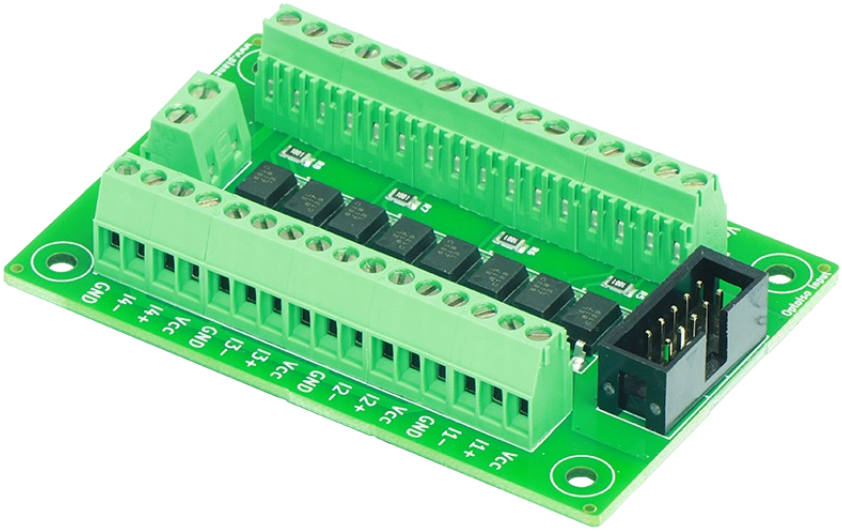
PlanetCNC

OptoIso Input adapter

2022/05/25 Rev1.0



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Introduction

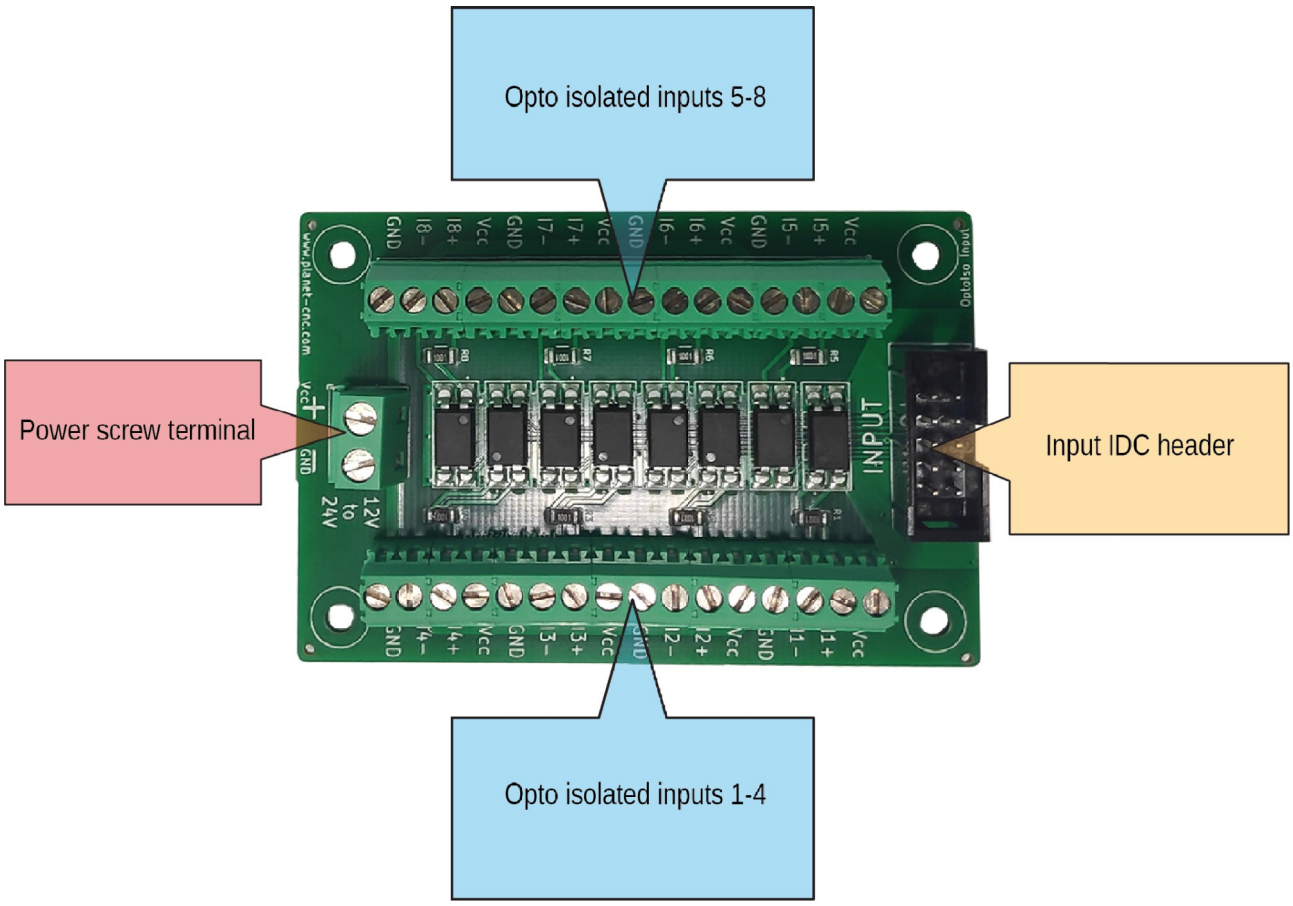
Overview

OptoIso Input adapter is a device that opto-isolates Mk3 controller inputs from external devices such as proximity sensors, input switches, probes and similar devices.

Its main function is to protect the input circuitry of Mk3 controller from any damage that may occur due to improper wiring or power surges at the side of externally connected device.

Also, using this adapter reduces electrical noise influence at controller inputs and makes up for easy connection of proximity switches.

Features and specifications:



1-8 Opto-isolated inputs:

- Single OptoIso Input adapter offers 8 opto-isolated input channels
- Inputs can be used with:
  - buttons
  - input switches
  - PNP and NPN proximity sensors
  - other switching devices

Input IDC header:

- this header is used to connect OptoIso Input adapter with the Mk3 controller Input header.

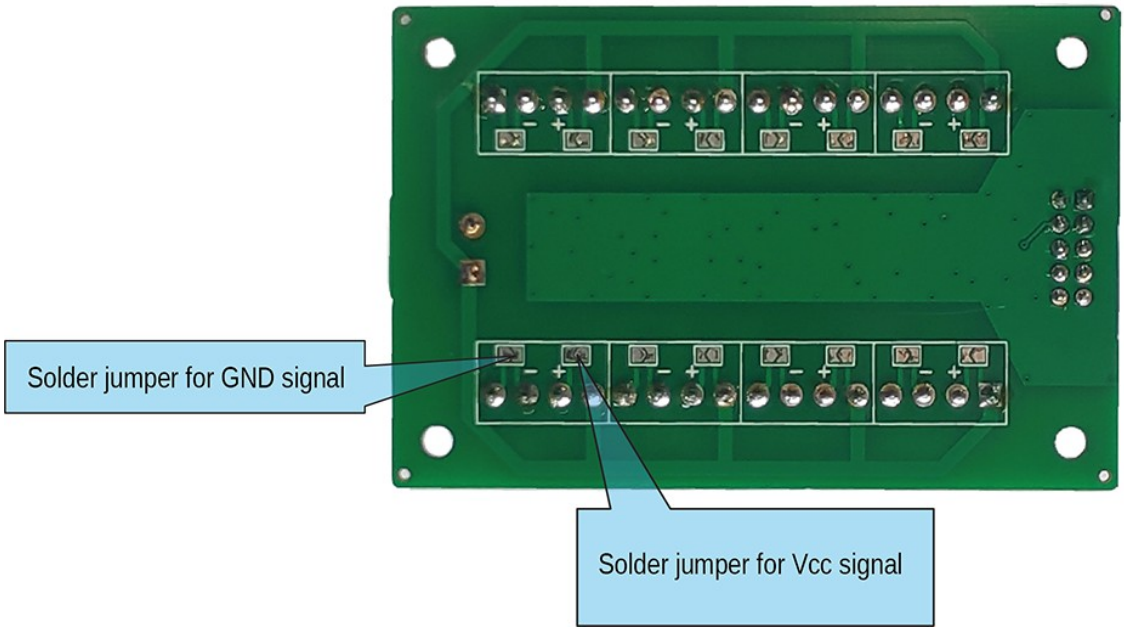
POWER screw terminal:

- External power supply screw terminal connector.
  - Min voltage value: 12VDC
  - Max voltage value: 24VDC

Solder jumpers:

Solder jumpers are located at the bottom side of the adapter.

Instead of manually wiring the IN- or IN+ terminals of dedicated input, user can solder the jumper and achieve the same effect. For better explanation see connection diagrams in next chapter.



“+” solder jumpers:

Each opto isolated input uses dedicated “+” solder jumper.

This jumper is used when you want to use e.g. NPN type of proximity sensor.

So if you connect your switching device that will supply the IN- terminal with GND, you can solder “+” jumper so that IN+ terminal will have constant Vcc potential.

“-” solder jumpers:

Each opto isolated input uses dedicated “-” solder jumper.

This jumper is used when you want to use e.g. PNP type of proximity sensor.

So if you use your switching device that will supply the IN+ terminal with Vcc when triggered, you can solder “-” jumper so that IN- terminal will have constant GND potential.

This is very useful when user wants to use both types of external switching devices with one board, e.g. PNP and NPN proximity sensor.

Input specification:

Each input uses opto-coupler and a resistor.

Terminals of single input are:

Vcc → Vcc terminal

Input + → Input for Vcc signal of opto input

Input- → Input for GND signal of opto input

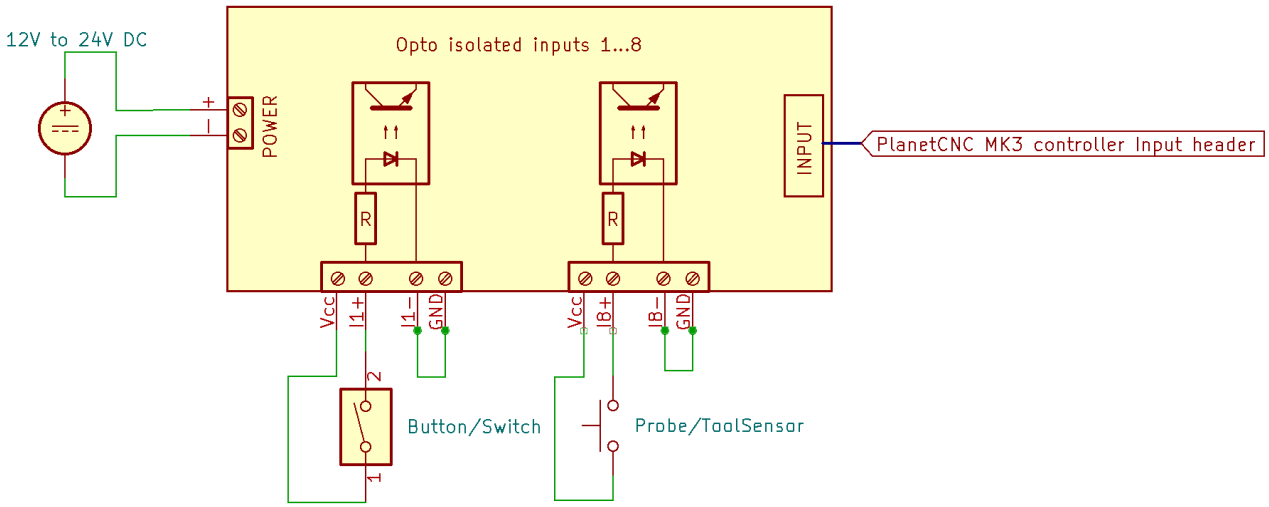
GND → GND terminal for switching device

Min voltage supplied to input : 12 VDC
Max voltage supplied to input: 24 VDC

Connection diagrams

Schematic below describes the use of OptoIso Input adapter with switch and a push button, both supplying the IN+ inputs with Vcc.

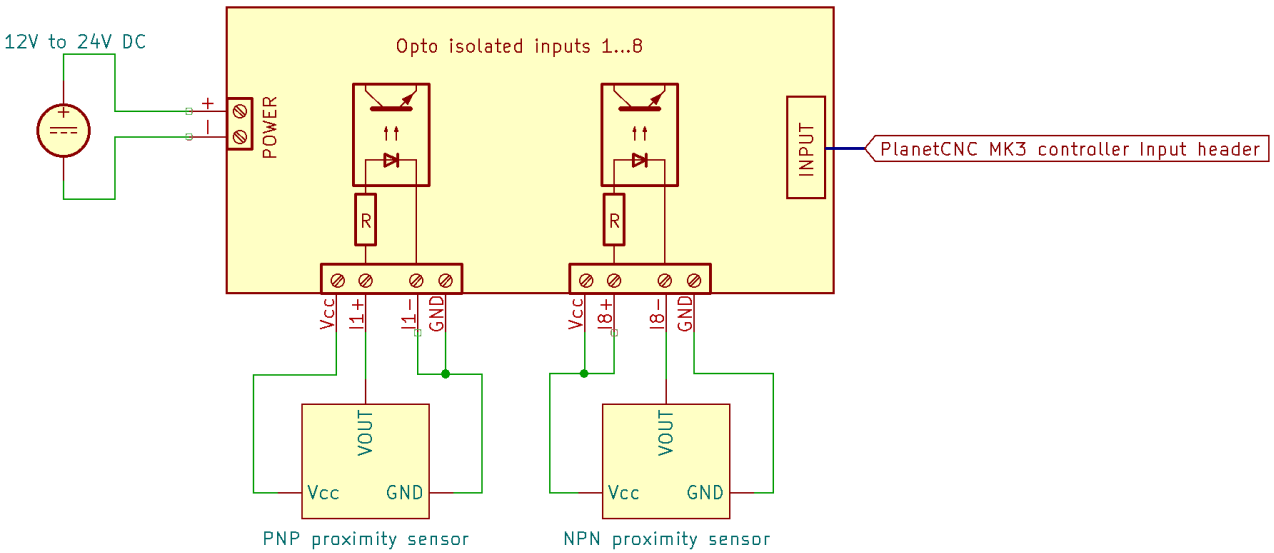
IN- terminals of both inputs need to be connected with GND terminal.



Schematic below describes the use of OptoIso Input adapter with NPN and PNP proximity sensor.

IN- terminal of first input need to be connected with GND terminal.

IN+ terminal of second input need to be connected with Vcc terminal.

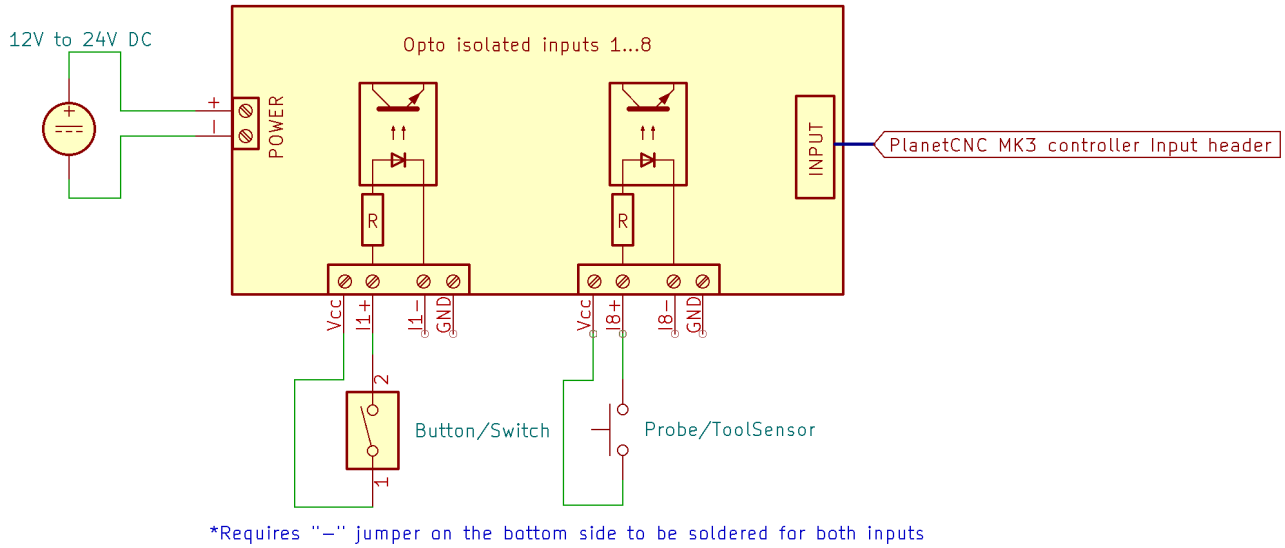


Connection diagram using solder jumpers:

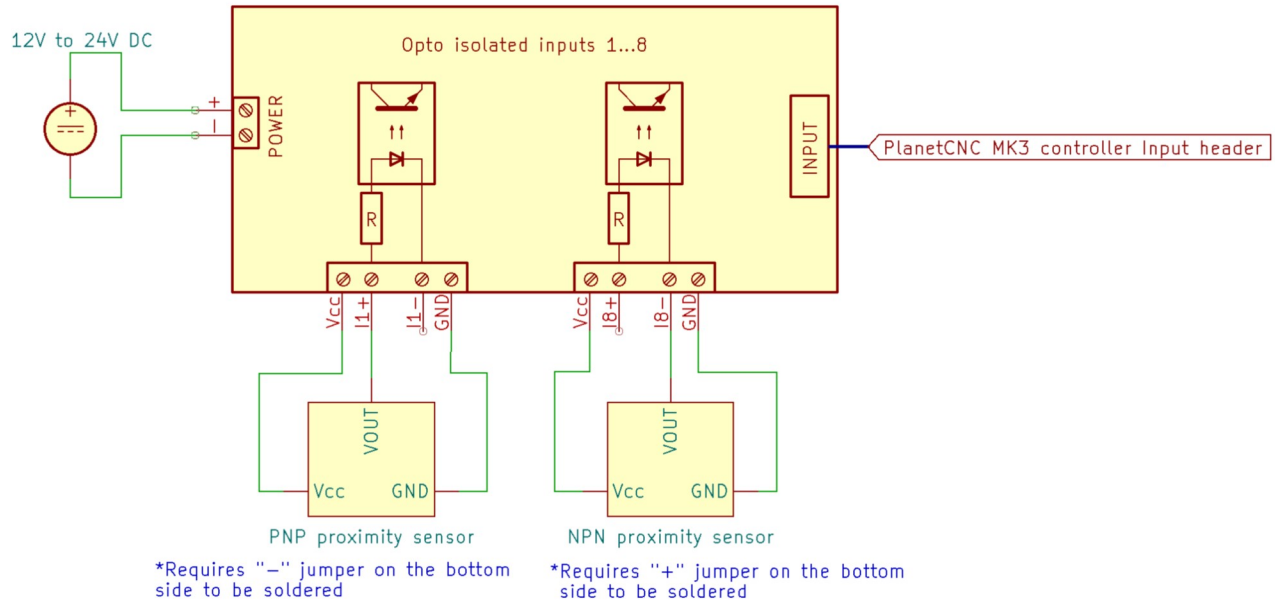
Instead of manually wiring the IN- or IN+ terminals of dedicated input, user can solder the jumper and achieve the same effect.

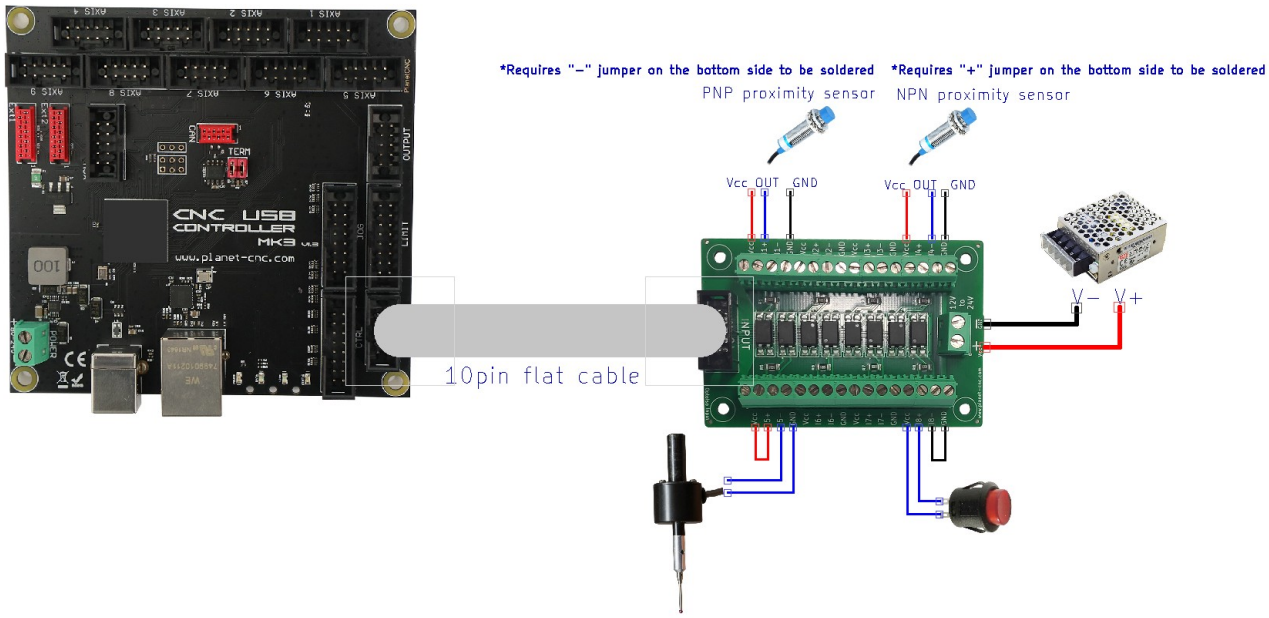
Schematic below describes the use of OptoIso Input adapter with switch and a push button, both supplying the IN+ inputs with Vcc.

“-” jumper of both inputs are in this case soldered.



Schematic below describes the use of OptoIso Input adapter with NPN and PNP proximity sensor.
“+” jumper of first input and “-” jumper of second input are in this case soldered.




*Requires "−" jumper on the bottom side to be soldered
*Requires "+" jumper on the bottom side to be soldered
PNP proximity sensor
NPN proximity sensor
Vcc OUT GND
Vcc OUT GND
V− V+
10pin flat cable
CNC USB
CONTROLLER
MK3
www.planet-cnc.com
INPUT

OptoIso Input adapter’s use with PlanetCNC TNG software

TNG software settings related to Input header are located under:

- File/Settings/Input/Output → user can ‘Invert’ desired inputs of controller
- File/Settings/THC → user can set desired input for THC device signals
- File/Settings/Program Options/Probe&Measure → user can set desired input for probe device/movable sensor/fixed sensor
- File/Settings/User Interface/State/LED Input

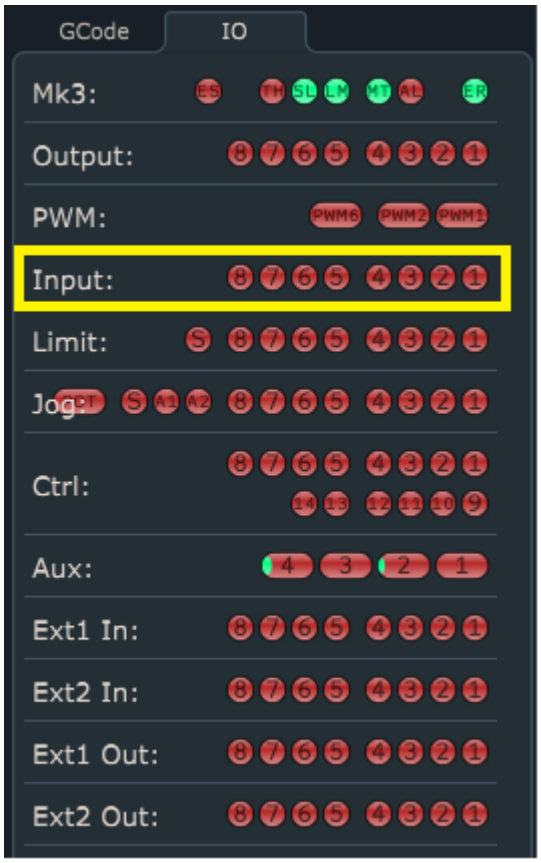
All settings above use inputs located at the Input header. Devices related to the input header can be connected to controller trough OptoIso Input adapter.

Input status lights under IO state panel:

Input IO LED settings are located under:

File/Settings/User Interface/State/LED Input → “Show”

Row displays 8 inputs:



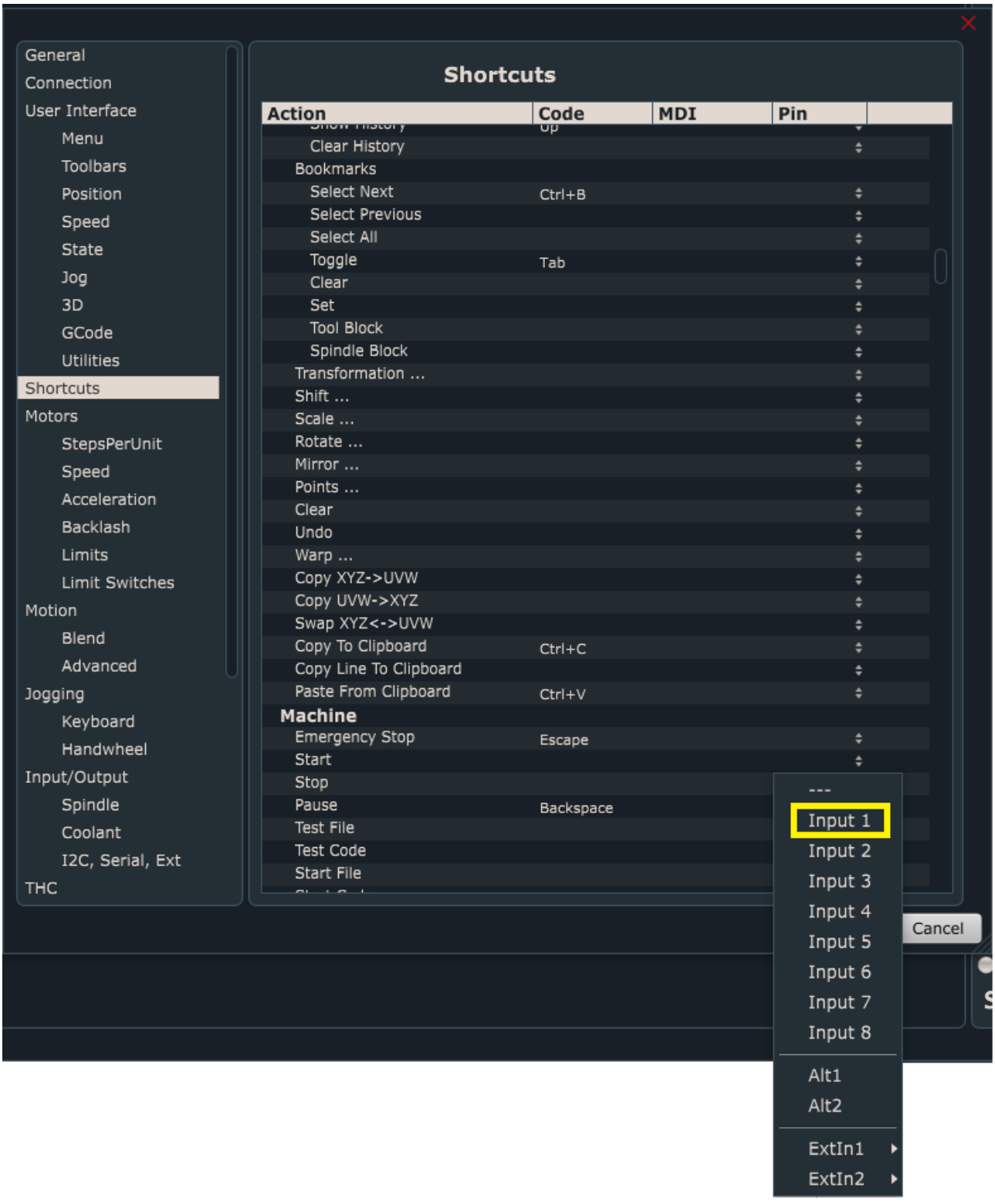
Using software pin shortcuts with OptoIso Input adapter inputs:

You can map inputs of OptoIso Input adapter as a shortcut pin in PlanetCNC TNG.

Example:

We want to use button, connected to OptoIso Input adapter input 1 as a program start button.

Under File/Settings/User Interface/Shortcuts → Machine/Start → Pin → Input 1



Gcode commands:

Reading Inputs:

OptoIso Input adapter status values are available through parameters

_input or ***_hw_input***

_input **|*num*** or ***_hw_input*|*num***

You can use them with your gcode, script files, expressions, toolbar buttons etc..

Dimensions:

DXF file is available at link below:

OptoIso Input DXF file

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