CAUTION: Wires to 120VAC directly. DO NOT use on a 240V or 277V circuit. Doing so will damage the LEDs and void the warranty! Make sure input power is off prior to installation of Powerline modules. When using Powerstik for sign cabinets, DO NOT insert into a live socket. Make sure existing ballast has been disconnected from primary power and removed prior to installation.

The Powerline LED system has been designed for easy installation in channel letters, sign cabinets, raceway & remote applications. The system is UL Recognized in SAM and may be installed as shown in non-enclosure rated signs as well as reverse channel letter applications and is UL Classified for sign retrofits. Direct mounting of LED modules on plastic sheet is permitted only under suitable conditions.

1. This LED System is suitable for dry or damp locations only. Do not mount where it can stand in water.

2. Primary wiring and final hookup outside of the sign body must be performed by a licensed electrician and comply with National Electrical Code and NFPA 70 standard, including the use of disconnect switches and enclosures.

3. Other than the modules themselves, the spacing in the product to other heat producing components shall be minimum 2 inches to sidewalls and minimum 2 inches spacing to top of enclosure.

4. All primary wiring and branch feeder circuits must be connected to ground. See detailed wiring diagram for each sign type.

5. Powerline and PowerStik LED modules are not polarity dependent and may be wired in either direction.

6. DO NOT overload. Total LED module count shall not exceed 80% of the rated current of the circuit. For ex. 20A circuit @ 0.010A per module* = 2,000 modules x 0.8 = 1,600 modules max. See datasheet for exact PowerStik current draw of various lengths of both double and single sided pre-assembled module population.
7. DO NOT wire more than a total of 10A worth of modules in a continuous linear string from a branch feeder circuit. The 18GA wire on the modules is not rated to exceed 10A @ 120VAC. Ex., 10A @ 0.010A per module* = 1,000 modules max.

8. Surge protection (VA-SB3P-120) is required between the primary circuit and the LED module string and may be purchased separately (raceways and enclosure rated signs) or fully integrated in a Sign Strike Box (non-enclosure rated signs). Failure to provide surge protection can damage the modules in the event of the surge and will void the product warranty.

9. When connecting the branch feeder wiring to Powerline LED Module String or Powerstik use the following:
   • For Enclosure Rated Signs & raceways: Any approved UL wire connector and #18AWG, 600V wire can be used.
   • For Non-Enclosure Rated Signs: Use Ventex Wire Nut P/N: VA-WN01 (Ideal Industries Wire Connector Ideal cat no. #61-64); for splicing or jumping use LED wire Ventex P/N: VA-W09 (#18 AWG, 600V, White, VW). Under these conditions an additional enclosure is not required inside the sign body.
   • For connection of the primary circuit, branch feeder circuits to the sign, or jumping from letter to letter outside of the sign body use minimum 14/2 MC conduit cable with a ground wire in dry and damp locations. For wet locations, wiring must be further enclosed in seal tight conduit and appropriate fittings. When conduit cable is used, a wall feed protection tube is not required in through wall applications.

These LED wires & wire nuts, sold separately are unique & integral to the system and allow for the installation and wiring of the LED system without the need for additional enclosures. No substitutes allowed.

10. Wire terminations shall be capped with the appropriate wire nut OR covered with shrink sleeving, rated 600V, 750C.

11. The modules are not designed to be subjected to direct sunlight outside of the sign body.

12. Each module is provided with VHB tape for securement, as well as an optional mechanical mounting tab.

13. For new construction cabinets using Powerstik, each Powerstik can be attached using PL-QS-MB1 mounting brackets as shown or any other mounting mechanical means for securement in the sign body.

14. For retrofits, Powerstik is designed to fit directly into a standard double recessed T-12 socket, ONLY after existing ballast(s) have been disconnected from primary power and removed.

15. ALWAYS disconnect the power from the sign prior to service or installation of Powerstik or Powerline modules.
Sign Strike is specifically designed for use with PRINCIPAL LED Powerline and Powerstik products. Sign Strike is a UL recognized NEMA 4 enclosure box that contains a surge protector (VA-BSP3-120) and 20A toggle switch (VA-SW-2200). The box also contains an integrated ground lug for grounding the primary. If the box is mounted to the metal sign body directly, no additional grounding is required.

For installations with one or more flush mount letters or sign cabinets, each letter must be grounded. Sign Strike can be used to bring in 120V primary power and splits the power into two 10A branch feeder circuits. In remote mount applications, standard UL listed, minimum 14/2 MC armored conduit cable with ground wire can be used to connect from Sign Strike to the modules inside the sign directly and to jump from letter to letter without the need for pass-throughs. A typical application would be exterior signage, where the MC Cable would pass through the wall connecting to the primary wiring and subsequently grounding from letter to letter.

For applications where the sign strike box is mounted in a wet location, use appropriate liquid tight conduit and liquid tight strain relief connectors from the Sign Strike to the sign. To connect the conduit, remove the cover and wire as shown below. If the Sign Strike is mounted inside the sign body, the appropriate 18 gauge wire may be pulled into the Sign Strike and connected directly to the Powerline modules or Powerstiks.

Additional materials needed for remote mount applications:
- Dry/Damp locations
  - ⅜” or ½” EMT Fitting
  - Min. 14/2 MC Conduit w/Ground
- Wet locations*
  - ⅜” or ½” NPT Fitting
  - Liquid Tight Conduit

*Note: Behind wall installation shown below. When Sign Strike Box is remote mounted in a wet location, use liquid tight conduit and watertight strain relief fitting.

**Surge protector and 20A toggle switch may be purchased separately for installation and wiring inside a raceway or the sign body of an enclosure rated sign.
**Flush Mount Installation**

1. Min. 14/2 cable feeder circuit from Sign Strike.

2. Drill a ½” hole for the input and output of the MC conduit cable.

3. When the sign strike box is remote mounted, each letter must be GROUNDED using 18AWG ring terminal at the input and output of each letter.

4. For non-enclosure rated signs, Ventex waterproof wire nuts (P/N VA-WNO1) or shrink sleeving rated 600V and 75° must be used for connection to the feeder circuit, splices and end terminations. No additional enclosure is required.

5. For non-enclosure rated signs, Ventex 18AWG splice wire must be used (P/N VA-W09).

6. 14/2 MC Conduit Cable w/ ground
   - Use in flush mount letters to connect as primary feeder input and grounding or jumping between letters
   - Approved for use outside of sign body

7. Ventex 1 strand splice wire (VA-W09)
   - Use for splicing Powerline LED modules within the sign body/raceway
   - 18AWG stranded tinned copper wire

*Note: Modules are AC (not polarity dependent)*
Raceway Installation

1. 20A toggle switch is split into two 10A lines. If less than 1000 modules is required in the sign, only one 10A line is used. Cap unused wires on toggle switch with wire nuts.

2. If the raceway is enclosure rated any UL 18AWG (600V) wire and wire nuts may be used for splicing.

3. If the channel letters mounted on the raceway are non-enclosure rated, use VA-W09 splice wire and VA-WN01 waterproof wire nuts for splicing and end termination.

4. Use a bushing to protect wires from sharp edges.

*Note: Modules are AC (not polarity dependent)*

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Sign Strike Enclosure Box

Surge protector and toggle as show mounted separately inside the sign raceway. Can be purchased preassembled in a separate Sign Strike Enclosure box (P/N VA-SSB-1) for mounting outside of the sign or inside the raceway.
Powerline: Single Sided Cabinet

Enclosure Rated Sign with Surge Protector Inside

Troubleshooting Tips:
There is a clamping device in the VA-BSP3-120 surge protector that will short an input transient and automatically recovers after the surge. These are MOV devices, so their life shortens with every strike. At end of life, the surge protector will open causing the sign not to operate as means of protecting the LEDs. If the sign turns off completely, the surge protector needs to be replaced. Failure to use a Sign Strike box or wire the surge protector correctly can damage the LEDs and will void the warranty.

1. If a section of modules are out, check the wire connections.
2. Make sure no wires are touching.
3. If the line and neutral touch while the sign is electrified, it can cause a short in the toggle switch. If this happens, the toggle switch will not turn the sign off and must be replaced.
4. Powerline and Powerstik modules are not polarity dependent and can be wired either way from the incoming splice wire.
5. If the circuit breaker trips, check to make sure the maximum number of modules has not been exceeded on the circuit.
6. Do not daisy chain more than 10A (1,000) modules on a single line.
7. Connect only to 120VAC. Over voltage will damage the LEDs and void the product warranty.

WARNING: This is an AC LED (120V) system. Do not attempt to install or repair the modules while the sign is still on. Disconnect power prior to service. P-LED recommends the use of warning stickers to be placed inside each letter or sign cabinet prior to installation or upon completion of a sign retrofit and are supplied with the product at no additional charge.

1. Clean sign surface prior to adhering modules. Modules may be cut and spliced between any module.

2. Cap end terminations to prevent shorting and possibly damaging switch.

Note: Standard UL wire nuts and 18 gauge, 600V wire may be used in an enclosure rated sign. If less than 1,000 modules are used in the sign, only one 10A line is required. Cap unused line on the toggle switch with wire nuts.
Non-enclosure Rated Sign with Remote Sign Strike Box

Troubleshooting Tips:
There is a clamping device in the VA-BSP3-120 surge protector that will short an input transient and automatically recovers after the surge. These are MOV devices, so their life shortens with every strike. At end of life, the surge protector will open causing the sign not to operate as means of protecting the LEDs. If the sign turns off completely, the surge protector needs to be replaced. Failure to use a Sign Strike box or wire the surge protector correctly can damage the LEDs and will void the warranty.

1. If a section of modules are out, check the wire connections.
2. Make sure no wires are touching.
3. If the line and neutral touch while the sign is electrified, it can cause a short in the toggle switch. If this happens, the toggle switch will not turn the sign off and must be replaced.
4. Powerline and Powerstik modules are not polarity dependent and can be wired either way from the incoming splice wire.
5. If the circuit breaker trips, check to make sure the maximum number of modules has not been exceeded on the circuit.
6. Do not daisy chain more than 10A (1,000) modules on a single line.
7. Connect only to 120VAC. Over voltage will damage the LEDs and void the product warranty.

WARNING: This is an AC LED (120V) system. Do not attempt to install or repair the modules while the sign is still on. Disconnect power prior to service. P-LED recommends the use of warning stickers to be placed inside each letter or sign cabinet prior to installation or upon completion of a sign retrofit and are supplied with the product at no additional charge.

1. MC Conduit feeder cable from Sign Strike (1000 mods MAX. per 10A line.)
2. In a non-enclosure rated sign, all splices within the sign body must be made using 18AWG UL approved splice wire and splices and end terminations must use waterproof wire nuts or shrink sleeving rate 600V and 75˚C. No additional enclosure required.
3. Powerstik extrusion may be mounted using a Qwik Bracket or inserted directly into a double recessed T-12 socket for sign retrofits. Qwik Bracket: Mount base to each side of return. Insert Qwik Stik onto threaded base and use wing nut to adjust to desired position and tighten to stabilize the Qwik Stik.