Product: 2413F

CAT6+ Horizontal, 4pr, F/UTP, LS-PVC Jkt, CMP

Product Description

CAT6+ (350MHz), 4-Pair, F/UTP-foil shielded, Plenum-CMP, Premise Horizontal cable, 23 AWG solid bare copper conductors, FEP/PO insulation, patented X-spline, overall Beldfoil® shield, Flamarrest® jacket

Technical Specifications

Product Overview

Suitable Applications:	Networking Horizontal Cable, HDBaseT, 1000Base-T (Gigabit Ethernet), 100Base-T (Fast Ethernet), 10Base-T (Ethernet), 100BaseVG, ANYLAN, 155ATM, 622ATM, ANSI.X3.263 FDDI TP-PMD, NTSC/PAL Component or Composite Video, AES/EBU, Digital Video, RS-422, Noisy Environments, 250 MHz Category 6

Physical Characteristics (Overall)

Conductor

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

Conductor Count:	8
Total Number of Pairs:	4

Insulation

Material
FEP - Fluorinated Ethylene Propylene

Bonded-Pair:	N/A

Color Chart

Number	Color
1	White/Blue Stripe & Blue
2	White/Orange Stripe & Orange
3	White/Green Stripe & Green
4	White/Brown Stripe & Brown

Outer Shield Material

Type	Material	Material Trade Name	Coverage [%]	Drainwire Material	Drainwire AWG	Drainwire Construction n x D
Tape	Alum / Poly	Beldfoil®	100 %	TC - Tinned Copper	24	Solid

Outer Jacket Material

Material	Material Trade Name	Nominal Diameter	Ripcord	Separator Material
PVC-LS - Polyvinyl Chloride (Low Smoke)	Flamarrest®	0.310 in	No	Polyester Tape

Electrical Characteristics

Conductor DCR

Max. Conductor DCR	Max. DCR Unbalance
93.8 Ohm/km	5 %

Capacitance

Max. Capacitance Unbalance	Nom.Mutual Capacitance
330 pF/100m	14 pF/ft

Delay

Frequency [MHz]	Max. Delay	Max. Delay Skew	Nominal 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 RMS

Temperature Range

Installation Temp Range:	0°C To +50°C
UL Temp Rating:	75°C
Storage Temp Range:	-20°C To +75°C
Operating Temp Range:	-20°C To +75°C

Mechanical Characteristics

Bulk Cable Weight:	44 lbs/1000ft
Max Recommended Pulling Tension:	25 lbs
Min Bend Radius During Installation:	2.25 in
Min Bend Radius/Minor Axis:	1.0 in

Standards

NEC/(UL) Specification:	CMP
CEC/C(UL) Specification:	CMP
ISO/IEC Compliance:	11801 ed 2.2 (2011) Class E
CPR Euroclass:	Eca
Data Category:	Category 6
ANSI Compliance:	S-116-732-2013 Category 6, ANSI/NEMA WC-66 Category 6
Telecommunications Standards:	ANSI/TIA-568-C.2 Category 6
IEEE Specification:	IEEE 802.3bt Type 1, Type 2, Type 3, Type 4
Third Party Performance Verification:	Category 6

Applicable Environmental and Other Programs

Environmental Space:	Plenum
EU Directive 2000/53/EC (ELV):	Yes

EU Directive 2002/96/EC (WEEE):	Yes
EU Directive 2003/11/EC (BFR):	Yes
EU Directive 2003/96/EC (BFR):	Yes
EU Directive 2011/65/EU (ROHS II):	Yes
EU Directive 2012/19/EU (WEEE):	Yes
EU Directive 2015/863/EU:	Yes
EU Directive Compliance:	Yes
EU CE Mark:	Yes
EU REACH SVHC Compliance (yyyy-mm-dd):	2017-07-10
EU RoHS Compliance Date (yyyy-mm-dd):	2004-01-01
MII Order #39 (China RoHS):	Yes

Suitability

Suitability - Aerial:	No
Suitability - Burial:	No
Suitability - Hazardous Locations:	No
Suitability - Indoor:	Yes
Suitability - Non-Halogenated:	No
Suitability - Oil Resistance:	No
Suitability - Outdoor:	No
Suitability - Sunlight Resistance:	No

Flammability, LS0H, Toxicity Testing

C(UL) Flammability:	FT6
UL Flammability:	NFPA 262 Plenum (UL 910)
CSA Flammability:	FT6
ISO/IEC Flammability:	IEC 60332-1-2
UL voltage rating:	300 V RMS

Plenum/Non-Plenum

Plenum (Y/N):	Yes

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

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

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: 0.367 Revision Date: 04-28-2020

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