

# ELECTRONIC BOARDS - SUPRA

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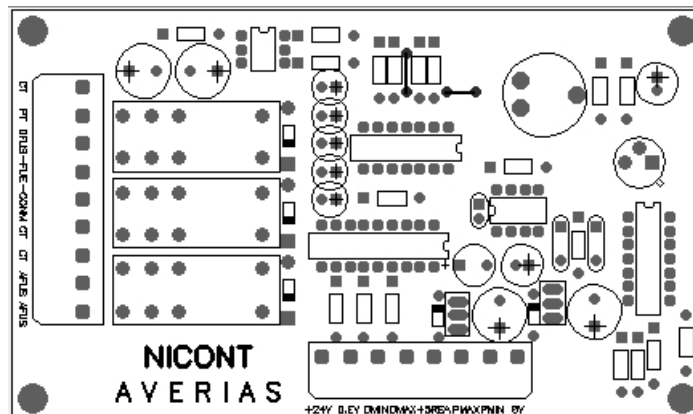
32-OUTPUT CARD

BOARD # 7520

## #TROUBLESHOOTING BOARD



12V



### CONNECTIONS:

- CONNECTOR 1:

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Terminals are top-down numerated:

- 1. Common terminal of the transformer**
- 2. Live terminal of the transformer**
- 3. Fuse output from electrovalves**
- 4. 0V source terminal**
- 5. 0V outputs to commutators**
- 6 and 7. Power stage: Transformer ground (/common?); any of both terminals**
- 8 and 9. Power stage: towards fuse input of electrovalves; any of both terminals.**

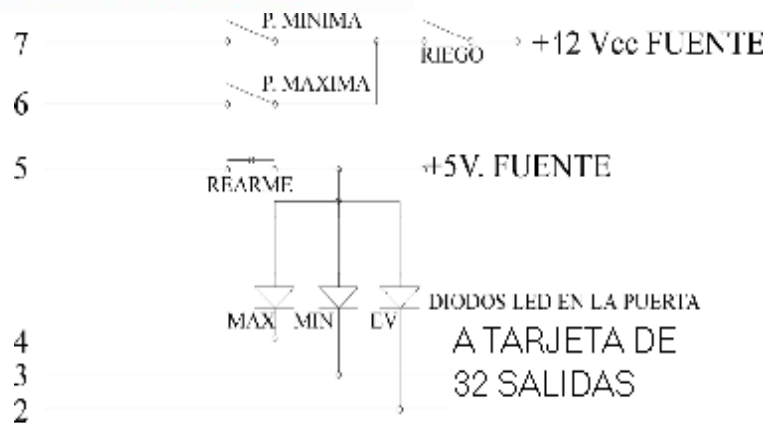
The squares mean that the terminals are jumpered.

### CONNECTOR 2:



Terminals are left-to-right numbered:

- 1. +24V Source**
- 2. 2, 3, 4, 5, 6 and 7 as shown below**
- 8. CTF**



## 8. CTF

- POTENTIOMETER:



### DESCRIPTION:

This card is used for detecting and signalling the troubles arising from maximum pressure, minimum pressure and electrovalve fuses. It should actuate regardless the irrigation system is started up manually (through the commutators) or by the irrigation controller.

It features just one (/timing?) adjustment potentiometer to temporize the minimum pressure connection. This time ranges between 2-3 secs up to 5 minutes, approximately. By turning the potentiometer clockwise, the time increases; counterclockwise, it decreases.

Whenever any trouble arises, the three relays GET FIXED (are powered down/go off?/get deactivated? are set-off??), and both the led and controller alarms get signalled (/activated??). To re-arm (/re-activate/ re-energize), press the rest button located on the cabinet door.

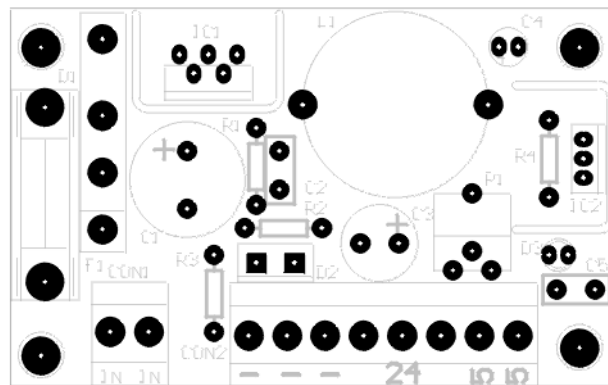
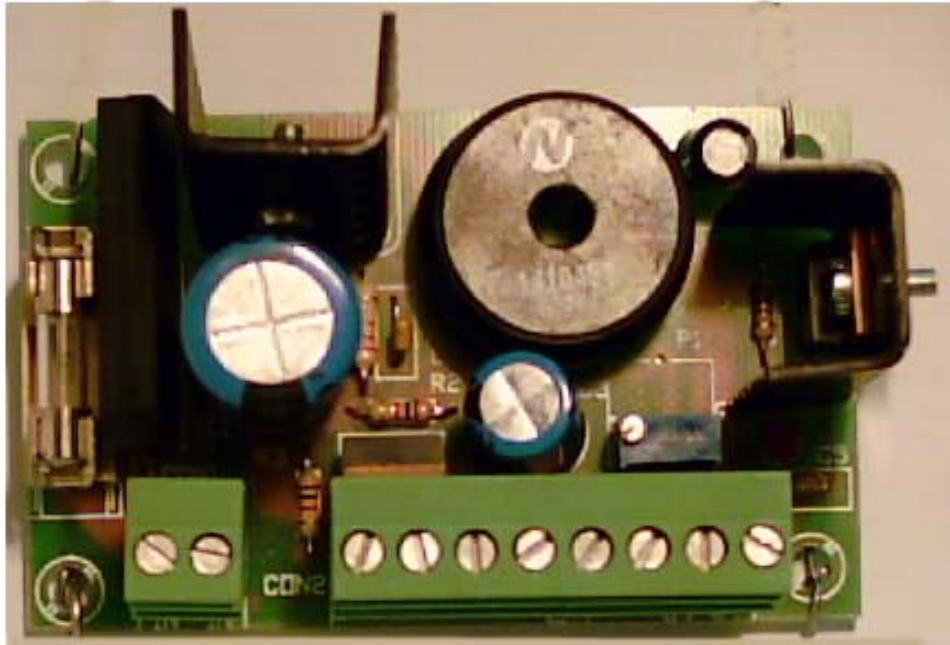
### TROUBLESHOOTING:

The troubles that may arise in this board most typically are:

- Some detection is not operating. The proof for this is to check each alarm, one at a time.

- The relays remain permanently activated. In such a case, the card should be replaced for a new one. As an emergency measure, the side connector could be disconnected, in order to power the card off and, consequently, to allow operation without any alarm.

## SOURCE CARD



### DESCRIPTION:

This card is fed 24V AC from the transformer, releasing in turn +5V DC to feed all the framework electronics, and +24V DC to feed the relay cards and the cabinet door LEDs.

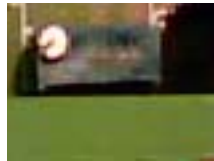
It is protected by an input fuse whose rating varies between 2 and 4 Amps, according to the number of outputs to be operated.



2 – 4 Amp Fuse

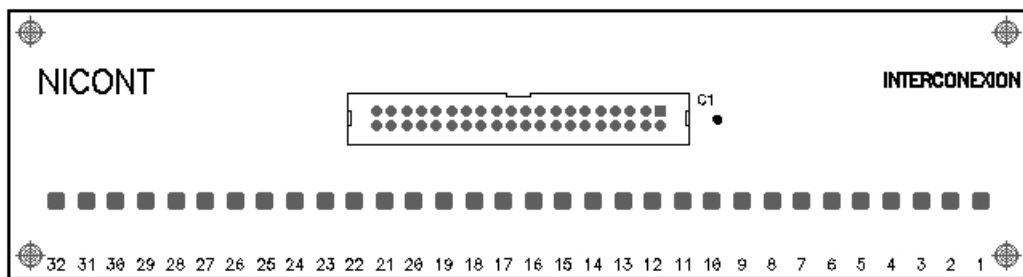
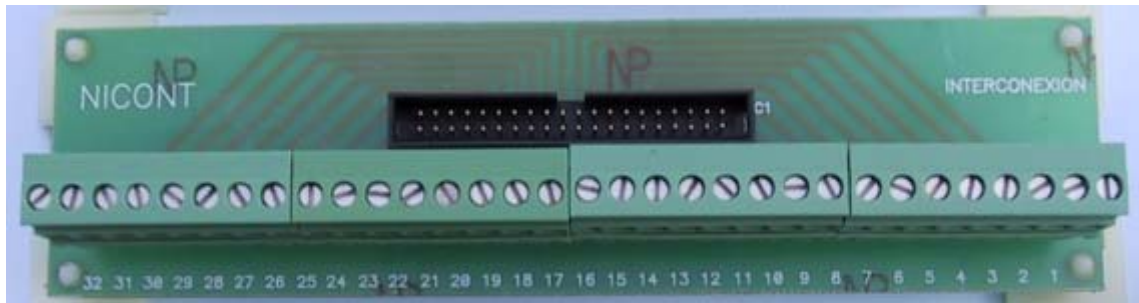
**MAINTENANCE:**

The first thing to check is the fuse; then, with a polymeeter (/multimeter??), check the 24V AC input and both the +5V DC and +24 V DC outputs. If the output reading is over 12V, try to calibrate with a multi-turn potentiometer.





## #INTERCONNECTION BOARD



### DESCRIPTION:

This card, as stated by its name, is used to link the door terminals with the back panel of the cabinet. It converts the 40-way ribbon cable into screw-type terminals.

The dot on the board indicates the side where to place the different-colour wire in the ribbon cable.

### TROUBLESHOOTING:

This card has no active component. The only trouble it may experience would be a burned track or a failed welding between the screw (/bolt?) connector and the ribbon cable.

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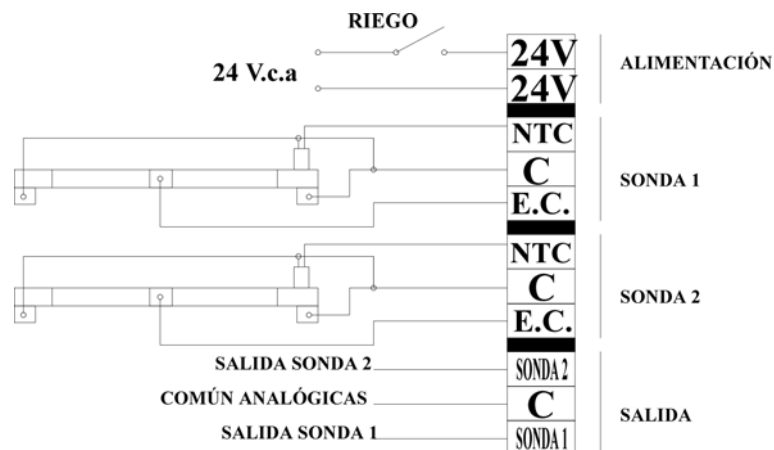
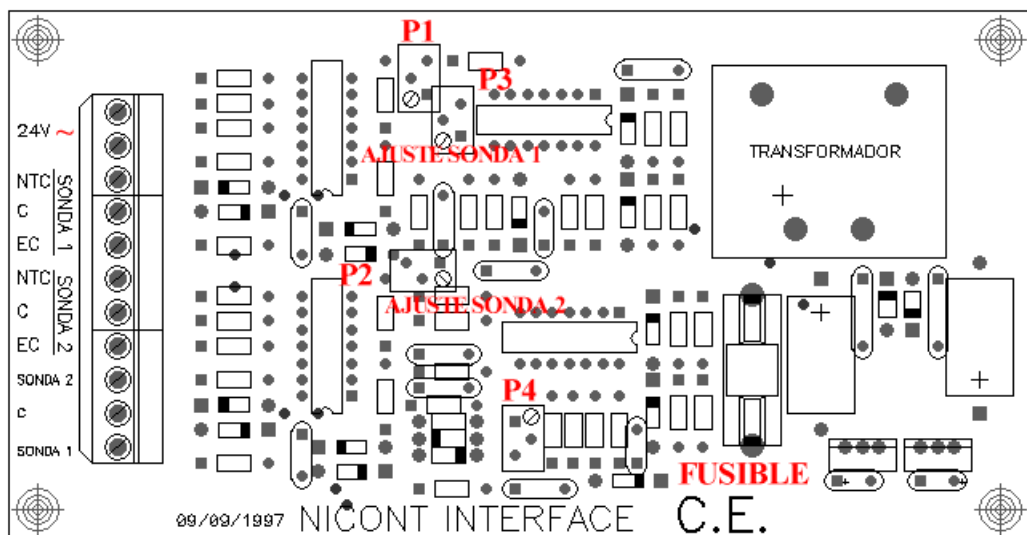
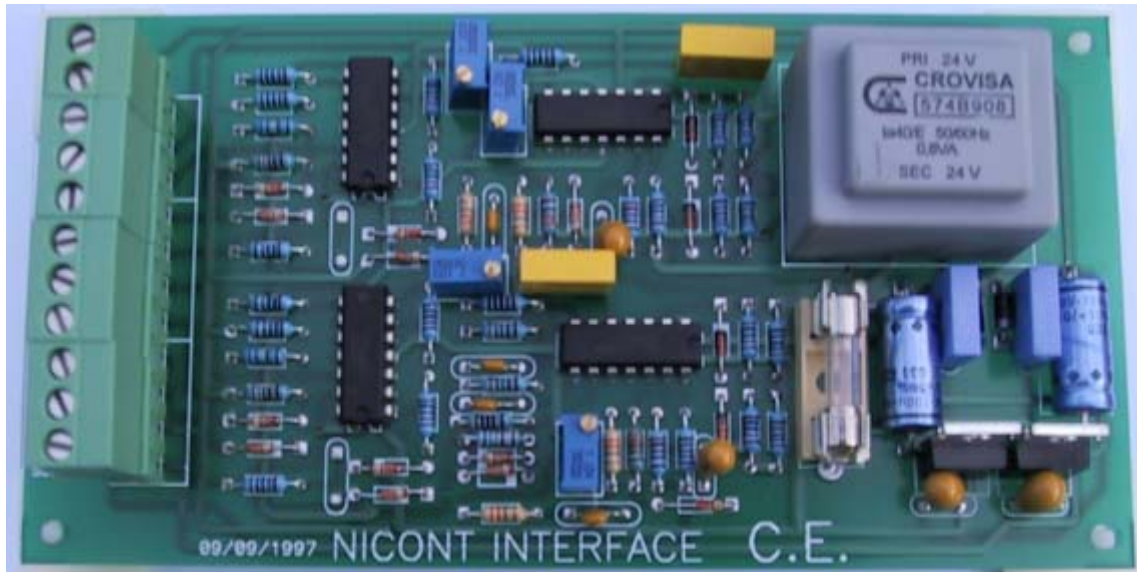
#INTERCONNECTION BOARD

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# # C.E. INTERFACE CARD



# C.E.INTERFACE CARD

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**DESCRIPTION:**

The connections to this card should be done as depicted in the figure above.

This card amplifies the electrical conductivity signals, producing a voltage level corresponding to half the conductivity readings. Thus, a 1V voltage level would mean a 2 mili-Siemens conductivity value.

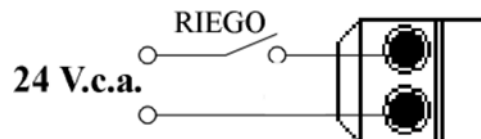
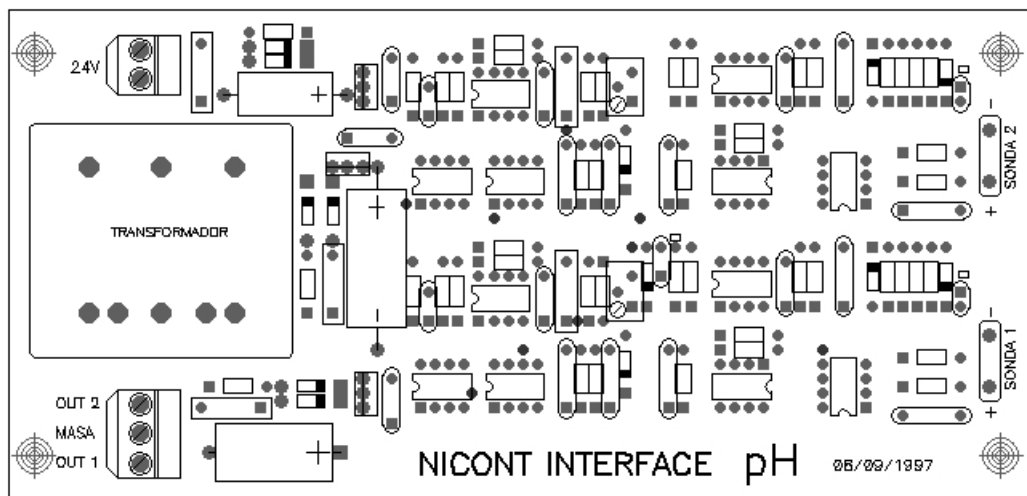
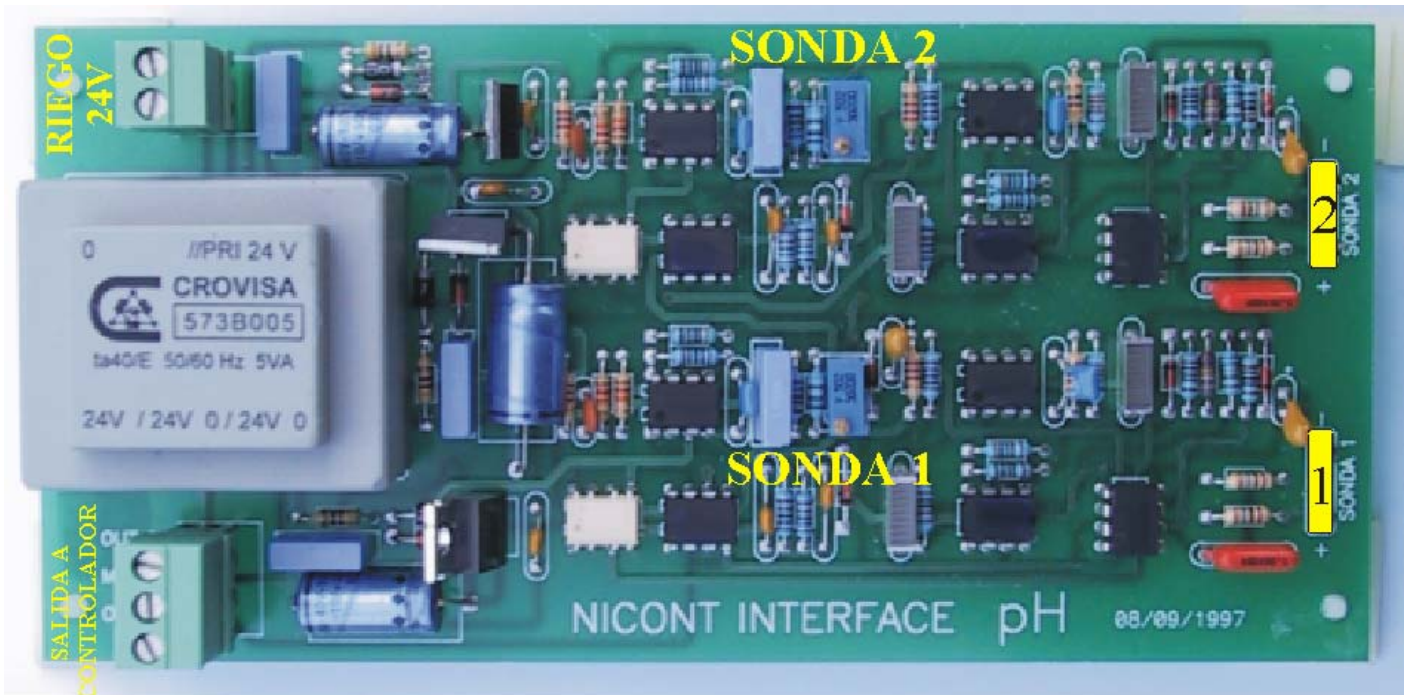
Conductivity adjustments and settings are carried out through the P1 and P2 potentiometers, for probes #1 and #2, respectively. Potentiometers P3 and P4 are used to adjust and to set the 0V level when the probes are not connected, but –normally- they should not be re-adjusted.

**MAINTENANCE:**

The first thing to do is to check the fuse with a multimeter because, although the external appearance of the fuse might be good, it may be internally broken.

In case of having a strong deviation between the card reading and the real one measured with a standard conductance meter (/conductivity standard?), re-calibrate P1 and/or P2 in order to re-adjust the values.

# #pH INTERFACE CARD



# pH INTERFACE CARD

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**DESCRIPTION:**

With this card, the pH probe signals are amplified and converted into a voltage ranging between 0V and 5V DC.

When the probes are in a pH 7 **tampon solution**, the voltage should be about 2.5 V.

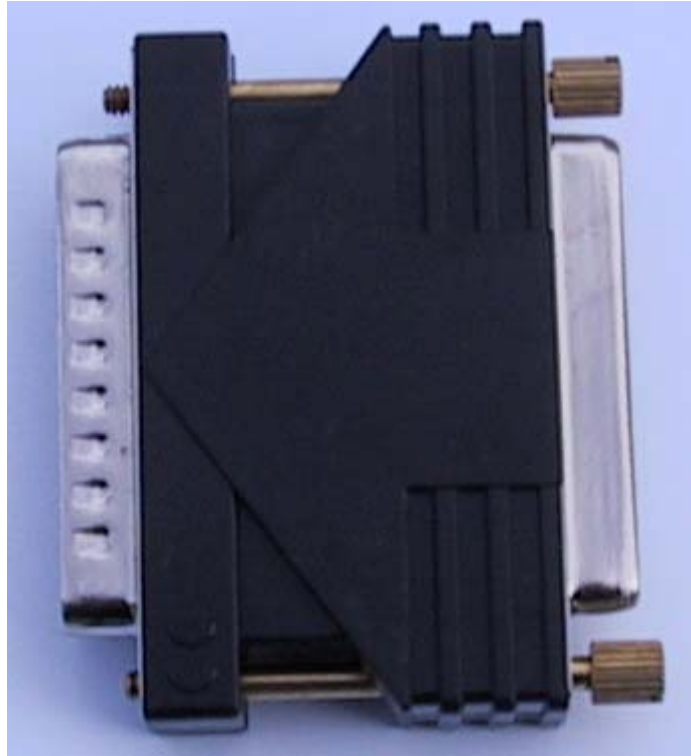
When they are in a pH 4 tampon solution, it should settle about 1 V. Higher voltage readings would indicate a probe breakdown or malfunctioning.

With the potentiometers, the output voltages can be re-adjusted (calibrated?). Perform this operation using only brand-new probes; else, the card response may be distorted.

**MAINTENANCE:**

- ❑ Make sure the card is powered with 24 V AC.
- ❑ Check, by using brand-new probes, which the voltage readings for pH 7 and pH 4 are within the above cited ranges.
- ❑ Calibrate with the potentiometers, if necessary.

## **# HARD SWITCH**



External Hard Switch

### **DESCRIPTION:**

This card protects our software. If this device is not available in the PC, no window will appear on the screen to indicate the protection switch is not available.

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# HARD SWITCH

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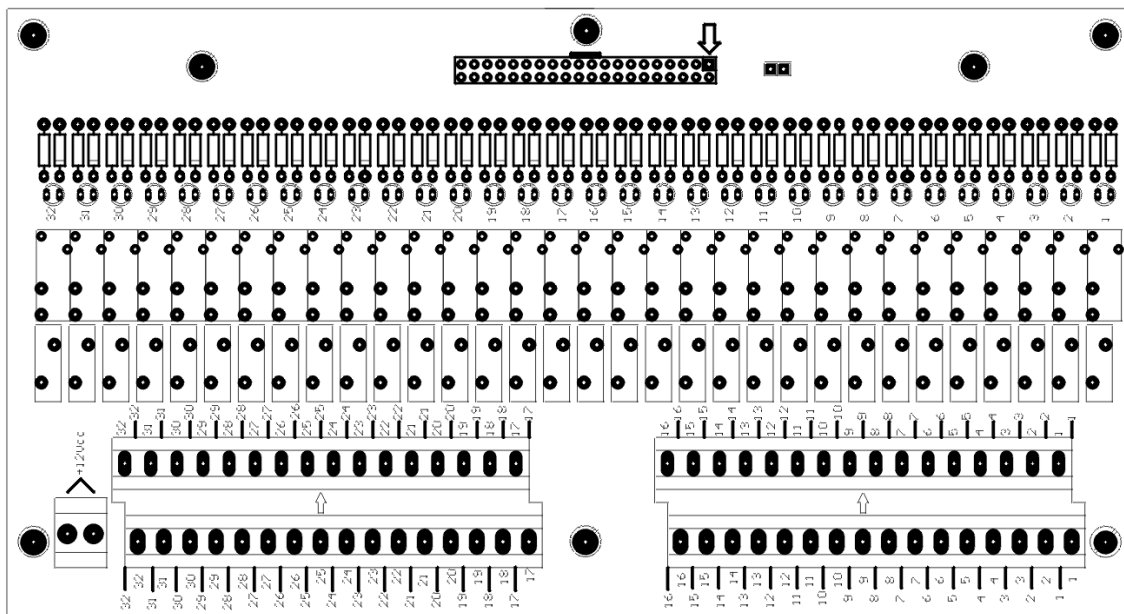
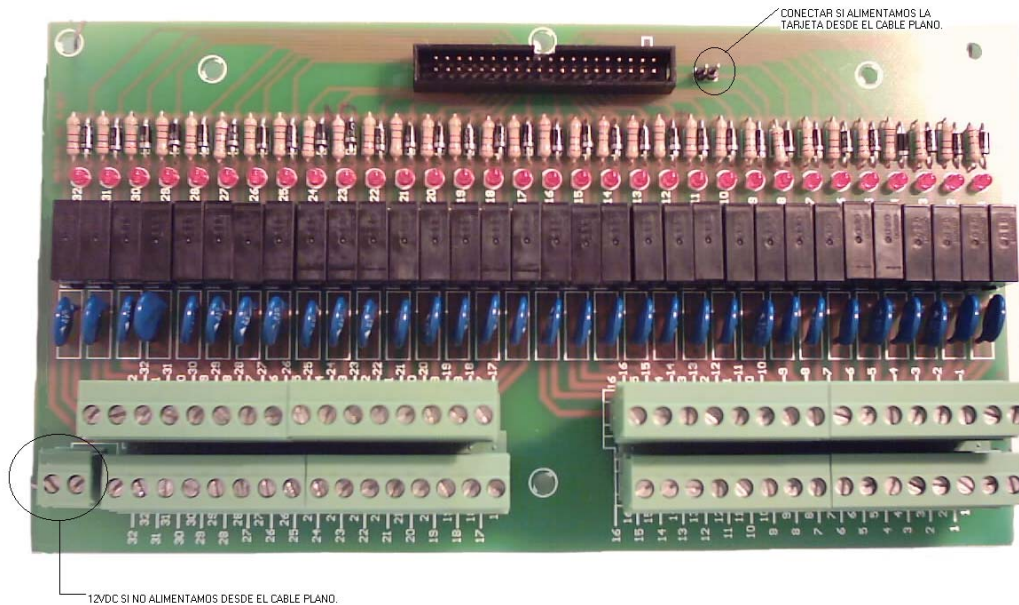
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### MAINTENANCE:

In case the card is not detected, verify that there is no problem either in the parallel port or in the software. There should not be any RUN TIME FILE (just on WINDOWS). If there is some, replace the card.

# #RELAYS CARD



## DESCRIPTION:

This card features only the relays, the protection diodes, signalling diodes and 60 V varistors in parallel with the contacts. Each relay has two terminals that correspond to each contact. This allows for using different voltage levels on each relay. However, we recommend not to use voltage levels above 24 V AC (do not go over 60 V without previously changing the varistors for another of appropriate rating for this new voltage level), in order to avoid the electric noise arising from relay commutation.

#RELAYS CARD

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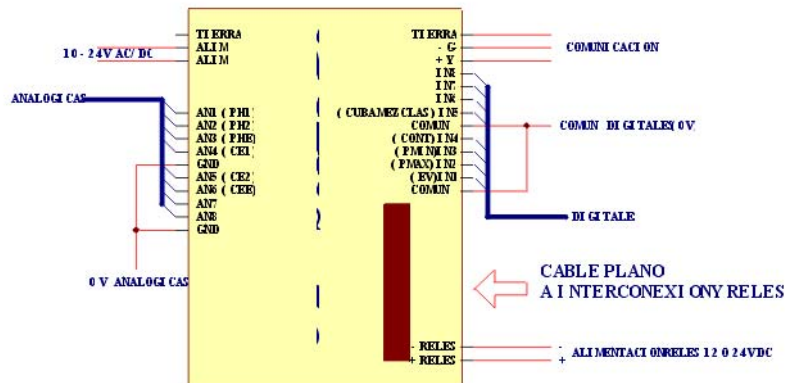
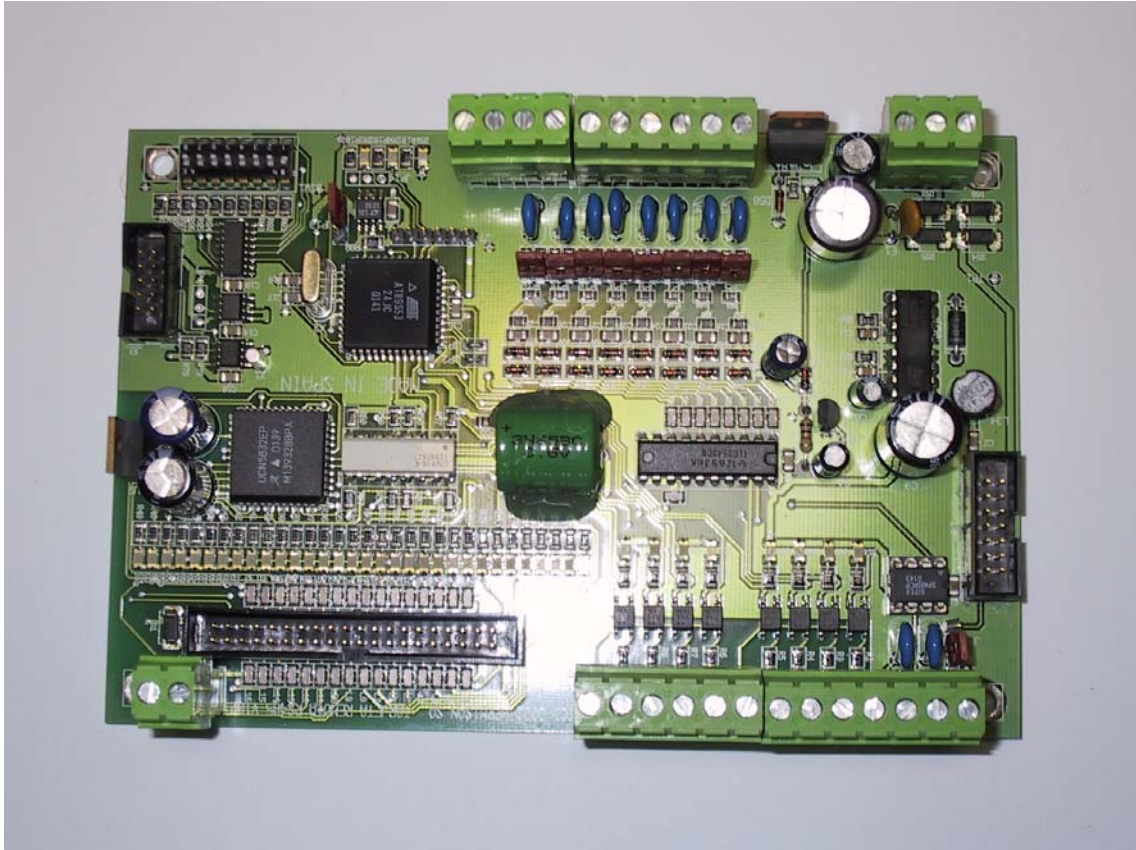


**MAINTENANCE :**

In case of a failure, the first thing to do is to check the diodes, because they are the most sensitive part. Set the multimeter in the checking mode for diodes, and test their state.

In order to check relay contacts and tracks, energize the relay and verify the continuity with the multimeter. First, the cables should be disconnected from their terminals. Check visually the condition of the tracks on the backside of the board.

# #32-OUTPUT CARD



#32-OUTPUT CARD

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**DESCRIPTION:**

This card is a data-acquisition device via series port. It is capable of obtaining 8 Analog inputs and 8 digital inputs, as well as of activating 32 relays. The communication system is based on the RS485 Standard. The Analog inputs may work in two ways: 0-10 V (jumper off) or 4-20 mA (jumper on). The digital inputs can work with 12 V or 254V (do not connect inputs to different voltages; all of them must be at the same voltage level). They can also work with positive or negative common terminal, although –habitually- we use the negative common terminal. There are available independent (/power?) feeding inputs for both the relays and the electronics. For this latter one, it is supplied by means of a toroidal transformer; although, at times, it has been fed by a commuted source.

The board has a dip-switch that is used to tell the card its number. This number is given in binary code; therefore, in order to know the card number, a summation of the weight of each switch (/breaker?) has to be carried out, according to the following table.

SWITCH (/breaker?)	WEIGHT
1	1
2	2
3	4
4	8
5	16
6	32
7	DO NOT TOUCH
8	ON= 19200 OFF=9600

**MAINTENANCE:**

In case of trouble, check the feeding connections and verify that the voltage levels at all points are the correct ones.

There are three LEDs available that indicate:

\*1<sup>a</sup>.\_ Source

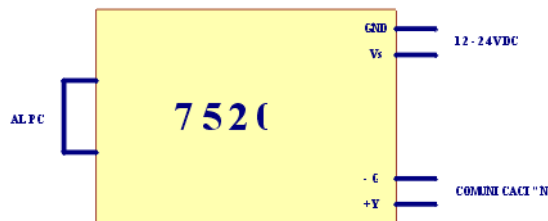
\*2<sup>a</sup>.\_ Reception OD a command through the series port. (When receiving a communication, it does a fast flickering; when there is no communication, the flickering is slow and with a steady pace).

\*3<sup>a</sup>. \_ Watchdog, both for communication and for hardware.

There exists a jumper in front of the microprocessor that should be located towards the board edge.

Along with the communication connector, there is another jumper that allows shutting off the communication bus (See the electrical characteristics of the RS485 Standard)

## MODULE 7520



### DESCRIPTION:

This board is Rs232-to-Rs485 converter. It allows changing the signals between the PC and our system.

### TROUBLESHOOTING:

The device has a LED that indicates its state; it should be flickering fast (**a flickering for each command**). If this LED is off, check that the source feed is the correct one; or if there is a short-circuit in the bus. If the LED is on steadily, there is a problem in the communication, either between the module and the PC, or between the module and the electronics.