



INSTRUMENTATION, INC.

Your Sensor Solution Source

For the Southeast

Over all outside Bundle Diameter Calculation

Bundle Outside Diameter = Diameter of Single Wire X 1.2
Then X Square Root of Total Number of Wires.

Example; 8 Ga. Wire, Wye Configuration (4 wires)

0.28" Single wire O.D. X 1.2 = 0.336

Square Root of 4 = 2

2 X 0.336 = 0.672" Outside Bundle Diameter for 4 wires

This calculation helps to determine if the (4) wires will fit through the aperture for the NK Ground Fault sensors selected.

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- Amperage is a measure of the electrical current flowing through a circuit. Current is measured in amperes or "amps". You must use the correct size wire for the amperage requirement of the circuit to prevent the wire from over heating.
- The number and type of electrical devices connected to a circuit determine the amperage requirement of the circuit. Usually, a general purpose house circuit is designed for 20 amps. Lighting circuits may be designed for only 15 amps.
- To calculate the amperage for a circuit, first add up the wattage of all the electrical devices that will be on the circuit. Then, divide the total wattage by the voltage of the system, 110 or 220, and that will give you the expected current or amps.

Wire Size and Amp Ratings

Wire Gauge Size	Copper			Aluminum	
	60°C (140°F)	75°C (167°F)	90°C (194°F)	75°C (167°F)	90°C (194°F)
	NM-B	THW	THWN-2	THW	XHHW-2
	UF-B	THWN	THHN	THWN	THHN
	---	SE	XHHW-2	SE	TWLN-2
	---	USE	---	USE	---
14	15	15	15	---	---
12	20	20	20	15	15
10	30	30	30	25	25
8	40	50	55	40	45
6	55	65	75	50	60
4	70	85	95	65	75
3	85	100	110	75	85
2	95	115	130	90	100
1	---	130	150	100	115
1/0	---	150	170	120	135
2/0	---	175	195	135	150
3/0	---	200	225	155	175
4/0	---	230	260	180	205
250	---	255	290	205	230
300	---	285	320	230	255
350	---	310	350	250	280
500	---	380	430	310	350
600	---	420	475	340	385
750	---	475	535	385	435
1000	---	545	615	445	500

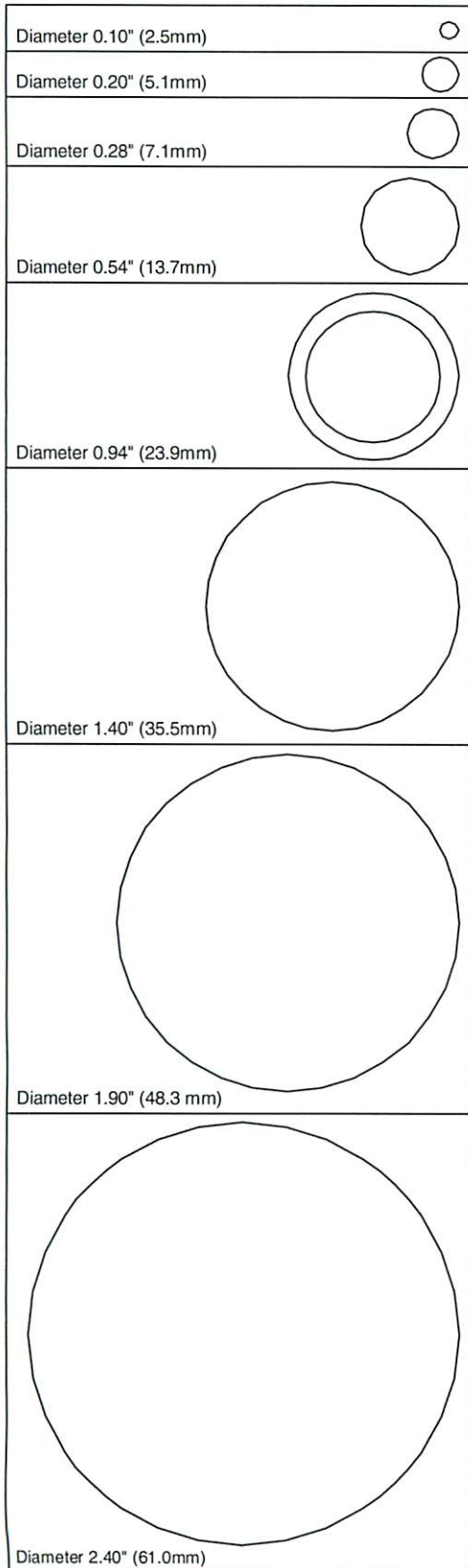
WARNING! Installation of electrical wire can be hazardous, if done improperly, can result in personal injury or property damage. For safe wiring practices, consult the National Electrical Code® and your local building inspector.

cerrowire[™]

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PANDUIT® Wire Size Selection Guide

To use this guide, place your wire or cable in the appropriate circle to determine wire outside diameter



The charts below indicate the approximate cable outside diameter of various electrical and communication cables.

Electrical Cables

Size	Approx. Wire Outside Diameter In. (mm)			
	TF	THW	TW	TFN / THHN / THWN
18 AWG	0.11 (2.8)	0.11 (2.8)	0.11 (2.8)	0.09 (2.3)
16 AWG	0.12 (3.0)	0.12 (3.0)	0.12 (3.0)	0.10 (2.5)
14 AWG	0.13 (3.3)	0.16 (4.1)	0.16 (4.1)	0.10 (2.5)
12 AWG	0.15 (3.8)	0.18 (4.6)	0.18 (4.6)	0.12 (3.0)
10 AWG	0.17 (4.3)	0.20 (5.1)	0.20 (5.1)	0.15 (3.8)
8 AWG	0.24 (6.1)	0.28 (7.1)	0.28 (7.1)	0.22 (5.6)
6 AWG	0.32 (8.1)	0.32 (8.1)	0.32 (8.1)	0.26 (6.6)
4 AWG	0.37 (9.4)	0.37 (9.4)	0.37 (9.4)	0.33 (8.4)
3 AWG	0.40 (10.2)	0.40 (10.2)	0.40 (10.2)	0.36 (9.1)
2 AWG	0.43 (10.9)	0.43 (10.9)	0.43 (10.9)	0.39 (9.9)
1 AWG	0.51 (12.9)	0.51 (12.9)	0.51 (12.9)	0.45 (11.4)
1/0	0.55 (14.0)	0.55 (14.0)	0.55 (14.0)	0.49 (12.4)
2/0	0.59 (15.0)	0.59 (15.0)	0.59 (15.0)	0.54 (13.7)
3/0	0.65 (16.5)	0.65 (16.5)	0.65 (16.5)	0.59 (15.0)
4/0	0.70 (17.8)	0.70 (17.8)	0.70 (17.8)	0.65 (16.5)
250 MCM	0.79 (20.1)	0.79 (20.1)	0.79 (20.1)	0.72 (18.3)
300 MCM	0.84 (21.3)	0.84 (21.3)	0.84 (21.3)	0.77 (19.6)
350 MCM	0.89 (22.6)	0.89 (22.6)	0.89 (22.6)	0.82 (20.8)
400 MCM	0.94 (23.9)	0.94 (23.9)	0.94 (23.9)	0.87 (22.1)
500 MCM	1.03 (26.2)	1.03 (26.2)	1.03 (26.2)	0.95 (24.1)
600 MCM	1.14 (29.0)	1.14 (29.0)	1.14 (29.0)	1.06 (26.9)
700 MCM	1.21 (30.7)	1.21 (30.7)	1.21 (30.7)	1.13 (28.7)
750 MCM	1.25 (31.8)	1.25 (31.8)	1.25 (31.8)	1.16 (29.5)
800 MCM	1.28 (32.5)	1.28 (32.5)	1.28 (32.5)	1.20 (30.5)
900 MCM	1.34 (34.0)	1.34 (34.0)	1.34 (34.0)	1.26 (32.0)
1000 MCM	1.40 (35.6)	1.40 (35.6)	1.40 (35.6)	1.32 (33.5)
1250 MCM	1.58 (40.1)	1.58 (40.1)	1.58 (40.1)	
1500 MCM	1.70 (43.2)	1.70 (43.2)	1.70 (43.2)	
1750 MCM	1.82 (46.2)	1.82 (46.2)	1.82 (46.2)	
2000 MCM	1.92 (48.8)	1.92 (48.8)	1.92 (48.8)	

Category 3 and Category 5 Cable

Size	Category 3		Category 5		
	Voice Grade 24 AWG UTP	Data Grade 24 AWG UTP	Data Grade 24 AWG STP	Data Grade 22 AWG UTP	Data Grade 22 AWG STP
2 Pair	0.12 (3.0)				
3 Pair	0.15 (3.8)				
4 Pair	0.19 (4.8)	0.22 (5.6)	0.25 (6.3)	0.23 (5.8)	0.29 (7.4)
25 Pair		0.42 (10.7)	0.51 (12.9)	0.54 (13.7)	0.63 (16.0)
50 Pair	0.46 (11.7)	0.66 (16.8)			
100 Pair	0.63 (16.0)	0.96 (24.4)			
300 Pair	1.07 (27.2)				

Coaxial Cable

Size	Coax
RG58/u	0.19 (4.8)
RG59/u	0.24 (6.1)
RG62A/u	0.24 (6.1)
RG6/u	0.27 (6.8)
RG11/u	0.40 (10.2)

Fiber Optic Distribution (62.5/125)

Size	Non-Plenum	Plenum
6 Strand	0.26 (6.6)	0.18 (4.6)
8 Strand	0.27 (6.9)	0.18 (4.6)
12 Strand	0.28 (7.1)	0.21 (5.3)
18 Strand	0.49 (12.4)	0.47 (11.9)
24 Strand	0.54 (13.7)	0.52 (13.2)
36 Strand	0.54 (13.7)	0.52 (13.2)
48 Strand	0.59 (15.0)	0.56 (14.2)
72 Strand	0.72 (18.3)	0.71 (18.0)