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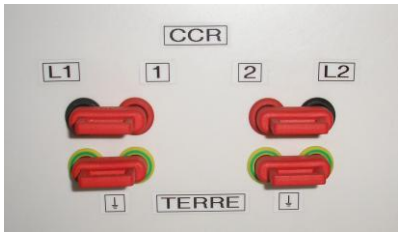
OCEM a division of Energy Technology srl

Installation & maintenance

DIAM 3100
DIAM 4100
DIAM 3200
DIAM 4200
Cut out



Compliance with standards:
ICAO Aerodrom design manual, part 5
IEC 61822 et 61821
FAA (AC 150/5345-10F Spec.L828/L829)
AENA: PPT/002-05/13

RECORD OF CHANGES

Rev.	***Pages***	***Description***	***From S/N***	***By***	***App.***	***Date***
1.0		First issue		ED	ED	31/01/19

WARRANTIES

Guarantee

AUGIER's goods has been manufactured and will perform in accordance with applicable specifications, and any defect in design, materials or workmanship which may occur during proper and normal use during a period of 1 year from date of installation or 2 years from date of shipment will be corrected by repair or replacement by the manufacturers f.o.b factory.

The guarantee covers repair, modification or replacement of parts or products recognised to be defective, in the shortest possible time, at AUGIER's cost, provided always that the goods have been properly handled and stored prior installation, properly installed and properly operated after installation.

Unless otherwise specifically laid down in contract, the guarantee does not cover:

- Costs of consignment to factory and re-consignment of defective goods to Buyer
- Travelling & sojourn expenses of AUGIER's personnel if goods have to be repaired on site; assembly and dismantling of any goods other than those recognised to be defective; expenses incurred for waiting times by AUGIER's personnel on site for reasons independent of their will;
- Unjustified travel expenses.

Guarantee shall not apply in the following cases:

- Defects in materials supplied by Buyer or due to any designs imposed by them;
- Repairs or replacements due to normal wear and tear, or damages or accidents.
- Repairs or replacements due to damages or accidents resulting from negligence or lack of due care, inadequate supervision or maintenance, or erroneous use of the equipment or software;
- Any other causes for which AUGIER shall not be held responsible, e.g. resulting from an case of Force Majeure.
- When Buyer has replaced AUGIER's parts with other parts.

Buyer must inform AUGIER in writing and without delay of any defects in goods, giving all necessary information and detailed description of how equipment has been utilised, together with purchase date. Buyer undertakes not to have repairs carried out by third parties; any repairs carried out without AUGIER's express prior agreement shall invalidate the guarantee.

It is expressly agreed between the two parties that Buyer cannot avail himself of the beneficial dispositions contained in the guarantee without having first satisfied payment conditions laid down in contract

Disclaimers

This manual could contain technical or typographical errors. AUGIER reserves the right to make changes and revise this manual from time to time without obligation to notify any person or organisation of such changes or revision.
Values and measurements given in this manual are average values and are not binding. AUGIER disclaims any liability for damages suffered as a result of reliance on the information given in this manual, or the use of equipment or processes which this manual refers.
No guarantee is made that the use of the products, equipment, processes or information to which this manual refers will not infringe any third party's patent or rights. Information given does not release the buyer from making their own tests.

SAFETY

Safety precautions

This equipment is normally used or connected to circuits that may employ dangerous and lethal voltages. Extreme caution should be exercised by operating or maintenance people when working on or with this equipment.
See IEC 61820 & 61821 standard (CCR type IEC), or FAA AC150/5340-26 advisory circular (CCR type FAA), concerning safety rules and precautions. While practical safety precautions have been incorporated in this equipment, the following rules must be strictly observed :

- **KEEP AWAY FROM LIVE CIRCUITS** :

Operating and maintenance people must at all time observe all safety regulations. Do not change components nor perform maintenance inside equipment with power ON or the lighting loop energised.

- **RESUSCITATION** :

Operating and maintenance personnel should familiarise and keep themselves trained with resuscitation techniques found in widely published manuals about first aid instructions.

- **ELECTROSTATIC DISCHARGE (ESD)** :

Electronic sub-assemblies and boards should be touched only for unavoidable operation (replacement, for example). Before to operate, maintenance people must first of all eliminate unwanted electronic charges, discharging his own body while touching a conductive earthed object or part. Electronic boards and components as power semiconductors must be stored and carried an conductive packing.

- **DESTRUCTION** :

In case of dismantling, scrapping or placing out of service, the user must follow all the required precautions for component, materials or equipment elimination, according the local rules.

EEC DIRECTIVES

This CE equipment complies with the requirements of EC directives :

- 89/336/EEC, 92/31/EEC and 93/68/EEC with regard of Electromagnetic Compatibility
- 73/23/EEC with regard of Low Voltage Equipment

TABLE OF CONTENTS

ABBREVIATIONS

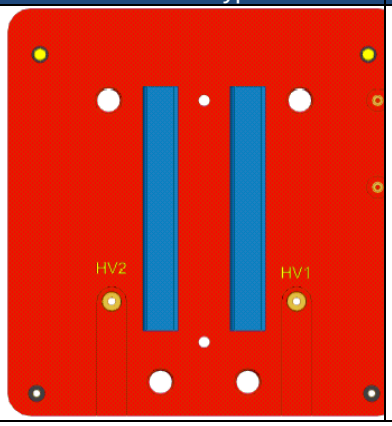
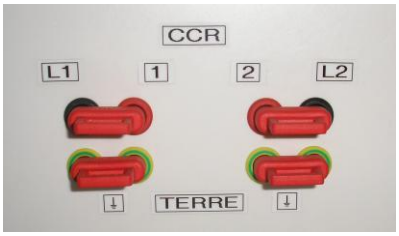
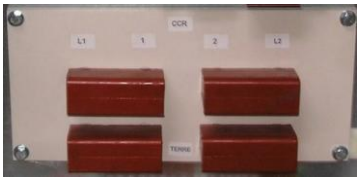
Abbreviation	Definition
A	Ampere
AC	Alternating Current
B	Brightness
CCR	Constant Current Regulator
DC	Direct Current
EFD	Earth Fault Detector
HV	High Voltage
IT	Injection Transformer
LFD	Lamp Fault Detector
LV	Low Voltage
OO	Out of order
V	Volt
VA	Volt-Ampere

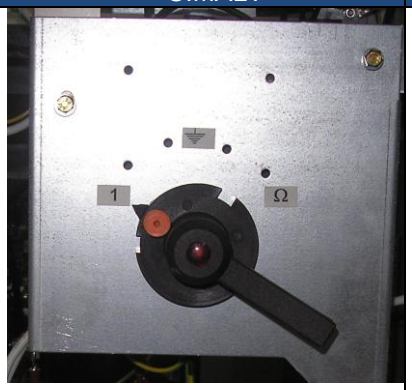
I DESCRIPTION

I.1 OVERVIEW

The CCR can be fitted with CUT OUT switch. *This cut out is an additionnal part to help maintenance.
The main function is to connect easily the loop to the earth. A second function is to measure the impedance loop.

6 models:

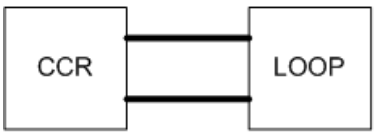
CCR code: CBA		
SIMALT Type 1	SIMALT Type 2	SIMALT Type 3
		

CCR code: CSE	CCR code: CRO	CCR code: CSC
SEB	CIMALT	CO-OCEM
		

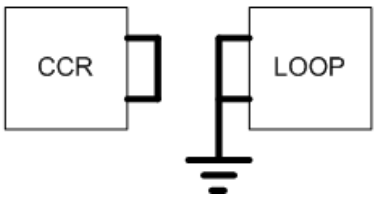
	SIMALT 1	SIMALT 2	SIMALT 3	SEB	CIMALT	CO-OCEM
DIAM3100		√				√
DIAM4100	√			√	√	√
DIAM3200		√				√
DIAM4200			√			√
With integrated circuit selector				√		
Type FAA				√		
Type AENA						√

The cut out has 3 positions:

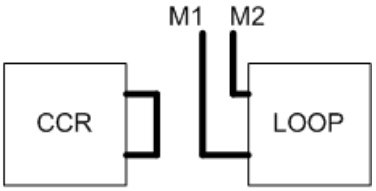
SERVICE



MAINTENANCE or SAFETY



MEASUREMENT
See Note 1



Note 1: No measurement position for SEB cut cout.

- **Standards:**
  - ICAO: Airport design manual, part 5
  - STNA: CCTP 91068 rev.93
  - CENELEC: prENV 50231
  - FAA: AC150/5345-10F, L828 or L829
  - AENA: PPT/002-05/13
  - IEC: 61822 (CCRs), 61821 (Maintenance)

II MODELS

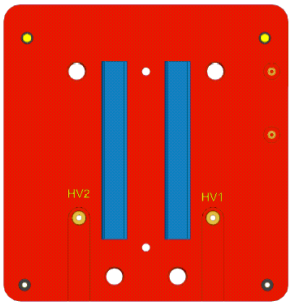
II.1SIMALT 1

II.1.1 DESCRIPTION

AUGIER's experience regarding CCRs has been used to simplify the HV compartment and maintenance operations to the maximum.
With that option, the CCR is equipped with an cut-out and earthing plate, using two jumpers which allows to carry out all maintenance and measurement operations, without unscrewing any load terminal or earth connection, and without requiring any special tools.

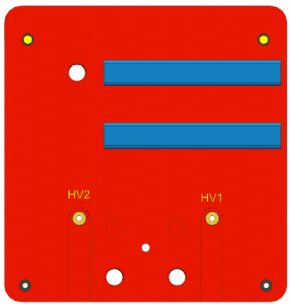
II.1.2 SERVICE POSITION :

It is the operational position.
If the two 3 pins jumpers are in that position (vertically), the loop's terminals are linked to the output of the CCR :



II.1.2.1 SAFETY POSITION:

By removing the two jumpers from the previous operating position as above, the CCR will be disconnected from the loop in a safe and clearly visible way. Then, placing the two jumpers in horizontal position, CCR's output and the two loop's terminals (still isolated) will be short-circuited, while the third pin of each jumper make an earth connection.



ⓘ This is the **safe position**, allowing works to be carried out on the field : CCR is short-circuited to the earth, and separately from the loop, also short-circuited and earthed.

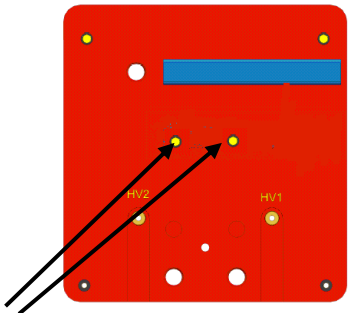
ⓘ WARNING : Although the CCR and the loop are earthed, the CCR can be switched ON : In that case, it regulates a constant current through the upper jumper.

II.1.2.2 LOAD MEASUREMENT POSITION:

Removing the lower jumper, CCR will be still short-circuited and earthed, but loop's terminals will be let free, in order to allow to proceed at all insulation and continuity measurements, which can be carried out as well as any other testing or research operations concerning the load.

ⓘ This is the **measurement position** of the cut-out plate.

ⓘ WARNING : Although the CCR and the loop are isolated, the CCR can be switched ON : In the case where the two jumpers are removed, it should fail in "Open Circuit".



Load measure

CAUTION:

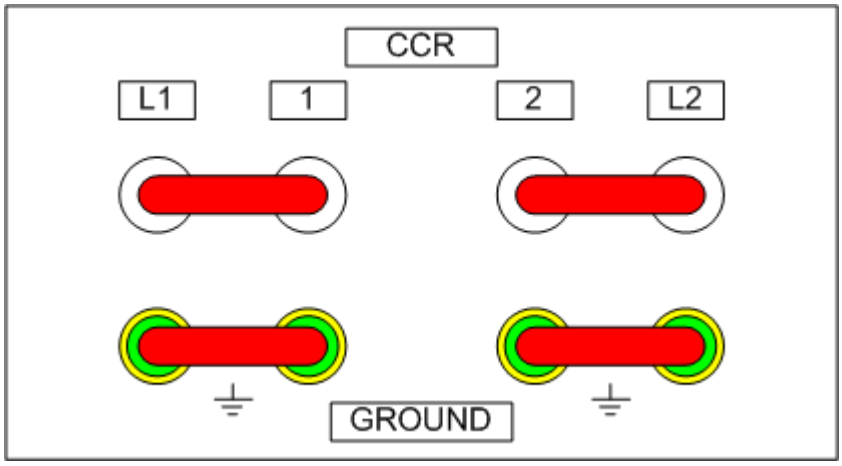
In order to avoid damaging the pins of the jumpers, do not push or pull it asymmetrically from the sockets : They must be placed or withdrawn with the two hands, distributing efforts at each end so that its movement remains perpendicular to the plate, the body remaining parallel with the plate.

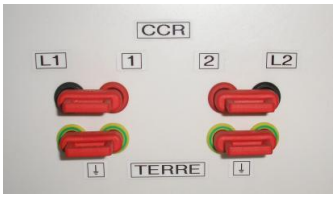
II.2SIMALT 2

AUGIER's experience regarding CCRs has been used to simplify the HV compartment and maintenance operations to the maximum.
With that option, the CCR is equipped with an cut-out and earthing plate, using two jumpers which allows to carry out all maintenance and measurement operations, without unscrewing any load terminal or earth connection, and without requiring any special tools.

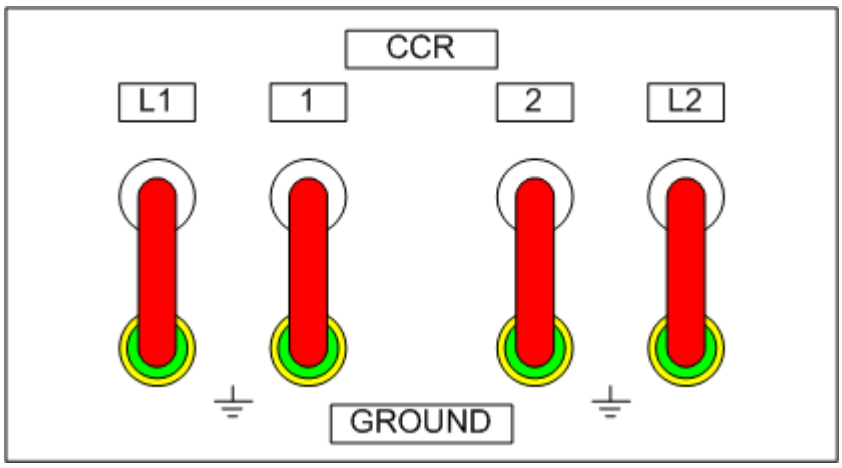
II.2.1 SERVICE POSITION :

It is the operational position (jumpers In horizontal position).





II.2.2 SAFETY POSITION:

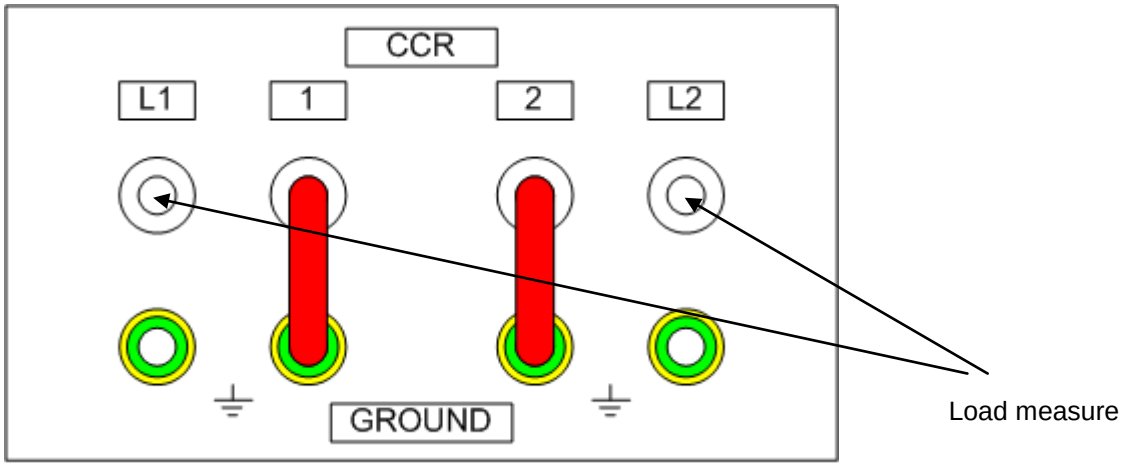


By removing the two jumpers from the previous operating position as above, the CCR will be disconnected from the loop in a safe and clearly visible way. Then, placing the two jumpers in vertical position, CCR's output and the two loop's terminals (still isolated) will be short-circuited and grounded.

ⓘ This is the **safe position**, allowing works to be carried out on the field : CCR is short-circuited to the earth, and separately from the loop, also short-circuited and earthed.

ⓘ WARNING : Although the CCR and the loop are earthed, the CCR can be switched ON : In that case, it regulates a constant current through the jumpers.

II.2.1 LOAD MEASUREMENT POSITION:



By removing the two jumpers of L1, L2 , it is possible to measure the load.

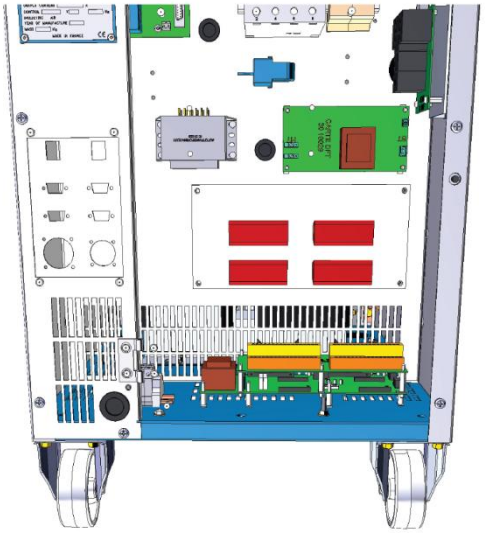
ⓘ WARNING : The CCR can start in short circuit. and voltage can appear on the CCR output (1) and (2).

II.3SIMALT 3

AUGIER's experience regarding CCRs has been used to simplify the HV compartment and maintenance operations to the maximum.
With that option, the CCR is equipped with an cut-out and earthing plate, using two jumpers which allows to carry out all maintenance and measurement operations, without unscrewing any load terminal or earth connection, and without requiring any special tools.

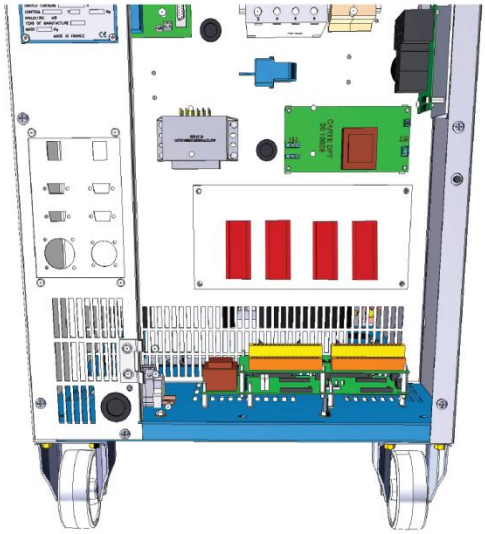
II.3.1 SERVICE POSITION :

It is the operational position
(jumpers In horizontal position).



II.3.1.1 SAFETY POSITION:

By removing the two jumpers from the previous operating position as above, the CCR will be disconnected from the loop in a safe and clearly visible way. Then, placing the two jumpers in horizontal position, CCR's output and the two loop's terminals (still isolated) will be short-circuited and grounded.

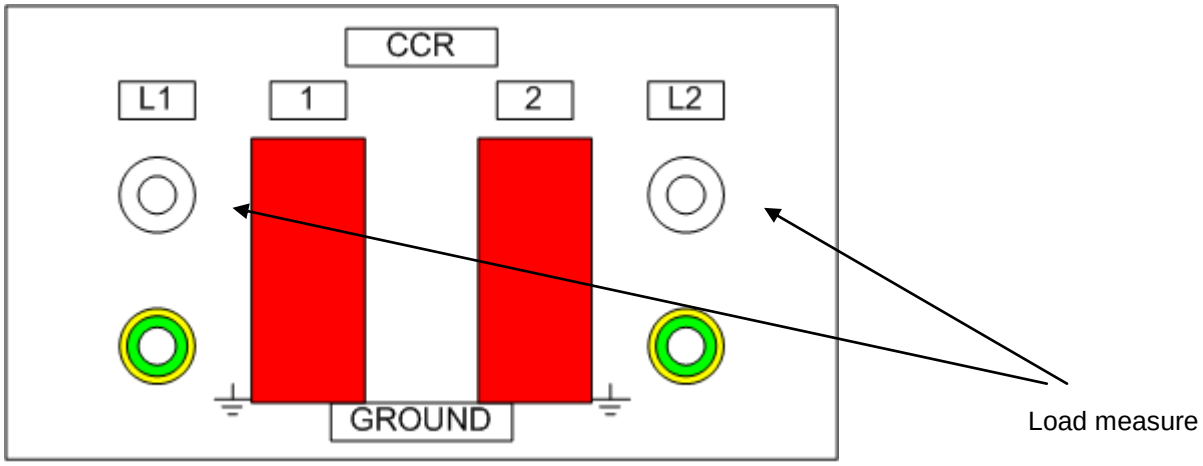


ⓘ This is the **safe position**, allowing works to be carried out on the field : CCR is short-circuited to the earth, and separately from the loop, also short-circuited and earthed.

ⓘ WARNING : Although the CCR and the loop are earthed, the CCR can be switched ON : In that case, it regulates a constant current through the upper jumper.

II.3.1.2 LOAD MEASUREMENT POSITION:

Removing the L1 L2 jumper, CCR will be still short-circuited and earthed, but loop's terminals will be let free, in order to allow to proceed at all insulation and continuity measurements, which can be carried out as well as any other testing or research operations concerning the load.



ⓘ This is the **measurement position** of the cut-out plate.

ⓘ WARNING : Although the CCR and the loop are isolated, the CCR can be switched ON : In the case where the two jumpers 1 and 2 are removed, it should fail in "Open Circuit".

II.4SEB

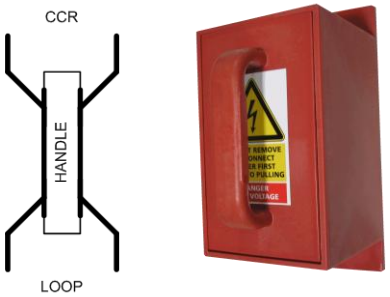
II.4.1 DESCRIPTION

The lighting circuit cut-out plug is a safety device that will realise the separation and short circuit of the constant current regulator main transformer and its load during maintenance operation.
Removing the handle will provide isolation of the load, eventually enable the CCR to operate in short circuit.
An optional interlock contact may be provided, in order to shunt down the CCR while manoeuvering the handles or monitor its position

II.4.2 SERVICE POSITION :

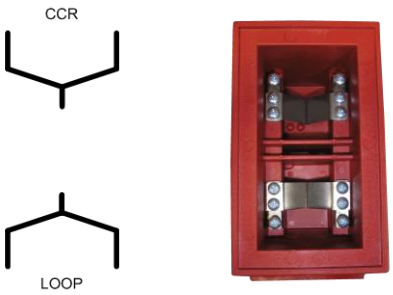
It is the operational position.

The handle is plugged in the cut out.
The CCR is connected to the loop.



II.4.3 SAFETY POSITION:

By removing the handle, the CCR is short circuited, the loop is short circuited.
The loop is isolated from the CCR output.



ⓘ WARNING : The loop is NOT CONNECTED TO EARTH.

ⓘ WARNING : Although the CCR and the loop are short circuited, the CCR can be switched ON : In that case, it regulates a constant current through the upper contact.

II.4.4 LOAD MEASUREMENT POSITION:

No measurement position, to measure the impedance of the loop, it is necessary to remove the loop from the cut out.

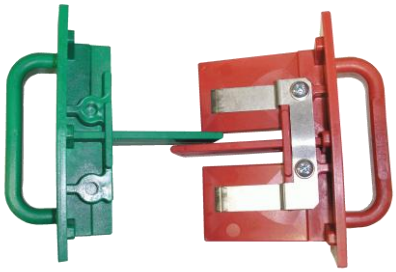
II.4.5 OPTIONS:

II.4.5.1 Interlock switch

An optional interlock contact may be provided, in order to shunt down the CCR while manoeuvering the handles or monitor its position.

II.4.5.2 Green Handle

A passive green handle is provided in order to prevent any access to live parts during energised CCR operation, while setting the position switch.



ⓘ WARNING : The loop is NOT CONNECTED TO EARTH.

If the interlock switch is installed and wired, it will shut down the CCR while no handle is inserted, and it will allow the CCR to operate in short circuit while the green handle is in place.
This passive green handle is provided in order to prevent any access to live parts during energised CCR operation, while setting the position switch.
This position will allow live tests while trouble shooting research, without disconnecting physically the load circuit.

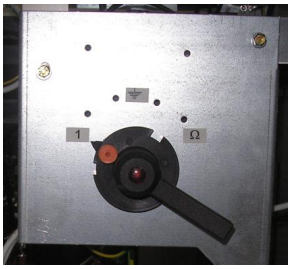
II.5CIMALT

II.5.1 DESCRIPTION

Rotative switch with handle and padlocking possibility.

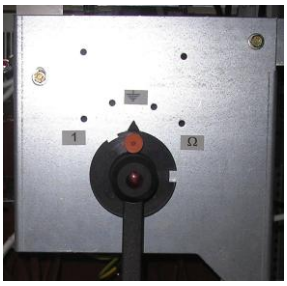
II.5.2 SERVICE POSITION:

This is the operating position of the rotative switch.
In this position, the loop terminals are electrically connected to the CCR:



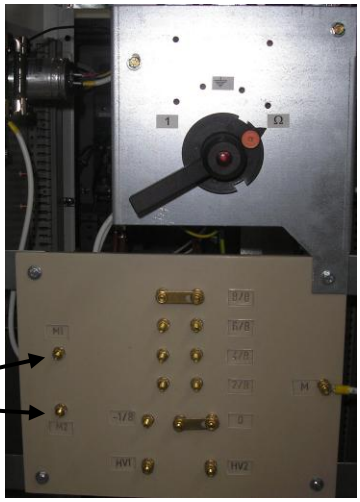
II.5.3 SAFETY POSITION:

This **safety position** will allow the operator to work on the load safely : the load is in short circuit and grounded. The CCR cannot be energised.



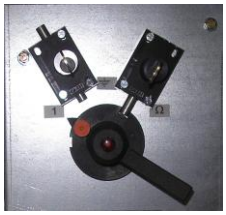
II.5.4 LOAD MEASUREMENT POSITION:

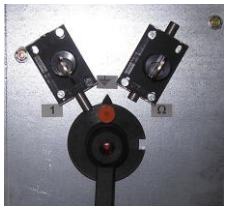
This **measurement position** will allow any maintenance operation on the loop. In this position the load terminals are electrically connected to the measurement points M1 and M2. The CCR cannot be energised.



II.5.5 PADLOCKING (OPTION) :

The rotative switch may be fitted with key lock devices that will lock the switch in normal or safety position.





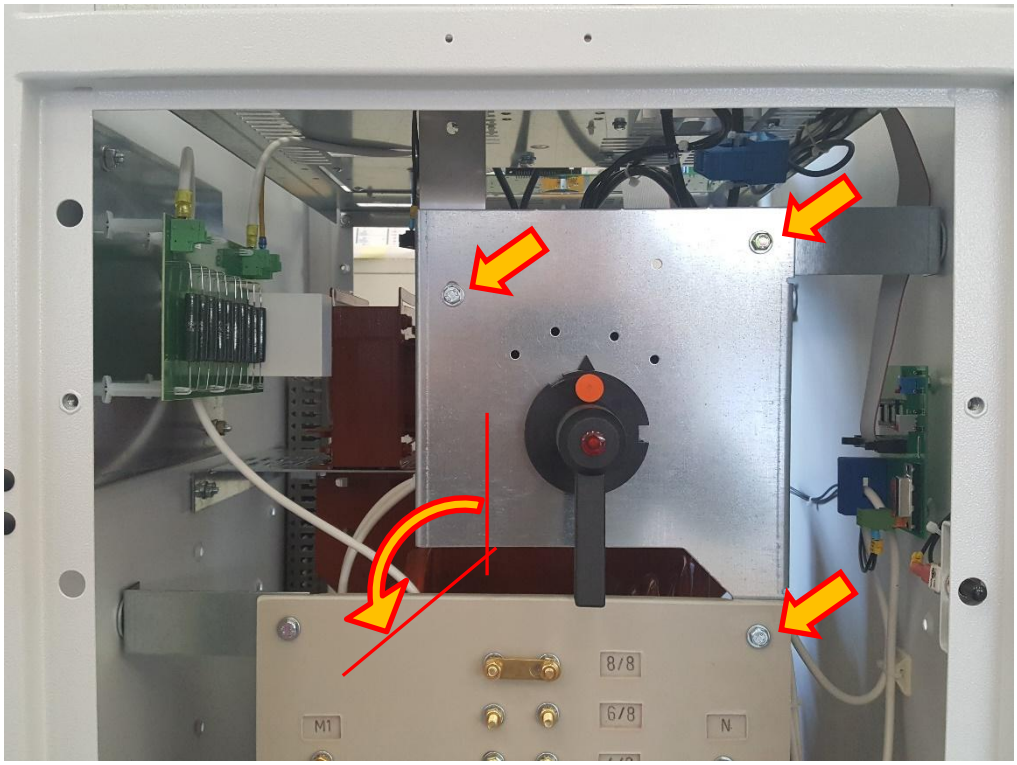
II.5.6 EXTERNAL ROTATIVE CUTOUT VERSION WITH PADLOCK (OPTION) :

The rotative cutout may as well be installed on the front panel of the CCR, with external access. In such a case, the padlocking device is mandatory.

Measurement points are accessible in direct way on the front panel, without opening the CCR.

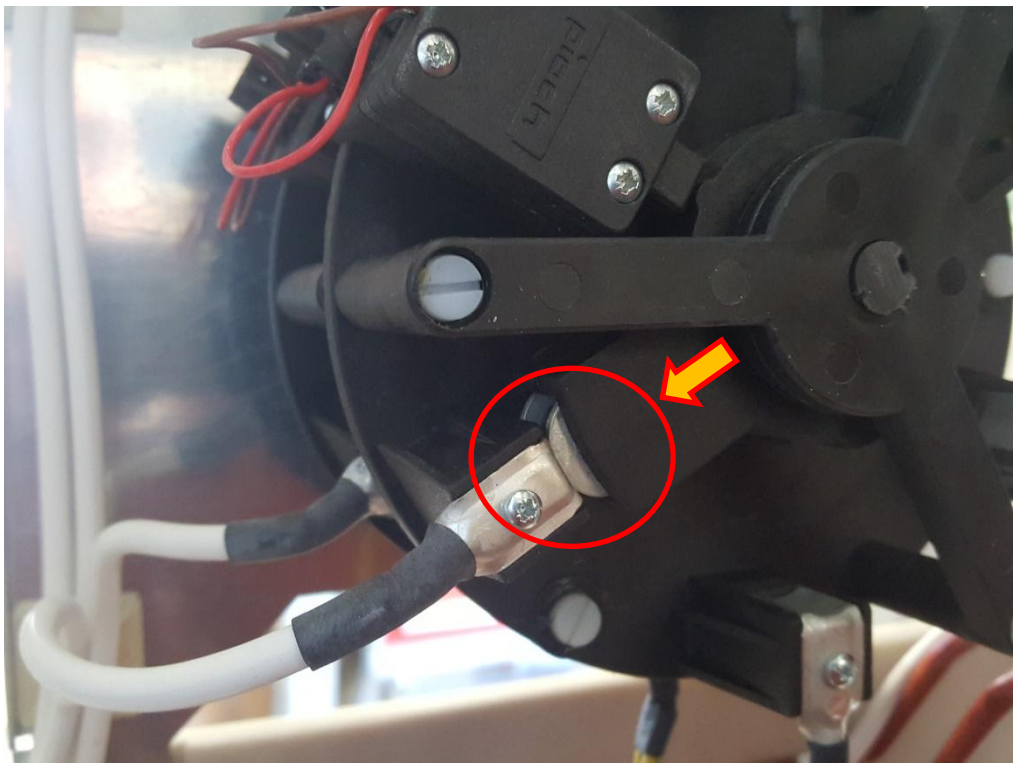
II.5.7 CIMALT MAINTENANCE

1. Remove the 3 fixing screws, and tilt the support plate forward, to access the back of the switch

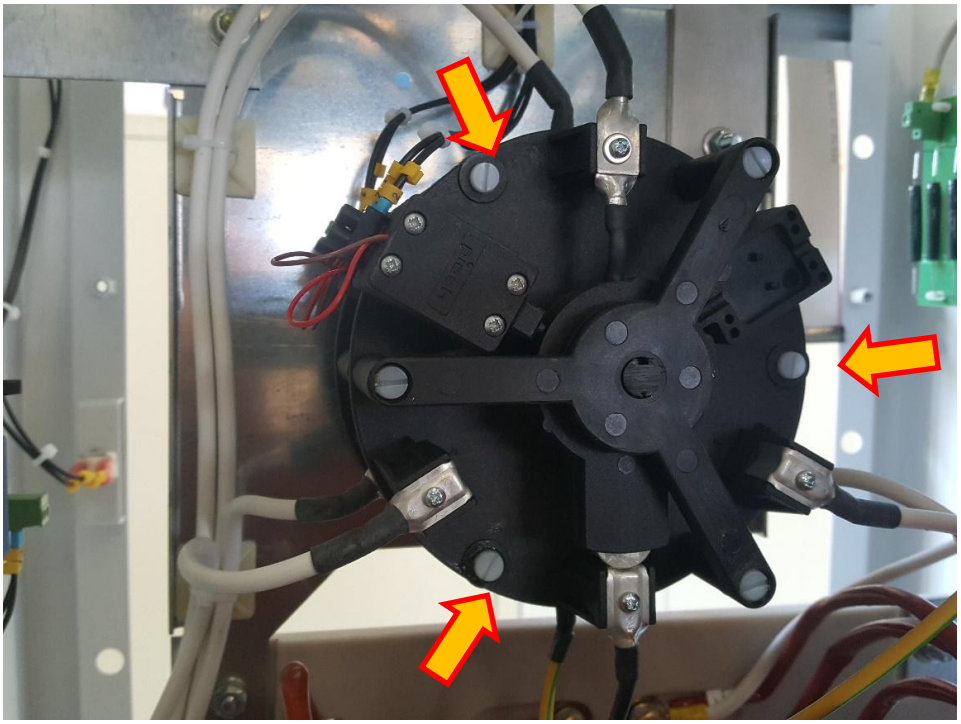


2. Check the condition of the 3 contacts and the pressure roller. Clean them or replace them if necessary.
The caster must be able to slide freely about 5 mm in its support: Use a conductive grease (Ref LUBRILOG: CUPROLOG G1, Ref ELECTROLUB: HCG).

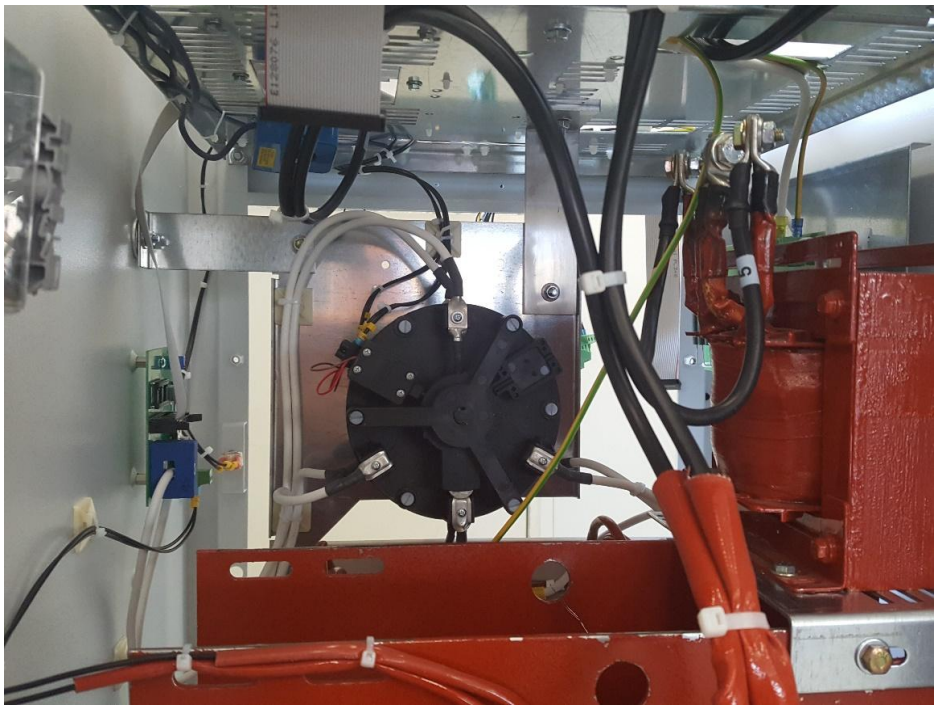
Check the tightness of each contact.



3. Remove the 3 nylon screws and remove the 2nd stage assembly, to perform the same check on the first stage of the switch.



4. Former equipment (THO, DIAMANT CCRs) and switches mounted on Epoxy plate: verification must be done from the back of the unit.
Switch replacement must be done at the factory



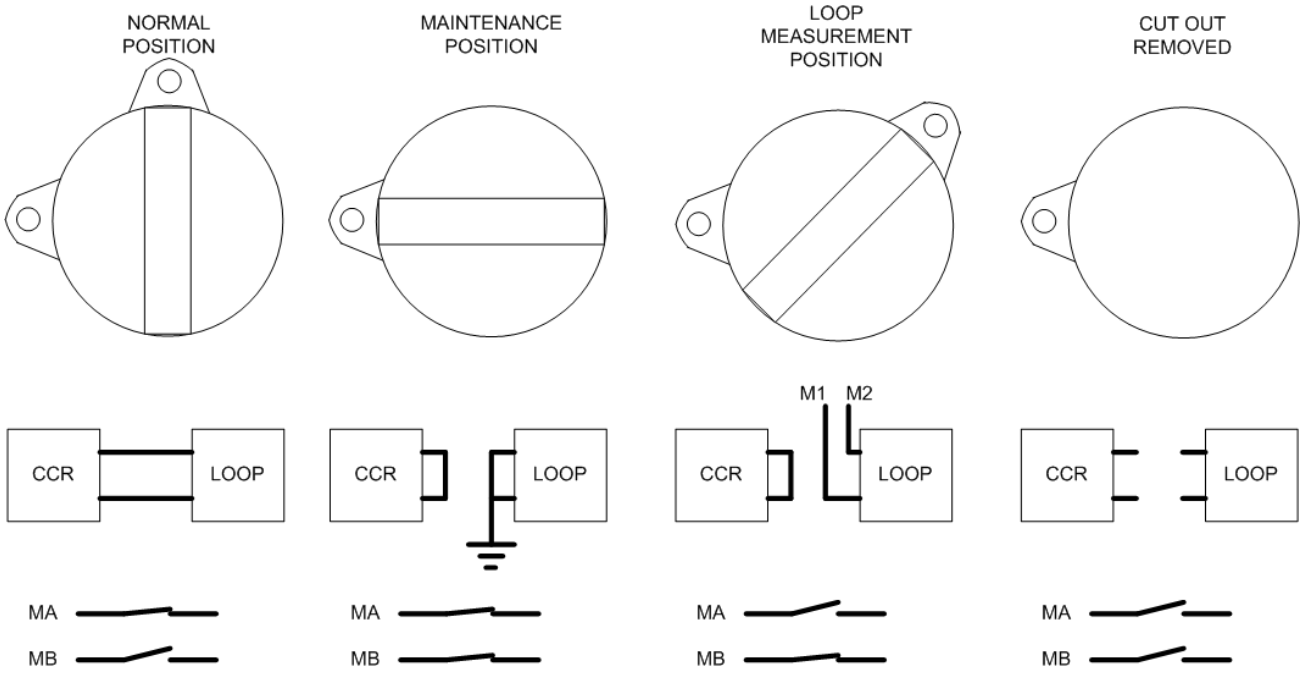
II.6CO-OCEM

II.6.1 DESCRIPTION

DIAM4100 fitted with OCEM cut out. 3 positions of the cut out: Normal, maintenance, loop measurement.

II.6.2 OVERVIEW

Positions and functions:

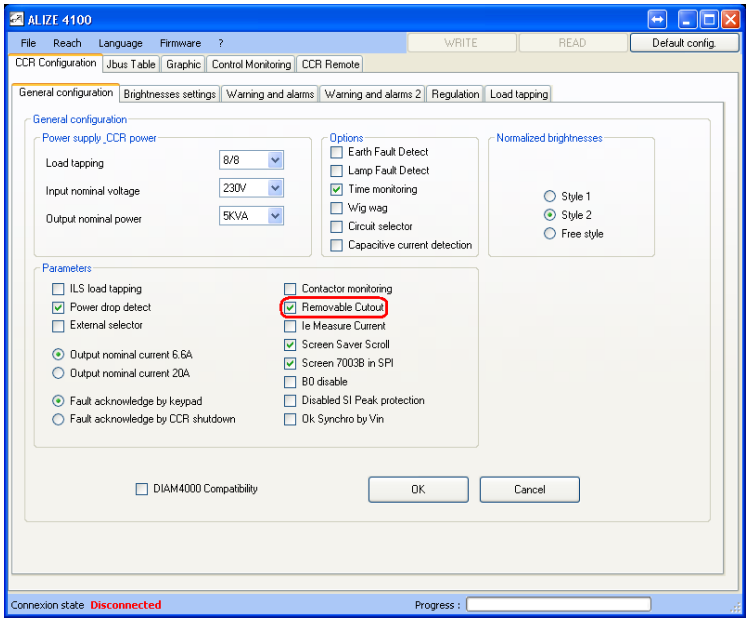


ⓘ The switch MA and MB connected to the CCR electronic disable starting of the CCR when cut out is removed.

II.6.3 CCR SETTING

Firmware: V2.17 or above.

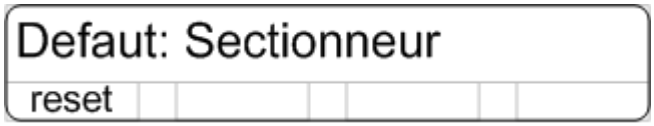
Enable “Removable Cutout” (Using ALIZE4100).



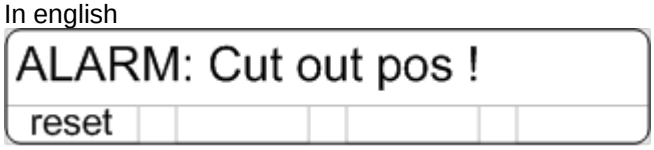
II.6.4 MA SWITCH

When MA switch is closed, the CCR can run proprerly. When the switch is open (Loop measurement position or cut out removed), the CCR can’t start and the following message appears:

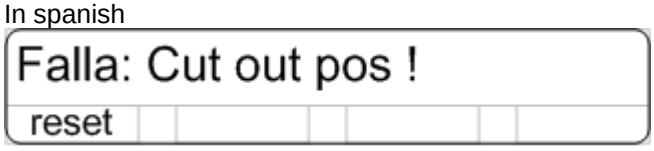
In french



In english



In spanish



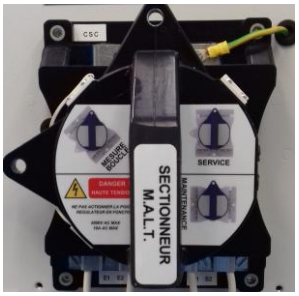
When the switch is closed (Normal position, maintenance position). It is possible to acknoledge the alarm pushing the RESET key.

II.6.5 MB SWITCH

The MB closed position (Maintenance or loop measurement position) is reported on the AENA connector (pin 29)

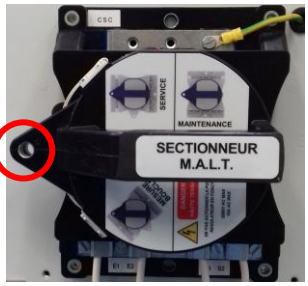
II.6.6 SERVICE POSITION:

This is the operating position of the rotative switch.
In this position, the loop terminals are electrically connected to the CCR:



II.6.7 SAFETY POSITION:

This **safety position** will allow the operator to work on the load safely : the load is in short circuit and grounded. The CCR output is in short-circuit. It can be energised.



ⓘ The rotative switch may be locked in the safety position

II.6.8 LOAD MEASUREMENT POSITION:

This **measurement position** will allow any maintenance operation on the loop. In this position the load terminals are electrically connected to the measurement points M1 and M2. The CCR cannot be energised.

Load measure

III SPARE PARTS LIST

Cut out	Designation	Code
SIMALT 1	Cut out earthing plate Jumper	30 09323 30 09325
SIMALT 2	Cut out earthing plate Jumper	30 11851 10 25705
SIMALT 3	Jumper	30 07967
SEB	Red handle (service handle) Green handle	30 11905 10 25990
CIMALT	Cut out	10 18490
CO-OCEM	Cut out without labels	10 27719

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