VFD enclosure schematic

How power, spindle commands and accessory signals travel through the enclosure.

SUPPLY AND COMMANDS

AC supply
Match enclosure voltage

CNC via PWM
Speed and control inputs

CNC via Modbus
Commands and status

PwnCNC VFD



The drive varies motor output frequency to control spindle speed.

MOTOR AND ACCESSORIES

Spindle motor
Three-phase motor power

Braking resistor
Optional braking load

ATC via RUN
Drive running-state relay

IoT relay strip
Accessory trigger signal

RIGHT PANEL / POWER

The AC inlet filters electrical noise. The adjacent power switch energizes the drive. The spindle socket carries motor power and protective earth through the spindle cable.

During deceleration, the optional braking resistor dissipates energy as heat. It can shorten spin-down time with the appropriate drive settings.

LEFT PANEL / CONTROL

In Auto (0 / down), the drive takes commands from the configured CNC interface. Use the labeled PWM or Modbus port and the cable supplied for your controller.

In Manual (I / up), use RUN and STOP/RESET on the front keypad and set speed with its dial. The display shows drive information such as frequency or RPM.

Two 2-pin plugs serve different purposes

Modbus connects to the CNC controller. RUN connects to the automatic tool changer (ATC) and reports the drive's running state. A standard spindle installation leaves RUN unused. Identify each socket by its panel label before connecting the cable.

Connector reference

Pin numbers and signal names refer to the VFD enclosure end of each connection.

PWM control

GX12-6 male panel connector / CNC controller to VFD

Pin 1	**GND**	Signal ground
Pin 2	**VF1**	Speed reference input
Pin 3	**DI1**	Digital input 1 (forward run in the standard profile)
Pin 4	**COM**	Digital input common
Pin 5	**DI2**	Digital input 2 (function depends on drive profile)
Pin 6	**+10 V**	Reference voltage supplied by the drive

Modbus and RUN

Separate GX12-2 male panel connectors / match the label on the enclosure

Modbus pin 1	**SC-**	RS-485 negative
Modbus pin 2	**SC+**	RS-485 positive
RUN pin 1	**TA**	Running-state relay contact
RUN pin 2	**TC**	Running-state relay common

Spindle and braking resistor

Separate WS16B female panel connectors / right panel

Spindle pin 1	**V**	Motor phase V
Spindle pin 2	**U**	Motor phase U
Spindle pin 3	**W**	Motor phase W
Spindle pin 4	**PE**	Protective earth
Brake pin 1	**PB**	Braking resistor connection
Brake pin 2	**P+**	Braking resistor connection

IoT accessory trigger

The female accessory jack carries FM1 (signal) and GND (return) to a compatible IoT relay strip. The strip supplies power to the accessory. A typical use is starting dust collection as the spindle comes up to speed.

Disconnect mains power before connecting or removing power-side cables. Use connector pin markings for identification and the controller-specific guide for the CNC end of the cable.