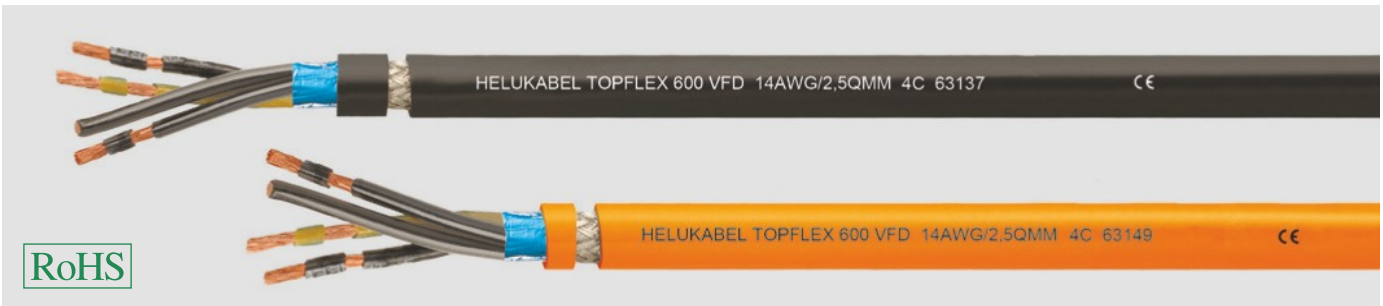
TOPFLEX® 600 VFD EMC preferred type, flexible motor supply cable, oil resistant, NFPA 79 Edition 2007



Technical Data

- ≥ PVC motor supply cable according to UL 1277
- ≥ Temperature range
  Flexing -40°C to + 90°C
- ≥ Nominal voltage
  TC 600 V
  WTTC 1000 V
- ≥ Test voltage 4000 V
- ≥ Minimum bending radius
  Flexing 6x cable Ø
- ≥ Coupling resistance
  Max. 250 Ohm/km

Cable Structure

- ≥ Tinned copper conductor, fine wire stranded with AWG measures
- ≥ Special PVC core insulation with transparent nylon skin
- ≥ Black cores with continuous white numbering
- ≥ Green-yellow earth core in the outer layer
- ≥ Cores stranded in layers with optimal lay-lengths
- ≥ Fleece
- ≥ 1. Screening with special aluminium foil
- ≥ 2. Screening with braid of tinned copper wires, optimal coverage, approx. 85%
- ≥ Separator
- ≥ Special PVC outer jacket
- ≥ Sheath colour - black (RAL 9005) or orange (RAL 2003)
- ≥ With length marking in feet

Properties

- ≥ Self-extinguishing and flame retardant in accordance with CSA FT4
- ≥ The materials used in manufacture are free of silicone, cadmium and substances that impair paint wetting
- ≥ UV-resistant
- ≥ Tests
  UL:
  TC-ER, WTTC 1000 V, MTW, NFPA 79 2007, UL 1277, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12)
  OIL RES I & II,
  90° C dry / 75° C wet,
  Cold Bend Test -40°C
  CSA:
  c (UL) CIC-TC FT4,
  AWM I/II A/B FT4

Note

≥ VFD = Variable Frequency Drive

Application

Flexible, extremely oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 2007 for open, unprotected installation on cable trays and from cable trays to the machine. The special PVC sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.
EMC = Electromagnetic compatibility.
To optimise EMC characteristics, we recommend a large contact area for the copper braiding around the entire circumference on both ends.
CE = The product conforms to the EG Low-Voltage Directive 2006/95/EG.

Sheath colour black

Part No.	Number of cores	Outer Ø approx. mm	Cop. Weight kg/km	Weight approx. kg/km
18 AWG / 1 mm² (19/30)				
63139	4	9,9	52	164
16 AWG / 1,50 mm² (26/30)				
63140	4	11,4	72	183
14 AWG / 2,50 mm² (41/30)				
63137	4	12,5	118	197
12 AWG / 4 mm² (65/30)				
63141	4	14,0	182	267
10 AWG / 6 mm² (105/30)				
63142	4	17,1	256	402
8 AWG / 10 mm² (168/30)				
63143	4	22,3	417	668
6 AWG / 16 mm² (266/30)				
63144	4	25,4	651	918
4 AWG / 25 mm² (413/30)				
63145	4	30,1	910	1363
2 AWG / 35 mm² (665/30)				
63146	4	35,3	1411	1994

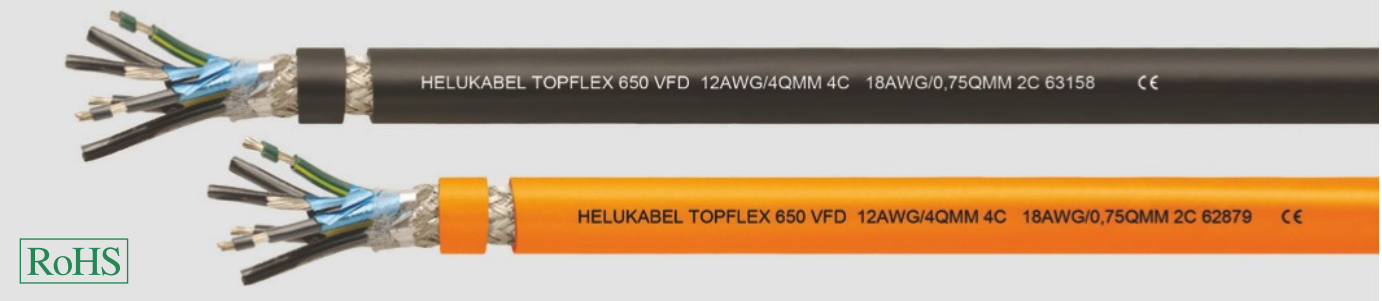
Sheath colour orange, Desina

Part No.	Number of cores	Outer Ø approx. mm	Cop. Weight kg/km	Weight approx. kg/km
18 AWG / 1 mm² (19/30)				
63147	4	9,9	52	164
16 AWG / 1,50 mm² (26/30)				
63148	4	11,4	72	183
14 AWG / 2,50 mm² (41/30)				
63149	4	12,5	118	197
12 AWG / 4 mm² (65/30)				
63150	4	14,0	182	267
10 AWG / 6 mm² (105/30)				
63151	4	17,1	256	402
8 AWG / 10 mm² (168/30)				
63152	4	22,3	417	668
6 AWG / 16 mm² (266/30)				
63153	4	25,4	651	918
4 AWG / 25 mm² (413/30)				
63154	4	30,1	910	1363
2 AWG / 35 mm² (665/30)				
63155	4	35,3	1411	1994

Dimensions and specifications may be changed without prior notice.

TOPFLEX® 650 VFD EMC preferred type,

flexible motor supply cable with control cores, oil resistant, NFPA 79 Edition 2007



Technical Data

≥ TPE motor supply cable according to UL 1277
≥ Temperature range
Flexing -25°C to + 105°C
≥ Nominal voltage
TC 600 V
WTTC 1000 V
≥ Test voltage
Power supply cores 4000 V
Control cores 2000 V
≥ Minimum bending radius
Flexing 6x cable Ø
≥ Coupling resistance
Max. 250 Ohm/km

Cable Structure

≥ Tinned copper conductor, fine wire stranded, with AWG measures
≥ Special PVC core insulation with transparent nylon skin
≥ Black supply cores with continuous white numbering
≥ Green-yellow earth core in the outer layer
≥ 2 black control cores with marking 5 and 6
≥ Control cores screened in pairs with plastic-coated aluminium foil, tinned drain wire
≥ Control cores stranded in pairs and laid up in layers with optimal lay-length with the power supply cores
≥ 1. Screening with plastic-coated aluminium foil
≥ 2. Screening from tinned Cu braid, optimal coverage approx. 85%
≥ Separator
≥ Special TPE outer jacket
≥ Sheath colour - black (RAL 9005) or orange (RAL 2003)
≥ With length marking in feet

Properties

≥ Self-extinguishing and flame retardant in accordance with CSA FT4
≥ The materials used in manufacture are free of silicone, cadmium and substances that impair paint wetting
≥ UV-resistant
≥ Tests
UL:
TC-ER, WTTC 1000 V, MTW, NFPA 79 2007, UL 1277, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), OIL RES I & II,
90° C dry / 75° C wet
Class 1 Div. 2 per NEC Part nos. 336, 392, 501
CSA:
c (UL) CIC-TC FT4
AWM I/II A/B FT4

Note

≥ VFD = Variable Frequency Drive

Application

Flexible, extremely oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 2007 for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.
EMC = Electromagnetic compatibility.
To optimise EMC characteristics, we recommend a large contact area for the copper braiding around the entire circumference on both ends.
CE = The product conforms to the EG Low-Voltage Directive 2006/95/EG.

Sheath colour black

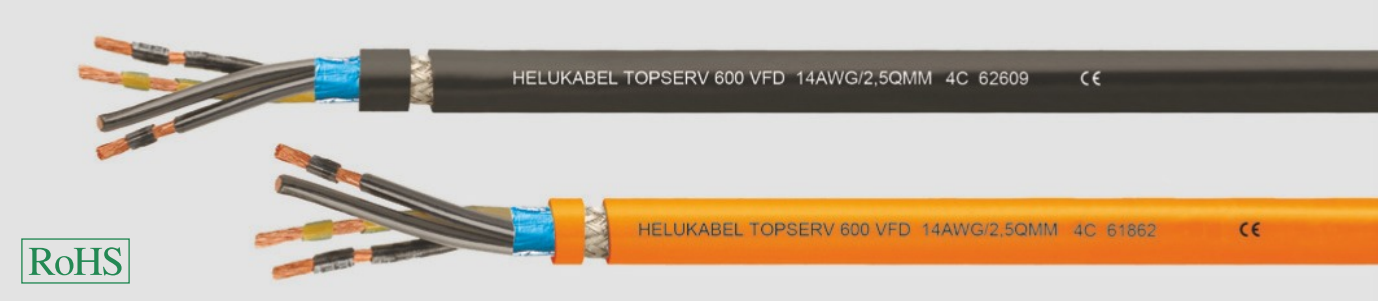
Part No.	Number of cores	Outer Ø approx. mm	Cop. Weight kg/km	Weight approx. kg/km
16 AWG / 1.50 mm² (26/30)				
63156	4c/16 + 2c/18	13.0	88	259
14 AWG / 2.50 mm² (41/30)				
63157	4c/14 + 2c/18	14.0	133	370
63138	4c/14 + 2c/14	14.6	159	399
12 AWG / 4 mm² (65/30)				
63158	4c/12 + 2c/18	15.3	197	435
63159	4c/12 + 2c/14	15.7	224	466
10 AWG / 6 mm² (105/30)				
63160	4c/10 + 2c/14	18.2	301	703
8 AWG / 10 mm² (168/30)				
63161	4c/8 + 2c/14	24.1	457	901
6 AWG / 16 mm² (266/30)				
63162	4c/6 + 2c/14	27.4	615	1275
4 AWG / 25 mm² (413/30)				
63163	4c/4 + 2c/14	33.4	1450	1861

Sheath colour orange, Desina

Part No.	Number of cores	Outer Ø approx. mm	Cop. Weight kg/km	Weight approx. kg/km
16 AWG / 1.50 mm² (26/30)				
62876	4c/16 + 2c/18	13.0	88	259
14 AWG / 2.50 mm² (41/30)				
62877	4c/14 + 2c/18	14.0	133	370
62878	4c/14 + 2c/14	14.6	159	399
12 AWG / 4 mm² (65/30)				
62879	4c/12 + 2c/18	15.3	197	435
62880	4c/12 + 2c/14	15.7	224	466
10 AWG / 6 mm² (105/30)				
62881	4c/10 + 2c/14	18.2	301	703
8 AWG / 10 mm² (168/30)				
62882	4c/8 + 2c/14	24.1	457	901
6 AWG / 16 mm² (266/30)				
62883	4c/6 + 2c/14	27.4	615	1275
4 AWG / 25 mm² (413/30)				
62884	4c/4 + 2c/14	33.4	1450	1861

Dimensions and specifications may be changed without prior notice.

TOPSERV® 600 VFD EMC preferred type, highly-flexible motor supply cable, oil resistant, NFPA 79 Edition 2007



Technical Data

- ≥ TPE motor supply cable according to UL 1277
- ≥ Temperature range
  Flexing -25°C to + 105°C
- ≥ Nominal voltage
  TC 600 V
  WTTC 1000 V
- ≥ Test voltage 4000 V
- ≥ Minimum bending radius
  Flexing 5x cable Ø
  Permanently flexing 7.5x cable Ø
- ≥ Coupling resistance
  Max. 250 Ohm/km

Cable Structure

- ≥ Tinned copper conductor, extra-fine wire stranded, with AWG measures
- ≥ Special PVC core insulation with transparent nylon skin
- ≥ Black cores with continuous white numbering
- ≥ Green-yellow earth core in the outer layer
- ≥ Cores stranded in layers with optimal lay-lengths
- ≥ Fleece
- ≥ 1. Screening with special aluminium foil
- ≥ 2. Screening with braid of tinned copper wires, optimal coverage, approx. 85%
- ≥ Separator
- ≥ Special TPE outer jacket
- ≥ Sheath colour - black (RAL 9005) or orange (RAL 2003)
- ≥ With length marking in feet

Properties

- ≥ Self-extinguishing and flame retardant in accordance with CSA FT4
- ≥ The materials used in manufacture are free of silicone, cadmium and substances that impair paint wetting
- ≥ UV-resistant
- ≥ Tests
  UL:
  TC-ER, WTTC 1000 V, MTW, NFPA 79 2007, UL 1277, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), OIL RES I & II,
  90° C dry / 75° C wet
  CSA:
  c (UL) CIC-TC FT4,
  AWM I/II A/B FT4

Note

- ≥ VFD = Variable Frequency Drive

Application

Highly-flexible, extremely oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 2007 for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.
EMC = Electromagnetic compatibility.
To optimise EMC characteristics, we recommend a large contact area for the copper braiding around the entire circumference on both ends.
CE = The product conforms to the EG Low-Voltage Directive 2006/95/EG.

Sheath colour black

Part No.	Number of cores	Outer Ø approx. mm	Cop. Weight kg/km	Weight approx. kg/km
18 AWG / 1 mm² (41/34)				
62607	4	9.9	38	163
5116 AWG / 1.50 mm² (65/34)				
62608	4	11.4	51	184
14 AWG / 2.50 mm² (105/34)				
62609	4	12.5	80	197
12 AWG / 4 mm² (168/34)				
62610	4	14.0	127	266
10 AWG / 6 mm² (259/34)				
62611	4	17.1	230	401
8 AWG / 10 mm² (413/34)				
62612	4	22.3	384	669
6 AWG / 16 mm² (665/34)				
62613	4	25.4	614	917
4 AWG / 25 mm² (1064/34)				
62614	4	30.1	960	1364
2 AWG / 35 mm² (1666/34)				
62615	4	35.3	1344	1990

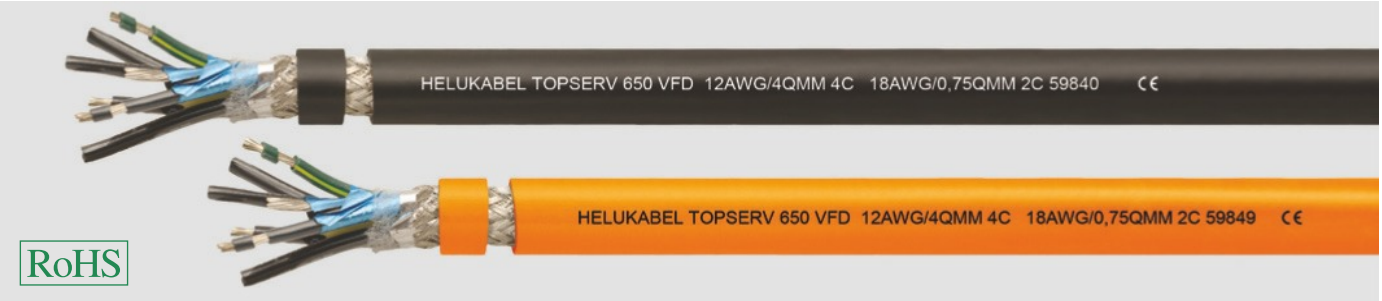
Sheath colour orange, Desina

Part No.	Number of cores	Outer Ø approx. mm	Cop. Weight kg/km	Weight approx. kg/km
18 AWG / 1 mm² (41/34)				
62616	4	9.9	38	163
5116 AWG / 1.50 mm² (65/34)				
62617	4	11.4	51	184
14 AWG / 2.50 mm² (105/34)				
62618	4	12.5	80	197
12 AWG / 4 mm² (168/34)				
62619	4	14.0	127	266
10 AWG / 6 mm² (259/34)				
62620	4	17.1	230	401
8 AWG / 10 mm² (413/34)				
62621	4	22.3	384	669
6 AWG / 16 mm² (665/34)				
62622	4	25.4	614	917
4 AWG / 25 mm² (1064/34)				
62623	4	30.1	960	1364
2 AWG / 35 mm² (1666/34)				
62624	4	35.3	1344	1990

Dimensions and specifications may be changed without prior notice.

TOPSERV® 650 VFD EMC preferred type,

highly-flexible motor supply cable with control cores, oil resistant, NFPA 79 Edition 2007



Technical Data

- ≥ TPE motor supply cable according to UL 1277
- ≥ Temperature range
  Flexing -25°C to + 105°C
- ≥ Nominal voltage
  TC 600 V
  WTTC 1000 V
- ≥ Test voltage
  Power supply cores 4000 V
  Control cores 2000 V
- ≥ Minimum bending radius
  Flexing 5x cable Ø
  Permanently flexing 7.5x cable Ø
- ≥ Coupling resistance
  Max. 250 Ohm/km

Cable Structure

- ≥ Tinned copper conductor, fine wire stranded, with AWG measures
- ≥ Special PVC core insulation with transparent nylon skin
- ≥ Black supply cores with continuous white numbering
- ≥ Green-yellow earth core in the Outer layer
- ≥ 2 black control cores with marking 5 and 6
- ≥ Control cores screened in pairs with plastic-coated aluminium foil, tinned drain wire
- ≥ Control cores stranded in pairs and laid up in layers with the power supply cores with optimal lay-length
- ≥ 1. Screening with plastic-coated aluminium foil
- ≥ 2. Screening from tinned Cu braid, optimal coverage approx. 85%
- ≥ Separator
- ≥ Special TPE outer jacket
- ≥ Sheath colour - black (RAL 9005) or orange (RAL 2003)
- ≥ With length marking in feet

Properties

- ≥ Self-extinguishing and flame retardant in accordance with CSA FT4
- ≥ The materials used in manufacture are free of silicone, cadmium and substances that impair paint wetting
- ≥ UV-resistant
- ≥ Tests
  UL:
  TC-ER, WTTC 1000 V, MTW, NFPA 79 2007, UL 1277, PLTC-ER (AWG 18 - AWG 12), ITC-ER (AWG 18 - AWG 12), OIL RES I & II,
  90° C dry / 75° C wet
  Class 1 Div. 2 per NEC Art. 336, 392, 501
  Cold Bend Test -40°C
  CSA:
  c (UL) CIC-TC FT4
  AWM I/II A/B FT4

Note

≥ VFD = Variable Frequency Drive

Application

Highly-flexible, extremely oil-resistant motor supply cable for modern servomotors; the double-screening with special aluminium foil (100% coverage) and tinned copper braid (approx. 85% coverage) provides effective protection against electrical disturbance and the resultant failures. Approved to NFPA 79 2007 for open, unprotected installation on cable trays and from cable trays to the machine. The special TPE sheath is extremely resistant to oil, coolants and solvents and hence the perfect solution for industrial applications with open installation, installation in pipes and in the earth.
EMC = Electromagnetic compatibility.
To optimise EMC characteristics, we recommend a large contact area for the copper braiding around the entire circumference on both ends.
CE = The product conforms to the EG Low-Voltage Directive 2006/95/EG.

Sheath colour black

Part No.	Number of cores	Outer Ø approx. mm	Cop. Weight kg/km	Weight approx. kg/km
16 AWG / 1.50 mm² (26/30)				
59837	4c/16 + 2c/18	13.0	88	259
14 AWG / 2.50 mm² (41/30)				
59838	4c/14 + 2c/18	14.0	133	370
59839	4c/14 + 2c/14	14.6	159	399
12 AWG / 4 mm² (65/30)				
59840	4c/12 + 2c/18	15.3	197	435
59841	4c/12 + 2c/14	15.7	224	466
10 AWG / 6 mm² (105/30)				
59842	4c/10 + 2c/14	18.2	301	703
8 AWG / 10 mm² (168/30)				
59843	4c/8 + 2c/14	24.1	457	901
6 AWG / 16 mm² (266/30)				
59844	4c/6 + 2c/14	27.4	615	1275
4 AWG / 25 mm² (413/30)				
59845	4c/4 + 2c/14	33.4	1450	1861

Sheath colour orange, Desina

Part No.	Number of cores	Outer Ø approx. mm	Cop. Weight kg/km	Weight approx. kg/km
16 AWG / 1.50 mm² (26/30)				
59846	4c/16 + 2c/18	13.0	88	259
14 AWG / 2.50 mm² (41/30)				
59847	4c/14 + 2c/18	14.0	133	370
59848	4c/14 + 2c/14	14.6	159	399
12 AWG / 4 mm² (65/30)				
59849	4c/12 + 2c/18	15.3	197	435
59850	4c/12 + 2c/14	15.7	224	466
10 AWG / 6 mm² (105/30)				
59851	4c/10 + 2c/14	18.2	301	703
8 AWG / 10 mm² (168/30)				
59852	4c/8 + 2c/14	24.1	457	901
6 AWG / 16 mm² (266/30)				
59853	4c/6 + 2c/14	27.4	615	1275
4 AWG / 25 mm² (413/30)				
59854	4c/4 + 2c/14	33.4	1450	1861

Dimensions and specifications may be changed without prior notice.

VFD Cable Selection Guide

MOTOR PROPERTIES
AWG SIZE SELECTION CHART

DRIVE HP	230V 3ø AWG	460V 3ø AWG	575V 3ø AWG	DRIVE HP	230V 3ø AWG	460V 3ø AWG	575V 3ø AWG
1/4 - 3	16	16	16	60	2/0	3	4
5	14	16	16	75	4/0	2	3
7 1/2	12	16	16	100	300 MCM	1/0	2
10	10	16	16	125	500 MCM	2/0	1/0
15	8	12	14	150	*	3/0	2/0
20	6	10	12	200	*	300 MCM	4/0
25	4	8	10	250	*	400 MCM	300 MCM
30	3	8	10	300	*	*	400 MCM
40	2	6	8	350	*	*	500 MCM
50	1/0	4	6	400 - 500	*	*	*

Note: The above table references the suggested wire AWG to use based on Horse Power (HP) and the Full Load Current (FLC) times 125% per NEC Art. 430-22 (A). Amperes (FLC) were determined from NEC Art. 430-150:

For Example: For a 5 HP and 460 Volt motor, the FLC is 7.6A x 125% = 9.5A. The right AWG wire for 9.5A is 18 per NEC Art. 310-16, 90°C. See page 667, for Table 310-16.

VOLTAGE DROP FACTORS, VOLTS AT FLC @ 20°C

DRIVE HP	230V 3ø AWG	460V 3ø AWG	575V 3ø AWG	DRIVE HP	230V 3ø AWG	460V 3ø AWG	575V 3ø AWG
1/2	.017	008	007	30	020	032	.042
3/4	.025	.012	.010	40	.021	.027	.033
1	.032	.016	.013	50	.023	.020	.026
1 1/2	.046	.023	.019	60	.016	.019	.018
2	.052	.026	.021	75	.012	.020	.019
3	.074	.037	.030	100	.011	.022	.021
5	.050	.058	.046	125	.008	.047	.022
7 1/2	.047	.058	.069	150	.008	.041	.015
10	.036	.072	.084	200	.006	.011	.013
15	.034	.045	.053	250	N/A	.010	.011
20	.028	.038	.047	300	N/A	.008	.009
25	.020	.028	.036	350	N/A	.008	.009

Note: The above table references the voltage drop over distances. It was determined by using selection criteria of Motor Properties Table. In order to determine the voltage drop, multiply the length by the data above.

For Example: For a 5 HP and 460V motor, P/N 701804 would be used. For a distance of 200 feet, your voltage drop would be 200 x .058 = 11.6volts.