



Considering VFD Cable?

When "VFD Cable" is specified, it could indicate compliance with some standard or inferred level of performance but unfortunately that is not the case. There is no standard that defines VFD cables. Any manufacturer can label products as "VFD cable" and there is no agency or standard to hold them accountable.

When properly designed, VFD cables harness and contain potentially harmful noise currents and isolate drive system noise from sensitive circuits. They also effectively deliver the high frequency drive output PWM power to the motor with minimal losses and minimal risk of damage or fault.

In 1995, Belden developed the **original VFD cables** based on design and performance criteria established in partnership with a major manufacturer of drives and drive systems. Belden's VFD cables are designed with application issues in mind and are proven for 25 years of reliable service.

What are the Risks?

The wrong design or selection of VFD cable can impact the life, performance, reliability and safety of motors, drives and machine control systems leading to injury, equipment damage, unnecessary drive faults and downtime.

- Damaged motor bearings and system component interference is due to compromises in grounds systems and shielding which result in higher common mode currents and bearing currents. Properly designed VFD cables also have large grounds to prevent emissions and induction of noise currents. Belden uses 300% and 100% grounds to ensure the motors and systems are optimally protected.
- Poor system efficiency and reliability can be attributed to substandard insulation materials and thickness. Insulation without low capacitance creates higher reflected wave voltages and increased charging currents. Be aware, some even use THHN class insulation which is not rated for the overload temperatures that motor leads can achieve, not dielectrically adequate for reliable long-term VFD service, not designed to properly mitigate arc flash hazards and may not meet the NEC requirements for ground size.
- Increased cable heating and losses due to inappropriate conductor stranding. Drives produce high frequency power and the construction-grade stranding used by many "VFD" cables is not ideal for these types of waveforms. This stranding on the grounds adds even more high frequency current noise being shunted to the bearings and other system damaging paths. For this reason, Belden cables are filled with copper to prevent this type of destruction.

Design Matters

Just choosing a VFD label is not always enough. Specify Belden, your systems will thank you for uptime and reliability benefits of 25 years of experience making the best VFD cables available.

Belden Offers a Broad VFD Cable Portfolio

- Premium Industrial-Grade
- Premium + Signal Pair
- High-Flex
- Machine-Grade
- Low-Smoke, Zero-Halogen



For more information, visit
[belden.com/products/industrial/cable/vfd](https://www.belden.com/products/industrial/cable/vfd)