Industrial Motors and Drives Cable Portfolio

AlphaWire

Cables you trust. Service you deserve.

Rugged, Reliable Performance

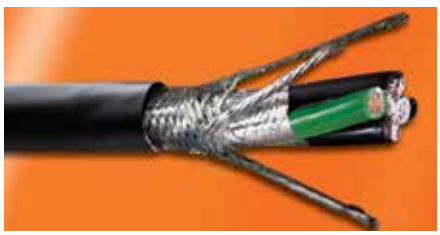
Reliable motors and drives require the right cable. The demands placed on the cables in precisely controlling a motor's speed and torque can stress the cable, resulting in improper motor control or complete system failure.

Alpha Wire offers a wide portfolio of cables for motor and drive applications. Our line ranges from flexible motor supply cables for less demanding applications to VFD cables that meet the most stringent performance requirements.

Series V and V-Flex VFD Cable: engineered with XLPE insulation and a symmetrical geometry for excellent electrical properties. Choose Series V's PVC jacket or V-Flex's TPE jacket for extra flexibility and additional resistance to oils and solvents.

Flexible Motor Supply Cable: double-shielded cable for light-duty flexing and featuring a smaller diameter and easier routing of connections in motor, drive, wind turbine, and light-duty VFD applications.

Series SF Flexible Servo Cable: designed for servo systems and suited to light-duty flex applications, Series SF cables are available with or without control pairs.

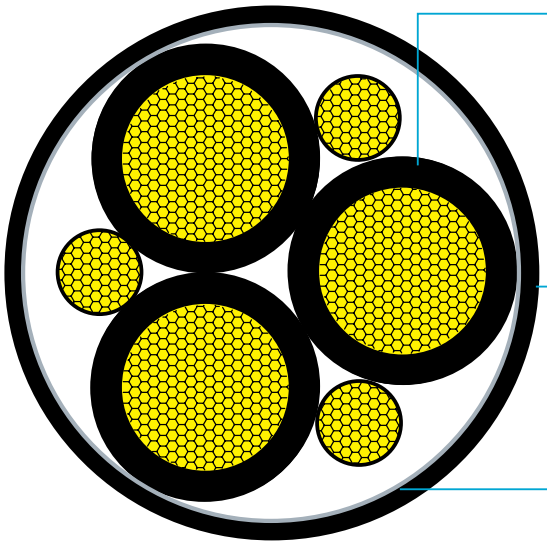


Series V and V-Flex VFD Control Cables

Designed to Excel in VFD Systems

Series V and V-Flex cables give you the features you need for high-performance VFD applications.

Pressure-extruded cross-linked polyethylene insulation and symmetrical cable geometry combine to provide the electrical characteristics required for precise control and long life.



XLPE Insulation
Lower Capacitance
Excellent Corona Resistance
Longer Transmission Distances

Round Geometry
Enhances Uniform Electrical Properties

Allows IP67/NEMA 6 Liquid-Tight Sealing

Double Shielding
EMI Protection

Two High-Performance VFD Families:

Series V:
- Rugged PVC jacket
- 3-conductor symmetrical and 4-conductor
- Brake pair available

Series V-Flex:
- TPE jacket for additional flexibility and exceptional fluid and chemical resistance
- 4-conductor configurations

Specifications

	Series V	Series V-Flex
Insulation	Cross-linked polyethylene	
Jacket	Premium PVC	TPE
Conductors	Stranded tinned copper	
Ground	Stranded tinned copper with XLPE insulation	
Shielding	16 – 4 AWG: aluminum/polyester/aluminum foil and tinned copper braid with 85% coverage 2 – 4/0 AWG: double-layer copper tape	
Voltage	600/1000 V	
Temperature	-40°C to +90°C	
Bend Radius	10x	5x
Approvals	UL TC-ER, 90°C, 600 Volt UL 1000 Volt Flexible Motor Supply Cable UL Sunlight Resistant UL Type XHHW-2 Wet/Dry UL Type RHW-2 Wet/Dry CSA FT4 Vertical Tray Suitable for use in Class I, Division 2 locations per NEC Article 501 CE-LVD: 2006/95/EC CSA CIC Control/TC	
	UL Direct Burial CSA AWM I/II A/B Pennsylvania MSHA	UL Oil Res I/II CSA -40°C Cold Bend

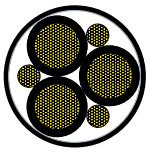
Three- and Four-Conductor Configurations

Three-conductor cables reduce both common-mode and differential noise, minimizing noise-induced motor damage. They are recommended for:

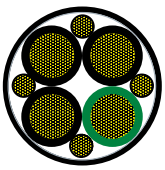
- **Applications not requiring an insulated ground wire (generally dry, one-phase fault conditions)**

Four-conductor cables use insulated ground wire to minimize the effects of EMI during a component failure. The insulation isolates the ground wire from the shield so that the overall shield will block transient currents. Four-conductor cable is recommended for:

- **Applications where an insulated ground conductor offers the best EMI performance in all conditions**



Three-Conductor Cable



Four-Conductor Cable

Series V VFD Cables

Three-Conductor VFD Cables													
Part No.	Wire Size		Stranding		Shielding	Insulation Thickness		Core OD		Jacket Thickness		Nominal Diameter	
	AWG	mm²	AWG	mm		Inch	mm	Inch	mm	Inch	mm	Inch	mm
V16316	16	1.32	26/30	26 x 0.25	Foil/Braid	0.046	1.17	0.334	8.48	0.050	1.27	0.471	11.96
V16314	14	2.09	41/30	41 x 0.25	Foil/Braid	0.046	1.17	0.369	9.37	0.065	1.65	0.542	13.77
V16312	12	3.31	65/30	65 x 0.25	Foil/Braid	0.046	1.17	0.408	10.36	0.065	1.65	0.581	14.76
V16310	10	5.37	105/30	105 x 0.25	Foil/Braid	0.047	1.19	0.472	11.99	0.065	1.65	0.645	16.38
V16308	8	8.53	133/29	133 x 0.28	Foil/Braid	0.061	1.55	0.621	15.77	0.065	1.65	0.801	20.35
V16306	6	13.57	133/27	133 x 0.36	Foil/Braid	0.061	1.55	0.707	17.96	0.085	2.16	0.927	23.55
V16304	4	21.58	133/25	133 x 0.45	Foil/Braid	0.061	1.55	0.833	21.16	0.085	2.16	1.053	26.75
V16302	2	34.32	133/23	133 x 0.57	Copper Tape	0.061	1.55	0.978	24.84	0.085	2.16	1.16	29.46
V16001	1	43.28	133/22	133 x 0.64	Copper Tape	0.056	1.42	1.015	25.78	0.085	2.16	1.197	30.40
V16000	1/0	54.58	133/21	133 x 0.72	Copper Tape	0.056	1.42	1.112	28.24	0.085	2.16	1.294	32.87
V16020	2/0	68.85	133/20	133 x 0.81	Copper Tape	0.056	1.42	1.217	30.91	0.085	2.16	1.399	35.53
V16030	3/0	86.9	133/19	133 x 0.91	Copper Tape	0.056	1.42	1.335	33.91	0.085	2.16	1.157	38.53
V16040	4/0	109	133/18	133 x 1.02	Copper Tape	0.056	1.42	1.474	37.44	0.085	2.16	1.653	41.99

Four-Conductor VFD Cable													
Part No.	Wire Size		Stranding		Shielding	Insulation Thickness		Core OD		Jacket Thickness		Nominal Diameter	
	AWG	mm²	AWG	mm		Inch	mm	Inch	mm	Inch	mm	Inch	mm
V16016	16	1.32	26/30	26 x 0.25	Foil/Braid	0.047	1.19	0.375	9.53	0.065	1.65	0.545	13.84
V16014	14	2.09	41/30	41 x 0.25	Foil/Braid	0.047	1.19	0.414	10.52	0.065	1.65	0.584	14.83
V16012	12	3.31	65/30	65 x 0.25	Foil/Braid	0.047	1.19	0.461	11.71	0.065	1.65	0.631	16.03
V16010	10	5.37	105/30	105 x 0.25	Foil/Braid	0.047	1.19	0.540	13.72	0.085	2.16	0.75	19.05
V16008	8	8.53	133/29	133 x 0.28	Foil/Braid	0.061	1.55	0.701	17.81	0.086	2.18	0.92	23.37
V16006	6	13.57	133/27	133 x 0.36	Foil/Braid	0.061	1.55	0.798	20.27	0.086	2.18	1.017	25.83
V16004	4	21.58	133/25	133 x 0.45	Foil/Braid	0.061	1.55	0.934	23.72	0.088	2.24	1.162	29.51
V16002	2	34.32	133/23	133 x 0.57	Foil/Braid	0.061	1.55	1.091	27.71	0.088	2.24	1.31	33.27

Series V-Flex VFD Cables

Four-Conductor VFD Cables												
Part No.	Wire Size		Stranding		Insulation Thickness		Core OD		Jacket Thickness		Nominal Diameter	
	AWG	mm²	AWG	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
VF16016	16	1.32	26/30	26 x 0.254	0.046	1.17	0.375	9.53	0.065	1.65	0.545	13.84
VF16014	14	2.08	41/30	41 x 0.254	0.046	1.17	0.414	10.52	0.065	1.65	0.584	14.83
VF16012	12	3.29	65/30	65 x 0.254	0.046	1.17	0.461	11.71	0.065	1.65	0.631	16.03
VF16010	10	5.32	105/30	105 x 0.254	0.047	1.19	0.540	13.72	0.085	2.16	0.75	19.05
VF16008	8	8.61	133/29	133 x 0.287	0.061	1.55	0.701	17.81	0.086	2.18	0.92	23.37
VF16006	6	13.60	133/27	133 x 0.361	0.061	1.55	0.798	20.27	0.086	2.18	1.017	25.83
VF16004	4	21.60	133/25	133 x 0.455	0.061	1.55	0.934	23.72	0.086	2.18	1.157	29.39

Series V and V-Flex Cable Selection Guide

Drive HP	115 VAC, 3 Phase					230 VAC, 3 Phase				
	Wire Gauge (AWG)	Full Load Current, Amps	Alpha Wire Part No.			Wire Gauge (AWG)	Full Load Current, Amps	Alpha Wire Part No.		
			Series V		Series VF			Series V		VF
			3 Cond.	4 Cond.	4 Cond.			3 Cond.	4 Cond.	4 Cond.
1/2	16	4.4	V16316	V16016	VF16016	16	2.2	V16316	V16016	VF16016
3/4	16	6.4				16	3.2			
1	16	8.4				16	4.2			
1-1/2	16	12.0				16	6.0			
2	16	13.6				16	6.8			
3	—	—	—	—	—	16	9.6			
5	—	—	—	—	—	14	15.2	V16314	V16014	VF16014
7-1/2	—	—	—	—	—	12	22	V16312	V16012	VF16012
10	—	—	—	—	—	10	28	V16310	V16010	VF16010
15	—	—	—	—	—	8	42	V16308	V16008	VF16008
20	—	—	—	—	—	6	54	V16306	V16006	VF16006
25	—	—	—	—	—	4	68	V16304	V16004	VF16004
30	—	—	—	—	—	2	80	V16304	V16004	—
40	—	—	—	—	—	2	104	—	V16002	—
50	—	—	—	—	—	1/0	130	V16000	—	—
60	—	—	—	—	—	2/0	154	V16020	—	—
75	—	—	—	—	—	4/0	192	V16040	—	—

Drive HP	460 VAC, 3 Phase					575 VAC, 3 Phase				
	Wire Gauge (AWG)	Full Load Current, Amps	Alpha Wire Part No.			Wire Gauge (AWG)	Full Load Current, Amps	Alpha Wire Part No.		
			Series V		Series VF			Series V		VF
			3 Cond.	4 Cond.	4 Cond.			3 Cond.	4 Cond.	4 Cond.
1/2	16	1.1	V16316	V16016	VF16016	16	0.9	V16316	V16016	VF16016
3/4	16	1.6				16	1.3			
1	16	2.1				16	1.7			
1-1/2	16	3.0				16	2.4			
2	16	3.4				16	2.7			
3	16	4.8				16	3.9			
5	16	7.6				16	6.1			
7-1/2	16	11				16	9			
10	16	14				16	11			
15	12	21	V16312	V16012	VF16012	14	17	V16314	V16014	VF16014
20	10	27	V16310	V16010	VF16010	12	22	V16312	V16012	VF16012
25	8	34	V16308	V16008	VF16008	10	27	V16310	V16010	VF16010
30	8	40	V16308	V16008	VF16008	10	32	V16310	V16010	VF16010
40	6	52	V16306	V16006	VF16006	8	41	V16308	V16008	VF16008
50	4	65	V16304	V16004	VF16004	6	52	V16306	V16006	VF16006
60	2	77	—	V16002	VF16302	4	62	V16304	V16004	VF16004
75	2	96	—	V16002	VF16302	2	77	—	V16002	VF16302
100	1/0	124	—	V16000	—	2	99	—	V16002	VF16302
125	2/0	156	—	V16020	—	1/0	125	—	V16000	—
150	4/0	180	—	V16040	—	2/0	144	—	V16020	—
200	—	—	—	—	—	4/0	192	—	V16040	—

Flexible Motor Supply Cable

Double-Shielded Cable for Motor, Drive, Wind Turbine, and Light-Duty VFD Applications

- Premium PVC jacket for outstanding sunlight and oil resistance

Specifications

Insulation	PVC/nylon
Jacket	Black PVC
Conductors	Finely stranded bare copper
Shielding	Al/poly/Al foil, with 25% overlap and four tinned copper drain wires + tinned copper braid (70%)
Voltage	600/1000 V
Temperature	-20°C to +90°C (static), -5°C to +90°C (dynamic)
Bend Radius	10x (static), 15x (dynamic)
Approvals	UL TC-ER (600 V) • UL MTW (600 V) • UL WTTC (1000 V) • CSA AWM I/II A/B FT4) • CE) • NFPA Standard 79 for industrial machinery

16 to 6 AWG (1.49 to 5.33 mm²)

Part No.	Conductors	Wire Size		Stranding		Insulation Thickness		Jacket Thickness		Nominal Diameter	
		AWG	mm²	AWG	mm	Inch	mm	0.05	1.27	Inch	mm
5660	4	16	1.32	26/30	26 x 0.25	0.016	0.40	0.05	1.27	0.381	9.68
5661	4	14	2.08	41/30	41 x 0.25	0.016	0.40	0.05	1.27	0.418	10.62
5662	4	12	3.30	65/30	65 x 0.25	0.016	0.40	0.063	1.60	0.464	11.79
5663	4	10	5.32	105/30	105 x 0.25	0.022	0.55	0.063	1.60	0.579	14.71
5664	4	8	8.52	168/30	168 x 0.25	0.032	0.81	0.083	2.11	0.76	19.30
5665	4	6	13.49	266/30	266 x 0.25	0.032	0.81	0.083	2.10	0.901	22.89

Series SF Flexible Servo Cable

Maximum Flexibility in Servo Control and Power

- Excellent EMI shielding to contain high-frequency dynamic signals
- Composite versions for power and control

Specifications

Insulation	PVC/nylon
Jacket	Orange TPE
Conductors	Stranded tinned copper
Shielding	Al/poly foil + tinned copper braid (85%)
Voltage	600/1000 V
Temperature	-25°C to +90°C (static), -5°C to +90°C (dynamic)
Bend Radius	10x
Approvals	UL TC-ER (600 V) UL WTTC (1000 V) • UL Sunlight Resistant • UL Oil Res. I/II • CSA AWM I/II A/B FT4 • CSA CIC Control/TC • Suitable for use in Class I, Division 2 locations per NEC Article 501

Flexible Power Servo Cable

4 conductors for power/ground

Part No.	Conductors	Wire Size		Stranding		Jacket Thickness		Nominal Diameter	
		AWG	mm²	AWG	mm	Inch	mm	Inch	mm
SF61118CY	4	18	0.96	19/30	19 x 0.25	0.055	1.40	0.384	9.75
SF61116CY	4	16	1.32	26/30	26 x 0.25	0.055	1.40	0.408	10.36
SF61114CY	4	14	2.09	41/30	41 x 0.25	0.055	1.40	0.432	10.97
SF61112CY	4	12	3.31	65/30	65 x 0.25	0.065	1.65	0.508	12.90
SF61110CY	4	10	5.32	105/30	105 x 0.25	0.065	1.65	0.605	15.37
SF61108CY	4	8	8.50	168/30	168 x 0.25	0.065	1.65	0.787	19.99

Flexible Composite Servo Cable

4 conductors for power/ground + 2 individually shielded pairs for brake or temperature control

Part No.	Conductors	Wire Size		Stranding		Jacket Thickness		Nominal Diameter	
		AWG	mm²	AWG	mm	Inch	mm	Inch	mm
SF61220CY	4 + 2 pairs	16 pwr 18 pr	1.32 0.96	26/30 19/30	26 x 0.25 19 x 0.25	0.065	1.65	0.654	16.38
SF61221CY	4 + 2 pairs	14 pwr 18 pr	2.09 0.96	41/30 19/30	41 x 0.25 19 x 0.25	0.065	1.65	0.655	16.64
SF61222CY	4 + 2 pairs	12 pwr 16 pr	3.31 1.32	65/30 26/30	65 x 0.25 26 x 0.25	0.065	1.65	0.715	18.16
SF61223CY	4 + 2 pairs	10 pwr 16 pr	5.37 1.32	105/30 26/30	105 x 0.25 26 x 0.25	0.065	1.65	0.792	20.12
SF61224CY	4 + 2 pairs	8 pwr 16 pr	8.50 1.32	168/30 26/30	168 x 0.25 26 x 0.25	0.085	2.16	0.972	24.69

Terminating VFD Cable to VFD Drive or VFD Motor with Non-Conductive Gland

All VFD installation and servicing must be initiated with a safe work environment, personal safety devices and with all circuits in and near the VFD system OFF and in a non-live state.

1. Insert the VFD cable into the VFD drive or VFD motor allowing more than sufficient length to reach the contact points.
2. Mark the jacket of the cable after the gland and inside the enclosure.
3. Remove the VFD Cable and place on a suitable surface to cut the jacket.
4. Using a cutting tool, cut the outer jacket around its circumference where you marked in step 2 above. Be sure to cut to the shield, but not through the shield.
5. Push back the braid shield to expose the foil shield.
6. Carefully cut the foil shield closest to the jacket being careful not to cut any insulation in the core.
7. Remove the foil shield and discard.
8. Push the braid shield back into its original position over the core.
9. Open a section of the braid where it meets the jacket so that the core can be pulled through.
10. Carefully pull the core, minus drain wire(s) through the braid shield.
11. Compress the braid and drain wire(s) which are now to the side of the core.
12. Apply heat shrink tubing to the braid with drain wire(s).
13. Recover (shrink) the heat shrink tubing by applying heat as per the heat shrink tubing specification.
14. Combine the braid with newly applied heat shrink with the core.
15. Apply 3 – 5 inches of heat shrink with half covering the jacketed cable and half covering the combined braid/core.
16. Recover (shrink) the heat shrink tubing by applying heat as per the heat shrink tubing specification.
17. Insert the dressed cable into the VFD drive or VFD motor.
18. Route and trim conductors to the appropriate terminals assuring sufficient slack for possible phase inversion.
19. Strip insulation from conductors and terminate motor leads as per manufacturer's recommendation.
20. Terminate ground as per manufacturer's recommendation.

Terminating VFD Cable to VFD Drive or VFD Motor with Conductive Gland

All VFD installation and servicing must be initiated with a safe work environment, personal safety devices and with all circuits in and near the VFD system OFF and in a non-live state.

1. With the conductive gland not yet installed on the cable, insert the VFD cable into the VFD drive or VFD motor allowing more than sufficient length to reach the contact points.
2. Mark the jacket of the cable before the enclosure as per the gland manufacturer's recommendation.
3. Remove the VFD Cable and place on a suitable surface to cut the jacket.
4. Using a cutting tool, cut the outer jacket around its circumference where you marked in step 2 above. Be sure to cut to the shield, but not through the shield.
5. Following the gland manufacturer's recommendation, mark the braid shield the distance from the end of the newly cut jacket to allow sufficient contact with the gland.
6. Carefully cut the braid shield closest at the mark being careful not to cut any insulation in the core.
7. Remove the braid shield from cut to cable end and discard.
8. Insert the cable into the gland and position so that the jacket is completely inserted and the gland will make 360° contact with the braid.
9. Insert the cable with gland into the VFD drive or VFD motor.
10. Tighten the gland nuts as per manufacturer's specification.
11. Route and trim conductors to the appropriate terminals assuring sufficient slack for possible phase inversion.
12. Strip insulation from conductors and terminate motor leads as per manufacturer's recommendation.
13. Terminate ground as per manufacturer's recommendation.

The cables you trust. The service you deserve.

Every application is critical and wire failure is not an option when safe and reliable operation is paramount. Specify Alpha cable for precise motor and drive applications, since the integrity of your system is only as robust as the products you use.

Custom cable is standard

Alpha Wire goes one step further: manufacturing custom cables to meet unique applications—offering specific conductor counts, shielding options, jacket materials, and versatile product designs.

Service and support, second-to-none

Selecting the correct cable for your critical application is essential to overall system reliability, performance, and safety. So we make it easy for you to select the right Alpha cable for your specific application. Our online resources include a wire and cable selection guide, technical information, full product catalog, and a distributor locator to make it easy to select and get the cable you need.

Can't find what you're looking for? Design the cable to your specification. It's easy, just visit **www.alphawire.com!**

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