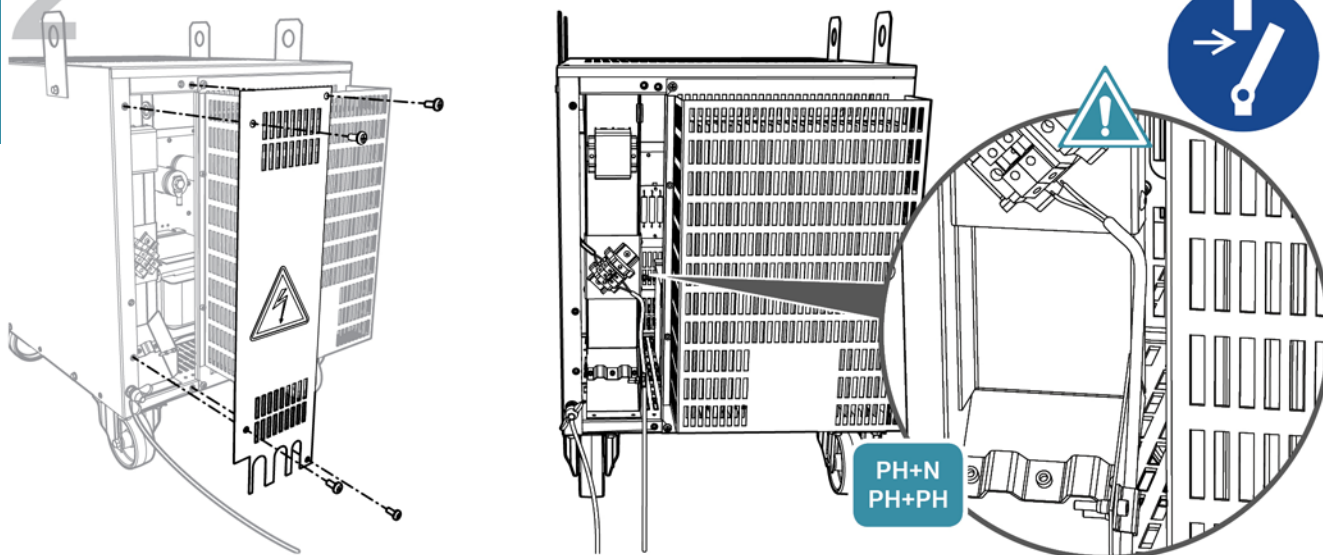
Before making the connections, check that the characteristics of the line are compatible with the characteristics of the device.

Connect the protective conductor to the grounding pin located behind. Prepare the connecting cable by firmly attaching a screw eye of suitable size to the cable.

1



2



3.5 Connection of the series circuit



Before carrying out any intervention on the device, cut off all external power sources and place appropriate work-in-progress warnings on the systems. Wait for the discharging time (at least 5 min) and check using appropriate instruments that there are no residual energies before accessing the electrical equipment.

Prepare the series circuit cables for connection and connect the terminal to the conductor.

Remove the transparent protection from the terminals and make the electrical connection to the prepared power supply line.

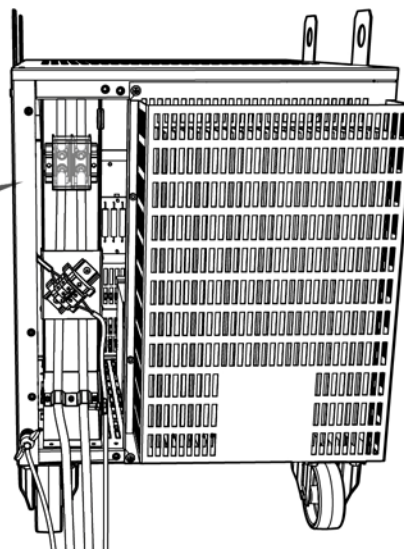
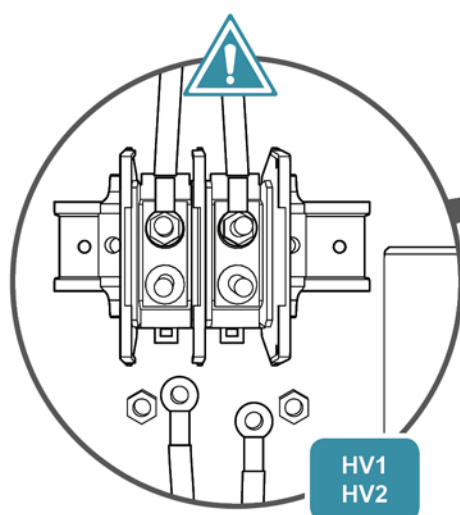
If foreseen, connect the cable screen to the prepared terminals.



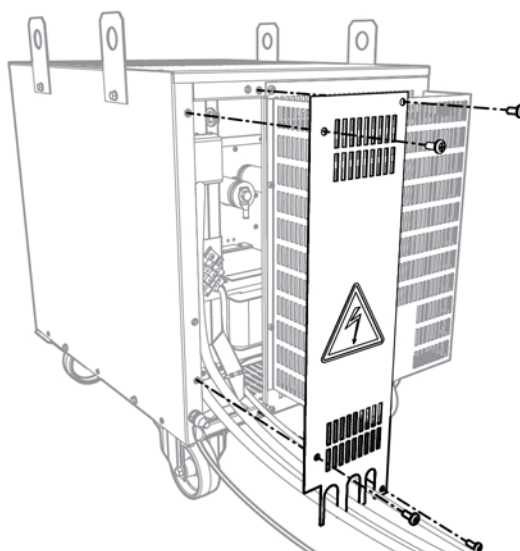
Before making the connections, check that the characteristics of the line are compatible with the characteristics of the device.

Replace the transparent panel over the terminal block and close the rear panel, taking care to pass the cables through the relevant openings.

1



2



3.6 Remote control configuration

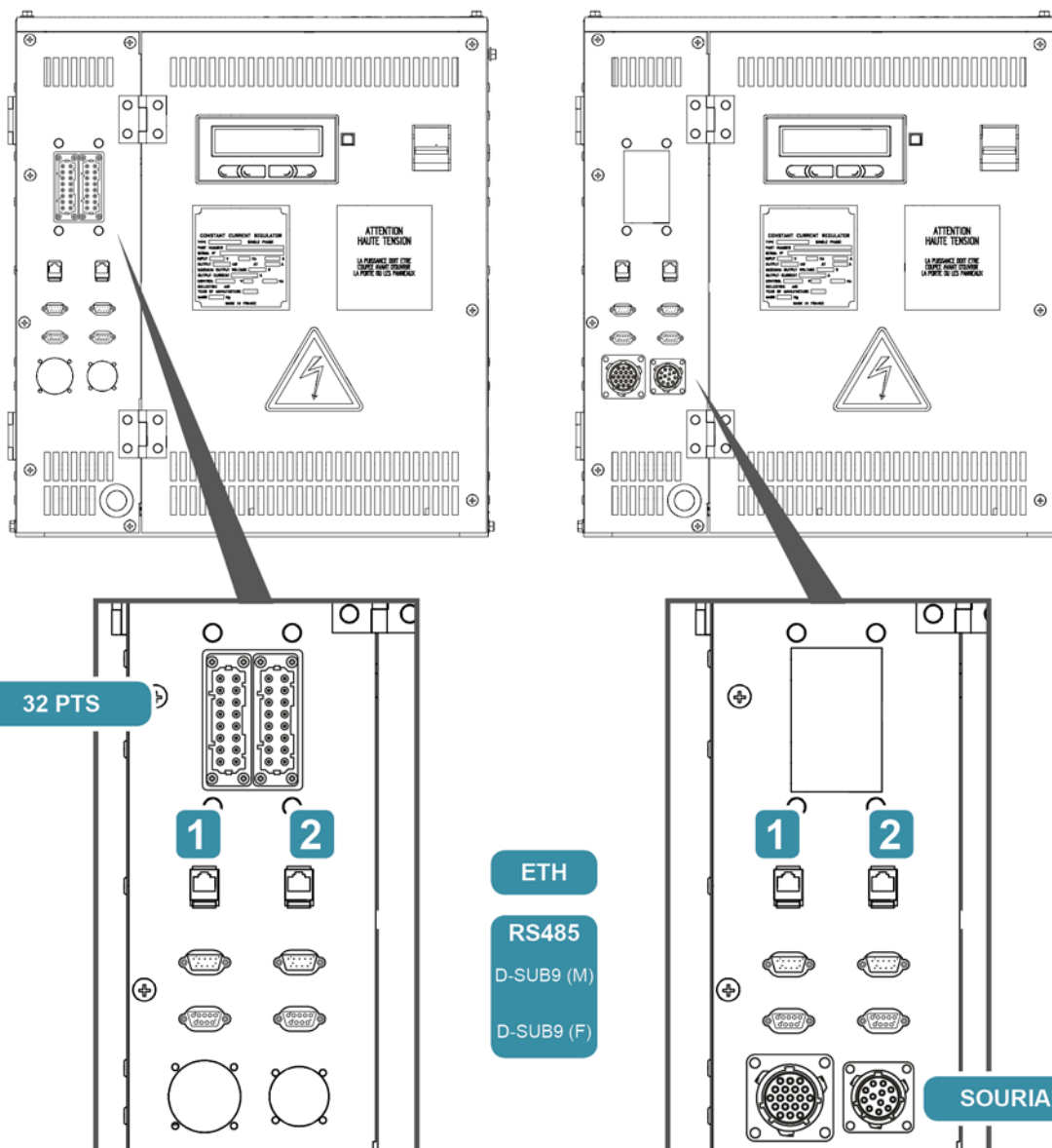
The connection for remote control varies depending on the configuration of the device. The connections are available on the back of the unit.

Connect the prepared cables to the respective doors of the device.



The units can be equipped with 1 or 2 serial communication interfaces. The basic configuration includes one RS485 type serial port.

1



3.7 External circuit selector interlock



The unit is supplied already wired to operate without an external circuit selector. To operate, the two terminals S1 and S2 are short-circuited (removable jumper).

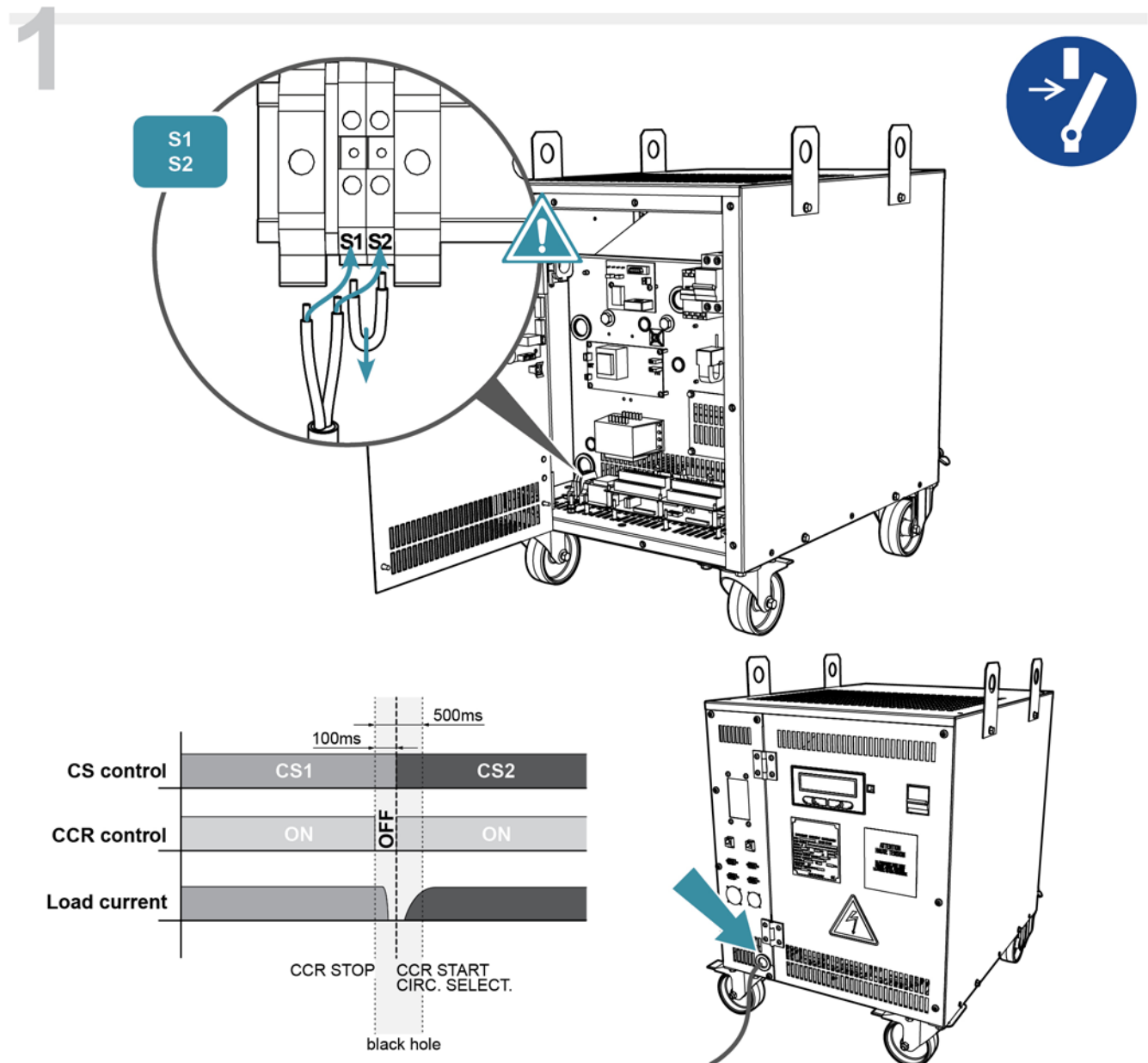
To operate in combination with an external selector, it is necessary for the unit to stop the supply at least 100 ms before the circuit changeover occurs in order to prevent transitory overcurrents from drastically reducing the life of the powered lamps. The unit must also stop the supply when the selector panels are open.

To properly drive the unit, connect the interlock cables from the external selector to the prepared S1 and S2 terminals. Remove the jumper (required for operation without an external selector) before connecting the cables.

Open the front panel and identify the terminals S1 and S2.

Remove the jumper and make the connection to the cable coming from the external circuit selector.

Close the front panel.



3.8 Tests and checks



At the end of the installation (before commissioning) and whenever necessary, carry out function tests and checks.
Always follow the safety instructions in order not to create dangerous situations for persons or property.

3.8.1 Short-circuit test



Do not perform this test if there is any doubt about the correct operation of the unit, or if there is a fault or breakage.

- Act on the main switch and switch off the unit.
- De-energise the power supply and wait for the discharging time.
- Open the rear cover and completely disconnect the series circuit.
- Short-circuit the HV1 and HV2 terminals of the unit.



If the unit is equipped with a CUT-OUT device, it is possible to short-circuit the terminals without acting on the wirings, by configuring the jumpers or the handle in the test position (for more information, see document ES-MT-0113 accompanying the CUT-OUT device).

- Energise the supply line of the unit.
- Act on the main switch and activate the unit.



The unit activates and the output current value is shown on the display.

- Activate the LOCAL mode.
- Operate the control panel and gradually increase the intensity levels.



The maximum brightness level at which to test the unit should be fixed at 6.6A.

- Operate the control panel and gradually decrease the intensity levels.
- Press the OFF key and switch off the unit.
- Act on the main switch and switch off the unit.
- De-energise the power supply and wait for the discharging time.
- Open the rear panel and remove the short-circuit between the terminals HV1 and HV2 of the unit.
- Connect the series circuit.
- Energise the supply line of the unit.
- Act on the main switch and switch on the unit.



If any problems occur during the test (e.g. tripping of protections, presence of overcurrents,...) stop the test immediately.
Therefore check the connections: earth connections, electronic board connections,...).
Check the status of the power module indicators and display messages before restarting the device.

3.8.2 Open circuit test



Do not perform this test if there is any doubt about the correct operation of the unit, or if there is a fault or breakage.

- Act on the main switch and switch off the unit.
- De-energise the power supply and wait for the discharging time.
- Open the rear cover and completely disconnect the series circuit.



If the unit is equipped with a SIMALT2 device, it is possible to disconnect the series circuit without acting on the wirings, by removing the jumpers CCR (for more information, see document ES-MT-0113 accompanying the CUT-OUT device).

- Energise the supply line of the unit.
- Act on the main switch and switch on the unit.



The unit starts and stops within 0.3s after the start of the supply. The constant current regulator inhibited the supply (STOP mode). The display shows the message: ALARM: I<<Open Cir.

- Act on the main switch and switch off the unit.
- De-energise the power supply and wait for the discharging time.
- Open the rear cover and connect the series circuit.



If the unit is equipped with a SIMALT2 device, it is possible to reconnect the series circuit without acting on the wirings, by inserting the jumpers CCR in horizontal/service position (for more information, see document ES-MT-0113 accompanying the CUT-OUT device).

- Energise the supply line of the unit.
- Act on the main switch and switch on the unit.

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4 ADJUSTMENTS AND MAINTENANCE



After completing the installation, check that all the fixed guards are closed.
Only now is possible to close the upstream cut-out to supply the device.

4.1 Preliminary operations

Act on the local cut-out (thermal-magnetic circuit breaker CB - standard), by rotating it in ON position.

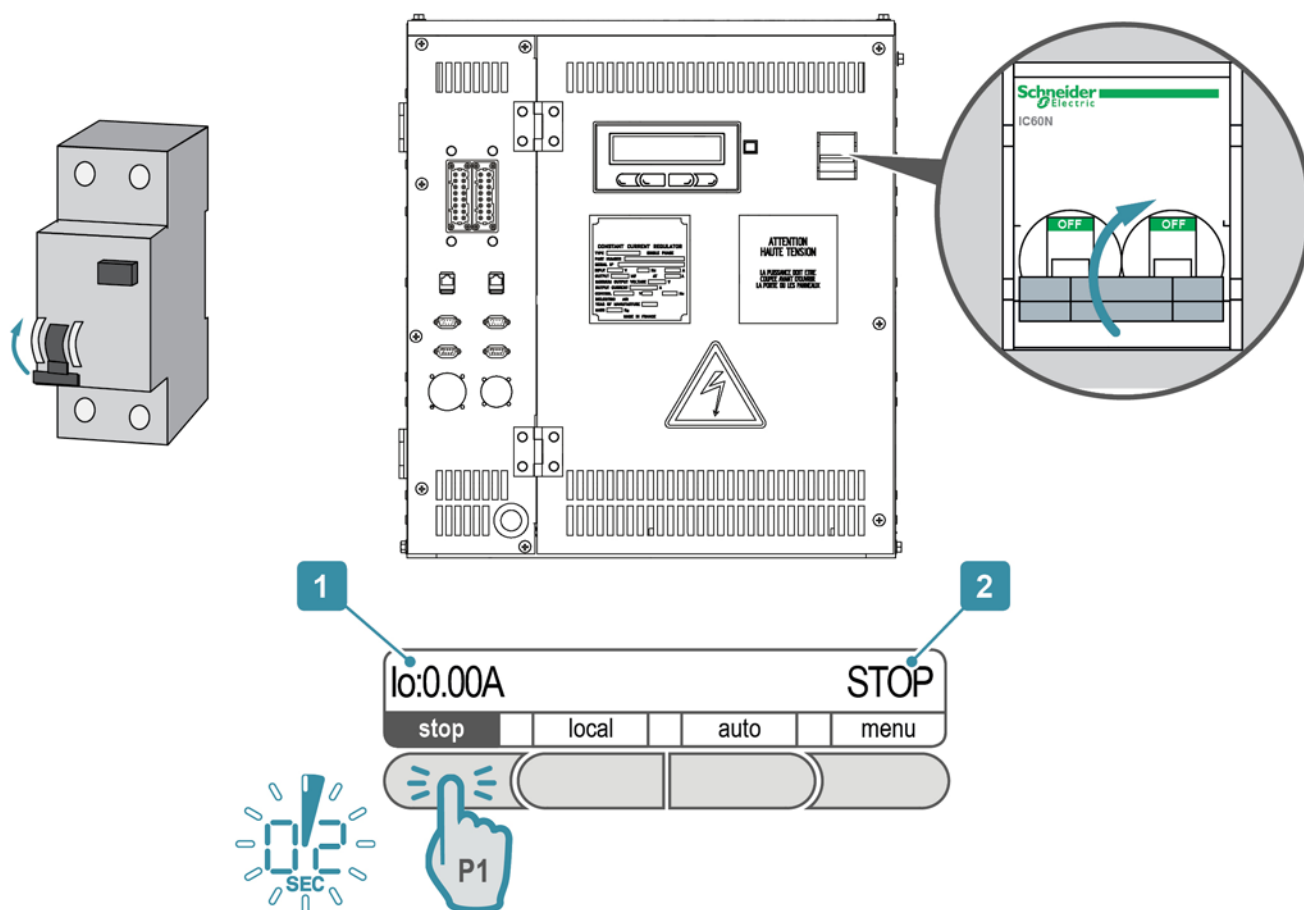
When the device is ONLINE (constant current regulator powered) the display switches on, the system is initialized and the device will revert to STOP mode: the controller's control system is active, but the series circuit is disconnected.



During operation, the display always shows the output current (1) and a second parameter (2) selectable as desired by the user: <Bx> level of brightness, output power P_o (in kVA), output voltage U_o (in V).
The parameter selection can be made when the constant current regulator is in STOP mode by prolonged pressure on the STOP button (P1).



The device is provided already configured with the default values.
All the parameters can be freely customised on the basis of the customer needs.



4.2 Selection of the operation mode



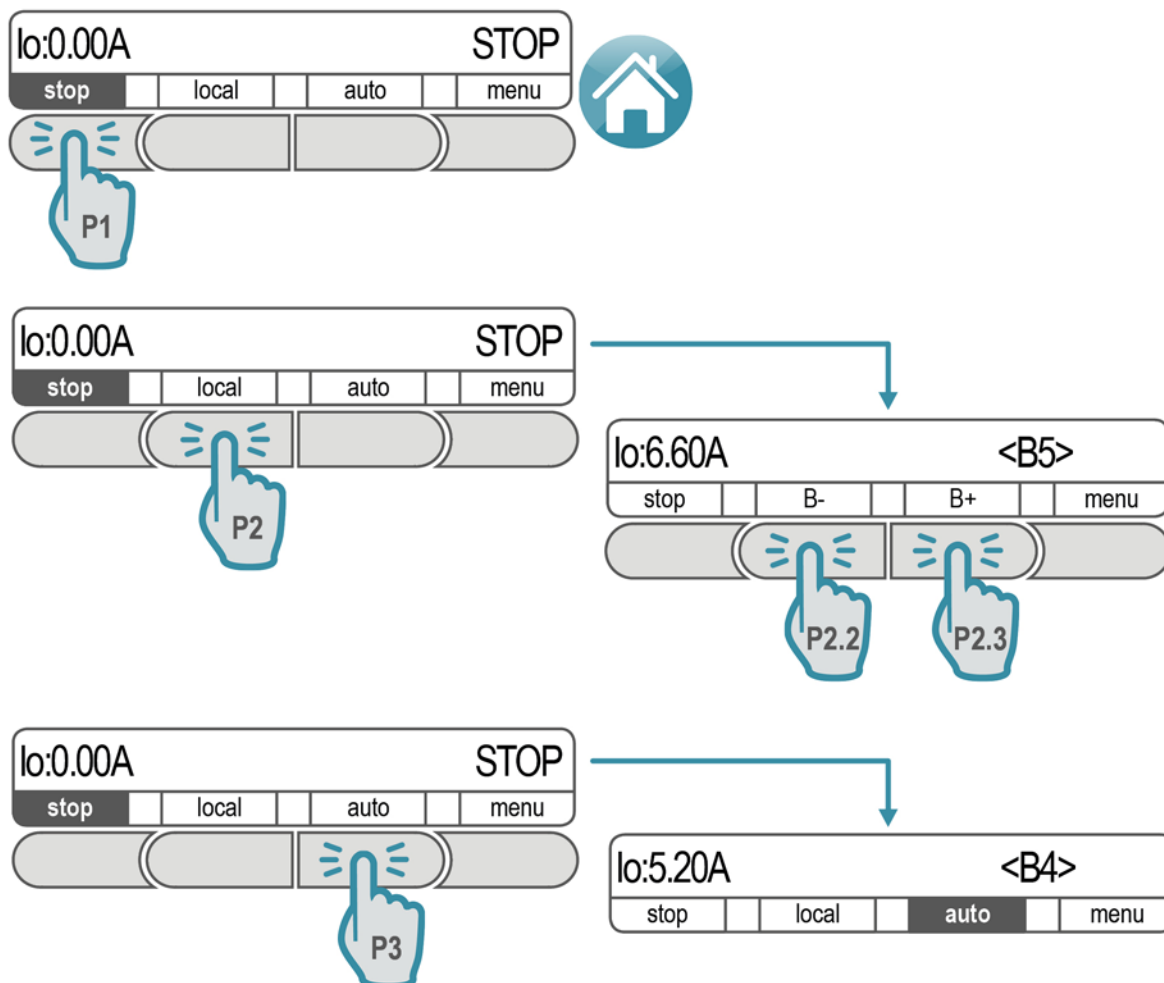
The unit is supplied with a pre-set of parameters in accordance with the machine configuration. For normal use, reconfiguration is not necessary during installation operations.

Starting from the STOP mode the constant current regulator can power the series circuit operating in different modes:

- LOCAL mode (1): press the LOCAL button (P2) to select the local control mode. The display shows the current level delivered and the operator can manually select a different level by pressing the B- (P2.2) and B+ (P2.3) buttons depending on the needs.
- REMOTE CONTROL mode: press the AUTO button (P3) to select the remote control mode. The display shows the current operating parameters (the Io output current and a second user-selected parameter). The controller
- STOP mode: press the STOP button (P1) to stop the current supply.



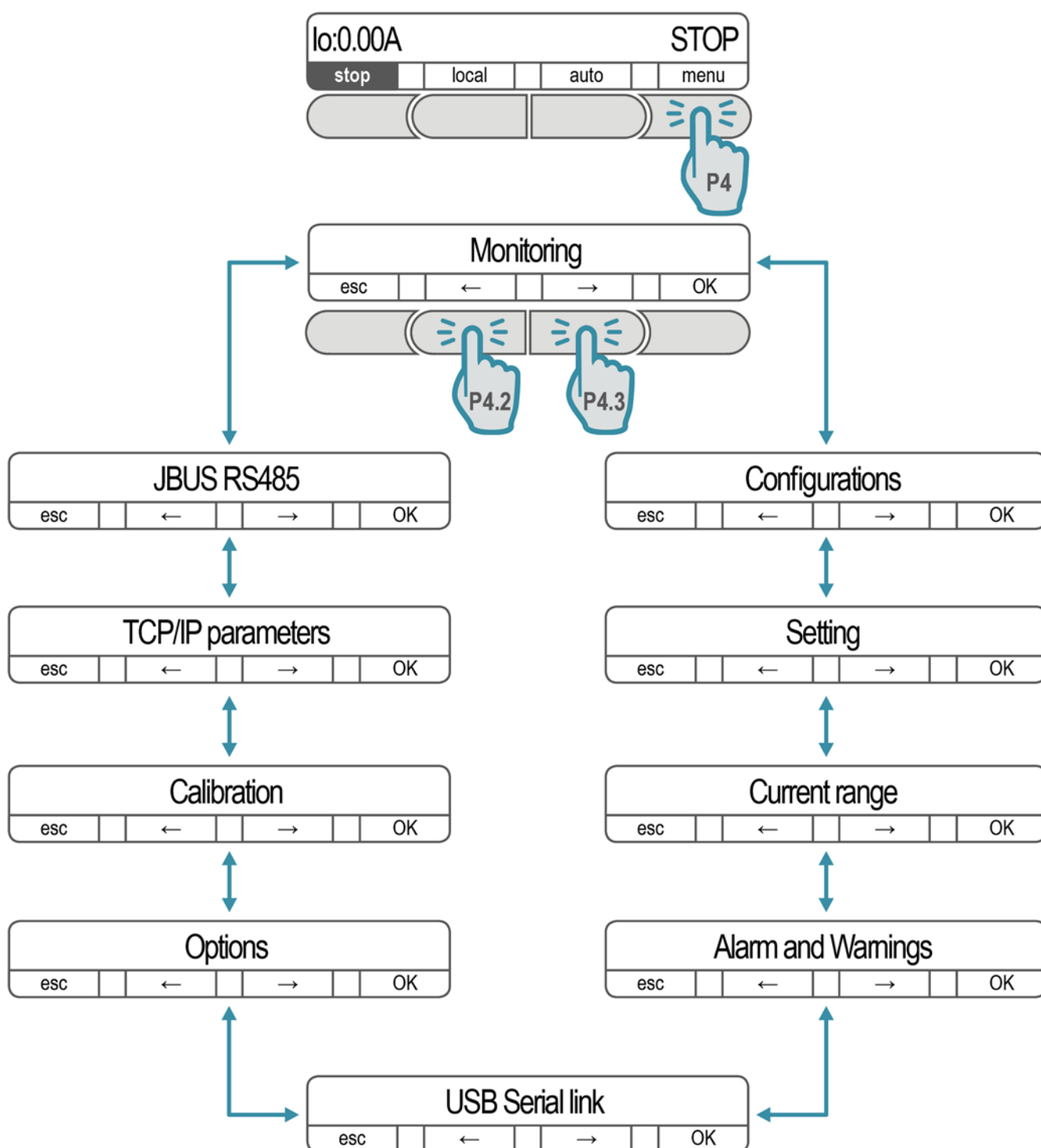
The multi-wired connection has a higher priority than Ethernet connectivity. Menu access is only allowed when the constant current regulator is in STOP mode.



4.3 Navigation map



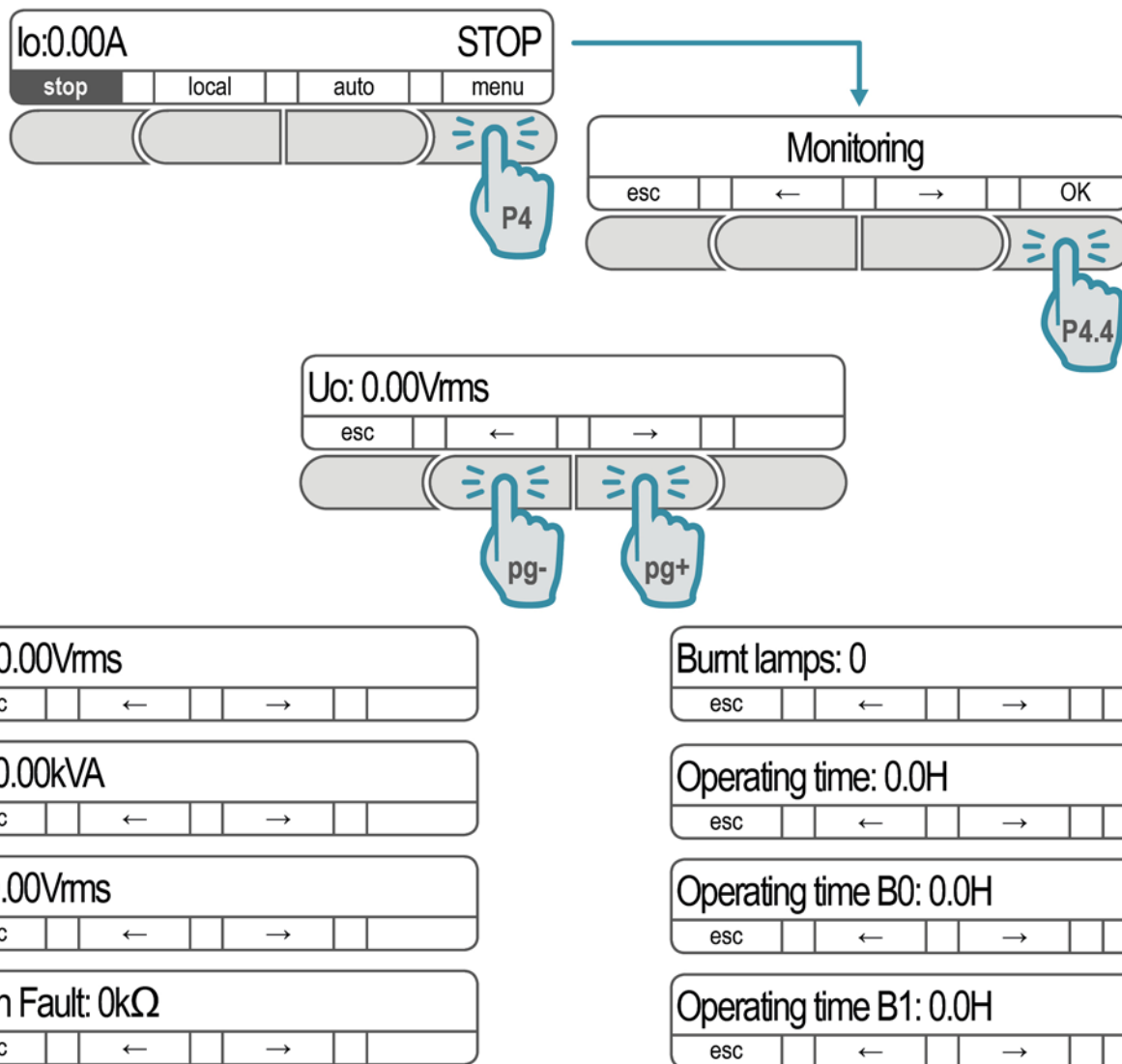
During operation, the display always shows the output current and a second parameter selectable as desired by the user: <Bx> level of brightness, output power P_o (in kVA), output voltage U_o (in V).



4.4 Local monitoring

Through the monitoring menu, it is possible to read the real-time values of the main quantities measured by the system:

- Uo: output voltage (expressed in Vrms)
- Po: output power (expressed in kVA)
- Ui: input voltage (expressed in Vrms)
- Earth Fault: insulation resistance value (expressed in kΩ)
- Burnt lamps: number of burnt lamps on the circuit (if the option LFD is activated)
- Operating time: operating time (expressed in hours) both overall and for each expected brightness level.



4.5 Warning, fault and alarm messages

Next to the type of problem there is a short message explaining the fault detected.

In the case of WARNING, the possible messages are:

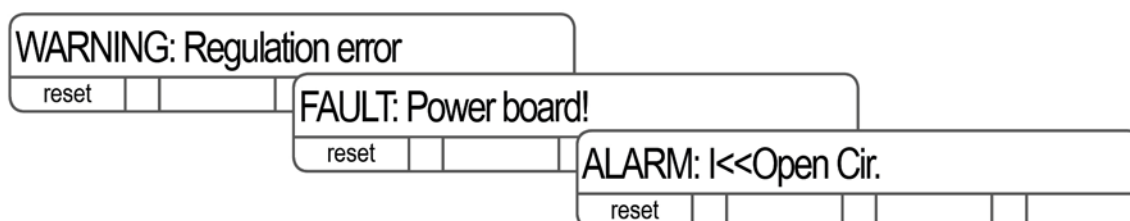
- LFD level 1: with the LFD (Lamp Fault Detector) option enabled, it signals the presence of a number of burnt lamps higher than the value set for the threshold level 1.
- LFD level 2: with the LFD (Lamp Fault Detector) option enabled, it signals the presence of a number of burnt lamps higher than the value set for the threshold level 2.
- Meas. lamps: the measuring sensor is unable to provide the required values.
- EFD level 1: with the EFD (Earth Fault Detector) option enabled, it signals an excessive earth resistance value compared to the value set for the threshold level 1.
- EFD level 2: with the EFD (Earth Fault Detector) option enabled, it signals an excessive earth resistance value compared to the value set for the threshold level 2.
- No EFD: the measuring electronic board is unable to provide the required values.
- BAD Freq.: the supply line frequency is outside the permissible range or an asymmetrical wave shape is detected.
- TC-TS board: the wired remote control is faulty/not present.
- Regulation error: the measured values exceed the limits (I_{BnMIN} - I_{BnMAX}) defined for each available setting (B0...B7).
- Power Drop: indicates a sudden drop in output power of more than 10%.
- Temp. level 1: the transformer temperature is higher than the value set for the threshold level 1 (AENA version only).
- Temp. level 2: the transformer temperature is higher than the value set for the threshold level 2 (AENA version only).
- Power Temp.: the heatsink temperature is above 90°C.
- Temp.Sensor: the heatsink measuring sensor is faulty.

In the case of FAULT, the possible messages are:

- Power board!: the electronic board inside the power module is faulty.
- Power fuse!: the power fuse is faulty.

In the case of ALARM, the possible messages are:

- I>>Level 1: the constant current regulator is unable to adjust/stabilize the output current which has reached the overcurrent level 1, as per set parameters.
- I>>Level 2: analogous to above, referring to level 2, as per set parameters.
- I>>Level 3: analogous to above, referring to level 3, as per set parameters.
- Peak value: analogous to above, referring to level 4, factory preset value.
- I<<Open Cir: the constant current regulator has detected too low output current for too long a period (current and time values set in parameters, situation compatible with open circuit condition).
- BAD interface: the remote control is faulty/not working properly.
- BAD SUPPLY: the supply voltage is outside the permissible range ($\pm 10\%$).



4.6 Troubleshooting



Before proceeding to delete the message, identify the cause of the fault and eliminate the problem.

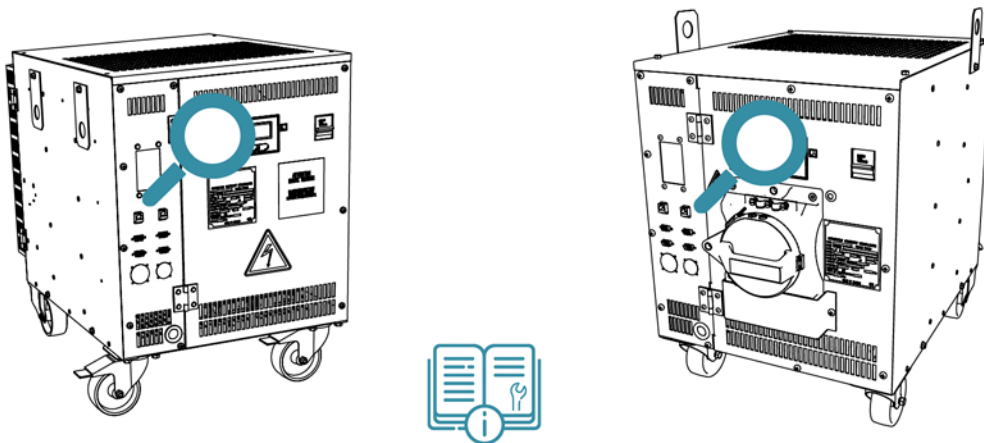
Check the general status of the device. If necessary, consult the manual to identify the problem and the possible causes of failure.

Eliminate the problem and press the RESET button (P1) to restore the system.

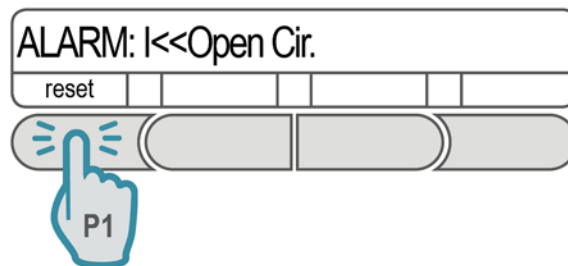


A system reset is only possible with the system energised in STOP mode. The unit preserves the memory of messages detected during operation even in the event of the supply voltage. When switching the unit back on, proceed to resolution and restoration of all messages in the memory.

1



2



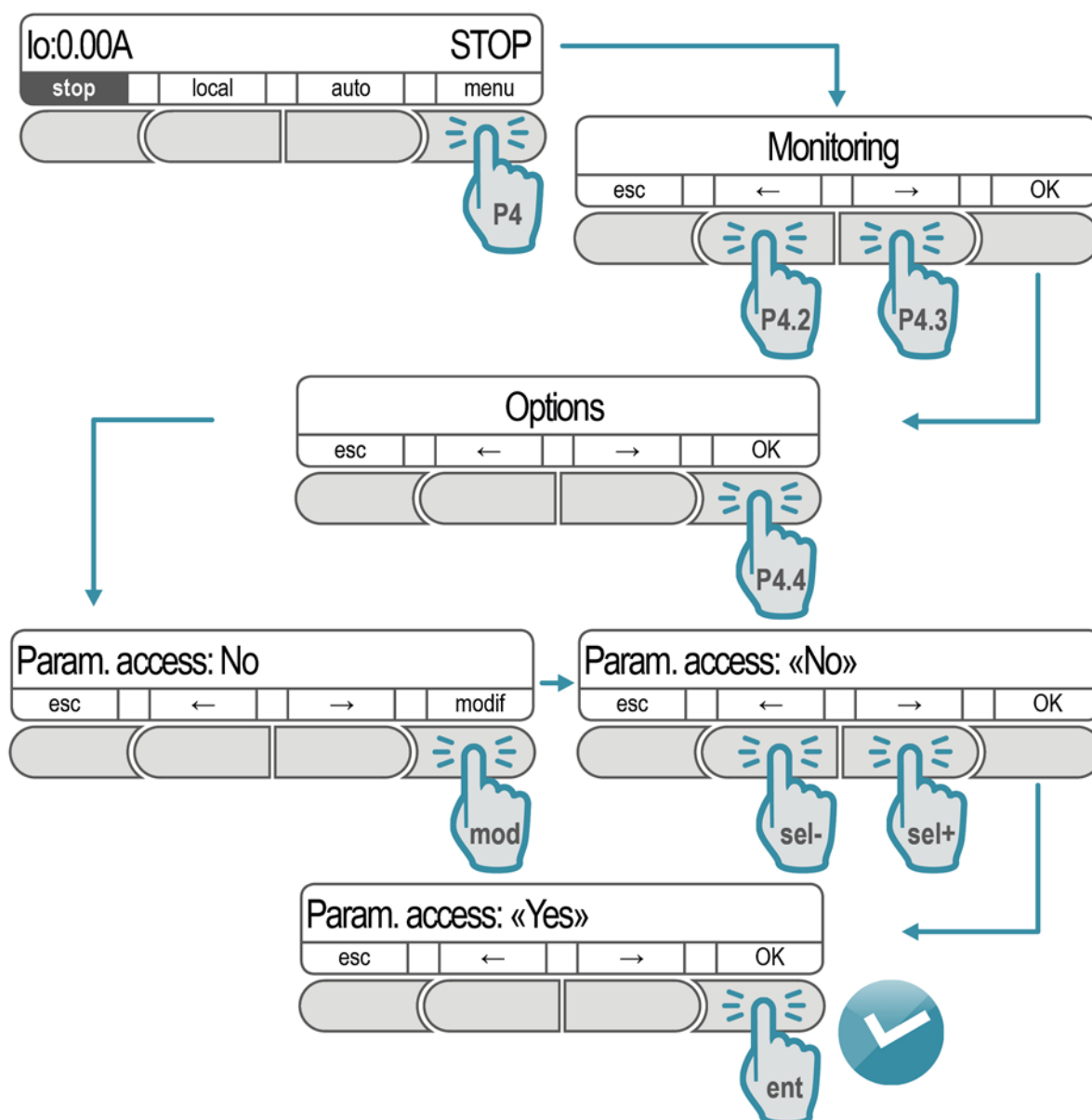
4.7 Access to the parameters



To prevent unintentional modification of operating values, the system only allows access to parameters after the relevant function has been enabled. Enabling the change function and updating the values is only possible with the system energised in STOP mode.

To enable access to parameters:

- press the MENU access button (P4);
- press the navigation buttons (P4.2) and (P4.3) and select the OPTIONS function;
- press the confirmation button (P4.4);
- press the navigation buttons (pg-) and (pg+) and select the PARAM ACCESS menu item;
- press the change button (mod);
- press the option buttons (sel-) and (sel+) and select YES;
- press the confirmation button (ok).



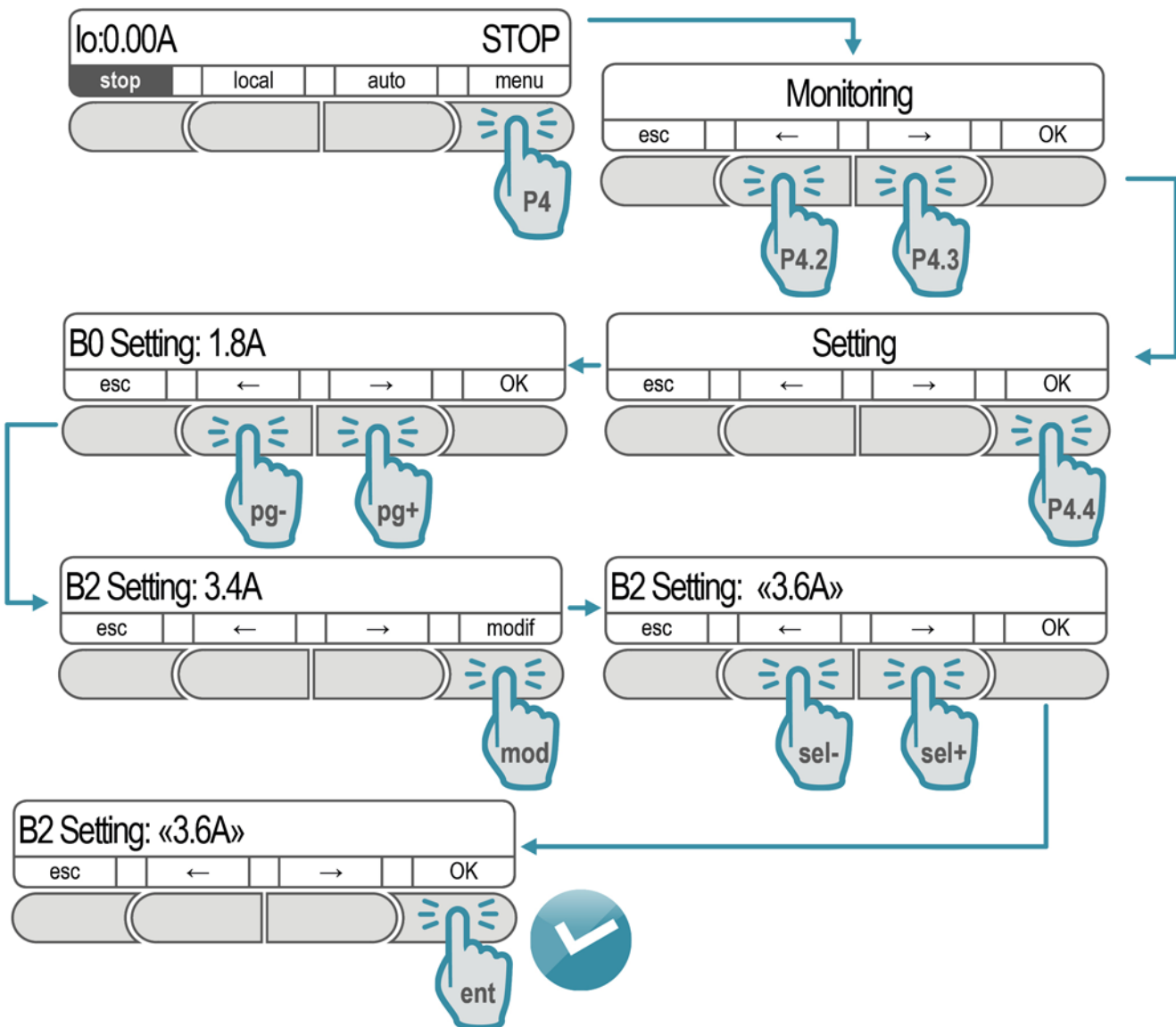
4.8 Edit parameters



The unit is supplied with a pre-set of parameters in accordance with the machine configuration. For normal use, reconfiguration is not necessary during installation operations. Parameter change is only possible with the system energised in STOP mode and with the parameter access option enabled.

To modify the parameters:

- press the MENU access button (P4);
- press the navigation buttons (P4.2) and (P4.3) and select the desired function (see parameter diagram);
- press the confirmation button (P4.4);
- press the navigation buttons (pg-) and (pg+) and select the desired menu item;
- press the change button (mod);
- press the option buttons (sel-) and (sel+) and select the desired value;
- press the confirmation button (ok).



Changing parameters may require updates of derived parameters. In the example, changing the B2 current level requires updating the relative range (ex. from 3.3-3.5A to 3.5-3.7A)

4.8.1 Parameter diagram and suggested configuration values

The unit is supplied with a pre-set of parameters in accordance with the machine configuration. The parameter diagram with suggested configuration values is presented below.

Configurations					
esc		←	→		OK
→	Ui: ___ Vrms				
	esc		←	→	
→	Po: ___ kVA				
	esc		←	→	
→	Current steps: _				
	esc		←	→	

Setting					
esc		←	→		OK
→	B0 setting: 1.80A				
	esc		←	→	modif
→	B1 setting: 2.80A				
	esc		←	→	modif
→	B2 setting: 3.40A				
	esc		←	→	modif
→	B3 setting: 4.10A				
	esc		←	→	modif
→	B4 setting: 5.20A				
	esc		←	→	modif
→	B5 setting: 6.60A				
	esc		←	→	modif

Current Range					
esc		←	→		OK
→	B0 max: 1.90A				
	esc		←	→	modif
→	B0 min: 1.70A				
	esc		←	→	modif
→	B1 max: 2.90A				
	esc		←	→	modif
→	B1 min: 2.70A				
	esc		←	→	modif
→	B2 max: 3.50A				
	esc		←	→	modif
→	B2 min: 3.30A				
	esc		←	→	modif
→	B3 max: 4.20A				
	esc		←	→	modif
→	B3 min: 4.00A				
	esc		←	→	modif
→	B4 max: 5.30A				
	esc		←	→	modif
→	B4 min: 5.10A				
	esc		←	→	modif
→	B5 max: 6.70A				
	esc		←	→	modif
→	B5 min: 6.50A				
	esc		←	→	modif



Please check the actual configuration of the device.
Some parameters may not be available, if the relevant option is not present on the device.

Alarm and Warnings					
esc		←		→	OK

USB Serial link					
esc		←		→	OK

Open circuit					
esc		←		→	OK

USB Baud: 38400					
esc		←		→	modif

I Level OC: 1.00A					
esc		←		→	modif

USB Log.address: 1					
esc		←		→	modif

Duration OC: 0.60s					
esc		←		→	modif

Overcurrent					
esc		←		→	OK

>>Level 1: 6.80A					
esc		←		→	modif

Duration I L1: 2.50s					
esc		←		→	modif

>>Level 2: 6.93A					
esc		←		→	modif

Duration I L2: 1.00s					
esc		←		→	modif

>>Level 3: 10.00A					
esc		←		→	modif

Duration I L2: 0.42s					
esc		←		→	modif

Restart numeber: 11					
esc		←		→	modif

Burnt Lamp fault					
esc		←		→	OK

Level LFD1: 5 lamps					
esc		←		→	modif

Level LFD2: 10 lamps					
esc		←		→	modif



Please check the actual configuration of the device.
Some parameters may not be available, if the relevant option is not present on the device.

Options					
esc		←		→	OK

↳ Param. Access: No

esc		←		→	modif
-----	--	---	--	---	-------

↳ Option EFD: No

esc		←		→	modif
-----	--	---	--	---	-------

↳ Option LFD: Yes

esc		←		→	modif
-----	--	---	--	---	-------

↳ Option Time Mon: Yes

esc		←		→	modif
-----	--	---	--	---	-------

↳ Option 4-20mA: No

esc		←		→	modif
-----	--	---	--	---	-------

↳ Option WigWag: No

esc		←		→	modif
-----	--	---	--	---	-------

↳ Option Selector: No

esc		←		→	modif
-----	--	---	--	---	-------

↳ Option TCP/IP: yes

esc		←		→	modif
-----	--	---	--	---	-------

↳ Option Jbus: No

esc		←		→	modif
-----	--	---	--	---	-------

↳ ICc detection: No

esc		←		→	modif
-----	--	---	--	---	-------

↳ Password: 0

esc		←		→	modif
-----	--	---	--	---	-------

↳ Language: English

esc		←		→	modif
-----	--	---	--	---	-------

Calibration					
esc		←		→	OK

↳ Calibration Io

esc		←		→	OK
-----	--	---	--	---	----

↳ Calibrat. Uo: 0V

esc		←		→	OK
-----	--	---	--	---	----

↳ Calibration Ui: 405V

esc		←		→	OK
-----	--	---	--	---	----

↳ Iteration I1: 1

esc		←		→	OK
-----	--	---	--	---	----

↳ x Burned Lamp: 0

esc		←		→	OK
-----	--	---	--	---	----

↳ OK for 0 B.Lamp?

esc		←		→	OK
-----	--	---	--	---	----

↳ OK for x B.Lamp?

esc		←		→	OK
-----	--	---	--	---	----

↳ Reset LFD meas.?

esc		←		→	OK
-----	--	---	--	---	----

↳ Default config.?

esc		←		→	OK
-----	--	---	--	---	----

↳ Download software?

esc		←		→	OK
-----	--	---	--	---	----

↳ Reset running time?

esc		←		→	OK
-----	--	---	--	---	----



Please check the actual configuration of the device.
Some parameters may not be available, if the relevant option is not present on the device.

TCP/IP parameters					
esc		←		→	OK

Mask (-.X.X.X): 255

esc		←		→	modif
-----	--	---	--	---	-------

Mask (X.-.X.X): 255

esc		←		→	modif
-----	--	---	--	---	-------

Mask (X.X.-.X): 255

esc		←		→	modif
-----	--	---	--	---	-------

Mask (X.X.X.-): 255

esc		←		→	modif
-----	--	---	--	---	-------

IP.Adr (-.X.X.X): 192

esc		←		→	modif
-----	--	---	--	---	-------

IP.Adr (X.-.X.X): 168

esc		←		→	modif
-----	--	---	--	---	-------

IP.Adr (X.X.-.X): 12

esc		←		→	modif
-----	--	---	--	---	-------

IP.Adr (X.X.X.-): 161

esc		←		→	modif
-----	--	---	--	---	-------

Wig wag					
esc		←		→	OK

Cycle time: 2.5s

esc		←		→	modif
-----	--	---	--	---	-------

On time: 1.7s

esc		←		→	modif
-----	--	---	--	---	-------

Earth fault					
esc		←		→	OK

Earth Fault Lev.1: 1MΩ

esc		←		→	modif
-----	--	---	--	---	-------

Earth Fault Lev.2: 100kΩ

esc		←		→	modif
-----	--	---	--	---	-------

JBUS RS485					
esc		←		→	OK

J BUS Baud: 38400

esc		←		→	modif
-----	--	---	--	---	-------

JBUS Id: 1

esc		←		→	modif
-----	--	---	--	---	-------



Please check the actual configuration of the device.
Some parameters may not be available, if the relevant option is not present on the device.

4.9 Software configuration utility

In order to make the functionality of the device more usable, it is possible to connect to the constant current regulator control system using the USB connection (located on the front of the device) with a PC with the ALIZE 4100 software installed.



The ALIZE 4100 software (available for download from the link on the manufacturer's website:

<http://www.augier.com/soft/ALIZE4100.exe>).

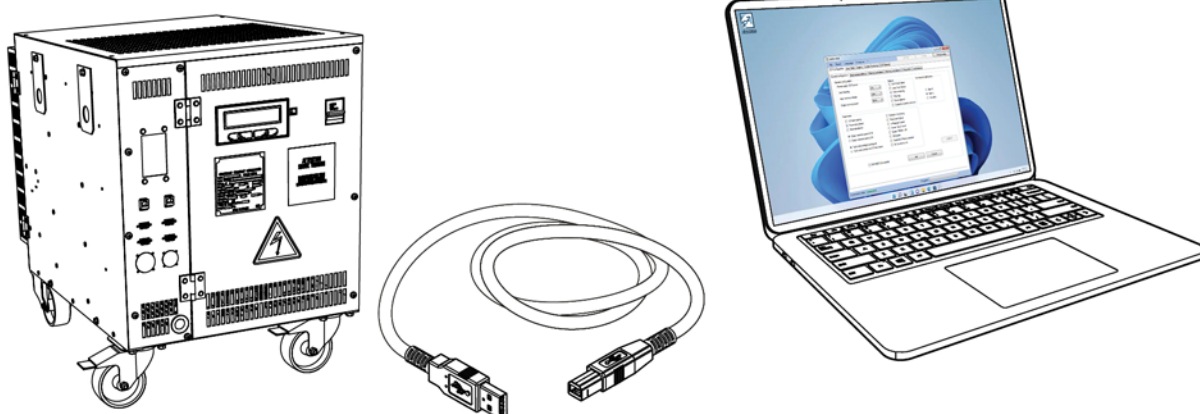
Before installing the software, read and accept the licence conditions and check that the minimum requirements are met.

The software interface allows faster access to the device's parameters, enabling the unit to be programmed quickly and accurately. The configuration file can be exported and archived for future reuse.

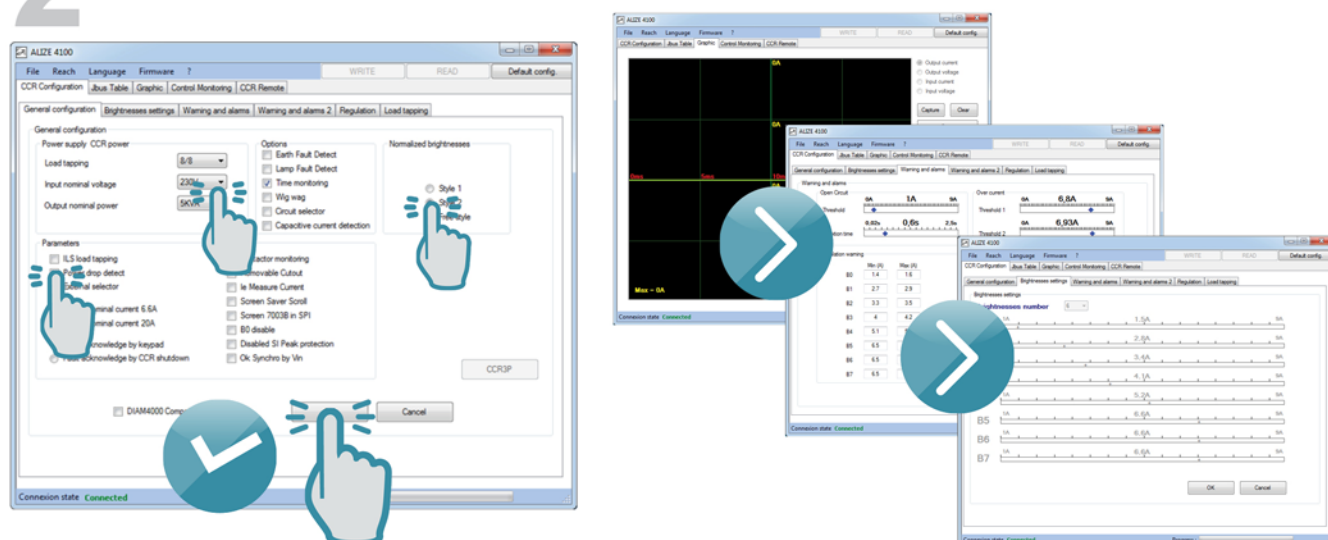
Through the software interface it is possible to display the main operating parameters, even in a graphic environment.

For further details, please refer to the software guide.

1



2



4.10 Scheduled maintenance

The CAN architecture of the DIAM3200D CCR controller of the OCEM Airfield Technology is designed to minimise the number and variety of spare parts and to allow wide configurability of the options. OCEM Airfield Technology offers software tools to perform quick parameter settings or diagnostics, without having to remove any parts.



Before carrying out any intervention on the device, cut off all external power sources and place appropriate work-in-progress warnings on the systems. Wait for the discharging time (at least 5 min) and check using appropriate instruments that there are no residual energies before accessing the electrical equipment.



If present, use the CUT-OUT disconnecter to secure the device during maintenance operations. See the relevant technical documentation for more information.

In accordance with the suggestions contained in the document ICAO Airport Service Manual - Part 9: Airport Maintenance Practices, or on the basis of what reported in the document FAA AC 150 5340-30, the devices DIAM3200D must be subjected to regular maintenance.

In order to assure the proper functioning and the maximum duration of the operating lifetime of the device all the checks and periodical audits must be carried out and, if necessary, the necessary corrective procedures must be activated to restore and ensure operative safety levels foreseen by the standards.



Do not let running devices not properly maintained or fixtures presenting signs of damage or fault.

Each maintenance operation carried out on the devices must be noted on the maintenance register.

4.10.1 Maintenance after the first month

After the first month of use, carry out the following checks:

- Status of the connections and of tightening of the terminals of the power terminals: input line (LV+GND), fuse holders and contactors;
- Status of the connections and of tightening of the power terminals: output line (HV1, HV2);
- Correct tightening of all internal terminal blocks.

4.10.2 Annual maintenance

At least once every 12 months of use, carry out the following activities:

- Remove dust accumulated on the lower surface of each unit;
- Remove dust accumulated on the electronic boards;
- Check the status of the connections and of tightening of the main connections (LV, HV, GND);
- Check the operation of the unit in LOCAL mode and in REMOTE mode.

4.10.3 Three-year maintenance

At least once every 36 months of use, carry out an overall check of the condition of the unit. Carry out a visual inspection and perform the following activities:

- Check the proper tightening of all internal terminal blocks;
- Measurement and check of current values: use suitable equipment with adequate measurement and accuracy specifications. If there are discrepancies between the actual values and those shown on the screen, recalibrate the unit. For more information, contact technical support.

4.11 Corrective Maintenance - Component Identification

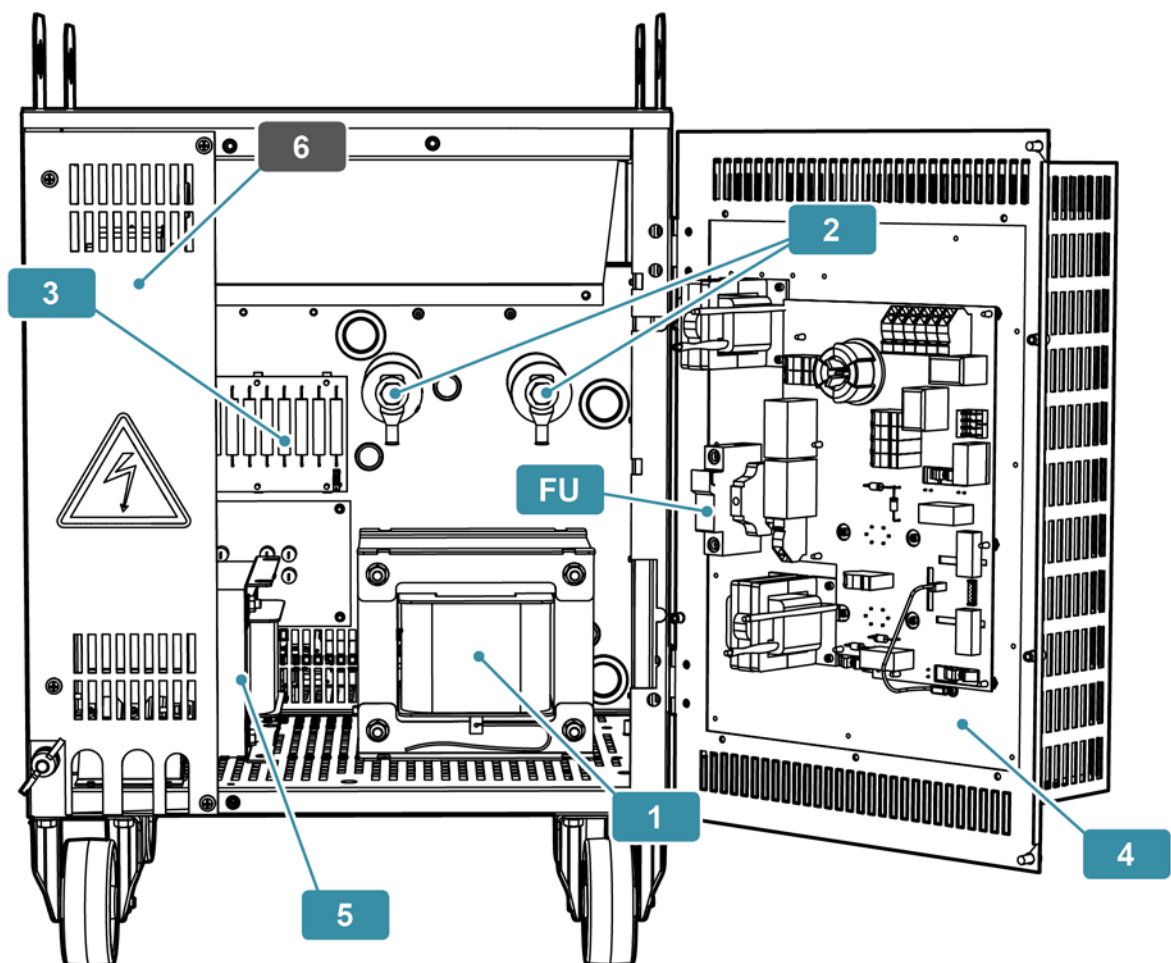


Before carrying out any intervention on the device, cut off all external power sources and place appropriate work-in-progress warnings on the systems. Wait for the discharging time (at least 5 min) and check using appropriate instruments that there are no residual energies before accessing the electrical equipment.

When necessary, perform corrective maintenance procedures to repair/replace the main electrical/electronic components of the unit:

- Parts accessible from the rear side

- 1) power transformer (T1)
- 2) output dischargers OLA (PF1 and PF2)
- 3) EFD injection board
- 4) power module (and relevant protective fuses FU) complete with heatsink
- 5) power supply autotransformer
- 6) input discharger ILA (optional)

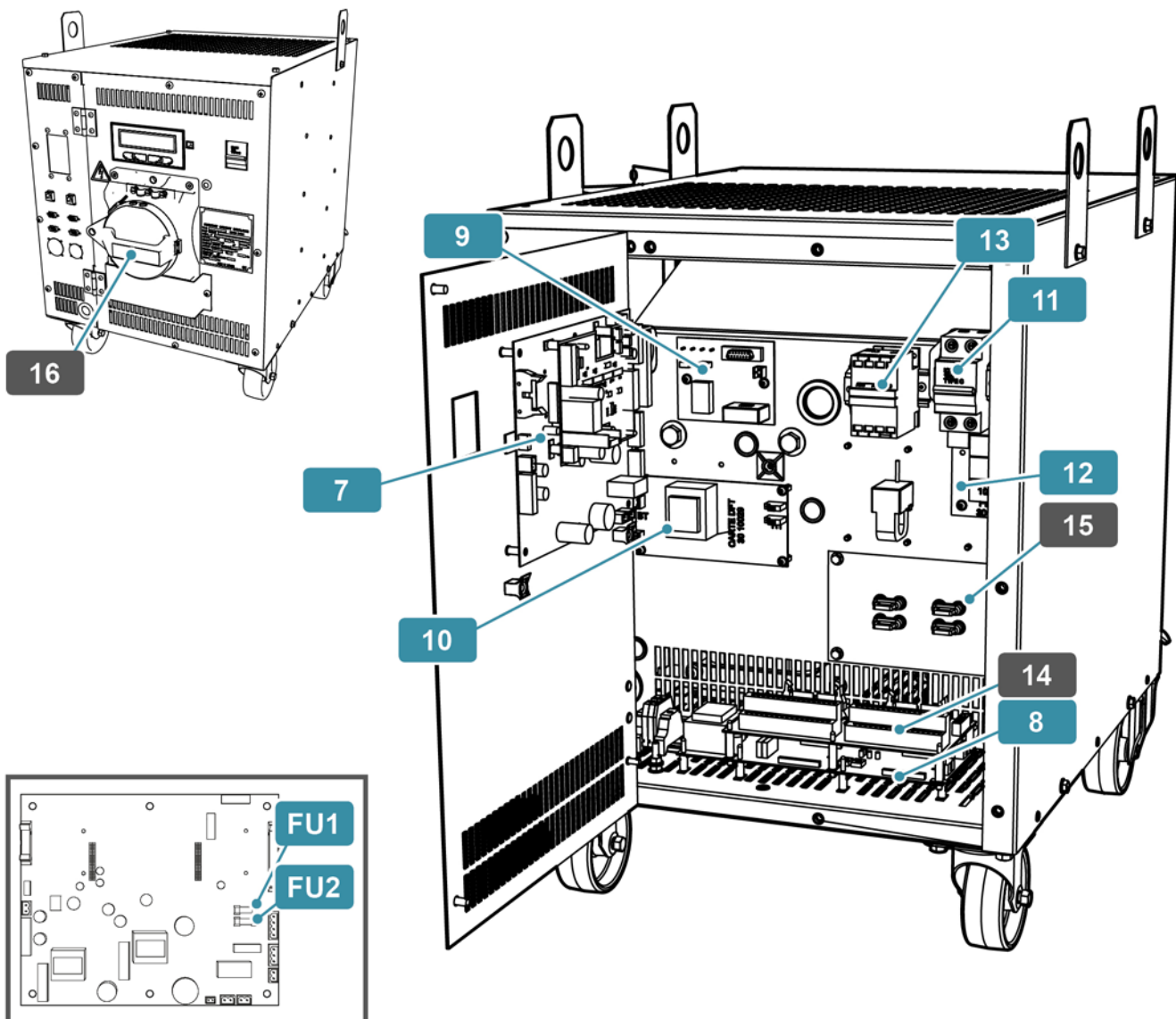


● Parts accessible from the front side

- 7) mother board (and relevant protective fuses FU1 and FU2)
- 8) interface board
- 9) measurement board
- 10) EFD board
- 11) main thermal-magnetic circuit breaker CB (Q1)
- 12) EMC filter
- 13) power contactor (KM)
- 14) wired remote control board/IEC/AENA (optional, for more information, see document ES-MT-0112)
- 15) CUT-OUT SCC disconnecter (optional, for more information, see document ES-MT-0113)
- 16) cut-out SIMALT disconnecter (optional, for more information, see document ES-MT-0113)



The device could be equipped with ICS integrated circuit selector (optional, for more information, see document ES-DP-0007).



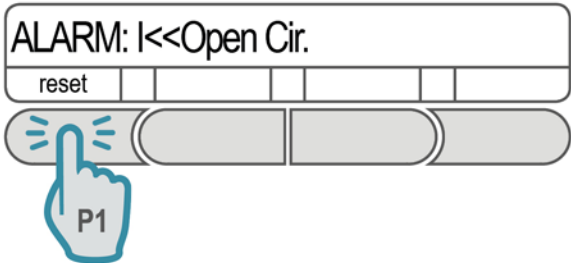
4.12 Troubleshooting



Carefully read the manual, and in particular safety information, before proceeding with the resolution of common faults.



Before proceeding to delete the message, identify the cause of the fault and eliminate the problem.
Press the RESET button (P1) to restore the system.
A system reset is only possible with the system energised in STOP mode.
The unit preserves the memory of messages detected during operation even in the event of the supply voltage. When switching the unit back on, proceed to resolution and restoration of all messages in the memory.



4.12.1 Fault of the supply line

Problems		
Possible causes		Possible solution
The constant current regulator inhibited the supply (STOP mode). The display shows one of the following messages: ● ALARM: BAD SUPPLY		
	A fault of the supply line has occurred.	1. Check the supply voltage value. 2. Check the POWER SUPPLY CCR parameter setting in the CONFIGURATION menu. If necessary, use the ALIZE 4100 software. 3. Check the VOLTAGE MEASUREMENT parameter setting in the SUPERVISION menu. If necessary, use the ALIZE 4100 software.
	If after trying the proposed solutions the problem persists, contact OCEM Customer Service.	

4.12.2 OPEN CIRCUIT fault

Problems		
Possible causes		Possible solution
The constant current regulator inhibited the supply (STOP mode). The display shows one of the following messages:		
ALARM: I<<Open Cir.		
	The series circuit is open.	1. Perform a series circuit continuity measurement (both on the primary as well as on the secondary of the transformers).
	The current value supplied is remained $I_o < 1$ A for more than 500 ms.	1. Perform a measurement of the output current value. 2. Check that the load on the series circuit has not increased causing an excessive variation in nominal values.
	The connection between the measurement board and the mother board is faulty.	1. Check the condition of the flat connection cable between the measurement board and the mother board.
	The parameters set for Open Circuit (intervention threshold and inhibition time) cause the supply to stop.	1. Check the OPEN CIRCUIT parameter setting in the ALARM AND WARNINGS menu. If necessary, use the ALIZE 4100 software.
If after trying the proposed solutions the problem persists, contact OCEM Customer Service.		

4.12.3 Over current

Problems: over current		
Possible causes		Possible solution
The constant current regulator inhibited the supply (STOP mode). The display shows one of the following messages:		
- ALARM: I>>Level 1 - ALARM: I>>Level 2 - ALARM: I>>Level 3 - ALARM: I>>Peak value		
	The supplied current value is higher than the values provided by the settings.	1. Check that the load on the series circuit has not decreased causing an excessive variation in nominal values.
	Overload combined with a drastic reduction in switching load.	1. Check the number of the isolating transformers with open secondary due to missing fixtures on the circuit or burnt lamps. If necessary, replace the damaged components.
	The set alarm threshold value is too low	1. Check the OVERCURRENT parameter setting in the ALARM AND WARNINGS menu. If necessary, use the ALIZE 4100 software.
If after trying the proposed solutions the problem persists, contact OCEM Customer Service.		

4.12.4 Other faults

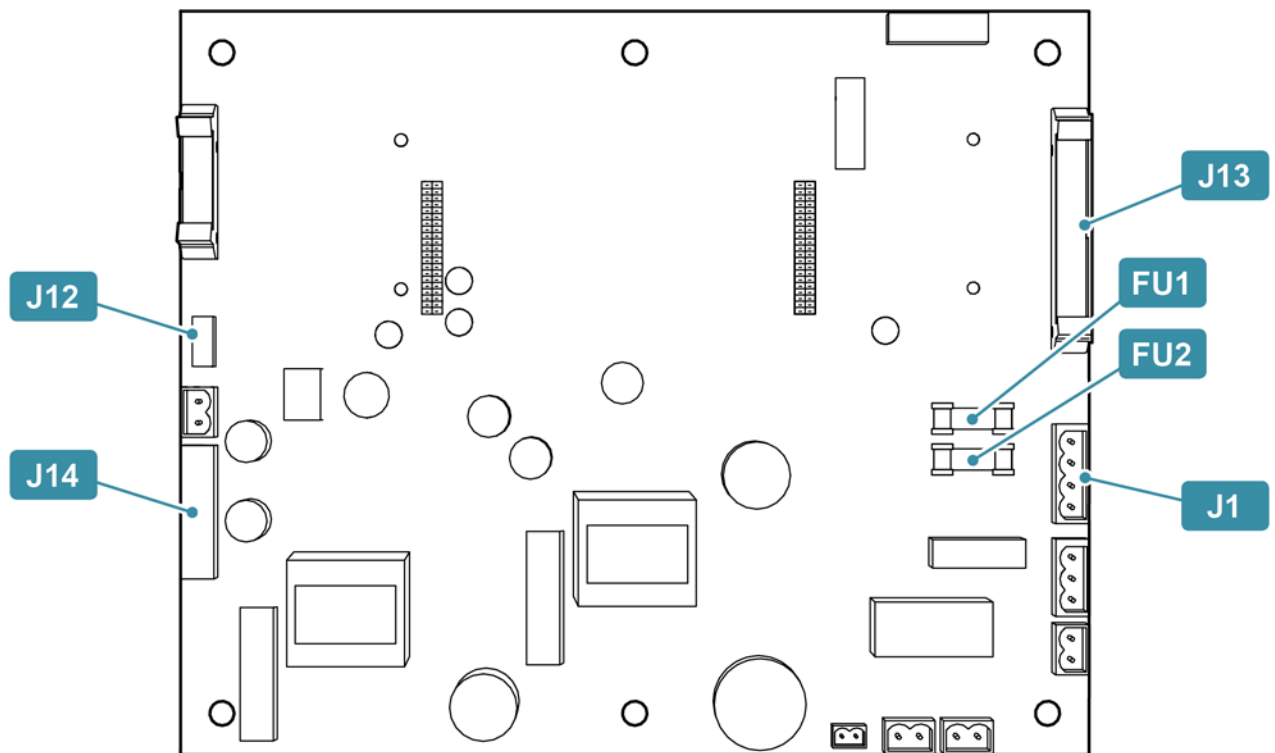
Problems		
Possible causes		Possible solution
The current supplied is insufficient. The display shows one of the following messages:		
● WARNING: Regulation error		
	The number of the isolating transformers with open secondary on the series circuit is excessive.	1. Check the number of the isolating transformers with open secondary due to missing fixtures on the circuit or burnt lamps. If necessary, replace the damaged components.
	The Pon nominal power of the constant current regulator is insufficient.	1. Check that the load on the series circuit has not increased causing an excessive variation in nominal values ($P_o > P_{on}$).
The constant current regulator is connected to the power supply and the display remains off.		
	The mother board protections have tripped.	1. Check the status of fuses F1 and F2 on the mother board (T1A). If necessary, replace the fuses.
	A mother board fault has occurred.	1. Check the status of the mother board. If necessary, use the DIAGNOSTIC function of the ALIZE 4100 software. If necessary, replace the board.
The constant current regulator cannot be operated remotely (REMOTE mode).		
	The remote control interface board protections have tripped.	1. Check the status of fuses F1(T100mA) and F2 (T500mA) on the interface board. If necessary, replace the fuses.
	An error has occurred in the configuration of the remote control type.	1. Check the WIRE REMOTE parameter setting in the CCR REMOTE menu. If necessary, use the ALIZE 4100 software. If necessary, replace the board.
	Insufficient remote control voltage.	1. Check that the remote control voltage is within the permissible range ($20-60V_{DC}$ o $120V_{AC}$).
The constant current regulator inhibited the supply (STOP mode). The display shows one of the following messages:		
● FAULT: Power board!		
	The power board protections have tripped.	1. Check the status of fuses on the power board. If necessary, replace the fuses.
	A mother board fault has occurred.	1. Check the status of the power board. If necessary, use the DIAGNOSTIC function of the ALIZE 4100 software. If necessary, replace the board. 2. If, after replacing the fuses, the fuses burn out again during testing, proceed to replace the board.
	If after trying the proposed solutions the problem persists, contact OCEM Customer Service.	

Problems		
Possible causes		Possible solution
The constant current regulator inhibited the supply (STOP mode). The display shows one of the following messages:		
FAULT: Power fuse!		
	The power board protections have tripped.	1. Check the status of fuses on the power board. If necessary, replace the fuses. 2. If, after replacing the fuses, the fuses burn out again during testing, proceed to replace the power module board.
The display shows one of the following messages:		
- WARNING: EFD level 1 - WARNING: EFD level 2		
	The series circuit may be damaged and the expected fixture brightness values may not be met. Note: The constant current regulator continues to operate normally.	1. Check the status of the primary cables of the series circuit. If necessary, replace the damaged components. 2. Check the status of the primary connectors of the series circuit. If necessary, replace the damaged components.
	An error has occurred in the configuration of the tripping thresholds.	1. Check the EARTH FAULT DETECTION parameter setting in the WARNING AND ALARMS 2 menu. If necessary, use the ALIZE 4100 software.
The display shows one of the following messages:		
WARNING: No EFD		
	No data is available on the measurement of insulation.	1. Check the status of the connection cables of the EFD measurement board. If necessary, replace the damaged components. 2. Check the status of the EFD measurement board. If necessary, replace the board.
The display shows one of the following messages:		
- WARNING: LFD level 1 - WARNING: LFD level 2		
	The current values on the series circuit may be unstable and the expected fixture brightness values may not be met.	1. Check the status of the fixture installed on the series circuit. If necessary, replace the burnt lamps. 2. Check the LAMP FAULT DETECTION parameter setting in the WARNING AND ALARMS 2 menu. If necessary, use the ALIZE 4100 software. 3. Run the learning function again.
If after trying the proposed solutions the problem persists, contact OCEM Customer Service.		

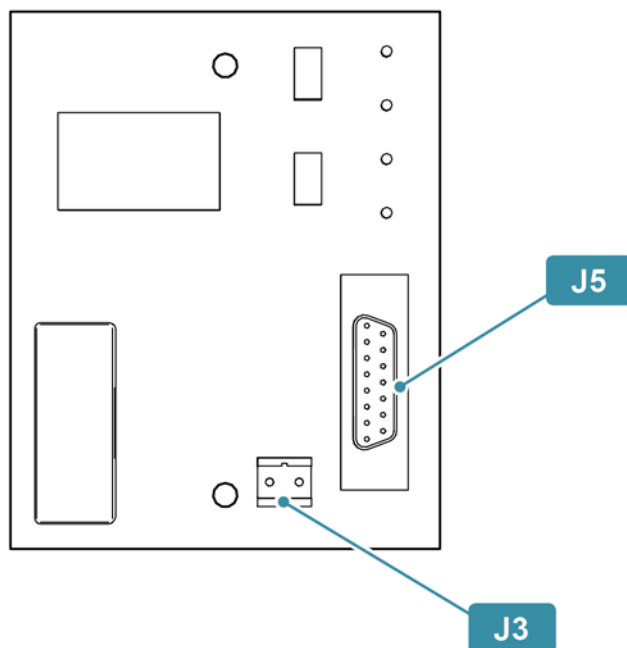
Problems		
	Possible causes	Possible solution
The display shows one of the following messages:		
WARNING: Meas. lamps		
	No data is available on the output voltage measurement.	1. Check the status of the current sensor connections. Using the ALIZE 4100 software, check that the current direction is correct: the GRAPHIC tab should show the curves all correctly phased. If necessary, change the position of the connection cables. 2. Run the BURNT LAMP learning function again. 3. Check the status of the current sensor. If necessary, replace the damaged components.
	The output voltage measurement is groundless.	1. Check the status of the current sensor connections. Using the ALIZE 4100 software, check that the current direction is correct: the GRAPHIC tab should show the curves all correctly phased. If necessary, change the position of the connection cables. 2. Run the BURNT LAMP learning function again.
The display shows one of the following messages:		
ALARM: BAD Interface		
	The constant current regulator cannot be operated remotely (REMOTE mode).	1. Check the status of interface board connections. If necessary, replace the damaged components. 2. Check the status of the interface board. If necessary, replace the board. 3. Check the status of the mother board.
The constant current regulator inhibited the supply (STOP mode). The display shows one of the following messages:		
WARNING: BAD Freq.		
	A fault of the supply line has occurred.	1. Check the supply line values. In particular, check that: the power supply frequency is correct; the power supply wave shape is symmetrical.
The display shows one of the following messages:		
WARNING: TC-TS board		
	Wired remote control is not detected.	1. Check the status of the remote control relay board. If necessary, replace the board.
If after trying the proposed solutions the problem persists, contact OCEM Customer Service.		

Problems		
Possible causes		Possible solution
The display shows one of the following messages:		
WARNING: Power Drop		
	The series circuit suffered a load reduction of more than 10% from the nominal value. Note: The constant current regulator continues to operate normally.	1. If required by the regulatory context, the information is to be considered a caution message (see FAA specifications).
The display shows one of the following messages:		
- WARNING: Temp. level 1 - FAULT: Temp. level 2		
	The transformer temperature exceeds the thresholds provided (only AENA specifications).	1. If required by the regulatory context, the information is to be considered a caution message. Check the environmental conditions (see AENA specifications).
The display shows one of the following messages:		
WARNING: Power Temp.		
	The heatsink temperature exceeds the limit values of 90°C.	1. Check the status of the device. Check that rear ventilation is ensured and that no dirt or dust has accumulated on the ventilation grids. If necessary, clean the ventilation grids.
The display shows one of the following messages:		
WARNING: Temp. Sensor		
	The temperature probe installed on the heatsink may be faulty.	1. Check the status of the probe connections. If necessary, replace the probe ($R_{25^{\circ}\text{C}} = 10\text{k}\Omega$).
If after trying the proposed solutions the problem persists, contact OCEM Customer Service.		

Identifying mother board components



Identifying measurement board components



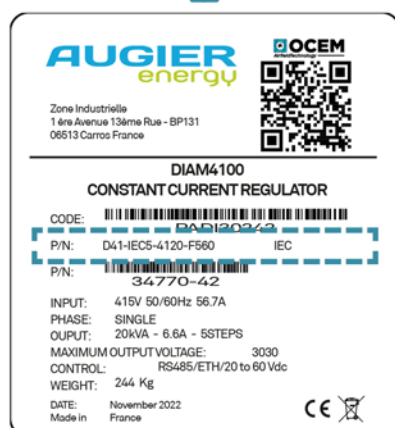
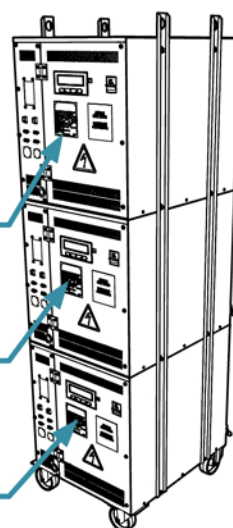
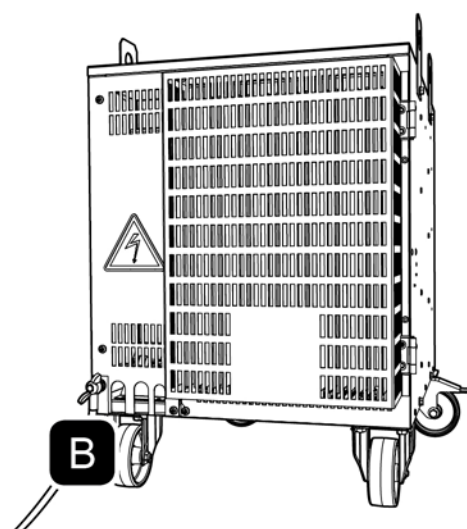
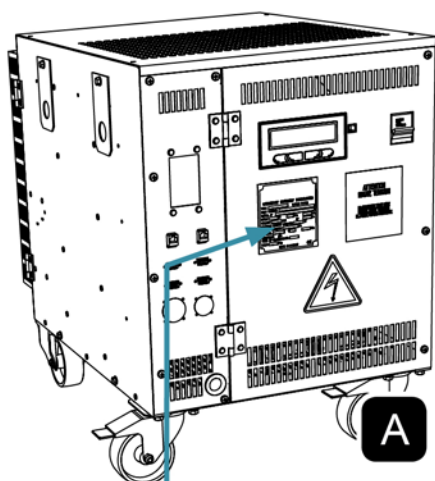
4.13 Spare parts



Always check the version of the device you have and any options/accessories present.

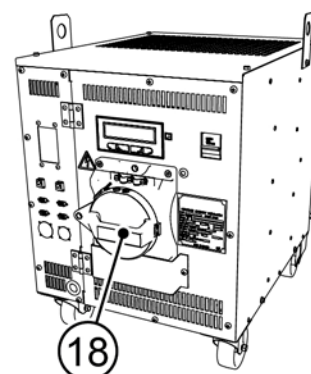
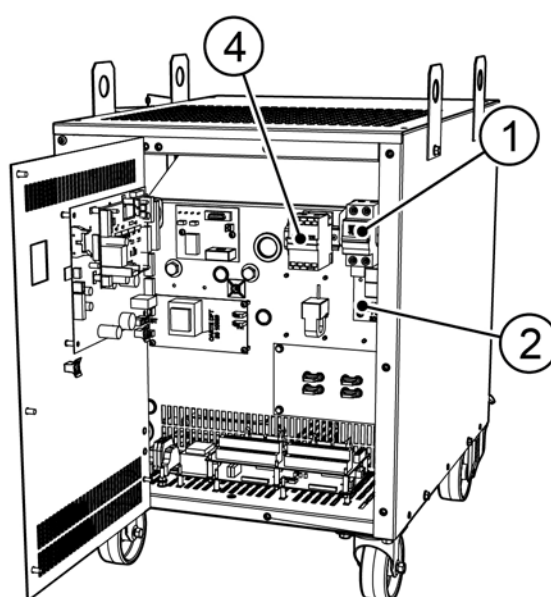
Constant current regulator DIAM3200D	
A	Front segregation
B	Rear segregation

Accessories		Code Art.
	Fixed wheels	
	Swivel castors	
	Lifting rings (single unit)	
	Lifting bars (2 overlapping units)	
	Lifting bars (3 overlapping units)	

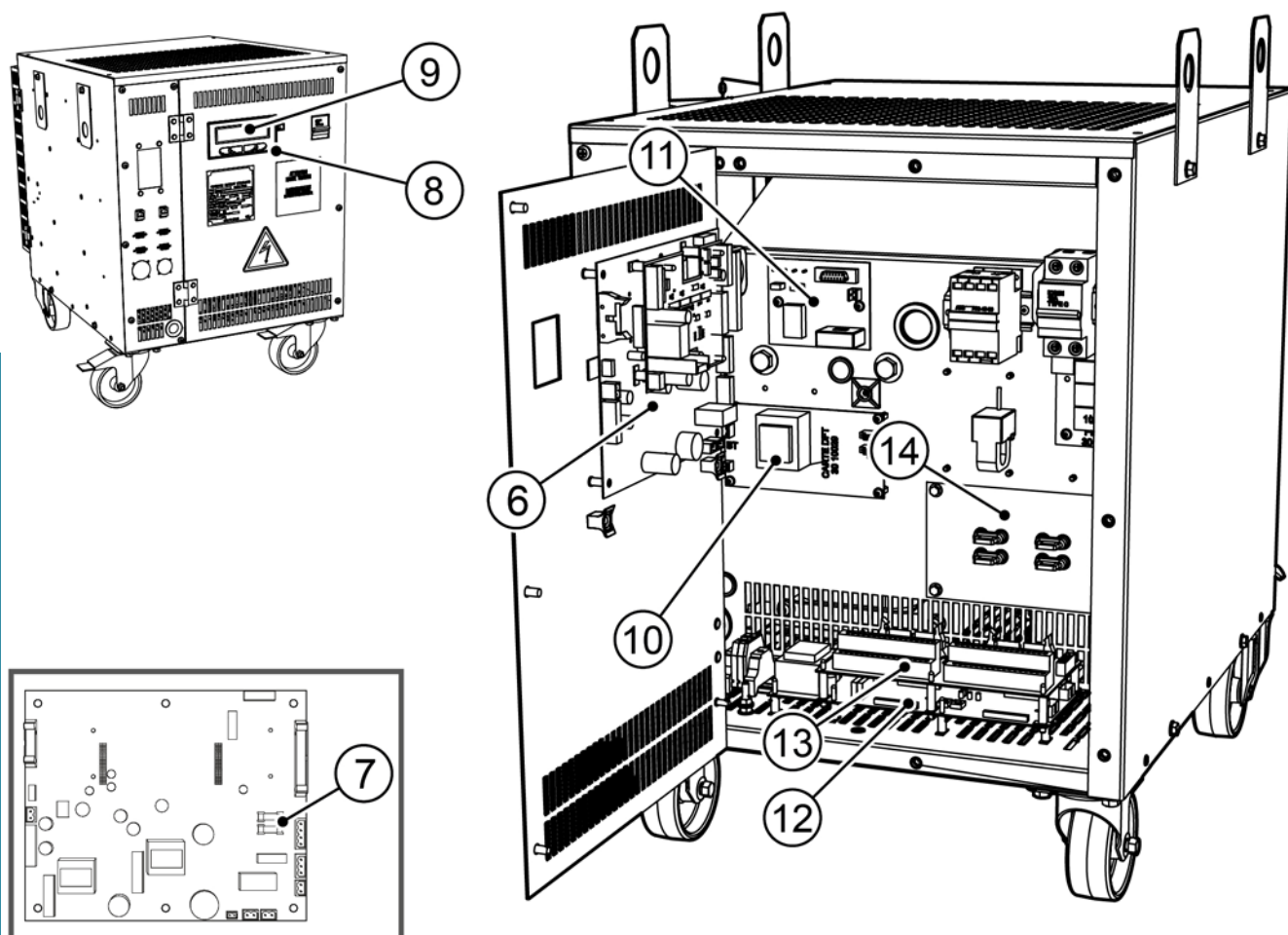


4.13.1 Front segregation

Pos	Description	Product Code	Code Art.
1	Magnetothermal input protection (DJ1)	IEC/AEN - 22/23/24 02 -	10.25251
		IEC/AEN - 38/40/41 02 -	10.25250
2	EMC filter	IEC/AEN - 22/23/24 -	30.10087
		IEC/AEN - 38/40/41 -	30.10068
4	Power contactor (KM)	IEC/AEN - 22/23/24 02 -	10.27054
		IEC/AEN - 38/40/41 02 -	
18	CUT-OUT SCC disconnecter (without labels)	IEC - - - A- ICS - S AEN - - - A- ICS - S	10.27719

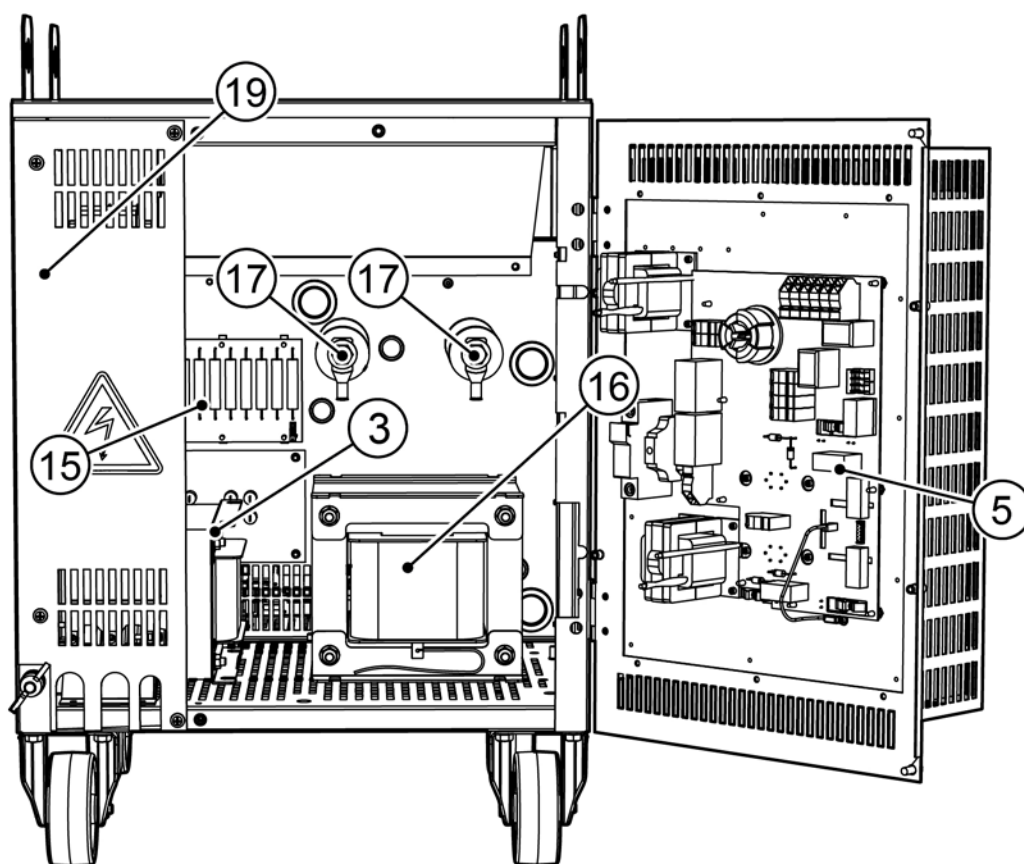


Pos	Description	Product Code	Code Art.
6	Fuses mother board	always valid	30.12819
7	Mother board protective fuses (FU1/FU2)	always valid	10.27584
8	Membrane keyboard	always valid	10.20483
9	Display	always valid	30.12449
10	EFD board	always valid	30.10029
11	Measurement board	always valid	30.08004
12	Interface board	always valid	30.10028
13	Wired remote control board (dry contacts) IEC/AENA	always valid	30.13547
14	CUT-OUT SIMALT2 disconnecter	IEC - - - A - ICS - S AEN - - - A - ICS - S	30.11851
	Connection jumper	IEC - - - A - ICS - S AEN - - - A - ICS - S	10.25705



4.13.2 Rear segregation

Pos	Description	Product Code	Code Art.
5	Power module	IEC/AEN - 22/23/24 -	718.3110
		IEC/AEN - 38/40/41 -	718.3111
15	EFD board - H.V.	always valid	30.11451
3	Auxiliary autotransformer (T2)	IEC/AEN - 22/24 -	10.21529
		IEC/AEN - 38/40/41 -	
16	Power transformer (T1)	IEC/AEN - 22/23/24 02 -	10.24847
		IEC/AEN - 38/40/41 02 -	10.26711
17	Output dischargers OLA (PF1/PF2)	always valid	10.17854
19	Input discharger (ILA)	- - 1 - ICS -S	10.19975
		- - 3 - ICS -S	
		- - 5 - ICS -S	
		- - 7 - ICS -S	



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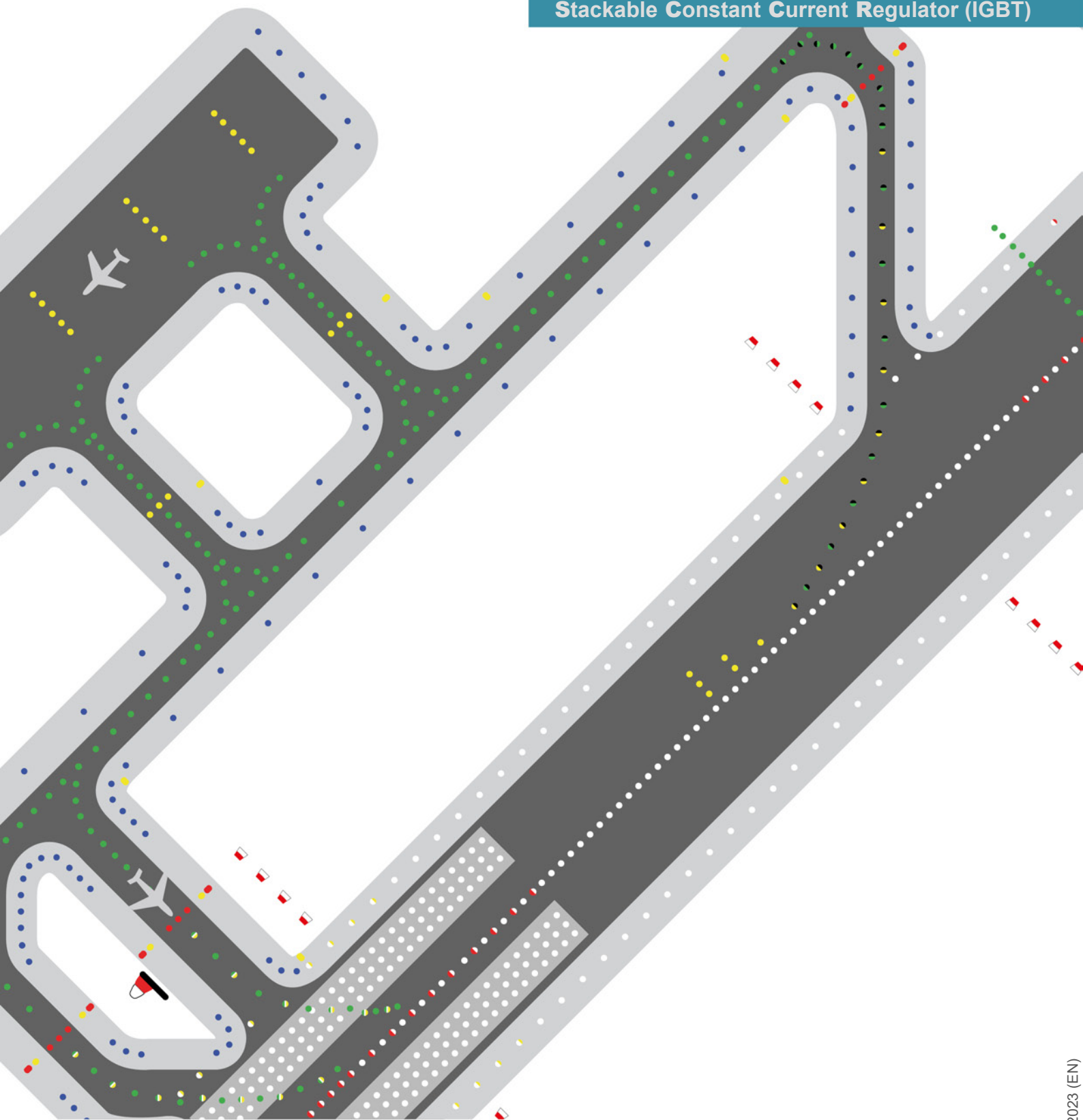


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Stackable Constant Current Regulator (IGBT)



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