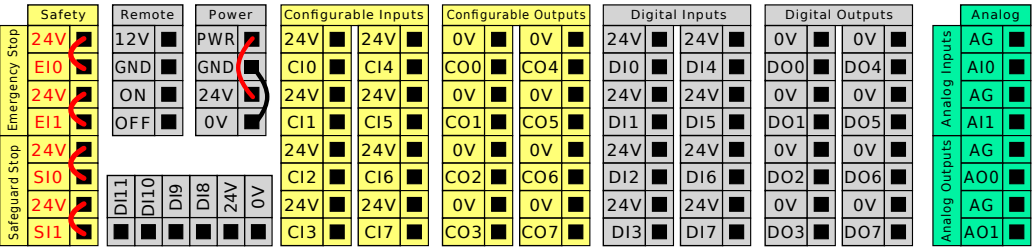# 8.4. Controller I/O

Description

You can use the **I/O** inside the Control Box for a wide range of equipment including pneumatic relays, PLCs and emergency stop buttons.
The illustration below shows the layout of electrical interface groups inside the Control Box.

You can use the horizontal Digital Inputs block (DI8-DI11), illustrated below, for quadrature encoding Conveyor Tracking.
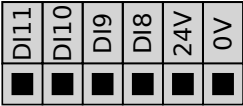
The meaning of the color schemes listed below must be observed and maintained.

Yellow with red text	Dedicated safety signals
Yellow with black text	Configurable for safety
Gray with black text	General purpose digital I/O
Green with black text	General purpose analog I/O

In the GUI, you can set up **configurable I/O** as either **safety-related I/O** or **general purpose I/O**.

Common specifications for all digital I/O	This section defines electrical specifications for the following 24V digital I/O of the Control Box.

- Safety I/O.
- Configurable I/O.
- General purpose I/O.

> **(i) NOTICE**
>
> The word **configurable** is used for I/O configured as either safety-related I/O or normal I/O. These are the yellow terminals with black text.

Install the robot according to the electrical specifications which are the same for all three inputs.

It is possible to power the digital I/O from an internal 24V power supply or from an external power source by configuring the terminal block called **Power**. This block consists of four terminals. The upper two (PWR and GND) are 24V and ground from the internal 24V supply. The lower two terminals (24V and 0V) in the block are the 24V input to supply the I/O. The default configuration uses the internal power supply (see below).

Power supply	If more current is needed, connect an external power supply as shown below.
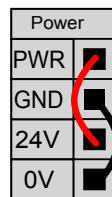
This example illustrates the default configuration using the internal power supply
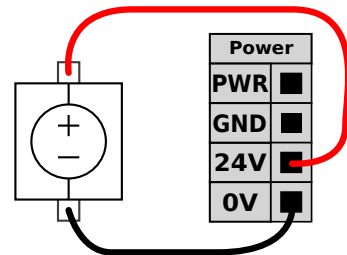
This example illustrates the default configuration with an external power supply for more current.

The electrical specifications for both the internal and external power supply are shown below.

Terminals	Parameter	Min	Typ	Max	Unit
Internal 24V power supply					
`[PWR – GND]`	Voltage	23	24	25	V
`[PWR – GND]`	Current	0	-	2*	A
External 24V input requirements					
`[24V – 0V]`	Voltage	20	24	29	V
`[24V – 0V]`	Current	0	-	6	A

*3.5A for 500ms or 33% duty cycle.