

F2029 Summary of the application 4I4O

OBJECTIVE of the application:

The goal was to make the 4I4O board compatible with the former 4E4S board and to permit the use of the option boards 0-10V and 4-20mA opto isolated.

Explanation of the different boards:

More of precisions on the board:

Technical use.

For this, we used a low-cost EPLD from altera permitting to make interface between the motherboard based on a 68HC812A4 microcontroller and the Nitron. The goal of the Nitron is to calculate the slope and the offset of the 0-10V and 4-20mA boards. The adjustment is executed with the help of straps and two push buttons. The parameters are saved in flash memory in order to re find our values when we have a new start up. The Nitron simulates an address bus and a bi-directional data bus in order to get the values sent by the motherboard to the EPLD and to send them back to the EPLD that will be in charge of transferring the new values under the format of an SPI bus wich is the bus used by the 0-10V and 4-20mA boards.

Remark: The EPLD is used like one double access RAM in order to be asynchronous between the speed of writing and reading of the 68HC812A4 and the Nitron. We signal that the update of the values out of the 0-10V and 4-20mA boards does not exceed 50Hz.

The capacities of the Nitron used:

- Save of 8 bytes in Flash with rotation to save the number of writing on the page used to 80000 writings. It is enough for our application.(It will be used occasionally in the life cycle of the product).
- 1350 bytes used on the 1500 available bytes.
- Use of the voltage supervisor of the NITRON (LVI)
- Multiplication 16bits*16bits
- Division 32bits/16bits.
- Addition and subtraction.
- The IRQ / is used to detect a new writing in the double access RAM executed by the motherboard.
- Use of the internal oscillator. No need of precision on the clock because it is an asynchronous system.
- Possibility of programming the Nitron on the board (for technical support problems for example)
- Use of a life LED for the Nitron and the EPLD for the technical support.
- The Nitron is on DIP support because he is only necessary when the 4I4O board has a 0-10V or a 4-20mA option board.
- The power supply of the Nitron and the EPLD is 3.3V.

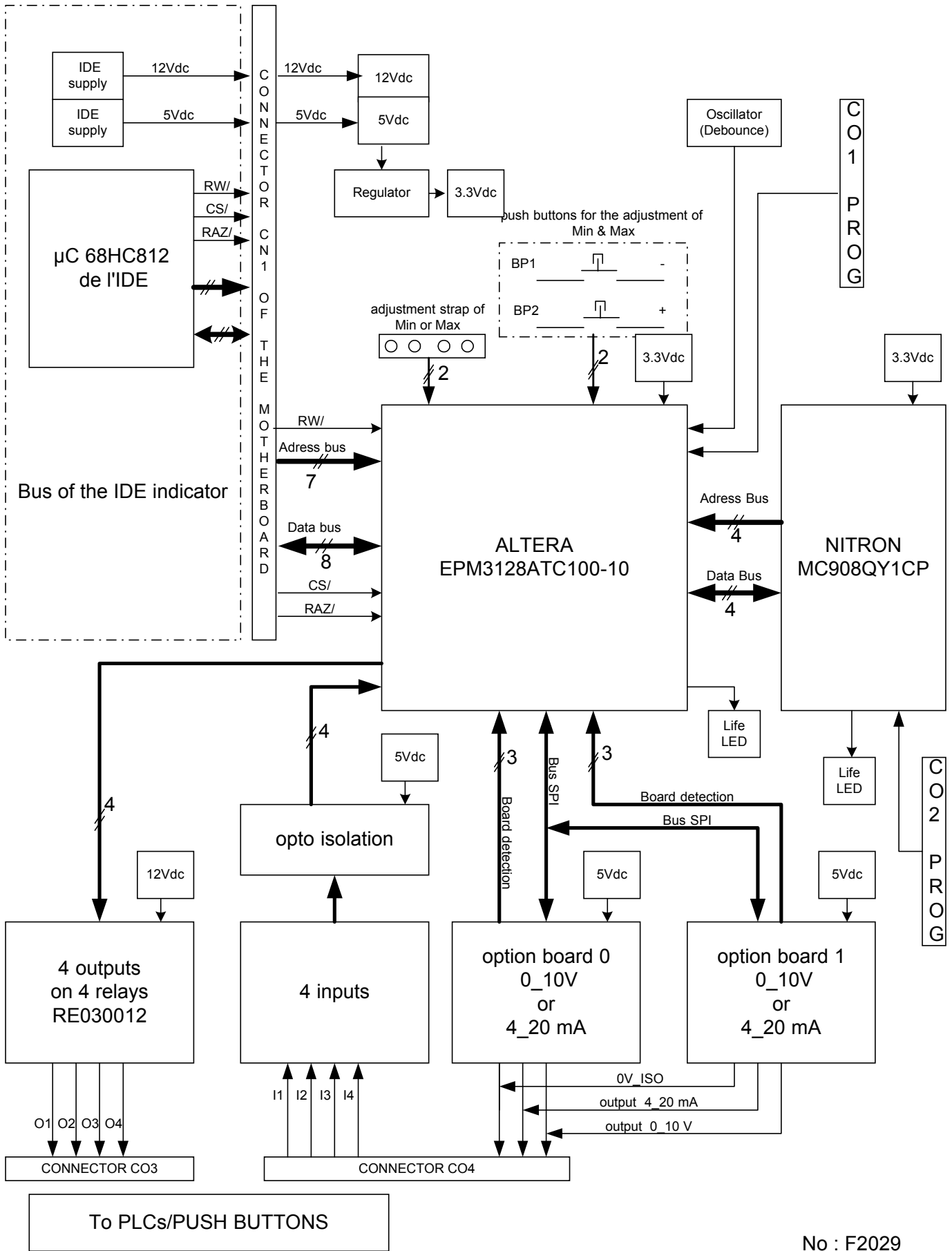
Remark: The EPLD is compatible with the 5V TTL, permitting to be connected directly with the motherboard.

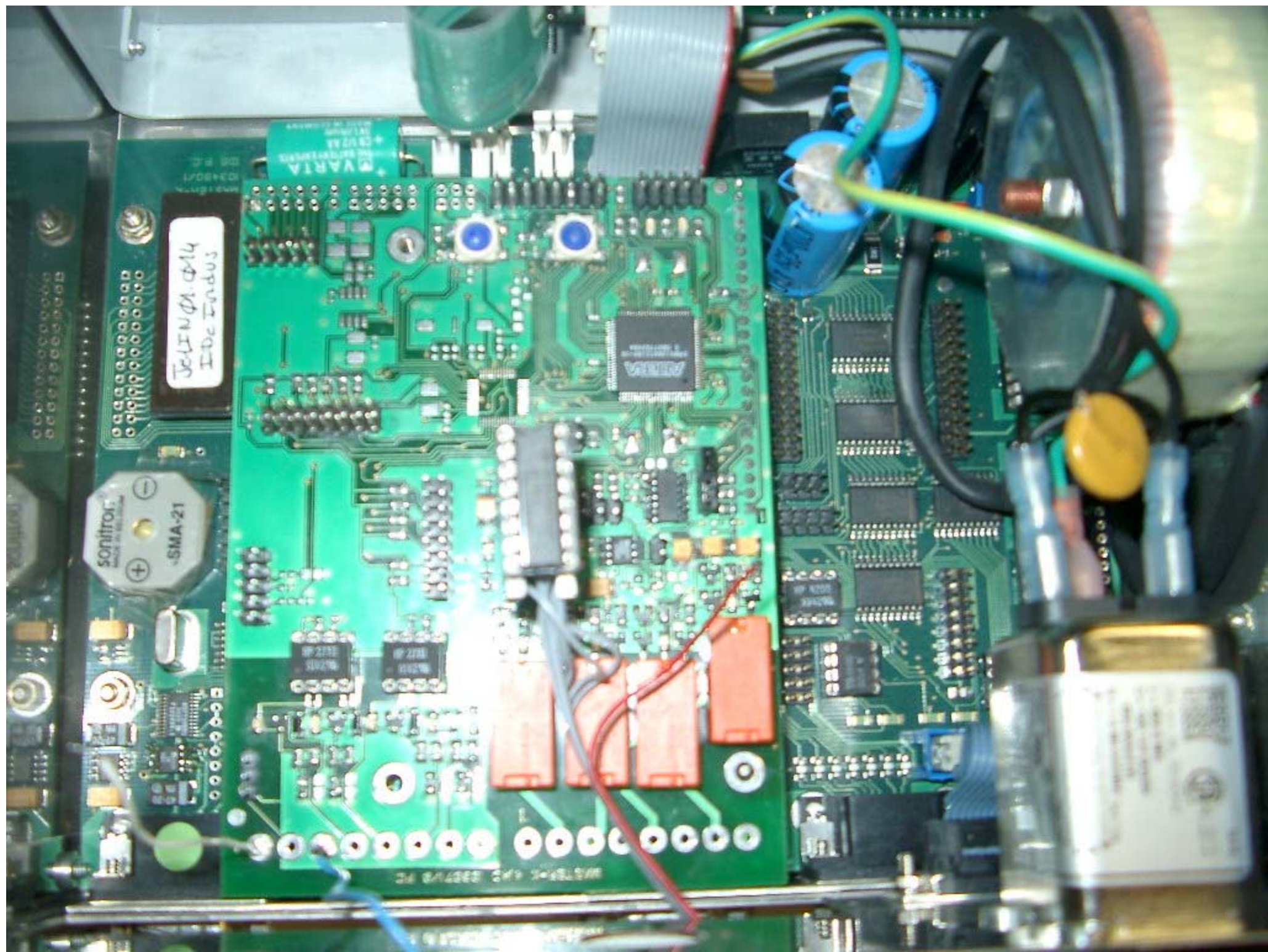
- Use of a timer for the anti-rebounds of the push buttons.

Role of the Nitron:

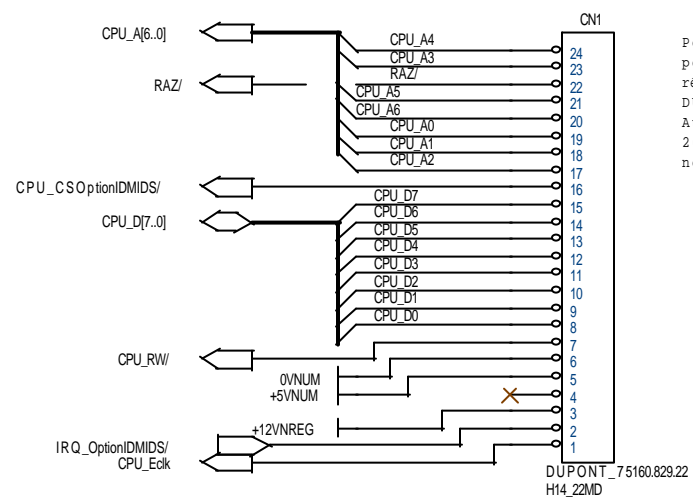
- Low-cost processing + saving.

4I4O block diagram



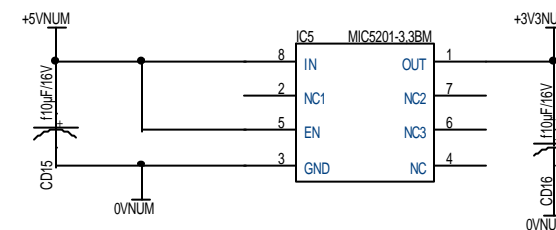


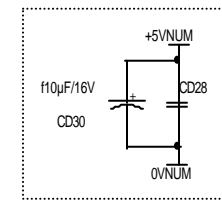
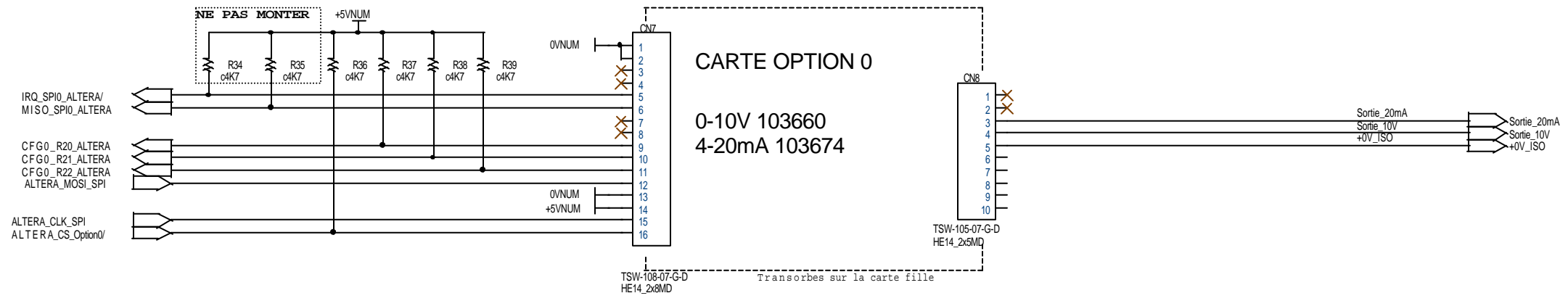
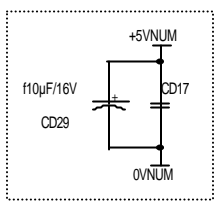
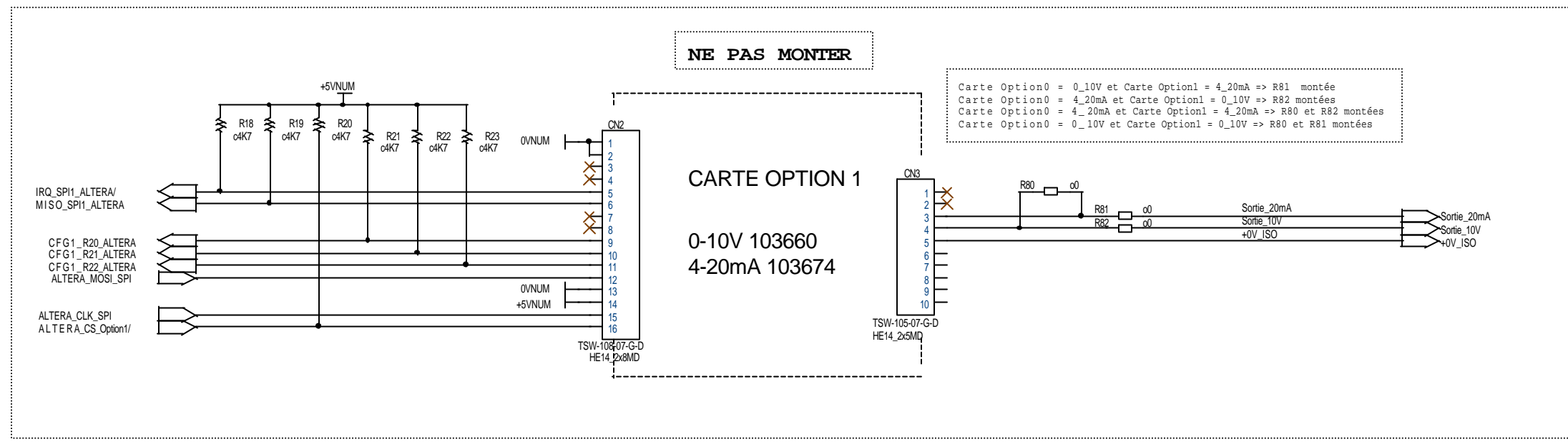
BUS OPTION CARTES IDS/IDE

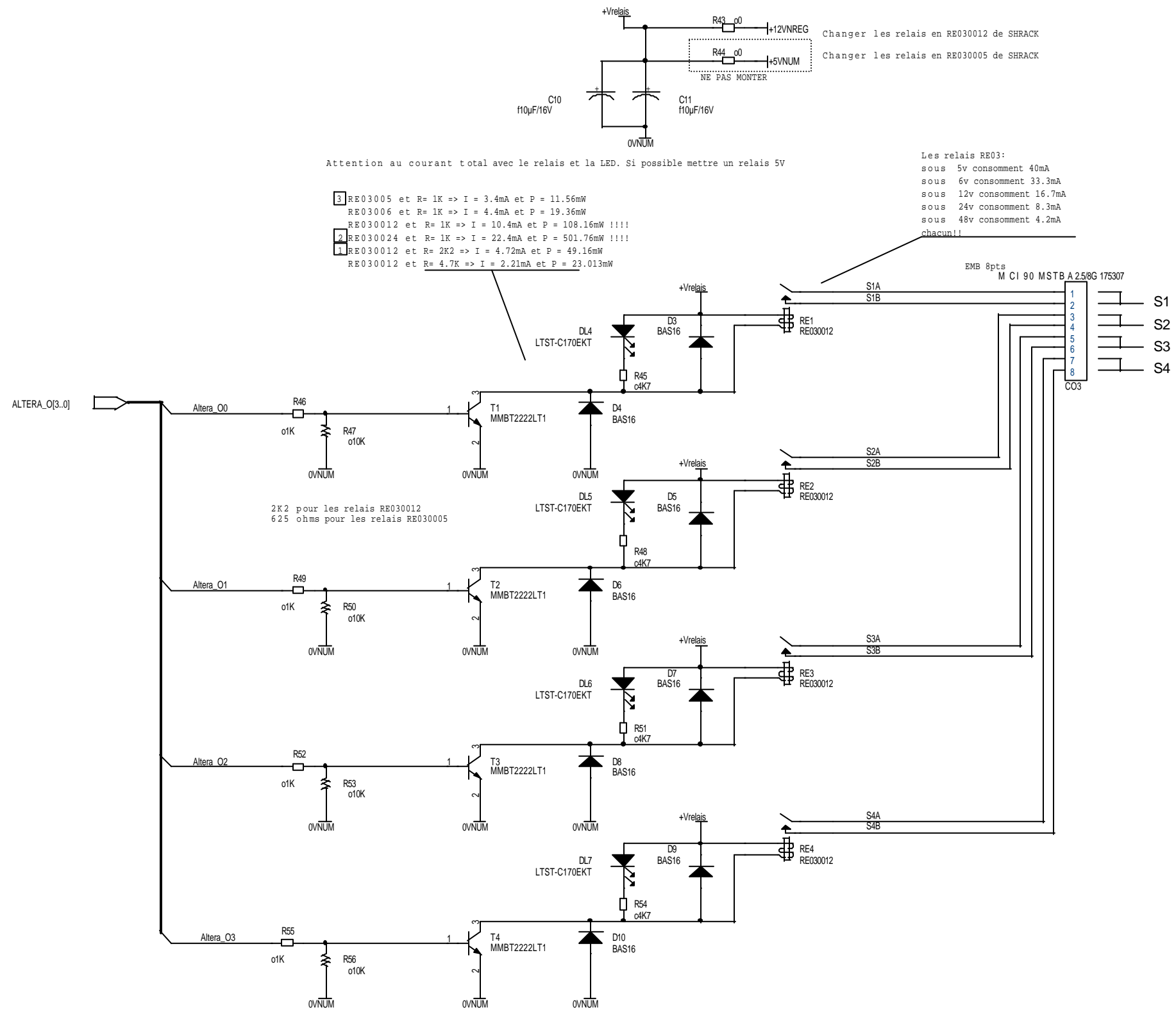


Pour avoir un connecteur de 24 points, il faut mettre la référence. DUPONT_75160.829.24. Aujourd'hui le 11 décembre 2001, l'extension du bus ne nous intéresse pas.

La zener sur l'IDE permettait de diminuer la tension +12VREG à +9V pour la carte 4E4S. (Elle chauffait énormément)







Attention au courant total avec le relais et la LED. Si possible mettre un relais 5V

- 3 RE03005 et R= 1K => I = 3.4mA et P = 11.56mW
- RE03006 et R= 1K => I = 4.4mA et P = 19.36mW
- RE030012 et R= 1K => I = 10.4mA et P = 108.16mW !!!!
- 2 RE030024 et R= 1K => I = 22.4mA et P = 501.76mW !!!!
- 1 RE030012 et R= 2K2 => I = 4.72mA et P = 49.16mW
- RE030012 et R= 4.7K => I = 2.21mA et P = 23.013mW

Changer les relais en RE030012 de SHRACK
Changer les relais en RE030005 de SHRACK

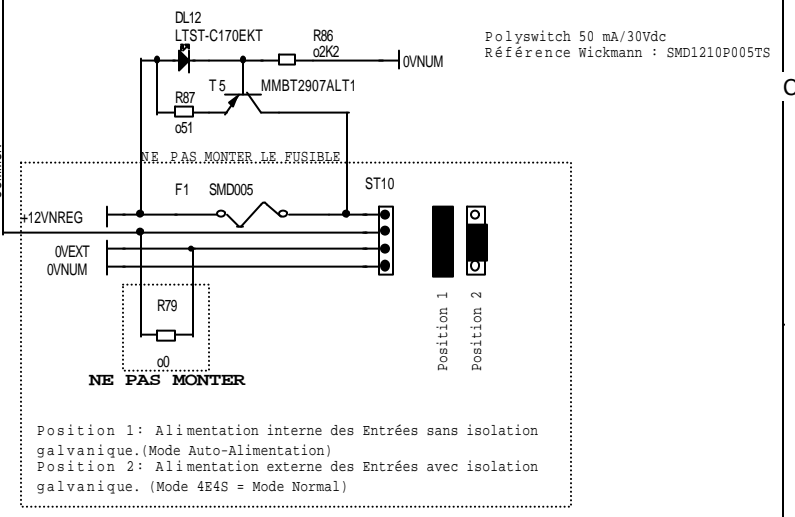
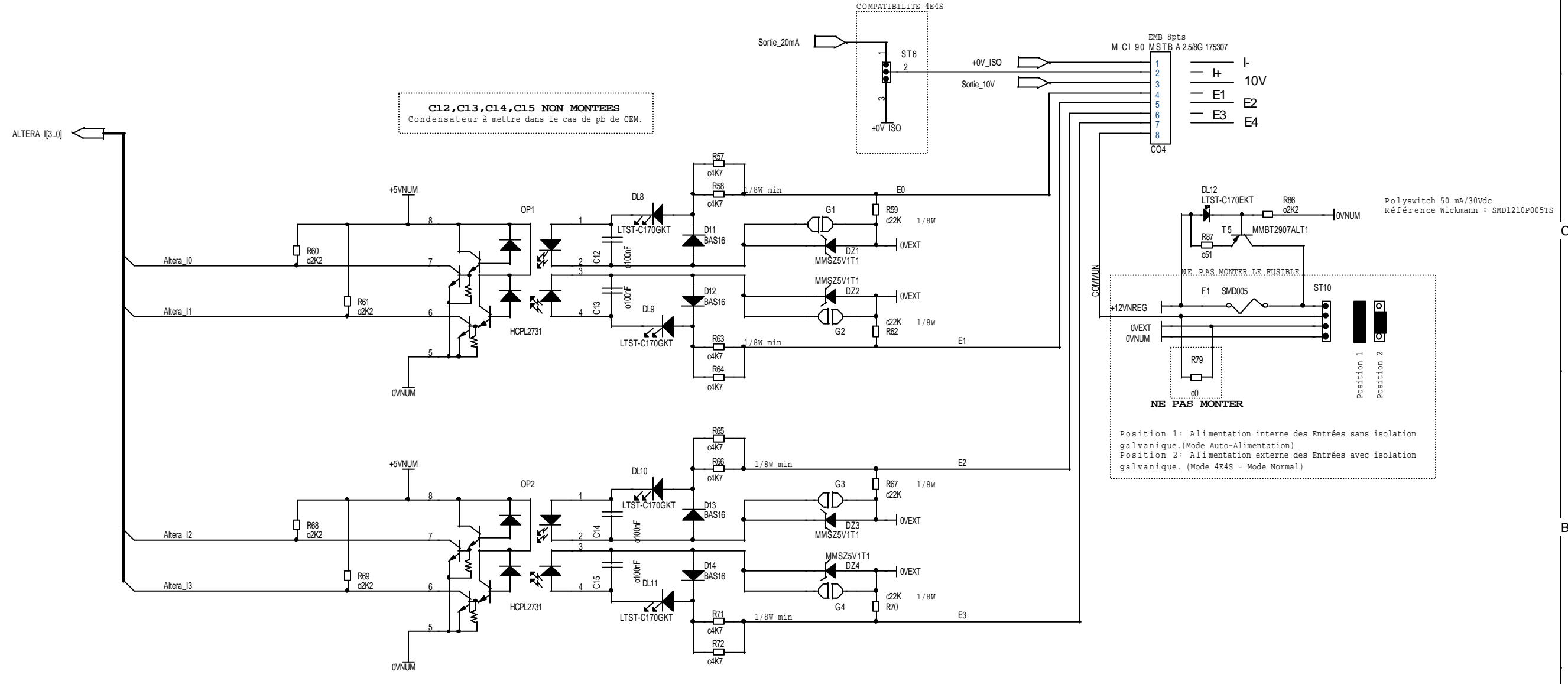
Les relais RE03:
 sous 5v consomment 40mA
 sous 6v consomment 33.3mA
 sous 12v consomment 16.7mA
 sous 24v consomment 8.3mA
 sous 48v consomment 4.2mA
 chacun!!

2K2 pour les relais RE030012
625 ohms pour les relais RE030005

Sortie 0/10V STRAP ST2 pos. 2-3
 Sortie 0/20mA STRAP ST2 pos. 1-2

Carte option 0_10V seule: sortie sur 2 et 3 du connecteur. Carte option 4_20mA seule: sortie sur 1 et 2 du connecteur. (Mode 4E4S Normal)
 Les deux cartes options à la fois: La 4_20mA sort sur 1 et 2 et la 0_10V sort sur 1 et 3 du connecteur ((Mode extension 4I40)

C12,C13,C14,C15 NON MONTÉES
 Condensateur à mettre dans le cas de pb de CEM.



Alimentation:	(5V)	12V	24V	48V
Iopto_min =1.6mA	0.7mA	1.5mA/3.7mA	6.8mA	1.7mA
Positionner G1 à G4	OUI	Préférable	NON	NON