

HOW VOLTAGE DROP AFFECTS LED LIGHTING:

Voltage drop is voltage loss that occurs through all or part of a circuit due to impedance. Any part of the LED lighting that carries current will always have resistance to current flow and thus create impedance.

LEDs require a minimum current to properly illuminate. LEDs can flicker, dim, or color shift if the minimum current is not available. Long runs of LED tapelights and long wires can cause impedance that then creates a perceivable shift in color or brightness difference in the LEDs.

24V DC VOLTAGE DROP AND WIRE LENGTH (FT.) DISTANCE CHART

POWER (W)		10W	20W	30W	40W	50W	60W	70W	80W	90W	100W	110W	120W
WIRE GAUGE (AWG)	#18	189'	94'	63'	47'	38'	31'	27'	24'	21'	19'	17'	16'
	#16	300'	149'	100'	76'	60'	50'	43'	37'	33'	30'	27'	25'
	#14	478'	238'	159'	120'	95'	79'	68'	60'	53'	48'	43'	40'
	#12	753'	274'	250'	189'	150'	125'	108'	94'	83'	75'	68'	63'
	#10	1205'	599'	400'	303'	240'	200'	172'	150'	133'	120'	109'	100'

HOW TO USE THE CHART:

1. Calculate the total wattage of the LED lighting system.
2. Find the wattage in the top row and follow the column down to length of wiring between the LEDs and the power supply.
3. Look to the left column for the wire gauge size required to prevent voltage drop.