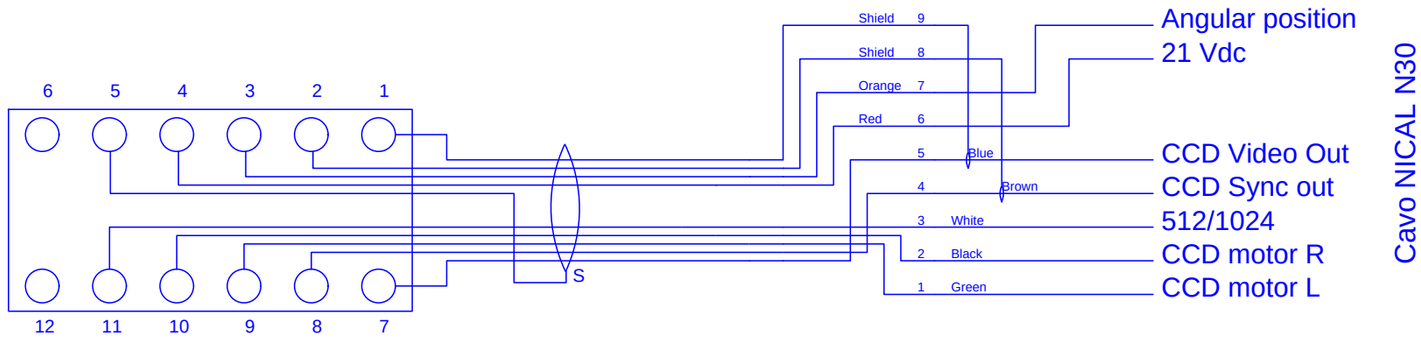
MAIN CONNECTOR

of interconnection tube

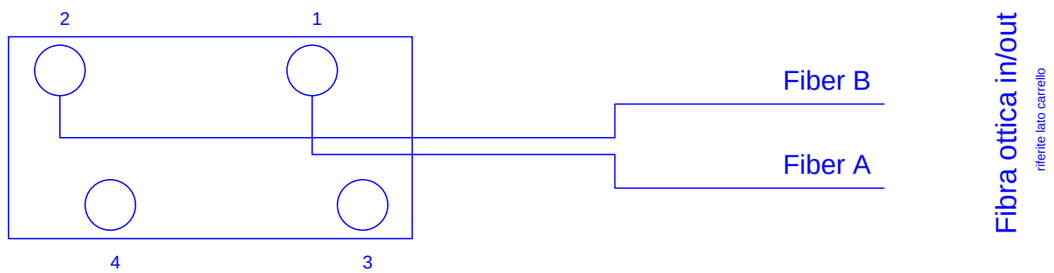
eurocolumbus s.r.l.		
Title: Schema a blocchi carrello: Spina modulare della guida cavi		
Size: A3	Project: Alien MCU	File: Root.sch
Date: Sep. 2005	Sheet: 1 di	Revision: 1.0

VIDEO CONNECTOR MODULE OF THE MAIN CONNECTOR

Versione con NICAL N30



Versione PaxScan e Thales (fibra ottica)



eurocolumbus s.r.l.			
Title: Schema a blocchi carrello: Spina guidacavi, settore video			
Size: A3	Project: Alien MCU	File: Root.sch	
Date: Sep. 2005	Sheet: 2 di	Revision: 1.0	

A B C D E F G H

1 2 3 4 5

+24V

Flat Cable, inverter controls

IMD -S24A

3 2 1 3 2 1

gnd gnd +24V -15V 0V +15V

1mmq 1mmq 1mmq 1mmq 1mmq

GND

S 19/B

INVERTER CONTROL BOARD S19/A

CP2 CP3 CP1

6 5 4 3 2 1 | 3 2 1 | 12 11 10 9 8 7 6 5 4 3 2 1

M G B Gr V

GND

twisted

GND

twisted

GND

1 x 1mmq

(non attaccato)

GND

2 x 0.34mmq dshield

H-COND-SCARICHI

H-PREPARAZIONE

H-RAGGI-CMD

GND

(non attaccato)

+12V

H-REF-9

H-KV-FILAMENTO

H-mA-FLUORO-FEEDBACK

H-mA-RADIO-FEEDBACK

H-REF-1

H-REF-2

5 x 0.5mmq shield

PS_CONVERTER

TERRA1

PR_CONVERTER

3 x 1.5mmq shield

GND

1

2

D8 D7

CP1

1 2 3 4 5

INVERTER BOARD S19/A

S 19/A

G X Y nc

TERRA2

6mmq

PS230-2

4mmq

PR230-2

4mmq

R4

100-25W

1.5mmq

R3

100-25W

1.5mmq

GND

entrambi i lati

GND

2 x 4mmq shield

Inverter internal

PSTATOR-C

1.5mmq

PS230-A

1.5mmq

PS230-1

1.5mmq

8 7 6 5 4 3 2 1

4mmq 4mmq 4mmq 4mmq

F T N F N

A2 A1

GND

RL_BYPASS_PRECARICA_NA

CT24

2x treccia 8 fili da 0.5, cavo 16 x 0.5mmq, shield

NB: schermo attacato da entrambi i lati

GND

6mmq

CP1 CP2

M G B GV | B M N

1 2 3 4 5 | 1 2 3 4 5

X Y

HT+

HT-

Generator

CP2

5 4 3 2 1

S51 LOWER

CP1

3 2 1

GND

entrambi i lati

PR-FILAMENT

PS-FILAMENT

+24V

CP3

1 2 3 4 5 6 7 8 9 10 11 12 13

S51 UPPER

GND

H-mA-FILAMENTO

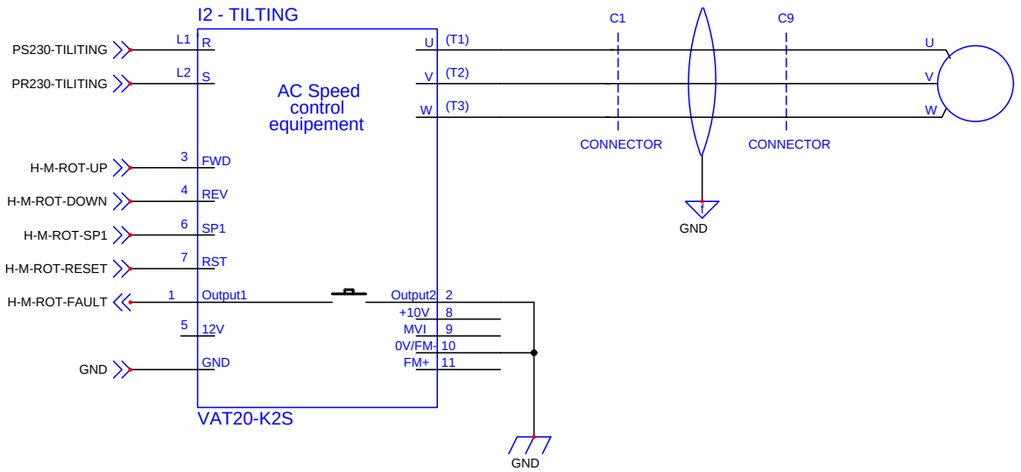
H-REF-10

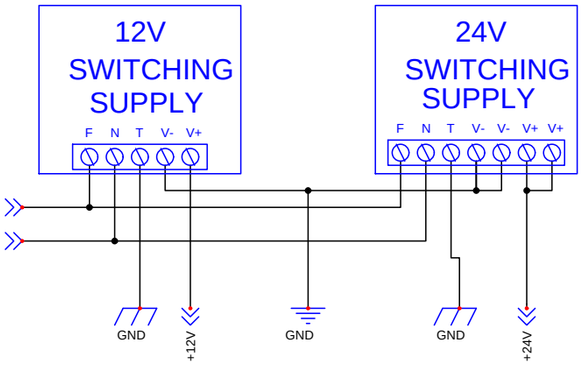
H-FUOCO-FINE/GRANDE

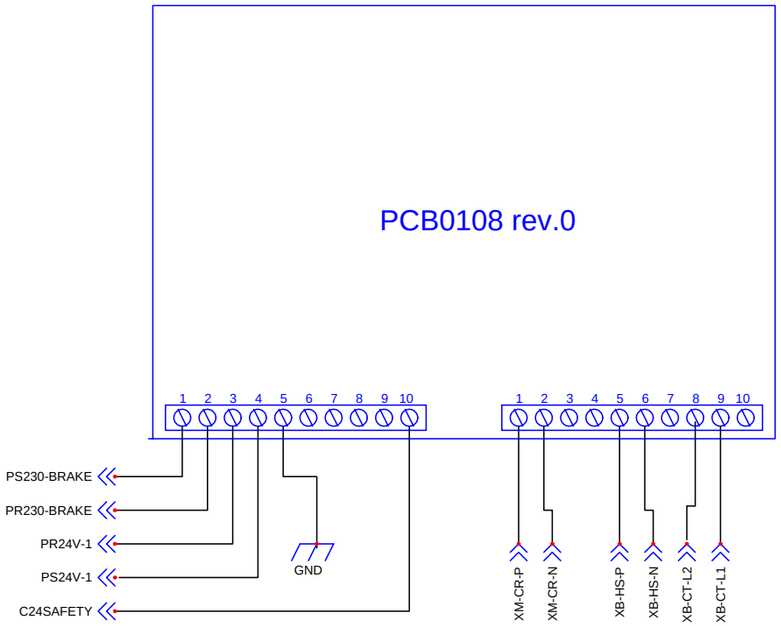
H-OVERLOAD-FILAMENTO

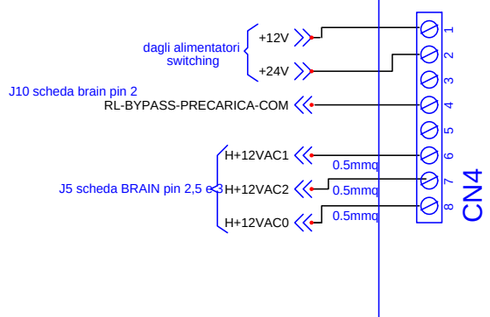
GND

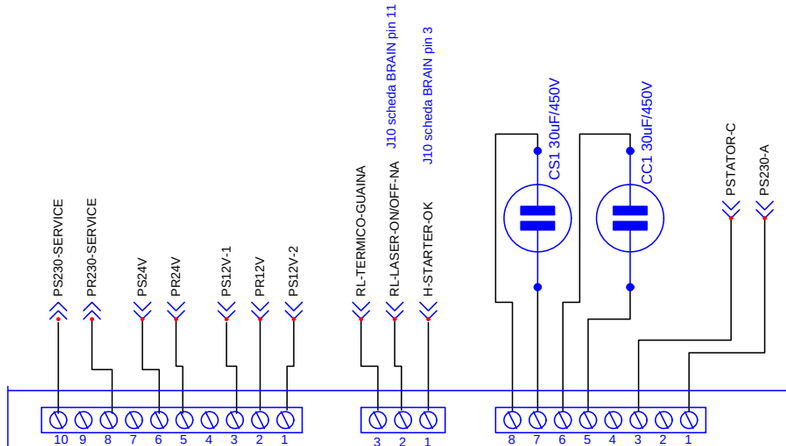
eurocolumbus s.r.l.			
Title: Schema a blocchi castelletto: generazione raggiX			
Size: A3	Project: Alien MCU	File:	Root.sch
Date: Sep. 2005	Sheet: 1 di	Revision:	1.0

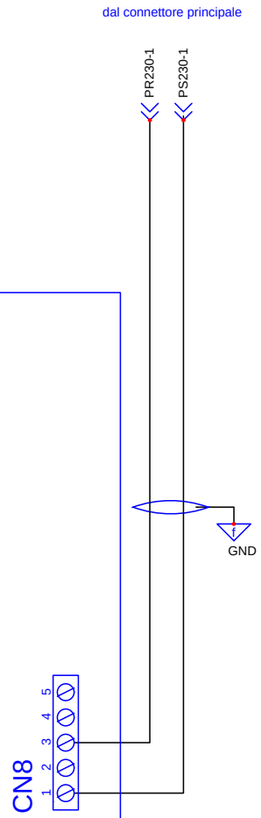


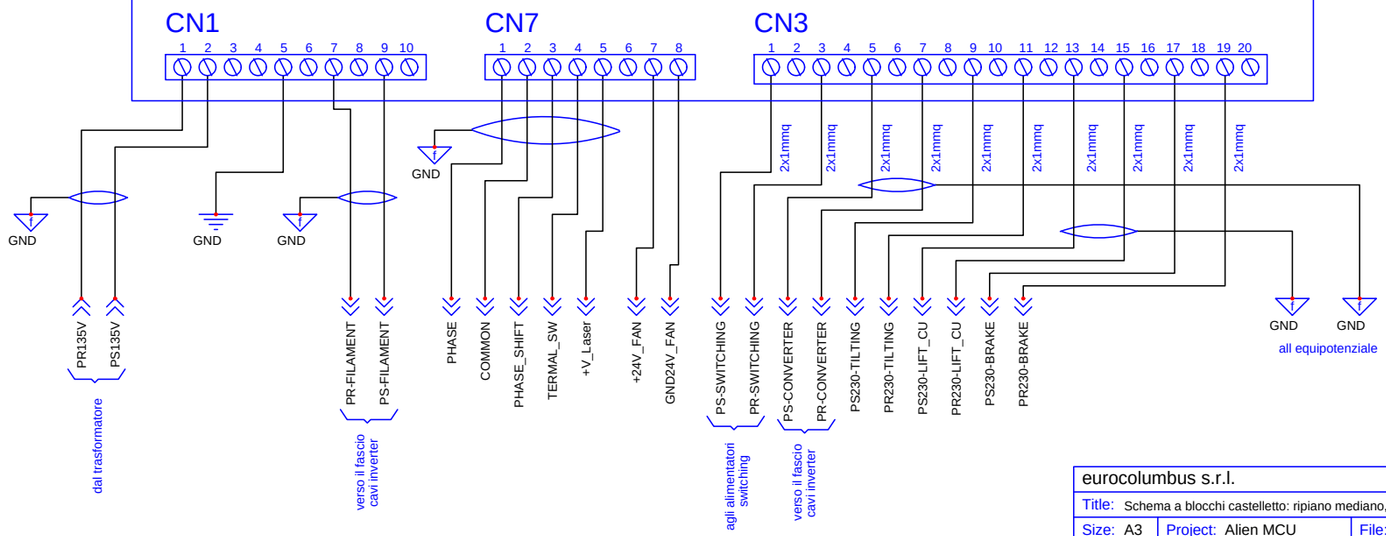






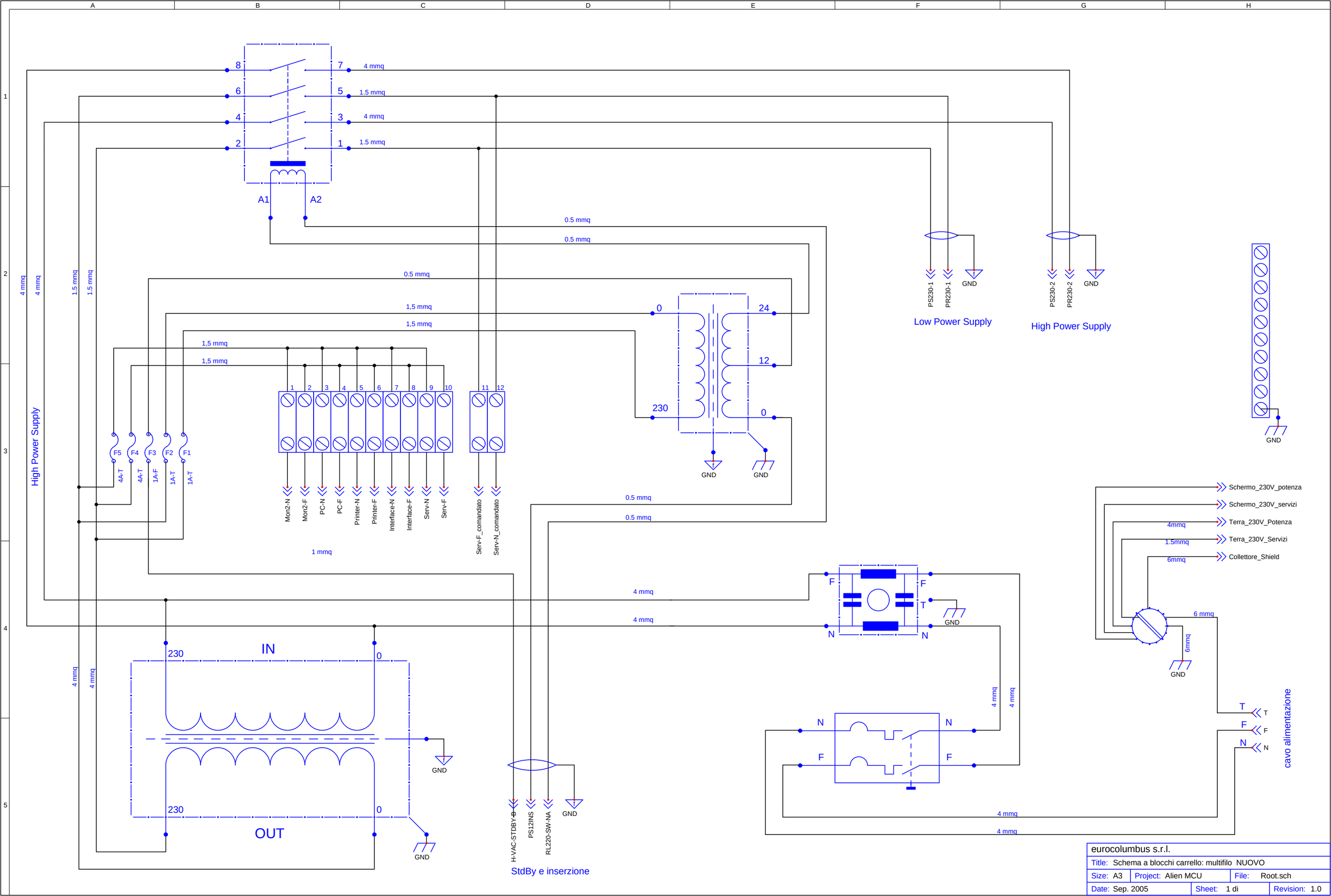




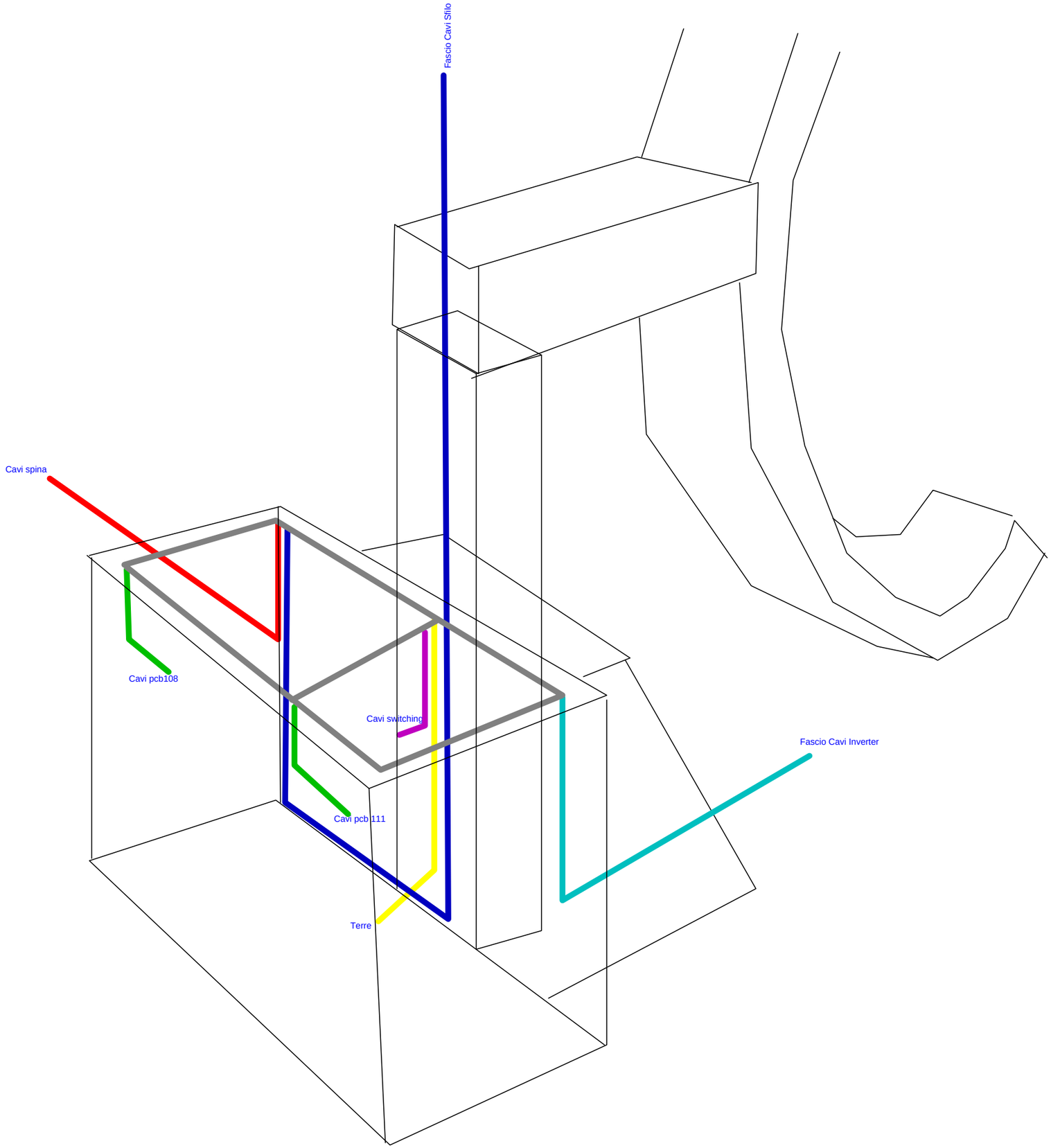


PCB111 rev.0

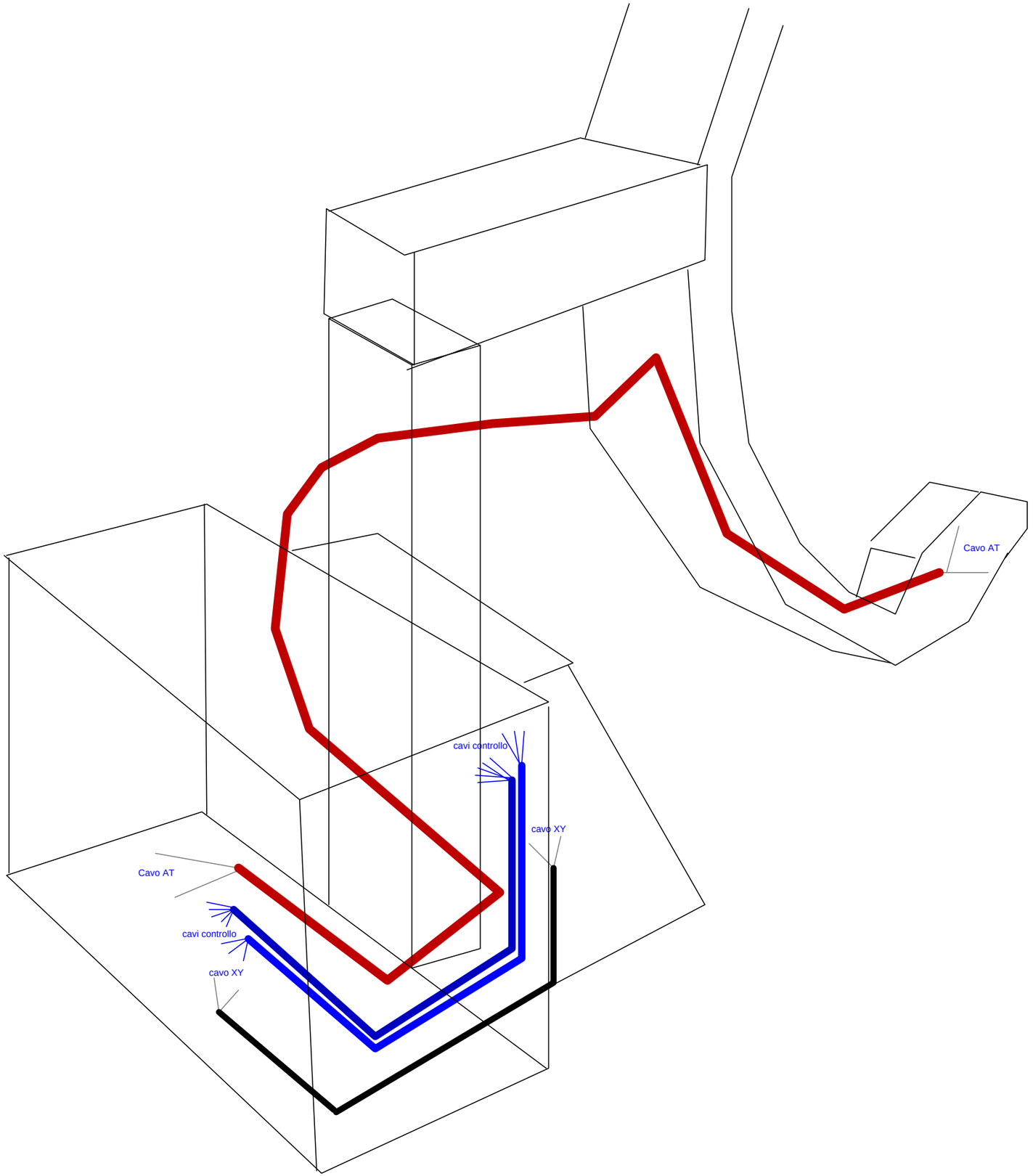
eurocolumbus s.r.l.			
Title: Schema a blocchi castelletto: ripiano mediano, schede interfaccia e motori			
Size: A3	Project: Alien MCU	File: Root.sch	
Date: Sep. 2005	Sheet: 1 di	Revision: 1.0	



eurocolumbus s.r.l.			
Title: Schema a blocchi carrello: multifilo NUOVO			
Size: A3	Project: Alien MCU	File:	Root.sch
Date: Sep. 2005	Sheet: 1 di	Revision:	1.0



eurocolumbus s.r.l.			
Title: Girocavi fascio cavi principale			
Size: A3	Project: Alien MCU	File:	Root.sch
Date: Sep. 2005	Sheet: 1 di	Revision:	1.0



eurocolumbus s.r.l.			
Title: Girocavi cavi di alta e generatore			
Size: A3	Project: Alien MCU	File:	Root.sch
Date: Sep. 2005	Sheet: 1 di	Revision:	1.0

H-PRONTO-GEN
H-PRONTO-GRAFIA
H-PRONTO-SCOPIA

They are the signal used by the BRAIN PCB to inform the elaboration unit that the machine is ready to expose.
They are open collector signals. Can be easily connected to the input of a opto coupler.
The BRAIN activate H-Pronto-Grafia when is starting to expose in Fluorography mode. Otherwise it activate H-Pronto-Scopia when is starting to expose in fluoroscopy mode.
The H-Pronto-Gen is activated for all mode of exposure and can be used as control signal for the other two.
To indicate an exposure in HCF mode (pulsed high contrast fluoroscopy) the BRain activate the H-Pronto-Scopia signal and send the HCF command through RS232 communication (see the RS2323 comunication protocol).

H-XRAY-ON-A
H-XRAY-ON-B

Exposure Trigger Sincronization Signal (RS422 protocol, active High)
It is the answer of the elaboration unit to the "ready signal" sent by the BRAIN pcb.

TTL to RS422 chip: DS26ls31CN
RS422to TTL chip: DS26ls32ACN

H-RS-MEM-TXD
H-RS-MEM-RXD
GND

RS232 serial control comunication. It used a predefine protocol, a list of string that can be sent, which define all commands used for the dialogue between the BRAIN and the elaboration unit.

H-LUCE-UP/DOWN
REF-GND

It is the automatic exposure control signal. It is an analog signal which can be reach 5 predefined value.

A value of 3 volts indicate stability. When the BRAIN rech this value did not change anything.
A value of 3.5 volts indicate to the BRAIN to increase slowly the KV.
A value of 4 volts indicate to the BRAIN to increase fast the KV.
A value of 2.5 volts indicate to the BRAIN to decrease slowly the KV.
A value of 2 volts indicate to the BRAIN to decrease fast the KV.
The increase or decrease of the value does not mean a direct increase or decrease of the KV. The increment or decrement is related to the pointer to the automatic exposure control value table.
This table, which is inside the memory of the BRAIN, put in relation a pointer integer (from 0 to 255) whit the corresponding value of KV.
With the slow increasing or decreasing, the BRAIN move the pointer of just 1 step up or down over the table.
With the fast increasing or decreasing, the BRAIN move the pointer 3 step up or down over the table.

General Exposure Sequence:

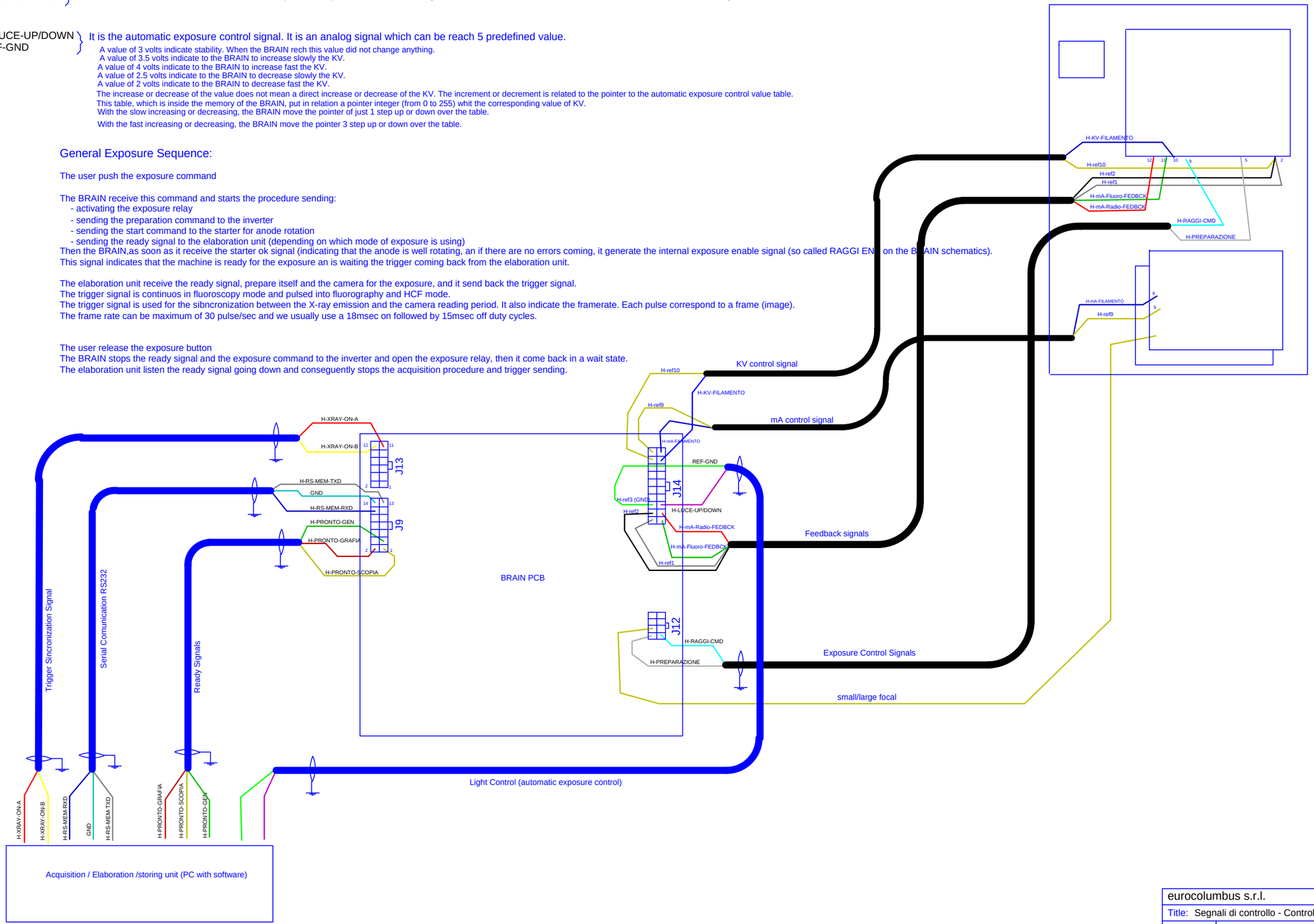
The user push the exposure command

The BRAIN receive this command and starts the procedure sending:
- activating the exposure relay
- sending the preparation command to the inverter
- sending the start command to the starter for anode rotation
- sending the ready signal to the elaboration unit (depending on which mode of exposure is using)

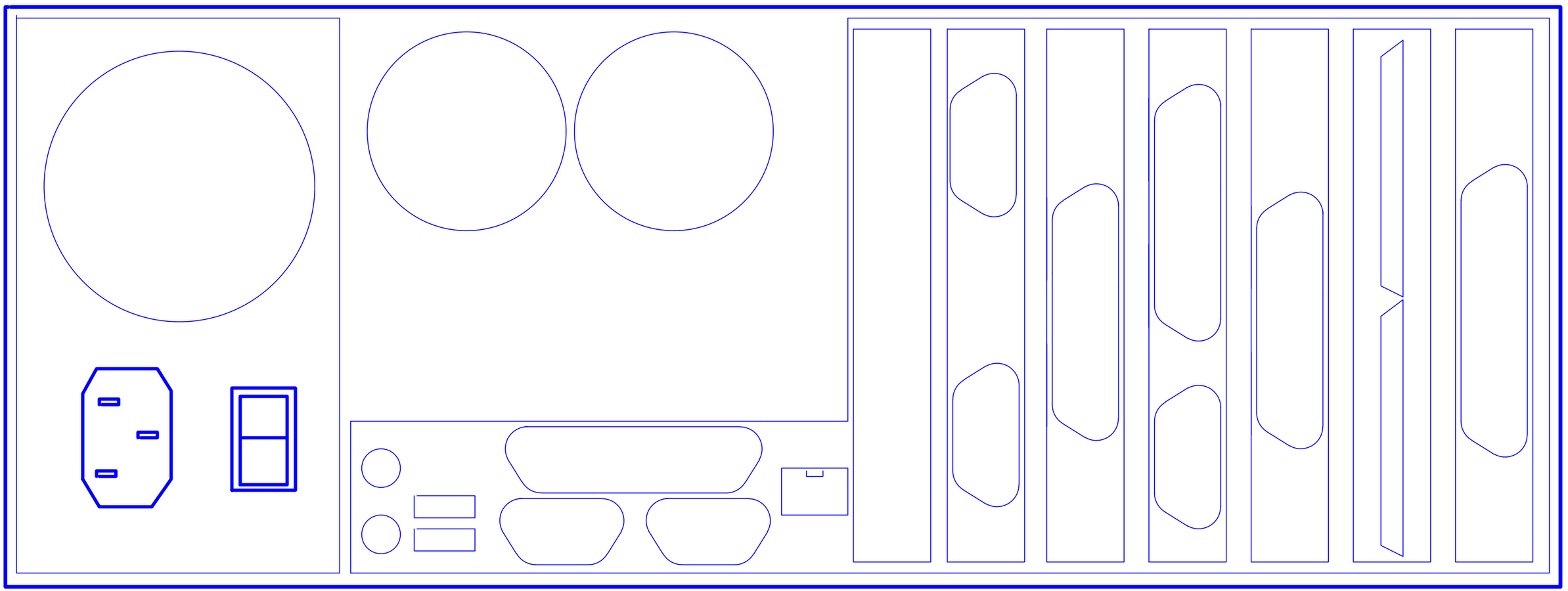
Then the BRAIN,as soon as it receive the starter ok signal (indicating that the anode is well rotating, an if there are no errors coming, it generate the internal exposure enable signal (so called RAGGI EN... on the BRAIN schematics).
This signal indicates that the machine is ready for the exposure an is waiting the trigger coming back from the elaboration unit.

The elaboration unit receive the ready signal, prepare itself and the camera for the exposure, and it send back the trigger signal.
The trigger signal is continuos in fluoroscopy mode and pulsed into fluorography and HCF mode.
The trigger signal is used for the sibncronization between the X-ray emission and the camera reading period. It also indicate the framerate. Each pulse correspond to a frame (image).
The frame rate can be maximum of 30 pulse/sec and we usually use a 18msec on followed by 15msec off duty cycles.

The user release the exposure button
The BRAIN stops the ready signal and the exposure command to the inverter and open the exposure relay, then it come back in a wait state.
The elaboration unit listen the ready signal going down and conseguently stops the acquisition procedure and trigger sending.



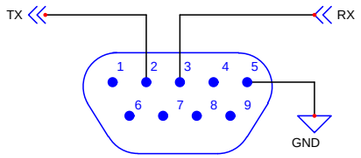
eurocolumbus s.r.l.			
Title: Segnali di controllo - Control signals			
Size: A3	Project: Alien MCU	File:	Root.sch
Date: Sep. 2005	Sheet: 1 di	Revision:	1.0



eurocolumbus s.r.l.			
Title: Unità di elaborazione: connessioni esterne			
Size: A3	Project: Alien MCU	File:	Root.sch
Date: Sep. 2005	Sheet: 1 di	Revision:	1.0

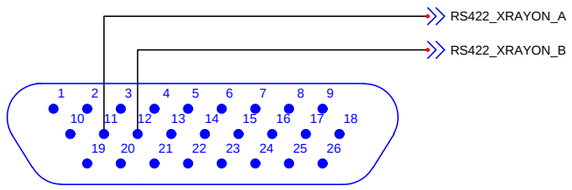
RS232

Spina femmina volante, DB9



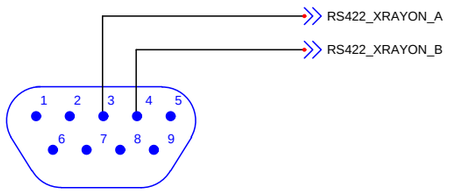
RS422 Versione PC CAMLINK (THALES)

Spina maschio volante, DB26



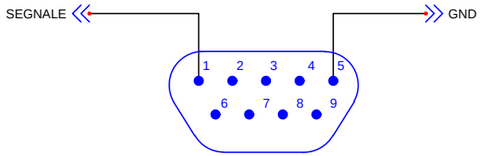
RS422 Versione PC DIG (N30, PAXSCAN)

Spina femmina volante, DB9

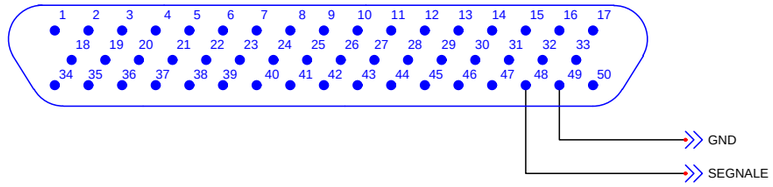


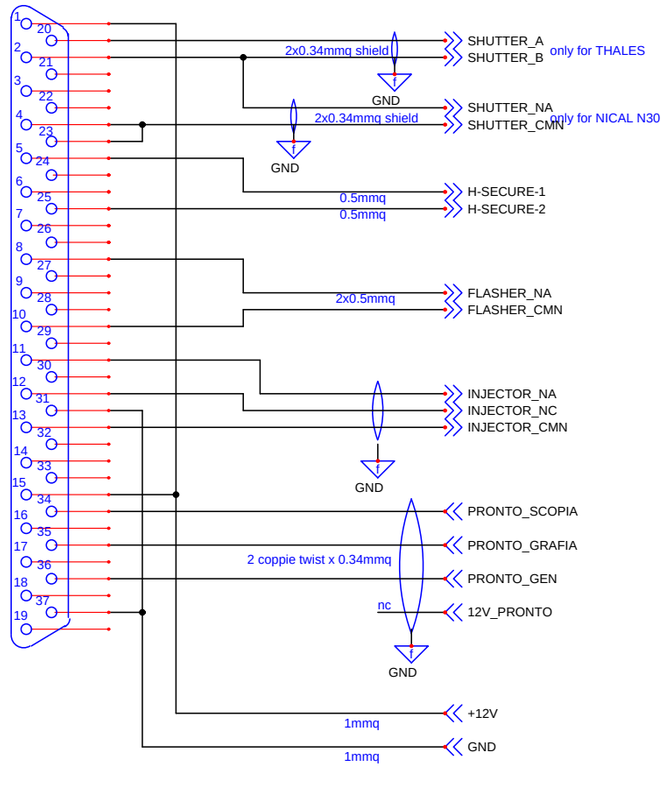
TRIGGER VERSIONI CON PAXSCAN

Spina maschio volante, DB9



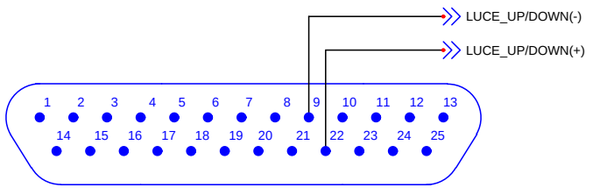
Spina maschio volante, DB50





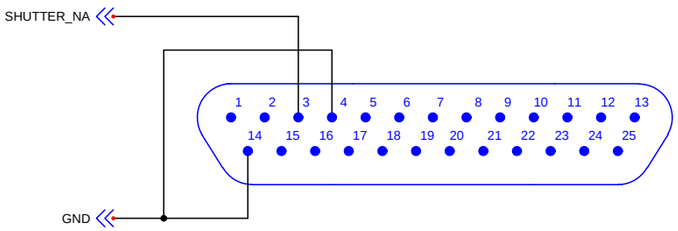
LUCE UP/DOWN

Spina femmina volante, DB25



Comando Shutter N30 Nical

Spina maschio volante, DB25



eurocolumbus s.r.l.			
Title: Unità di elaborazione: connettori al carrello			
Size: A3	Project: Alien MCU	File: Root.sch	
Date: Sep. 2005	Sheet: 1 di	Revision: 1.0	