Considering Signal Pair VFD Cable?

Faulty cable design leads to unexpected failures and unnecessary downtime. Variable frequency drive (VFD) cables are designed to harness and contain potentially harmful noise currents and isolate drive system noise from sensitive circuits. It is possible to package VFD cables with other components, such as signal pairs, if that packaging provides the necessary isolation. However, unaware of the risks and methods for effective cable designs, some manufacturers create products that are harmful to equipment.

Belden’s signal pair VFD cables are designed with application issues in mind and are proven for 25 years of reliable service.

When to Choose Signal Pair VFD Cable

Signal pair VFD cables provide added functionality in a single cable and are ideal for systems where a single cable pull can simplify the installation. These cables are used for applications such as:

- Monitoring the status of an auxiliary contact to disable the drive as the disconnect opens and while open
- Remote starting of the motor and drive
- Monitoring the motor thermistor status
- Operating a motor fan or motor heater
- Releasing a motor brake
- Tying in an emergency stop button

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
What are the Risks?
Proper care must be taken to understand the potential for and mitigation of electrical interference within the cable components.

The drive may stop if the noise currents generated lead to false readings on the enable circuits or the motor thermistor circuits. Though the thermistor reading may be indicated as a drive fault, if properly configured, the noise on the enable or control signals would lead to an unexplained stop without a fault code. Noise on an emergency stop circuit could also lead to a trip of the safety systems and may or may not be easily diagnosed, depending on how the circuit is designed.

Design Matters
Properly designed VFD cables have very heavy shielding to prevent emissions and induction of noise currents. Noise currents can be generated within the signal pair by the drive outputs or on the motor leads by current in the signal pair. Belden Signal pair VFD cables uniquely place the signal pair outside the heavy main power cable shielding, effectively isolating the pair from the motor leads.

Designs that place the pair inside the main power cable shielding leave only a weak shield that is easily overcome by the magnitude of noise present.