

## 2413F Multi-Conductor - Enhanced Category 6 Nonbonded-Pair ScTP Cable



For more Information  
please call

1-800-Belden1



### General Description:

CAT6+, (350 MHz) 4-Pair, F/UTP-Foil Shielded, Plenum-CMP, Premise Horizontal Cable, 23 AWG Solid Bare Copper Conductors, FEP Insulation, Patented X-Spline, Overall Beldfoil Shield, Flamarrest® Jacket

### Usage (Overall)

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:

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

Total Number of Conductors:

8

#### Insulation

Insulation Material:

| Insulation Material                  |
|--------------------------------------|
| FEP - Fluorinated Ethylene Propylene |

#### Outer Shield

Outer Shield Material:

| Outer Shield Trade Name | Type | Outer Shield Material        | Coverage (%) |
|-------------------------|------|------------------------------|--------------|
| Beldfoil®               | Tape | Aluminum Foil-Polyester Tape | 100.000      |

Outer Shield Drain Wire AWG:

| AWG | Stranding | Drain Wire         | Conductor Material |
|-----|-----------|--------------------|--------------------|
| 24  | Solid     | TC - Tinned Copper |                    |

#### Outer Jacket

Outer Jacket Material:

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

Outer Jacket Diameter:

| Nom. Dia. (mm) |
|----------------|
| 7.239          |

Outer Jacket Ripcord:

Yes

#### Overall Cable

Overall Cabling Fillers:

Patented Central X-Spline

Overall Cabling Separator Material:

Polyester Tape

#### Pair

Pair Color Code Chart:

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

### Mechanical Characteristics (Overall)

Storage Temperature Range:

-20°C To +75°C

Installation Temperature Range:

+5°C To +50°C

Operating Temperature Range:

-20°C To +75°C

Bulk Cable Weight:

72.922 Kg/Km

Max. Recommended Pulling Tension:

111.205 N

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|                              |           |
|------------------------------|-----------|
| Min. Bend Radius/Minor Axis: | 25.400 mm |
| Min. Bend/Installation:      | 76.200 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                       |
| 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): | 12/09/2011                |
| 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  |
| Other Specification:                  | UL Verified to Category 6 |

#### Applicable Patents:

|                  |
|------------------|
| Country          |
| www.belden.com/p |

#### Flame Test

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

#### Plenum/Non-Plenum

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

### Electrical Characteristics (Overall)

#### Nom. Mutual Capacitance:

|                    |
|--------------------|
| Capacitance (pF/m) |
| 45.934             |

#### Maximum Capacitance Unbalance:

|                    |
|--------------------|
| Capacitance (pF/m) |
| 216.546            |

#### Nominal Velocity of Propagation:

|        |
|--------|
| VP (%) |
| 72.000 |

#### Maximum Delay:

|                  |
|------------------|
| Delay (ns/100 m) |
| 537.000          |

#### Max. Delay Skew:

|                   |
|-------------------|
| Delay Skew (ns/m) |
| 98.430            |

#### Maximum Conductor DC Resistance:

|                        |
|------------------------|
| DCR @ 20°C (Ohm/100 m) |
| 8.200                  |

#### 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:

## METRIC MEASUREMENT VERSION

### 2413F Multi-Conductor - Enhanced Category 6 Nonbonded-Pair ScTP Cable

| 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           | 73.3             | 73.3          | 72.3            | 20.000      |
| 4           | 3.700                       | 66.3           | 64.3             | 62.6          | 61.6            | 23.000      |
| 8           | 5.200                       | 63.3           | 61.3             | 58.1          | 57.1            | 24.500      |
| 10          | 5.800                       | 61.8           | 59.8             | 56.0          | 55.0            | 25.000      |
| 16          | 7.400                       | 58.6           | 56.6             | 51.2          | 50.2            | 25.000      |
| 20          | 8.300                       | 57.1           | 55.1             | 48.8          | 47.8            | 25.000      |
| 25          | 9.300                       | 55.5           | 53.5             | 46.3          | 45.2            | 24.300      |
| 31.25       | 10.400                      | 54.0           | 52.0             | 43.6          | 42.6            | 23.600      |
| 62.5        | 15.000                      | 49.1           | 47.1             | 34.1          | 33.1            | 21.500      |
| 100         | 19.300                      | 45.8           | 43.8             | 26.5          | 25.5            | 20.800      |
| 200         | 28.300                      | 40.9           | 38.9             | 12.6          | 11.6            | 18.700      |
| 250         | 32.100                      | 39.3           | 37.3             | 7.2           | 6.2             | 18.000      |
| 300         | 35.600                      | 38.1           | 36.1             | 2.5           | 1.5             | 17.500      |
| 350         | 38.900                      | 37.1           | 35.1             |               |                 | 17.000      |
| 400         | 42.000                      | 36.3           | 34.3             |               |                 | 16.600      |
| 450         | 45.000                      | 35.5           | 33.5             |               |                 | 16.200      |
| 500         | 47.900                      | 34.8           | 32.8             |               |                 | 15.900      |
| 550         | 50.600                      | 34.2           | 32.2             |               |                 | 15.600      |

Premise Cable Electrical Table 2:

| Freq. (MHz) | Input (Unfitted) Imp. (Ohms) | Fitted Impedance | Min. ELFEXT (dB) | Min. PSELFEXT (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               |
| 200         | 100 ± 22                     | 100 ± 15         | 24.8             | 21.8               |
| 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               |

Premise Cable Electrical Table 4:

| Frequency (MHz) | Min. TCL (dB) | Min. ELTCTL (dB) |
|-----------------|---------------|------------------|
| 1.000           | 40.000        | 35.000           |
| 4.000           | 40.000        | 23.000           |
| 8.000           | 40.000        | 17.000           |
| 10.000          | 40.000        | 15.000           |
| 16.000          | 38.000        | 10.900           |
| 20.000          | 37.000        | 9.000            |
| 25.000          | 36.000        | 7.100            |
| 31.250          | 35.100        | 5.100            |
| 62.500          | 32.000        |                  |
| 100.000         | 30.000        |                  |
| 200.000         | 27.000        |                  |
| 250.000         | 26.000        |                  |

#### Notes (Overall)

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

#### Put Ups and Colors:

| Item #         | Putup    | Ship Weight | Color  | Notes | Item Desc                |
|----------------|----------|-------------|--------|-------|--------------------------|
| 2413F D15A1000 | 1,000 FT | 50.000 LB   | BLUE   |       | CAT6+ 4PR F/UTP CMP RIB  |
| 2413F D15A500  | 500 FT   | 27.500 LB   | BLUE   |       | CAT6+ 4PR F/UTP CMP RIB  |
| 2413F D151000  | 1,000 FT | 49.000 LB   | BLUE   |       | CAT6+ 4PR F/UTP CMP REEL |
| 2413F 0021000  | 1,000 FT | 49.000 LB   | RED    |       | CAT6+ 4PR F/UTP CMP REEL |
| 2413F 0031000  | 1,000 FT | 49.000 LB   | ORANGE |       | CAT6+ 4PR F/UTP CMP REEL |
| 2413F 0041000  | 1,000 FT | 49.000 LB   | YELLOW |       | CAT6+ 4PR F/UTP CMP REEL |

## METRIC MEASUREMENT VERSION

### 2413F Multi-Conductor - Enhanced Category 6 Nonbonded-Pair ScTP Cable

|                |          |           |             |  |                          |
|----------------|----------|-----------|-------------|--|--------------------------|
| 2413F 0051000  | 1,000 FT | 49.000 LB | GREEN, DARK |  | CAT6+ 4PR F/UTP CMP REEL |
| 2413F 0081000  | 1,000 FT | 49.000 LB | GRAY        |  | CAT6+ 4PR F/UTP CMP REEL |
| 2413F 009A1000 | 1,000 FT | 50.000 LB | WHITE       |  | CAT6+ 4PR F/UTP CMP RIB  |
| 2413F 009A500  | 500 FT   | 27.500 LB | WHITE       |  | CAT6+ 4PR F/UTP CMP RIB  |
| 2413F 0091000  | 1,000 FT | 49.000 LB | WHITE       |  | CAT6+ 4PR F/UTP CMP REEL |
| 2413F 010A1000 | 1,000 FT | 50.000 LB | BLACK       |  | CAT6+ 4PR F/UTP CMP RIB  |
| 2413F 0101000  | 1,000 FT | 49.000 LB | BLACK       |  | CAT6+ 4PR F/UTP CMP REEL |

Revision Number: 3    Revision Date: 09-25-2014

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