

2% Voltage Drop Charts for 75°C Stranded Copper Wire

1-Way Wire Distance (feet), 12 Volt System

Wire Size (AWG)	60 Amps	55 Amps	50 Amps	45 Amps	40 Amps	35 Amps	30 Amps	25 Amps	20 Amps	15 Amps
2/0 **	22.4	24.4	26.9	29.9	33.6	38.4	44.8	53.8	67.2	89.6
1/0 **	17.8	19.4	21.3	23.7	26.6	30.4	35.5	42.6	53.3	71.0
2	11.2	12.2	13.4	14.9	16.8	19.1	22.3	26.8	33.5	44.7
4	7.0	7.7	8.4	9.4	10.6	12.1	14.1	16.9	21.1	28.1
6	4.4	4.8	5.3	5.9	6.6	7.6	8.8	10.6	13.2	17.7
8	2.8	3.0	3.3	3.7	4.2	4.8	5.6	6.7	8.4	11.1
10	1.7	1.9	2.1	2.3	2.6	3.0	3.5	4.2	5.2	7.0
12	1.1	1.2	1.3	1.5	1.6	1.9	2.2	2.6	3.3	4.4
14	0.7	0.8	0.8	0.9	1.0	1.2	1.4	1.7	2.1	2.8

Table 8-1. Maximum 1-way wire distance for 12 Volt systems, stranded copper, 2% voltage drop

1-Way Wire Distance (meters), 12 Volt System

Wire Size (mm ²)	60 Amps	55 Amps	50 Amps	45 Amps	40 Amps	35 Amps	30 Amps	25 Amps	20 Amps	15 Amps
70 **	6.83	7.45	8.20	9.11	10.24	11.71	13.66	16.39	20.49	27.32
50 **	5.41	5.91	6.50	7.22	8.12	9.28	10.83	12.99	16.24	21.65
35	3.40	3.71	4.08	4.54	5.11	5.84	6.81	8.17	10.21	13.62
25	2.14	2.34	2.57	2.86	3.22	3.68	4.29	5.15	6.43	8.58
16	1.35	1.47	1.61	1.79	2.02	2.31	2.69	3.23	4.04	5.38
10	0.85	0.93	1.02	1.13	1.27	1.46	1.70	2.04	2.55	3.40
6	0.53	0.58	0.64	0.71	0.80	0.91	1.07	1.28	1.60	2.13
4	0.33	0.36	0.40	0.44	0.50	0.57	0.67	0.80	1.00	1.33
2.5	0.21	0.23	0.25	0.28	0.32	0.36	0.42	0.50	0.63	0.84

Table 8-2. Maximum 1-way wire distance for 12 Volt systems, solid copper, 2% voltage drop

** Wires sizes larger than 2 AWG (35 mm²) must be terminated at a splicer block located outside of the TriStar MPPT wiring box. Use 2 AWG (35 mm²) or smaller wire to connect to the TriStar MPPT to the splicer block.

Notes:

- The specified wire length is for a pair of conductors from the solar or battery source to the controller (1-way distance)
- For 24 volt systems, multiply the 1-way length in the table by 2.
- For 48 volt systems, multiply the 1-way length in the table by 4.
- Shaded cells in the table indicate that the current exceeds the ampacity of the wire for a given ambient temperature as defined in the following table:

Wire Ampacity* Key	
	Exceeds wire ampacity at 60°C ambient temperature
	Exceeds wire ampacity at 50°C ambient temperature
	Exceeds wire ampacity at 40°C ambient temperature
	Exceeds wire ampacity at 30°C ambient temperature

*Ampacity for not more than three current-carrying conductors in a raceway, cable, or earth (buried).