



**Product:** [2413F](#)

Category 6+ Enhanced Cable, 4 Pair, F/UTP, CMP

**Product Description**

Category 6+ Enhanced Premise Horizontal Cable (350MHz), 4 Pair, 23 AWG Solid Bare Copper Conductors, F/UTP - Foil Shielded, Plenum-CMP, Flamarrest® PVC-LS Jacket

**Technical Specifications**

**Product Overview**

|                        |                                                                                                                                                                            |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suitable Applications: | Premise Horizontal Cable, Ethernet 1000BASE-T, Ethernet 100BASE-TX, Ethernet 10BASE-T, Surveillance, PoE++, PoE+, PoE, Noisy Environments                                  |
| Patent:                | This product has one or more applicable patents. More information on patents can be found at <a href="https://www.belden.com/patents">https://www.belden.com/patents</a> . |

**Construction Details**

**Conductor**

| Size   | Stranding | Material         | No. of Pairs |
|--------|-----------|------------------|--------------|
| 23 AWG | Solid     | BC - Bare Copper | 4            |

**Insulation**

| Material                             | Color Code                                                                                                     |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------|
| FEP - Fluorinated Ethylene Propylene | White/Blue Stripe & Blue, White/Orange Stripe & Orange, White/Green Stripe & Green, White/Brown Stripe & Brown |

**Outer Shield**

| Shield Type | Material                            | Coverage | Drainwire Type    |
|-------------|-------------------------------------|----------|-------------------|
| Tape        | Polyester + Bi-Laminate (Alum+Poly) | 100%     | 24 AWG (Solid) TC |

**Outer Jacket**

| Separator                          | Material                 | Material Trade Name | Nom. Diameter      | Ripcord |
|------------------------------------|--------------------------|---------------------|--------------------|---------|
| Center Member (Patented X-Spline®) | PVC - Polyvinyl Chloride | Flamarrest®         | 0.285 in (7.24 mm) | No      |

|                                   |                    |
|-----------------------------------|--------------------|
| Overall Cable Diameter (Nominal): | 0.285 in (7.24 mm) |
|-----------------------------------|--------------------|

**Electrical Characteristics**

**Electricals**

| Max. Conductor DCR            | Max. Capacitance Unbalance |
|-------------------------------|----------------------------|
| 93.8 Ohm/km (28.6 Ohm/1000ft) | 330 pF/100m                |

**Delay**

| Frequency | Max. Delay    | Max. Delay Skew | Nom. Velocity of Prop. |
|-----------|---------------|-----------------|------------------------|
| 100 MHz   | 537.6 ns/100m | 45 ns/100m      | 72%                    |

**High Frequency**

| Frequency [MHz] | Max. Insertion Loss (Attenuation) | Min. NEXT [dB] | Min. PSNEXT [dB] | Min. ACR [dB] | Min. PSACR [dB] | Min. ACRF (ELFEXT) [dB] | Min. PSACRF (PSELFEXT) [dB] | Min. RL (Return Loss) [dB] | Max./Min. Input Impedance (unFitted) [Ohm] | Max./Min. Fitted Impedance [Ohm] | Min. TCL [dB] | Min. ELTCTL [dB] |
|-----------------|-----------------------------------|----------------|------------------|---------------|-----------------|-------------------------|-----------------------------|----------------------------|--------------------------------------------|----------------------------------|---------------|------------------|
| 0.772           | 1.8 dB/100m                       | 77.0           | 77.0             | 75.2          | 76.2            | 73.0                    | 70.0                        | 19.4                       | 100 +/- 15                                 | 100 ± 15                         | 40.0          | 37.2             |
| 1               | 2.0 dB/100m                       | 75.3           | 75.3             | 73.3          | 74.3            | 70.8                    | 67.8                        | 20.0                       | 100 +/- 15                                 | 100 ± 15                         | 40.0          | 35.0             |
| 4               | 3.7 dB/100m                       | 66.3           | 66.3             | 62.6          | 63.6            | 58.8                    | 55.8                        | 23.0                       | 100 +/- 15                                 | 100 ± 15                         | 40.0          | 23.0             |
| 8               | 5.2 dB/100m                       | 61.8           | 61.8             | 56.6          | 57.6            | 52.7                    | 49.7                        | 24.5                       | 100 +/- 15                                 | 100 ± 15                         | 40.0          | 16.9             |

|       |              |      |      |      |      |      |      |      |            |          |      |      |
|-------|--------------|------|------|------|------|------|------|------|------------|----------|------|------|
| 10    | 5.8 dB/100m  | 60.3 | 60.3 | 54.5 | 55.5 | 50.8 | 47.8 | 25.0 | 100 +/- 15 | 100 ± 15 | 40.0 | 15.0 |
| 16    | 7.4 dB/100m  | 57.2 | 57.2 | 49.9 | 50.9 | 46.7 | 43.7 | 25.0 | 100 +/- 15 | 100 ± 15 | 38.0 | 10.9 |
| 20    | 8.3 dB/100m  | 55.8 | 55.8 | 47.5 | 48.5 | 44.8 | 41.8 | 25.0 | 100 +/- 15 | 100 ± 15 | 37.0 | 9.0  |
| 25    | 9.3 dB/100m  | 54.3 | 54.3 | 45.1 | 46.1 | 42.8 | 39.8 | 24.3 | 100 +/- 15 | 100 ± 15 | 36.0 | 7.0  |
| 31.25 | 10.4 dB/100m | 52.9 | 52.9 | 42.5 | 43.5 | 40.9 | 37.9 | 23.6 | 100 +/- 15 | 100 ± 15 | 35.1 | 5.1  |
| 62.5  | 15.0 dB/100m | 48.4 | 48.4 | 33.4 | 34.4 | 34.9 | 31.9 | 21.5 | 100 +/- 15 | 100 ± 15 | 32.0 |      |
| 100   | 19.3 dB/100m | 45.3 | 45.3 | 26.0 | 27.0 | 30.8 | 27.8 | 20.1 | 100 +/- 15 | 100 ± 15 | 30.0 |      |
| 155   | 24.6 dB/100m | 42.4 | 42.4 | 17.9 | 18.9 | 27.0 | 24.0 | 19.5 | 100 +/- 22 | 100 ± 15 | 28.1 |      |
| 200   | 28.3 dB/100m | 40.8 | 40.8 | 12.5 | 13.5 | 24.8 | 21.8 | 18.7 | 100 +/- 22 | 100 ± 15 | 27.0 |      |
| 250   | 32.1 dB/100m | 39.3 | 39.3 | 7.2  | 8.2  | 22.8 | 19.8 | 18.0 | 100 +/- 32 | 100 ± 15 | 26.0 |      |
| 300   | 35.6 dB/100m | 38.1 | 36.1 | 2.5  | 1.5  | 21.3 | 18.3 | 17.5 | 100 +/- 32 | 100 ± 15 | 25.2 |      |
| 350   | 38.9 dB/100m | 37.1 | 35.1 |      |      | 19.9 | 16.9 | 17.0 | 100 +/- 32 | 100 ± 15 | 24.6 |      |
| 400   | 42.0 dB/100m | 36.3 | 34.3 |      |      | 18.8 | 15.8 | 16.6 | 100 +/- 32 | 100 ± 15 | 24.0 |      |
| 450   | 45.0 dB/100m | 35.5 | 33.5 |      |      | 17.7 | 14.7 | 16.2 | 100 +/- 32 | 100 ± 15 | 23.5 |      |
| 500   | 47.9 dB/100m | 34.8 | 32.8 |      |      | 16.8 | 13.8 | 15.9 | 100 +/- 32 |          | 23.0 |      |
| 550   | 50.6 dB/100m | 34.2 | 32.2 |      |      | 16.0 | 13.0 | 15.6 | 100 +/- 32 |          | 22.6 |      |

Voltage

|                   |
|-------------------|
| UL Voltage Rating |
| 300 V (CMP)       |

Mechanical Characteristics

Temperature

| UL Temperature | Operating      | Installation | Storage        |
|----------------|----------------|--------------|----------------|
| 75°C           | -20°C To +75°C | 0°C To +50°C | -20°C To +75°C |

Bend Radius

| Stationary Min. | Installation Min. |
|-----------------|-------------------|
| 1.0 in (25 mm)  | 2.25 in (57.2 mm) |

|                    |                |
|--------------------|----------------|
| Max. Pull Tension: | 25 lbs (11 kg) |
| Bulk Cable Weight: | 44 lbs/1000ft  |

Standards and Compliance

|                                       |                                                                                                                                                     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental Suitability:            | Plenum, Indoor                                                                                                                                      |
| Sustainability:                       | Product Lens™, Environmental Product Declaration (EPD) Available                                                                                    |
| Flammability / Reaction to Fire:      | NFPA 262, UL 910 (Plenum), FT6, IEC 60332-1-2                                                                                                       |
| CPR Compliance:                       | CPR Euroclass: Eca; CPR UKCA Class: Eca                                                                                                             |
| NEC / UL Compliance:                  | Article 800, CMP                                                                                                                                    |
| CEC / C(UL) Compliance:               | CMP                                                                                                                                                 |
| ICEA Compliance:                      | S-116-732                                                                                                                                           |
| IEEE Compliance:                      | IEEE 802.3bt Type 1, Type 2, Type 3, Type 4                                                                                                         |
| NEMA Compliance:                      | ANSI/NEMA WC-66                                                                                                                                     |
| Data Category:                        | Category 6                                                                                                                                          |
| TIA/EIA Compliance:                   | ANSI/TIA-568.2-D Category 6                                                                                                                         |
| Third Party Performance Verification: | Category 6                                                                                                                                          |
| ISO/IEC Compliance:                   | ISO/IEC 11801-1, IEC 61156-5                                                                                                                        |
| European Directive Compliance:        | EU CE Mark, EU Directive 2015/863/EU (RoHS 2 amendment), REACH, EU Directive 2011/65/EU (RoHS 2), EU Directive 2012/19/EU (WEEE), REACH: 2020-01-16 |
| UK Regulation Compliance:             | UKCA Mark                                                                                                                                           |
| APAC Compliance:                      | China RoHS II (GB/T 26572-2011)                                                                                                                     |
| Non-Plenum Number:                    | 2412F                                                                                                                                               |

Product Notes

|        |                                                                                                                                                                                                                                                                                                                                      |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Notes: | Electrical values are expected performance based on cable testing and representative performance within a typical Belden system. Values above 300 MHz are for Engineering Information Only. Shield is Bonded to Jacket Inner Wall for Electrical Stability. Print Includes Descending Footage Markings from Max. Put-Up Length to 0. |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

History

|                      |                                                  |
|----------------------|--------------------------------------------------|
| Update and Revision: | Revision Number: 0.535 Revision Date: 02-03-2025 |
|----------------------|--------------------------------------------------|

Variants

| Item #        | Color  | Putup Type  | Length   | UPC          |
|---------------|--------|-------------|----------|--------------|
| 2413F 0101000 | Black  | Reel        | 1,000 ft | 612825131601 |
| 2413F D15A500 | Blue   | Reel-in-Box | 500 ft   | 612825131519 |
| 2413F D151000 | Blue   | Reel        | 1,000 ft | 612825131526 |
| 2413F 0081000 | Gray   | Reel        | 1,000 ft | 612825131571 |
| 2413F 0051000 | Green  | Reel        | 1,000 ft | 612825131564 |
| 2413F 0031000 | Orange | Reel        | 1,000 ft | 612825131540 |
| 2413F 0021000 | Red    | Reel        | 1,000 ft | 612825131533 |
| 2413F 009A500 | White  | Reel-in-Box | 500 ft   | 612825131588 |
| 2413F 0091000 | White  | Reel        | 1,000 ft | 612825131595 |
| 2413F 0041000 | Yellow | Reel        | 1,000 ft | 612825131557 |

© 2025 Belden, Inc

All Rights Reserved.

Although Belden makes every reasonable effort to ensure their accuracy at the time of this publication, information and specifications described here in are subject to error or omission and to change without notice, and the listing of such information and specifications does not ensure product availability.

Belden provides the information and specifications herein on an "ASIS" basis, with no representations or warranties, whether express, statutory or implied. In no event will Belden be liable for any damages (including consequential, indirect, incidental, special, punitive, or exemplary damages) whatsoever, even if Belden has been advised of the possibility of such damages, whether in an action under contract, negligence or any other theory, arising out of or in connection with the use, or inability to use, the information or specifications described herein.

All sales of Belden products are subject to Belden's standard terms and conditions of sale.

Belden believes this product to be in compliance with all applicable environmental programs as listed in the data sheet. The information provided is correct to the best of Belden's knowledge, information and belief at the date of its publication. This information is designed only as a general guide for the safe handling, storage, and any other operation of the product itself or the one that it becomes a part of. The Product Disclosure is not to be considered a warranty or quality specification. Regulatory information is for guidance purposes only. Product users are responsible for determining the applicability of legislation and regulations based on their individual usage of the product.