



9V28014 Flat - Vari-Twist® 9V280XX Series

|  |                                                                                                       |
|--|-------------------------------------------------------------------------------------------------------|
|  | <p>For more information please call<br/><b>1-800-Belden1</b></p> <p><u>See Put-ups and Colors</u></p> |
|--|-------------------------------------------------------------------------------------------------------|

**Description:**

Belden's PVC Vari-Twist series was designed to reduce crosstalk in the balanced mode by twisting the pairs, but can be mass-terminated in the flat sections with standard IDC connectors.

**PHYSICAL CHARACTERISTICS:**

**CONDUCTOR:**

|                            |                    |
|----------------------------|--------------------|
| Number of Pairs            | 7                  |
| Total Number of Conductors | 14                 |
| AWG                        | 28                 |
| Stranding                  | 7x36               |
| Conductor Material         | TC - Tinned Copper |

**INSULATION:**

|                                  |                          |
|----------------------------------|--------------------------|
| Insulation Material              | PVC - Polyvinyl Chloride |
| Nom. Insulation Wall Thickness   | .010 in.                 |
| Insulation Resistance            | >10, 000 Mega Ohms       |
| Substrate Thickness and Material | .010" Clear PVC          |

**PAIR:**

|                                              |                                                                   |
|----------------------------------------------|-------------------------------------------------------------------|
| Pair Lay Length & Direction - adjacent pairs | 1/2" Nom. Lay Length - Adjacent pairs have opposite direction lay |
|----------------------------------------------|-------------------------------------------------------------------|

Pair Color Code Chart :

| Number | Color      |
|--------|------------|
| 1      | Brown/Tan  |
| 2      | Red/Tan    |
| 3      | Orange/Tan |
| 4      | Yellow/Tan |
| 5      | Green/Tan  |
| 6      | Blue/Tan   |
| 7      | Purple/Tan |

**SPACING:**

|                                                    |                   |
|----------------------------------------------------|-------------------|
| Conductor Spacing Center to Center Flat Section    | .050 +/- .005 in. |
| Conductor Spacing Outside Center to Outside Center | .65 +/- .012 in.  |
| Twisted Pair Spacing Center to Center              | .100 in.          |

**OVERALL:**



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|                                           |                   |
|-------------------------------------------|-------------------|
| Overall Nominal Width                     | .70 in.           |
| Overall Nominal Thickness Flat Section    | .042 +/- .003 in. |
| Overall Nominal Thickness Twisted Section | .080 in.          |
| Overall Twisted Length                    | 18 in.            |
| Flat Section Center to Center Spacing     | 20 +/- .50 in.    |
| Overall Flat Section Length               | 2 +.5/-0 in.      |

**OUTER SHIELD:**

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

**MECHANICAL CHARACTERISTICS:**

|                             |                 |
|-----------------------------|-----------------|
| Operating Temperature Range | -20°C To +105°C |
|-----------------------------|-----------------|

**APPLICABLE SPECIFICATIONS AND AGENCY COMPLIANCE:**

**APPLICABLE STANDARDS:**

|                                       |                        |
|---------------------------------------|------------------------|
| UL AWM Style                          | 2693 and 2697          |
| UL Rating                             | 105°C, 300 V RMS, VW-1 |
| EU CE Mark (Y/N)                      | Yes                    |
| EU RoHS Compliant (Y/N)               | Yes                    |
| EU RoHS Compliance Date (mm/dd/yyyy): | 10/01/2005             |

**FLAME TEST:**

|               |      |
|---------------|------|
| UL Flame Test | VW-1 |
|---------------|------|

**PLENUM/NON-PLENUM:**

|              |   |
|--------------|---|
| Plenum (Y/N) | N |
|--------------|---|

**ELECTRICAL CHARACTERISTICS:**

Nominal Balanced Characteristic Impedance :

| Description | Nominal Balanced Characteristic Impedance (Ohms) |
|-------------|--------------------------------------------------|
|             | 115                                              |

Nominal Unbalanced Characteristic Impedance :

| Description | Nominal Unbalanced Characteristic Impedance (Ohms) |
|-------------|----------------------------------------------------|
|             | 100                                                |

Nom. Inductance :

| Description | Nominal Inductance (µH/ft) |
|-------------|----------------------------|
| @ 1 MHz     | .24                        |

Nom. Capacitance Conductor to Conductor :

| Description | Nom. Capacitance Conductor to Conductor (pF/ft) |
|-------------|-------------------------------------------------|
| @ 1 kHz     | 20                                              |
| @ 1 MHz     | 16                                              |

Nominal Velocity of Propagation :

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|                    |                                            |
|--------------------|--------------------------------------------|
| <b>Description</b> | <b>Nominal Velocity of Propagation (%)</b> |
|                    | 64                                         |

Nominal Delay 1.6 NS/FT. ns/ft

Nom. Conductor DC Resistance @ 20 Deg. C 68.2 OHMS/1000 FT. MAX. Ohms/1000 ft

Nom. Attenuation :

| Description | Frequency (MHz) | Nom. Attenuation (dB/100 ft.) |
|-------------|-----------------|-------------------------------|
|             | 10              | 3.5                           |
|             | 20              | 5.5                           |
|             | 30              | 7.2                           |
|             | 40              | 8.8                           |
|             | 50              | 10.2                          |
|             | 60              | 12                            |
|             | 70              | 13                            |
|             | 80              | 14.2                          |
|             | 90              | 15                            |
|             | 100             | 16                            |

Typical Balanced Crosstalk - dB Suppression :

| Description          | Frequency (MHz) | Start Frequency (MHz) | Stop Frequency (MHz) | Typ. dB Sup. for both near/far end is better than (dB) |
|----------------------|-----------------|-----------------------|----------------------|--------------------------------------------------------|
| 10 ft. sample length |                 | 10                    | 100                  | 35                                                     |

Typical Unbalanced Crosstalk :

| Description                                          | Pulse Rise Time (NS) | Near End (%) | Far End (%) | Typical Unbalanced Crosstalk (dB) |
|------------------------------------------------------|----------------------|--------------|-------------|-----------------------------------|
| 10 ft. sample length all grounds connected together. | 3                    | 5.8          | 5.2         |                                   |
| 10 ft. sample length all grounds connected together. | 5                    | 4            | 3.2         |                                   |
| 10 ft. sample length all grounds connected together. | 7                    | 2.5          | 2.8         |                                   |

Max. Operating Voltage - UL 300 V RMS

Max. Recommended Current 1 Amp per conductor @ 20°C

Dielectric Withstand Voltage 2,000 V RMS

**NOTES:**

Notes The transition area is included in the twisted length to assure a full 2 inches of flat termination area.

**PUT-UPS AND COLORS:**

| Item            | Description             | Put-Up (ft.) | Ship Weight (lbs.) | Jacket Color | Notes |
|-----------------|-------------------------|--------------|--------------------|--------------|-------|
| 9V28014 000H100 | 7 PR #28 PVC VARI-TWIST | H100         | 2.5                | NONE         | E     |



**9V28014 Flat - Vari-Twist® 9V280XX Series**

E = MAY CONTAIN MORE THAN 1 PIECE. MINIMUM LENGTH OF ANY ONE PIECE IS 25'

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