

## 9776 Multi-Conductor - Audio, Control and Instrumentation Cable

**Description:**

18 AWG stranded (19x30) TC conductors, polypropylene insulation, twisted pairs, individually shielded w/Beldfoil® (100% coverage), 20 AWG stranded TC drain wire, PVC jacket.

**Physical Characteristics (Overall)****Conductor****AWG:**

| # Pairs | AWG | Stranding | Conductor Material |
|---------|-----|-----------|--------------------|
| 12      | 18  | 19x30     | TC - Tinned Copper |

**Insulation****Insulation Material:**

| Insulation Material |
|---------------------|
| PP - Polypropylene  |

**Inner Shield****Inner Shield Material:**

| Inner Shield Trade Name | Type | Inner Shield Material        | Coverage (%) |
|-------------------------|------|------------------------------|--------------|
| Beldfoil® (Z-Fold®)     | Tape | Aluminum Foil-Polyester Tape | 100          |

**Inner Shield Drain Wire AWG:**

| AWG |
|-----|
| 20  |

Inner Shield Drain Wire Stranding: Stranded

Inner Shield Drain Wire Conductor Material: TC - Tinned Copper

**Outer Jacket****Outer Jacket Material:**

| Outer Jacket Material    |
|--------------------------|
| PVC - Polyvinyl Chloride |

**Overall Cabling**

Overall Nominal Diameter: 0.735 in.

**Pair****Pair Color Code Chart:**

| Number | Color          |
|--------|----------------|
| 1      | Black & Red    |
| 2      | Black & White  |
| 3      | Black & Green  |
| 4      | Black & Blue   |
| 5      | Black & Yellow |
| 6      | Black & Brown  |
| 7      | Black & Orange |
| 8      | Red & White    |
| 9      | Red & Green    |
| 10     | Red & Blue     |
| 11     | Red & Yellow   |
| 12     | Red & Brown    |

**Pair Lay Length & Direction:**

## 9776 Multi-Conductor - Audio, Control and Instrumentation Cable

Lay Length (in.)

1.750

## Mechanical Characteristics (Overall)

|                                        |                          |
|----------------------------------------|--------------------------|
| Operating Temperature Range:           | -20°C To +80°C           |
| UL Temperature Rating:                 | 80°C (UL AWM Style 2919) |
| Bulk Cable Weight:                     | 308.450 lbs/1000 ft.     |
| Max. Recommended Pulling Tension:      | 707 lbs.                 |
| Min. Bend Radius (Install)/Minor Axis: | 7.500 in.                |

## Applicable Specifications and Agency Compliance (Overall)

## Applicable Standards &amp; Environmental Programs

|                                       |                           |
|---------------------------------------|---------------------------|
| NEC/(UL) Specification:               | CM                        |
| CEC/C(UL) Specification:              | CM                        |
| AWM Specification:                    | UL Style 2919 (30 V 80°C) |
| 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): | 01/01/2004                |
| 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                       |

## Flame Test

|                |                   |
|----------------|-------------------|
| UL Flame Test: | UL1685 UL Loading |
|----------------|-------------------|

## Plenum/Non-Plenum

|               |    |
|---------------|----|
| Plenum (Y/N): | No |
|---------------|----|

## Electrical Characteristics (Overall)

## Nom. Characteristic Impedance:

Impedance (Ohm)

50

## Nom. Inductance:

Inductance (µH/ft)

.18

## Nom. Capacitance Conductor to Conductor:

Capacitance (pF/ft)

30

## Nom. Capacitance Cond. to Other Conductor &amp; Shield:

Capacitance (pF/ft)

55

## Nominal Velocity of Propagation:

VP (%)

66

## Nom. Conductor DC Resistance:

DCR @ 20°C (Ohm/1000 ft)

6.4

Ind. Pair Nominal Shield DC Resistance @ 20  
 Deg. C: 8.300 Ohm/1000 ft

## 9776 Multi-Conductor - Audio, Control and Instrumentation Cable

## Max. Operating Voltage - UL:

## Voltage

30 V RMS (UL AWM Style 2919)

300 V RMS (CM)

## Max. Recommended Current:

## Current

2.7 Amps per conductor @ 25°C

## Put Ups and Colors:

| Item #       | Putup    | Ship Weight | Color  | Notes | Item Desc           |
|--------------|----------|-------------|--------|-------|---------------------|
| 9776 060100  | 100 FT   | 31.600 LB   | CHROME | C     | 12 FS PR #18 PP PVC |
| 9776 0601000 | 1,000 FT | 308.000 LB  | CHROME | C     | 12 FS PR #18 PP PVC |
| 9776 060500  | 500 FT   | 152.000 LB  | CHROME | C     | 12 FS PR #18 PP PVC |

## Notes:

C = CRATE REEL PUT-UP.

## Introduction

Belden® paired cable products are manufactured in a variety of gage sizes, dimensions, insulation materials, shielding configurations, and jacketing materials including Plenum and High-Temperature versions to meet the technical requirements of many different types of systems.

Paired cables allow balanced signal transmission, which results in lower crosstalk through common mode rejection. Due to the improved noise immunity of twisted pairs, they generally permit higher data speeds than multi-conductor cables.

As an aid to proper cable selection, both the suggested working voltages and the maximum temperature ratings are indicated for each applicable paired cable selection.

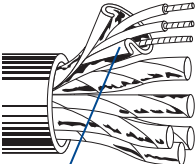
Most of our paired cables are available from stock. Many of these are available off the shelf from distributors. If you have a new or unusual application or you cannot find a paired cable in this catalog section that meets your technical requirements, contact Technical Support at 1-800-BELDEN-1.

### Paired Cables Packaging

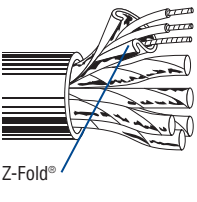
Belden's unique UnReel® cable dispenser is available for many of the paired cable products listed in this section. The letter "U" before the specified put-up length denotes UnReel packaging.

## Individually Shielded

Audio, Control and Instrumentation Cables

| Description                                                                                                                              | Part No. | UL NEC/<br>C(UL) CEC<br>Type | No.<br>of Pairs                          | Color<br>Code                            | Standard<br>Lengths |       | Standard<br>Unit Weight |          | Nom. DCR |          | Nominal<br>OD |       | Nom.<br>Imp.<br>(Ω) | Nom.<br>Vel.<br>of Prop. | Nom. Capacitance |               |                  |                |
|------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------------|------------------------------------------|------------------------------------------|---------------------|-------|-------------------------|----------|----------|----------|---------------|-------|---------------------|--------------------------|------------------|---------------|------------------|----------------|
|                                                                                                                                          |          |                              |                                          |                                          | Ft.                 | m     | Lbs.                    | kg       | Cond.    | Shield   | Inch          | mm    |                     |                          | *<br>pF/<br>Ft.  | *<br>pF/<br>m | **<br>pF/<br>Ft. | **<br>pF/<br>m |
| 20 AWG Stranded (7x28) TC Conductors • Twisted Pairs • Individually Shielded w/Beldfoil® (100% Coverage) • 22 AWG Stranded TC Drain Wire |          |                              |                                          |                                          |                     |       |                         |          |          |          |               |       |                     |                          |                  |               |                  |                |
| Polypropylene Insulation • Overall Chrome PVC Jacket                                                                                     |          |                              |                                          |                                          |                     |       |                         |          |          |          |               |       |                     |                          |                  |               |                  |                |
| <br>Z-Fold®                                              | 9873     | NEC:                         | 3                                        | See<br>Chart 3<br>(Tech Info<br>Section) | 100                 | 30.5  | 6.6                     | 3.0      | 10.5Ω/M' | 14.0Ω/M' | .341          | 8.66  | 50                  | 66%                      | 30               | 98            | 55               | 180            |
|                                                                                                                                          |          | CM                           |                                          |                                          | 250                 | 76.2  | 14.5                    | 6.6      | 34.4Ω/km | 45.9Ω/km |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          |          | CEC:                         |                                          |                                          | 500                 | 152.4 | 32.5                    | 14.8     |          |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          |          | CM                           |                                          |                                          | 1000                | 304.8 | 58.0                    | 26.3     |          |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          | 9874     | NEC:                         | 6                                        | See<br>Chart 3<br>(Tech Info<br>Section) | 100                 | 30.5  | 10.3                    | 4.7      | 10.5Ω/M' | 11.3Ω/M' | .445          | 11.30 | 50                  | 66%                      | 30               | 98            | 55               | 180            |
|                                                                                                                                          |          | CM                           |                                          |                                          | 250                 | 76.2  | 29.0                    | 13.2     | 34.4Ω/km | 37.1Ω/km |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          |          | CEC:                         |                                          |                                          | 500                 | 152.4 | 56.5                    | 25.7     |          |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          |          | CM                           |                                          |                                          | 1000                | 304.8 | 113.0                   | 51.3     |          |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          | 9875     | NEC:                         | 9                                        | See<br>Chart 3<br>(Tech Info<br>Section) | 100                 | 30.5  | 17.7                    | 8.1      | 10.5Ω/M' | 11.3Ω/M' | .555          | 14.10 | 50                  | 66%                      | 30               | 98            | 55               | 180            |
|                                                                                                                                          |          | CM                           |                                          |                                          | 500                 | 152.4 | 97.0                    | 44.0     | 34.4Ω/km | 37.1Ω/km |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          |          | CEC:                         |                                          |                                          | 1000                | 304.8 | 187.0                   | 88.4     |          |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          |          | CM                           |                                          |                                          |                     |       |                         |          |          |          |               |       |                     |                          |                  |               |                  |                |
| 9876                                                                                                                                     | NEC:     | 11                           | See<br>Chart 3<br>(Tech Info<br>Section) | 1000                                     | 304.8               | 220.0 | 100.0                   | 10.5Ω/M' | 11.3Ω/M' | .600     | 15.24         | 50    | 66%                 | 30                       | 98               | 55            | 180              |                |
|                                                                                                                                          | CM       |                              |                                          |                                          |                     |       |                         | 34.4Ω/km | 37.1Ω/km |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          | CEC:     |                              |                                          |                                          |                     |       |                         |          |          |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          | CM       |                              |                                          |                                          |                     |       |                         |          |          |          |               |       |                     |                          |                  |               |                  |                |
| 9877                                                                                                                                     | NEC:     | 12                           | See<br>Chart 3<br>(Tech Info<br>Section) | 100                                      | 30.5                | 22.1  | 10.1                    | 10.5Ω/M' | 11.3Ω/M' | .617     | 15.67         | 50    | 66%                 | 30                       | 98               | 55            | 180              |                |
|                                                                                                                                          | CM       |                              |                                          | 500                                      | 152.4               | 119.0 | 54.1                    | 34.4Ω/km | 37.1Ω/km |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          | CEC:     |                              |                                          | 1000                                     | 304.8               | 237.0 | 107.7                   |          |          |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          | CM       |                              |                                          |                                          |                     |       |                         |          |          |          |               |       |                     |                          |                  |               |                  |                |
| 9879                                                                                                                                     | NEC:     | 15                           | See<br>Chart 3<br>(Tech Info<br>Section) | 500                                      | 152.4               | 146.0 | 66.4                    | 10.5Ω/M' | 11.3Ω/M' | .689     | 17.50         | 50    | 66%                 | 30                       | 98               | 55            | 180              |                |
|                                                                                                                                          | CM       |                              |                                          | 1000                                     | 304.8               | 296.0 | 134.5                   | 34.4Ω/km | 37.1Ω/km |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          | CEC:     |                              |                                          |                                          |                     |       |                         |          |          |          |               |       |                     |                          |                  |               |                  |                |
|                                                                                                                                          | CM       |                              |                                          |                                          |                     |       |                         |          |          |          |               |       |                     |                          |                  |               |                  |                |

**18 AWG Stranded (19x30) TC Conductors • Twisted Pairs • Individually Shielded w/Beldfoil (100% Coverage) • 20 AWG Stranded TC Drain Wire**

|                                                                                                                       |             |      |    |                                          |      |       |       |       |          |          |      |       |    |     |    |    |    |     |
|-----------------------------------------------------------------------------------------------------------------------|-------------|------|----|------------------------------------------|------|-------|-------|-------|----------|----------|------|-------|----|-----|----|----|----|-----|
| <b>Polypropylene Insulation • Chrome PVC Jacket</b>                                                                   |             |      |    |                                          |      |       |       |       |          |          |      |       |    |     |    |    |    |     |
| UL AWM Style 2919<br>(30V 80°C)<br> | <b>9773</b> | NEC: | 3  | See<br>Chart 3<br>(Tech Info<br>Section) | 100  | 30.5  | 10.8  | 4.9   | 6.4Ω/M'  | 8.3Ω/M'  | .404 | 10.26 | 50 | 66% | 30 | 98 | 55 | 180 |
|                                                                                                                       |             | CM   |    |                                          | 500  | 152.4 | 52.5  | 23.8  | 21.0Ω/km | 27.2Ω/km |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CEC: |    |                                          | 1000 | 304.8 | 107.0 | 48.6  |          |          |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CM   |    |                                          |      |       |       |       |          |          |      |       |    |     |    |    |    |     |
|                                                                                                                       | <b>9774</b> | NEC: | 6  | See<br>Chart 3<br>(Tech Info<br>Section) | 100  | 30.5  | 16.1  | 7.3   | 6.4Ω/M'  | 8.3Ω/M'  | .560 | 14.22 | 50 | 66% | 30 | 98 | 55 | 180 |
|                                                                                                                       |             | CM   |    |                                          | 500  | 152.4 | 89.5  | 40.9  | 21.0Ω/km | 27.2Ω/km |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CEC: |    |                                          | 1000 | 304.8 | 176.0 | 80.8  |          |          |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CM   |    |                                          |      |       |       |       |          |          |      |       |    |     |    |    |    |     |
|                                                                                                                       | <b>9775</b> | NEC: | 9  | See<br>Chart 3<br>(Tech Info<br>Section) | 100  | 30.5  | 25.8  | 11.7  | 6.4Ω/M'  | 8.3Ω/M'  | .655 | 16.64 | 50 | 66% | 30 | 98 | 55 | 180 |
|                                                                                                                       |             | CM   |    |                                          | 500  | 152.4 | 123.0 | 55.8  | 21.0Ω/km | 27.2Ω/km |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CEC: |    |                                          | 1000 | 304.8 | 241.0 | 109.4 |          |          |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CM   |    |                                          |      |       |       |       |          |          |      |       |    |     |    |    |    |     |
|                                                                                                                       | <b>9776</b> | NEC: | 12 | See<br>Chart 3<br>(Tech Info<br>Section) | 100  | 30.5  | 31.6  | 14.4  | 6.4Ω/M'  | 8.3Ω/M'  | .735 | 18.67 | 50 | 66% | 30 | 98 | 55 | 180 |
|                                                                                                                       |             | CM   |    |                                          | 500  | 152.4 | 151.5 | 69.0  | 21.0Ω/km | 27.2Ω/km |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CEC: |    |                                          | 1000 | 304.8 | 307.0 | 139.4 |          |          |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CM   |    |                                          |      |       |       |       |          |          |      |       |    |     |    |    |    |     |
|                                                                                                                       | <b>9777</b> | NEC: | 15 | See<br>Chart 3<br>(Tech Info<br>Section) | 100  | 30.5  | 38.8  | 17.6  | 6.4Ω/M'  | 8.3Ω/M'  | .819 | 20.80 | 50 | 66% | 30 | 98 | 55 | 180 |
|                                                                                                                       |             | CM   |    |                                          | 500  | 152.4 | 194.0 | 88.1  | 21.0Ω/km | 27.2Ω/km |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CEC: |    |                                          | 1000 | 304.8 | 421.0 | 191.1 |          |          |      |       |    |     |    |    |    |     |
|                                                                                                                       |             | CM   |    |                                          |      |       |       |       |          |          |      |       |    |     |    |    |    |     |

DCR = DC Resistance • TC = Tinned Copper

\*Capacitance between conductors.

\*\*Capacitance between one conductor and other conductors connected to shield.