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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

AWG	Stranding	Material	Number of Pairs
23	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

Bonded-Pair:	No

Outer Shield Material

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

Outer Jacket Material

Separator Material	Material	Material Trade Name	Nom. Diameter	Ripcord
Center Member (Patented X-Spline®)	PVC - Polyvinyl Chloride	Flamarrest®	0.310 in	No

Electrical Characteristics

Electricals

Max. Conductor DCR	Max. DCR Unbalance	Max. Capacitance Unbalance	Nom. Mutual Capacitance
93.8 Ohm/km	5%	330 pF/100m	14 pF/ft

Delay

Frequency [MHz]	Max. Delay	Max. Delay Skew	Nom. Velocity of Propagation (VP) [%]
100 MHz	537.6 ns/100m	45 ns/100m	72%

High Freq

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 MHz	1.8 dB/100m	77.0 dB	77.0 dB	75.2 dB	76.2 dB	73.0 dB	70.0 dB	19.4 dB	100 +/- 15	100 ± 15 Ohm	40.0 dB	37.2 dB
1 MHz	2.0 dB/100m	75.3 dB	75.3 dB	73.3 dB	74.3 dB	70.8 dB	67.8 dB	20.0 dB	100 +/- 15	100 ± 15 Ohm	40.0 dB	35.0 dB
4 MHz	3.7 dB/100m	66.3 dB	66.3 dB	62.6 dB	63.6 dB	58.8 dB	55.8 dB	23.0 dB	100 +/- 15	100 ± 15 Ohm	40.0 dB	23.0 dB
8 MHz	5.2 dB/100m	61.8 dB	61.8 dB	56.6 dB	57.6 dB	52.7 dB	49.7 dB	24.5 dB	100 +/- 15	100 ± 15 Ohm	40.0 dB	16.9 dB

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

Voltage

UL Voltage Rating
300 V (CMP)

Mechanical Characteristics

Temperature

UL Rating.	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	2.25 in

Max. Pull Tension:	25 lbs
Bulk Cable Weight:	44 lbs/1000ft

Standards and Compliance

Environmental Suitability:	Plenum, Indoor
Sustainability:	Product Lens™, Environmental Product Declaration (EPD) Available
Flammability / Fire Resistance:	NFPA 262, UL 910 (Plenum), FT6, FT6, IEC 60332-1-2
NEC / UL Compliance:	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
CPR Euroclass:	Eca
European Directive Compliance:	EU CE Mark, EU Directive 2015/863/EU, EU Directive 2011/65/EU (ROHS II), EU Directive 2012/19/EU (WEEE), REACH: 2020-01-16
APAC Compliance:	China RoHS II (GB/T 26572-2011)

Part Number

Non-Plenum Number:	2412F

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

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: 0.420 Revision Date: 09-30-2020