

SOPROLEC
ZAC DE L'EPINE
72530 YVRE L'EVEQUE
Tel : +33 (0)2 4376 4476
Email : contact@soprolec.com
Website: <https://www.soprolec.com>



SOPROLEC InterpCNC V2.4 4 axes Module



Summary :

Contents:

Presentation :.....3
Diagnosis software :.....4
Overview of the InterpCNC V2.4 card:.....6
Installation :.....7
Connections :.....8
 Power supply, Emergency stop :.....8
 Connection of inputs:.....8
 Command of a motor driver:.....9
 Example of using outputs OUT1 to OUT8 (PNP):.....9
 Control of a VFD :.....10
 Use of encoder / counter inputs:.....10
InterpCNC V2.4 implementation.....12

Presentation :

The InterpCNC V2.4 card is an axis control card.
It has 4 axes command outputs that can be interpolated or independent.

Developed on the basis of a powerful 32-bit processor, the InterpCNC offers ideal performance for digital control applications and also automation applications requiring economical axis control/command.

In addition, the InterpCNC has a Basic language interpreter allowing the management of automation.

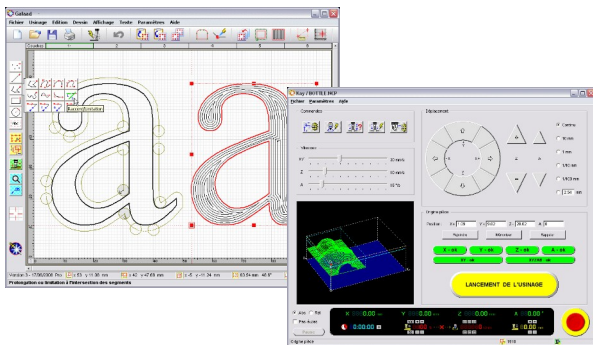
The axis control interface in Step/Direction mode is compatible with the entire range of motorization offered by the SOPROLEC company (stepper motorization, brushless motorization).

Two communication interfaces are available:

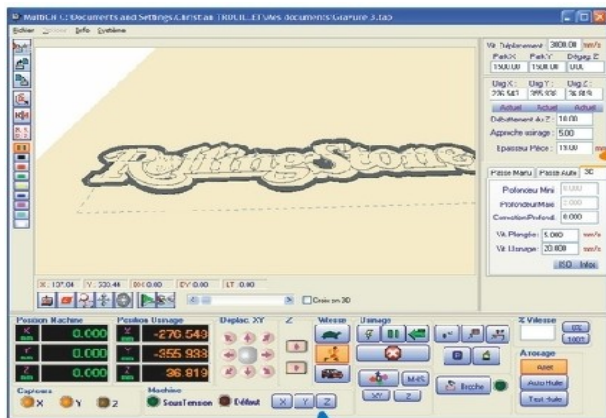
- USB for fast communication in CNC applications,
- RS485 MODBUS for industrial applications.

Different communication libraries allow the use of the InterpCNC with several control software:

- GALAAD (CAD/CAM Integrated Control Package),
- MULTI-CN CNC control solution with professional automation.



GALAAD CAD / CAM / Control



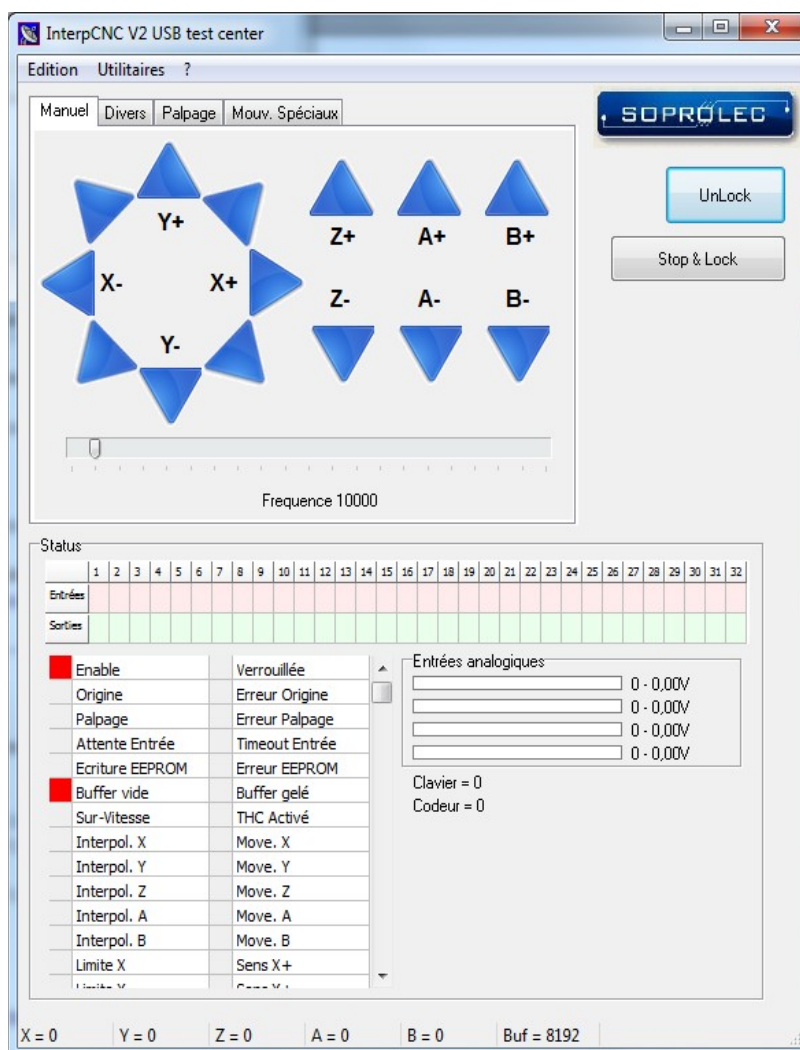
MULTI CN
Interpreter / Control
Extended automation management

Diagnosis software :

The InterpCNC card is delivered with Test Center, a test and diagnostic software allowing access to all of the functions of the card and to the various parameters.

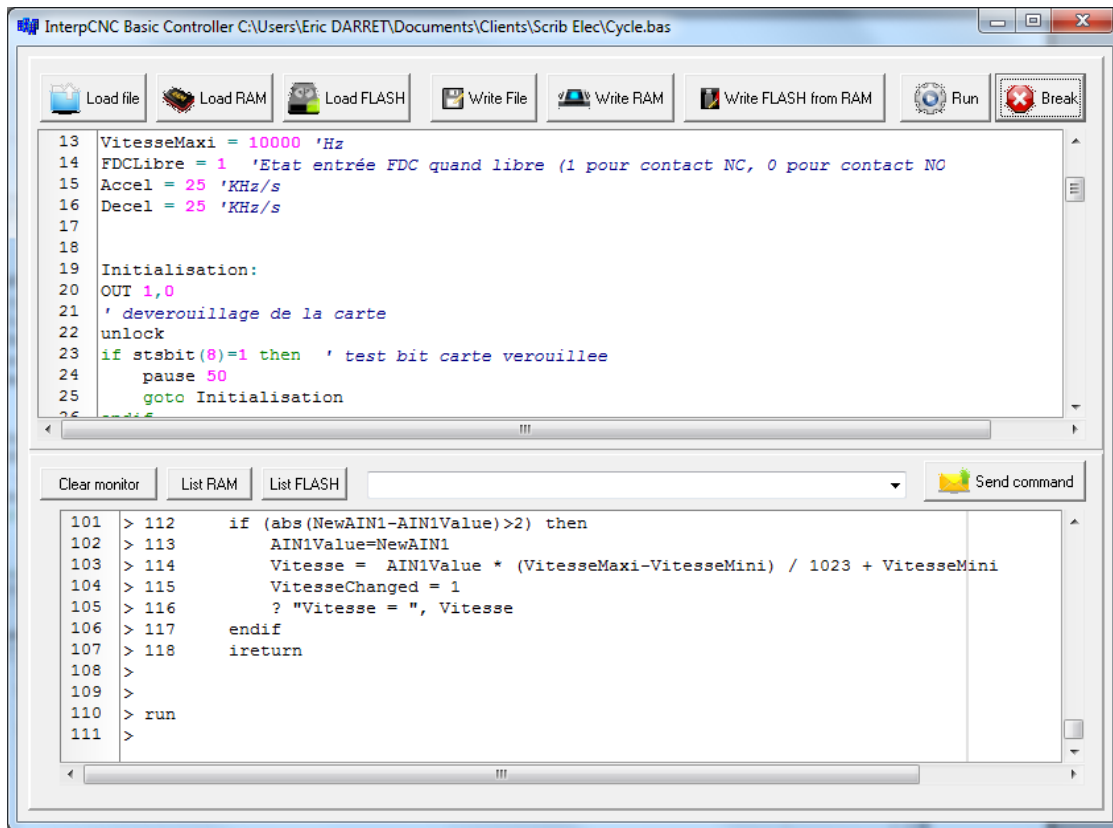
Attention: the use of this software and in particular of the displacement functions, must be reserved for informed people.

When the card is powered up, movements are locked (not authorised). To authorize operation of the axes and outputs, first click on the "Unlock" button.



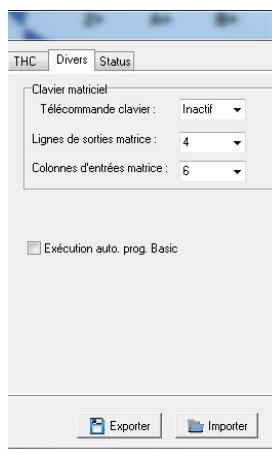
BASIC interpreter programming screen :

The screen is divided into 3 zones which allow:
Entering the PLC program,
The sending of Basic orders to the card,
The communication monitor.



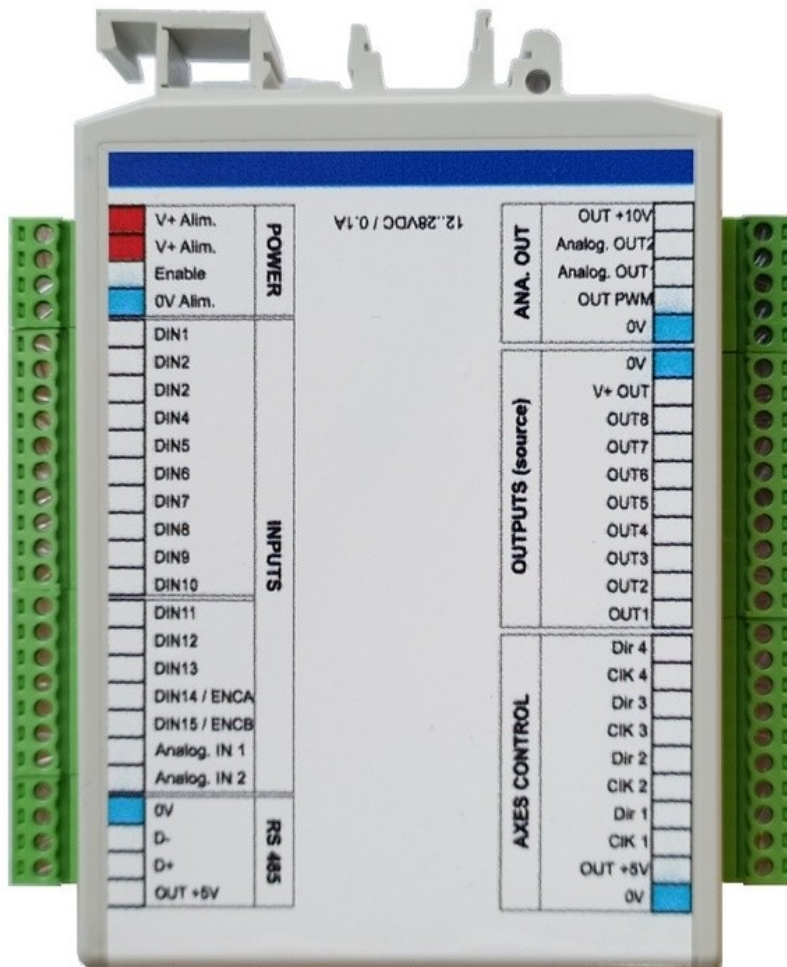
Parameter No. 127 (EE_AUTORUN_BASIC) makes it possible to automate the loading and launching of the basic program when the InterpCNC is powered up.

When this parameter is set to 1, the Basic program present in the non-volatile Flash memory will be loaded into memory then executed automatically. (Check box on "Exécution auto. Prog. Basic")



Consult the specific instructions for the Basic interpreter for all additional information.

Overview of the InterpCNC V2.4 card:



Power supply :
Card power supply: 24VDC/250mA

Output characteristics:
Outputs 1 to 8: PNP 350mA (total of all outputs)/24V
Outputs CK1 to CK4, D1 to D4: TTL output 5V/20mA max

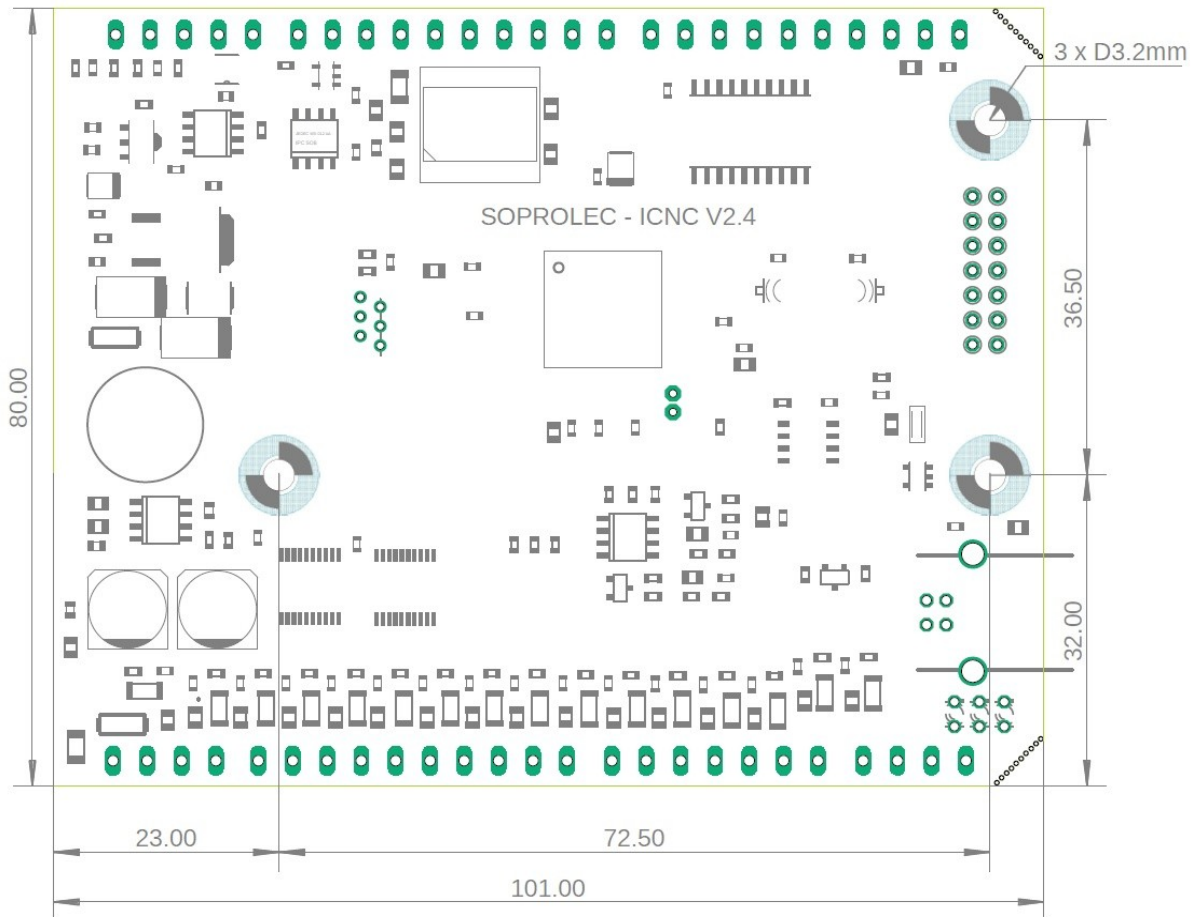
Characteristics of the inputs:
Inputs 1 to 13: 0 to 32V max. High level from 3.5V (1.5 KHz filter)
ENABLE input: Emergency stop function. 0 to 32V max. High level from 3.5V
1 incremental encoder input or 1 TTL type fast counting input

Analog inputs/outputs:
2 Analog inputs AI1 and AI2: 0 to 10V. 1M impedance, 10-bit resolution.
2 Analog outputs AO1 and AO2: 0 to 10V. 10-bit resolution.
1 PWM analog output (AO3): 0 to 5V TTL (frequency 10 KHz)

All connectors are removable for simplified installation.

Installation :

The card is integrated in a protective box which can be fixed on DIN rail.
In the case of a fixing on any other support (not recommended without case, loss of the guarantee if deterioration of the seal), here is the drilling plan to be respected:



During the first connection of the InterpCNC card to the PC, Windows prompts for the installation of the USB communication driver.

For Windows 8, Windows 10 and 11, driver installation is automatic.

For Windows 7 or XP, the latter is available in the "**USBDriver**" folder (from the "Product Documents" download section of the card's page on our website www.soprolec.com).

Use with GALAAD:

Copy the files from the "GALAAD" folder into the GALAAD installation folder.

(NB: the latest version of ICNC2.dll is the one included with **Test Center** (2018)).

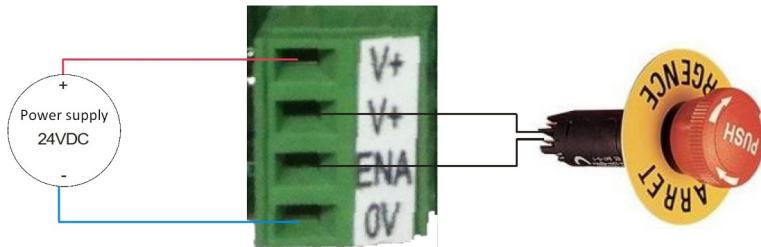
For Galaad to work, **Test Center** must remain closed.

Use with MULTICN:

Copy the "MultiCN" folder to the MultiCN installation folder.

Connections :

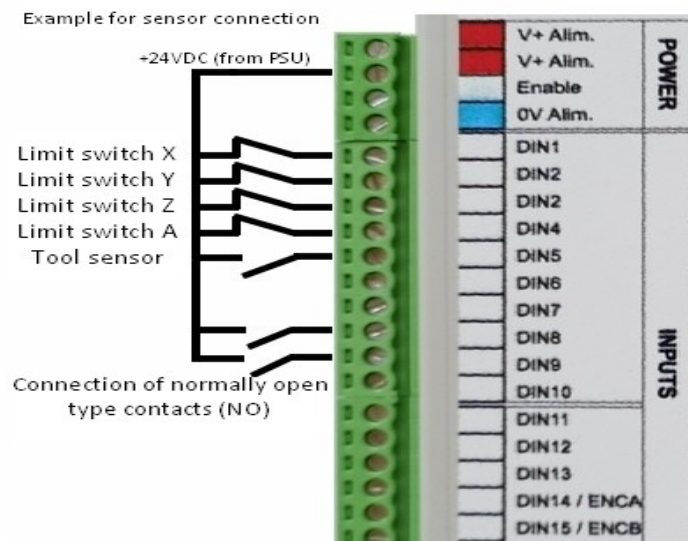
Power supply, Emergency stop :



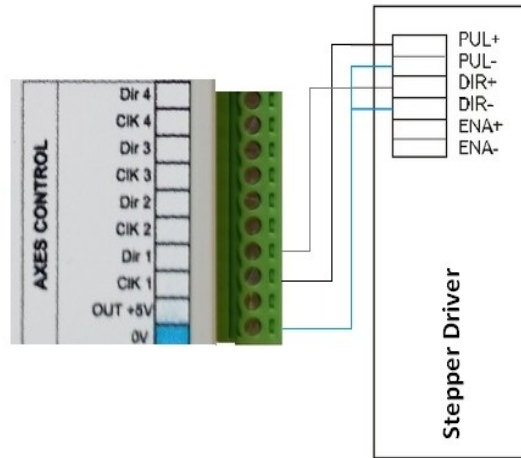
The connection between V+ and ENA is essential. Therefore, use an NC (normally closed) type contact to ensure this connection.

For safety, this input physically cuts the power supply to the relay coils.

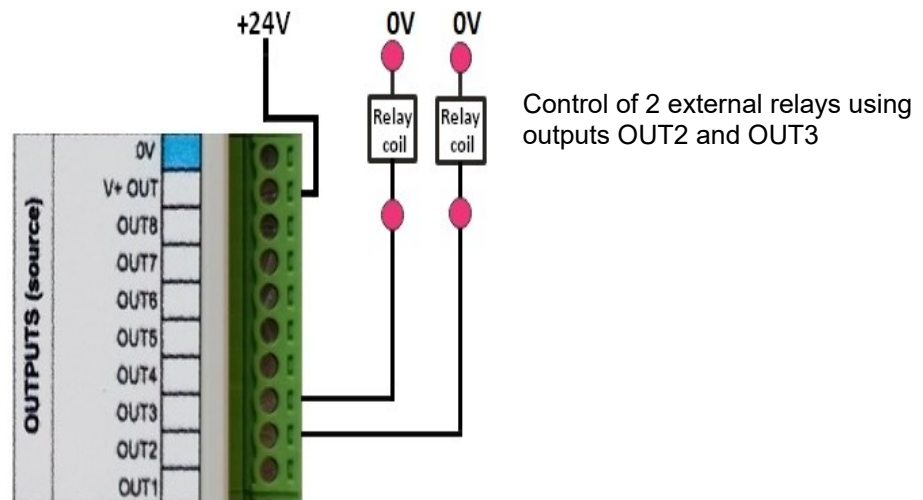
Connection of inputs:



Command of a motor driver:



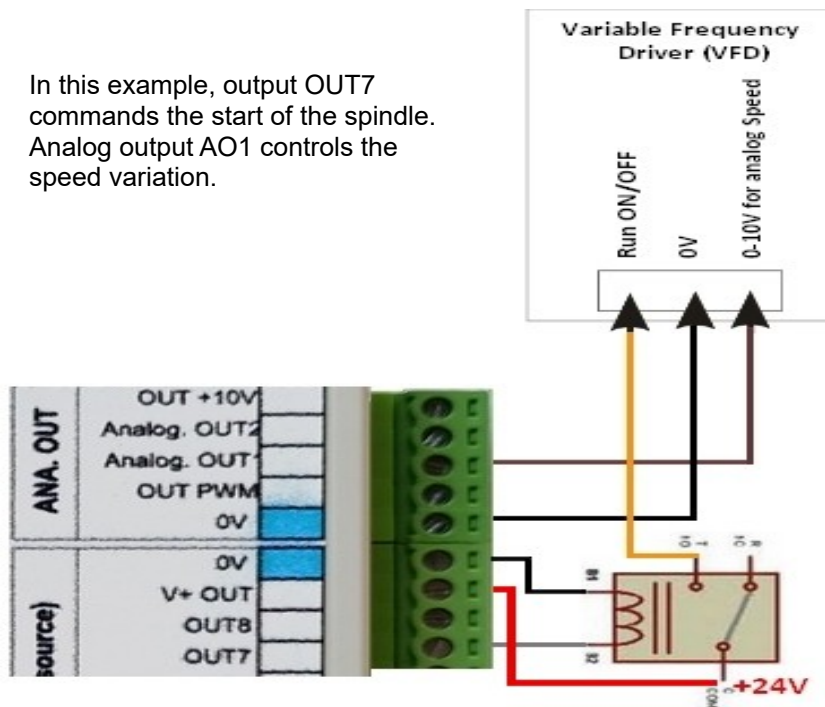
Example of using outputs OUT1 to OUT8 (PNP)



NB: The outputs being of PNP type, it is always **necessary to supply V+OUT** (with +24VDC for example, the 0V being common with that of the power supply of the card), in order to obtain this same voltage on the outputs, at state 1.

Control of a VFD :

In this example, output OUT7 commands the start of the spindle. Analog output AO1 controls the speed variation.



Use of encoder / counter inputs:

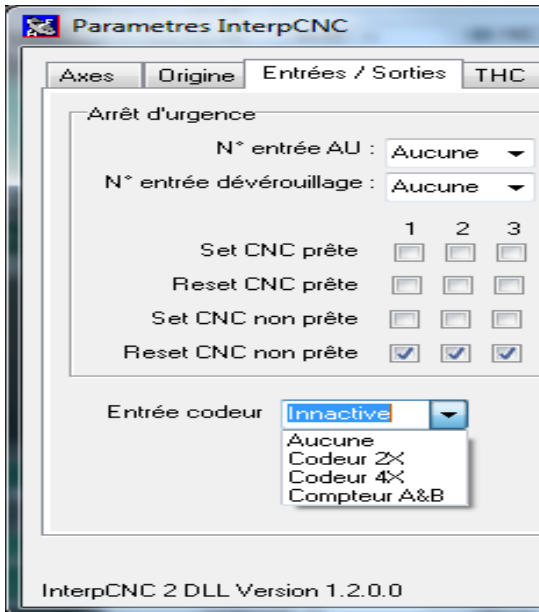
Two fast counter inputs (A1 and B1) are available on the InterpCNC V2.4.

They are named ENCA and ENCB respectively on the "INPUT B" terminal block.

They can be used as a counter or as an encoder input (quadrature).

If necessary, you can use the +5V and 0V pins of the neighboring connector (RS485), to supply the encoder.

The choice of the mode of use is made using the parameters of the card.



NB: Selecting the Counter mode (4th line here) allows the InterpCNC V2.4 to have only a counter A. Thus, in PLC Basic programming, only the GetCnt(1) function is to be used.

Whatever the operating mode selected for the **ENCA** and **ENCB** inputs, these also function as conventional discrete inputs, permanently accessible as **IN14** and **IN15**.

Axis coupling:

In order to allow the use of 2 motors for the same axis, it is possible to couple 2 axes.

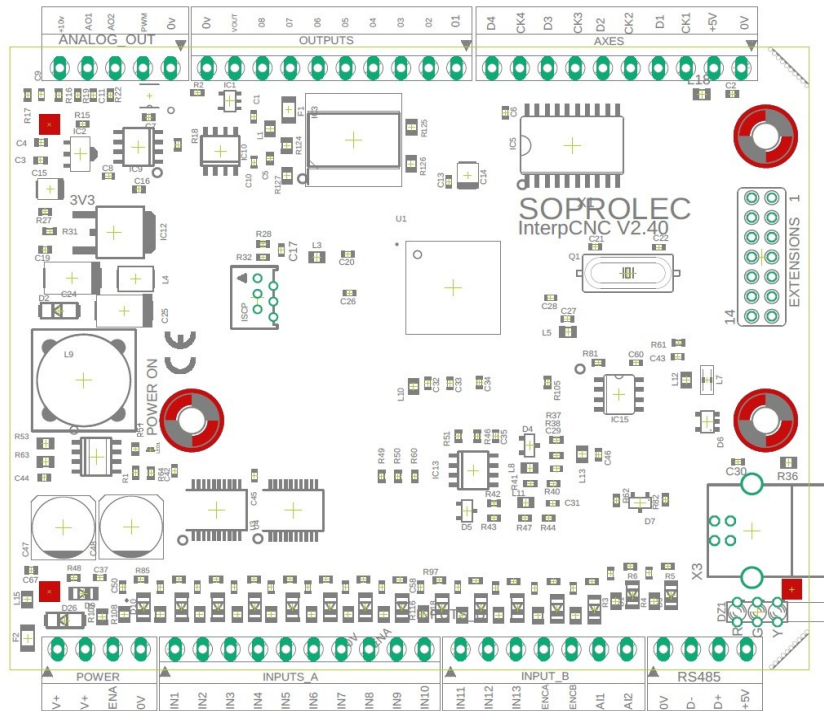
However, only the X axis can be duplicated on the A axis.

Thus the card will generate identical pulse signals on outputs CK1 and CK4, likewise between D1 and D4.

In the Test Center settings, choose "**Duplication axes: X vers A**", and click on "**Envoyer**" (=send).

NB: The **THC function** for making Plasma cutting machines is not supported by the InterpCNC V2.4 card. In this case it will be advisable to opt for the 5-axis InterpCNC V2.2 card, or the InterpCNC V3 (6 axes).

InterpCNC V2.4 implementation



The terminals marked V+ are all interconnected.
The 0V terminals are all connected together.
The +5V terminals are all linked together (regulated +5V output from the card).

The state of the outputs is visualized by the green LEDs.
The state of the inputs is visualized by the red LEDs.

The ENABLE LED represents the state of the ENA input which functions as an emergency stop.