RosettaCNC Board A - Installation and Maintenance manual

Dear Customer,
Thank you for purchasing this product. RosettaCNC Board A is developed and manufactured with high standards to give high quality performance, ease of use and installation. In case of difficulty during installation or use of the product, We recommend that you first consult the instructions or information on the www.rosettacnc.com site.

Need help ?
Write in the forum on the www.rosettacnc.com site or send an email to the following address: support@rosettacnc.com, the RosettaCNC development team will be happy to answer you in a short time.

Informations

Document:	**MIMROSETTACNCBOARDA**
Description:	Installation and Maintenance manual
Link:	http://wiki.rosettacnc.com/doku.php/en:hardware:rosettacncboard:mimrosettacncboarda

Document release	Hardware Release	Description	Note	Date
01	01		/	30/05/2017
02	01	Fix user inputs pin. Add user inputs nr 7 and 8	/	07/07/2017
03	01	New PRB input description	/	06/12/2017
04	01	Complete some instructions for STEP DIR outputs	/	02/07/2018
05	01.2	Corrected the electrical characteristics of CN11 and CN3. some stylistic improvements	/	12/12/2018
6	01.2	Added new features for RosettaCNC software version 1.5	/	25/01/2019
7	01.2	New order code	/	29/04/2019

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1. Introduction

1.1. General description

RosettaCNC Board A is an ETHERNET motion controller that manages up to 4 interpolated axes. The ETHERNET port (instead of USB) ensures fast and secure transmission thanks to the protocol and at the e galvanic insulation with the PC connection.
Does not require the use of external electronic parts or protectors. The power supply is integrated and protected, The inputs and outputs are equipped with opto-insulator that guarantee, together with the metal container, high resistance to electromagnetic interference. The outputs are protected from short circuits and allow you to directly connect inductive loads (relays or solenoid valves), without having to add external components.
The control outputs of STEP/DIR type are generated by a powerful FPGA That allows to reach operating frequencies of 300KHz (with stable duty cycle at 50%) making it possible to use both step-by-step drives and servo drives.
Rosetta CNC Board commands the axes using a look ahead that allows you to achieve high interpolation speeds.
The product can possibly be equipped with a handwheel, supplied already complete with connector, alternatively, it makes available inputs for the jog connection joystick type and other useful control signals.
Rosetta CNC Board is equipped with removable spring connectors to allow quick wiring, highly reliable and free to vibrations.

1.2. Symbols used in the manual

Useful Information and tips.

Warnings, failure to comply with these warnings may result in inappropriate operation or damage to the device.

Potential danger and possible risk of injury.

1.3. System composition

RosettaCNC Motion® is a system composed of the following elements:

- RosettaCNC Board A which is the motion controller described in this document.
- RosettaCNC software, a complete Windows® application to configure, monitor, and execute G codes.
- THe RosettaCNC Handwheel A accessory, a practical and economical handwheel.
- The RosettaCNC MPG A accessory, is a rotary device to change the override.

1.4. Product Compliance

The equipment is designed for use in industrial environments In accordance with the 2004/108/CE directive.

- EN 61000-6-4: Electromagnetic compatibility -Generic emission standard in industrial environment
  - EN55011 Class A: Limits and Measurement methods
- EN 61000-6-2: Electromagnetic compatibility - Generic norm on free industrial environments
  - EN 61000-4-3: Free to radio frequency magnetic fields
  - EN 61000-4-4: Electrical Fast Transient
  - EN 61000-4-5: Surge Immunity
  - EN 61000-4-6: Radio frequency noise
- The product also complies with the following regulations:
  - EN 60068-2-1: Cold resistance test
  - EN 60068-2-2: Dry heat resistance test

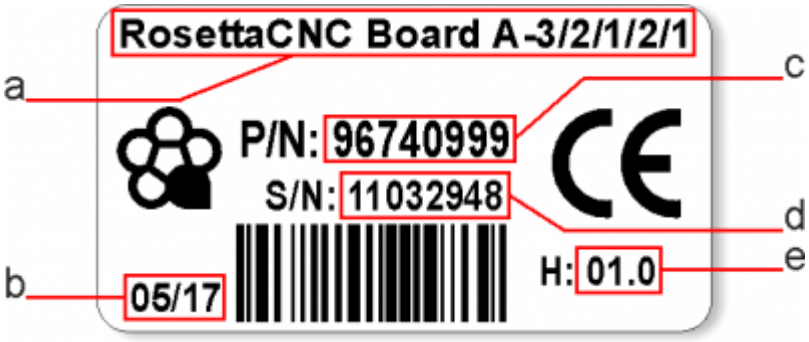
1.5. Package Contents

- n.1 RosettaCNC Board
- n.1 Pack of spring terminals

1.6. Product identification

With the product ordering code it's possible to obtain exactly the features.
Check that the product features match your needs.

1.6.1. Product label



- **a - Ordering Code**
- **b - Week made**: indicates the week and year of manufacture
- **c - Part number**: unique code that identifies an ordering code
- **d - Serial number**: product serial number, different for individual product
- **e - Hardware release**: version of hardware release

1.6.2. Ordering code

Model	-	Features										
RosettaCNC A	-	**3**	/	**0**	/	**0**	/	**1**	/	**1**	-	**001**
												Customization code. (omitted if no customization is present)
										RTCP status. **0** = Disabled; **1** = Enabled;		
								Remote communication. **0** = None; **1** = OPC-UA server; **2** = OPC-UA server + RosettaCNC Data Exchange 4.0;				
						I/O Expansion. **0** = Not present; **1** = present;						
				Max step frequency. **0** = 125 KHz; **1** = 200Khz; **2** = 300Khz; **3** = 500Khz; **4** = 1Mhz;								
		Axis number. **3** = 3 axis; **4** = 4 axis;										
Controller model. **RosettaCNC A** = Board A controller;												

1.6.3. Normally available codes

Part number	Model	Features
97500012	RosettaCNC A - 4/1/0/0/0	4 axes, max step freq 200 KHz
97500007	RosettaCNC A - 4/2/0/0/0	4 axes, max step freq 300 KHz
97500009	RosettaCNC A - 4/2/0/1/0	4 axes, max step freq 300 KHz, OPC-UA server
97500010	RosettaCNC A - 4/3/0/0/0	4 axes, max step freq 500 KHz
97500011	RosettaCNC A - 4/4/1/1/1	4 axes, max step freq 1 MHz, OPC-UA server, I/O expansion, RTCP

Starting from May 2019 the Part Number **97500003 “4 axis version”** is replaced by the new code **97500007** .

1.6.4. Specification

Parameter	Value
Power supply	24VDC
Maximum absorption	5W
Axis number	3 or 4 [1)]
Digital inputs	16
Handwheel interface	4-Axis Selector x1-x10-x100 Selector Emergency button
EXTRA digital inputs	10 [2)]
Digital outputs	8
Analog outputs	1
Axis control type	STEP/DIR
PC Communication	Ethernet 10/100Mb
Temperature range	0°C to +50°C
MPG inputs	1
Enclosure Protection Degree	IP20 (as from EN-60529 normative)

[1)] depends on the ordering code
[2)] available only if you don't use handwheel

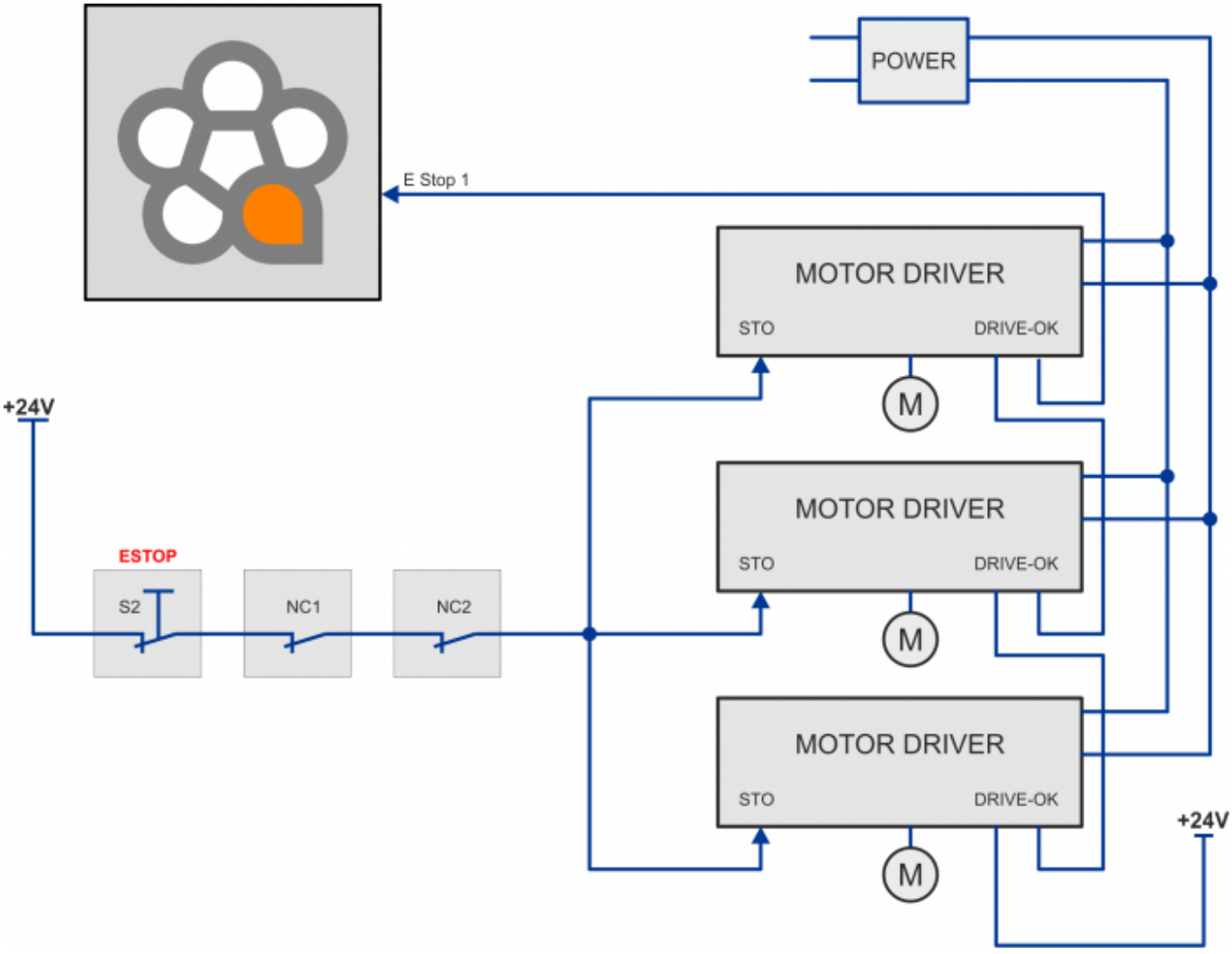
2. Safety

RosettaCNC Board it's powered in low voltage, 24VDC, the I/O line are opto-insulated and the PC connection is galvanically isolated, therefore the device is not a direct threat to the health and life of the user.
The design of a complete control system (electric panel), should draw attention to different aspects of, so that the whole machine system does not become a danger during the use.
It's good practice to always use NC contacts for the limit switches and for the emergency button So that a wiring error or a wire disconnection always lead to machine shutdown.
Special attention must be paid to the emergency stop circuit: The control system must be designed in such a way the that when you press the button for emergency stop, the machine immediately interrupts the movement of all axes. You should also consider the possibility of failure of particular components of the system, as the main controller, or the axes control units.

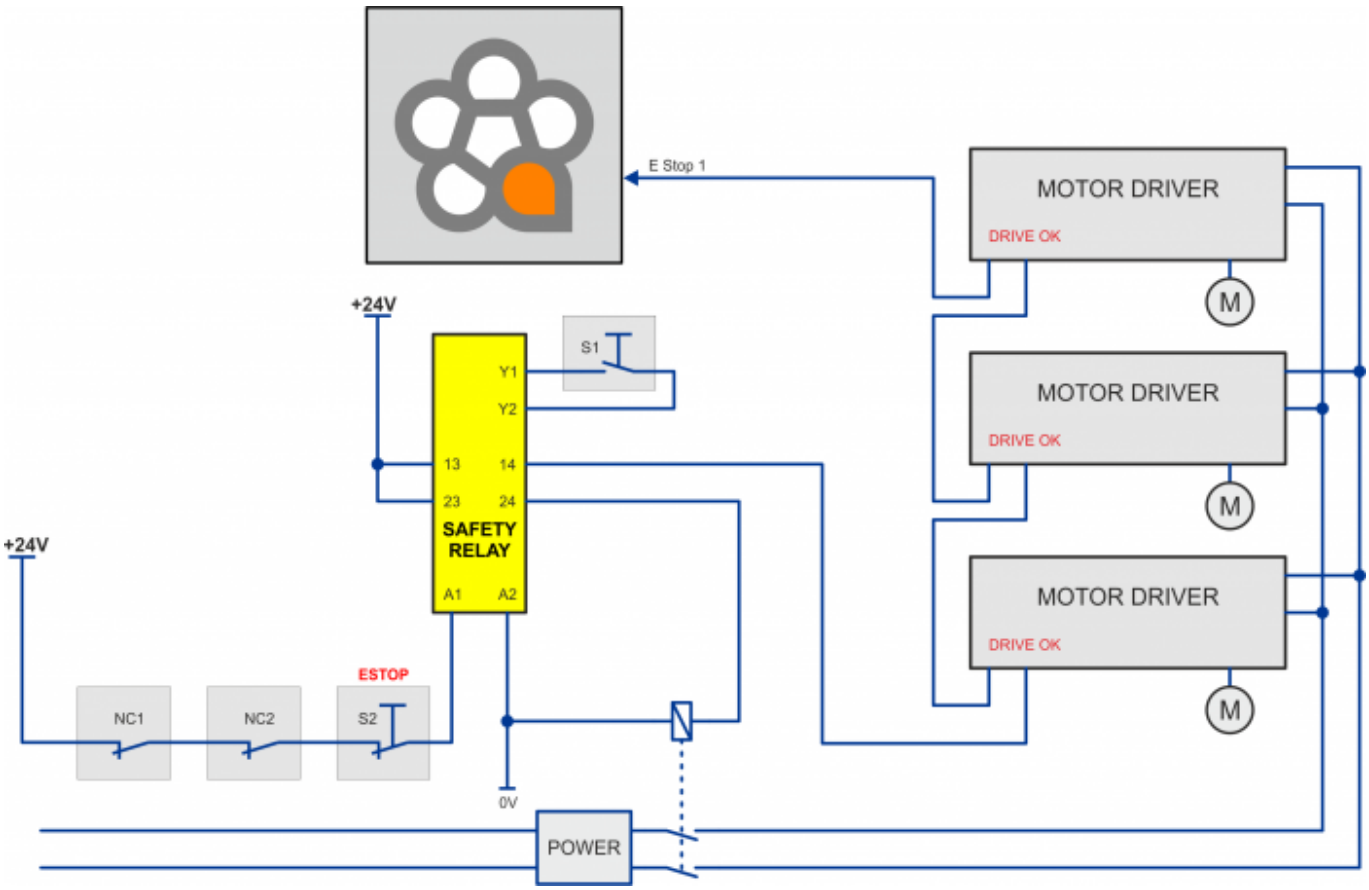
The safety of the machine is never the responsibility of the RosettaCNC Board Controller

Here are two examples of connection. The first uses the Safe Torque Off (STO) input Present in drives.
The second uses a safety device to control the chain of emergency signals.

Both are only example schemes and each installer must then design its own scheme suitable for the machine according to the regulations.

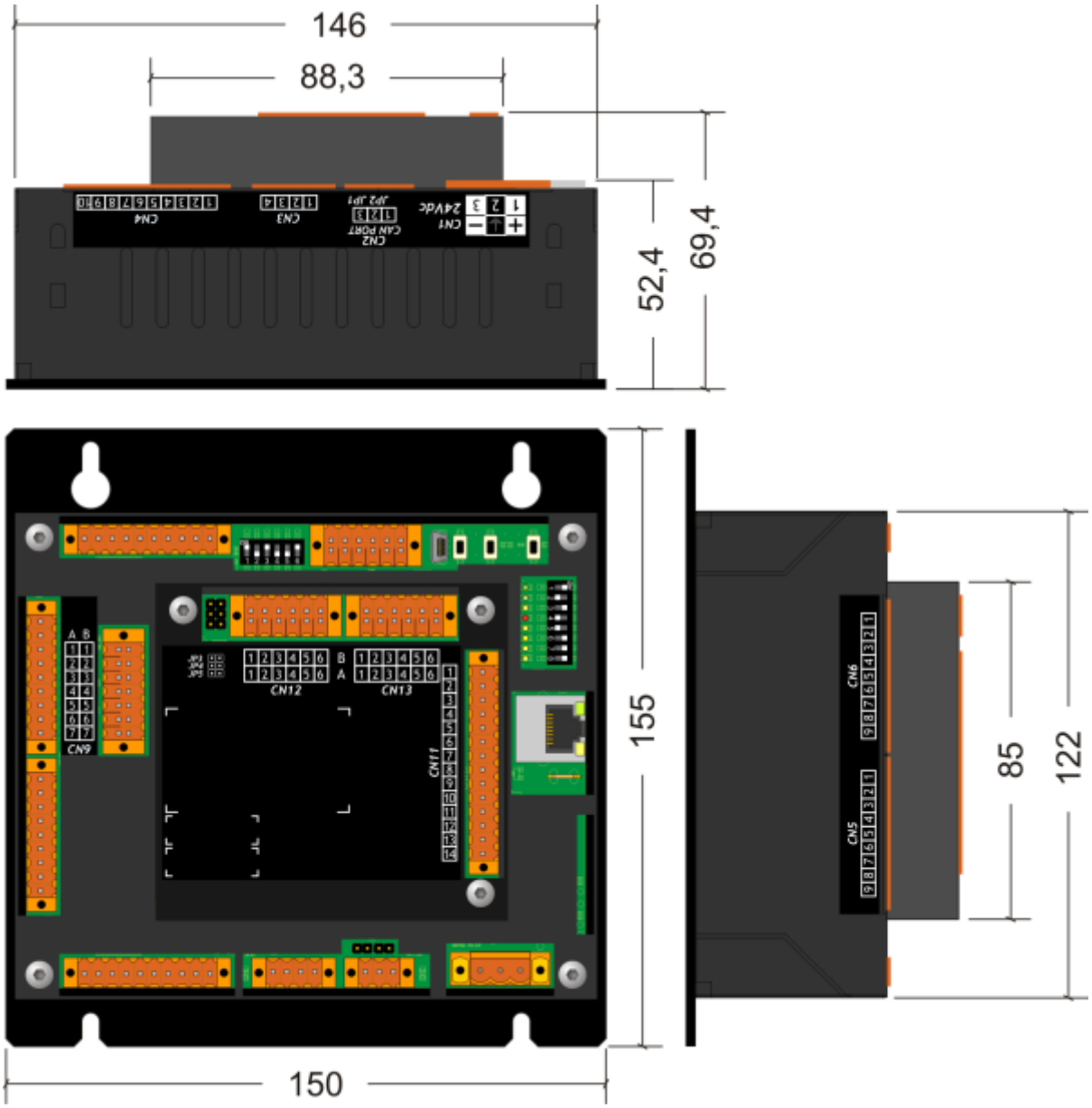


In the below picture, is used a safety device Pilz model PNOZ X7. The emergency button, and possibly other alarm signals (safety barriers, crankcase opening, etc.) must be connected to the input circuits. An output must be connected to the EST1 input of RosettaCNC Board And in series also the drive ok outputs. The other exit of the safety module must be used to stop power to drives.
S1 is the Restore button.
S2 is the stop button in emergency.



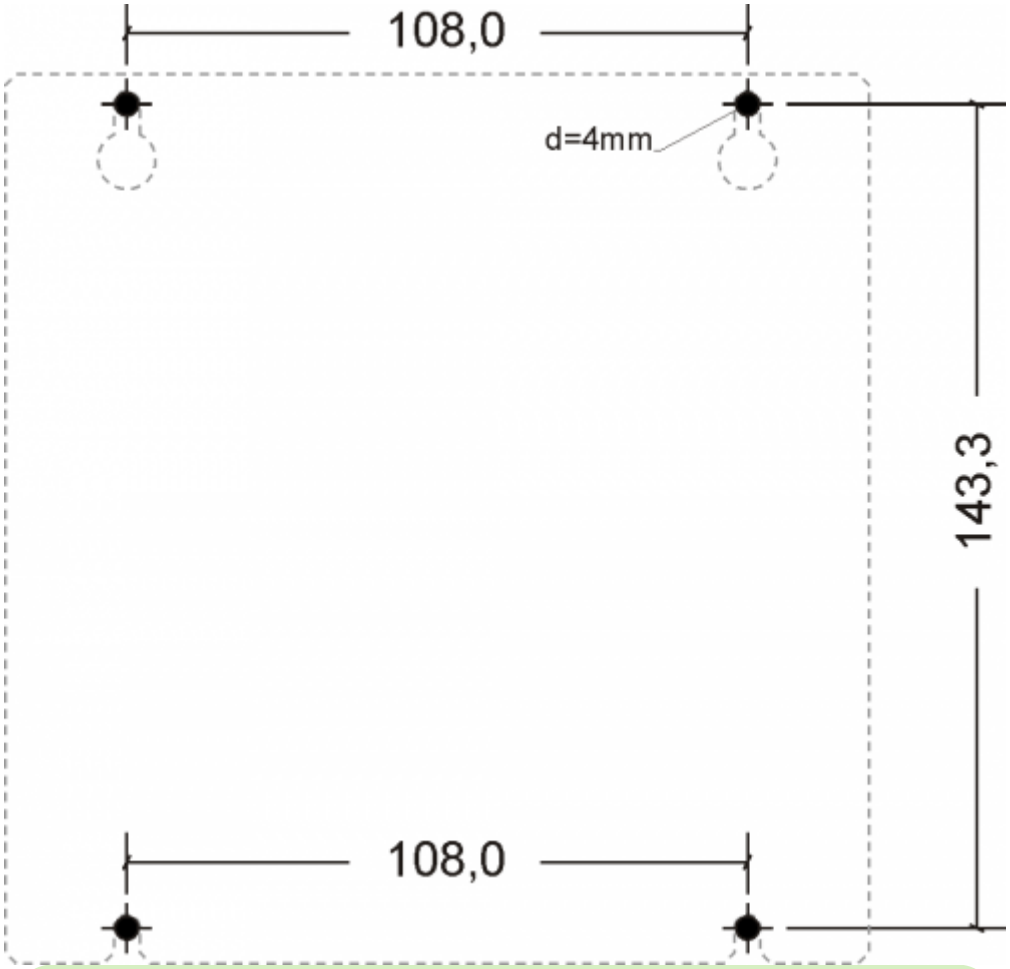
3. Mechanical Installation

3.1. Mechanical dimensions



Dimensions in mm

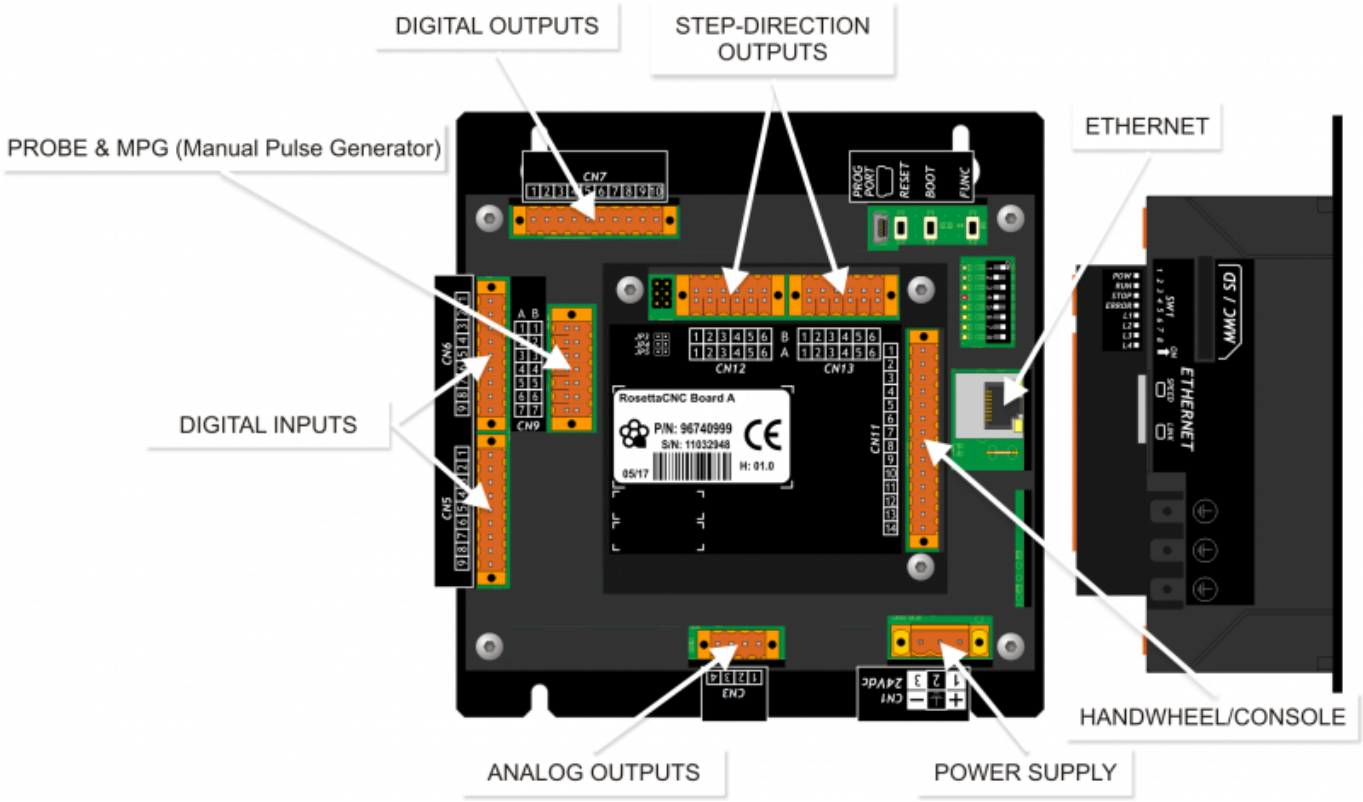
3.2. Hole template



Mechanical drawings

4. Connectors

For information about the usable cable sections and the used connectors, see the Application Note AN001

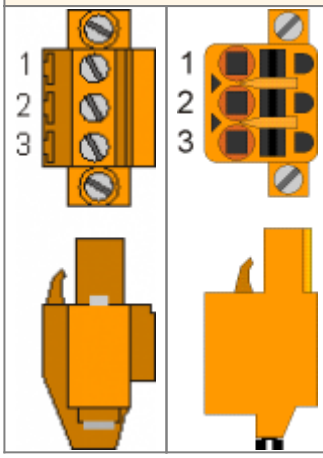


4.1. Power supply

The wiring must be carried out by specialized personnel and provided with appropriate anti-static measures.
Before handling the instrument, remove voltage and all parts connected to it.
To ensure with the CE compliance, The supply voltage must have a galvanic insulation of at least 1500 Vac.

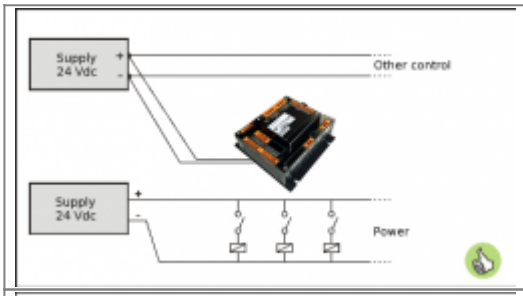
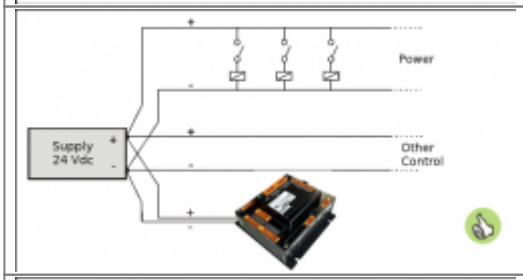
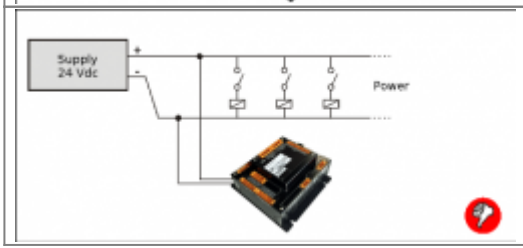
Available power supplies	24 Vdc
Valid range	22 ÷ 27 Vdc
Max. absorption	5W

Connector

CN1	Terminal	Symbol	Description
	1	+	Positive power supply
	2	**GROUND**	Ground-PE (signals)
	3	−	0V power supply

Connection examples

Is prescribed the use of insulated power supply with 24Vdc output complies with EN60950-1.

	Use two separate power supplies: one for the control part and one for the power part
	In the case of a single power supply, Use two separate lines: one for control and one for power
	Do not use the same lines as the power part

4.2. Serial Connections

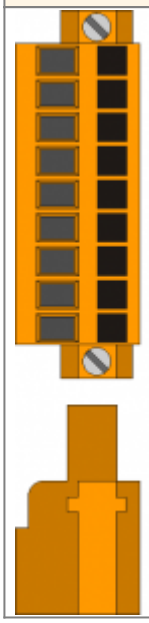
4.2.1. ETHERNET port

ETHERNET PORT	Description
	RJ45 connector. LED: * LINK: green led = connected cable (the LED on indicates that the cable is connected to both sides) * DATA: yello led = data exchange (the blinking LED indicates the data exchange between the connected devices)

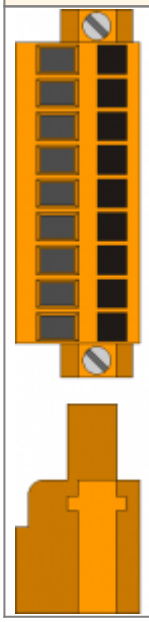
4.3. Digital inputs

The digital inputs called “User input” can be configured by the RosettaCNC software to perform some functions. For example; ESTOP 1, Spindle ok speed, Spindle zero speed, Limit, Start, Safety barriers, etc.

4.3.1. CN6

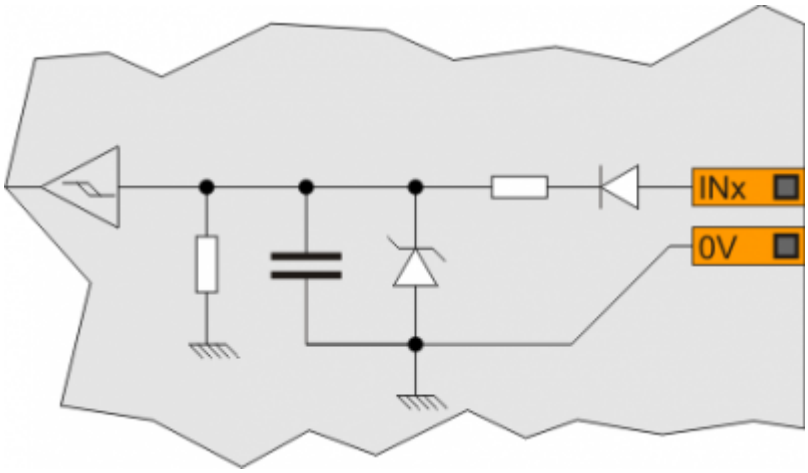
CN6	Terminal	User input		Homing inputs	
		Symbol	Description	Symbol	Description
	1	0V	Common of digital Inputs		
	2	I9	User input I9		
	3	I10	User input I10		
	4	I11	User input I11		
	5	I12	User input I12		
	6	I13	User input I13	HMX	Homing X
	7	I14	User input I14	HMY	Homing Y
	8	I15	User input I15	HMX	Homing Z
	9	I16	User inpute I16	HMA	Homing A

With RosettaCNC software version 1.4 or earlier, the CN6 connector don't have User Inputs feature. Pin2=PAUSE, pin3=LIMITE, pin4=ESTOP1, pin5=N.C, pin6÷9=Homing.

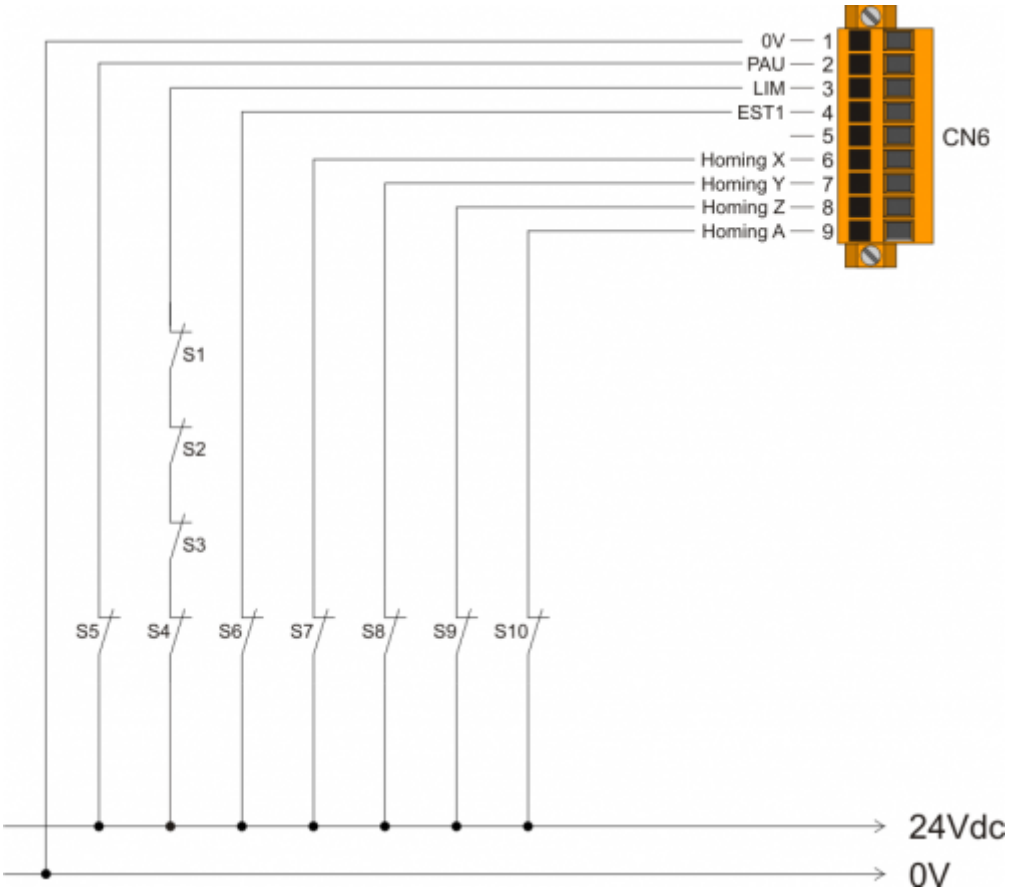
CN5	Terminal	Symbol	Description
	1	0V	Common of digital Inputs
	2	I1/HMB	User input 1
	3	I2/HMC	User input 2
	4	I3	User input 3
	5	I4	User input 4
	6	I5	User input 5
	7	I6	User input 6
	8	I7	User input 7
	9	I8	User input 8

4.3.1.1. Electrical features

Type	Sinking (PNP)
Minimum acquisition time (hardware)	3ms
Rated operating voltage	12÷24Vdc
Maximum voltage	26.5Vdc
Voltage state logic 0	< 2 V
Voltage state logic 1	> 10.5 V
Absorbed current	2mA@10.5V / 8mA@26.5V



4.3.1.2. Connection examples

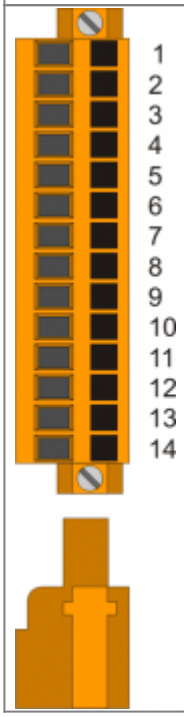


S1	Limit X
S2	Limit Y
S3	Limit Z
S4	Limit A
S5	PAU
S6	EST1
S7	Home X
S8	Home Y
S9	Home Z
S10	Home A

4.3.2. Handwheel or Console

The following connectors are used for different functionalities depending on the value of the “Controller type” parameter. This parameter is present in the “RosettaCNC card settings” panel → Jog.

4.3.2.1. Connector

CN11	Terminal	Symbol	“Controller Type” parameter		
			HandWheel A	Doppio joystick	Singolo Joystick
	1	0V	Comune degli ingressi digitali		
	2	HSX / JXP / CSX	Sel. asse X	JOG X+	Sel. asse X
	3	HSY / JXM / CSY	Sel. asse Y	JOG X-	Sel. asse Y
	4	HSZ / JYP / CSZ	Sel. asse Z	JOG Y+	Sel. asse Z
	5	HSA / JYM / CSA	Sel. asse A	JOG Y-	Sel. asse A
	6	HMO / JZP / ZERO	Moltiplicatore x1	JOG Z+	Azzeramento asse
	7	HMT / JZM / JP	Moltiplicatore x10	JOG Z-	JOG +
	8	HMH / JSA / JN	Moltiplicatore x100	JOG Z ⇒ JOG A	JOG -
	9	I19	User input 19		
	10	+5V	5 Volts DC output [1)]		
	11	HPA / JSB / CPA	Fase A MPG1	JOG Z ⇒ JOG B	Fase A MPG1
	12	HPB / JSF / CPB	Fase B MPG1	JOG rapidi	Fase B MPG1
	13		Morsetti 13 e 14 internamente collegati tra di loro		
	14				

[1)] Corrente massima erogabile 50mA

If you are using version 1.4 or earlier of the RosettaCNC software, this connector can not be used as MPG1 and pin9 has the fixed function of ESTOP2.

4.3.2.2. Electrical features

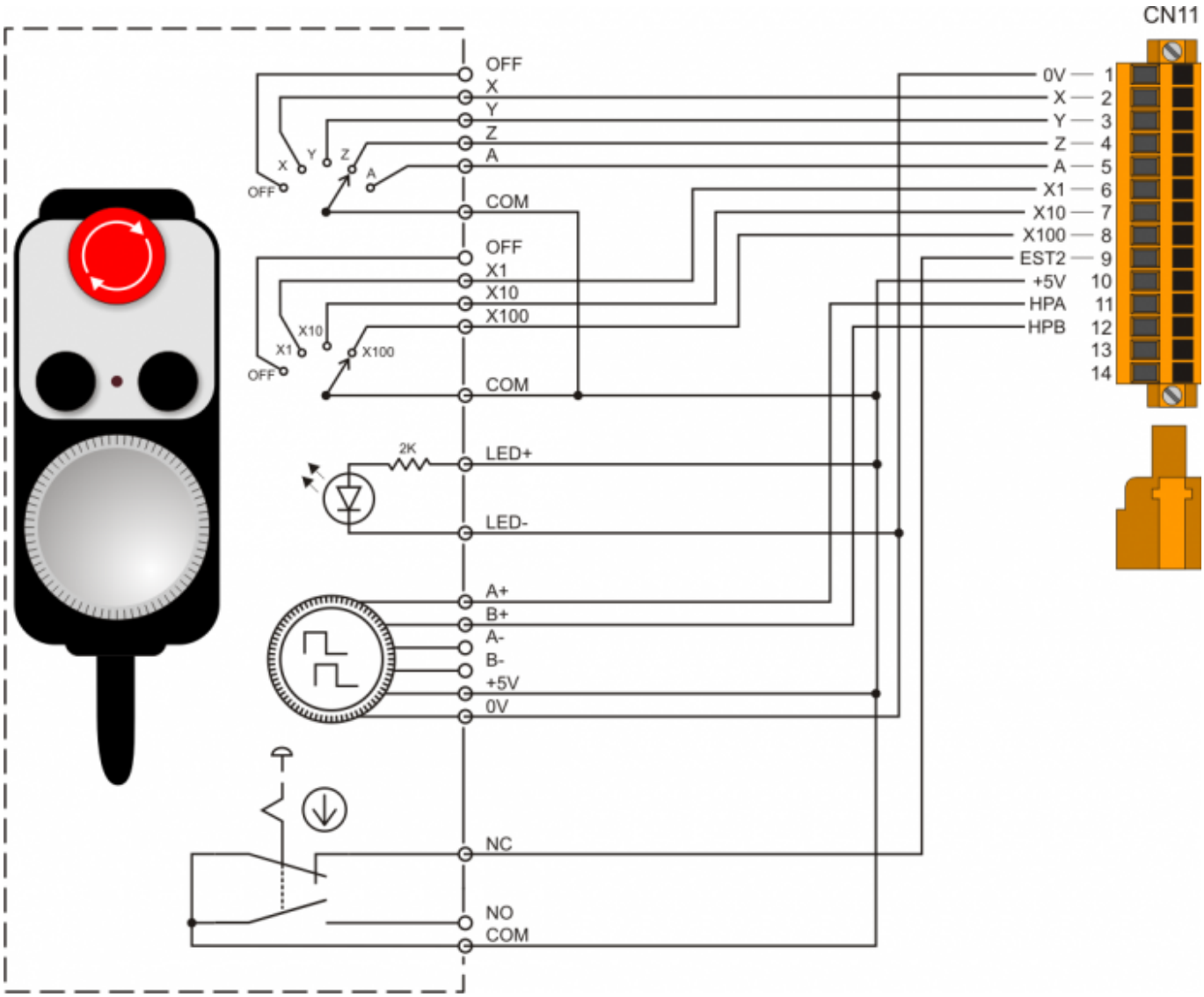
Encoder phase terminal 11 and 12

Type	Sinking (PNP)
Minimum acquisition time (hardware)	1ms
Rated operating voltage	5Vdc
Maximum voltage	7Vdc
Voltage State Logic 0	< 1.6V
Voltage State Logic 1	> 2.7V
Absorbed current	17mA@5V / 18mA@5V

Inputs terminal 2÷9

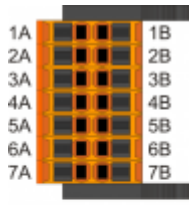
Type	Sinking (PNP)
Minimum acquisition time (hardware)	1ms
Rated operating voltage	5/12/24Vdc
Maximum voltage	26Vdc
Voltage State Logic 0	< 1V
Voltage State Logic 1	> 3.5V
Absorbed current	0.1mA@5V / 6mA@12V / 16mA@24V

4.3.2.3. Connection examples for Handwheel A



4.3.3. CN9

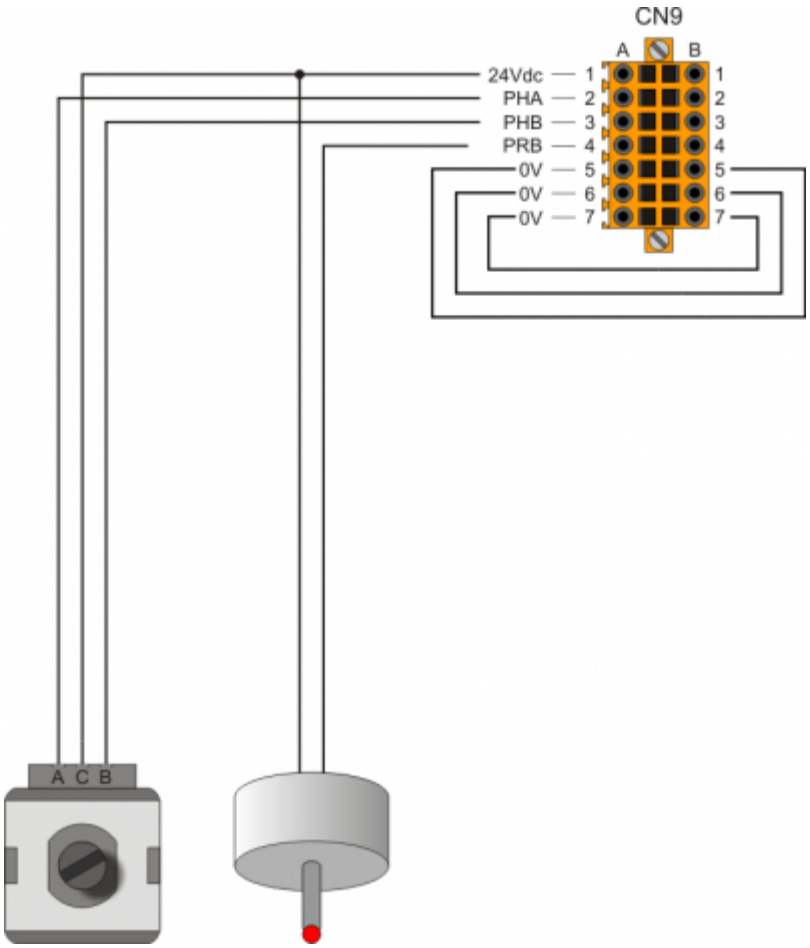
It can be used as MPG2 and as “User Inputs”. The connection of the PROBE is also permitted.

CN9	Terminal	User input		MPG2		PROBE	
		Symbol	Description	Symbol	Description	Symbol	Description
 	1A	24Vdc	Uscita +24Vdc	24Vdc	Uscita +24Vdc	24Vdc	Uscita +24Vdc
	2A	I17	User input I17	PHA	Fase A		
	3A	I18	User input I18	PHB	Fase B		
	4A					PROBE	Sensore PROBE
	5A		Collegare con 5B		Collegare con 5B		
	6A		Collegare con 6B		Collegare con 6B		
	7A						Collegare con 7B
	1B						
	2B						
	3B						
	4B						
	5B		Collegare con 5A		Collegare con 5A		
	6B		Collegare con 6A		Collegare con 6A		
	7B						Collegare con 7A

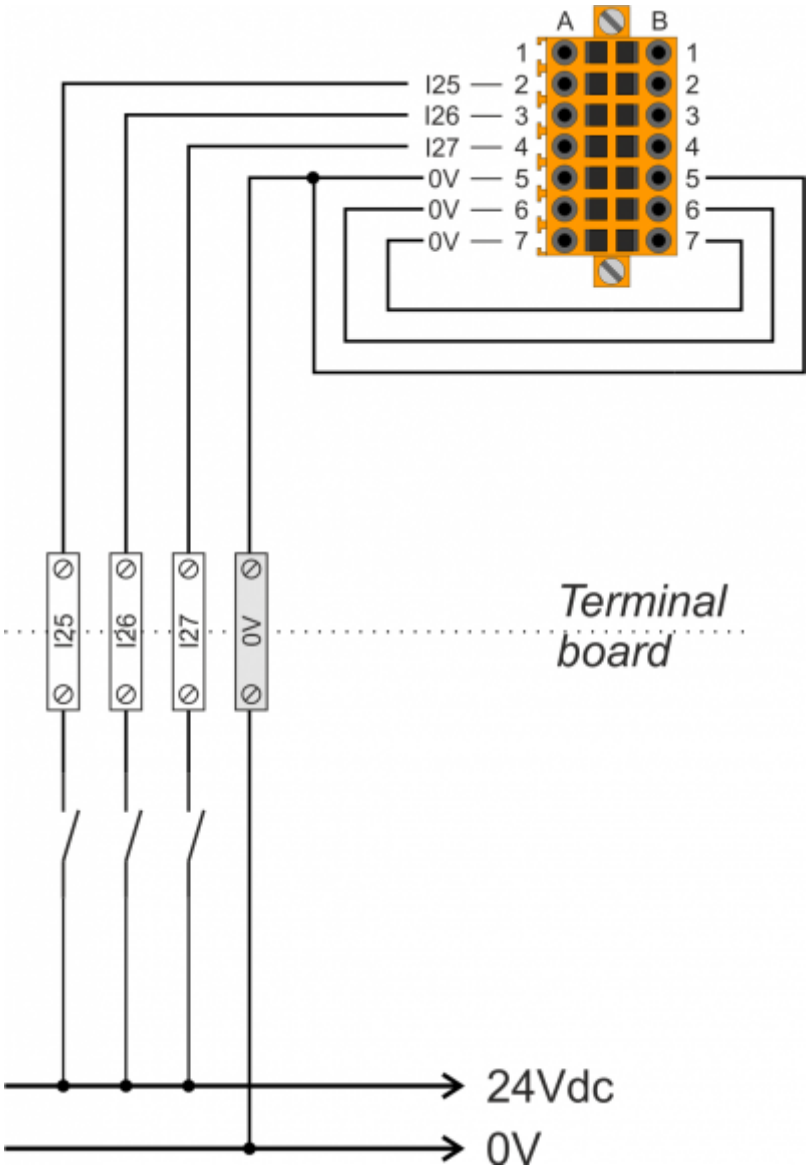
If you are using version 1.4 or earlier of the RosettaCNC software, the CN9 connector can only be used for PROBE input and MPG function for feed override.

4.3.3.1. Connection examples

MPG e Probe



User Inputs 12-24V dc

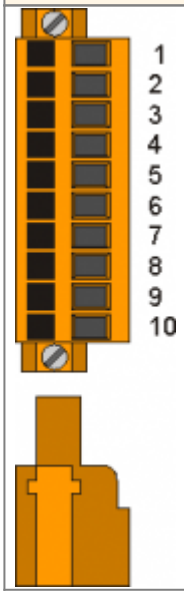


4.4. Digital outputs

The digital outputs called “User Output” can be configured by the RosettaCNC software to perform some functions. For example: spindle ignition with rot. hourly, ignition spindle with rot. counter-clockwise, air activation, water activation, aux outputs 1..4, etc.

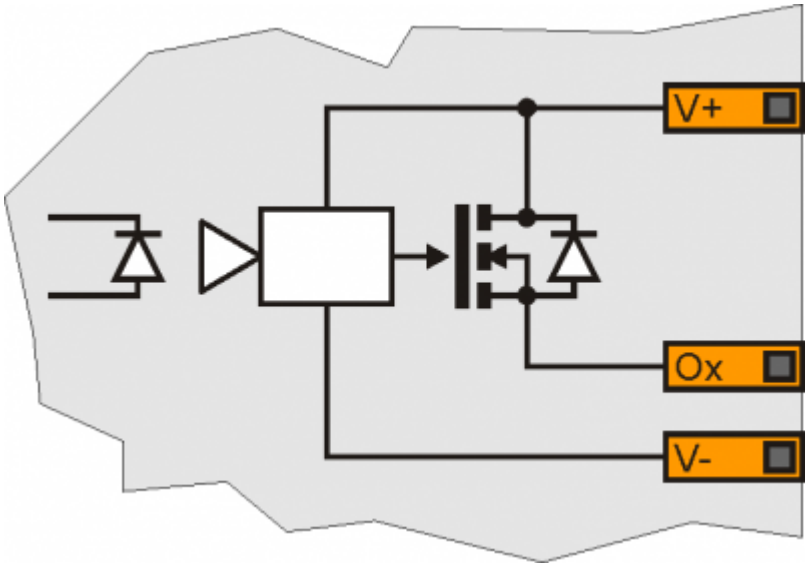
4.4.1. Protected outputs

4.4.1.1. Connectors

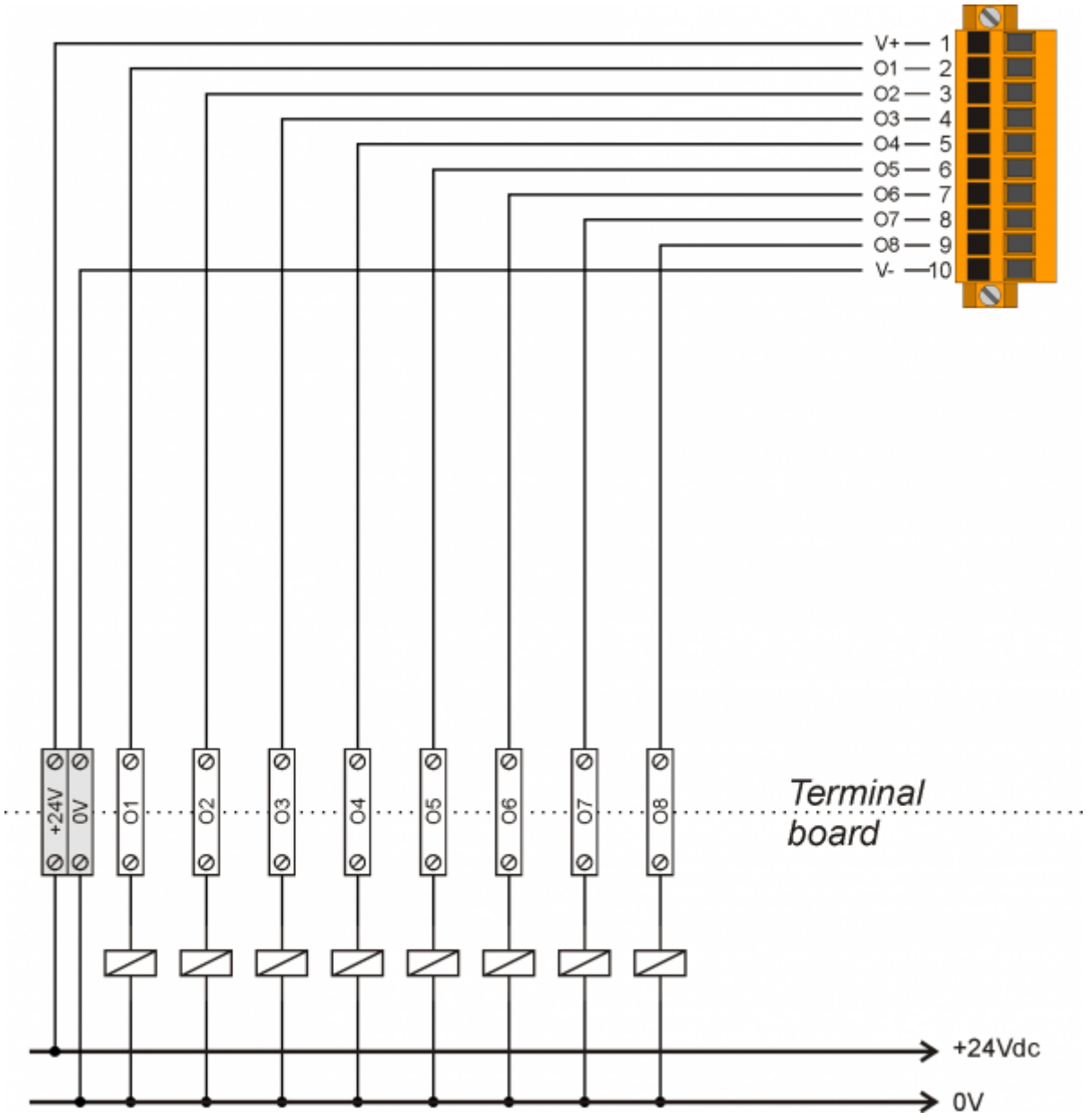
CN7	Terminal	Symbol	Description
	1	V+	Input for power supply outputs (12÷28V dc)
	2	UO1	User output 1
	3	UO2	User output 2
	4	UO3	User output 3
	5	UO4	User output 4
	6	UO5	User output 5
	7	UO6	User output 6
	8	UO7	User output 7
	9	UO8	User output 8
	10	V-	Input for power supply outputs (0V dc)

4.4.1.2. Electrical features

Type	Sourcing (PNP)
Maximum operating voltage	28V
Maximum internal voltage drop	600mV
Maximum current	500mA
Maximum switching time from ON to OFF	270µs
Maximum switching time from OFF to ON	250µs



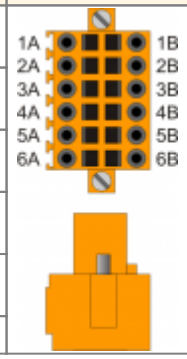
4.4.1.3. Connection examples



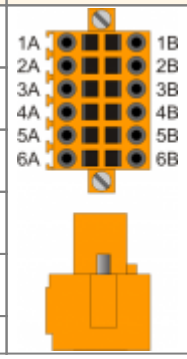
4.4.2. STEP-DIRECTION outputs

4.4.2.1. Connectors

4.4.2.2. CN12

Descrizione		Simbolo	Morsetto	CN12	Morsetto	Simbolo	Descrizione	
Alimentazione esterna uscite STEP/DIR		VDx	1A		1B	VDx	Alimentazione esterna uscite STEP/DIR	
Push-Pull Line Driver	Uscita DIREZIONE X	DIR1+	2A		2B	DIR1-	Uscita complementare DIREZIONE X	Uscite complementari per l'utilizzo nei drive con ingressi **Line-Driver**
	Uscita STEP X	STEP1+	3A		3B	STEP1-	Uscita complementare STEP X	
	Uscita DIREZIONE Y	DIR2+	4A		4B	DIR2-	Uscita complementare DIREZIONE Y	
	Uscita STEP Y	STEP2+	5A		5B	STEP2-	Uscita complementare STEP Y	
Comune delle uscite stepper		0V	6A		6B	0V	Comune delle uscite stepper	

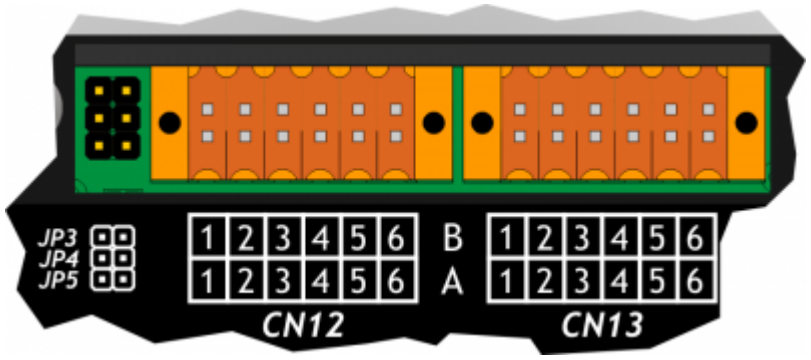
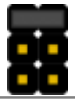
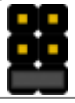
4.4.2.3. CN13

Descrizione		Simbolo	Morsetto	CN13	Morsetto	Simbolo	Descrizione	
Alimentazione esterna uscite STEP/DIR		VDx	1A		1B	VDx	Alimentazione esterna uscite STEP/DIR	
Push-Pull Line Driver	Uscita DIREZIONE Z	DIR3+	2A		2B	DIR3-	Uscita complementare DIREZIONE Z	Uscite complementari per l'utilizzo nei drive con ingressi **Line-Driver**
	Uscita STEP Z	STEP3+	3A		3B	STEP3-	Uscita complementare STEP Z	
	Uscita DIREZIONE A	DIR4+	4A		4B	DIR4-	Uscita complementare DIREZIONE A	
	Uscita STEP A	STEP4+	5A		5B	STEP4-	Uscita complementare STEP A	
Comune delle uscite stepper		0V	6A		6B	0V	Comune delle uscite stepper	

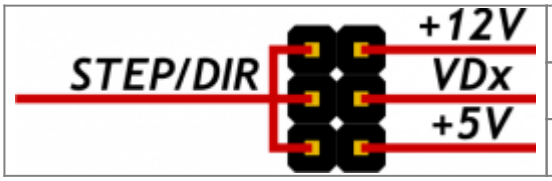
4.4.2.4. STEP-DIRECTION Output voltage Setting

Inserting one of the JP3, JP4 o JP5 jumpers, You can choose the operating voltage of the STEP and DIR outputs.

> Only one jumper must be inserted at a time
> If one of the two voltages is selected, 5V(JP5) or 12V(JP3), both the 1A and 1B terminals must remain disconnected.

	Name Jumper	Setting	Nominal voltage
	JP3	INSERTED 	Selects the STEP/DIR signal voltage to 12V
	JP4	INSERTED 	The STEP/DIR signals have a voltage equal to the value in the 1A or 1B terminals. These terminals must be supplied with an external power supply.
	JP5	INSERTED 	Selects the STEP/DIR signal voltage to 5V

.

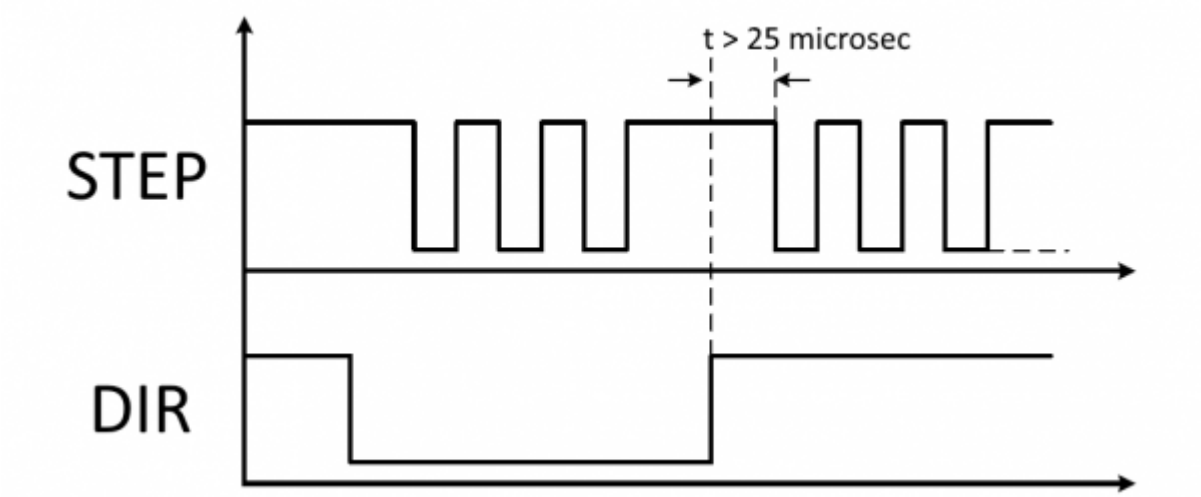
	JP3 JP4 JP5

4.4.2.5. Electrical features

Polarization type	Push-Pull / Line-Driver
Maximum output frequency	300KHz
Insulated	1000Vpp
Maximum operating current	20mA
Maximum VDX voltage	27Vdc

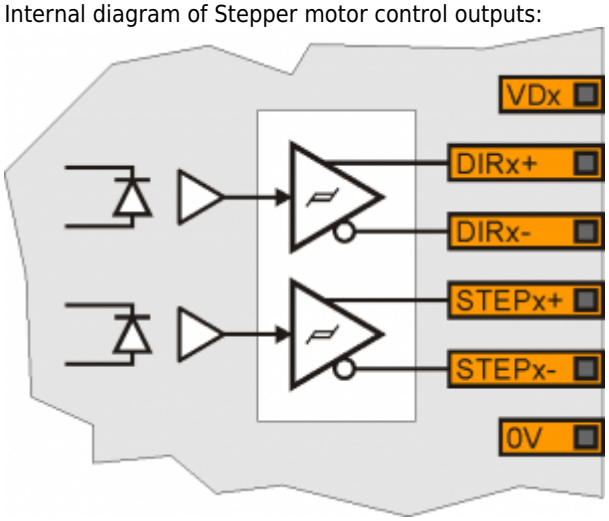
If you use stepper motors drivers, for a satisfactory user experience that minimizes vibrations and resonances, we recommend setting at least 32 or 64 microsteps. The correct value must always be chosen considering the maximum frequency of 300KHz and the maximum frequency that the driver can accept.

Step signal during the change of direction:



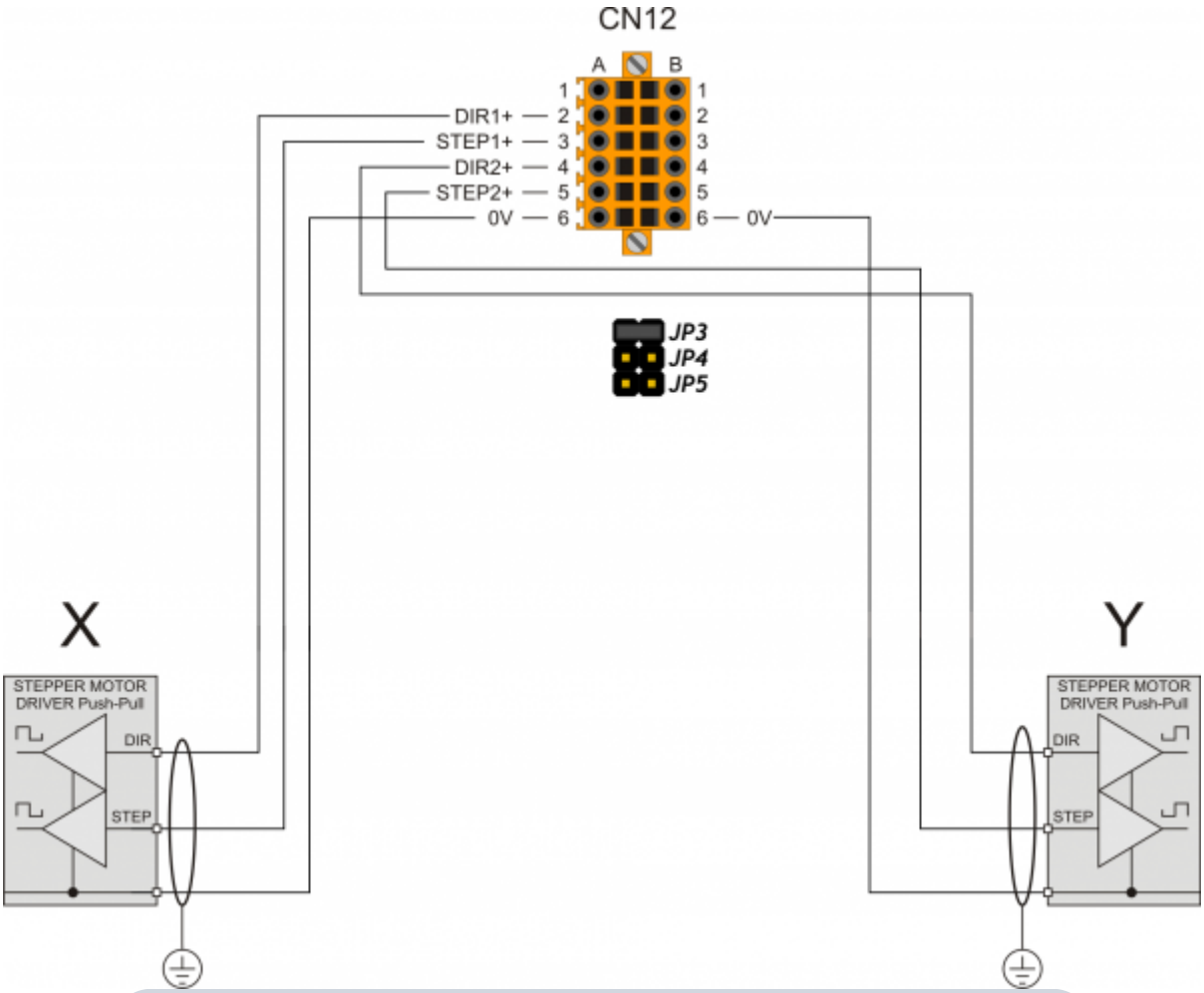
The 25 microsecond time can be configured in the RosettaCNC software.

Internal diagram of Stepper motor control outputs:



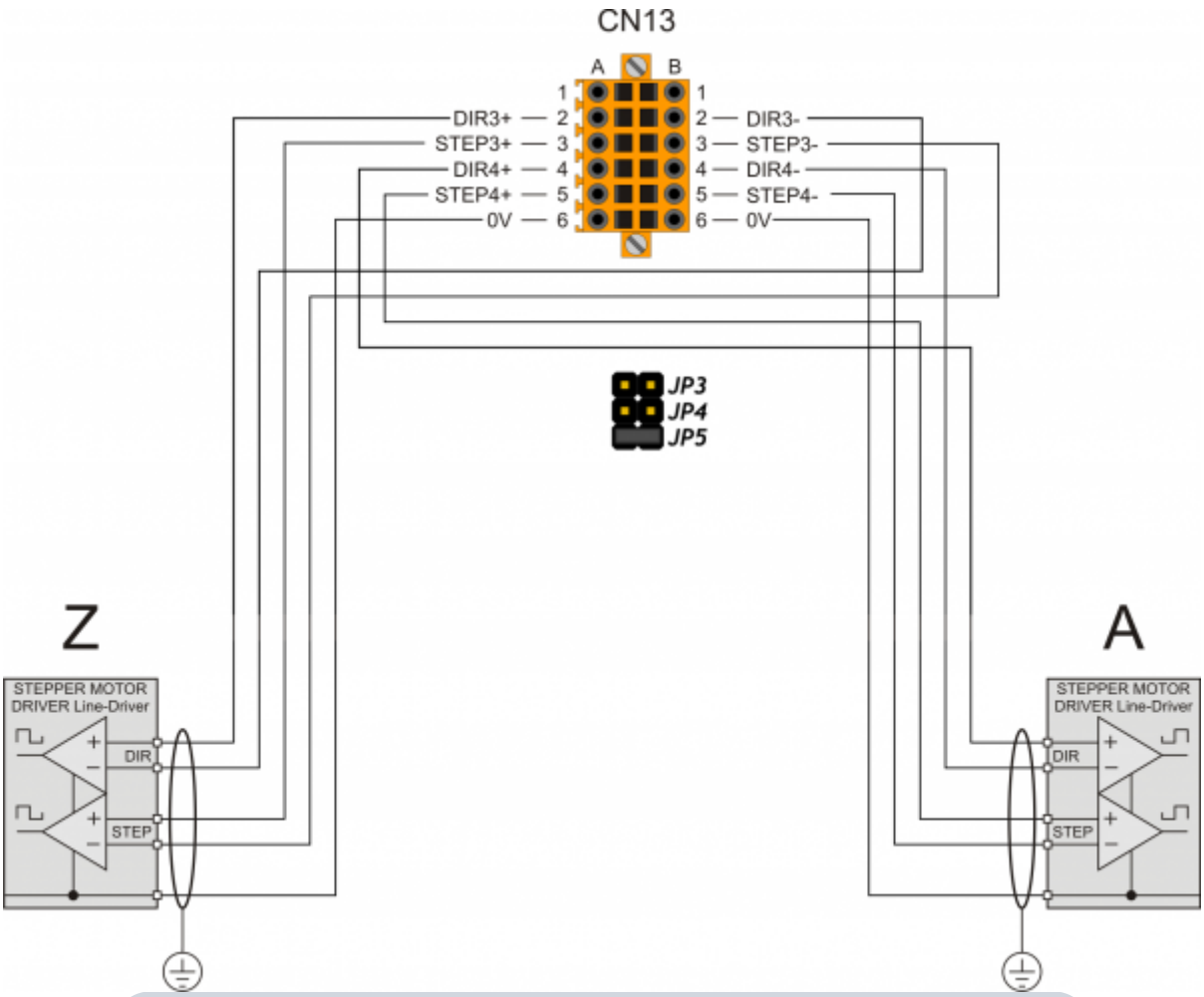
4.4.2.6. Connection examples

X an Y axes Push-Pull to 12Vdc



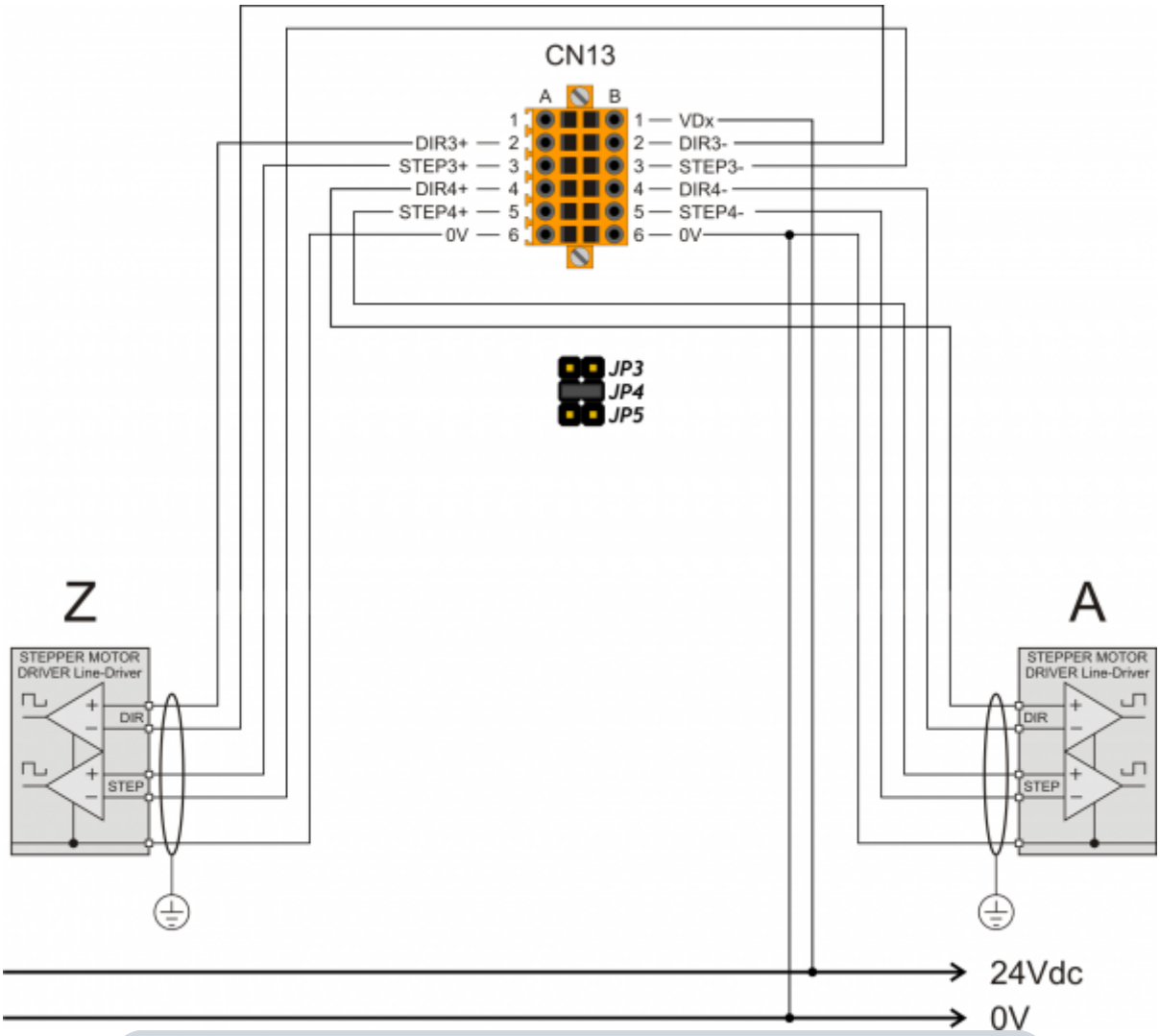
The voltage level of the outputs is selected by the JP3 jumpers

A and Z axes Line-Driver to 5Vdc



The voltage level of the outputs is selected via the JP5 jumpers

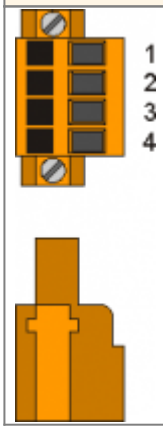
A and Z axes Line-Driver to 24Vdc



The voltage level of the outputs is selected via the JP4 jumpers

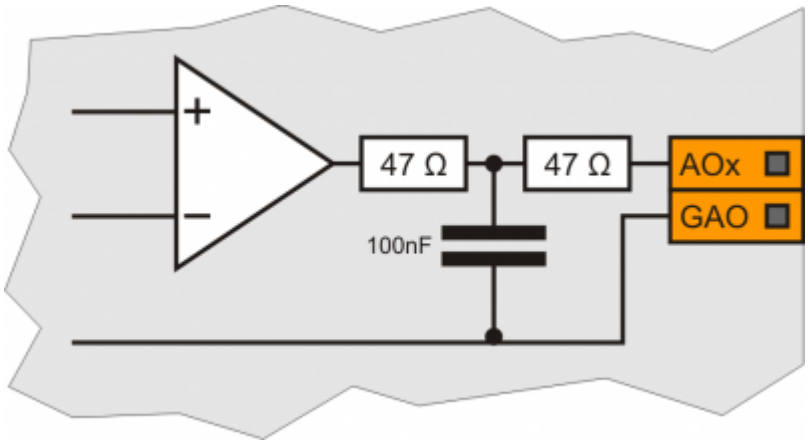
4.5. Analog outputs

4.5.1. Connector

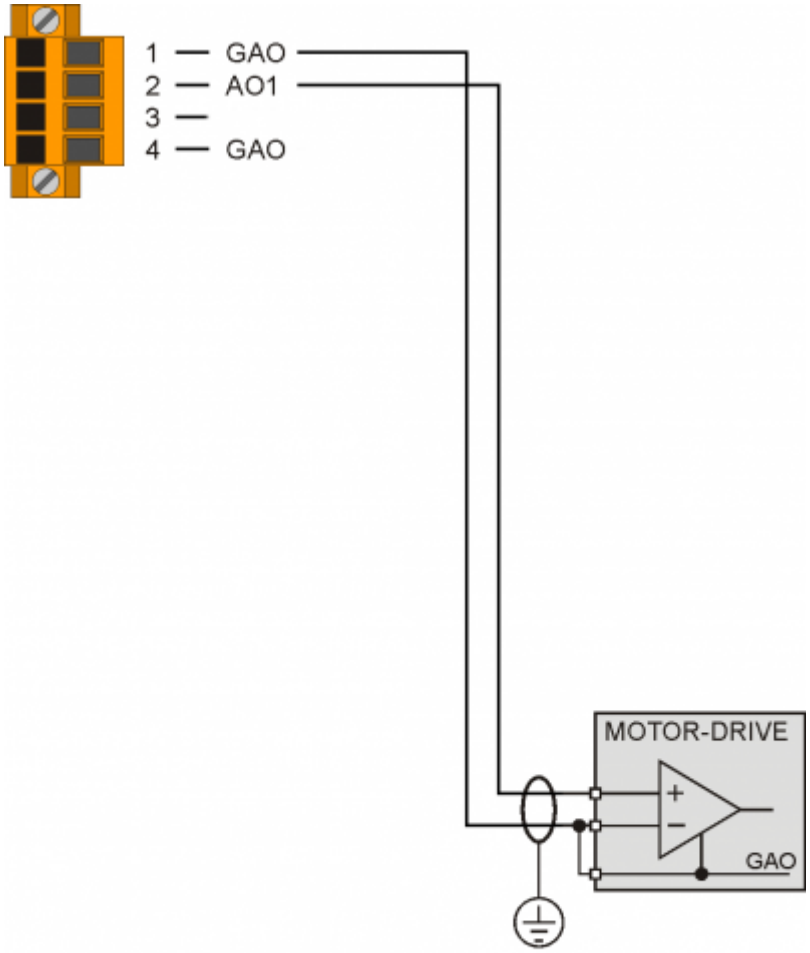
CN3	Terminal	Symbol	Description
	1	GAO	Common of analog outputs
	2	AO1	Spindle speed
	3	AO2	Not used
	4	GAO	Common of analog outputs

4.5.2. Electrical features

Connection type	In a common mode
Insulated	1000Vrms
Voltage range (minimum empty)	0÷10V
Maximum offset variation depending on temperature	+/- 5mV
Resolution	16bit
Maximum current	1mA
Variation of output depending on load	100 µV/mA
Output resistance	249Ω



4.5.3. Connection examples

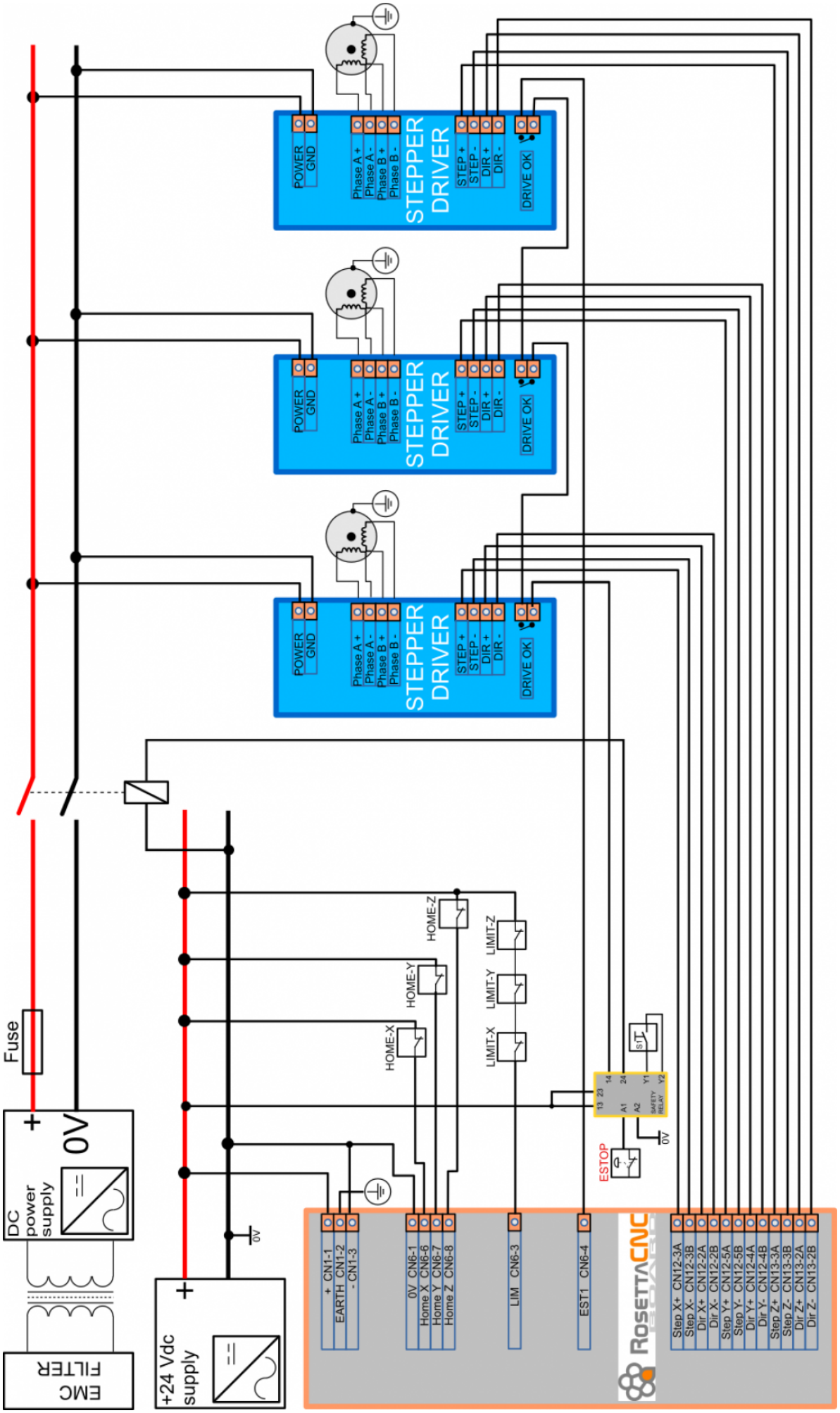


5. Connection and configuration examples

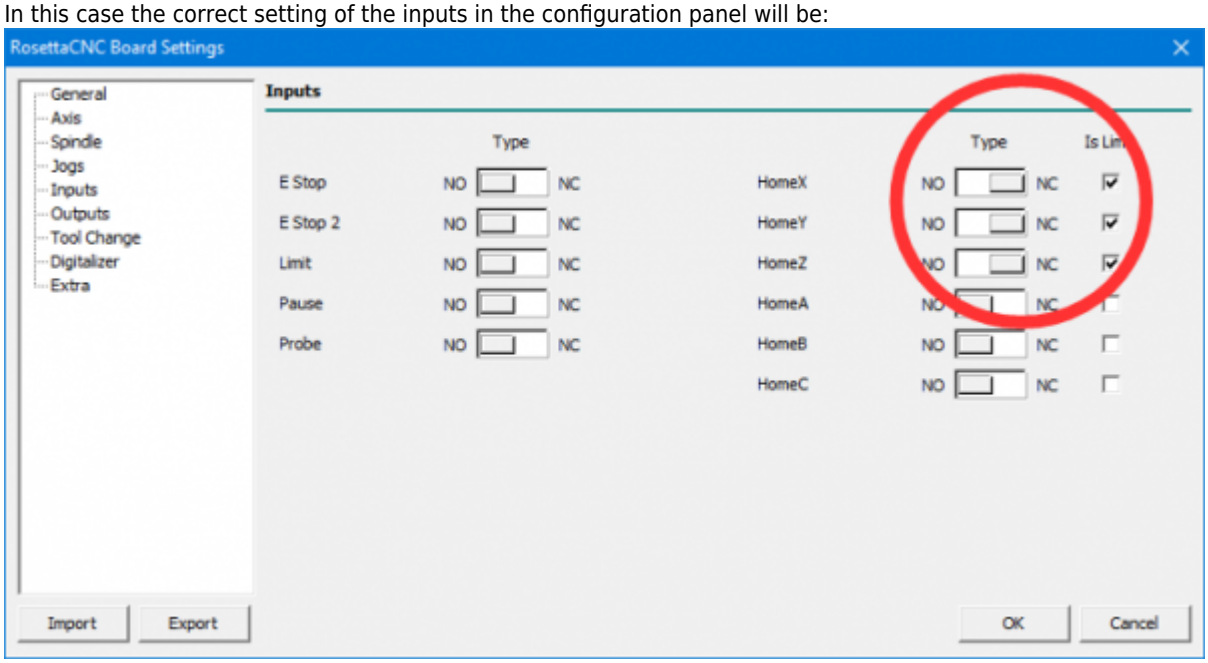
Below we will illustrate some useful wiring diagrams as an example for the design of the complete control system (electric panel).

5.1. Connecting of an XYZ pantograph

In the following example we see a wiring diagram of three stepper drives. The HOME switches are also used as a limit for the direction of movement where the homing procedure is executed. For the other direction, uses three NC switches in series and connected with the LIM input.


STEPPER DRIVER
POWER
GND
Phase A +
Phase A -
Phase B +
Phase B -
STEP +
STEP -
DIR +
DIR -
DRIVE OK
HOME-Z
HOME-Y
HOME-X
LIMIT-Z
LIMIT-Y
LIMIT-X
ESTOP
SAFETY RELAY
DC power supply
0V
Fuse
EMC FILTER
+24 Vdc supply
+ CN1-1
EARTH CN1-2
- CN1-3
0V CN6-1
Home X CN6-6
Home Y CN6-7
Home Z CN6-8
LIM CN6-3
EST1 CN6-4
Step X+ CN12-3A
Step X- CN12-3B
Dir X+ CN12-2A
Dir X- CN12-2B
Step Y+ CN12-5A
Step Y- CN12-5B
Dir Y+ CN12-4A
Dir Y- CN12-4B
Step Z+ CN13-3A
Step Z- CN13-3B
Dir Z+ CN13-2A
Dir Z- CN13-2B
RosettaCNC

In this case the correct setting of the inputs in the configuration panel will be:

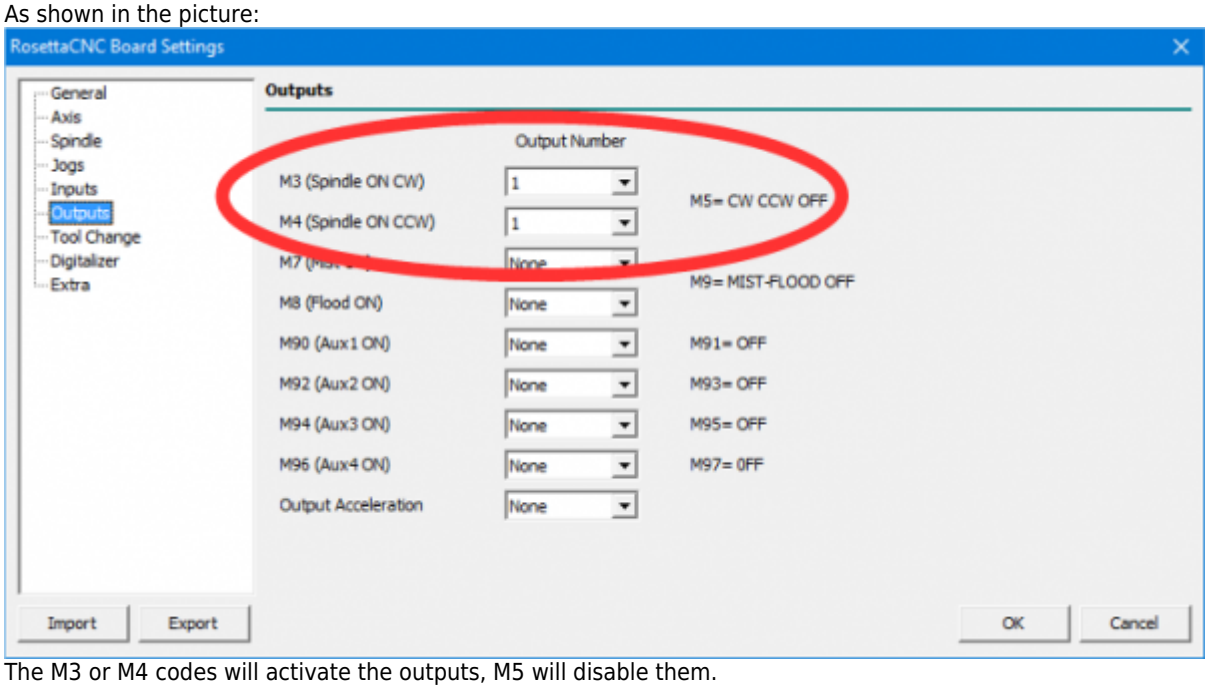


5.2. Configuring the Spindle command

The following outputs are available for the spindle control:

- Digital output for clockwise rotation control
- Digital output for counterclockwise rotation control
- Analog output for Speed variation

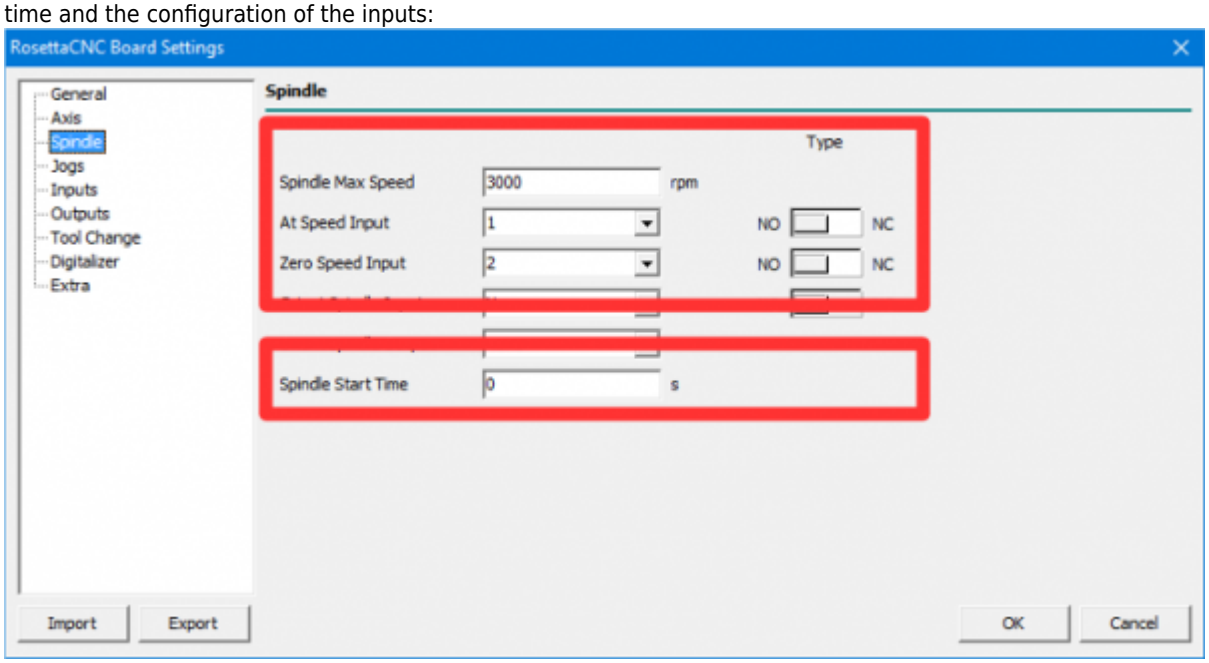
The choice of the digital outputs to use for these functions is performed in the “Outputs” panel in “RosettaCNC card settings” As shown in the picture:



The M3 or M4 codes will activate the outputs, M5 will disable them.

If RosettaCNC Board controls also the spindle rotation speed then you must connect the analog output 0÷10V to the analog input of the drive. In the maximum speed parameter, you must set the the speed reached by the drive to the maximum voltage of 10V.

The “Start Time” parameter if set delays the execution of the Gcode to allow the spindle to reach the set speed. This time is also used when turning off the spindle.
In RosettaCNC Board are available also two digital inputs that can be used to inform the Controller when the spindle has reached the set speed or when it's stopped. The following picture shows where to set the reference speed to 10V, The start time and the configuration of the inputs:

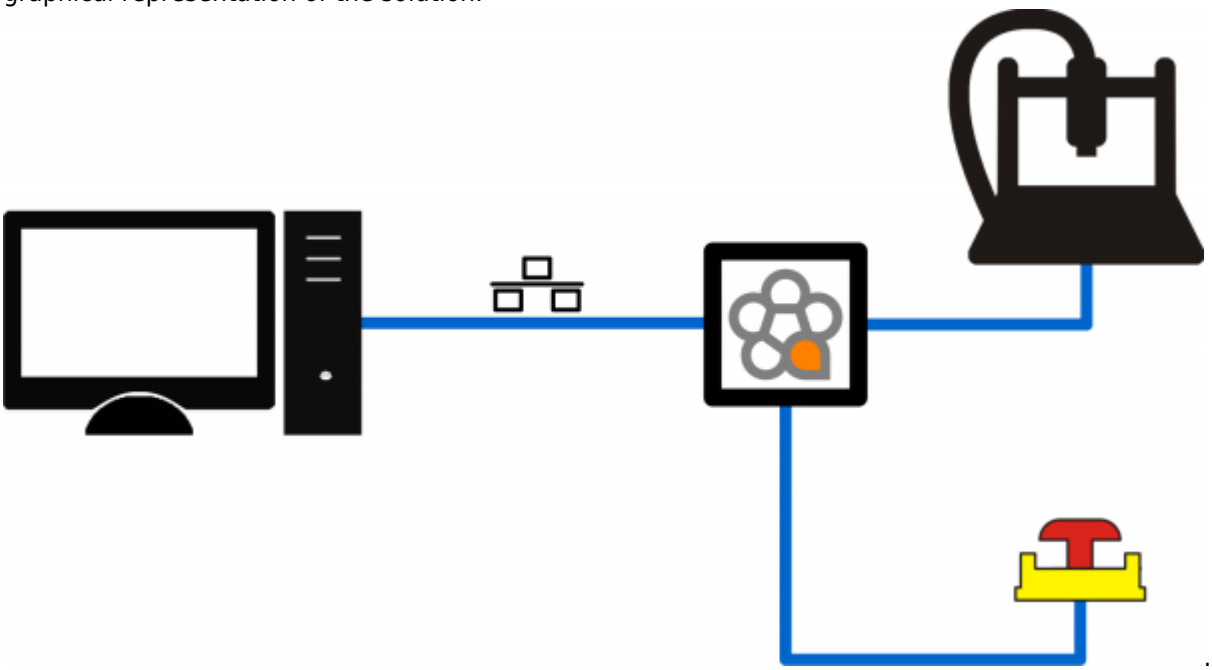


If the inputs are configured then the value in the start time parameter always indicates the minimum wait time although the logic level of the input does not require a wait.

5.3. Control console connection

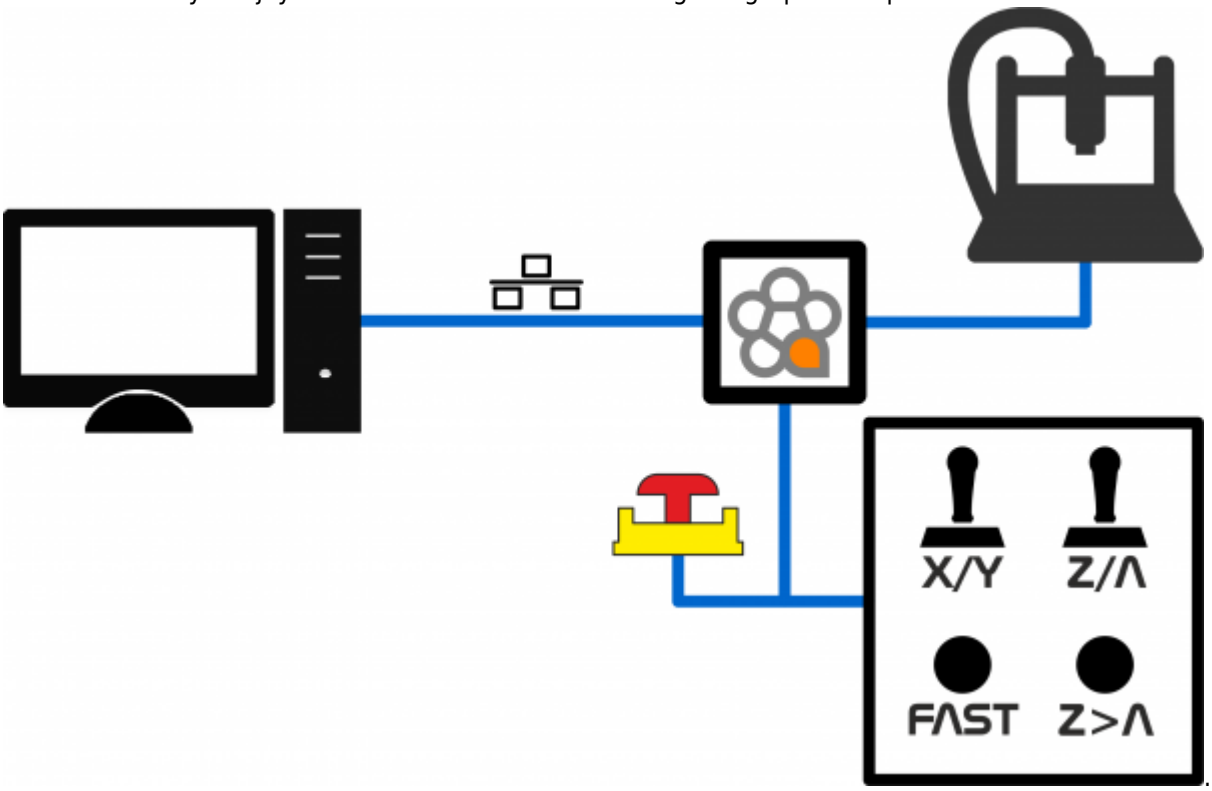
There are several ways to design the control console. The following shows four examples:

- The easiest way is to always operate in the personal computer where the RosettaCNC software is installed. Here the Jogs, homing sequences, start and stop of Gcode programs, etc. will be controlled. Below is a graphical representation of the solution:



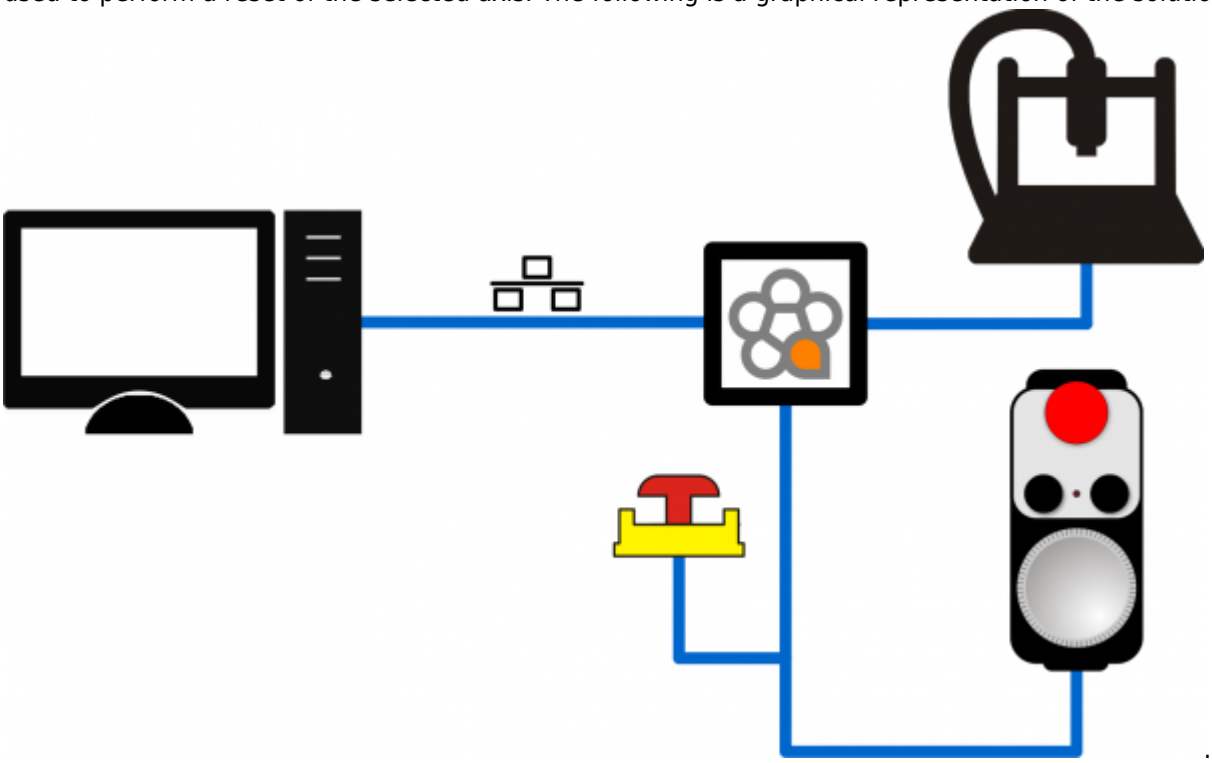
On the machine side only the ESTOP emergency button will be present (and possibly the reset button). In addition, MPG devices for override control (up to two devices) can be set up. In this case the value of the “Controller type” parameter is not significant.

- With the following solution, the following control devices are wired near the machine (in addition to the ESTOP emergency button): Joystick for the X-Y-Z jog. A button for selecting Jog Fast speeds. Possible button to modify the joystick control Z in A. The following is a graphical representation of the solution:



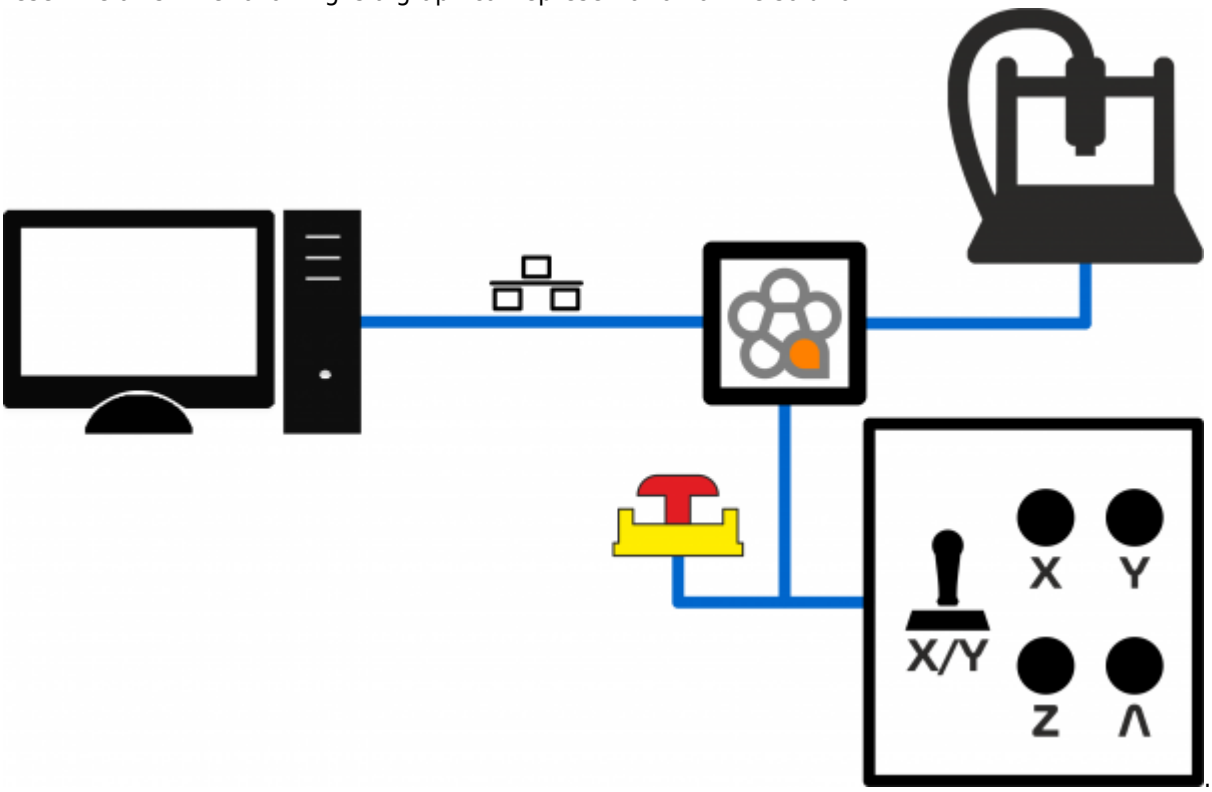
In addition an MPG device can be set up for control of override (feed, rapid, jog or spindle). In this case the value of the “Controller type” parameter must be set to “Dual Joystick”.

- With the following solution a handwheel is installed near the machine to check manual movements. During operation, if set in configuration, the handwheel can also be used to control the override (configuring the operation of the MPG1 device). Finally, always if set in configuration the handwheel button can also be used to perform a reset of the selected axis. The following is a graphical representation of the solution:



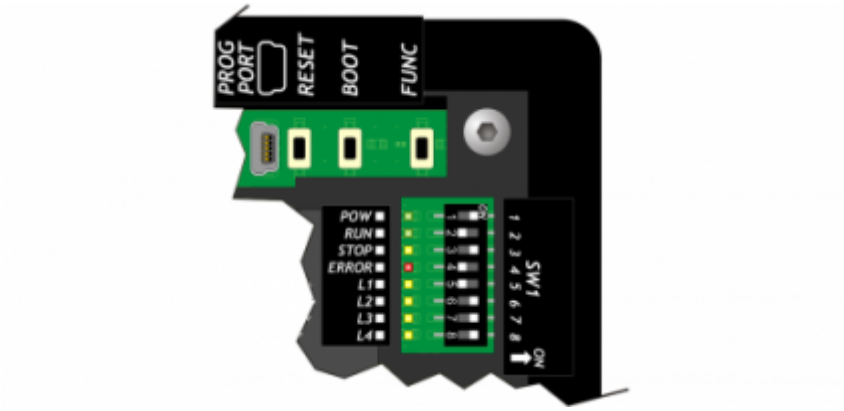
In addition to the flyer, an MPG device for override control can be set up near the machine (feed , rapid, jog or spindle). In this case, the value of the “Controller type” parameter must be set to “HandWheel A”.

- With the following solution, the following control devices are wired near the machine (in addition to the ESTOP emergency button): a Joystick for the jog + and Jog-. Up to 4 buttons for axis selection. A button to reset the axis. The following is a graphical representation of the solution:



In addition, an MPG device can be set up to control the override (feed, rapid, jog or spindle) . In this case the value of the “Controller type” parameter must be set to “Single Joystick”.

6. Diagnostic



Green Led POW, indicates that the device is powered.
Green Led RUN, indicates that the device is working.
Yellow Led STOP, indicates that the device is in a stop state.
If flashes the Red Led ERROR, the controller is in an error state. You can try turning off and on again, if the problem persists, the product should be sent to technical support through the purchase channel used.

7. Previous hardware versions

Below are links to consult the previous hardware versions of the product.

Modello	Part number
Hardware version 01	User Manual

8. Acknowledgement

All those who want to contribute to the improvement of this documentation are in advance thanks to the reporting inaccuracies or incorrect content. Write to the address: support@rosettacnc.com