

LED 驱动器产品安装使用说明书

一、 LED 驱动器特性详见驱动器 Datasheet，驱动器结构认识参考如下：

输入线型	线色	极性	户内使用产品示意图	户外(户内)使用产品示意图	输出线型	线色	极性
美规 UL 线	黑色	L (火线)					美规 UL 线
	白色	N (零线)	黑色(蓝色)	-			
	绿色	GND (安全接地线)	欧规 VDE CCC 线	棕色			+
欧规 VDE CCC 线	棕色	L (火线)		蓝色			-
	蓝色	N (零线)	印度版本 PVC BIS 线	红色			L (火线)
	黄绿色	GND (安全接地线)		黑色			N (零线)
红色	L (火线)	黄绿色		GND (安全接地线)			
印度版本 PVC BIS 线	黑色	N (零线)	调光线	参照实物	参照铭牌		
	黄绿色	GND (安全接地线)					

注意：不同产品外形请以实物为准，输入输出线极性请详细核对驱动器铭牌相关标识。

二、安装说明：

1. 安装操作人员需具备相关资历，需接受过相关专业培训，并需认真阅读安装使用说明书；
2. 请确认驱动器安装方式是户内使用还是户外使用，工作环境要求与产品规格书一致。安装使用环境要求不含腐蚀性气体、腐蚀液体；严禁将电源直接裸露安装，或裸露安装在 LED 灯具的散热器上，至少需要加一个防雨罩，防止线材与防水线圈老化进水
3. 确认驱动器是在规定的负载条件、负载特性下使用(详见驱动器 Datasheet)；
4. 安装步骤：
 - 1) 用万用表(或其它仪表)分别区分输入电网的 L 线(火线)和 N 线(零线)做出标识，再测试安全接地线的阻抗、电网电压符合要求确认无误后，断开输入电网供电；
 - 2) 用适用螺丝将驱动器牢固地固定在灯具架上；
 - 3) 将驱动器的输出 + 正极线接入灯具的输入 + 正极，驱动器的输出 - 负极线接入灯具的输入 - 负极；
 - 4) 将驱动器的交流输入侧的 GND 线(地线：绿色、黄绿色)接入安全接地线上；
 - 5) 将驱动器的交流输入 L 线接入输入电网保护开关后的 L 线(火线)接线端子上，驱动器的交流 N 线接入电网保护开关后的 N 线(零线)接线端子上；
 - 6) 在确认产品驱动器机械安装牢固并符合散热要求后，请核对驱动器各联线安装方式是否正确，对接线端子需进行抗氧化、防水处理，符合要求后再进行其它相关操作；
 - 7) 合上网电电源开关，如出现跳闸及驱动器不能正常工作现象请立即断开电网，进行故障原因排查，如确认为驱动器损坏时，请立即更换或者联系公司相关业务人员。

1. 驱动器需轻拿轻放，严禁提、拨输入、输出线，避免造成不必要的人身伤害及驱动器的损坏；
2. 有带接地需要的驱动器，产品安全接地需良好；
3. 严禁拆卸驱动器外壳。输入 AC 接线长度需大于 152mm(安规要求)；
4. 输入输出线、调光线严禁接反、交叉及短路。带调光驱动器的控制线严禁接触高压(不超过 24V)，严禁接反正、负(+/-)极性，接线方式请参照铭牌否则会损坏产品；
5. 供电电网与电源之间应加漏电流保护措施。当用户使用多个驱动器共用一个漏电保护开关时，请严格控制驱动器个数。选用漏电保护开关电容量时需留有足够余量，建议在 5 个驱动器以内共用 1 个 30mA 漏电保护开关。如产品工作中突然跳闸，请相关专业人员排查是否有其它漏电现象，确认故障原因后再采取针对措施。

四、驱动器质保说明

1. 在正常使用条件下，驱动器质保时间以出厂日期算起，在质保期内，驱动器发生故障，经本公司检验属于质量问题，公司负责维修或者替换相同规格的驱动器。
2. 下列情形之一者，驱动器不在质保范围：
 - 1) 不按说明书要求使用而损坏的驱动器；
 - 2) 不按照安装要求而导致电源内部进水的；
 - 3) 用户操作失误或者安装不当而损坏的驱动器；
 - 4) 因灯具的变更与驱动器不能配套使用的驱动器；
 - 5) 用户自行拆解驱动器外壳的驱动器；
 - 6) 外形严重损坏或变形的驱动器；
 - 7) 输入输出线自然损坏的驱动器(输入输出线受用户环境影响，属易损器件)；
 - 8) 机身流水号识别码被擦去或经涂改及破坏的驱动器；
 - 9) 不可抗拒的自然灾害而损坏的驱动器。
 - 10) 驱动器使用在高于驱动器本身所标称的使用环境要求而造成损坏。

三、安全注意事项

注：对此说明书有任何不理解的地方可向本公司相关人员咨询，本说明书最终解释权归英飞特电子(杭州)股份有限公司
发布实施日期：2019-03-27 ※公司秘密级文件，未经许可不得复印或携带出公司范围外※ YFT-WI-QC-028 版本：D

安装指南 - 提升驱动器防水性能

英飞特 IP67 驱动器设计用于复杂条件的户外应用环境, IP67 设计标准符合 IEC-60529 的防潮要求。

根据此标准, IP67 防水等级驱动电源必须能够承受 1 米水深及浸泡 30 分钟. 所有 Inventronics IP67 等级的驱动器均符合此标准。但是, 达到 IP67 等级不足以承受所有环境应用. IEC-60529 没有考虑湿度, 热循环, 空气污染物或紫外线损害的影响。总之, 现实世界的复杂应用环境通常比 IP67 要求更高。

驱动器的长期可靠性取决于所使用的安装方法。

最佳

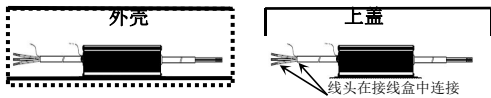


Figure 1. 最佳安装方式 - 有保护性的外壳或上盖

最佳安装方式

- 将驱动器安装在防水外壳内或至少安装在盖子下面, 以防止直接暴露在雨中或流动的水中
- 正确处理线材的剥皮镀锡部分和外皮:
 - 在防水接线盒中接线
 - 用防水连接器
- 保持线材平直或合适弯曲, 防止线材和护线圈之间有间隙而进水
- 灯具须有一定的开孔或其他形式的路径帮助驱动器排水, 防止灯腔内积水, 驱动器泡水。

注意: 系统热性能也应在设计和应用中考虑及评估。

可接受

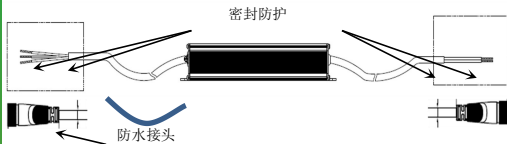


Figure 2. 可接受 - 线材向下弯曲, 低于驱动器

可接受的替代方法

- 水平安装驱动器
- 输入输出线要向下弯曲, 低于驱动器, 防止水流顺着线材流入电源内部

避免

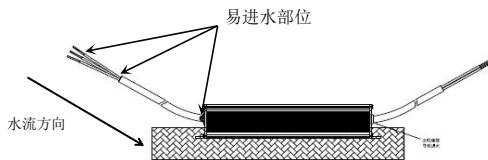


Figure 3. 不认可的 - 裸露 + 线材高于驱动器

要避免的安装方式

- 直接暴露在雨中或水中
- 输入输出线向上弯曲
- 输入输出线镀锡及剥皮部分直接暴露在潮湿环境中, 使水顺着铜线或线芯流入电源内部
- 驱动器周围积水, 泡水
- 垂直安装, 水顺着线材流入电源内部

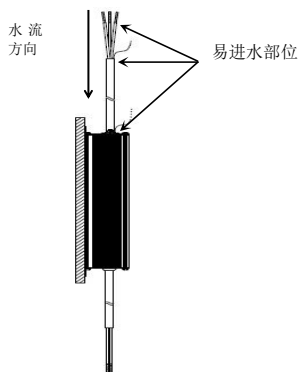


Figure 4. 不认可的 - 裸露 + 垂直安装

英飞特致力于与客户共同前行, 为各种严苛的应用开发最可靠的驱动器。如有任何意见, 问题或疑虑, 请通过以下网址与我们联系: <https://www.inventronics-co.com/technical-support/>。

Installation and Operation Manual of LED Driver

I. For a description of LED Driver features, please refer to the datasheet. Use the following table as a reference for the LED Driver wire leads:

Input Wire Type	Color	Polarity		Output Wire Type	Color	Polarity
American Safety Standard: UL level	Black	L (Live)		American Safety Standard: UL level	Red	+
	White	N (Neutral)			Black (Blue)	-
	Green	GND (Safety ground)		European Safety Standard: VDE CCC level	Brown	+
European Safety Standard: VDE CCC level	Brown	L (Live)			Blue	-
	Blue	N (Neutral)		Indian Version PVC BIS level	Red	+
	Yellow/Green	GND (Safety ground)			Black	-
Indian Version PVC BIS level	Red	L (Live)		Dimming control line	See nameplate	See nameplate
	Black	N (Neutral)				
	Yellow/Green	GND (Safety ground)				

Attention: Different driver profiles are judged based on the entity. The polarities of the LED Drivers should be checked based on the relevant identifications of LED Drivers' nameplate.

II. Installation Instructions:

- Power supplies must be installed by a qualified electrician who is familiar with the installation and operation manual.
- Ensure the installation of the power supply, either indoor or outdoor, properly complies with the driver s' specifications. Drivers should not be exposed to corrosive gas or liquids.
- Ensure drivers following the installation guideline for enhancing waterproof reliability in outdoor application, and refer to details from below link. ["Installation Guideline- Prevention of Moisture Ingress"](#)
- Ensure the drivers are used with the proper LED, LEP, or other specified electrical loads, temperature and other spec (with reference to the drivers' datasheet).
- Installation procedures:
 - Determine the L(Live) and N (neutral) wires of the main power using a multimeter or other instrument. Verify the impedance and voltage of the ground connection as normal, then disconnect the input power grid.
 - Install the drivers firmly onto the lamp bracket with matching screws.
 - Connected the positive '+' output of the driver to the DC positive '+' input of the lighting fixture. Connect the negative '-' output of the driver to the DC negative '-' input of the luminaire.
 - Connect the GND (Green, Green/Yellow) wire on the input side of the LED driver securely to ground.
 - Connect the L (Live) wire of the power main to the L (Live) wire of the driver. Connect the N (neutral) wire of the power main to the N (neutral) wire of the driver.
 - Ensure that all driver wire connections are correct after the product is installed and that heat dissipation is properly addressed within the fixture. Ensure the wiring connections are airtight and waterproof. Only after these requirements are sufficiently met can the driver be operated.
 - If any phenomenon occurs such as tripping or irregular operation, disconnect the power main and the connection to the luminaire before investigating the problem. If the driver is found to be defective, please replace it or contact the appropriate Inventronics' sales group for resolution.

III. Attention to Safety

- Please handle the drivers carefully. Do not lift or move the driver using the input or output wires to avoid personal injury and/or

product damage.

- A ground connection should be provided to the driver. The drivers' safety ground connection should be verified.
- Do not disassemble the driver in any way. The length of the input AC wire must exceed 152mm or 6 inches, which is required by Inventronics' Safety Department.
- Reverse connections, wire crosses, and short circuits are strictly prohibited on the input, output, and dimming wires. The dimming control wires cannot come into contact with voltages greater than 24VDC or be subject to reverse polarity connections without risk of damage to the driver.
- Leakage current protection measurement is recommended between the power main and the LED driver. Please limit the number of the drivers used when the end-user operates them with only one leakage circuit-breaker. Sufficient margin needs to be considered when an earth leakage circuit-breaker is chosen. It is recommended that no more than five drivers share one leakage circuit-breaker with a 30mA rating. If the drivers are tripped during operation, please consult a qualified professional to investigate whether there is other possible leakage. Leakage current measurements should be taken after the cause of failure is confirmed.

IV. Warranty Instructions

- Under normal circumstances, the driver warranty begins from the date of delivery from Inventronics. If a product has any failure during the warranty period, Inventronics will repair or replace the driver after the failure is confirmed as a true defect and do action through normal RMA process.
- Warranty is considered out-of-scope when one or more of the following situations occur:
 - The driver suffers damage by not following the instruction manual;
 - The driver suffers damage because of improper operation or improper assembly;
 - Improper application or integration with luminaire;
 - Disassembly of driver by the end-user;
 - Severe damage or deformation of the driver's appearance;
 - Damage to the driver's input or output wires;
 - Driver's identification codes or serial numbers erased, altered or damaged;
 - Damage to the driver caused by natural disasters.

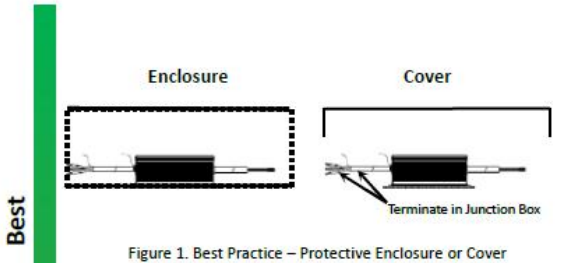
Remarks: The final interpretation of this manual rests with Inventronics (Hangzhou), Inc. Please consult the appropriate personnel within Inventronics for assistance in understanding this manual.

Installation Guidelines—Prevention of Moisture Ingress for Outdoor Applications

Inventronics “IP67 rated” drivers are designed to take on the additional electrical, thermal, and moisture related challenges of the outdoor world. The IP67 design standard conforms to IEC-60529 for moisture ingress protection.

Per this standard, IP67 rated drivers must withstand immersion in 1 meter of water for 30 minutes. All Inventronics IP67 rated drivers meet this standard. However, meeting IP67 is not sufficient to withstand all environmental applications. IEC-60529 does not account for the effects of humidity, thermal cycling, airborne pollutants, or UV damage. In summary, real world applications are frequently more demanding than IP67.

The long-term reliability of the driver is dependent on the installation method used.



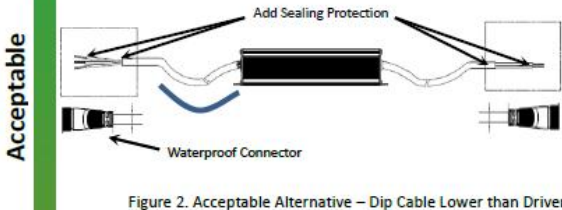
Best

Figure 1. Best Practice – Protective Enclosure or Cover

Best Practice

- Mount driver in waterproof enclosure or at least beneath a cover to prevent direct exposure to rain or moving water
- Properly terminate wire leads and cable jacket:
 - In a waterproof junction box
 - With waterproof connectors
- Keep cables straight or at least provide adequate strain relief to prevent gaps between the cables and grommet
- Provide a drainage system with holes or at least a path to move water away from the driver

Note: Consider thermal performance for every design and application.



Acceptable

Figure 2. Acceptable Alternative – Dip Cable Lower than Driver

Acceptable Alternative Method

- Mount driver horizontally
- Route cable to dip or loop lower than driver to prevent water from flowing to junction areas

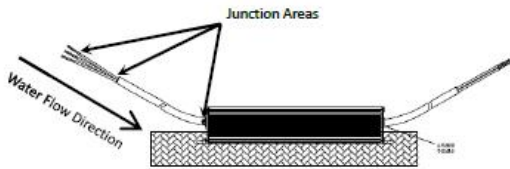


Figure 3. Not Recommended – Exposed + Cable Above Driver

Things to Avoid

- Direct exposure to rain or moving water
- Cables bent or looped above driver
- Wire leads or end of cable jacket directly exposed to moisture, enabling moisture to eventually wick into driver
- Moisture build up, or pooling, around driver
- Vertical mounting, enabling water to collect at junction areas

Avoid

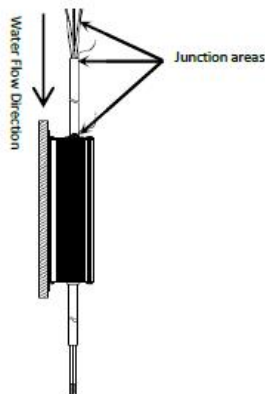


Figure 4. Not Recommended – Exposed + Vertical Mounting

Inventronics is committed to concurrent engineering with our customers to develop the world’s most reliable drivers for the toughest applications. Please contact us with any comments, questions, or concerns at:

<https://www.inventronics-co.com/technical-support/>.