

General Questions

Can I use outputs that are configured as 'Active Low'?

The short answer is "Yes, but.... we **strongly** urge you not to do this except for the step and direction outputs. Please also see the note below regarding connecting outputs to a motor driver's "enable" input.

When designing the PMDX break-out boards ([PMDX-122](#) and [PMDX-126](#)) we had to make a design decision: what voltage level to we drive our output signals to when our outputs are "disabled" (due to EStop or missing charge pump signal). We decided that the break-out boards would drive their outputs low (to zero volts) when their outputs are "disabled" as this would be correct for most cases. Solenoids, solid-state relays, coolant pumps, etc. usually require a logic high output (5V) to turn them on. Outputting zero volts would therefore keep them disabled.

For the SmartBOB line of motion controllers and break-out boards, we faced a similar question: when the SmartBOB powers up, and **before** Mach4 has started and told us what the output signal polarities are, what voltage level should we drive our output signals to? For the same reasons discussed above for the break-out boards, we decided to drive our outputs low (to very near zero volts).

We recommend that if at all possible you avoid using active low output signals (other than step, dir or spindle PWM signals). When the SmartBOB or break-out board powers up and before Mach is running (or before the charge pump signal is present on ou break-out boards), we will drive all output signals to zero volts. If you have any device connected that is enabled by an active low (i.e. 0V) signal, it **WILL TURN ON**. For some things this may be no big deal, but for other things like spindle motors and coolant pumps, that would be a very bad thing.

See ["Should I Connect the Enable Input On My MotorDrivers"](#) for suggestions on connecting your motor driver's "Enable" inputs.

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