



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 https://www.belden.com/resources/patents .

Construction Details

Conductor

Size	Stranding	Material	Number 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	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)	Max./Min. Fitted Impedance	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 Ohm	100 ± 15 Ohm	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 Ohm	100 ± 15 Ohm	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 Ohm	100 ± 15 Ohm	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 Ohm	100 ± 15 Ohm	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 Ohm	100 ± 15 Ohm	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 Ohm	100 ± 15 Ohm	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 Ohm	100 ± 15 Ohm	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 Ohm	100 ± 15 Ohm	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 Ohm	100 ± 15 Ohm	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 Ohm	100 ± 15 Ohm	32.0	
100	19.3 dB/100m	45.3	45.3	26.0	27.0	30.8	27.8	20.1	100 +/- 15 Ohm	100 ± 15 Ohm	30.0	
155	24.6 dB/100m	42.4	42.4	17.9	18.9	27.0	24.0	19.5	100 +/- 22 Ohm	100 ± 15 Ohm	28.1	
200	28.3 dB/100m	40.8	40.8	12.5	13.5	24.8	21.8	18.7	100 +/- 22 Ohm	100 ± 15 Ohm	27.0	
250	32.1 dB/100m	39.3	39.3	7.2	8.2	22.8	19.8	18.0	100 +/- 32 Ohm	100 ± 15 Ohm	26.0	
300	35.6 dB/100m	38.1	36.1	2.5	1.5	21.3	18.3	17.5	100 +/- 32 Ohm	100 ± 15 Ohm	25.2	
350	38.9 dB/100m	37.1	35.1			19.9	16.9	17.0	100 +/- 32 Ohm	100 ± 15 Ohm	24.6	
400	42.0 dB/100m	36.3	34.3			18.8	15.8	16.6	100 +/- 32 Ohm	100 ± 15 Ohm	24.0	
450	45.0 dB/100m	35.5	33.5			17.7	14.7	16.2	100 +/- 32 Ohm	100 ± 15 Ohm	23.5	
500	47.9 dB/100m	34.8	32.8			16.8	13.8	15.9	100 +/- 32 Ohm		23.0	
550	50.6 dB/100m	34.2	32.2			16.0	13.0	15.6	100 +/- 32 Ohm		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, FT6, IEC 60332-1-2
CPR Compliance:	CPR Euroclass: Eca
NEC / UL Compliance:	Article 800, CMP
CEC / C(UL) Compliance:	CMP
ICEA Compliance:	S-116-732-2013
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
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: 0.460 Revision Date: 12-15-2021

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

© 2022 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.