



Maintenance and support Guide for IRS VERSION 2.1 15.04.2010

Comments are welcome : support@olicorp.ch

MODEL	SOFTWARE VERSION	HARDWARE VERSION
IRS-SDL WO.7.x, 13.x WO20.x	20.16	101
IRS-STD WO.1.x, 2.x	5.18	12

NEW : From October 30th 2009, the new version WO20.x can replace indifferently the WO7, WO13 and WO1 models

NEW : In this document you will find the wiring schematics of the IRS in order to ease the dismounting and remounting procedure during maintenance

NEW : Procedure to bypass alarms sent by a defect IRS installed on a machine.

On the Web site you will find :

- Online access to spare parts store :
www.olicorp.ch
 - List of spare parts with codification :
<http://www.olicorp.ch/support/>
 - List of known problems with the PWR :
<http://olicorp.ch/support/>
 - Detailed users manual :
<http://www.olicorp.ch/support/>
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Contacts for support :

Phone +41 22 3091540 Fax : +41 44 355 3820

Email : support@olicorp.ch

Skype : uralps or patrick.olicorp

DOCUMENT CONTENT

- A) Warranty and support procedures
- B) Known Problems and issues
- C) Procedure to be realized on the machine by the user to check if there is a real failure
- D) Procedure to repair the IRS by yourself
- E) Technical diagrams
- F) Supervisor and Datalog module

Safety and security aspects

Symbols :



This symbol means that failure to take note of the information given in this manual may have serious consequences for the safety of the personnel or may result in electrocution.



This symbol means that failure to take note of the information given in this manual may have serious consequences for the installation, lead to incorrect operation of the product, or may damage the product.

Safety:



The installation, configuration, commissioning and maintenance of the IRS products must only be carried out by personnel qualified and trained to work with low voltage electrical equipment in an industrial environment.



The front door should not be opened except by competent technicians when connecting or disconnecting the device. Electrical isolation must be ensured between the equipment and the power supply.



In both off and on modes, the IRS regulator doesn't ensure isolation from the power supply. One should pay attention to the fact that electrical shock may occur when touching the lamps or the cables coming from the IRS. It is thus recommended to turn off the power supply (400 V) within 2 sec following the end of regulation.

EMC and Electronics protection :



The IRS system contains several electronics components which are sensitive to ESD discharges. We recommend to work in an ESD free environment when manipulating the Electronics boards and components of the IRS.

PART 1 : WARRANTY AND SUPPORT PROCEDURES

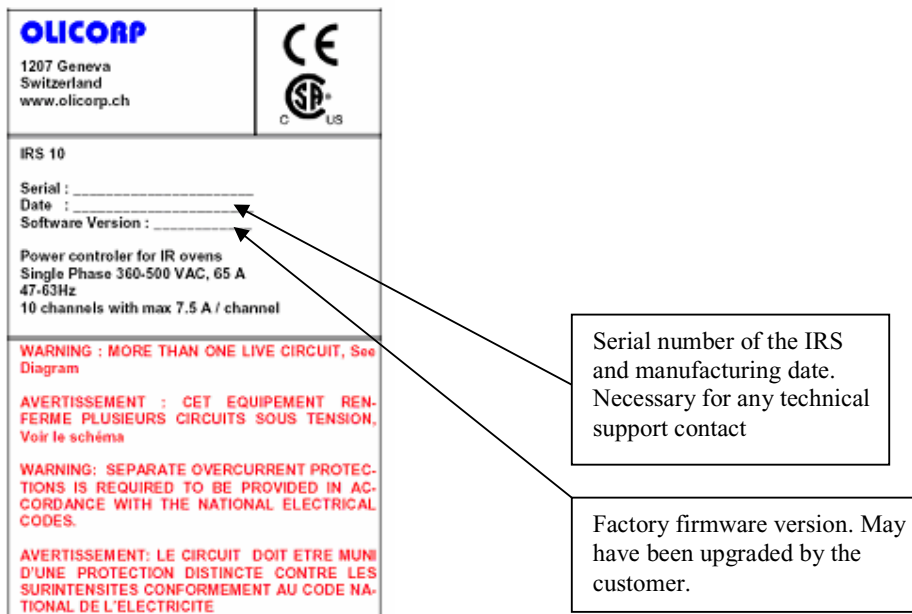
Support :

OLICORP provides free technical information and support to OEMs, End Users, and local maintenance companies.

This support is available online by Email, Skype or phone.

Warranty :

The warranty for IRS products is available during 3 years of the manufacturing date.



Warranty is free of charge, except of the transportation costs back and forth to the factory.

To reduce the custom constraints and shipments costs, Olicorp is actually setting up an international network of local representatives (CTCs) and subsidiaries.

The list can be found on the web site www.olicorp.ch/contacts

If your country is not listed, please contact us at the headquarters to explore the possibility to setup a local CTC.

PART 2 : Known problems and issues

- a. Power supply voltage not read.

The voltage of the power supply is measured through a 400/20 VAC transformer. WE11.X. Due to process issues, a serie of WE11.X produced in 2008 has some weak connections between the coil and the output wires. In harsh conditions the WE11 lifetime might be reduced. Changing the part will solve the problem.

- b. After being repaired the box detects systematically dead lamps

Check the connexion of the red wires linking the WE11 transformer and the CPU board and try to invert them. The system of dead lamps detection works positive part of the sine wave and the signal measured by the LEM sensor and the output of the transformer must be in phase. (See wire schematics in Technical diagram section)

- c. The box detects fake overloads

Outside perturbations, on non CE compliant supply networks, can simulate overload (dv/dt). If so, try to update the firmware to the last version available on www.olicorp.ch or use EMC filters.

- d. 24DC supplying fans is off. Fans are not running

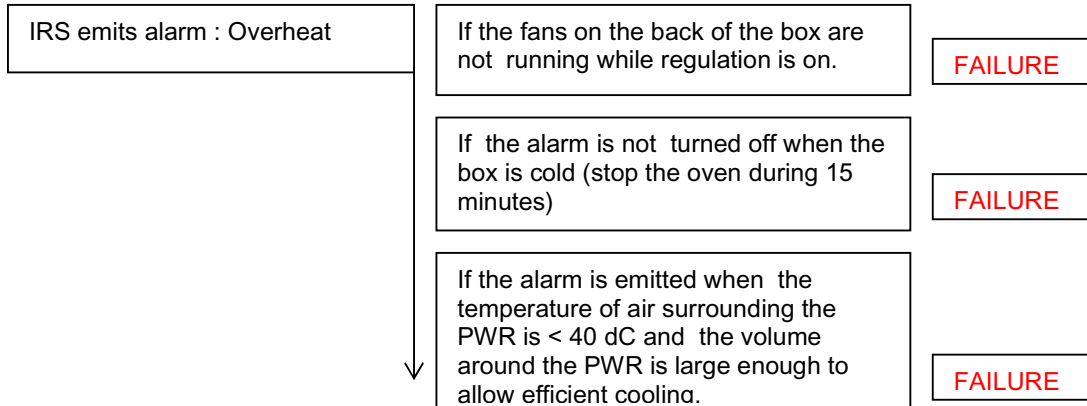
This might be due to a failure of the WP2.x, or simply to the fact that the fans are blocked by the mechanical frame of the stainless steel box. If the fans are blocked, then the internal fuse protection of the WP2.X will shutdown the 24DC. This fuse will be autoreseted after a while.

PART 3 : Checking if there is really a failure

In this section, we give basic procedure, that should be done on the machine to verify if the box is really out of order.

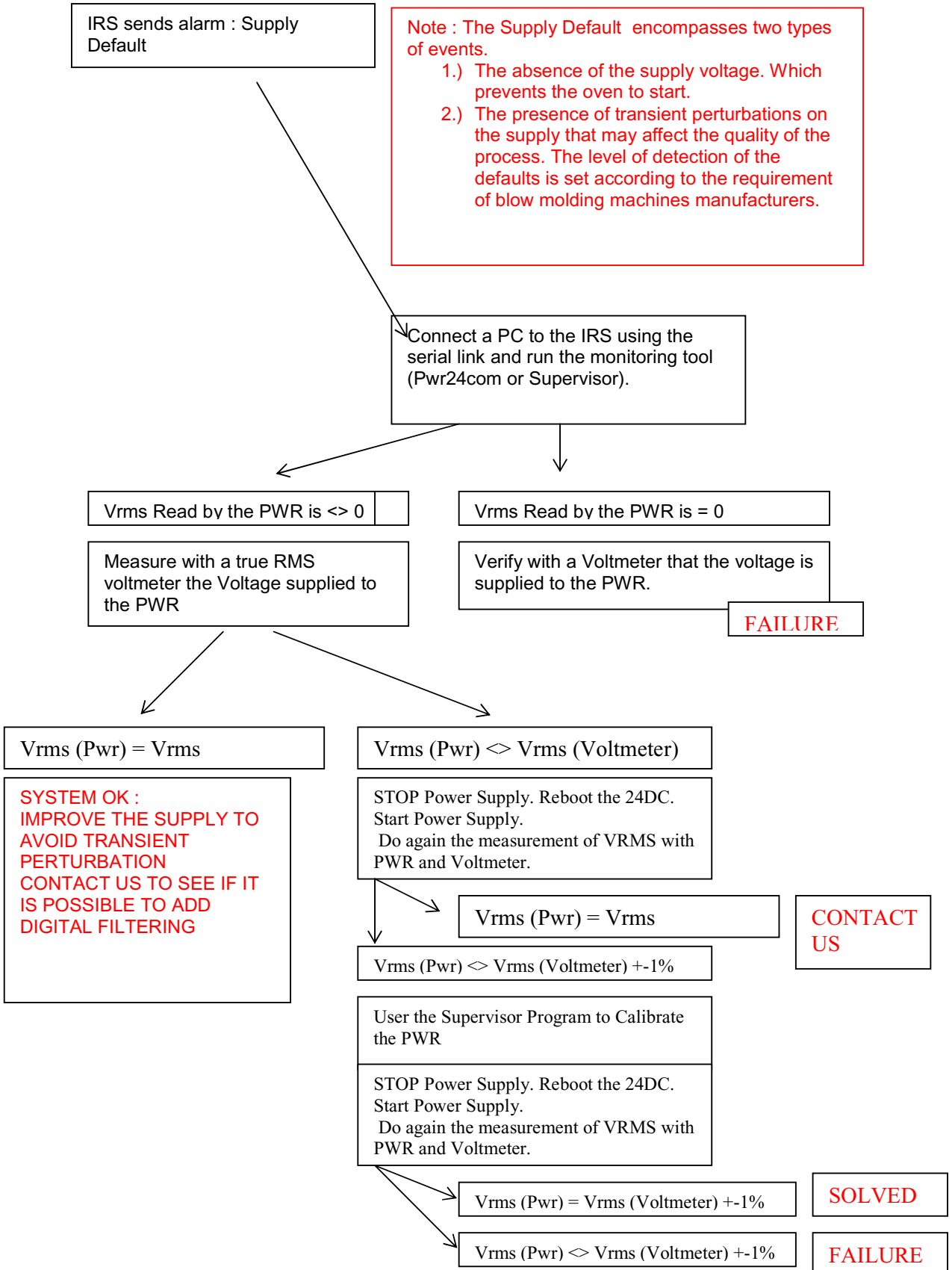
Alarm Overheat :

OH1

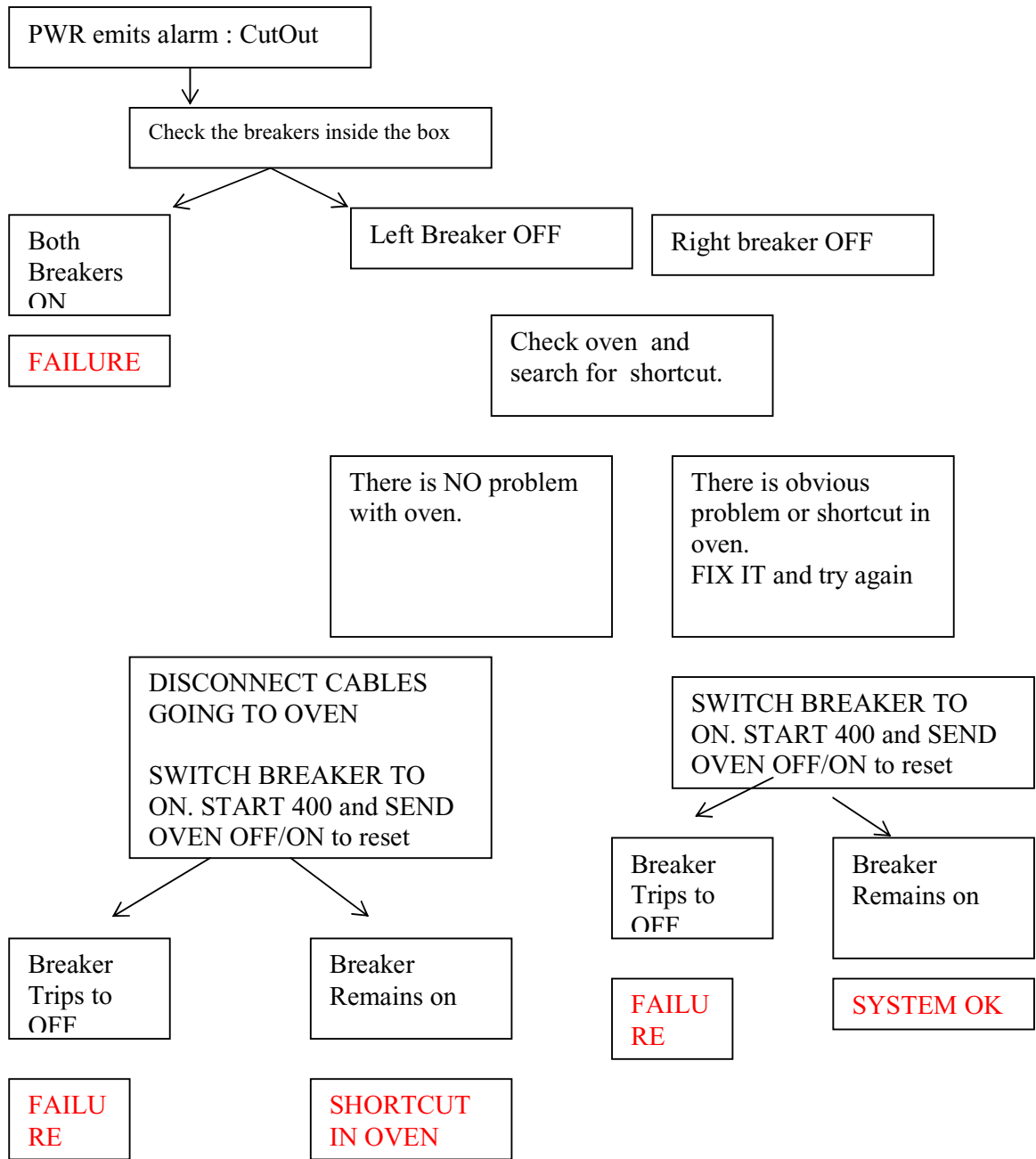


Alarm supply default :

SD1



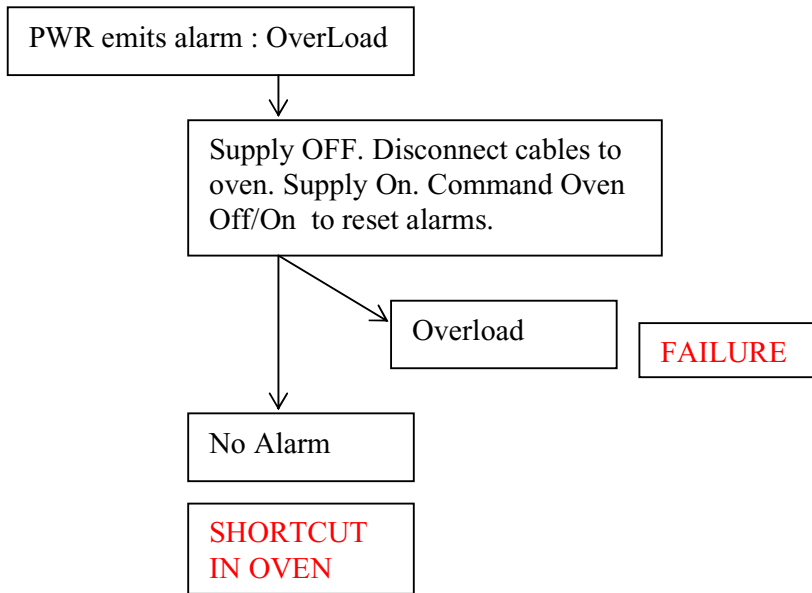
IRS sends alarm cutout :



CU1

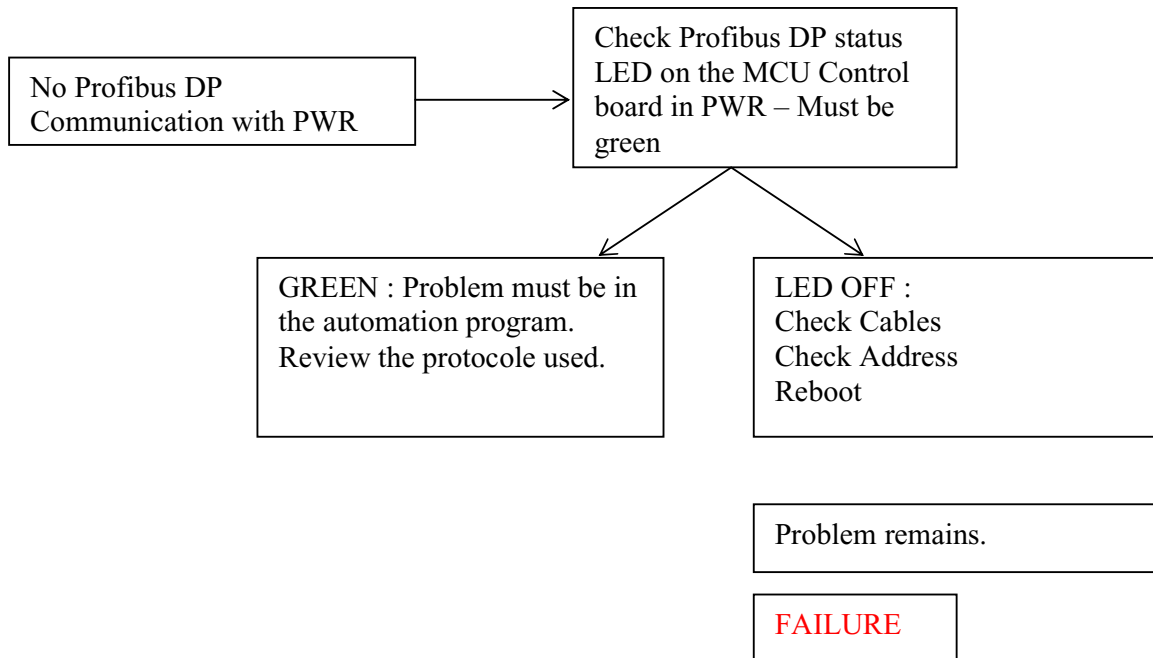
Overload :

OVL

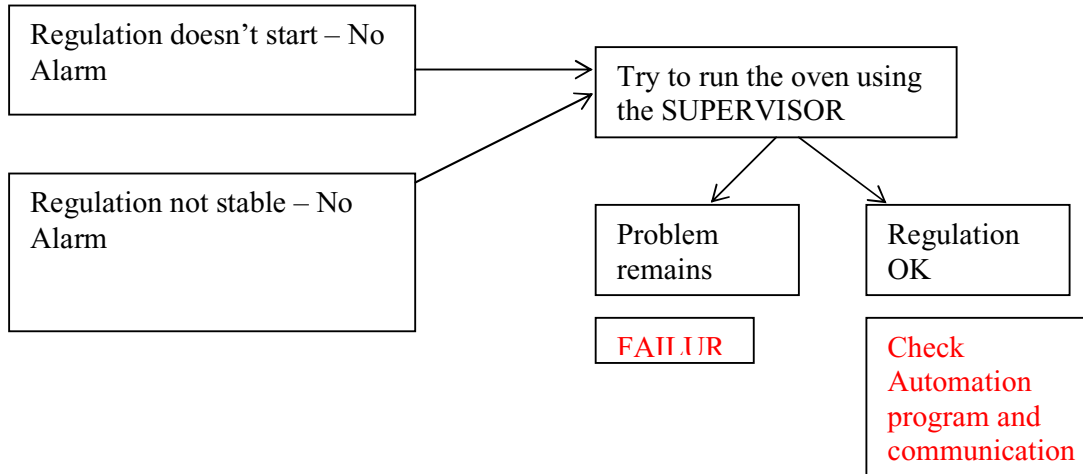


Profibus :

PB1



Regulation problem :



A lamp is always on with the regulation off.--> check the cabling between IRS and oven. Wires might be inverted. If not FAILURE

A lamp is always off with the regulation on. Check cabling, and lamp. If both are OK and no alarm DEAD LAMP is sent by the IRS box FAILURE.

PART 3 : Procedure to repair the IRS system

Repairing the IRS by yourself

Documents available in the support section www.olicorp.ch

- Electrical schematics of boards.
- Technical manual
- List of spare parts and components
- List of known issues and problems

Components available on-line at : www.olicorp.ch

Minimal facilities to test the IRS :

- A PC with the SUPERVISOR program and null modem cable.
- A 200-500v power supply to power up the IRS (**320 VAC minimum for SDL software**)
- A 24 DC power supply to power up the IRS
- A few lamps to test the functions (minimum 100 W tungsten lamps)

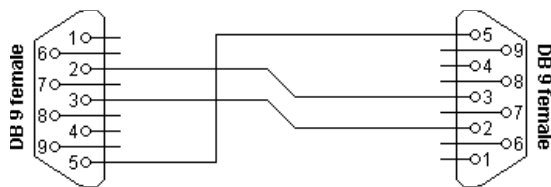
Tools that could be useful :

- Metric pipe and allene wrenches
- Screw driver
- True RMS voltmeter / Diodes and continuity tester
- 5 to 10 kohms resistor

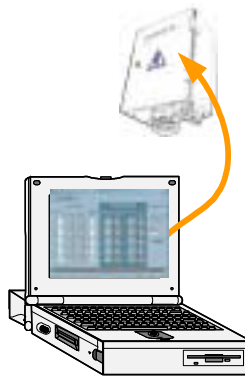


Environment :

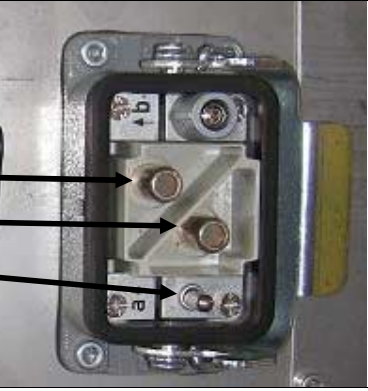
- ESD protection device
-

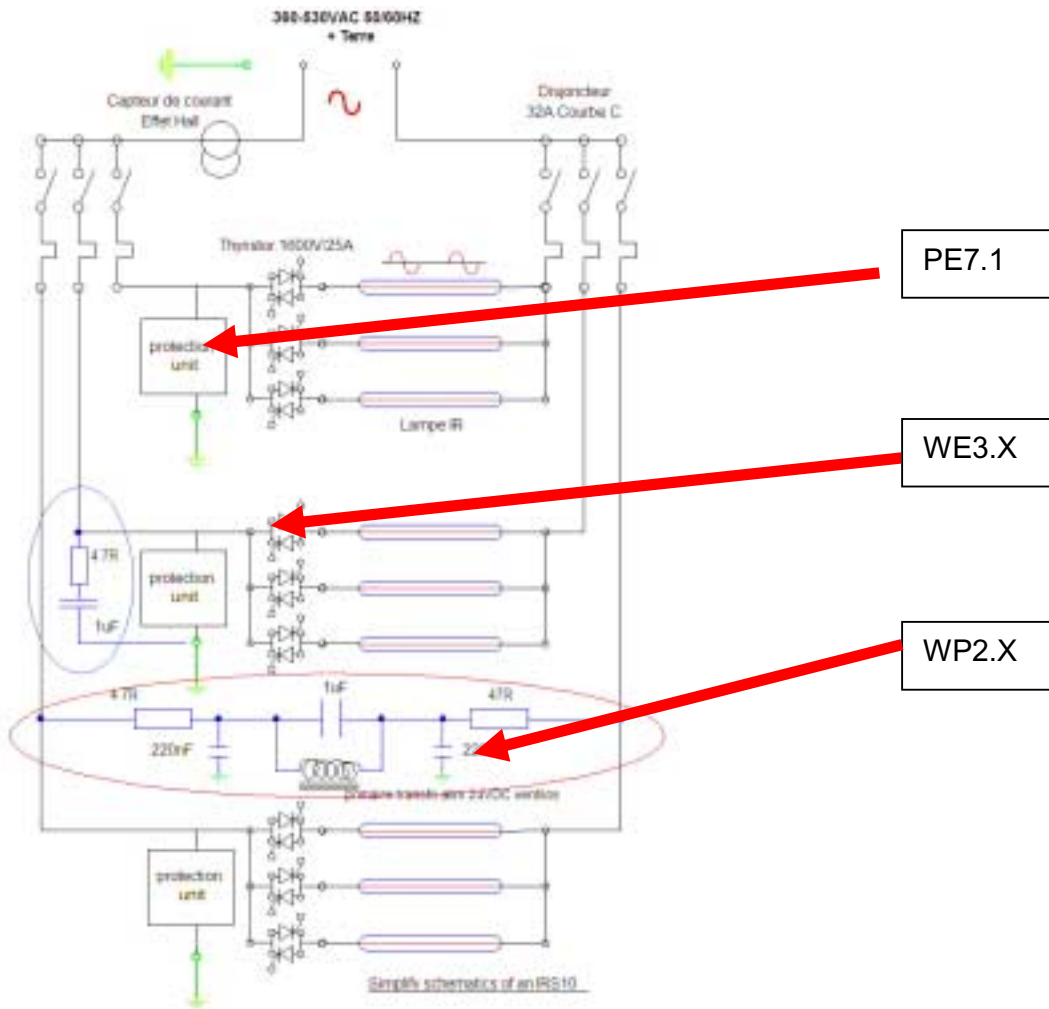


Connector 1	Connector 2	Function
2	3	Rx ← Tx
3	2	Tx → Rx
5	5	Signal ground



Checking the power part :

What do we test ?	Protection unit thyristor and power board
When to test it ?	Always... This test is a basic safety test before connecting power to the box, but also a good way to detect broken power components
How to test it ?	<p>With an ohmmeter, check if there is a shortcut between phases or phase and ground</p> 
Note : breakers inside the box must be on	
What to change or repair ?	<p>If so, defectuous components might be :</p> <ul style="list-style-type: none"> WE11.1 measurement transformer WE3.X power board PE7.1 protection unit thyristor WP2.x 24dc supply and filter <p>Further measurements are necessary to identify the problem</p>

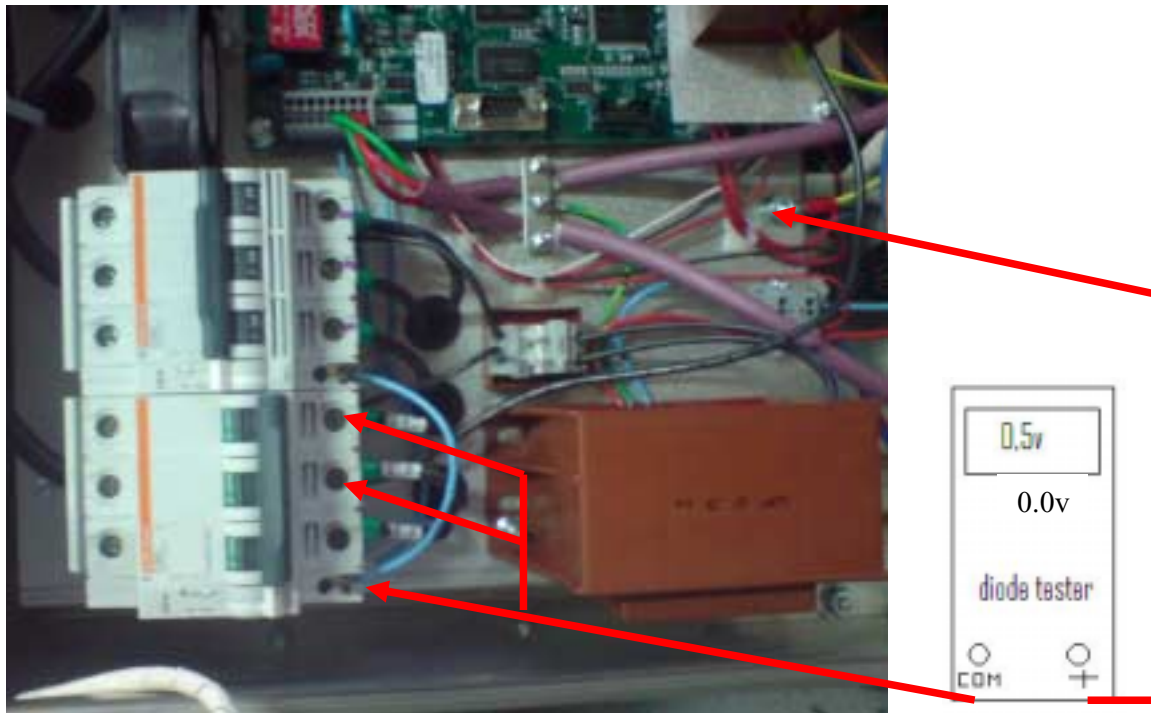
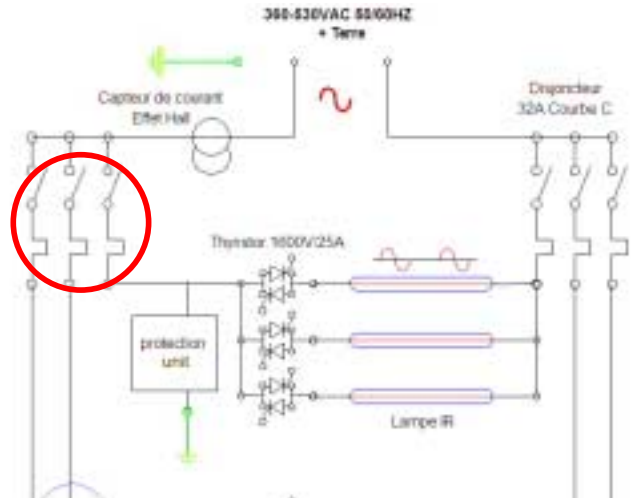


GOING FURTHER :

If the previous test shows that there is a broken component, it might be useful to seek for its exact position

Most of the problems will appear on the "hot side" of the IRS, ie on the side where there is active electronics (thyristors, condensators, electronics)

Inside the IRS the Power and channels are split into three groups.
Each group is powered with one pole of the LEFT c32 breaker



OPEN THE BREAKERS (BREAKER OFF), and use an ohmmeter or diod tester to check continuity between each of the three terminators of the left breaker.
0.0V or R<few kohms indicates that there is an internal failure. Basically, one of the thyristors (either small ones or big modular ones) is in shortcut.
By doing so you can see which of the groups fails.

Testing the WP2.X power supply.

What do we test ?	WP2.X 24dc supply and filter
When do we test it ?	When the fans remain off despite the presence of 400 VAC on the input.
How to test it ?	<ol style="list-style-type: none">disconnect the 2 black wires going to the breakercheck resistance between the 2 wires. Must be >500 ohmsIf resistance is OK, then supply 400 vac to the wp2.x.. The internal fan and fans of the cooling unit should run. Or alternately check that the wp2.x supplies 24vdc on the red output wires.
What to change or repair ?	Replace the component WP2.X

NOTE : The Wp2.X module contains an autoreset fuse.

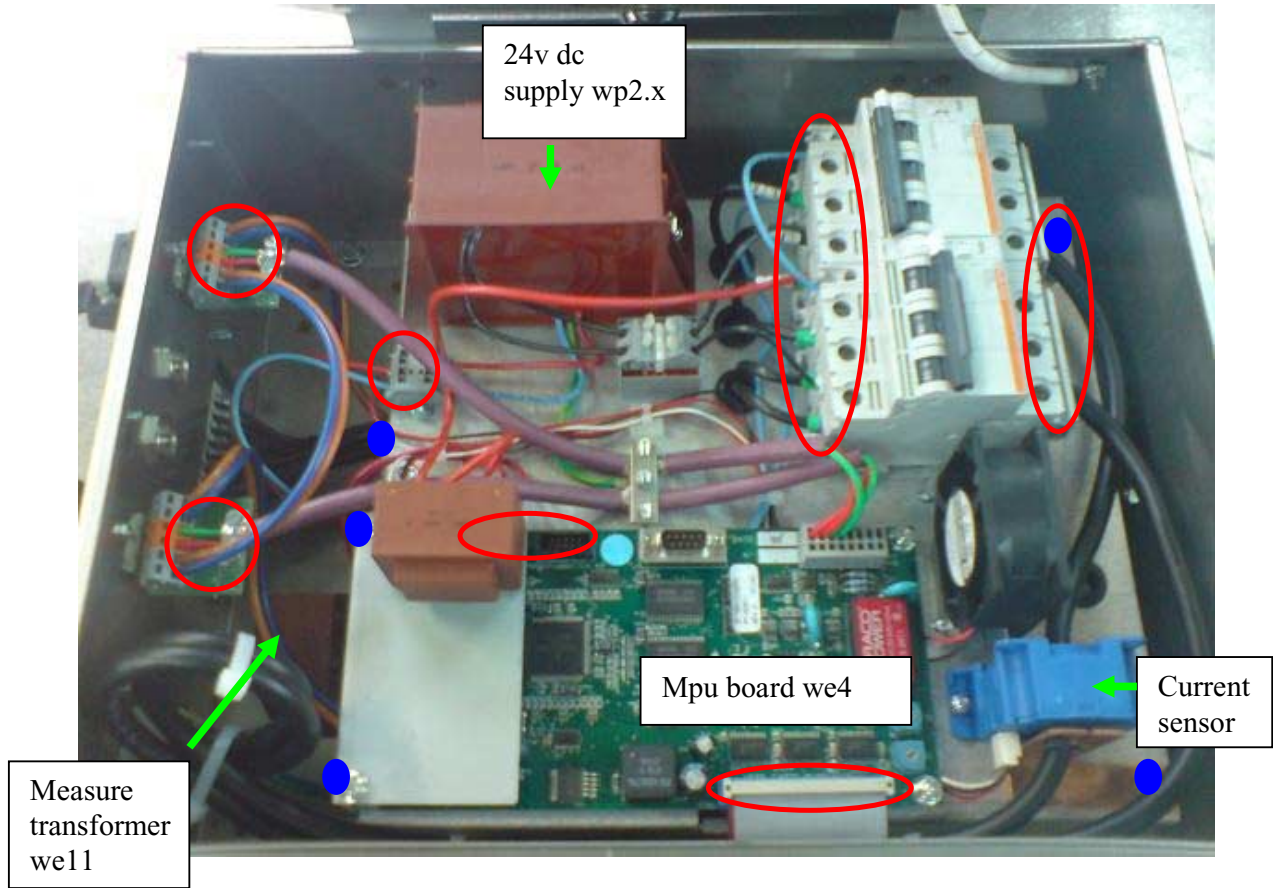
If the Current load on the 24DC is too high, then the fuse might turn the WP2.X off.

Before changing the WP2.X one can check that the fans on the back of the IRS box are free to rotate. In the earliest versions of the IRS, the back panel was flat, and mechanical chocks could have tighten the space of the fan blocking them and causing overload.

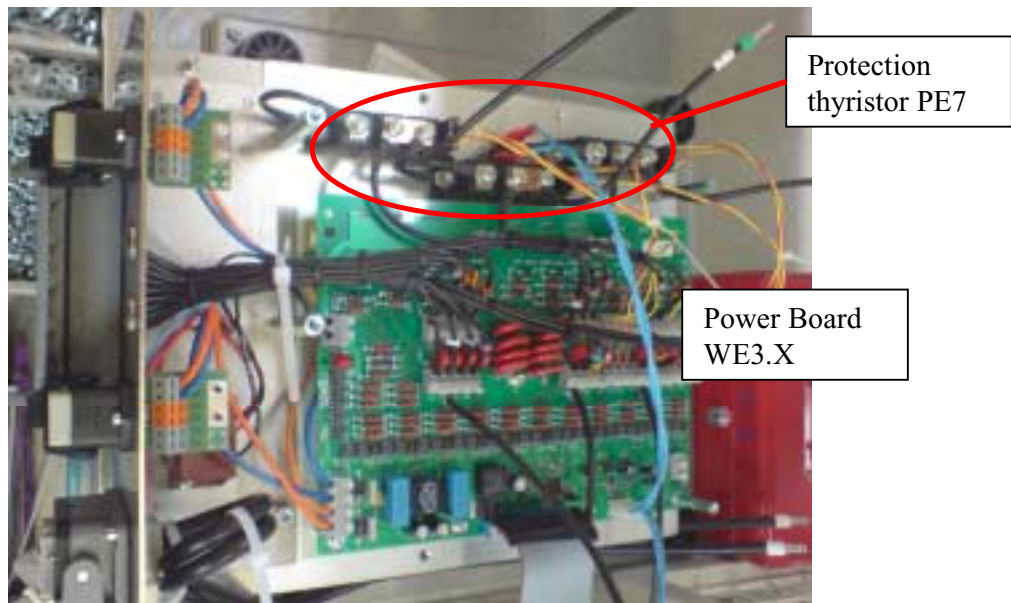
Checking the power components.

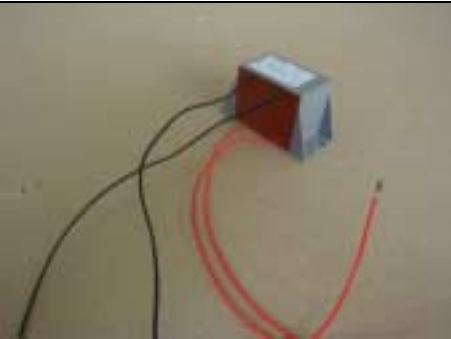
What do we test ?	The Active power components of the box.
When do we test it ?	<ul style="list-style-type: none">- When the previous test has shown that there is a shortcut on the power part of the box.- When the power supply voltage is not seen by the IRS <p>Note : If the problem is related to power supply voltage measurement, it is recommended to check that the IRS runs the correct firmware before going further. Bad firmware configuration can be the cause of this problem. (see testing Control board section).</p>
How to test it ?	Proceed as defined in the next sections.

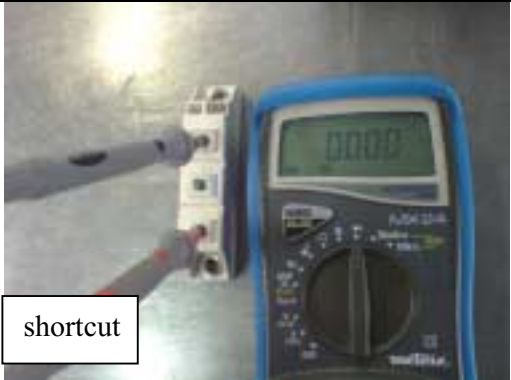

The top part of the box must be removed.

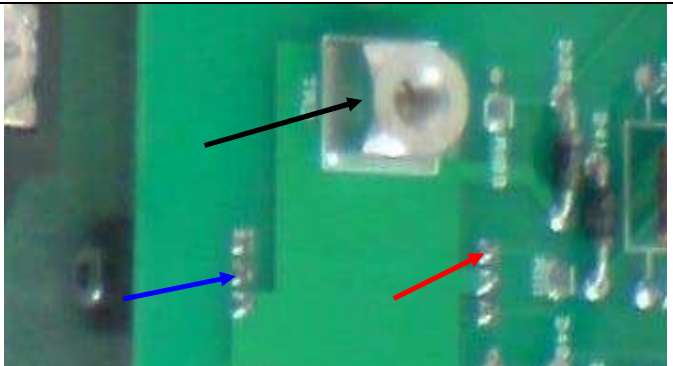



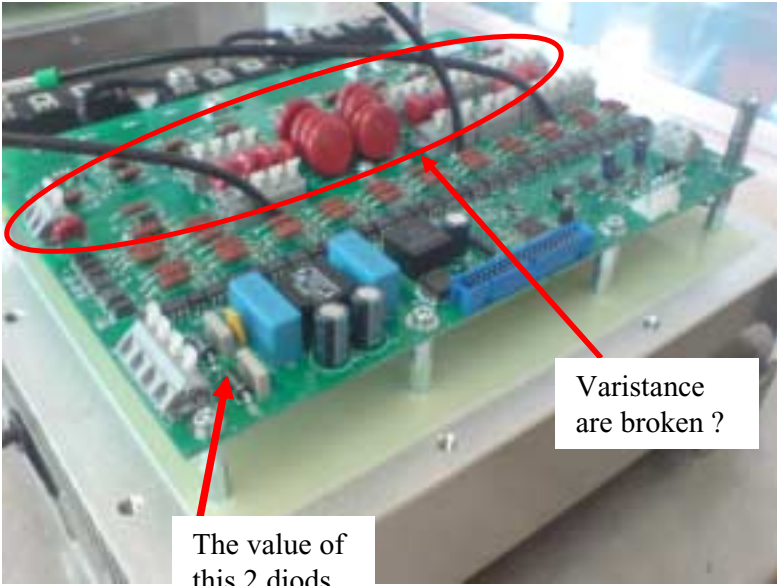
Unsecure the cables and wires marked in Red.
Remove the bolts securing the intermediate plate (blue)
Remove the intermediate plate to reach the power layer :



What do we test ?	Measurement transformer we11.1
How to test it ?	<p>The resistance between the two black wires must be about 15 to 23 kOhms</p> 
What to change or repair ?	Replace the component WE.11.1

What do we test ? How to test it ?	<p>Protection thyristor pe7</p> <p>Using an ohmmeter check for shortcut between the 3 pads on the top of the thyristor.</p> <p>If there is a shortcut, it means that the component is defective</p>  
What to change or repair ?	<p>Replace the component PE.7.1</p> <p>Or if it is not possible to find any PE7.1, it is possible to work in degraded mode by suppressing the cables linking the 3 Thyristors to the ground. By doing so the protection against short-cuts is suppressed but the box is functional.</p> <p>In version 13. X the PE7.1 are not installed In Version 20.X the PE7.1 can be connected or disconnected by moving a simple jumper.</p>

What do we test ?	Power board WE3.X This simple test aims to check every thyristors of the power board. The following procedure is designed to be done without removing the board from the heatsink.
How to test it ?	 <p data-bbox="651 785 972 984">Test for shortcut between black and red (third pin) for the 10 right thyristors then between black and blue (central pin) for the 10 left thyristors</p> 
What to change or repair ?	Replace the power board WE.3.x

<p>What do we test ?</p>	<p>Varistance , Diodes on WE3 POWER BOARD</p>
<p>How to test it ?</p>	
<p>What to change or repair ?</p>	<p>The two diods reverse voltage must be 0.5V. if you measure 0.15V the processor of the power the board is broken. The power board WE.3.x must be changed.</p> <p>If the varistors are broken there is no more overvoltage protection anymore. They must replaced by new ones.</p>

At this point all the power components have been tested.

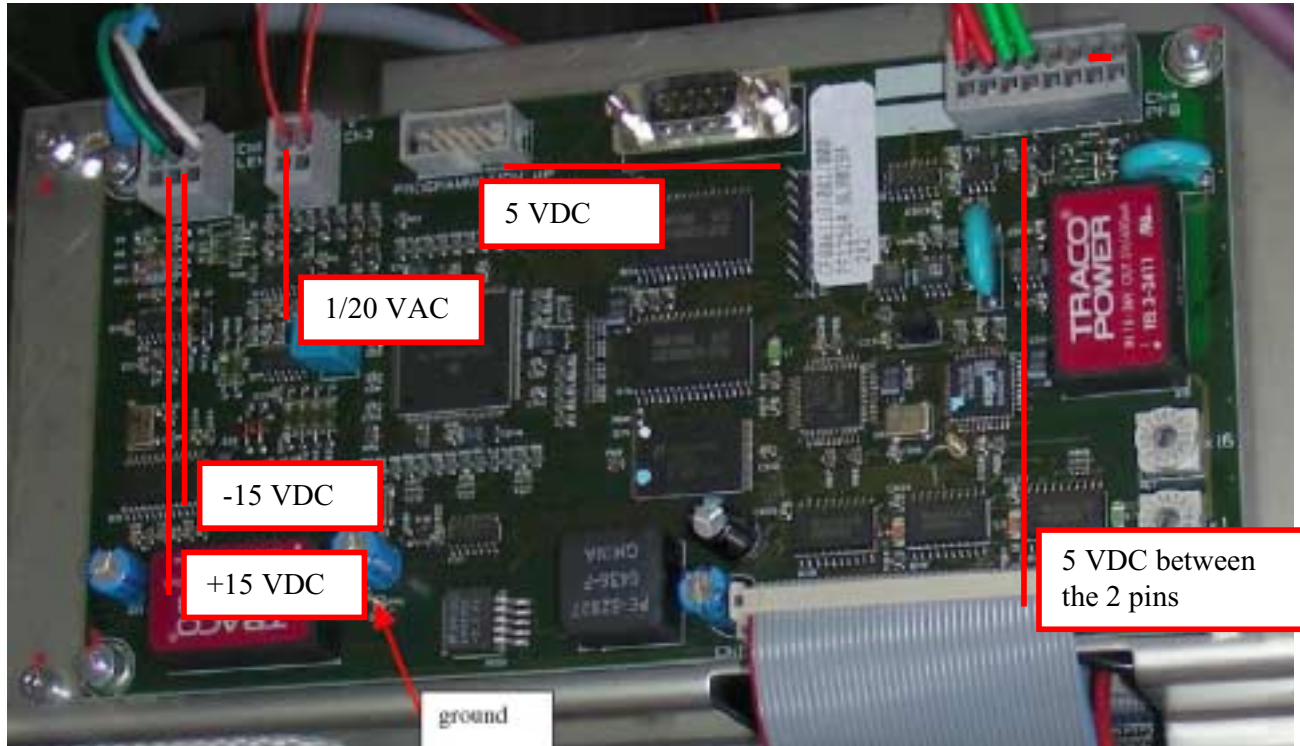
The last section of this document gives a schematics of the correct wiring and cabling of the box, in order to replace and remount all the components changed.

CHECKING THE CPU PART :

The CPU can be tested on a running unit.

What do we test ?	CPU WE.4.X
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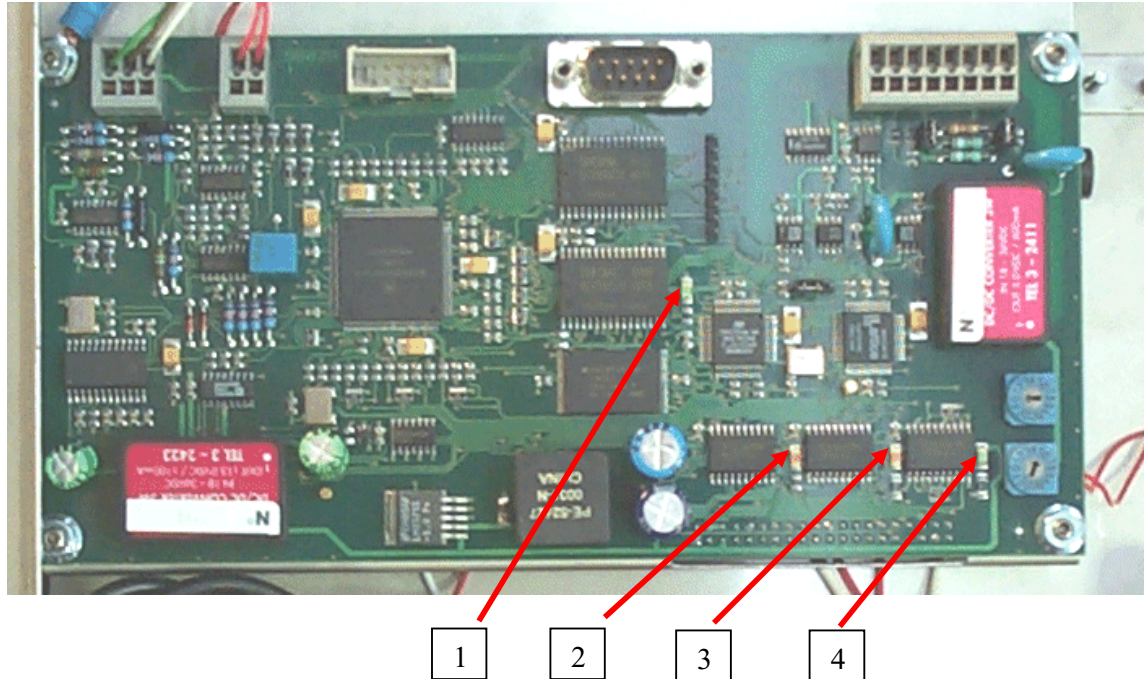
How to test it ?	
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If 24 DC is supplied to the board, it is possible to check the DC voltages on several locations.

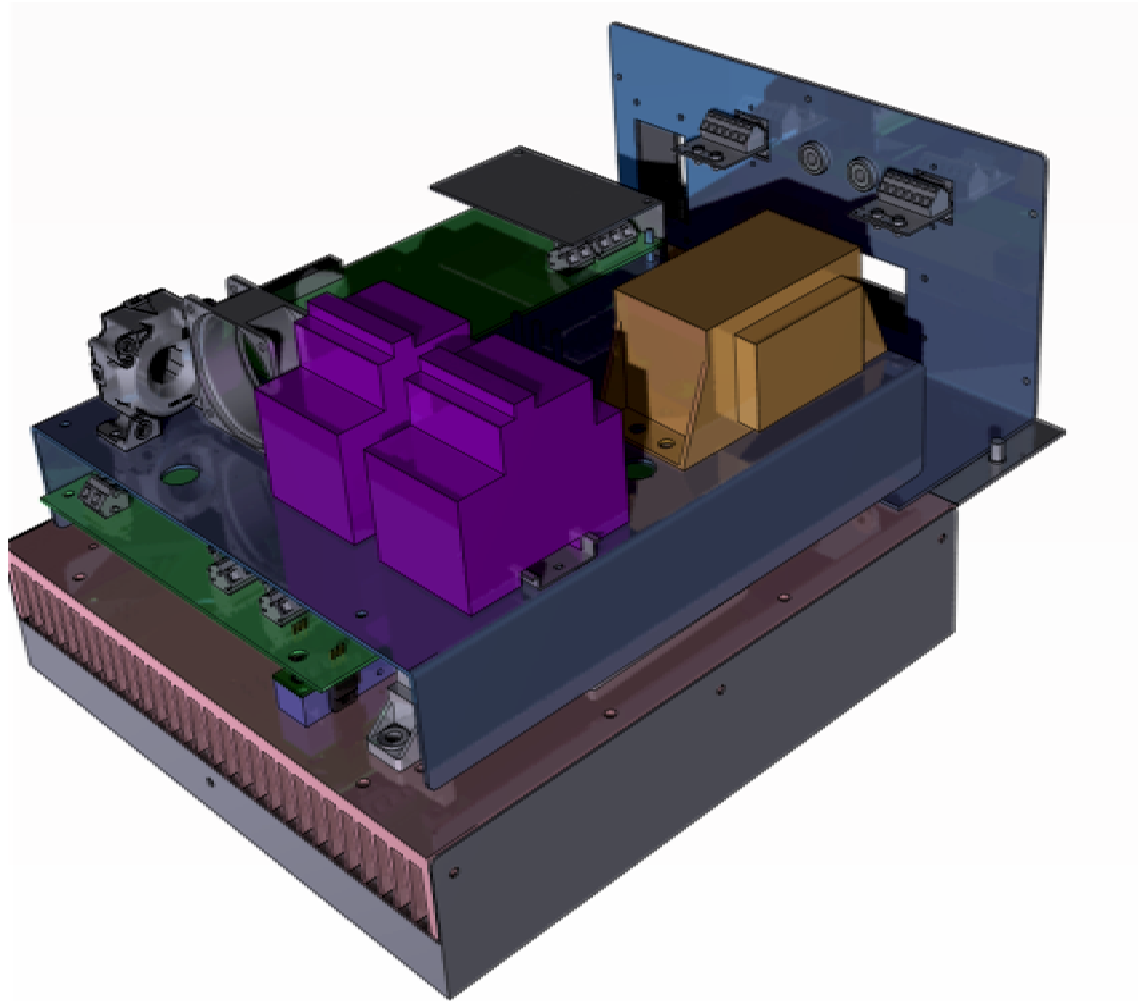
What to change or repair ?	If the measured voltages are different that one above, the we4 board must be replaced.
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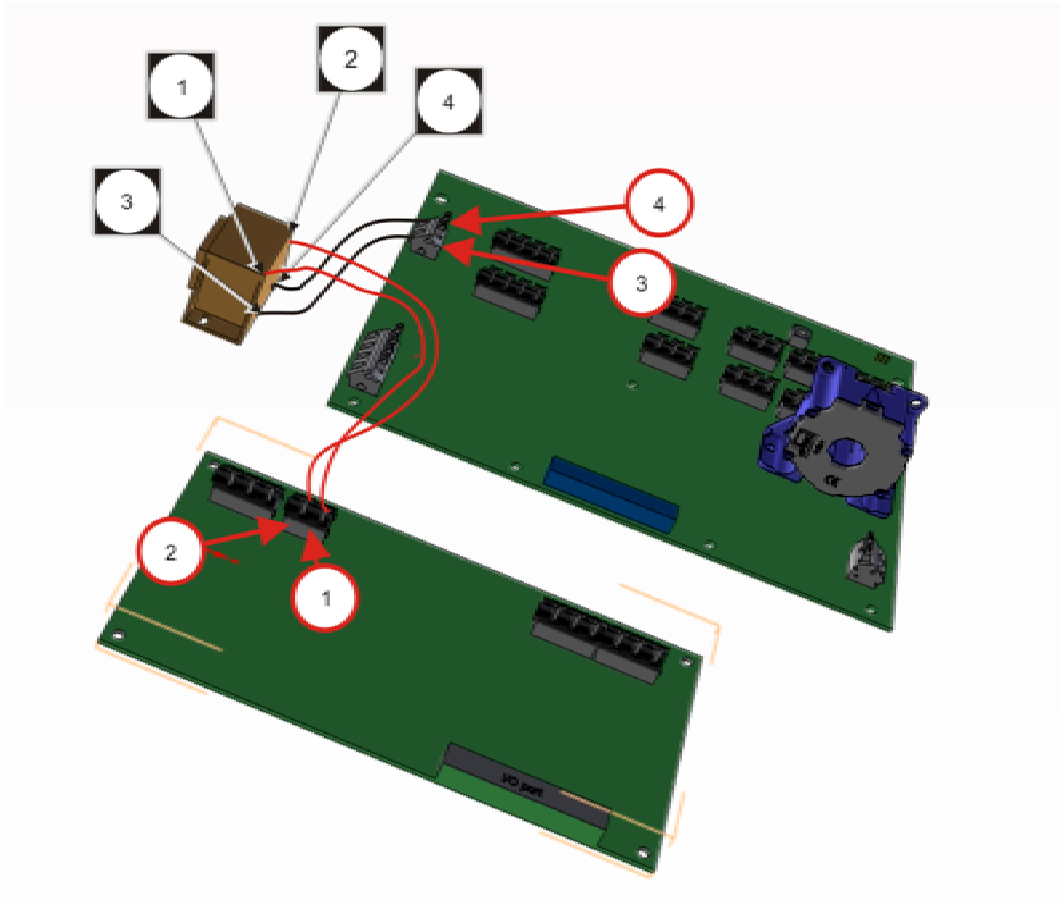
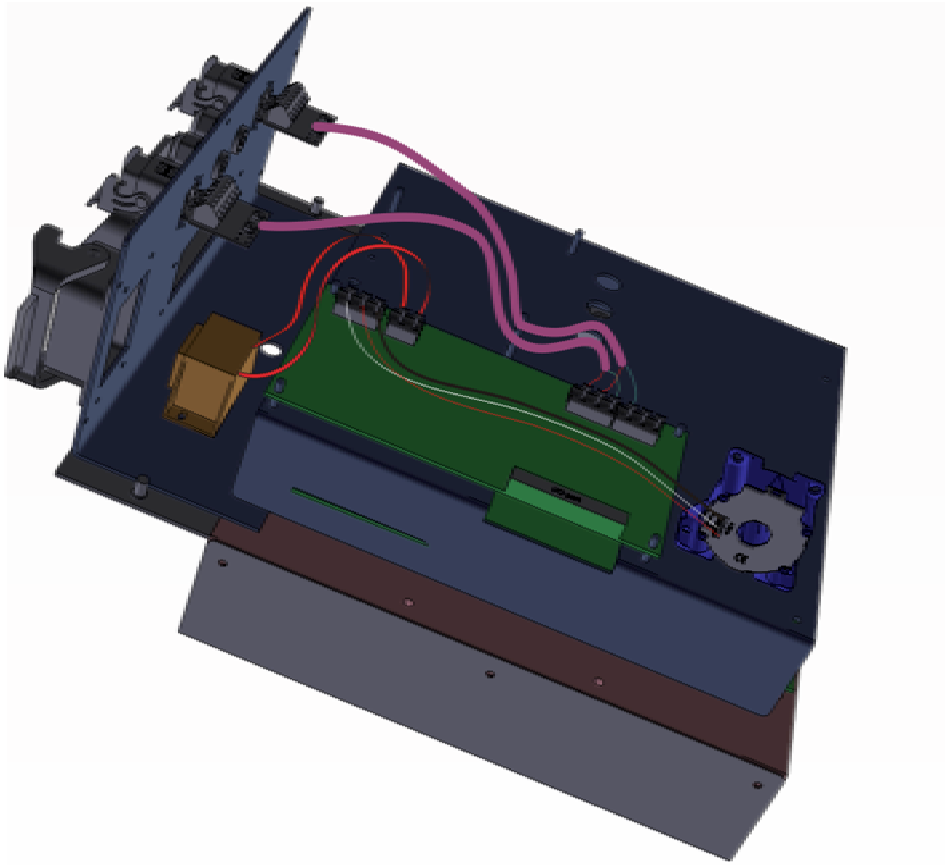
LEDs

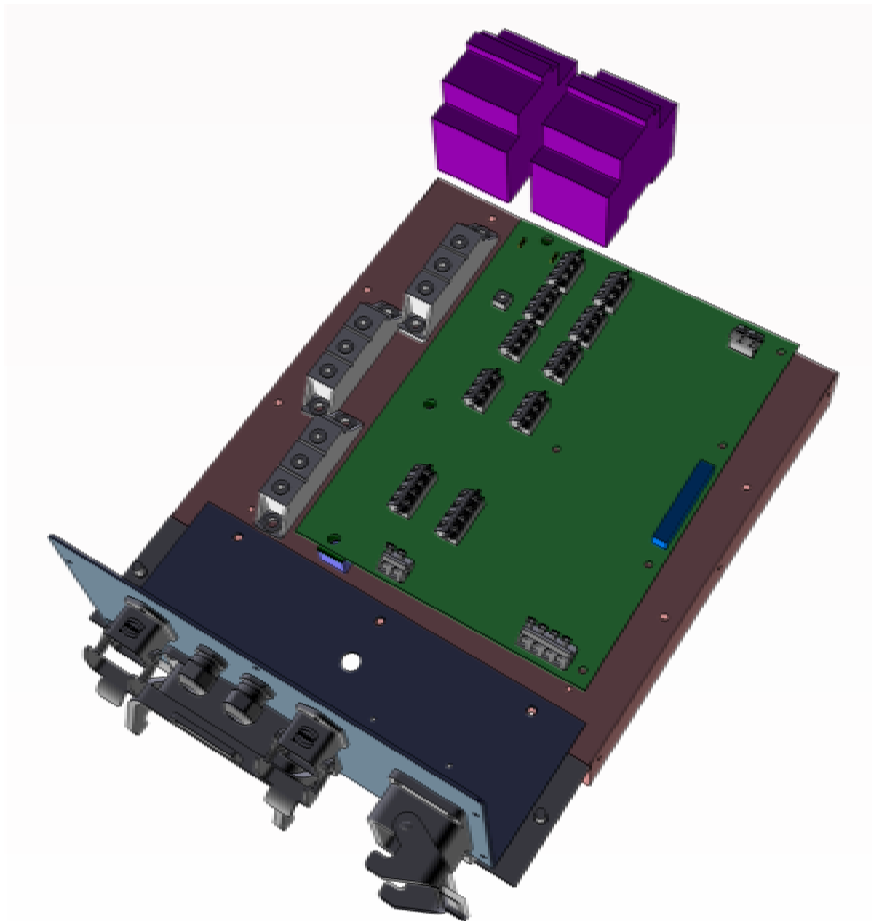
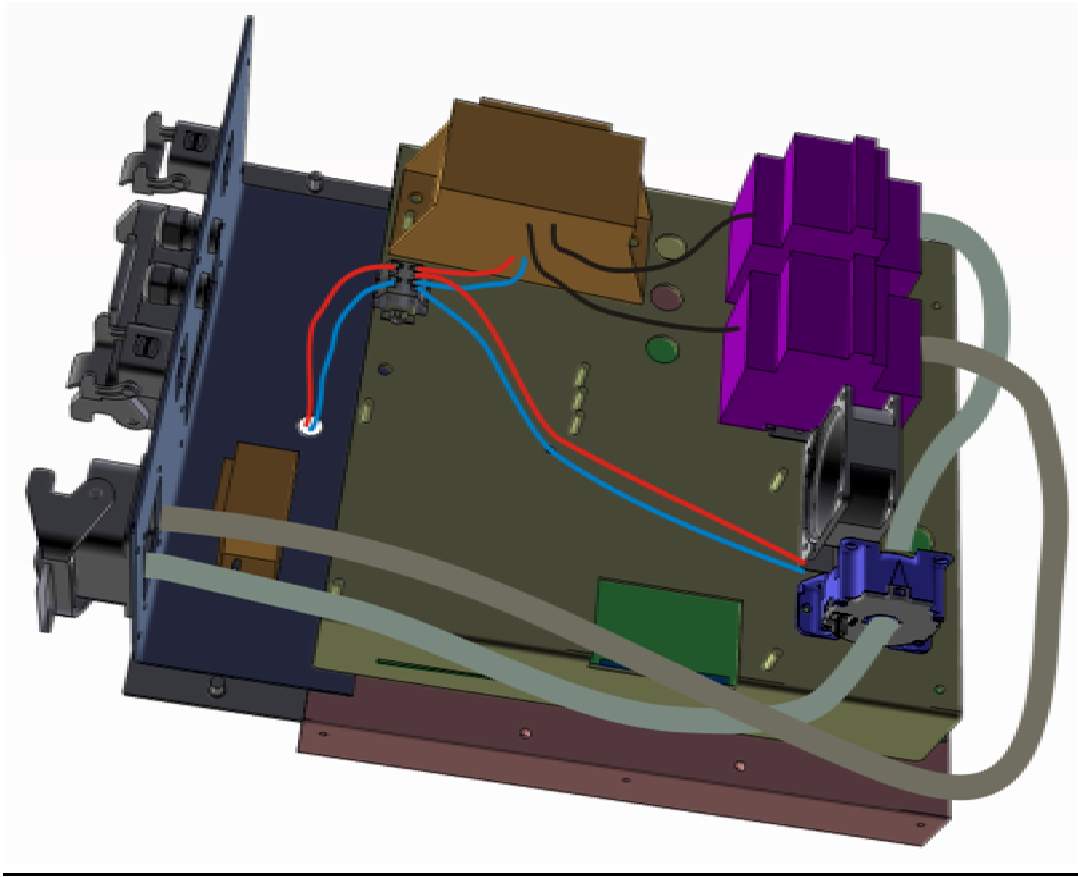


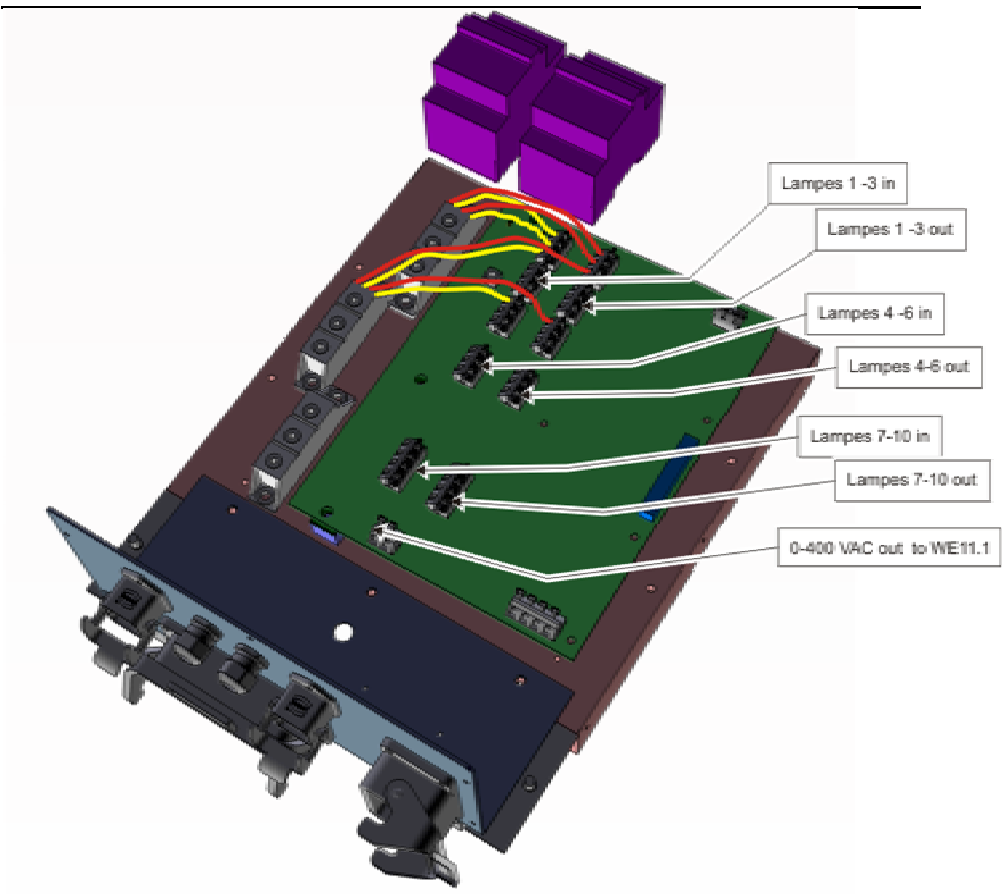
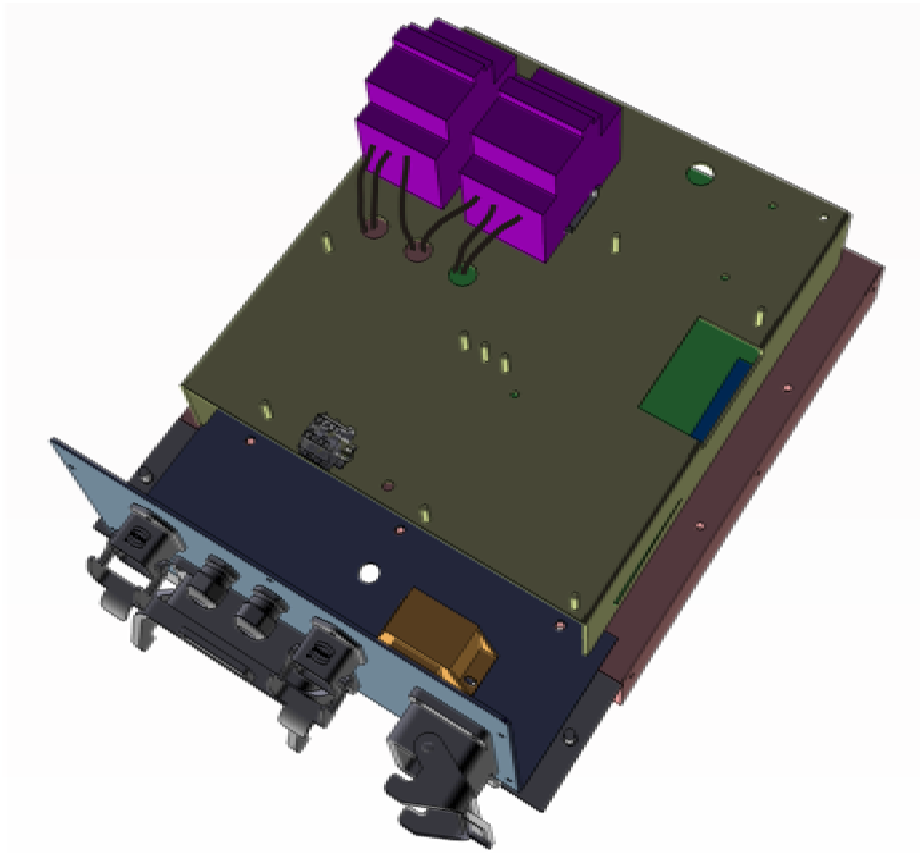
LED	ON	OFF
(1)	Profibus-DP running	No datagram exchange
(2)	MPU running	MPU error (firmware)
(3)	400 V ON	400 V OFF
(4)	24 VDC on	24 VDC off

PART 4 : Cabling and mounting schematics

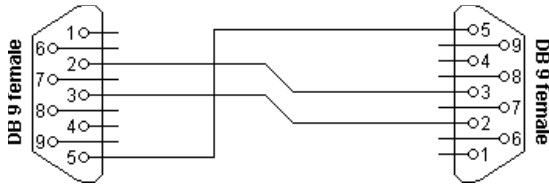




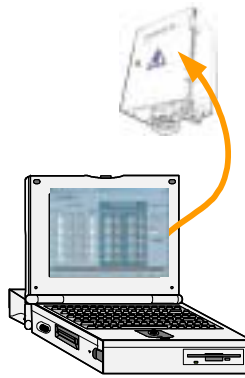




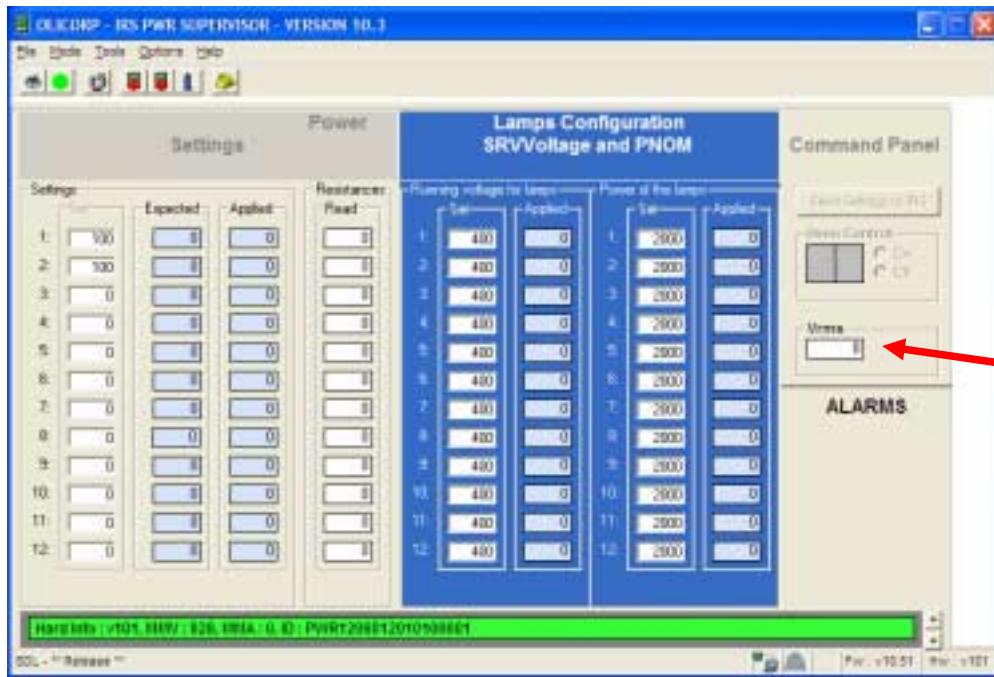
PART 5 : USING SUPERVISOR TO TEST THE BOX



Connector 1	Connector 2	Function
2	3	Rx ← Tx
3	2	Tx → Rx
5	5	Signal ground



connect a pc to the IRS using a serial link and run the monitoring tool SUPERVISOR, available from our website.



Voltage read

Communication ok

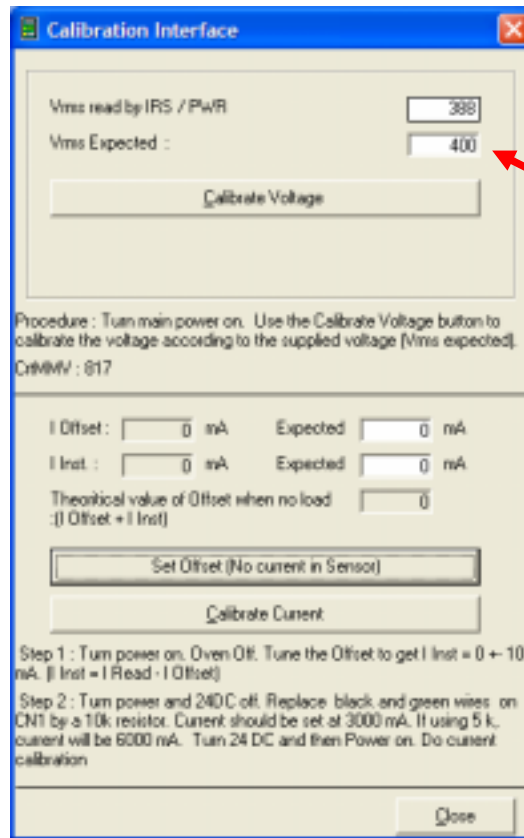
Firmware and hardware

Check Firmware and Hardware values :

MODEL	SOFTWARE VERSION	HARDWARE VERSION
IRS-SDL WO.7.x, 13.x	20.16	101
IRS-STD WO.1.x, 2.x	5.18	12

Option Calibration tool :

CALIBRATION WIZARD in the TOOLS MENU.



Write the value read by the true RMS voltmeter

USING The LAST POWER SUPPLY DEFAULT TOOL

Sometimes the Power supply default appears while running the regulation. The alarm may be related to perturbations on the power supply.

The last POWER SUPPLY DEFAULT is saved in the RAM memory of the IRS (not available if 24 DC turned off)..

By using the option TOOLS->LAST POWER SUPPLY DEFAULT in the main menu, it is possible to monitor the voltage around the default.

USING Datalog module

The datalog module is a CPU board equipped with a flash disk and especially designed to monitor and record events occurring on the IRS system (power supply, alarms, settings, on/off etc etc). It can be installed on any IRS system and the flash unit (microSD card) can be read on any PC equipped with SD card read and supervisor software