Techlight LV Wiring Suggestions — What's New & How to Use It

What's New

- VA-based **Voltage-Drop Formula** replaces "max watts" tables.
- **Max Run-Length** chart for 10/12/14/16 AWG (0–20→100 VA).
- **Quick Gauge Picks** for **12V** and **24V** systems.
- **Cable constants** retained (#12: 7500/15000; #10: 11920/23840).
- **Direct-burial, stranded, pure-copper** cable only; 2-volt drop target.
- **ETL Listed / NEC-compliant** transformers language updated.

Why It's Better

- Matches how **LED** LV systems actually perform (transformers/drivers are VA-based).
- Reduces field troubleshooting with **clear run limits** and **tap-selection** guidance.
- Improves AHJ comfort with present-day **listing** language.

How to Apply

1. Select **system voltage** (12V or 24V).
2. Pick **wire gauge** from the **Quick Gauge** box.
3. Check the **run-length table** against total **VA** on that leg.
4. If long runs approach limits, use a **higher gauge** (lower AWG number) and/or a **higher transformer tap (12–15V)**.
5. Keep transformer loading at **≤80%** of rating.

WIRING SUGGESTIONS

To reduce voltage drop, place the transformer in a central location and split cable runs into multiple directions instead of one long run. Use **direct-burial, stranded, pure-copper cable** for all low-voltage landscape installations.

Techlight recommends **no more than a 2-volt drop** at the final fixture.

RECOMMENDED WIRE GAUGE & MAX RUN LENGTH

12V Systems	10 AWG	12 AWG	14 AWG	16 AWG
0–20 VA	1860'	1150'	730'	450'
40 VA	930'	580'	370'	230'
60 VA	620'	390'	240'	150'
80 VA	470'	290'	180'	110'
100 VA	370'	230'	140'	90'

RECOMMENDED WIRE GAUGES

12V Systems
- 12 AWG – Standard for most runs
- 10 AWG – Long runs or higher-load zones
- 14 AWG – Short runs only

24V Systems
- 14 AWG – Suitable for many medium runs
- 12 AWG – Recommended for main trunk lines
- 10 AWG – Very long runs only

VOLTAGE DROP FORMULA

(TOTAL VA LOAD x CABLE LENGTH) / CABLE CONSTANT = VOLTAGE DROP

TOTAL VA LOAD - Sum of transformer VA assigned to the cable run.
CABLE LENGTH - Length of cable in feet from transformer to the last fixture of the run.

WIRE SIZE	12V CABLE CONSTANT	24V CABLE CONSTANT
#12	7500	15000
#10	11920	23840

NOTES

- Use transformers with multiple voltage-tap outputs (12V–15V) when compensation for long runs is required.
- For transformer sizing, follow the 80% load / 20% overhead guideline.

2009 Mckenzie Drive Suite 110 I Carrollton, TX 75006 I PH: 800.225.0727 www.techlight.com

REV: 20260121-01

www.techlight.comhttps://techlight.com/pdf/LV~Wiring~Suggestions.pdf