

Zener Diode Protection and Noise Reduction for Analog Output signal

This Zener Diode addition provides both basic protection and noise reduction for the 0-10 VDC Analog Spindle Speed control signal. While it does not negate the need for good shielding, grounding and good cnc control wiring practices it does help in some cases where noisy drive electronics are being utilized. The addition of the Zener Diode helps with protection of the Acorn analog out circuitry from stray voltages that have entered into the Analog Output wiring (typically caused by a combination of poor grounding/shielding, bad wiring practices such as, running signal wires close to noisy high voltage wires and utilizing noisy drive electronics) while “cleaning up” the noisy signal.



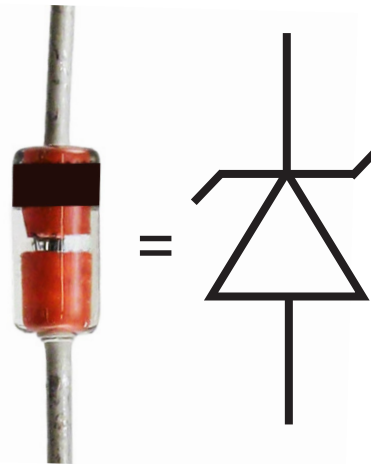
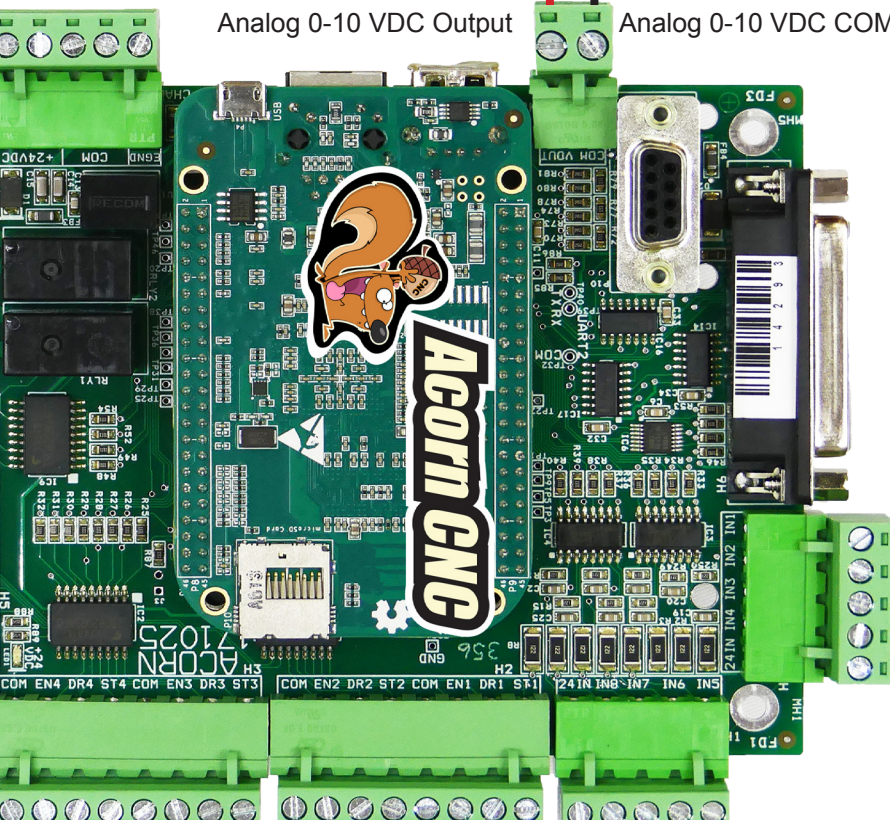
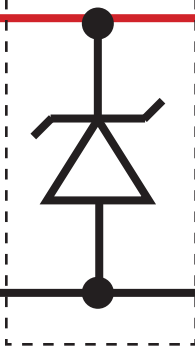
Zener Diode Industry standard PN: 1N5241
Digi-key PN: 1N5241B-ND
Stripe goes towards 0-10VDC Analog Output, other side to Analog COM

Shielded 22 AWG stranded twisted pair copper wire with drain.



Analog 0-10 VDC Output

Analog 0-10 VDC COM

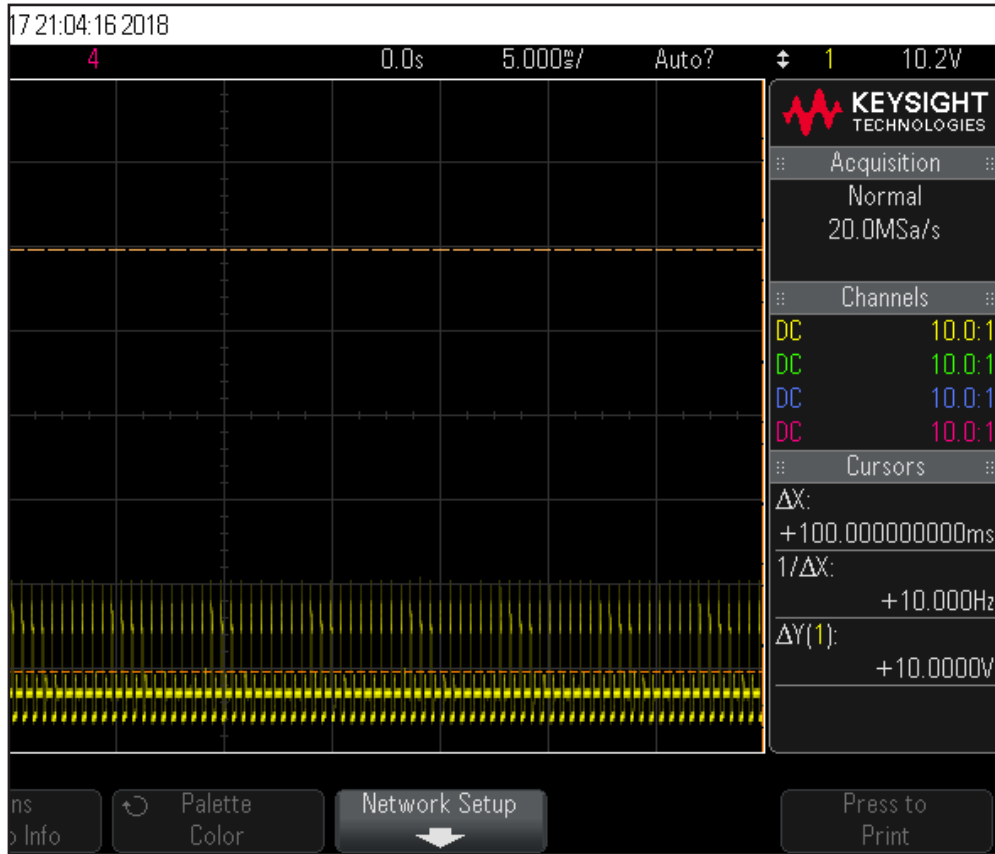


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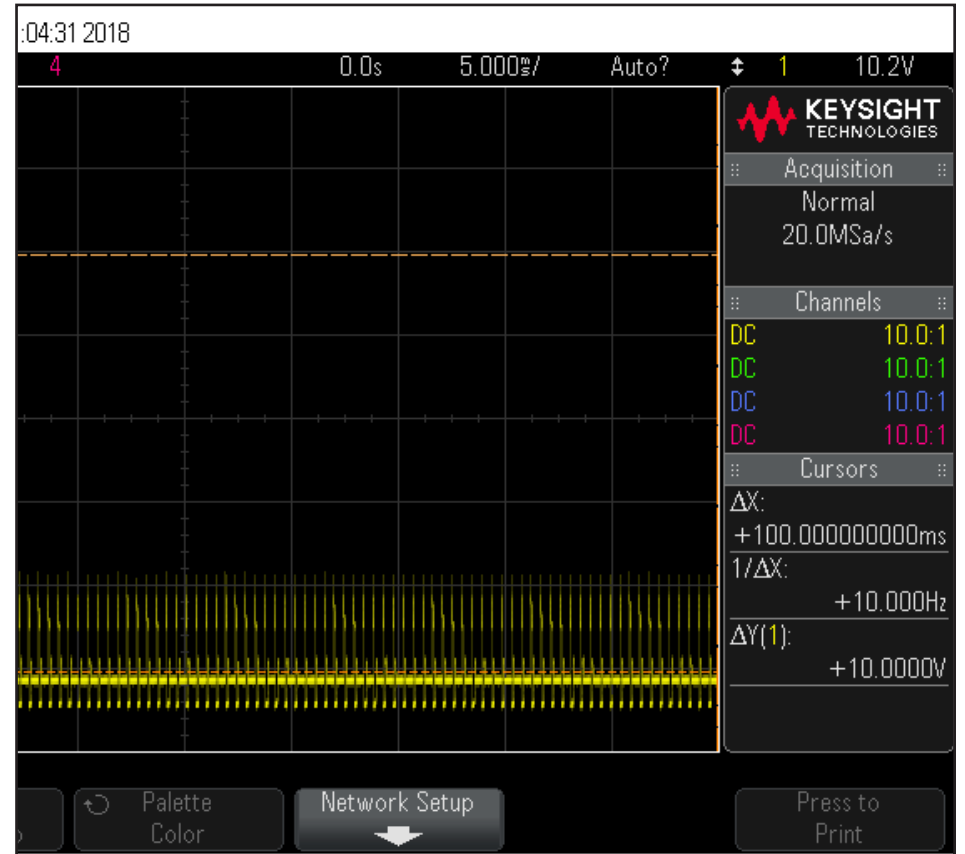
Examples with PN 1N5241 Zener diode on analog output
16kHz signal capacitively coupled to Analog VDC Output to simulate noise from a drive

16kHz signal capacitively coupled to Analog VDC Output to simulate noise from a drive

0V analog request, with no zener diode installed



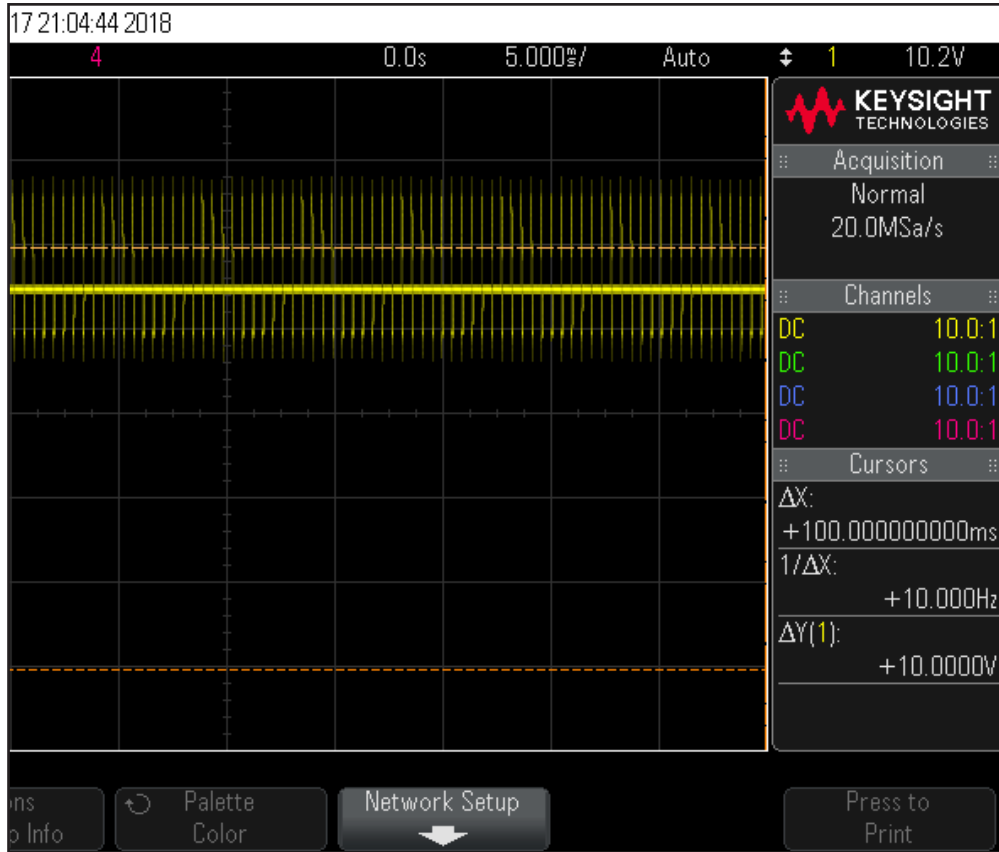
0V analog request, with zener diode installed and clamping at -0.800V



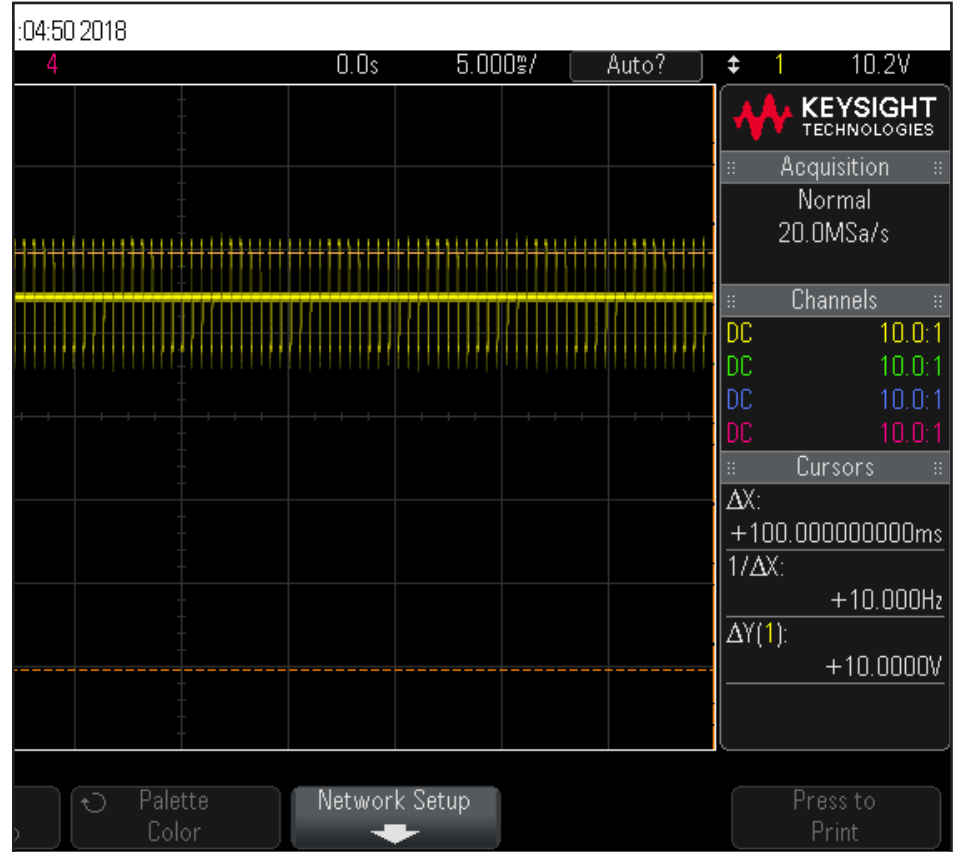
Examples with 1N5241 Zener diode on analog output
16kHz signal capacitively coupled to Analog VDC Output to simulate noise from a drive

16kHz signal capacitively coupled to Analog VDC Output to simulate noise from a drive

10V analog request, with no zener diode installed



10V analog request, with zener diode installed and clamping at 10.275 Volts



Examples with 1N5241 Zener diode on analog output
Clean Analog VDC Output with proper grounding and shielding with no noise

0V analog request, with zener diode installed



10V analog request, with zener diode installed

