

NP 254E

Belden® 10GX® Cables

10GX Cables incorporate patent-pending RoundFlex Technology, opening the door to higher density due to their reduced diameter, while at the same time offering a high level of Alien Crosstalk reduction. Both advantages are essential to a 10G system.



Belden's New 10GX Cables Offer a Smaller Diameter and Outstanding Mechanical and Electrical Characteristics

Belden's new line of 10GX cables are designed to address the needs of demanding networking arenas that require both high density connections and superb mechanical and electrical performance.

This new series is intended for use in horizontal cable installations in data centers, high speed Local Area Networks (LANs), server farms, storage area networks (SANs), network access nodes (NANs), campus backbones, metropolitan area networks (MANs) and short distance backbone connections – anywhere there is a high concentration of data traffic.

By redesigning our earlier 10GX cable's internal cross-web construction and removing the filler, Belden's engineers have attained a smaller diameter cable (only 0.295 inch) than could previously be made. The use of this new RoundFlex Technology means higher density connections in the rack. What's more, the smaller diameter and greater flexibility provides for easier handling during installation.

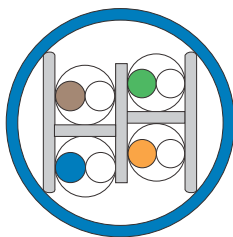
Alien Crosstalk

Still another major bonus to the redesigned cross-web is that it keeps Alien Crosstalk – crosstalk between neighboring cables – to the same impressively low level that was offered by its 10GX predecessor. To allow for the data rates of 10 Gb/s that are typical in data centers and the like, signals must be transmitted at frequencies up to a minimum of 500 MHz, in contrast to Category 6 transmissions that only run to 200 MHz.

However, to achieve satisfactory communication at these high frequencies over UTP copper requires significant changes in the way the channel components are designed – the cable being no exception. Overcoming Alien Crosstalk has been one of the most difficult demands of the Augmented Category 6 Standard.

Patent-pending RoundFlex Technology successfully attacks the problem by improving control of the electrical performance with improved positioning of the pairs. The resulting level of Alien Crosstalk suppression is fully compatible with Belden's guaranteed performance specs for its 10GX systems.

Belden's small OD 10GX cable features RoundFlex Technology, an internal cross-web construction that keeps Alien Crosstalk at an exceptionally low level.



RoundFleX, MatriX IDC, X-Bar, FleXPoint and X-Pair technologies comprise the pillars that support Belden's complete 10GX system.

10GX® Enabling Technologies

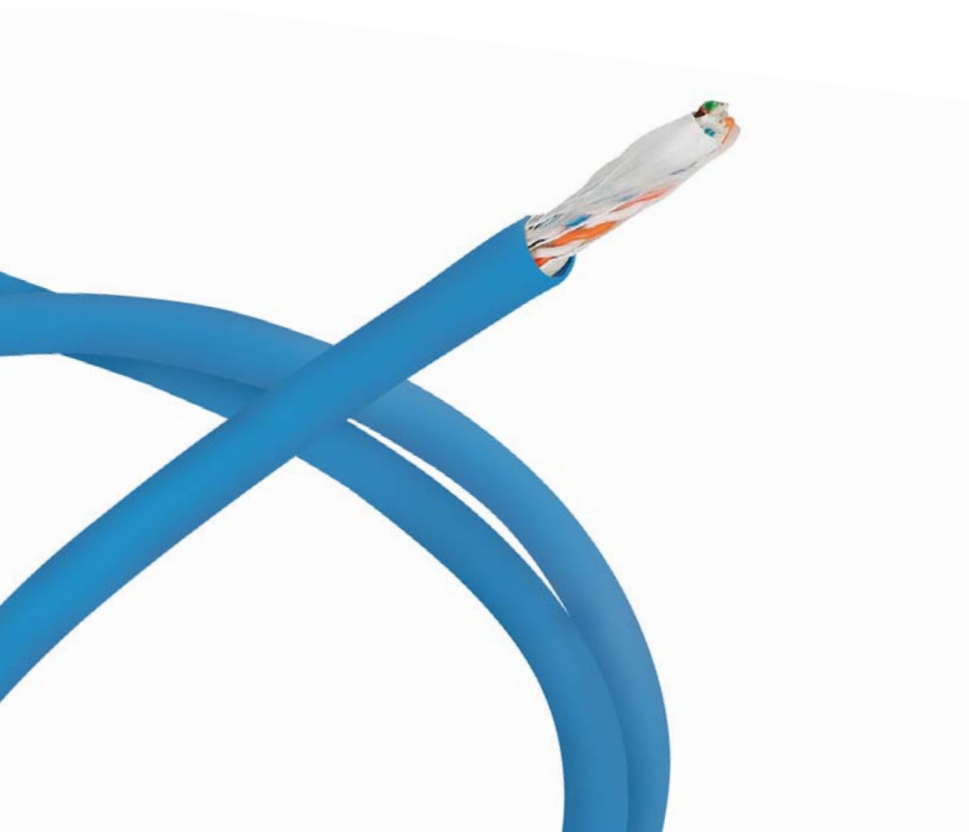
The new, 4-pair, 23 AWG UTP copper 10GX cables represent the latest advance in Belden's evolving IBDN 10GX family of cabling products.

The company's RoundFleX, MatriX IDC, X-Bar, FleXPoint and X-Pair technologies, taken together, comprise five strong pillars of enabling technology that support a complete 10GX system from Belden®. They permit the building of a channel that goes well beyond expectations for leading edge 10 Gbit/sec system performance, exceeding all parameters specified in the proposed Augmented Category 6 Standard. All performance characteristics – including Alien Crosstalk (ANEXT), NEXT, FEXT, Insertion Loss and Return Loss – in the new line have been set to guarantee channel transmission performance up to 625 MHz.

The new cables will also be compatible with all existing Belden 10GX components, and part numbers will not change with this introduction. The series will be available in the near future in Bonded-Pair and Non-bonded-pair configurations, as well as plenum and non-plenum designs.

Features and Benefits

- The unique, patent pending, RoundFleX cross-web design in 10GX cables separates pairs and maintains stability in pair position, thus improving ANEXT, NEXT and impedance performance
- Smaller cable diameter than previously available (0.295 inch)
- Guaranteed electrical performance that goes well beyond the Augmented Category 6 proposal
- Strong signal strength due to improved noise attenuation
- Maximized bandwidth and signal-to-noise margin for mission-critical applications
- Truly backward compatibility with Category 6 and Category 5e components to protect your cabling investment
- Easy to install, due to a more-round cross-section
- Availability in Bonded-Pair design, as well as Non-bonded
- Availability in CMR, CMP, and LSZH
- Matching tip and ring color code for ease of installation





Technical Specifications

Physical Characteristics

- Conductors: 23 AWG solid copper
- Insulation:
 - Plenum: 100% FEP
 - Non-Plenum: PE
 - Color coding as per ANSI/TIA/EIA-568-B
- Cable Core:
 - Unique cross-web design
 - Four twisted pairs construction
 - Rip cord
- Jacket:
 - Plenum: LSPVC
 - Non-Plenum: PVC
 - LSZH: Low Smoke (and fume), Zero Halogen Polymer Alloy

Mechanical Characteristics

- Minimum Recommended Installation Temperature: 5°C (40°F)
- Temperature Rating: 60°C (140°F)

Transmission Characteristics

- Values up to 625 MHz are minimum guaranteed values
- DC Resistance @ 20°C, max.: 7.4 ohms/100 m
- DC Resistance Unbalance, max.: 3%
- Mutual Capacitance, max.: 5.7 nF/100 m
- Capacitance Unbalance Pair to Ground, max.: 50 pF/100
- Nominal Velocity of Propagation (NVP):
 - Plenum: 72% @ 10 MHz
 - Non-Plenum: 68% @ 10 MHz
 - Propagation Delay (Skew), max.: 35 ns/100 m

Qualifications

- Meets or exceeds proposed Augmented Category 6 requirements as per TIA/EIA-568-B. 2-10 draft 6, and ISO/IEC 11801 Ed2:2002 Class E channels
- Exceeds Category 6 requirements per ANSI/TIA/EIA-568-B
- Exceeds the Category 5e requirements per ANSI/TIA/EIA-568-A.5 or ANSI/TIA/EIA-568-B
- Exceeds the Category 5 requirements per ANSI/TIA/EIA-568-A, CSA T529-95 and ISO/IEC 11801-1995
- Exceeds the Category 5 requirements per NEMA Standard WC 63.1-1996
- Exceeds the Category 5 requirements of ICEA S-90-661-1997
- Non-Plenum: ITS/ETL Certified as CMR, and listed as NEC Type CMR 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

Description	Nominal OD	Min. Bend Radius	Weight (cable only)
10GX Cable, 4-pair, 23 AWG, CMR	7.55 mm (0.295 inch)	32.00 mm (1.26 inch)	5.9 kg/100 m (40.0 lb/kft)
10GX Cable, 4-pair 23 AWG, CMP	7.55 mm (0.295 inch)	31.48 mm (1.24 inch)	5.6 kg/100 m (38.0 lb/kft)

Ordering Information

Belden® offers (6) series of Augmented Category 6 cables:

- 10GX® CMR Cable with Bonded-Pair technology: 10GX32 series
- 10GX CMR Cable with Non-bonded-pair technology: 10GX12 series
- 10GX CMP Cable with Bonded-Pair technology: 10GX33 series
- 10GX CMP Cable with Non-bonded-pair technology: 10GX13 series
- 10GX LSZH Cable with Bonded-Pair technology: 10GX44 series
- 10GX LSZH Cable with Non-bonded-pair technology: 10GX24 series

The 10GX Cables are available on a standard wooden spool. Alternative colors and packaging are also available, subject to minimum order quantities.

Please check with customer service for availability.

Color	Length	Packaging	No. of Spools per Pallet	Total per Pallet	Ordering Number
10GX Cable, CMR 4-pair, Non-bonded 10GX12, Augmented Category 6					
White	305 m (1000 ft.)	14N Spool	27 spools/pallet	8.235 m (27,000 ft.)	24816395
Blue	305 m (1000 ft.)	14N Spool	27 spools/pallet	8.235 m (27,000 ft.)	24816995
10GX Cable, CMP 4-pair, Non-bonded 10GX13, Augmented Category 6					
White	305 m (1000 ft.)	14N Spool	27 spools/pallet	8.235 m (27,000 ft.)	24817395
Blue	305 m (1000 ft.)	14N Spool	27 spools/pallet	8.235 m (27,000 ft.)	24817995
10GX Cable, LSZH 4-pair, 23 AWG, Non-bonded 10GX24, Augmented Category 6					
Purple	305 m (1000 ft.)	14N Spool	27 spools/pallet	8.235 m (27,000 ft.)	24818095

Bonded-Pair cables will be available in the near future.

Conduit Fill Chart

Trade Size	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	Cable OD
Internal Dia.	0.622	0.824	1.049	1.38	1.61	2.067	2.731	3.356	3.834	4.334	
Maximum # of Cables	3	5	9	15	21	35	61	93	121	155	0.220
	2	4	7	12	16	27	47	72	94	120	0.250
	1	3	5	9	12	20	35	53	70	89	0.290
	1	3	5	8	12	19	34	51	67	86	0.295
	1	3	5	8	11	19	33	50	65	83	0.300
	1	3	4	8	10	17	31	47	61	78	0.310
	1	2	4	7	10	16	29	44	57	73	0.320
	1	1	3	6	8	14	24	36	48	61	0.350

All information is subject to change without notice, since Belden reserves the right to change its products as progress in engineering and manufacturing methods or other circumstances may warrant.