

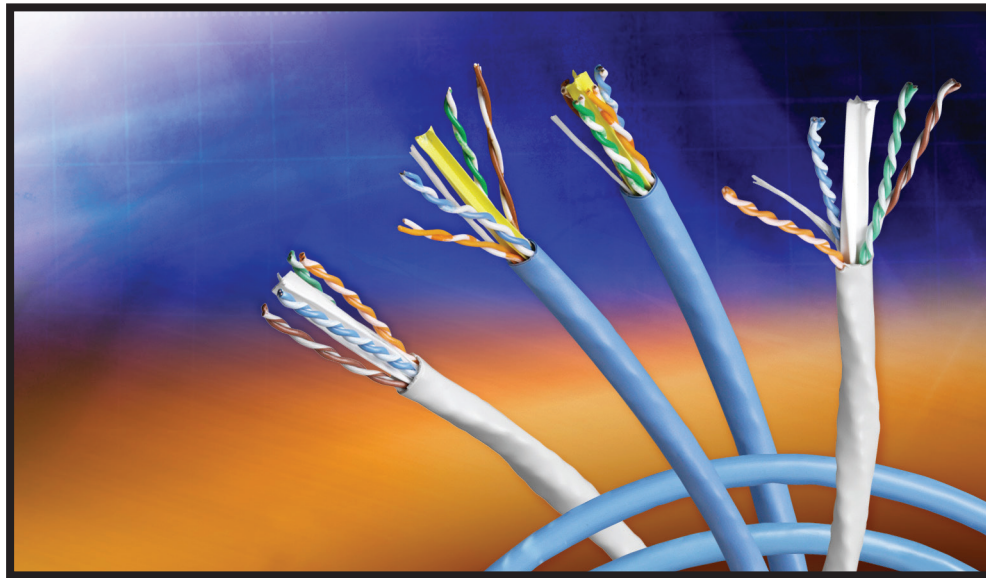


Product Bulletin

PB 296

Belden® DataTwist® 4800 Cables

DataTwist 4800 UTP Cables provide significant headroom and robust data transmission performance for today's most demanding applications. The cables support the industry's most powerful Category 6 networking solution: Belden System 4800.



Belden's DataTwist 4800 Cables Exceed TIA/EIA Requirements and Offer Significant Headroom Over Category 6

DataTwist 4800 Cable

If your business is looking to the future, and investing in best-in-class technologies is part of your IT strategy, you need the performance and reliability delivered by DataTwist 4800 Cables. These enhanced Category 6 cables were conceived to support the most demanding multi-Gigabit protocols and networking applications.

DataTwist 4800 Cables consist of 4 pairs of 23 AWG insulated copper conductors, incorporating a unique central spline which separates and holds the twisted pairs of the cable firmly in position at a uniform distance from each other. This design provides improved Power Sum Crosstalk performance in comparison to conventional cables where the twisted pairs can nest into each other and change position during manufacturing or handling. The end result is very stable transmission performance that is more resilient to installation variables.

Depending on your application requirements, DataTwist 4800 Cables can be specified in either Nonbonded-Pair design or in Belden's exclusive Bonded-Pair construction. All DataTwist 4800 Cables are designed to provide low Insertion Loss (low signal Attenuation). This characteristic enables increased signal power over a higher range of frequencies. This strong signal translates into maximum headroom and more robust transmission for today's applications as well as a capacity for those of tomorrow's networks. The higher signal power of DataTwist 4800 Cables also results in a higher PSACR. With this higher ratio, 4800 Cables are able to provide fewer transmission errors and higher data rate capability.

Belden DataTwist 4800 Cables are part of the Belden 4800 System. The Belden 4800 System provides 300 MHz of channel bandwidth and a data rate of 4.8 Gb/s, giving you a high performance system to support today's demanding network applications as well as the evolving bandwidth hungry applications of tomorrow.

Our End-to-End Expertise
Your End-to-End Solution

Belden DataTwist 4800 Cables Help Future-Proof the Network

The Belden 4800 Solution delivers unparalleled performance with 300 MHz of channel bandwidth and a maximum data rate of 4.8 Gb/s.

Applications

DataTwist 4800 Cable is intended to be used for horizontal cable installations of high speed Local Area Networks (LANs) for transmission speeds up to 4.8 Gb/s.

Specific applications include:

- 1000BASE-T Applications (IEEE 802.3ab)
- PoE IEEE802.3af to 15W
- PoE+ IEEE802.3at to 30W
- 4pPoE IEEE 802.3bt draft
 - PSE Type 1 (15W) PSE Type 2 (30W)
 - PSE Type 3 (60W), PSE Type 4 (100W)
- Broadband Video (CATV) & High Speed Internet (DOCSIS) over UTP up to 860 MHz
- High Temperature performance up to 50°C without length de-rating for 1000BASE-T and 100BASE-TX
- High Noise Immunity with a Noise Reduction Factor of 0.5 (TIA 569B)
- VoIP Applications with stringent Bit Error Rate (BER) / Quality of Service (QoS) objectives

Features and Benefits

- Central spline design separates pairs and maintains stable pair position, thus improving NEXT and impedance performance
- Stable pair position provides built-in resilience to installation stresses
- Improved attenuation ensures stronger signal power
- Maximized bandwidth and signal-to-noise margin for mission-critical applications
- Larger 23 AWG conductors are ideal for PoE and PoE+ applications
- Descending distance marking for cable length reduces waste
- Matching tip and ring color code for ease of installation
- Available in Spool-in-Box packaging for ease of installation, handling and inventory management
- Available in CMR, CMP and LSZH versions
- Available in Bonded-Pair or Nonbonded-Pair design

Technical Specifications*

Physical Characteristics

- Conductors: 23 AWG solid copper
- Insulation
 - Plenum:
 - Bonded-Pair: 100% FEP
 - Nonbonded-Pair: Dual Insulation FEP over a Polyolefin base
 - Riser and LSZH: Polyolefin
- Cable Core: Filler, Four twisted pairs, cabled around Belden's patented cross-web or E-spline
- Jacket with Rip Cord:
 - Plenum: LSPVC
 - Riser: PVC
 - LSZH: Low Smoke Zero Halogen Polymer Alloy
 - Jacket printed at intervals indicating cable code, AWG, listings (NEC Code), verification, date, manufacturing traceability code
 - Descending length markings start at highest number and end at 0

Mechanical Characteristics

- Minimum Recommended Installation Temperature: 5°C (40°F)
- Temperature Rating: 75°C (167°F)

Transmission Characteristics

- Values up to 600 MHz are minimum guaranteed values
- Values above 600 MHz are for engineering purposes only
- DC Resistance @ 20°C:
 - Bonded-Pair: 8.2 ohms/100 m
 - Nonbonded-Pair: 6.6 ohms/100 m
- DC Resistance Unbalance
 - conductor-conductor max: 3%
 - pair-pair max: 5%
- Mutual Capacitance, nom.: 5.1 nF/100 m
- Capacitance Unbalance Pair to Ground, max.: 66 pF/100 m

- Input Impedance:

Input Impedance	Bonded-Pair	Nonbonded-Pair
100±12	1-20 MHz	—
100±15	20-250 MHz	1-200 MHz
100±20	250-350 MHz	—
100±22	350-600 MHz	100-200 MHz
100±32	—	200-600 MHz

- Nominal Velocity of Propagation (NVP):
 - Plenum: 70% @ 10 MHz
 - Riser: 68% @ 10 MHz
- Propagation Delay (Skew): 30 ns/100 m

Qualifications

- Category 6 requirements per TIA/EIA-568-C.2, ISO/IEC 11801 ed 2 Amendment 2 (2010) Class E
- Riser: ITS/ETL Certified as CMR, and listed as NEC Type CMP per UL Standard 444
- Plenum: ITS/ETL Certified as CMP, and listed as NEC Type CMP per UL Standard 444
- LSZH: ISO/IEC 332-1, 754-2 and 1034-2

* Values are the same for Bonded-Pair and Nonbonded-Pair Cables, unless specifically noted.

Select Bonded-Pair or Nonbonded-Pair Construction

Belden provides the option of ordering DataTwist 4800 Cables in either Bonded-Pair or in Nonbonded-Pair constructions. The choice will depend on the type of signals supported, the critical nature of the information transmitted, and the stability of the networking environment.

Belden's Bonded-Pair Cables feature a patented design in which the individual conductors are securely bonded along their longitudinal axis to guarantee uniform spacing within each twisted pair – a key factor in maintaining consistently high electrical performance.

Because Belden's Bonded-Pair Cables have better centricity and symmetry, they provide improved return loss and balance performance. Superior transverse conversion loss (TCL), capacitance unbalance and

resistance unbalance results in the cabling infrastructure being less susceptible to electromagnetic and radio frequency interference (EMI/RFI) in noisy environments.

Belden's ultra-robust Bonded-Pair cables can provide additional peace of mind, especially when deployed in:

- Mission-critical data centers
- Frequently changing networking environments where constant moves, adds and changes are routine
- Environments where electromagnetic and radio frequency interference (EMI/RFI) create noise and signal transmission problems
- High frequency applications in which return loss can affect signal integrity

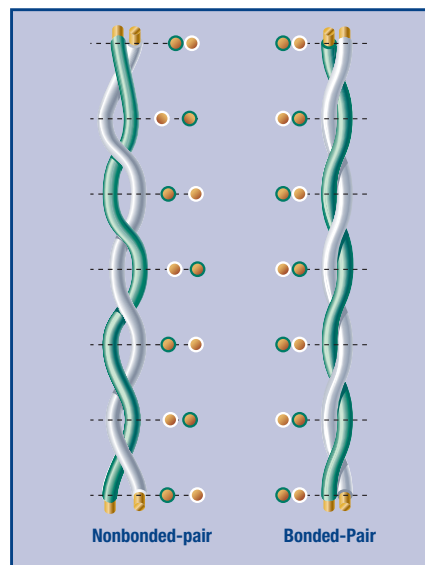
In stable networking environments, Belden's standard DataTwist 4800 Cables will perform reliably to exceed TIA/EIA Category 6 standards. When the application calls for a more robust solution, Belden Bonded-Pair DataTwist 4800 Cables will provide superior integrity and electrical performance from the reel to real life – through all the stresses of installation and post-installation maintenance. Belden calls this unique capability Installable Performance®.

Key Physical Attributes — DataTwist 4800 Bonded-Pair Cable

4-pair, 23 AWG Bonded-Pair	Nominal O.D.	Min. Bend Radius	Weight (Cable Only)
CMR (7851A)	5.766 x 8.001 mm (0.227 x 0.315 in.)	6.35 mm (0.25 in.)	46.47 kg/km (31.3 lb/kft)
CMP (7852A)	5.537 x 7.366 mm (0.218 x 0.290 in.)	6.35 mm (0.25 in.)	50.18 kg/km (33.8 lb/kft)
LSZH (7851NH)	6.121 x 8.357 mm (0.241 x 0.329 in.)	6.35 mm (0.25 in.)	46.47 kg/km (31.3 lb/kft)

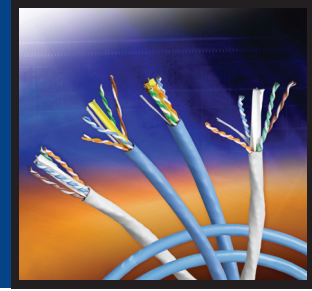
Key Physical Attributes — DataTwist 4800 Nonbonded-Pair Cable

4-pair, 23 AWG Nonbonded-Pair	Nominal O.D.	Min. Bend Radius	Weight (Cable Only)
CMR (4812)	6.22 mm (0.245 in.)	24.88 mm (0.98 in.)	50.47 kg/km (34.0 lb/kft)
CMP (4813)	6.09 mm (0.240 in.)	23.37 mm (0.92 in.)	54.93 kg/km (37.0 lb/kft)
LSZH (4824)	6.22 mm (0.245 in.)	24.88 mm (0.98 in.)	43.16 kg/km (29.0 lb/kft)



Installed and manipulated nonbonded-pairs (left) have a tendency to gap, varying the centricity of the two conductors. Belden Bonded-Pairs (right) do not gap so the physical integrity of the pair is maintained.

Visit www.belden.com to learn more about Belden's Bonded-Pair construction and its unique benefits.



Technical Specifications (continued)

Key Electrical Attributes — DataTwist 4800 Bonded-Pair Cable

Frequency (MHz)	Max. Insertion Loss (dB/100 m)		Min. PSNEXT (dB)		Min. PSACR (dB)		Min. PSACRF (dB)		THE BONDED-PAIR ADVANTAGE					
	TIA	Belden	TIA	Belden	TIA	Belden	TIA	Belden	Min. Return Loss (dB)*		Min. Balance TCL (dB)*		Min. Balance ELTCTL (dB)*	
1	2.0	1.9	72.3	80.3	70.3	78.3	64.8	72.8	20.0	20.0	40.0	45.0	35.0	40.0
4	3.8	3.5	63.3	71.3	59.5	67.7	52.8	60.8	23.0	23.0	40.0	45.0	23.0	28.0
8	5.3	4.9	58.8	66.8	53.5	61.8	46.7	54.7	24.5	24.5	40.0	45.0	16.9	21.9
10	6.0	5.5	57.3	65.3	51.3	59.8	44.8	52.8	25.0	25.0	40.0	45.0	15.0	20.0
16	7.6	7.0	54.2	62.3	46.6	55.3	40.7	48.7	25.0	25.0	38.0	43.0	10.9	15.9
20	8.5	7.8	52.8	60.8	44.3	53.0	38.8	46.8	25.0	25.0	37.0	42.0	9.0	14.0
25	9.5	8.7	51.3	59.3	41.8	50.6	36.8	44.8	24.3	25.0	36.0	41.0	7.0	12.0
31.25	10.7	9.8	49.9	57.9	39.2	48.1	34.9	42.9	23.6	25.0	35.1	40.1	-	-
62.5	15.4	14.1	45.4	53.4	30.0	39.3	28.9	36.9	21.5	25.0	32.0	37.0	-	-
100	19.8	18.0	42.3	50.3	22.5	32.3	24.8	32.8	20.1	25.0	30.0	35.0	-	-
200	29.0	26.2	37.8	45.8	8.8	19.6	18.8	26.8	18.0	21.6	27.0	32.0	-	-
250	32.8	29.7	36.3	44.3	3.5	14.7	16.8	24.8	17.3	20.5	26.0	31.0	-	-
300	-	32.8	-	43.2	-	10.3	-	23.3	-	20.1	-	-	-	-
350	-	35.8	-	42.2	-	6.4	-	21.9	-	19.8	-	-	-	-
400	-	38.6	-	41.3	-	2.7	-	20.8	-	19.5	-	-	-	-
450	-	41.2	-	40.5	-	0	-	19.7	-	18.9	-	-	-	-
500	-	43.8	-	39.8	-	-	-	18.8	-	18.4	-	-	-	-
550	-	46.2	-	39.2	-	-	-	18.0	-	18.0	-	-	-	-
600	-	48.6	-	38.6	-	-	-	17.2	-	17.6	-	-	-	-
650	-	50.9	-	36.1	-	-	-	14.5	-	17.2	-	-	-	-
750	-	55.3	-	35.2	-	-	-	13.3	-	16.5	-	-	-	-
860	-	60.0	-	34.3	-	-	-	12.1	-	15.8	-	-	-	-

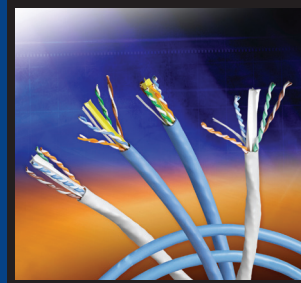
Values above 600 MHz for engineering purposes only. The values shown are guaranteed minimum performance.

*Belden's Bonded-Pair Cables provide improved return loss and balance performance.

Key Electrical Attributes — DataTwist 4800 Nonbonded-Pair Cable

Frequency (MHz)	Max. Insertion Loss (dB/100 m)		Min. PSNEXT (dB)		Min. PSACR (dB)		Min. PSACRF (dB)		Min. Return Loss (dB)		Min. Balance TCL (dB)		Min. Balance ELTCTL (dB)	
	TIA	Belden	TIA	Belden	TIA	Belden	TIA	Belden	TIA	Belden	TIA	Belden	TIA	Belden
1	2.0	1.8	72.3	80.3	70.3	78.4	64.8	72.8	20.0	20.0	40.0	40.0	35.0	35.0
4	3.8	3.5	63.3	71.3	59.5	67.8	52.8	60.8	23.0	23.0	40.0	40.0	23.0	23.0
8	5.3	4.9	58.8	66.8	53.4	61.8	46.7	54.7	24.5	24.5	40.0	40.0	16.9	16.9
10	6.0	5.5	57.3	65.3	51.3	59.8	44.8	52.8	25.0	25.0	40.0	40.0	15.0	15.0
16	7.6	7.0	54.2	62.2	46.7	55.3	40.7	48.7	25.0	25.0	38.0	38.0	10.9	10.9
20	8.5	7.8	52.8	60.8	44.3	53.0	38.8	46.8	25.0	25.0	37.0	37.0	9.0	9.0
25	9.5	8.7	51.3	59.3	41.8	50.6	36.8	44.8	24.3	22.5	36.0	36.0	7.0	7.0
31.25	10.7	9.8	49.9	57.9	39.2	48.1	34.9	42.9	23.6	24.3	35.1	35.1	-	-
62.5	15.4	14.1	45.4	53.4	30.0	39.3	28.9	36.9	21.5	22.2	32.0	32.0	-	-
100	19.8	18.0	42.3	50.3	22.5	32.3	24.8	32.8	20.1	20.8	30.0	30.0	-	-
200	29.0	26.2	37.8	45.8	8.8	19.6	18.8	26.8	18.0	18.7	27.0	27.0	-	-
250	32.8	29.6	36.3	44.3	3.5	14.8	16.8	24.8	17.3	18.0	26.0	26.0	-	-
300	-	32.7	-	43.2	-	10.4	-	23.3	-	17.5	-	-	-	-
350	-	35.6	-	42.2	-	6.5	-	21.9	-	17.0	-	-	-	-
400	-	38.4	-	41.3	-	2.9	-	20.8	-	16.6	-	-	-	-
450	-	41.0	-	40.5	-	0	-	19.7	-	16.2	-	-	-	-
500	-	43.6	-	39.8	-	-	-	18.8	-	15.9	-	-	-	-
550	-	46.0	-	39.2	-	-	-	18.0	-	15.6	-	-	-	-
600	-	48.4	-	38.6	-	-	-	17.2	-	15.4	-	-	-	-
650	-	50.6	-	36.1	-	-	-	15.5	-	15.1	-	-	-	-
750	-	55.0	-	35.2	-	-	-	14.3	-	14.6	-	-	-	-
860	-	59.6	-	34.3	-	-	-	13.1	-	14.3	-	-	-	-

Values above 600 MHz for engineering purposes only. The values shown are guaranteed minimum performance.



DataTwist 4800 Cable, Category 6

Bonded-Pair

DataTwist 4800 Cables are available in plenum, riser and LSZH versions.

Belden Part Number	Color	Length	Packaging	No. of Packages Per Pallet	Total Length Per Pallet
DataTwist 4800, 4-pair, 23 AWG, CMR					
7851A 002A1000	Red	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7851A 003A1000	Orange	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7851A 004A1000	Yellow	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7851A 005A1000	Green	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7851A 006A1000	Blue	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7851A F6HA1000	Gray	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7851A 009A1000	White	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7851A 010A1000	Black	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7851A 0021000	Red	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7851A 0031000	Orange	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7851A 0041000	Yellow	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7851A 0051000	Green	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7851A 0061000	Blue	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7851A F6H1000	Gray	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7851A 0091000	White	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7851A 0101000	Black	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
DataTwist 4800, 4-pair, 23 AWG, CMP					
7852A 003A1000	Orange	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7852A 004A1000	Yellow	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7852A 005A1000	Green	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7852A D15A1000	Blue	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7852A 008A1000	Gray	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7852A 009A1000	White	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7852A 0021000	Red	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7852A 0031000	Orange	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7852A 0041000	Yellow	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7852A 0051000	Green	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7852A D151000	Blue	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7852A 0081000	Gray	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7852A 0091000	White	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
7852A 0101000	Black	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
DataTwist 4800, 4-pair, 23 AWG, LSZH					
7851NH E4XA1000	Gray	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
7851NH E4X1000	Gray	305 m (1000 ft)	Spool	24 spools/pallet	7320 m (24000 ft)



DataTwist 4800 Cable, Category 6

Nonbonded-Pair

Belden Part Number	Color	Length	Packaging	No. of Packages Per Pallet	Total Length Per Pallet
DataTwist 4800, 4-pair, 23 AWG, CMR					
4812 006A1000	Blue	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
4812 009A1000	White	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
4812 0021000	Red	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4812 0041000	Yellow	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4812 0051000	Green	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4812 0061000	Blue	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4812 0081000	Gray	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4812 0091000	White	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4812 0062500	Blue	762 m (2500 ft)	Spool	15 spools/pallet	11437 m (37500 ft)
DataTwist 4800, 4-pair, 23 AWG, CMP					
4813 D15A1000	Blue	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
4813 009A1000	White	305 m (1000 ft)	Spool-in-Box	18 boxes/pallet	5490 m (18000 ft)
4813 0041000	Yellow	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4813 0051000	Green	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4813 0081000	Gray	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4813 0091000	White	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4813 0101000	Black	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4813 D151000	Blue	305 m (1000 ft)	Spool	27 spools/pallet	8235 m (27000 ft)
4813 0092500	White	762 m (2500 ft)	Spool	15 spools/pallet	11437 m (37500 ft)

To learn more about Belden copper-based structured cabling systems, call **1.800.BELDEN.1** or visit our Website at www.belden.com.