

# Winchester Interconnect

## Factory Automation Product Set



At Winchester, we have a history of creating industry-first solutions for an array of critical applications. Our clients have trusted Winchester to design and produce the highest quality, most reliable cables and assemblies from crush-resistant to extreme cold and Mega flex cycles.

Today, we offer many of these products as stocking part numbers available for immediate shipment combining reliability, value and superior service.

Winchester combines decades of experience supporting ultra-reliable industries. Our clients benefit from our innovation, engineering-led product design and cable and wire manufacturing excellence.

### Our Industry Focus

- Motor Power
- Sensors & Controls
- Robotics
- Industrial Ethernet
- Material Handling
- Vision Systems

# Our Commitment to Innovation Never Ends

2000	<b>MEGAFLEX</b> The Industry's first super flexible cable is brought to the market.
2010	<b>Motor/Power</b> The first combined Motor/Power Cable becomes available increasing overall efficiency of design.
2012	<b>Fiber/Power</b> The first combined Fiber/Power cable is introduced supporting fiber's high demand.
2015	<b>Extreme Cold</b> To combat temperature demands, new cable technology is created allowing for use in -70°C conditions.
2018	<b>Reduced EV</b> Responding to OEM demands for lighter and smaller cables, we created a smaller diameter EV cables for a growing market.
Present	<b>Ongoing Innovation</b> We continue to push the industry forward with better, lighter and more reliable solutions.

## Agility

We understand the pace at which you move and the need for flexibility that both your role and your wire and cable products require. Let us show you how we enhance your work and how we support your goals.

## Innovation

Winchester is a leader in creating new products that meet the demands of today's applications. We've been doing so for decades and its the cornerstone of our philosophy.

## Custom Design

When an off-the-shelf product just wont work, we'll engage our team of engineers to help design the exact solution for your application.



# Fact Sheet

## Devicenet

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Used primarily for factory automation, DeviceNet is an application-level protocol that bridges the communication between a Programmable Logic Controller (PLC) and many control devices such as motors, conveyors, flowmeters, limit switches, drives, actuators and level sensors. Built on the standard Controller Area Network (CAN) physical communications standard, DeviceNet uses CAN hardware to define an application layer protocol that structures the task of configuring, accessing and controlling industrial automation devices.

The DeviceNet protocol can significantly reduce overall costs by integrating all I/O devices on a 4-wire trunk network with data and power conductors within the same cable. This direct connectivity reduces costly and time-consuming wiring.

DeviceNet cables from Winchester are made of the finest, most durable materials within the industry and are tested for quality, consistency and service life. They provide assurance that the networks and systems that are built using these products, are durable, reliable and second to none.

Winchester was the pioneer in development of high-flex DeviceNet products for use in dynamic flexing applications. Winchester high-flex DeviceNet cables have been tested and proven to continually meet or exceed OVDA performance requirements in excess of 1.5 million cycles in real C-track applications.

Want to learn more or discuss how Winchester Interconnect can help you with your DeviceNet needs? Please call us at 860-779-4368. We're here to help.

# WinNet

DeviceNet Solutions for Today's Factory Automation Needs

## Properties

Type	Thin Net - Static	Thick Net - Static	Thin Net - Dynamic	Midnet - Dynamic
Data Pair	22 AWG 19 Strand	18 AWG 19 Strand	22 AWG 19 Strand	20 AWG 26 Strand
Impedance	120 +/- 12	120 +/- 12	120 +/- 12	120 +/- 12
Capacitance (pF/FT)	12	12	12	12
DCR (0hm/1000ft)	16.9	6.9	16.9	10.5
DC Power Pair	22 AWG 19 Strand	15 AWG 19 Strand	22 AWG 19 Strand	17 AWG 82 Strand
DCR @ 20'C (0hm/100ft)	16.9	3.6	16.9	5.29
Attenuation				
125kHz (dB/100ft)	0.29	0.13	0.29	0.29
500kHz (dB/100ft)	0.5	0.25	0.5	0.5
1.0 MHz (dB/100ft)	0.7	0.4	0.7	0.7
UL	PLTC OIL RES I & II OR AWM 80C 300V OR C(UL) CMX-OUTDOOR-CMG		PLTC OIL RES II OR AWM 80C 300V OR C(UL) AWM I/II A/BN 80'C	
Diameter (in)	.287"	.423"	.323"	.377"
Winchester Part #	53415-CM	54415-CM	55415-CM	56415-CM

### Static

Made with flexible PVC Jacketing material suitable for low temperature, oil and sun light resistance.

### Dynamic

Made with a soft flexible TPE Jacket Material these constructions are rated for 1 million+ cycles on c-track applications

### Custom

Have a specific need? The Winchester Engineer team will work with you to develop a custom solution for any of your requirements or design specs.

### Assemblies

Please ask about our overmolded assemblies that are available in array of configurations.

# Fact Sheet

## Factory Automation

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Winchester Interconnect provides a broad range of custom cable solutions for most every application in the industrial and manufacturing environment. Do you have a cabling requirement that doesn't come from a catalog or need a cabling solution that is specialized? In addition to our standard product offerings Winchester Interconnect can provide custom wire and cable solutions.

Whether it is as simple as a specific cable jacket color for visual effect, or the combining of multiple cable functions into a single overall cable to reduce cost, real estate and weight, Winchester Interconnect can design and provide a wire and cable solution for your specific needs.

Power cables, Signal cables, 20 Million cycle high flex cables, Harsh environment application cables, High speed packaging or Heavy manufacturing, Winchester can design and manufacture the electric wire and cable solution for your application.

### **Motor Power Cables**

Winchester produces a line of Motor Power cables with power conductors sized for your specific motor application. Three power and one safety ground conductor with either one or two shielded 18 AWG pairs for safety brake and temperature monitoring with Winchester's proven Duralon™ jacket compound. These cables feature RAL 2003 Orange jackets for international color recognition, are NEC and NFPA 79 compliant and are fully comparable to OEM cables.

### **VFD Cables**

VFD cables are a class of cables designed to survive the rigors of high voltage spikes associated with Variable Frequency Drive applications, typically to 1,500 volts or greater on a 450-volt operating system. Winchester reduced diameter VFD cables utilize an insulation system formulated to resist cable damage and insulation failure due to corona discharge to greater than 1900 volts. Winchester reduced diameter VFD cables with Duralon™ jackets are ideal considerations when cable real estate and high flexibility are premium considerations in your application.

### **Premium Flex Cables**

Winchester's Premium Flex line of cables are tested and validated to perform for more than 20 million cycles of C-Track operation at a 10x bend radius, 15ft/sec travel speeds and 14.3 ft/sec/sec acceleration rates. Winchester Motor Power cables, VFD cables, multi-conductor signal cables, composite cables, feedback cables and single solution cables can be provided in a Premium Flex construction for your custom requirement.

# Motor Power

## Motor Power Cable for Today's Factory Automation Needs

### Standard Cable

#### Element 1 (See Table Below)

- Bare Copper
- Polyester Elastomer
- Color Code
  - 1-3. Black with White Printed Numbers
  - 4. Green/Yellow

#### Element 2

- 18 AWG (41/34) Bare Copper
- Polyester Elastomer, .067" ± .002" Diameter
- Color Code
- 5-6 Black with White Printed Numbers
- Twisted Pair:
- Primaries Required: 2
- Aluminum / Polyester Tape, 25% Overlap
- Braided Shield:
- 36 AWG Tinned Copper, 65% Coverage Jacket:
- Polyester Elastomer, .012" Wall Thickness .184"± .005" Final Diameter
- Color: White

#### Element 3

- 18 AWG (41/34) Bare Copper
- Polyester Elastomer, .067" ± .002" Diameter
- Color Code 7-8 Black with White Printed Numbers
- Twisted Pair:
- Primaries Required: 2
- Aluminum / Polyester Tape, 25% Overlap
- Braided Shield:
- 36 AWG Tinned Copper, 65% Coverage Jacket:
- Polyester Elastomer, .012" Wall Thickness .184"± .005" Final Diameter
- Color: Black

### Overall Cabling

- Element 1: 4 required
- Element 2: 1 required
- \*(Alternate Cabling Construction: Add Element 3)
- Filler: As Required for Roundness
- Expanded Polytetrafluoroethylene Tape, 50% Overlap

### Braided Shield

- 36 AWG Tinned Copper, 85% Coverage
- Polytetrafluoroethylene Tape, 25% Overlap

### Jacket

- Separator Tape- Required
- Duralon™
- Final Diameter (see table)
- Color: Black
- Print Legend (white ink): E135238 XX AWG 4/C 18 AWG x PR (UL) Type TC-ER 600V 90°C FT4 or WTTC 1000V 90°C or AWM 20626 --- c(UL) AWM I/II A/B 600V 90°C--- Premium Continuous Flexing RoHS

Note: xx=AWG

### Industry Standard Requirements

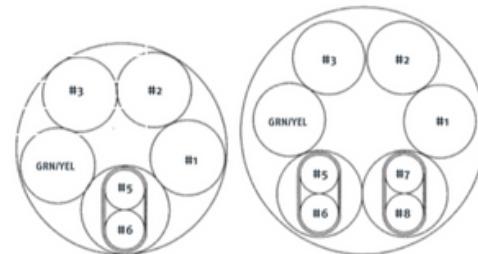
- RoHS Compliant per European Union Directive 2002/95/EC

### Safety Certifications

- UL Listing: TC-ER 600V / WTTC 1000V 90°C DRY FT4

### Mechanical Requirements

- Continuous Flex



P/N	AWG	Brake Pairs (18 AWG)	Cable Diameter (inches)	Diameter
88814	14	1pr	.525 +/- .015	0.456
88824	14	2pr	.587 +/- .015	0.515
88816	16	1pr	.500 +/- .015	0.437
88826	16	2pr	.561 +/- .015	0.505

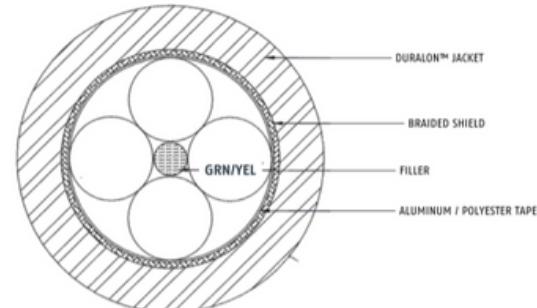
# VFD Cable

## Primary (See Table Below)

- Bare Copper
- Polyester Elastomer Insulation
- Color Code
  - 1-3. Black with White Printed Numbers
  - 4. Green/Yellow

## Overall Cable

- Primaries Required: 4
- FR-Fibrillated Polyester Filler
- Aluminum (Our) / Polyester Tape, 25% Overlap



## Braided Shield

- 36 AWG Tinned Copper, 85% Coverage (for OD Range .051" - .301")
- 34 AWG Tinned Copper, 85% Coverage (For OD Range .301")

## Jacket

- Duralon™
- Final Diameter (see table below)
- Color: Black

Print Legend (White Ink): E135238 XX AWG 4/C (UL)  
Type TC-ER 600V 90°C or AWM 20626 --- c(UL)  
AWM I/II A/B 600V 90°C --- Reduced Diameter  
VFD High Flex Cable - RoHS  
Note: TC-ER and c(UL) AWM are approved for all  
AWG sizes except 2 AWG and 4 AWG

P/N	AWG	Primary Diameter (Inches)	Overall Diameter (inches)
99856	14 (105/34)	0.102	.438 +/- .012
99857	16 (65/34)	0.089	.407 +/- .012

## Industry Standard Requirements

- RoHS Compliant per European Union Directive 2002/95/EC

## Safety Certifications

- UL Listing: TC-ER 600V / WTTC 1000V 90°C FT4, c(UL)  
AWM 90°C DRY

## Mechanical Requirements

- Continuous Flex / Surge Tested