

VOLTAGE DROP TABLE

- Voltage drop becomes important when the length of a run of wire or cable becomes very long. Usually this is not a problem in circuits within a house, but may become an issue when running wire to an outbuilding, well pump, etc.
- Excessive voltage drop can cause loss of efficiency in operation of light, motors and appliances. This could result in lights that are dim and motors or appliances whose life is shortened.
- To avoid excessive voltage drop, select a size wire that will minimize voltage drop, You need to know the length of the wire run and the amp load or current that will be on the circuit. To determine amps, add up the wattage of all electrical devices that will be on the circuit and divide this total by the voltage of the circuit, 110 or 220.

Wire Size Selection for Long Runs

110 Volt, Single Phase, Max 3% Voltage Drop*						
	Length of Run					
	25'	50'	100'	150'	200'	Amp Load
Copper	14	12	8	6	6	15 AMP
Copper	12	10	8	6	4	20 AMP
Copper	10	8	6	4	3	30 AMP
Copper	3**	3**	1	2/0	3/0	100 AMP
Aluminum	2	2	2/0	4/0	300 MCM	100 AMP
Copper	3/0	3/0	3/0	250 MCM	350 MCM	200 AMP
Aluminum	4/0	4/0	300 MCM	400 MCM	600 MCM	200 AMP

220 Volt, Single Phase, Max 3% Voltage Drop*						
Copper	14	14	12	10	8	15 AMP
Copper	12	12	10	8	8	20 AMP
Copper	10	10	8	6	6	30 AMP
Aluminum	8	8	6	4	4	30 AMP
Copper	8	8	8	6	4	40 AMP
Aluminum	8	8	6	4	3	40 AMP
Copper	8***	8***	6	4	4	50 AMP
Aluminum	6	6	4	3	2	50 AMP

* The table above applies to the single phase systems, in steel conduit, at a conductor operating temperature of 75°C. It assumes a power factor of one. The table may be used for systems using non-steel conduit, but actual results for these conditions may result in a greater voltage drop.

** Type NMB cables may not be used for a 100 amp load.

*** Must use 6 gauge if using NMB or UFB.

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.