

## 2413 Multi-Conductor - Enhanced Category 6 Nonbonded-Pair Cables



For more Information  
please call

1-800-Belden1



### General Description:

CAT6+ (350 MHz), 4-Pair, U/UTP-Unshielded, Plenum-CMP, Premise Horizontal Cable, 23 AWG Solid Bare Copper Conductors, Dual FRPO/FEP Insulation, Tape Separator, Ripcord, Flam arrest® Jacket

### Usage (Overall)

**Suitable Applications:** Premise Horizontal Cable, Gigabit Ethernet, 100BaseTX, 100BaseVG ANYLAN, 155 ATM, 622 ATM, 250MHz Category 6

### Physical Characteristics (Overall)

#### Conductor

**AWG:**

| # Pairs | AWG | Stranding | Conductor Material |
|---------|-----|-----------|--------------------|
| 4       | 23  | Solid     | BC - Bare Copper   |

**Total Number of Conductors:** 8

#### Insulation

**Insulation Material:**

| Insulation Material  |
|--|
| FRPO/FEP - Flame Retardant Polyolefin/Fluorinated Ethylene Propylene |

#### Outer Shield

**Outer Shield Material:**

| Outer Shield Material |
|-----------------------|
| Unshielded            |

#### Outer Jacket

**Outer Jacket Material:**

| Outer Jacket Trade Name | Outer Jacket Material                 |
|-------------------------|---------------------------------------|
| Flam arrest®            | LS PVC - Low Smoke Polyvinyl Chloride |

**Outer Jacket Diameter:**

| Nom. Dia. (mm) |
|----------------|
| 5.715          |

**Outer Jacket Ripcord:** Yes

### Overall Cable

**Overall Cabling Separator Material:** Patented Dielectric Tape

**Overall Nominal Diameter:** 5.715 mm

### Pair

**Pair Color Code Chart:**

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

### Mechanical Characteristics (Overall)

**Storage Temperature Range:** -20°C To +75°C

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|                                   |               |
|-----------------------------------|---------------|
| Installation Temperature Range:   | +5°C To +50°C |
| Operating Temperature Range:      | 0°C To +75°C  |
| Bulk Cable Weight:                | 40.181 Kg/Km  |
| Max. Recommended Pulling Tension: | 177.928 N     |
| Min. Bend Radius/Minor Axis:      | 19.050 mm     |
| Min. Bend/Installation:           | 57.150 mm     |

### Applicable Specifications and Agency Compliance (Overall)

#### Applicable Standards & Environmental Programs

|                                       |                                     |
|---------------------------------------|-------------------------------------|
| NEC/(UL) Specification:               | CMP                                 |
| CEC/C(UL) Specification:              | CMP                                 |
| EU Directive 2011/65/EU (ROHS II):    | Yes                                 |
| Other Standards:                      | ISO/IEC 11801 ed 2.1 (2008) Class E |
| EU CE Mark:                           | Yes                                 |
| EU Directive 2000/53/EC (ELV):        | Yes                                 |
| EU Directive 2002/95/EC (RoHS):       | Yes                                 |
| EU RoHS Compliance Date (mm/dd/yyyy): | 10/13/2005                          |
| EU Directive 2002/96/EC (WEEE):       | Yes                                 |
| EU Directive 2003/11/EC (BFR):        | Yes                                 |
| CA Prop 65 (CJ for Wire & Cable):     | Yes                                 |
| MII Order #39 (China RoHS):           | Yes                                 |
| Telecommunications Standards:         | Category 6 - TIA 568.C.2            |

#### Applicable Patents:

| Country | Patent  |
|---------|---------|
| US      | 5563377 |
| US      | 6570095 |
| US      | 6998537 |
| US      | 7179999 |
| CANADA  | 2144694 |
| US      | 7977575 |

#### Flame Test

|                   |   |
|-------------------|---|
| UL Flame Test:    | NFPA 262 Plenum Flame Test (UL910)(FT6) |
| C(UL) Flame Test: | FT6                                     |
| CSA Flame Test:   | FT6                                     |

#### Suitability

|                        |     |
|------------------------|-----|
| Suitability - Indoor:  | Yes |
| Suitability - Outdoor: | No  |

#### Plenum/Non-Plenum

|                    |      |
|--------------------|------|
| Plenum (Y/N):      | Yes  |
| Non-Plenum Number: | 2412 |

### Electrical Characteristics (Overall)

#### Nom. Mutual Capacitance:

|                    |
|--------------------|
| Capacitance (pF/m) |
| 49.215             |

#### Maximum Capacitance Unbalance:

|                    |
|--------------------|
| Capacitance (pF/m) |
| 1082.730           |

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Maximum Capacitance Unbalance (pF/100 m): 330

Nominal Velocity of Propagation:

VP (%)  
72

Maximum Delay:

Delay (ns/100 m)  
537 @ 100MHz

Max. Delay Skew:

Delay Skew (ns/100 m)  
35.000

Maximum Conductor DC Resistance:

DCR @ 20°C (Ohm/100 m)  
7.800

Max. Operating Voltage - UL:

Voltage  
300 V RMS

Maximum DCR Unbalanced:

DCR Unbalance @ 20°C (%)  
3.000

### Electrical Characteristics-Premise (Overall)

Premise Cable Electrical Table 1:

| Freq. (MHz) | Max. Attenuation (dB/100 m) | Min. NEXT (dB) | Min. PSNEXT (dB) | Min. ACR (dB) | Min. PSACR (dB) | Min RL (dB) |
|-------------|-----------------------------|----------------|------------------|---------------|-----------------|-------------|
| 1           | 2.000                       | 75.3           | 75.3             | 73.3          | 73.3            | 20.000      |
| 4           | 3.700                       | 66.3           | 66.3             | 62.6          | 62.6            | 23.000      |
| 8           | 5.200                       | 61.8           | 61.8             | 56.6          | 56.6            | 24.500      |
| 10          | 5.800                       | 60.3           | 60.3             | 54.5          | 54.5            | 25.000      |
| 16          | 7.400                       | 57.2           | 57.2             | 49.9          | 49.9            | 25.000      |
| 20          | 8.300                       | 55.8           | 55.8             | 47.5          | 47.5            | 25.000      |
| 25          | 9.300                       | 54.3           | 54.3             | 45.1          | 45.1            | 24.300      |
| 31.25       | 10.400                      | 52.9           | 52.9             | 42.5          | 42.5            | 23.600      |
| 62.5        | 15.000                      | 48.4           | 48.4             | 33.4          | 33.4            | 21.500      |
| 100         | 19.300                      | 45.3           | 45.3             | 26.0          | 26.0            | 20.800      |
| 155         | 24.600                      | 42.4           | 42.4             | 17.9          | 17.9            | 19.500      |
| 200         | 28.300                      | 40.8           | 40.8             | 12.5          | 12.5            | 18.700      |
| 250         | 32.100                      | 39.3           | 39.3             | 7.2           | 7.2             | 18.000      |
| 300         | 35.600                      | 38.1           | 36.1             | 0.5           | 0.5             | 17.500      |
| 350         | 38.900                      | 37.1           | 35.1             | -1.7          | -3.7            | 17.000      |
| 400         | 42.000                      | 36.3           | 34.3             | -5.7          | -7.7            | 16.600      |
| 450         | 45.000                      | 35.5           | 33.5             | -9.5          | -11.5           | 16.200      |
| 500         | 47.900                      | 34.8           | 32.8             | -13.0         | -15.0           | 15.900      |
| 550         | 50.600                      | 34.2           | 32.2             | -16.4         | -18.4           | 15.600      |

Premise Cable Electrical Table 2:

| Freq. (MHz) | Input (Unfitted) Imp. (Ohms) | Fitted Impedance | Min. ACRF (dB) | Min. PSACRF (dB) |
|-------------|------------------------------|------------------|----------------|------------------|
| 1           | 100 ± 15                     | 100 ± 15         | 70.8           | 67.8             |
| 4           | 100 ± 15                     | 100 ± 15         | 58.8           | 55.8             |
| 8           | 100 ± 15                     | 100 ± 15         | 52.7           | 49.7             |
| 10          | 100 ± 15                     | 100 ± 15         | 50.8           | 47.8             |
| 16          | 100 ± 15                     | 100 ± 15         | 46.7           | 43.7             |
| 20          | 100 ± 15                     | 100 ± 15         | 44.8           | 41.8             |
| 25          | 100 ± 15                     | 100 ± 15         | 42.8           | 39.8             |
| 31.25       | 100 ± 15                     | 100 ± 15         | 40.9           | 37.9             |
| 62.5        | 100 ± 15                     | 100 ± 15         | 34.9           | 31.9             |
| 100         | 100 ± 15                     | 100 ± 15         | 30.8           | 27.8             |
| 155         | 100 ± 22                     | 100 ± 15         | 27.0           | 24.0             |
| 200         | 100 ± 22                     | 100 ± 15         | 24.8           | 21.8             |

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|     |          |          |      |      |
|-----|----------|----------|------|------|
| 250 | 100 ± 32 | 100 ± 15 | 22.8 | 19.8 |
| 300 | 100 ± 32 | 100 ± 15 | 21.3 | 18.3 |
| 350 | 100 ± 32 | 100 ± 15 | 19.9 | 16.9 |
| 400 | 100 ± 32 | 100 ± 15 | 18.8 | 15.8 |
| 450 | 100 ± 32 | 100 ± 15 | 17.7 | 14.7 |
| 500 | 100 ± 32 | 100 ± 15 | 16.8 | 13.8 |
| 550 | 100 ± 32 | 100 ± 15 | 16.0 | 13.0 |

### Notes (Overall)

**Notes:** Jacket sequentially marked at 2 ft./1m intervals. Third party verified to ANSI/TIA-568-C.2, Category 6. Values above 350 MHz are for Engineering Information Only.

### Reference (Overall)

**Previous Part Number:** 24567415, 24567715, 24567736T, 24567615T, 25067545, 25067545T, 25067515T, 24567745T, 24567715T, 25067845, 25067845T, 25067836, 25067836T, 24567815, 24567815T, 2456705T, 24567145, 24567145T, 24567115, 24567115T, 24567345, 24567345T, 24567336, 24567336T, 24567315, 24567315T, 24567445T, 24567436, 24567436T, 24567415T, 24567A15T, 24567945, 24567945T, 24567936T, 24567915, 24567915T

### Put Ups and Colors:

| Item #        | Putup  | Ship Weight | Color       | Notes | Item Desc                |
|---------------|--------|-------------|-------------|-------|--------------------------|
| 2413 D15A1000 | 305 MT | 13.608 KG   | BLUE        |       | CAT6+ 4PR U/UTP CMP RIB  |
| 2413 D15U1000 | 305 MT | 12.701 KG   | BLUE        |       | CAT6+ 4PR U/UTP CMP BOX  |
| 2413 D151000  | 305 MT | 12.701 KG   | BLUE        |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 D152500  | 762 MT | 29.484 KG   | BLUE        |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 002A1000 | 305 MT | 13.608 KG   | RED         |       | CAT6+ 4PR U/UTP CMP RIB  |
| 2413 003A1000 | 305 MT | 13.608 KG   | ORANGE      |       | CAT6+ 4PR U/UTP CMP RIB  |
| 2413 003U1000 | 305 MT | 12.701 KG   | ORANGE      |       | CAT6+ 4PR U/UTP CMP BOX  |
| 2413 0031000  | 305 MT | 12.701 KG   | ORANGE      |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 004A1000 | 305 MT | 13.608 KG   | YELLOW      |       | CAT6+ 4PR U/UTP CMP RIB  |
| 2413 004U1000 | 305 MT | 12.701 KG   | YELLOW      |       | CAT6+ 4PR U/UTP CMP BOX  |
| 2413 0041000  | 305 MT | 12.701 KG   | YELLOW      |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 0042500  | 762 MT | 29.484 KG   | YELLOW      |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 005A1000 | 305 MT | 13.608 KG   | GREEN, DARK |       | CAT6+ 4PR U/UTP CMP RIB  |
| 2413 005U1000 | 305 MT | 12.701 KG   | GREEN, DARK |       | CAT6+ 4PR U/UTP CMP BOX  |
| 2413 0051000  | 305 MT | 12.701 KG   | GREEN, DARK |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 0052500  | 762 MT | 29.484 KG   | GREEN, DARK |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 007A1000 | 305 MT | 13.608 KG   | VIOLET      |       | CAT6+ 4PR U/UTP CMP RIB  |
| 2413 008A1000 | 305 MT | 13.608 KG   | GRAY        |       | CAT6+ 4PR U/UTP CMP RIB  |
| 2413 008U1000 | 305 MT | 12.701 KG   | GRAY        |       | CAT6+ 4PR U/UTP CMP BOX  |
| 2413 0081000  | 305 MT | 12.701 KG   | GRAY        |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 009A1000 | 305 MT | 13.608 KG   | WHITE       |       | CAT6+ 4PR U/UTP CMP RIB  |
| 2413 009U1000 | 305 MT | 12.701 KG   | WHITE       |       | CAT6+ 4PR U/UTP CMP BOX  |
| 2413 0091000  | 305 MT | 12.701 KG   | WHITE       |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 0092500  | 762 MT | 29.484 KG   | WHITE       |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 010A1000 | 305 MT | 13.608 KG   | BLACK       |       | CAT6+ 4PR U/UTP CMP RIB  |
| 2413 010U1000 | 305 MT | 12.701 KG   | BLACK       |       | CAT6+ 4PR U/UTP CMP BOX  |
| 2413 0101000  | 305 MT | 12.701 KG   | BLACK       |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 0102500  | 762 MT | 29.484 KG   | BLACK       |       | CAT6+ 4PR U/UTP CMP REEL |
| 2413 012A1000 | 305 MT | 13.608 KG   | PINK        |       | CAT6+ 4PR U/UTP CMP RIB  |

Revision Number: 8    Revision Date: 01-07-2014

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#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.