

**ALPHA WIRE  
CUSTOMER PRODUCT SPECIFICATION**

**Part Number: 517807**  
**Page 1 of 3 Pages**

**Issue: 5**  
**Issue Date: 1/27/2011**  
**Effective Date: 2/14/2011**

**A. Construction**

**Diameters (In)**

- 1) Component 1 1 X 2 COND  
 a) Conductor 22 (19/34) AWG TC 0.030  
 b) Insulation 0.042" Wall, Nom. Polypropylene(PP) 0.114  
 (1) Color(s)

Cond	Color	Cond	Color	Cond	Color
1	WHITE	2	BLUE		

- c) Cabling 2 COND Cabled  
 (1) Twists: 3.7 Twists/foot (min)  
 (2) Core Wrap Clear Mylar Tape, 25% Overlap, Min.  
 d) Shield: Alum/Mylar Tape, 25% Overlap, Min.  
 (1) Foil Direction Foil Facing In  
 (2) Drain Wire 22 (19/34) AWG TC  
 e) Jacket 0.015" Wall, Nom.,PVC 0.260 (0.273 Max.)  
 (1) Color(s) BLACK  
 2) Component 2 1 X 2 COND  
 a) Conductor 18 (19/30) AWG BC 0.048  
 b) Insulation 0.015" Wall, Nom. PVC/ 0.005" Wall NYLON 0.088  
 (1) Color(s)

Cond	Color	Cond	Color	Cond	Color
1	BLACK	2	RED		

- c) Cabling 2 COND Cabled  
 (1) Twists: 4.8 Twists/foot (min)  
 d) Shield: Alum/Mylar Tape, 25% Overlap, Min.  
 (1) Foil Direction Foil Facing In  
 (2) Drain Wire 18 (19/30) AWG TC  
 e) Jacket 0.015" Wall, Nom.,PVC 0.210 (0.222 Max.)  
 (1) Color(s) BLACK  
 3) Component 3 1 X 2 COND  
 a) Conductor 14 (41/30) AWG BC 0.072  
 b) Insulation 0.015" Wall, Nom. PVC/ 0.005" Wall NYLON 0.112  
 (1) Color(s)

Cond	Color	Cond	Color	Cond	Color
1	ORANGE	2	YELLOW		

- c) Cabling 2 COND Cabled  
 (1) Twists: 3.7 Twists/foot (min)  
 4) Component 4 1 X 1 COND  
 a) Conductor 18 (19/30) AWG BC 0.048  
 b) Insulation 0.015" Wall, Nom. PVC/ 0.005" Wall NYLON 0.088  
 (1) Color(s)

Cond	Color	Cond	Color	Cond	Color
1	BROWN				

- 5) Cable Assembly 4 Components Cabled  
 a) Twists: 1.5 Twists/foot (min)  
 b) Core Wrap Clear Mylar Tape, 25% Overlap, Min.  
 c) Component Orientation See drawing below.  
 6) Shield TC BRAID Shield,90% Coverage, Min.  
 a) Drain Wire 18 (16/30) AWG TC

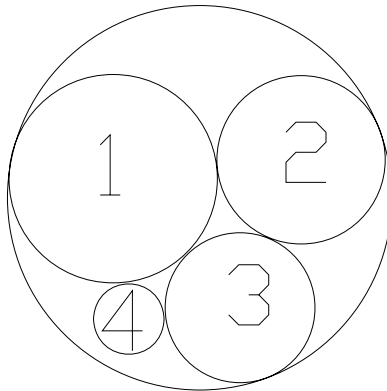
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- |                     |  |                |
|---------------------|--|----------------|
| 7) Jacket           | 0.065" Wall, Nom.,TPE  | 0.690+/- 0.025 |
| a) Color(s)         | BLACK  |                |
| b) Jacket Separator | Tissue Tape, 25% Overlap, Min.   |                |
| c) Print            | ALPHA WIRE-* P/N 517807 2C 22 AWG 2C 18 AWG 2C 14 AWG 1C 18 AWG<br>MILLER ELECTRIC<br>* = Factory Code |                |



**B. Applicable Specifications**

**C. Environmental Compliance**

**D. Physical & Mechanical Properties**

- |                      |                    |
|----------------------|--------------------|
| 1) Temperature Range | -20 to 105°C       |
| 2) Bend Radius       | 10X Cable Diameter |
| 3) Pull Tension      | 167 Lbs, Maximum   |

**E. Electrical Properties**

- |                             |  |
|-----------------------------|--|
| 1) Voltage Rating           | 300 V <sub>RMS</sub>   |
| 2) Component 1              |  |
| a) Capacitance              | 12 to 12.3 pf/ft @1 kHz, Nominal Conductor to Conductor- <b>critical</b> |
| b) Ground Capacitance       | 22.14 pf/ft @1 kHz, Nominal  |
| c) Characteristic Impedance | 120 to 124 Ω – <b>critical</b>   |
| d) Inductance               | 0.28 μH/ft, Nominal  |
| e) Conductor DCR            | 15.3 Ω/1000ft @20°C, Nominal   |
| f) Component Shield DCR     | 11.2 Ω/1000ft @20°C, Nominal   |

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- g) OA Shield DCR 2.22  $\Omega$ /1000ft @20°C, Nominal
- 3) Component 2
  - a) Capacitance 48 pf/ft @1 kHz, Nominal Conductor to Conductor
  - b) Ground Capacitance 86.4 pf/ft @1 kHz, Nominal
  - c) Characteristic Impedance 46  $\Omega$
  - d) Inductance 0.19  $\mu$ H/ft, Nominal
  - e) Conductor DCR 5.7  $\Omega$ /1000ft @20°C, Nominal
  - f) Component Shield DCR 5.3  $\Omega$ /1000ft @20°C, Nominal
  - g) OA Shield DCR 2.22  $\Omega$ /1000ft @20°C, Nominal
- 4) Component 3
  - a) Capacitance 60 pf/ft @1 kHz, Nominal Conductor to Conductor
  - b) Ground Capacitance 108 pf/ft @1 kHz, Nominal
  - c) Characteristic Impedance 36  $\Omega$
  - d) Inductance 0.17  $\mu$ H/ft, Nominal
  - e) Conductor DCR 2.6  $\Omega$ /1000ft @20°C, Nominal
  - f) OA Shield DCR 2.22  $\Omega$ /1000ft @20°C, Nominal
- 5) Component 4
  - a) Ground Capacitance 116 pf/ft @1 kHz, Nominal
  - b) Inductance 0.05  $\mu$ H/ft, Nominal
  - c) Conductor DCR 5.7  $\Omega$ /1000ft @20°C, Nominal
  - d) OA Shield DCR 2.22  $\Omega$ /1000ft @20°C, Nominal

**F. Other**

- 1) Packaging Flange x Traverse x Barrel (inches)
  - a) Bulk(Made-to-order)
- 2) Notes:
  - a) Added Miller Electric to print legend, marked capacitance and impedance range as critical values. Noted desired inductance range. Adjusted OD tolerance to +/- 0.025". Spec still contains several manual overrides on electricals. GK.

**This Design is custom, Made-To-Order & once accepted, the order is NON-CANCELLABLE & NON-RETURNABLE.**

Accepted By:	Date:
Company:	Title:

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