



LOW-VOLTAGE LANDSCAPE LIGHTING: A PRACTICAL GUIDE

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The importance of Outdoor Lighting

01



Safety

Improves visibility on walkways, stairs, and other outdoor areas, helping reduce trips and falls.

02



Security

Illuminates dark areas and helps deter unwanted activity.

03



Aesthetics

Highlights landscape features and enhances outdoor spaces.



01

01. POWERING LOW VOLTAGE LIGHTING

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01 • POWERING LOW VOLTAGE LIGHTING

The Power Supply Sets the Foundation

Choosing **the right power source** ensures the system delivers the **correct voltage** and **supports** the way the **lighting system** is designed and controlled.



3 WAYS TO POWER A LOW VOLTAGE SYSTEM

01 AC TRANSFORMER
Converts 120V AC to low-voltage AC.



02 DC POWER PACK
Converts 120V AC to regulated low-voltage DC.



03 SOLAR POWER
Generates and stores power for off-grid applications.



01 • POWERING LOW VOLTAGE LIGHTING

AC Transformer

- Alternating Current
- Most Common
- Cost Effective
- Multiple Size Availability
- Limited LED Protection



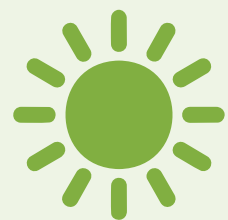
LTN1100AC

100W



LTN3300AC

300W



PHOTOCELL

Automatic operation based on available daylight



ASTRONOMIC TIMER

Schedule lighting based on sunrise and sunset



MULTIPLE WATTAGE OPTIONS

100W and 300W options for different system requirements.



SIMPLE + COST EFFECTIVE

A straightforward solution for traditional low-voltage systems

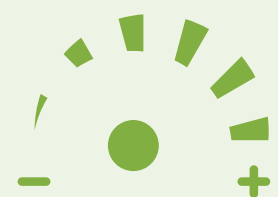
01 • POWERING LOW VOLTAGE LIGHTING

DC Power Pack

- Direct Current
- Preferred Power Source for LEDs
- Surge and Lightning Strike Protection
- Flicker Free Dimming
- Higher upfront cost, better long-term value
- AC Input **Expandable**
 - 342W
 - 120V Outdoor Outlet



LTN2150



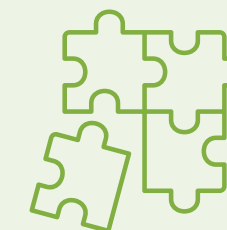
DIMMABLE
100%-30%
(8 LEVELS)



**RF REMOTE
CONTROL**
Included



**FULL SURGE
PROTECTION**
Built-in



EXPANDABLE
Modular system for
growing projects

AC Transformer **vs** DC Power Pack

FEATURE	AC TRANSFORMER	LTN2150 DC POWER PACK
Current type	12V Alternating Current	12V Direct Current
Power surge protection	Limited	Full system
Compatibility with LEDs	AC LED drivers only	AC/DC LED drivers
Energy efficiency	Standard	Higher — less heat loss
LED lifespan impact	Neutral	Extended — clean power
LED flicker risk	Possible with some fixtures	None — stable DC output
Halogen compatibility	Yes	Not recommended
Expandable	Limited by wattage	Yes — modular by design
Available wattages (LTN)	100W, 300W	150W base, expandable up to 600W
Price point	Lower upfront	Higher upfront, better long-term value

Which Power Solution **Is Right** for Your Project?

Consideration

Recommended Solution

	Dimming capabilities		DC Power Pack
	Expanding an existing AC-based system		AC Transformer
	Remote controlling		DC Power Pack
	Replacing a failed transformer in halogen system		AC Transformer
	Complete surge protection		DC Power Pack
	Budget is the primary constraint, short-term		AC Transformer

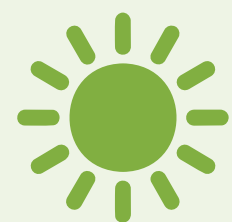
01 • POWERING LOW VOLTAGE LIGHTING

Solar Power

RUPS= Renewable Universal Power Supply

**Power Anywhere.
No Grid Required.**

- Converts solar energy into low-voltage DC power.
- Off-Grid - ideal for remote or hard-to-wire locations.
- Any low-voltage applications (lighting, security cameras, etc)
- Remote Powering Irrigation Controllers
- 300Whr Battery with Photocell Countdown Timer



OFF-GRID FREEDOM

Automatic
operation based on
available daylight



QUICK INSTALL

Schedule lighting
based on sunrise
and sunset



RELIABLE PERFORMANCE

300Whr



RENEWABLE ENERGY

Solar-powered lighting
for off-grid applications.

02

01. POWERING LOW VOLTAGE LIGHTING

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Voltage Drop Calculations

01 Check Cable Length + Wire Gauge

- Longer cable runs increase voltage drop.
- Thicker wire reduces voltage drop.

MAXIMUM CABLE LENGTH PER TOTAL FIXTURE WATTS							
Cable Size	50W	75W	100W	150W	200W	250W	300W
14-2	190'	125'	95'	65'	50'	-	-
12-2	300'	200'	150'	100'	75'	60'	-
10-2	475'	318'	240'	160'	120'	100'	80'

If Voltage Drop Is Too High

- Split the run into multiple runs or zones
- Use a heavier gauge cable
- Shorten cable length
- Add an additional transformer
- Use a “LOOP” layout

02 Cable Constant

CABLE CONSTANT	
Cable	Constant
18 AWG	1,380v
16AWG	2,200v
14AWG	3,500v
12AWG	7,500v
10AWG	11,920v
8AWG	18,960v

03 Calculating Voltage Drop

- Multiply total watts by cable length.
- Divide by the cable constant.
- Multiply by 2 to account for the circuit's outgoing and return path.
- Subtract voltage drop from supply voltage to find the voltage at the farthest fixture.

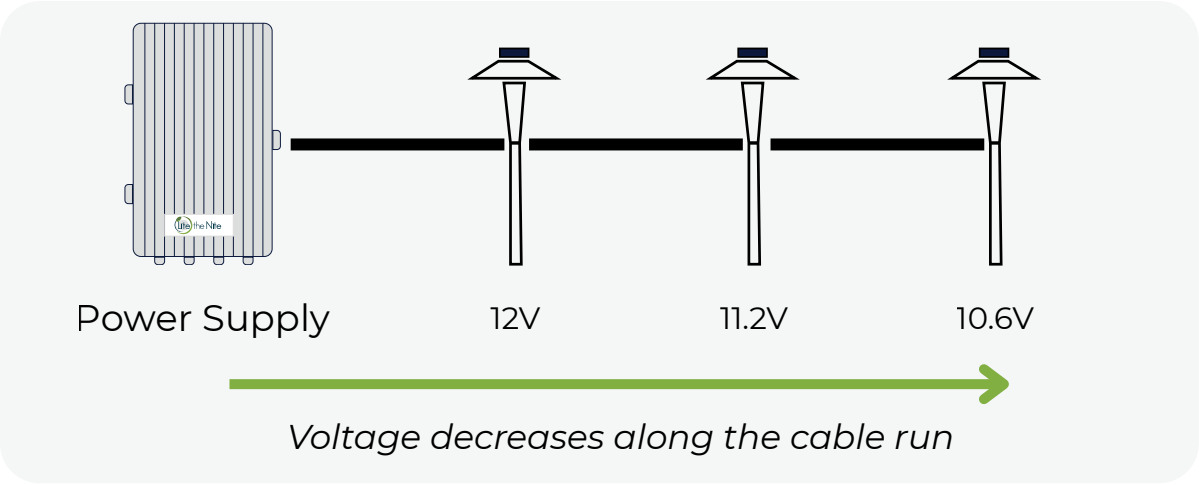
VOLTAGE DROP =
$$\frac{\text{Total Watts/VA} \times \text{Cable Length}}{\text{Cable Constant}} \times 2$$

Example

A run with **75W** of load and **125 ft** of cable using **12 AWG** wire.

VOLTAGE DROP =
$$\frac{75\text{W} \times 125'}{7500 \text{ (12 AWG Cable Constant)}} \times 2 = 2.5 \text{ volts}$$

For **optimal performance**, voltage at the fixture should typically remain **between 10.8V and 15V**.



The lighting layout determines how power is distributed.

A well-designed layout should:

- 01 |  **Distribute power**
Efficiently across the system.
- 02 |  **Maintain Consistent Output**
Deliver reliable, even illumination.
- 03 |  **Adapt to the site**
Account for distance, load, and fixture location.

Common Lighting Layouts

There are five common ways to distribute power supply to the fixtures.

01 | **Straight Run — Daisy Chain**

02 | **T Layout**

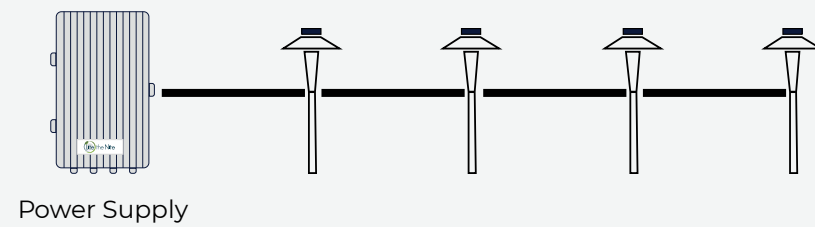
03 | **Split Load Layout**

04 | **Hub Layout**

05 | **Loop Layout**

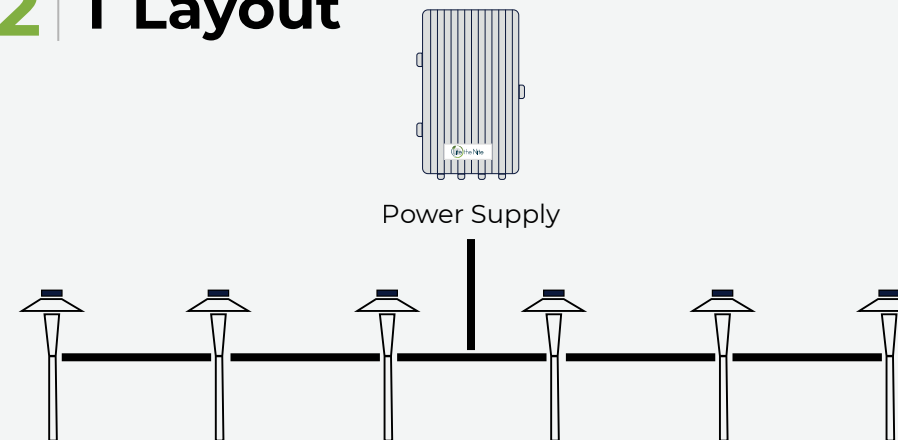
5 Common Lighting Layouts

01 | Straight Run — Daisy Chain



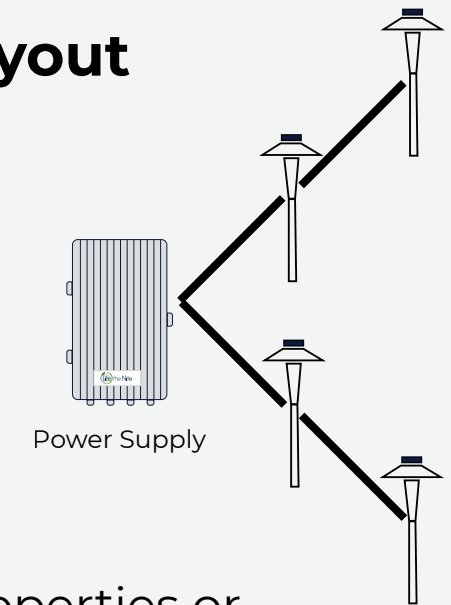
✓ **Best for:** short runs with a few lights close together.

02 | T Layout



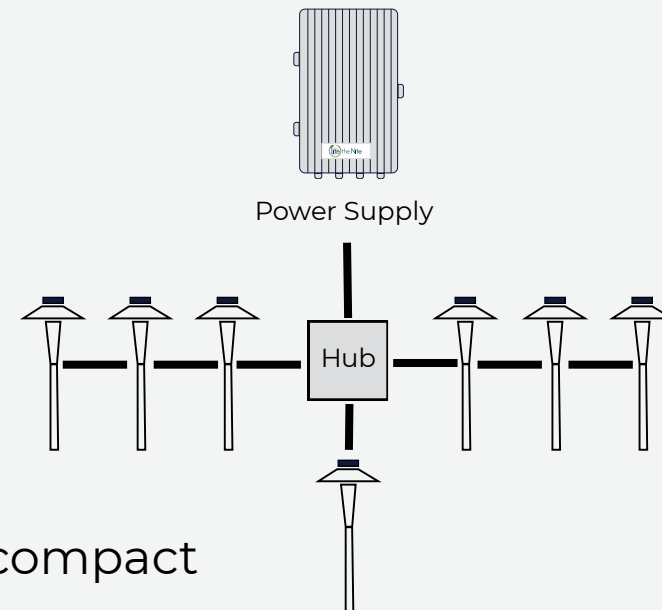
✓ **Best for:** runs that split in two directions from the transformer.

03 | Split Load Layout



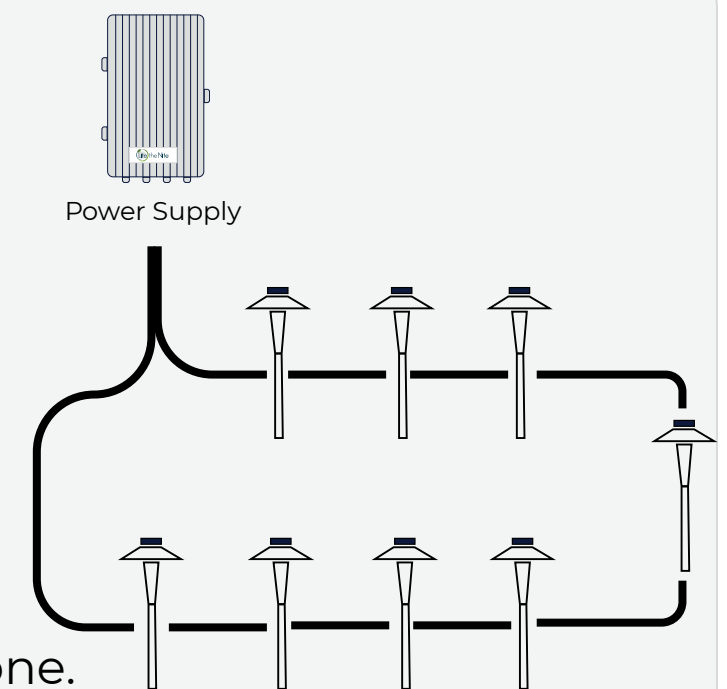
✓ **Best for:** large properties or separate lighting zones.

04 | Hub Layout



✓ **Best for:** multiple fixtures in a compact area requiring balanced power.

05 | Loop Layout



✓ **Best for:** even brightness across multiple fixtures within a single zone.

How Do You Choose the Right Layout?

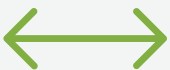
01



Fixture Locations

Where are the fixtures located?

02



Distance

How far are the fixtures from the power supply?

03



Load

How much power does each run require?

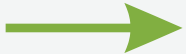
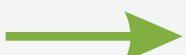
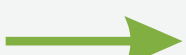
04



Lighting Zones

Do fixtures need to be grouped into separate areas?

Match the Site to the Layout

If the site has...		Consider...
A short, simple run with a few fixtures close together.		01 • Straight Run — Daisy Chain
Fixtures extending in two directions.		02 • T Layout
Separate areas or distinct lighting zones.		03 • Split Load Layout
Several fixtures concentrated in one area.		04 • Hub Layout
A larger zone where even output is important.		05 • Loop Layout

03

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Spotlights

Highlight trees, architecture, and landscape features with versatile accent lighting.

USES

Trees • Facades • Garden Features •
Architectural Details



Brass Uplight

BU110BZ



**Brass Uplight –
Black**

BU110BK



**Brass Mini
Uplight**

BU132BZ



**Brass Mini Wall
Wash**

BUR106BZ



**Brass Large
Wall Wash**

BUR101BZ



**Brass Large
Uplight**

BU1412BZ

Path Lights

Create inviting pathways with elegant, low-level landscape lighting.

USES

Walkways • Driveways • Gardens • Pathways



**Brass Flat Top
Path light –
Black 5"**

BP1505BK



**Brass Flat Top
Path light –
Black 7"**

BP1507BK



**Brass Flat Top
Path light –
Bronze 7"**

BP1507BZ



**Brass Mini
Dome Path light**

BP116BZ



**Brass Mini Cone
Path light**

BP126BZ



**Brass Dome
Path light**

BP118BZ



**Brass Cone
Path light**

BP128BZ



**Brass Deep
Cone Path light**

BP156BZ



**Brass Pyramid
Path light**

BP166BZ

Hardscapes

Bring out the texture and natural character of stone, rock, walls, and other features with subtle lighting.

USES

Steps • Decks • Walls • Posts • Stairs



**Brass Undercap
– 7"**

BH1033BZ



**Brass Undercap
– 4"**

BH1023BZ-4

Certified Turtle-Friendly



Pathlights

CERTIFICATION
#2019-205

18" Stem



12" Stem



BP118BZ-A
BP118BZ-2A
8" Dome



BP156BZ-A
BP156BZ-2A
8" Deep Cone



BP128BZ-A
BP128BZ-2A
8" Cone

Deck Light

CERTIFICATION
#2018-027



BDL192BZ-A
2W Dimmable LED

Tiki Torch



BPT177BZ-A
Brass Amber Tiki Torch

Step Lights

CERTIFICATION
#2018-027



BST105BZ-A
5" x 3" (5W)
12V AC Dimmable LED



BST108BZ-A
9" x 3" (8W)
12V AC Dimmable LED

LEDs Amber Colored

CERTIFICATION
#2019-206



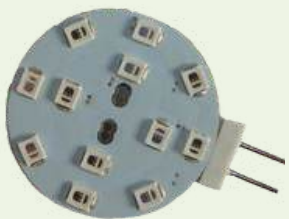
L192A
LED Disk 2W
G4 Bi-Pin

CERTIFICATION
#2019-207



L115A4
LED 5W MR16

CERTIFICATION
#2019-205



BX1PHABZ-A
LED 4W Light Array

POWERING BETTER OUTDOOR LIGHTING



The right power, layout, and fixtures create a better-performing lighting system.



CHOOSE THE RIGHT POWER SOURCE

AC, DC, or solar — select the solution that fits the project.



PLAN THE LAYOUT

Distribute power efficiently based on distance, load, and fixture location.



MATCH FIXTURES TO THE APPLICATION

Choose fixtures based on where and how the space will be illuminated.



DESIGN FOR PERFORMANCE

Build a reliable system with consistent light output and long-term performance.