

Belden ControlBus® Low-Loss Coax Cables Are Made Specifically For High-speed, Time-critical ControlNet® Applications



ControlNet is a high-speed, serial communication system that provides for a time-critical exchange of information between complex control devices such as programmable logic controllers (PLCs), human machine interfaces (HMIs) and PC-based controllers. ControlNet operates in a totally deterministic and predictable manner, allowing the various devices and controllers on the network to communicate at a precise and pre-determined point in time.



A ControlNet network can support up to 48 nodes at a bus speed of 5Mbps on a total end-to-end distance of 250m. The bus topology can be star, tree, bus, or any combination of the three. The time delay throughout the system and a maximum end-to-end distance of 30+ km, represent the only limiting factors on the number of repeaters that can be used.

Although ControlNet uses a larger bandwidth than other automation and control networks, it does not function as a traditional "broadband" network. In a ControlNet system, the network devices and controllers are expected to communicate/operate at a predetermined point in time and for a specific length of time. Broadband communication networks differ in that their communication efforts take place when the network has room for the communication.

Because ControlNet is deterministic, it is robust and capable enough for industrial time-critical control applications. This core philosophy of the system also requires that signal transmission be uncorrupted and high speed. Therefore, choosing an approved, tested and conformant Belden Low-Loss RG-6 cable made especially for ControlNet systems is required for maximum system performance.

ControlBus Cables - Features and Benefits

To ensure that Belden's ControlBus cables meet the high-speed, time-critical requirements for the operation of ControlNet factory-floor systems, these Low-Loss RG-6/U Type coaxes incorporate a Duobond® Quad Shield for maximum signal integrity and run length. All products are sweep tested across a wide frequency range, ensuring that Return Loss, Impedance and other critical performance features, meet the requirements of the ControlNet physical layer specification. ControlBus cables can be supplied with a CPE jacket and/or aluminum or steel interlocked armoring. Belden also manufactures variations of the cable for different applications, identification needs, and environments (including Product #183092A which features continuously corrugated aluminum armoring for added protection in harsh environments).

ControlBus RG-6/U Type Coax with 18 AWG Copper-covered Steel Conductors and Duobond IV Quad Shields

[3092A](#) Foam PE Insulation, PVC Jacket, 75°C

[3093A](#) Plenum-rated, Foam FEP Insulation, Fluorocopolymer Jacket, 150°C

[123092A](#) Foam PE Insulation, Inner/Outer PVC Jackets, 75°C, AL Interlocked Armor

[183092A](#) Foam PE Insulation, Inner/Outer PVC Jackets, 75°C, Continuously Corrugated AL Armor

ControlBus RG-6/U Type Coax with 20 AWG Stranded (105x40) Bare Copper Conductor and Duobond IV Quad Shield

[3092F](#) Foam PE Insulation, PVC Jacket, High-flex PVC Jacket

Custom cables are available upon request which can utilize any number of construction features such as:

- Armoring: Aluminum Interlock, Steel Interlock, and Continuous Corrugated Aluminum
- Armor Tapes: Corrugated Copper, Aluminum, and Steel
- Jackets: PVC, CPE, LDPE, TPE, HDPE, Fluorocopolymer, Oil Res II, Low Smoke Zero Halogen (LSZH), Haloarrest®, and Polyurethane
- Shielding: Overall Beldfoil®, Duofoil®, TC Braid, TC Double Braid, Individual Beldfoil Copper Tape Shields, and “French Braid”
- Insulations: Datalene®, XLPE, FEP, Polypropylene, Foam FEP, HDPE, PVC, TPE, and PVC-Nylon
- Conductors: Solid BC, Stranded BC, Solid Bare Copper-covered Steel, and Stranded TC

For information on other protocols see our [Industrial PLC/DCS Cable Cross-reference](#).