

Using the Output Board for Spindle Control

The output board can be used with Variable Frequency Drive (VFD) and Spindle and these instructions will show you how. These instructions will describe how to set VFD parameters and connecting VFD control input to the output board. A MK3/4 controller and Chinese Huanyang VFD are used in these instructions.

Step 1 - Configuring Huanyang VFD's parameters.

By varying the frequency and voltage supplied to the electric motor, the electric motor is driven and the motors ON/OFF control, directions and speed, by the VFD. The external equipment (output board) can control all these functions and through the control inputs, communicated with the VFD. These control inputs are located on the external terminal pad.

Start with defining the operating mode and configuring the control inputs of the VFD.

1.1 Defining the VFD's operating mode:

- Start/stop the spindle from the VFD's external terminal pad
- Change motors direction from the VFD's external terminal pad.
- Regulate the motors RPM from the VFD's external terminal panel with 0-10 analog voltage signal.

As per the VFD's user manual the following parameters must be configured:

"Source of Run Commands" ->parameter PD001

PD001 → set it to value 1 (Set by external terminals)

Start, stop, change direction and speed can now be controlled via screw type input terminal.

"Source of Operating Frequency"-> parameter PD002

PD002 → set it to value 1 (Set by external terminals);

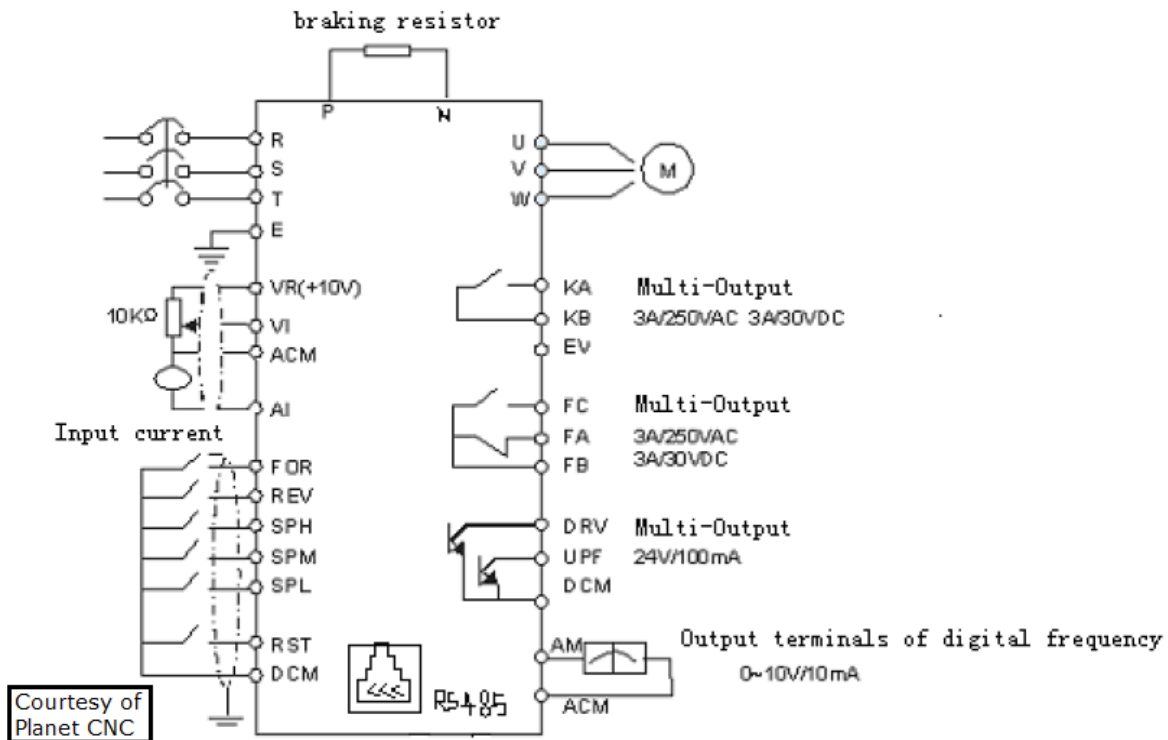
Source of operating frequency signal type is determined with parameter PD070

PD070 → set to value 0 (0-10V)

The motor speed can now be controlled via screw type terminal using the 0-10V input.

Step 2 - Connecting the output board with the VFD

The output board needs to be connected with the VFD control inputs.



Control inputs of VFD to use:

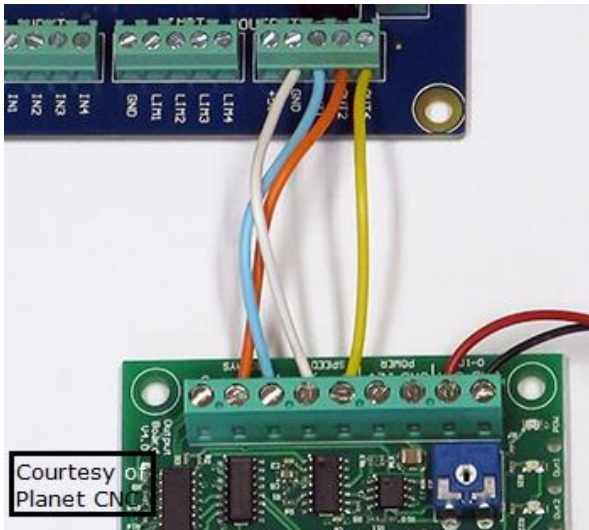
"FOR" : Input for forward motor rotation

"REV" : Input for reverse motor rotation

"DCM" : Common terminal of Digital and Control Signals

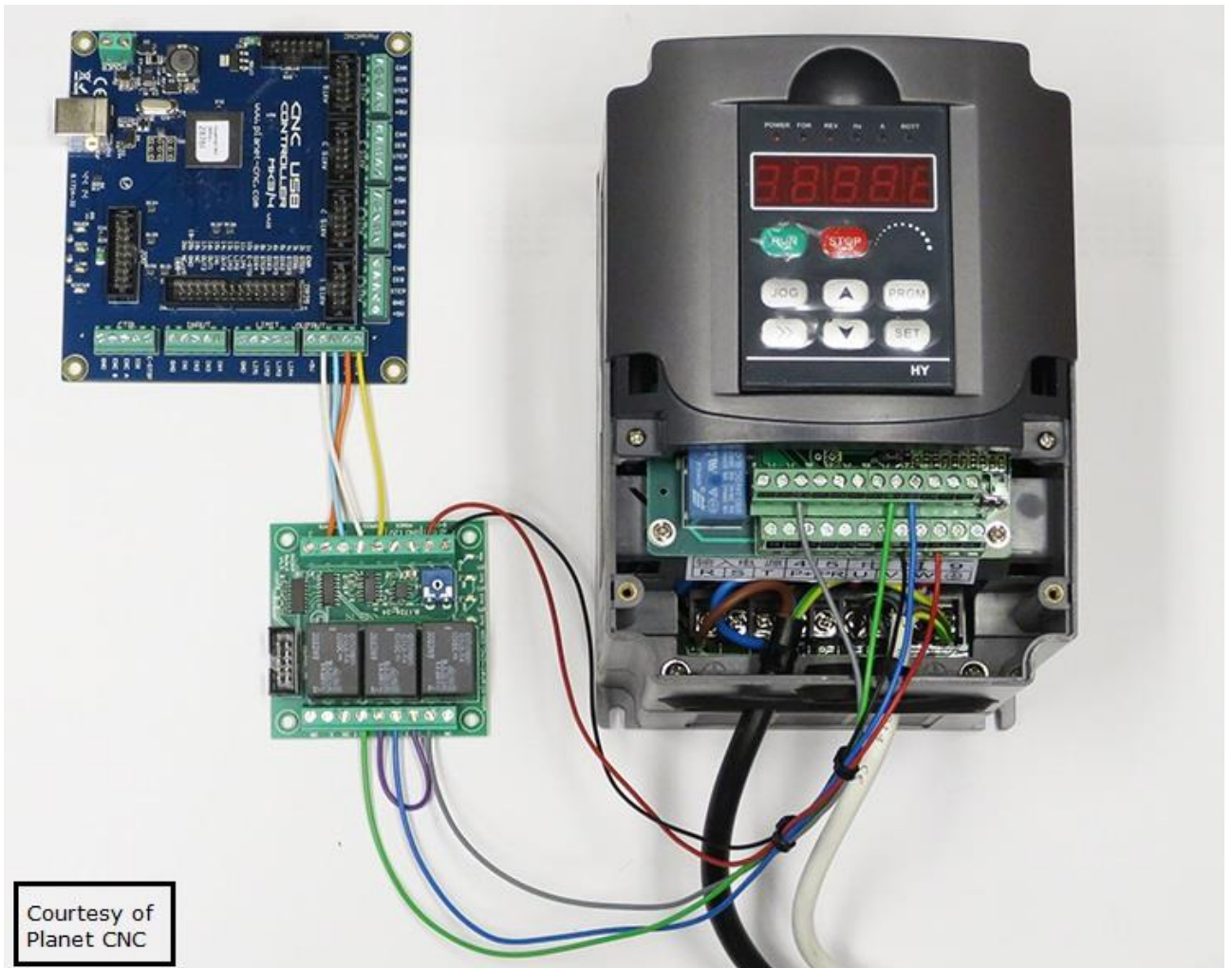
"VI" : Analog Voltage Frequency Reference Input. 0-10V signal from output board will be connected to this input.

"ACM" : Common Terminal of Analog and Control Signals. GND signal from output board will be connected to this input.



Courtesy of Planet CNC

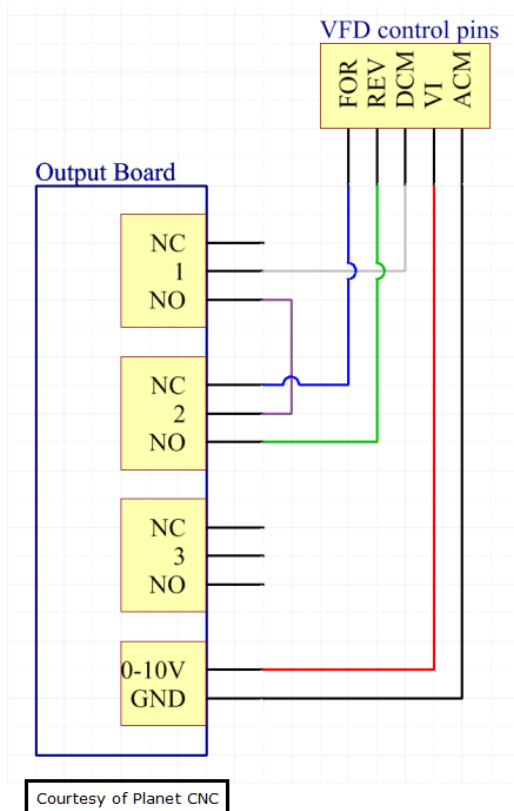
Connect the output pins of the controller with the input pins of the output board.



Courtesy of Planet CNC

Connect the output board to the VFD's control inputs.

This wiring diagram illustrates how the relays and the varying voltage output are connected with the VFD's control input so that the ON/OFF, direction and speed control is achieved:



Short functional behaviour description:

Once the spindle is turned ON (M3 command), relay 1 activates and the motor rotates in forward direction (VFD's **"FOR"** input becomes active). When you change direction, relay 2 is activated and the motor starts to rotate in reverse direction (VFD's **"REV"** input becomes active).

PLEASE NOTE:

Please check that all spindle, coolant and speed g-codes correctly correspond with the relays and outputs BEFORE any wiring is done and equipment connected.

Information courtesy of Planet CNC.