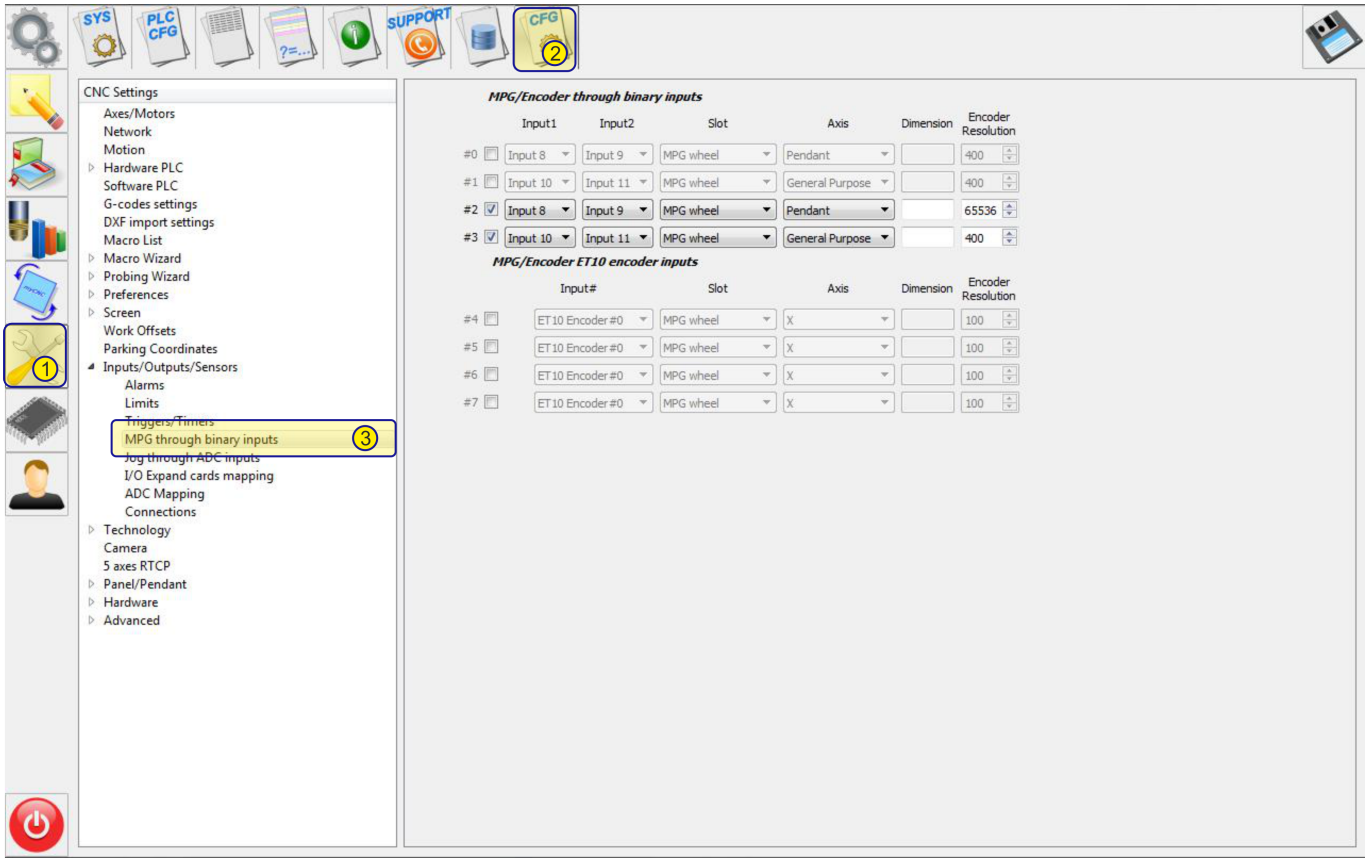
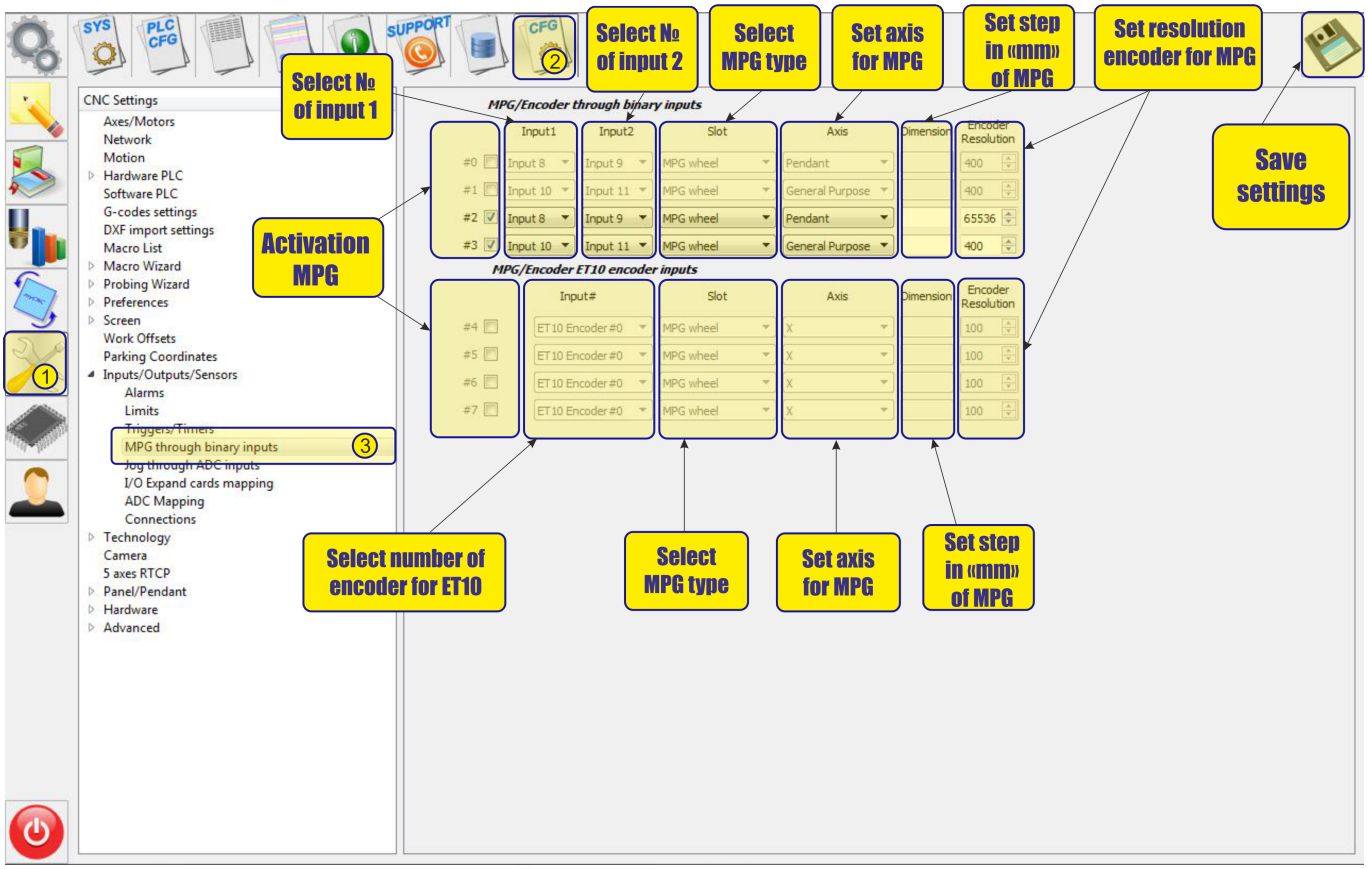
MPG through binary inputs

Main window:



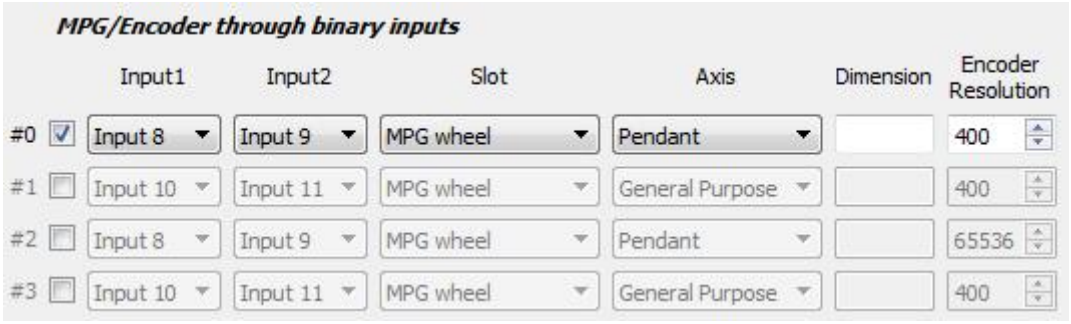
Basic functions:



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Mpg/Encoder throught binary inputs

- To activate the MPG, it is necessary to check the box next to the MPG number:



- MPG - designed for manual control of the CNC without resorting to controlling the system from the operator panel. With the help of the control panel, the operator of the CNC machine can change the position of the axes, change the feedrate, adjust the spindle operation, set “0” and perform other operations while in close proximity to the workpiece.
- MPG examples are shown below:



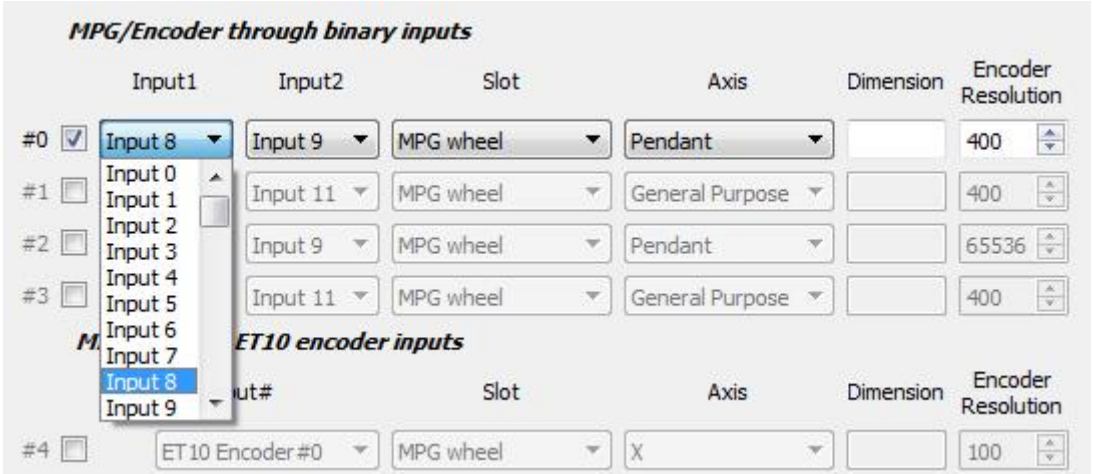




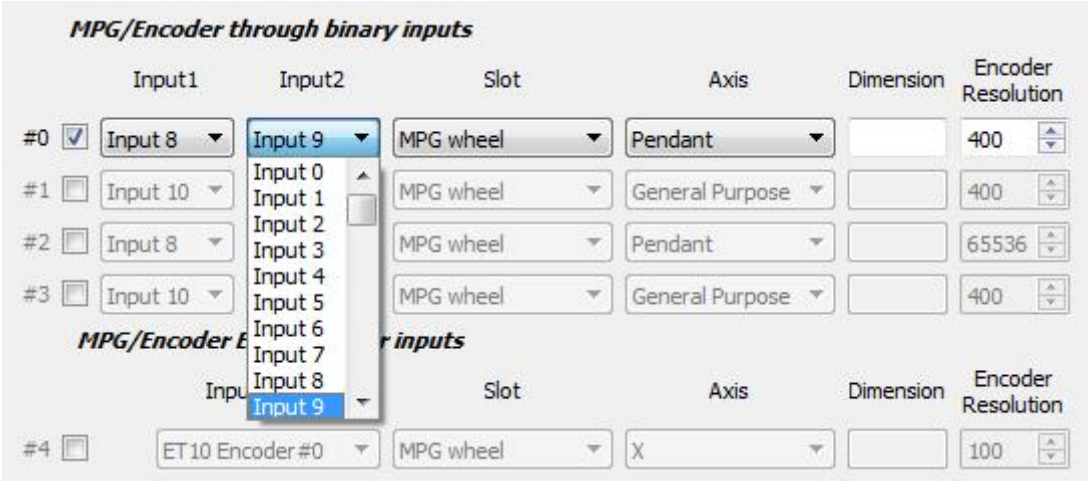


- After activation, you can select the operating input numbers for the MPG on the controller - input1 and input2

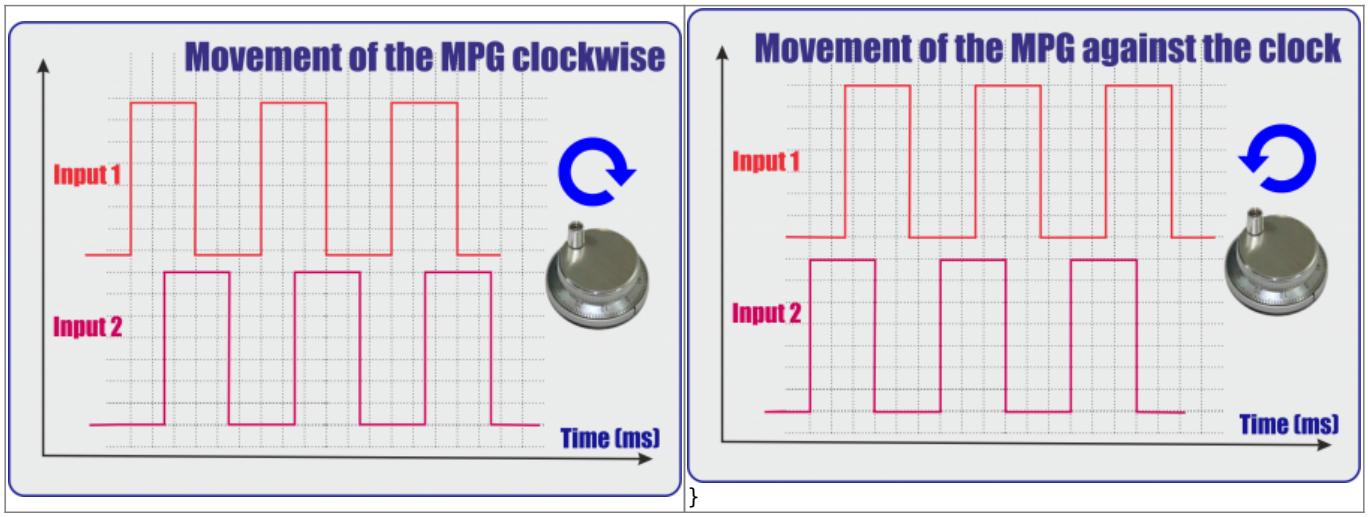
input1:



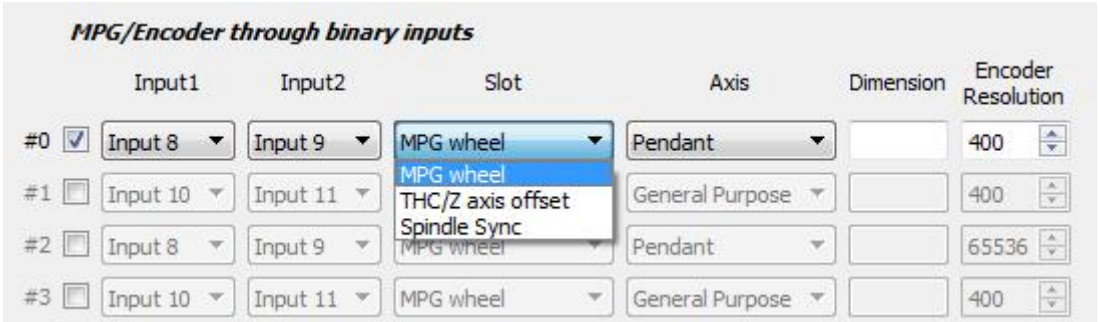
input2:



- Timing diagram for the MPG signals:

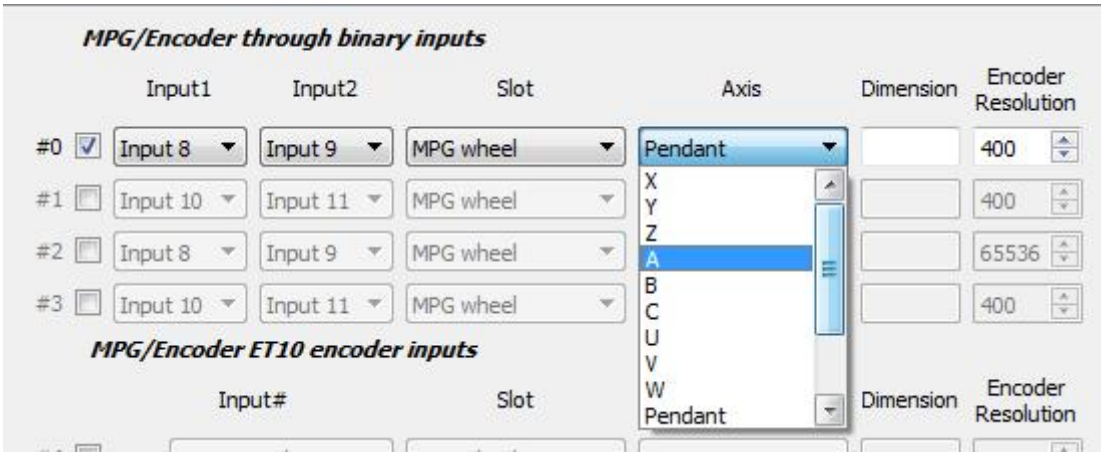


- It is also necessary to select the MPG function:



Functions	Discriptions
MPG wheel	Direct control of the MPG
THC/Z axis offset	Controlling the tracking (torch height control) while cutting with the help of an MPG
Spindle Sync	Spindle control, via the analog output to control the spindle speed.

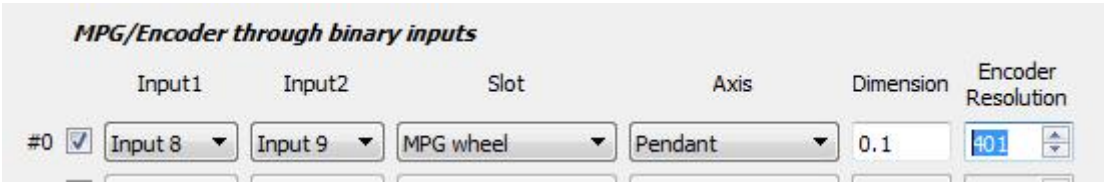
- If necessary, select the coordinate axis, which will be controlled by the MPG



- Next we select the length of displacements with the help of an MPG. Number of movements in mm per pulse MPG:



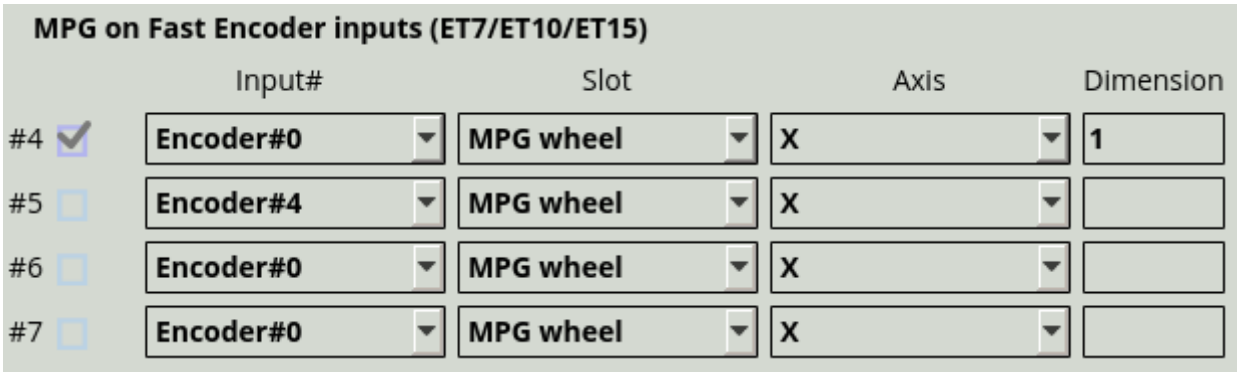
- We set the resolving power of the MPG - the number of pulses per one revolution of the MPG



NOTE: The ET7 controller has two encoder slot reserved for the ET7 keyboard panel. These are permanently assigned to inputs #16, 17, 18, and 19, and cannot be changed despite editing the Config window (the preset cannot be overridden). If encoder input slots are to be used on the ET7 board, the latter two slots (2 and 3) should be used. This preset is not present on the ET6/ET10/ET15 boards where encoder slots 0-3 can all be used.

ET10 MPG connection through encoder inputs

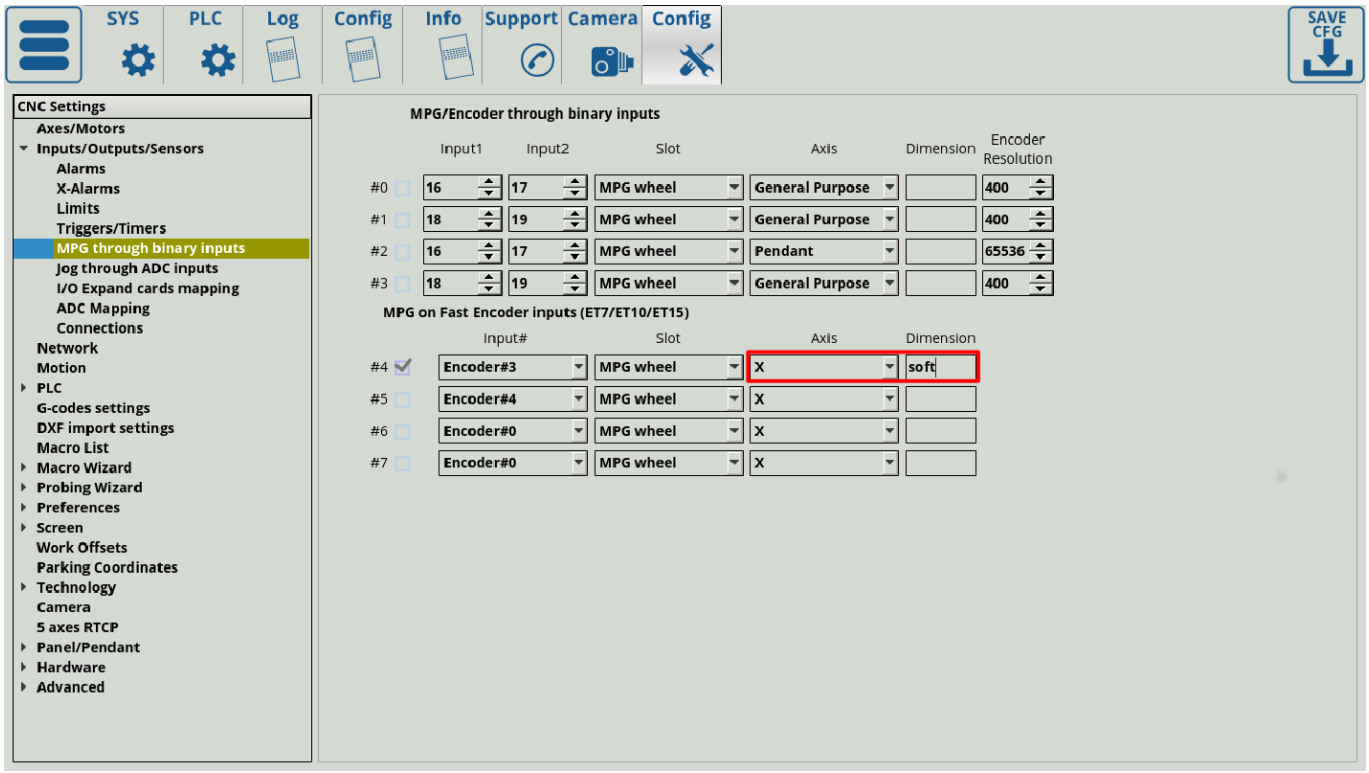
If you use the ET10 controller, you can utilize the dedicated encoder inputs instead of connecting the MPG wheel to the binary inputs of this controller. In this way, it is not necessary to specify two binary inputs but rather one specific encoder input.



- To activate the MPG or Encoder, it is necessary to check the box next to required MPG/encoder number
- After activation, you can select the encoder number on the controller for to specify which encoder will be operated
- It is also necessary to select the MPG function (MPG wheel/THC/Spindle Sync):

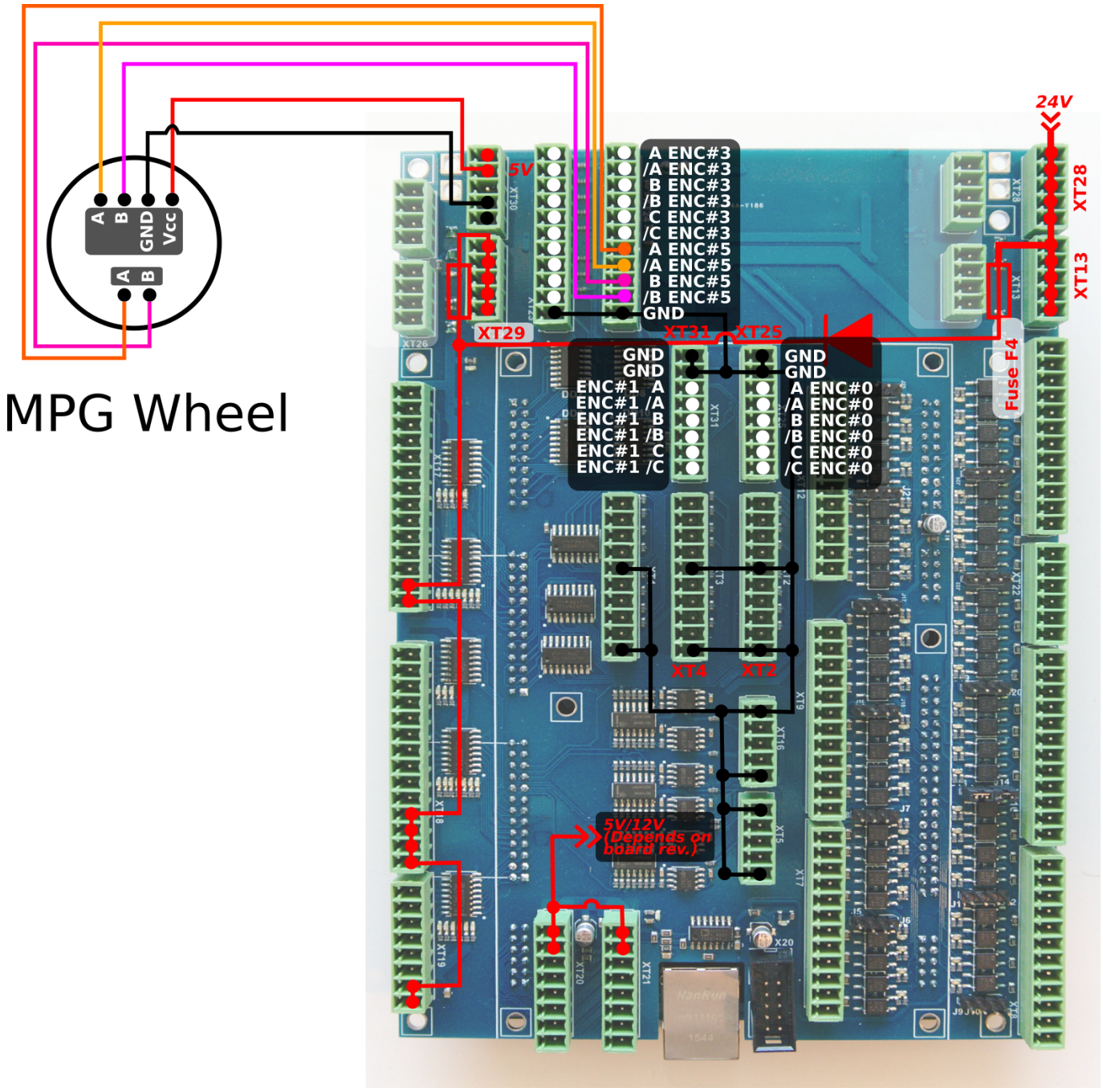
Functions	Discriptions
MPG wheel	Direct control of MPG
THC/Z axis offset	Controlling the tracking (THC) while cutting with the help of an MPG
Spindle Sync	Spindle control, via the analog output to control the spindle speed.

- If necessary, select the coordinate axis which will be controlled by MPG. This will allow to move the machine along that axis when the MPG wheel is turned.
- Next we select the length of displacements with the help of MPG. This specifies the length of each movement per one click of the MPG wheel (turning by one mark). *Note that this number is IGNORED when using the `Pendant` option - the software value will be chosen instead*:
  - If using a software pendant approach while having selected a particular axis (for example, by using the hotkeys to switch the step size while only using the MPG wheel to control the X axis), you can enter `soft` into the Dimension field so that the length of displacements uses the software pendant value.



- The encoder resolution is hard-coded to be 65536 (as of November 2019).

The diagram below shows an example of an MPG wheel connection to the ET10 controller (in this example, the MPG wheel in connected to the encoder input #5):

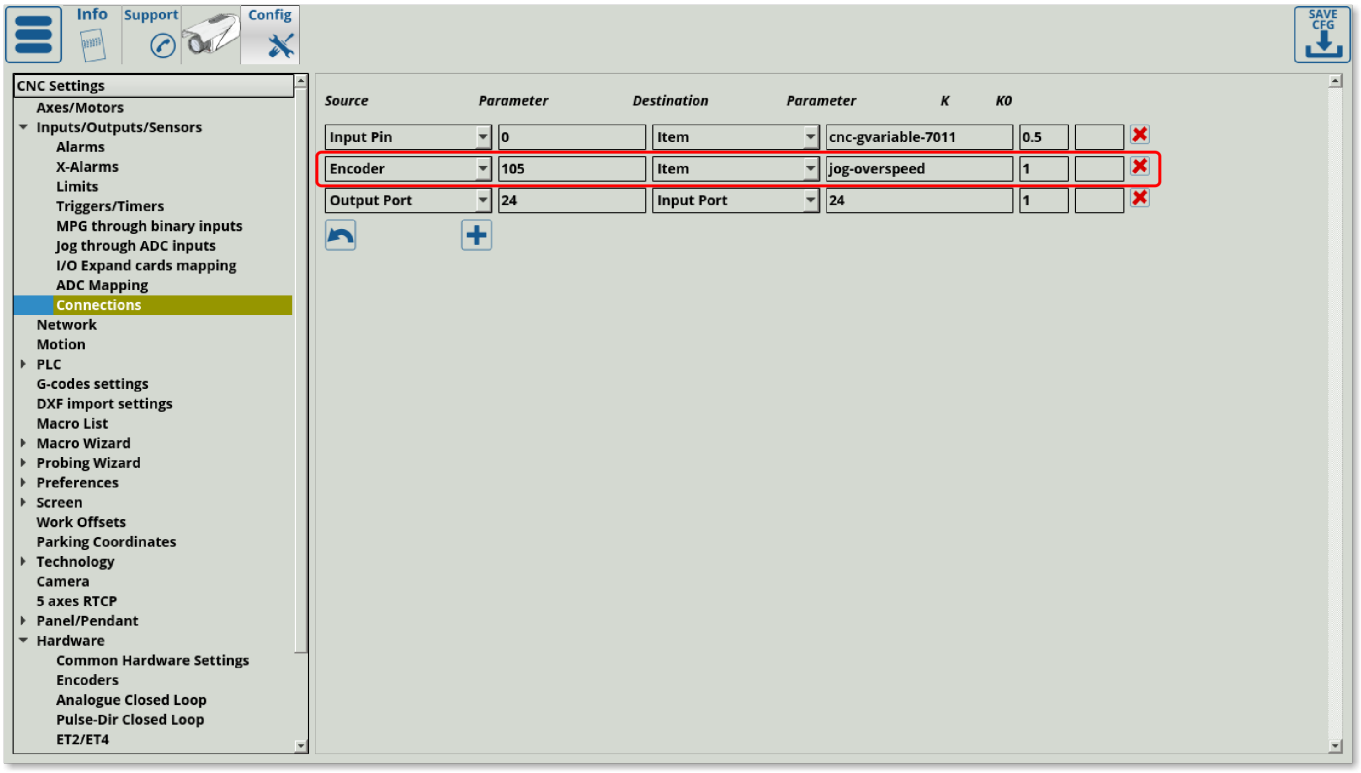


As already mentioned, axis jog control can be set up directly from the *MPG through binary inputs* settings window. In order to set up this encoder to change some values within the software (such as jog overspeed, motion overspeed, etc), the user can go into Settings > Config > Inputs/Outputs/Sensors > Connections, and add a new connection or edit an existing one.

- In the **Source** field, select Encoder.
- For the **parameter**, type in some parameter 100-112 for fast encoders (0-16 is reserved for slow encoders). In order to check which particular encoder is used, the user can go into Settings > Config > Hardware > Encoders and note which encoder value changes as the MPG wheel is being turned. For example, for fast encoder #5, parameter 105 will be chosen.
- For **destination**, select Item.

- For **destination parameter**, input the parameter you require (for example, jog-overspeed)
- Set K to 1, leave K0 blank.

The settings window should then look similar to this:



This will allow the operator to use the MPG wheel connected to the encoder inputs to change a number of myCNC parameters of the fly by simply turning the MPG wheel handle.

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Last update: **2019/11/15 09:57**