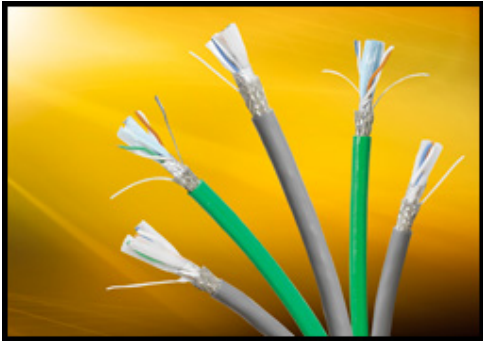


Belden EIA-485 Cables Provide Superior Electrical Performance in Plenum Environments - Without the Use of Conduit

EIA-485 (formerly RS-485 or RS485) is an OSI model physical layer electrical specification of a two-wire, [1] half-duplex, multipoint serial connection. The standard specifies a differential form of signaling. The difference between the wires' voltages is what conveys the data. One polarity of voltage indicates a logic 1 level, the reverse polarity indicates a logic 0 level. The difference of potential must be at least 0.2 volts for valid operation, but any applied voltages between +12V and -7V will allow correct operation of the receiver.



The recommended arrangement of the wires is as a connected series of point-to-point (multi-dropped) nodes, a line or bus, not a star, ring or multiple-connected network. Ideally, the two ends of the cable will have a termination resistor connected across the two wires. Without termination resistors, reflections of fast driver edges can cause multiple data edges that can cause data corruption. Termination resistors also reduce electrical noise sensitivity due to the lower impedance, and bias resistors are required. The value of each termination resistor should be equal to the cable impedance (typically, 120 ohms for twisted pairs). Star and ring topologies are not recommended because of signal reflections or excessively low or high termination impedance.

Traditionally, EIA-485 transmission in plenum applications required conduit to protect the cable, but Belden offers EIA-485 cables that are CMP listed, they offer flame and smoke protection performance, and they are able to run in a plenum without conduit - without sacrificing electrical performance.

Using a EIA-485 physical interface, the maximum distance achieved would be 4,000 ft. at 100kbps. A maximum of 247 nodes is possible.

EIA-485 PLTC Cable -22 AWG Stranded (7x30) Tinned Copper Conductors, Overall Beldfoil (100% Coverage) + TC Braid Shield (90% Coverage), Drain Wire - Non-plenum

[3105A](#) 1-Pair, Datalene Insulation, Black UV-resistant PVC Jacket, 300V

[3106A](#) 1.5-Pair, Datalene Insulation, Black UV-resistant PVC Jacket, 300V

[3107A](#) 2-Pair, Datalene Insulation, Black UV-resistant PVC Jacket, 300V

[3108A](#) 3-Pair, Datalene Insulation, Black UV-resistant PVC Jacket, 300V

[3109A](#) 4-Pair, Datalene Insulation, Black UV-resistant PVC Jacket, 300V

EIA-485 Cable -24 AWG Stranded (7x32) Tinned Copper Conductors, Overall Beldfoil® (100% Coverage) + TC Braid Shield (90% Coverage) - Non-plenum

[9841](#) 1-Pair, Polyethylene Insulation, Chrome PVC Jacket, Drain Wire, UL AWM Style 2919, 30V 80°C, DMX 512

[9842](#) 2-Pair, Polyethylene Insulation, Chrome PVC Jacket, Drain Wire, UL AWM Style 2919, 30V 80°C, DMX 512

[9843](#) 3-Pair, Polyethylene Insulation, Chrome PVC Jacket, Drain Wire, UL AWM Style 2919, 30V 80°C, DMX 512

[9844](#) 4-Pair, Polyethylene Insulation, Chrome PVC Jacket, Drain Wire, UL AWM Style 2919, 30V 80°C, DMX 512

EIA-485 Cable -24 AWG Stranded (7x32) Tinned Copper Conductors, Overall Beldfoil (100% Coverage) + TC Braid Shield (90% Coverage) - Plenum

[82841](#) 1-Pair, Foam FEP Insulation, Natural Flammarest® Jacket, Drain Wire, 300V RMS

[82842](#) 2-Pair, Foam FEP Insulation, Natural Flammarest® Jacket, Drain Wire, 300V RMS

[89841](#) 1-Pair, Foam FEP Insulation, Red FEP Jacket, Drain Wire, 300V RMS

[89842](#) 2-Pair, Foam FEP Insulation, Red FEP Jacket, Drain Wire, 300V RMS

Belden Infinity® Flexible Automation Cable -24 AWG Stranded (41x40) Bare Copper Conductors, Twisted Pairs, Overall Beldfoil (100% Coverage) + TC Braid Shield (85% Coverage)

[7200A](#) 1-Pair, Foam Polyethylene Insulation with Skin, Green Oil-resistant PVC Jacket, 300V 60°C

[7201A](#) 2-Pair, Foam Polyethylene Insulation with Skin, Green Oil-resistant PVC Jacket, 300V 60°C

[7202A](#) 3-Pair, Foam Polyethylene Insulation with Skin, Green Oil-resistant PVC Jacket, 300V 60°C

[7203A](#) 1-Pair, Foam Polyethylene Insulation with Skin, Green Oil-resistant PVC Jacket, 300V 60°C

[7206A](#) 1-Pair, Foam Polyethylene Insulation with Skin, Green Oil-resistant PVC Jacket, 300V 60°C

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](#).