

# Customer Specification

## PART NO. F16033RW

### Construction

|                   |              |                                                                                                                                                                                                                                                                                                                                                                                  |        | Diameters (In) |        |
|-------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------|--------|
| 1) Component 1    |              | 33 X 1 COND                                                                                                                                                                                                                                                                                                                                                                      |        |                |        |
| a) Conductor      |              | 16 (65/34) AWG Bare Copper                                                                                                                                                                                                                                                                                                                                                       |        | 0.059          |        |
| b) Insulation     |              | 0.016" Wall, Nom. PVC/ 0.005" Wall NYLON                                                                                                                                                                                                                                                                                                                                         |        | 0.101          |        |
| (1) Print         |              | ALPHANUMERIC NUMBERS - 1-ONE ALTERNATING AND INVERTED                                                                                                                                                                                                                                                                                                                            |        |                |        |
| (2) Color Code    |              | Alpha Wire Color Code RW                                                                                                                                                                                                                                                                                                                                                         |        |                |        |
| Cond              | Color        | Cond                                                                                                                                                                                                                                                                                                                                                                             | Color  | Cond           | Color  |
| 1                 | GREEN/YELLOW | 12                                                                                                                                                                                                                                                                                                                                                                               | RED#11 | 23             | RED#22 |
| 2                 | RED#1        | 13                                                                                                                                                                                                                                                                                                                                                                               | RED#12 | 24             | RED#23 |
| 3                 | WHITE/RED    | 14                                                                                                                                                                                                                                                                                                                                                                               | RED#13 | 25             | RED#24 |
| 4                 | RED#3        | 15                                                                                                                                                                                                                                                                                                                                                                               | RED#14 | 26             | RED#25 |
| 5                 | RED#4        | 16                                                                                                                                                                                                                                                                                                                                                                               | RED#15 | 27             | RED#26 |
| 6                 | RED#5        | 17                                                                                                                                                                                                                                                                                                                                                                               | RED#16 | 28             | RED#27 |
| 7                 | RED#6        | 18                                                                                                                                                                                                                                                                                                                                                                               | RED#17 | 29             | RED#28 |
| 8                 | RED#7        | 19                                                                                                                                                                                                                                                                                                                                                                               | RED#18 | 30             | RED#29 |
| 9                 | RED#8        | 20                                                                                                                                                                                                                                                                                                                                                                               | RED#19 | 31             | RED#30 |
| 10                | RED#9        | 21                                                                                                                                                                                                                                                                                                                                                                               | RED#20 | 32             | RED#31 |
| 11                | RED#10       | 22                                                                                                                                                                                                                                                                                                                                                                               | RED#21 | 33             | RED#32 |
| 2) Cable Assembly |              | 33 Components Cabled                                                                                                                                                                                                                                                                                                                                                             |        |                |        |
| a) Twists:        |              | 1.7 Twists/foot (min)                                                                                                                                                                                                                                                                                                                                                            |        |                |        |
| b) Orientation:   |              | Components to be arranged from OUTSIDE LAYER to INSIDE LAYER                                                                                                                                                                                                                                                                                                                     |        |                |        |
| c) Core Wrap      |              | REMAI Tape, 25% Overlap, Min.                                                                                                                                                                                                                                                                                                                                                    |        |                |        |
| 3) Jacket         |              | 0.085" Wall, Nom.,TPE                                                                                                                                                                                                                                                                                                                                                            |        | 0.899+/- 0.043 |        |
| a) Color(s)       |              | BLACK                                                                                                                                                                                                                                                                                                                                                                            |        |                |        |
| b) Print          |              | ALPHA WIRE-* P/N F16033RW 33C 16 AWG (1.31mm2)<br>SERIES F (UL) TYPE TC-ER 90C WET/DRY 600V<br>OIL RES I/II SUN RES OR TYPE PLTC 90C OR C(UL) CIC<br>CONTROL/TC 90C PVC/NYLON INS FT4 16 AWG<br>OR CRU AWM I/II A/B 90C 600V FT4<br>CE ROHS (DATE CODE) (SEQ FOOTAGE)<br>* = Factory Code<br>[Note: Product may have c(UL) or CSA markings depending upon plant of manufacture.] |        |                |        |

### Applicable Specifications

|                      |                                     |                                            |
|----------------------|-------------------------------------|--------------------------------------------|
| 1) UL                |                                     |                                            |
| a) Component 1       | MTW                                 | 90°C Dry / 60°C Wet / 600 V <sub>RMS</sub> |
| b) Overall           | TC                                  | 90°C Dry / 90°C Wet / 600 V <sub>RMS</sub> |
|                      | EXPOSED RUN                         |                                            |
|                      | SUN RES                             |                                            |
|                      | PLTC                                | 90°C                                       |
|                      | OIL RES I/II                        |                                            |
| 2) CSA International | C(RU) AWM I/II A/B                  | 90°C / 600 V <sub>RMS</sub>                |
|                      | FT4                                 |                                            |
|                      | C(UL) CIC CONTROL                   | 90°C / 600V V <sub>RMS</sub>               |
|                      | C(UL) TC                            | 90°C / 600V V <sub>RMS</sub>               |
| 3) Other             | Conductors ASTM Class M             |                                            |
|                      | Conductors IEC Class 6 on AWG size  |                                            |
| 4) CE:               | EU Low Voltage Directive 2014/35/EC |                                            |

## Environmental

|                                                                          |                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) CE: EU Directive 2011/65/EU(RoHS2), EU Directive 2015/863/EU (RoHS3): |                                                                                                                                                                                                                                                             |
|                                                                          | This product complies with European Directive 2011/65/EU (RoHS Directive) of the European Parliament and of the Council of 8 June 2011 and the amending Directive 2015/863/EU of 4 June 2015 . No Exemptions are required for RoHS Compliance on this item. |
| 2) REACH Regulation (EC 1907/2006):                                      |                                                                                                                                                                                                                                                             |
|                                                                          | This product does not contain Substances of Very High Concern (SVHC) listed on the European Union's REACH candidate list in excess of 0.1% mass of the item.                                                                                                |

## Properties

|                                  |                                                       |
|----------------------------------|-------------------------------------------------------|
| Physical & Mechanical Properties |                                                       |
| 1) Temperature Range             | -30 to 90°C(static), -5 to 90°C (dynamic)             |
| 2) Bend Radius                   | 6X Cable Diameter(static), 8X Cable Diameter(dynamic) |
| 3) Pull Tension                  | 669 Lbs, Maximum                                      |
| 4) Sunlight Resistance           | Yes                                                   |
| Electrical Properties            |                                                       |
| (For Engineering purposes only)  |                                                       |
| 1) Voltage Rating                | 600 V <sub>RMS</sub>                                  |
| 2) Capacitance                   | 32 pF/ft @1 kHz, Nominal Conductor to Conductor       |
| 3) Inductance                    | 0.18 µH/ft, Nominal                                   |
| 4) Conductor DCR                 | 4.3 Ω/1000ft @20°C, Nominal                           |

## Other

|                                                                                         |                                     |
|-----------------------------------------------------------------------------------------|-------------------------------------|
| Packaging                                                                               | Flange x Traverse x Barrel (inches) |
| a) Bulk(Made-to-order)                                                                  |                                     |
| Notes:                                                                                  |                                     |
| a) Suitable for constant flexing where cycle count will be less than 20,000,000 cycles. |                                     |

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## EU/China ROHS CERTIFICATE OF COMPLIANCE

To Whom It May Concern:

Alpha Wire Part Number: F16033RW

F16033RW , RoHS-Compliant Commencing With 8/1/2005 Production

Note: all colors and put-ups

This document certifies that the Alpha part number cited above is manufactured in accordance with Directive 2011/65/EU of the European Parliament, better known as the RoHS Directive (commonly known as RoHS 2), with regards to restrictions of the use of certain hazardous substances used in the manufacture of electrical and electronic equipment. This certification extends to amending Directive 2015/863/EU which expanded the list of restricted substances to 10 items (commonly known as RoHS 3) The reader is referred to these Directives for the specific definitions and extents of the Directives. **No Exemptions are required for RoHS Compliance on this item.** Additionally, Alpha certifies that the listed part number is in compliance with China RoHS "Marking for Control of Pollution by Electronic Information Products" standard SJ/T 11364-2014.

| Substance                               | Maximum Control Value      |
|-----------------------------------------|----------------------------|
| Lead                                    | 0.1% by weight (1000 ppm)  |
| Mercury                                 | 0.1% by weight (1000 ppm)  |
| Cadmium                                 | 0.01% by weight (100 ppm)  |
| Hexavalent Chromium                     | 0.1% by weight (1000 ppm ) |
| Polybrominated Biphenyls (PBB)          | 0.1% by weight (1000 ppm)  |
| Polybrominated Diphenyl Ethers (PBDE) , |                            |
| Including Deca-BDE                      | 0.1% by weight (1000 ppm)  |
| Bis(2-ethylhexyl) phthalate (DEHP)      | 0.1% by weight (1000 ppm)  |
| Butyl benzyl phthalate (BBP)            | 0.1% by weight (1000 ppm)  |
| Dibutyl phthalate (DBP)                 | 0.1% by weight (1000 ppm)  |
| Diisobutyl phthalate (DIBP)             | 0.1% by weight (1000 ppm)  |

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Authorized Signatory for the Alpha Wire:

A handwritten signature in black ink, appearing to read 'Dave Watson'.

Dave Watson, Director of Engineering & QA

4/25/2020

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