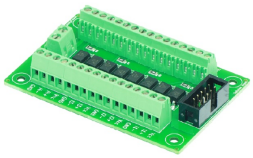

PlanetCNC 1.0 Optolso Input Adapter Instruction Manual

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PlanetCNC

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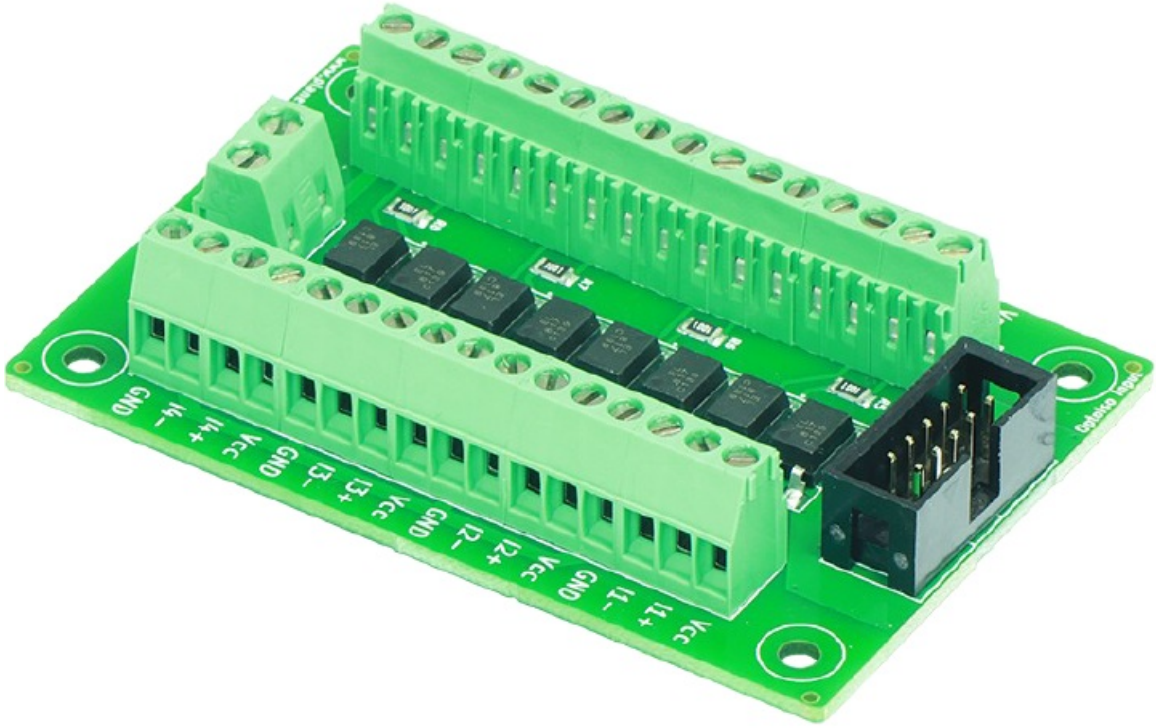


Date of Revision: 2022/05/25

Disclaimer

The OptoIso Input Adapter is provided “as is,” without warranty. There is no warranty for the board, either expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose and non-infringement of third-party rights. The entire risk as to the quality and performance of the devices is with you. Should the height sensor or height controller prove defective, you assume the cost of all necessary servicing, repair, or correction.

In no event shall the author be liable to you for damages, including any general, special, incidental, or consequential damages arising out of the use or inability to use the OptoIso Input Adapter.

Product Introduction

The 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.

Product Features and Specifications

- **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.
- **Input specification:** Each input uses opto-coupler and a resistor. Terminals of a 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

Product Connection Diagrams

The following connection diagrams describe the use of the OptoIso Input Adapter with different devices:

- 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 the first input needs to be connected with GND terminal. IN+ terminal of the second input needs 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 the first input and – jumper of the second input are in this case soldered.

OptoIso Input Adapter's Use with PlanetCNC TNG Software

All settings above use inputs located at the Input header. Devices related to the input header can be connected to the controller through 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:

Product Usage Instructions

1. Connect the input device(s) to the OptoIso Input Adapter as per the connection diagrams mentioned in the user manual.
2. Make sure that the IN- terminal of each input is connected to the GND terminal.
3. Make sure that the IN+ terminal of each input is connected to the Vcc terminal.
4. If using solder jumpers, solder the appropriate jumper(s) instead of manually wiring the IN- or IN+ terminals of dedicated input.
5. Connect the OptoIso Input Adapter to the Mk3 controller.
6. Configure the input settings in the PlanetCNC TNG software as per the instructions mentioned in the user manual.
7. Check the input status lights under IO state panel to ensure that the inputs are working correctly.

Disclaimer

OPTOISO INPUT ADAPTER IS PROVIDED TO YOU "AS IS," WITHOUT WARRANTY. THERE IS NO

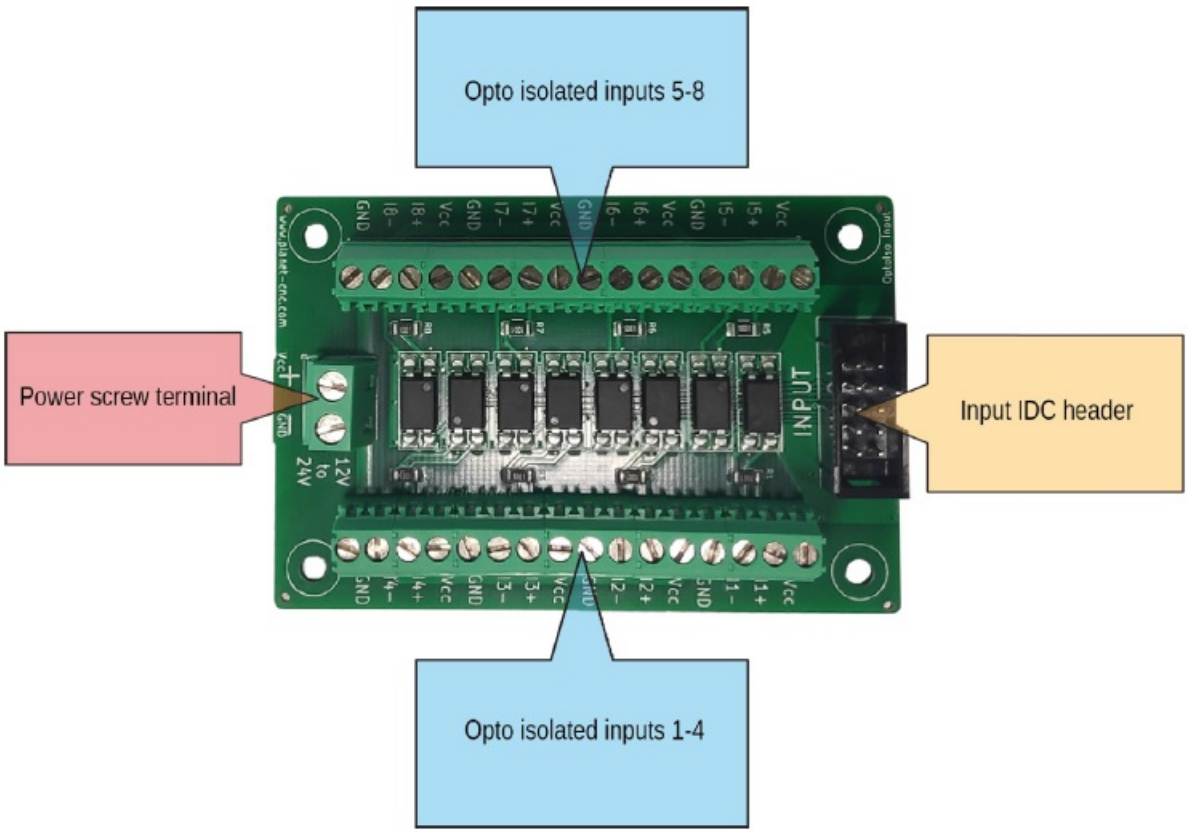
WARRANTY FOR THE BOARD, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE DEVICES IS WITH YOU. SHOULD THE HEIGHT SENSOR OR HEIGHT CONTROLLER PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION. IN NO EVENT SHALL THE AUTHOR BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE OPTOISO INPUT ADAPTER.

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

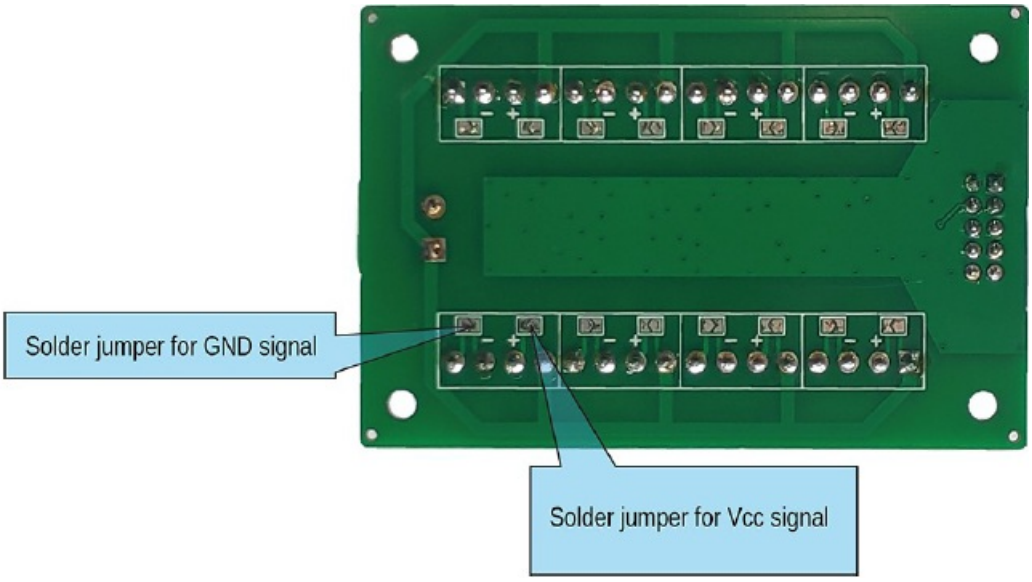
Input IDC header:

- 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.

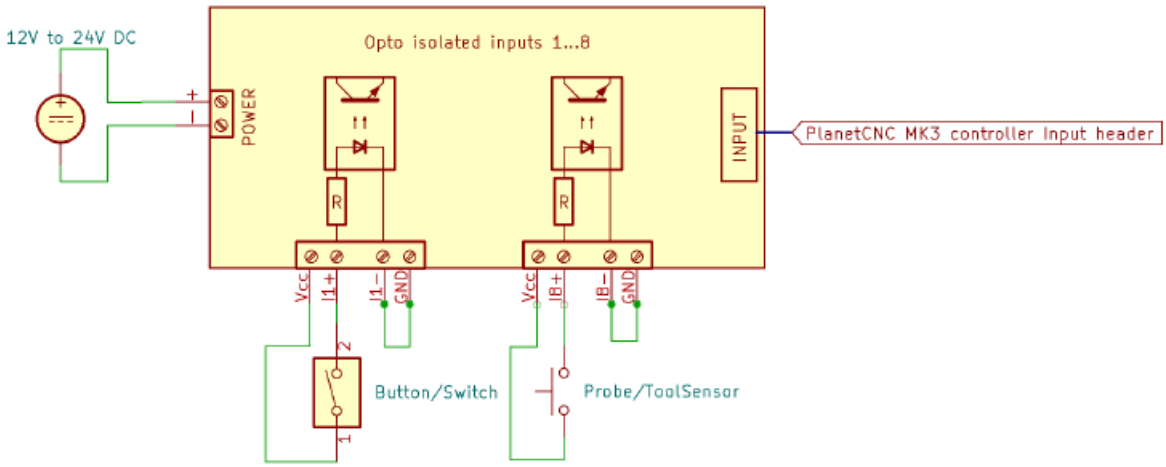
Input specification

Each input uses opto-coupler and a resistor.

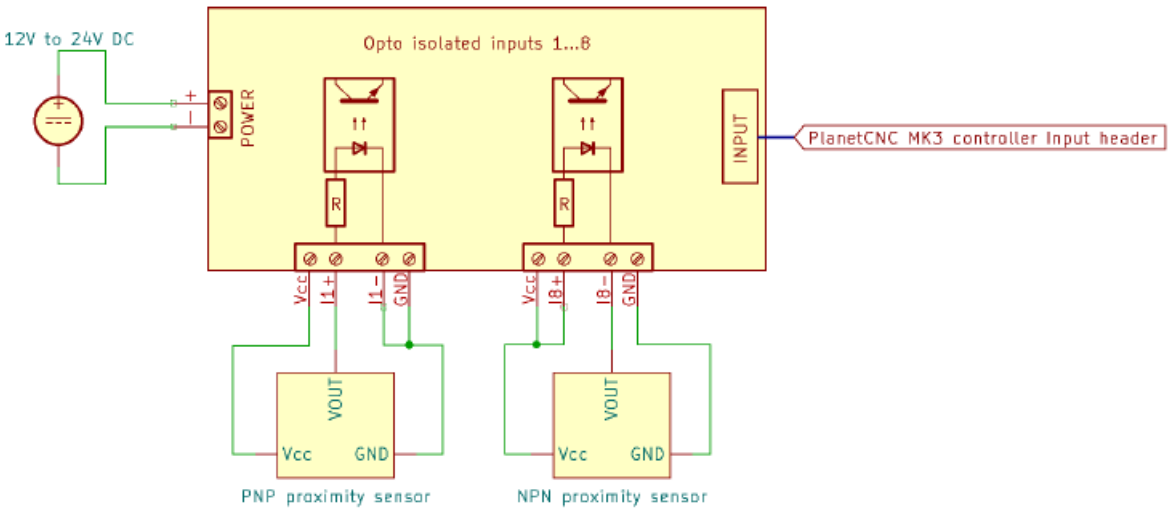
Terminals of single input are:

- 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.

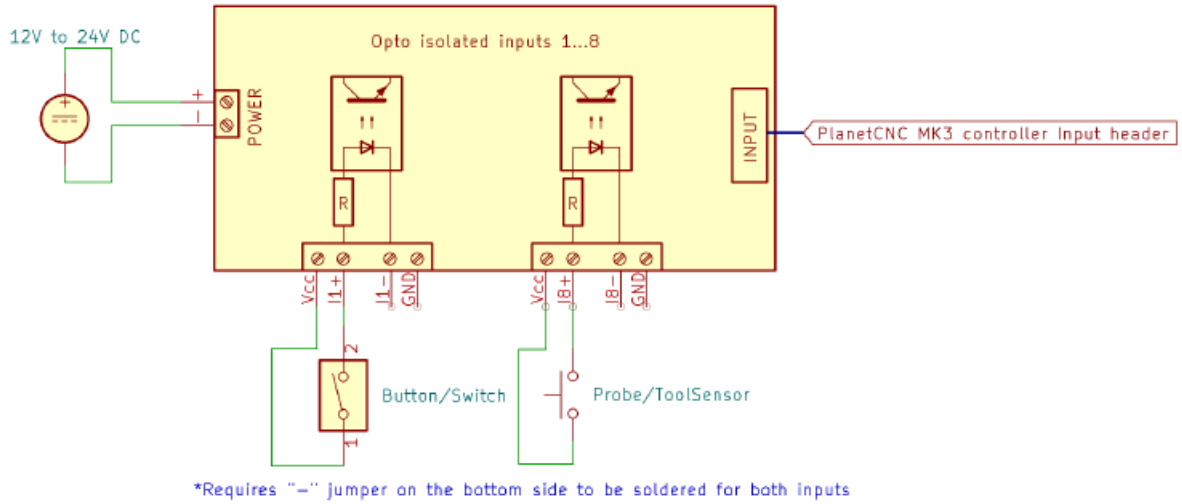


- Schematic below describes the use of OptoIso Input adapter with NPN and PNP proximity sensor.
- IN- terminal of first input need to be connected with GND terminal.
- IN+ terminal of second input need to be connected with Vcc terminal.

Connection diagram using solder jumpers:

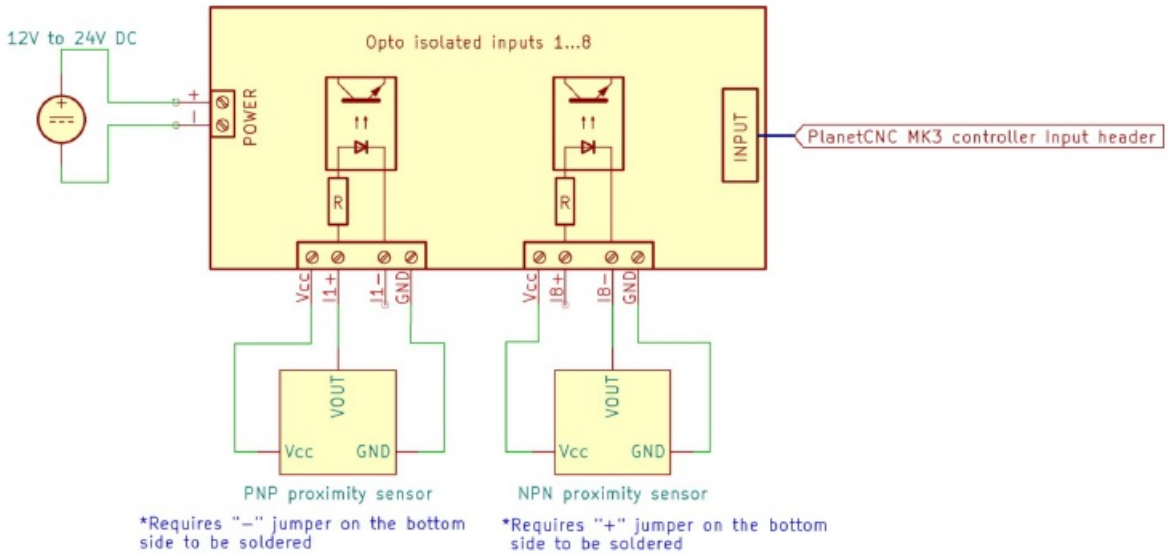
- Instead of manually wiring the IN- or IN+ terminals of dedicated input, user can solder the jumper and achieve the same effect.
- Schematic below describes the use of OptoIso Input adapter with switch and a push button, both supplying the IN+ inputs with Vcc.

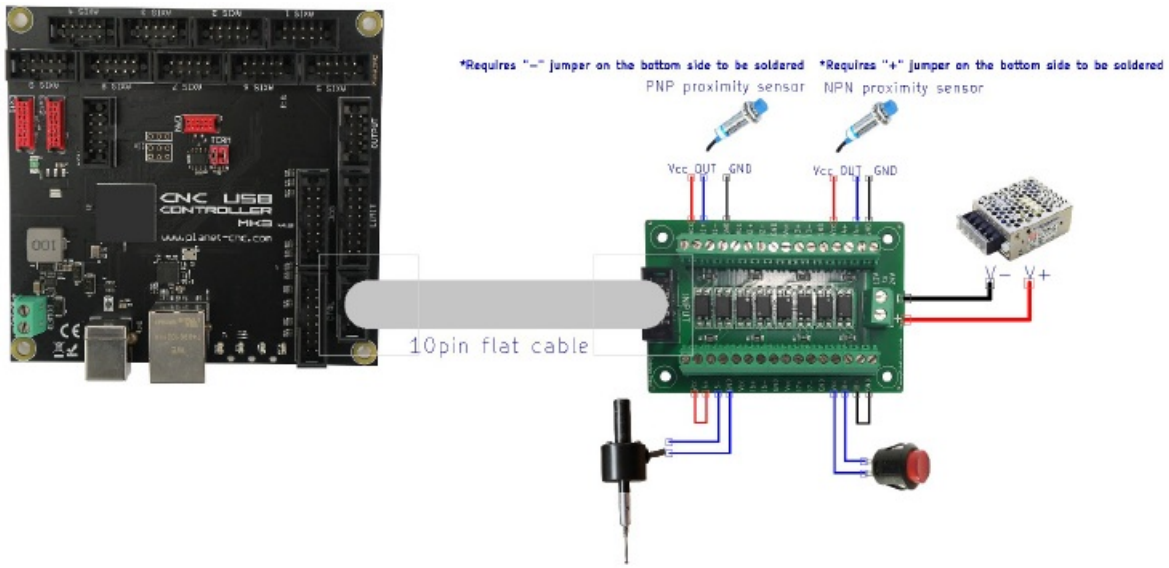
“-” jumper of both inputs are in this case soldered



- 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





PlanetCNC TNG software

OptoIso Input adapter's use with PlanetCNC TNG software

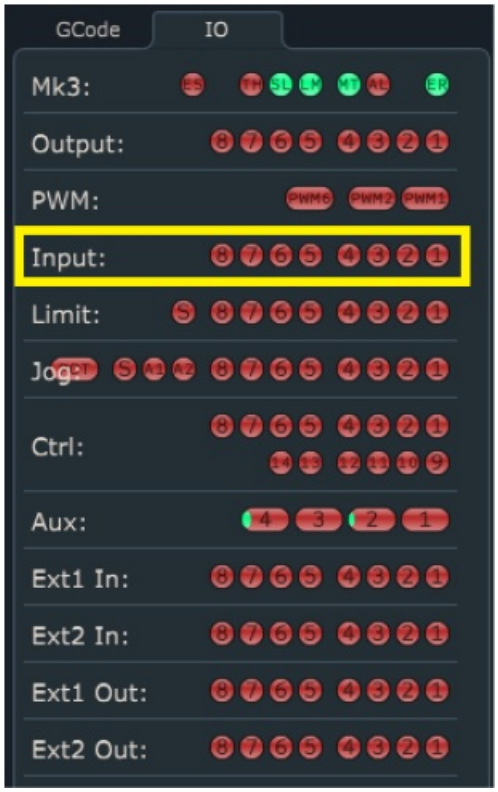
TNG software settings related to Input header are located under:

- 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

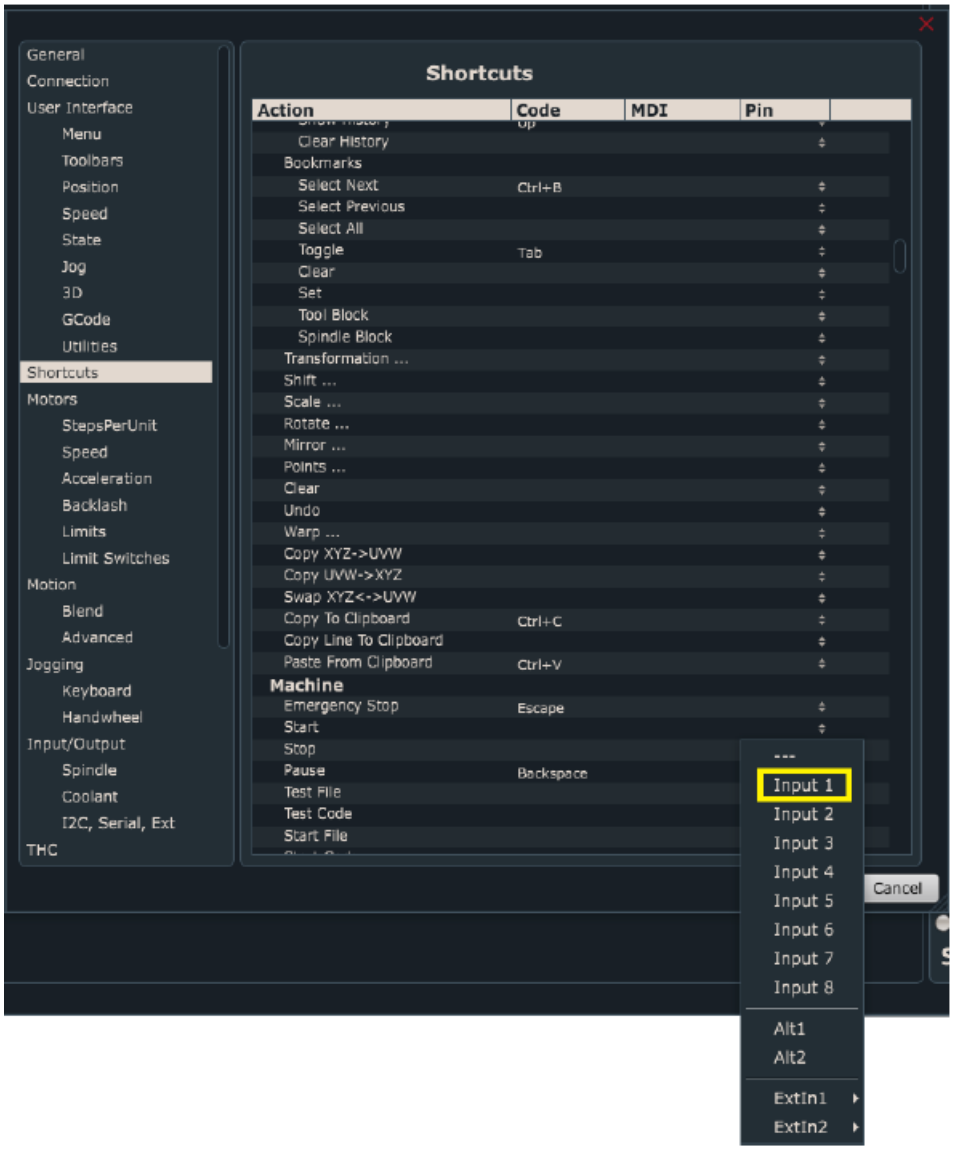
All settings above use inputs located at the Input header. Devices related to the input header can be connected to controller trough OptoIso Input adapter.

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 Optolso 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

Documents / Resources

	PlanetCNC 1.0 OptoIso Input Adapter [pdf] Instruction Manual 1.0, 1.0 OptoIso Input Adapter, OptoIso Input Adapter, Input Adapter, Adapter

References

- planet-cnc.com/wp-content/uploads/sw/doc/OptoIsoInput.dxf