LTECH

Triac/ELV

Intelligent LED Driver

- Adopt SAMSUNG/COVESTRO V0 flame resistant polycarbonate protective housings with small size and light weight.
- The clamshell design and screwless type for strain-relief, tensile strength of wires complies with the 0.5-1.5mm²wire diameter 60N tensile test, and complies with the tensile test standard GB7000.1-2015/IEC60598-1: 2014.
- Soft-on and fade-in dimming function enhances your visual comfort.
- T-PWM™dimming technology allows continuous and flicker-free images under high-speed shooting.
- Dimming from 0~100%, down to 0.01%.
- 0-100% flicker-free dimming with high frequency exemption level.
- Innovative thermal management technology protects the power life intelligently.
- Multi-current & wide voltage, suitable for different power LEDs.
- Class 2 LED driver, full protective plastic housing.
- Comply with Safety Extra Low Voltage standard.
- Overvoltage, overload, short circuit protection and automatic recovery.
- Suitable for indoor light applications of Ⅰ/Ⅱ/Ⅲtype.
- Up to 50000-hour life time.
- 5 -year warranty (Rubycon capacitor).

T-PWM™
Super depth dimming technology

Flicker-free
IEEE 1789

Dimmable:
0.01-100%

(The certification icons represent on-going certification applications only, and final certification qualification is subject to actual products.)

Triac ELV | T-PWM Super depth dimming technology | Flicker-free IEEE 1789 | Multiple Current | Short circuit protection | Overload protection | Overheat protection

Technical Specs

Model		SE-9-350-700-G1T		SE-12-100-400-G1T	SE-15-350-700-G1T
OUTPUT	Output Voltage	2-12Vdc		9-42Vdc	9-42Vdc
	Max Output Voltage	≤22V		≤50V	≤50V
	Output Current	350-700mA		100-400mA	350-700mA
	Load Power Range	0.7W-8.4W		0.9W-12W	3.15W-15W
	Strobe Level	No visible flicker/High frequency exemption level			
	Dimming Range	0~100%, down to 0.01%			
	LF Current Ripple(<120Hz)	<3%			
	Current Accuracy	±5%			
	Ripple & Noise	≤4V			
	PWM Frequency	3600Hz			
INPUT	Dimming Interface	Triac leading edge/ELV trailing edge			
	Input Voltage Range	220-240Vac			
	Frequency	50/60Hz			
	Input Current	≤0.08A/230Vac		≤0.09A/230Vac	≤0.1A/230Vac
	Power Factor	PF>0.9/230Vac (Foll load)			PF>0.95/230Vac (Foll load)
	THD	THD<15%/230Vac (Foll load)			THD<10%/230Vac (Foll load)
	Efficiency	>70%@700mA		>78%@300mA	>80%@350mA
	Inrush Current (typ.)	Cold start10A@230Vac (Test twidth=200 us tested under50% Ipeak)			
	Anti Surge	L-N: 1kV			
	Leakage Current	<0.5mA/230Vac			
ENVIRONMENT	Working Temperature	ta: -20 ~ 45°C tc: 90°C			
	Working Humidity	20 ~ 95%RH, non-condensing			
	Storage Temperature, Humidity	-40 ~ 80°C, 10 ~ 95%RH			
	Temperature Coefficient	±0.03%/°C (-20°C ~ 45°C)			
	Vibration	10-500HZ, 2G 12min/1cycle, 72 min for X, Y and Z axes respectively.			
PROTECTION	Overload Protection	Shut down the output and recover automatically once it exceeds 1.02-1.35 times of the rated power.			
	Overheat Protection	Intelligently adjust or turn off the current output if the PCB temperature ≥110°C. When the PCB temperature <90°C, automatically recover normal output.			
	Short Circuit Protection	When short circuit occurs, shut down the output and recover automatically.			
SAFETY & EMC	Withstand Voltage	I/P-O/P:3750Vac			
	Insulation Resistance	I/P-O/P:500VdC/25°C/70%RH≥100MΩ			
	Safety Standards	CCC	China	GB19510.1, GB19510.14	
		TUV	Germany	EN61347-1, EN61347-2-13, EN62493	
		CE	European Union	EN61347-1, EN61347-2-13, EN62384	
		KC	Korea	KC61347-1, KC61347-2-13	
		RCM	Australia	AS61347-1, AS61347-2-13	
		ENEC	Europe	EN61347-1, EN61347-2-13, EN62384	
		CB	CB member states	IEC61347-1, IEC61347-2-13	
		EAC	Russia	IEC61347-1, IEC61347-2-13	
	EMC Emission	CCC	China	GB/T17743, GB17625.1	
		CE	European Union	EN55015, EN61000-3-2, EN61000-3-3, EN61547	
		KC	Korea	KN15, KN61547	
		RCM	Australia	EN55015, EN61000-3-2, EN61000-3-3, EN61547	
		EAC	Russia	IEC62493, IEC61547, EH55015	
	EMC Immunity	EN61000-4-2,3,4,5,6,8,11, EN61547			
	Strobe Test Standard	IEEE 1789			
OTHERS	Dimensions	111×35×20mm(L×W×H)			
	Packing	122×36×22mm(L×W×H)			
	Weight(G.W.)	77.5g±10g			

LED Current Selection

DIPswitch

	DIP Switch								
SE-9-350-700-G1T	Output Current	350mA	400mA	450mA	500mA	550mA	600mA	650mA	700mA
	Output Voltage	2-12V	2-12V	2-12V	2-12V	2-12V	2-12V	2-12V	2-12V
	Output Power	0.7-4.2W	0.8-4.8W	0.9-5.4W	1-6W	1.1-6.6W	1.2-7.2W	1.3-7.8W	1.4-8.4W

ON OFF

	DIP Switch							
SE-12-100-400-G1T	Output Current	100mA	150mA	200mA	250mA	300mA	350mA	400mA
	Output Voltage	9-42V	9-42V	9-42V	9-42V	9-40V	9-34V	9-30V
	Output Power	0.9-4.2W	1.35-6.3W	1.8-8.4W	2.25-10.5W	2.7-12W	3.15-11.9W	3.6-12W

ON OFF

	DIP Switch								
SE-15-350-700-G1T	Output Current	350mA	400mA	450mA	500mA	550mA	600mA	650mA	700mA
	Output Voltage	9-42V	9-37.5V	9-33V	9-30V	9-27V	9-25V	9-23V	9-21.5V
	Output Power	3.15-14.7W	3.6-15W	4.05-14.85W	4.5-15W	4.95-14.85W	5.4-15W	5.85-14.95W	6.3-15.05W

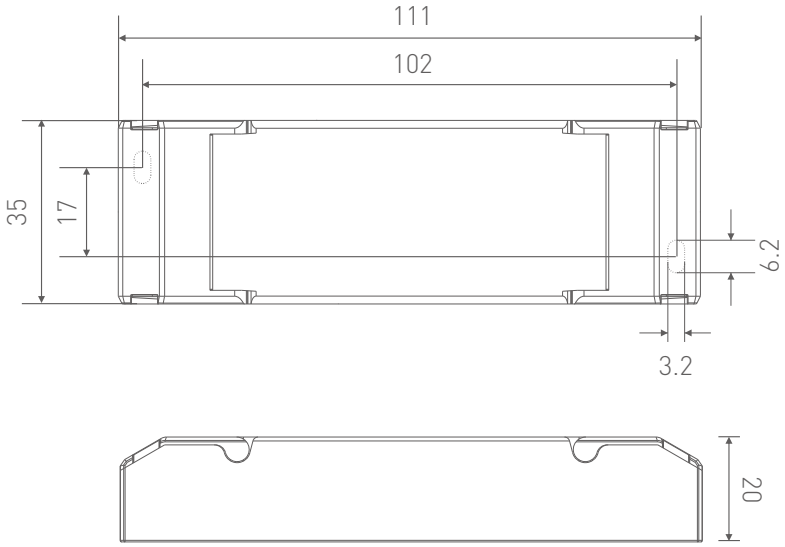
ON OFF

★ After DIP switches set the current, power off and then power on to make the new current effective.

★ E.g. LED 3V/pcs: 9-42V can power 3-14pcs LEDs in series, 9-21.5V can power 3-7pcs LEDs, the max quantity of LEDs in series will be subject to the actual voltage of LED.

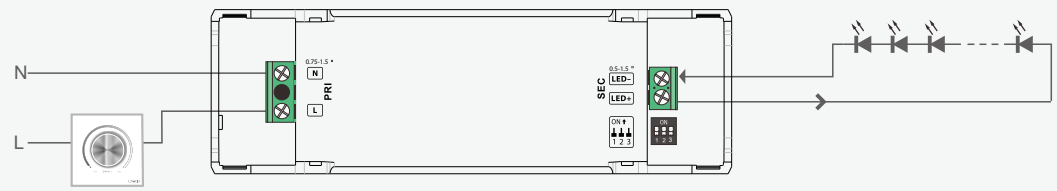
Product Size

Unit: mm



Wiring Diagram

Triac/ELV Connection Mode



Triac/ELV dimmer
0-100% dimming range

Wire diameter:0.75-1.5㎟(20-16AWG)
Strip length:4.5mm-5mm

Wire diameter:0.5-1.5 ㎟(20-16AWG)
Strip length:4.5mm-5mm

Protective Housing Drawings

1.Pry up the protective housing in the side plate position with a tool.

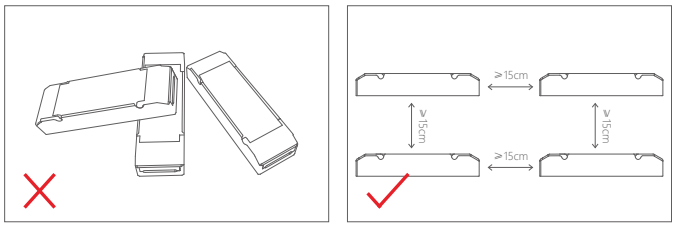
2.Pry up the side edge of the tension plate with a tool to remove it.

3.Use a screwdriver to connect electrical wires as wiring diagram shows.

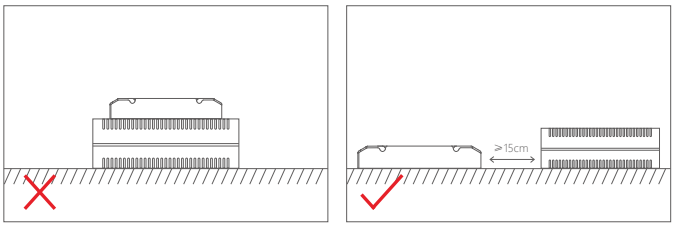
4.Press down the tension plate to fix the electrical wires.

5.Close the protective housing.

Installation Precautions

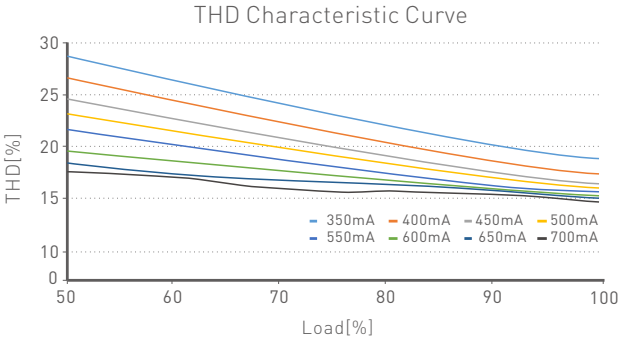


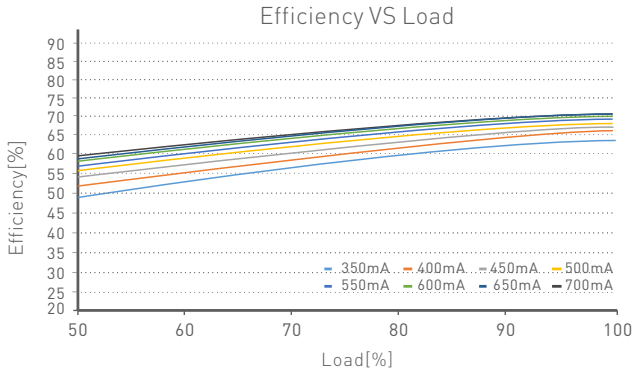
Please do not stack the products. The distance between two products should be≥15cm so as not to affect heat dissipation and the lifespan of the products.

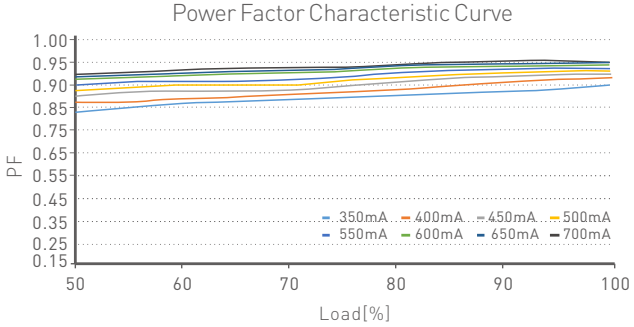


Please not place the products on LED drivers. The distance between the product and the driver should be ≥15cm so as not to affect heat dissipation and shorten the lifespan of the products.

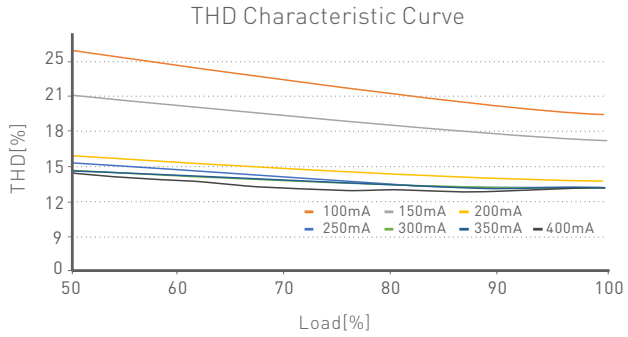
Relationship Diagrams

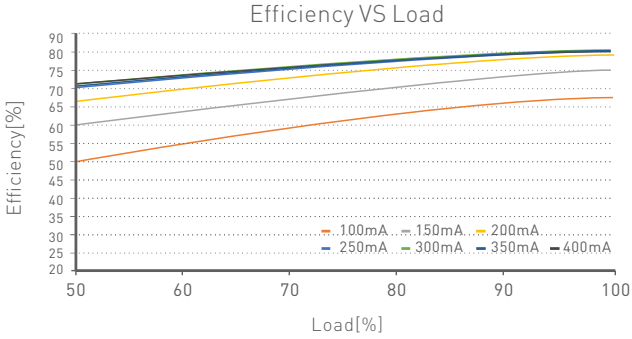


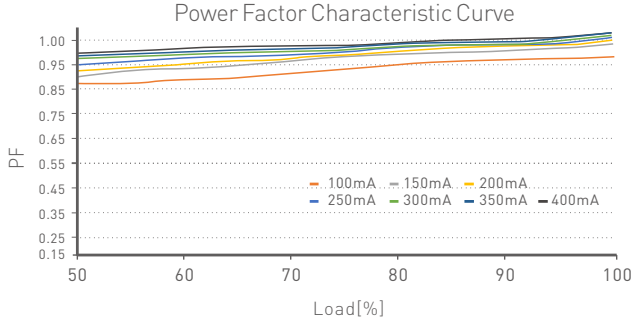




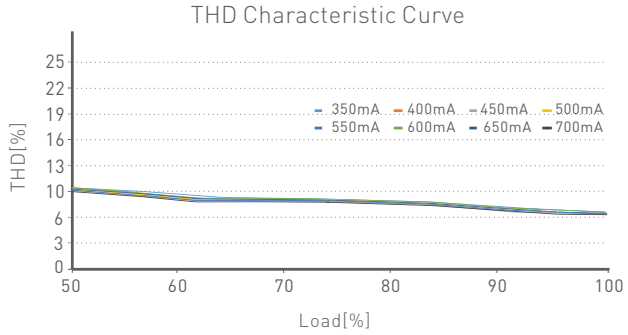
SE-9-350-700-G1T

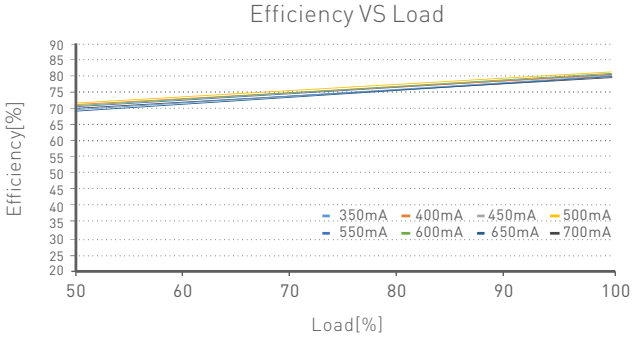


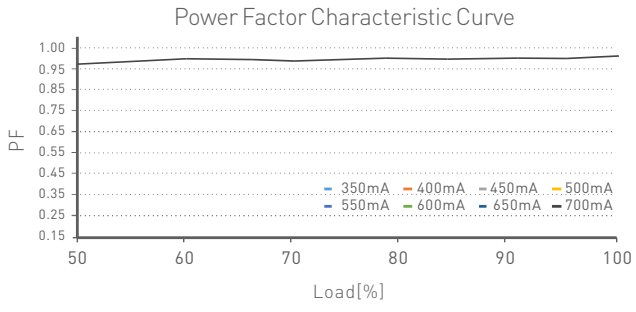




SE-12-100-400-G1T





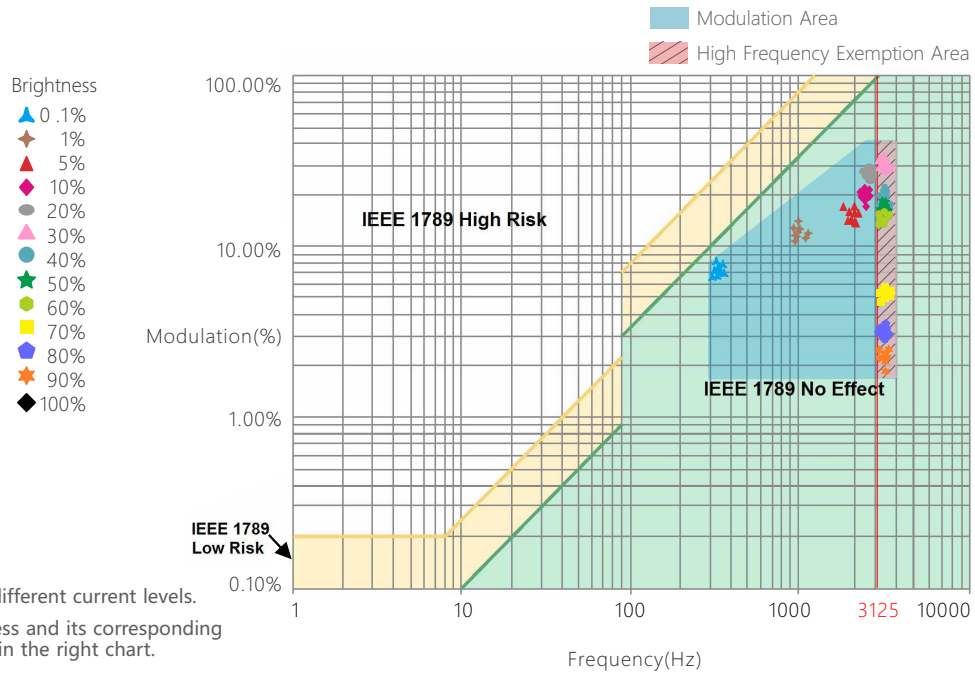


SE-15-350-700-G1T

Flicker Test Table

IEEE 1789

Limit Value of Modulation in Low Risk Areas	
Waveform frequency of Optical output	Limit value (%)
$f \leq 8Hz$	0.2
$8Hz < f \leq 90Hz$	$0.025 \times f$
$90Hz < f \leq 1250Hz$	$0.08 \times f$
$f > 1250Hz$	Exemption assessment
Limit Value of Modulation in No Effect Areas	
Waveform frequency of Optical output	Limit value (%)
$f \leq 10Hz$	0.1
$10Hz < f \leq 90Hz$	$0.01 \times f$
$90Hz < f \leq 3125Hz$	$(0.08/2.5) \times f$
$f > 3125Hz$	Exemption assessment (High frequency exemption)



Marks in the right chart are tested results of different current levels.

The output frequency is 0Hz in 100% brightness and its corresponding modulation is 0%, which could not be shown in the right chart.

Attentions

- Products shall be installed by qualified professionals.
- LTECH products are non-waterproof (special models excepted). Please avoid the sun and rain. When installed outdoors, please ensure it is mounted in a water proof enclosure.
- Good heat dissipation will extend the working life of products. Please ensure good ventilation.
- Please check if the working voltage used complies with the parameter requirements of products.
- The diameter of wire used must be able to load the light fixtures you connect and ensure the firm wiring.
- Before you power on products, please make sure all the wiring is correct in case of incorrect connection that causes damage to light fixtures.
- If a fault occurs, please do not attempt to fix products by yourself. If you have any question, please contact your suppliers.

✻ This manual is subject to changes without further notice. Product functions depend on the goods. Please feel free to contact our official distributors if you have any question.

Warranty Agreement

- Warranty periods from the date of delivery : 5 years.
- Free repair or replacement services for quality problems are provided within warranty periods.

Warranty exclusions below:

- Beyond warranty periods.
- Any artificial damage caused by high voltage, overload, or improper operations.
- Products with severe physical damage.
- Damage caused by natural disasters and force majeure.
- Warranty labels and barcodes have been damaged.
- No any contract signed by LTECH.

1. Repair or replacement provided is the only remedy for customers. LTECH is not liable for any incidental or consequential damage unless it is within the law.
2. LTECH has the right to amend or adjust the terms of this warranty, and release in written form shall prevail.

Update Log

Version	Updated Time	Update Content	Updated by
A0	2020.02.21	Original version	Xu Shujun
A1	2021.04.01	Added technical specifications, LED current level selection and relationship diagrams. Updated the protective housing drawings.	Xu Shujun
A2	2021.12.24	Updated the silkscreen on the product.	Xu Shujun

LTECH

Triac/ELV

LED 智能调光驱动器

- 体积小、重量轻；采用SAMSUNG/COVESTRO PC V0阻燃保护壳
- 免螺丝压线翻盖设计，压线符合0.5-1.5平方线径60N拉力测试，符合拉力测试标准GB7000.1-2015/IEC 60598-1:2014
- Triac前沿，ELV后沿切相调光
- 带软启动渐亮功能，让人眼视觉更舒服
- T-PWM™数字调光技术，呈现完美的视觉感受
- 调光范围：0~100%，LED从0.01%开始调光
- 0~100%全程无频闪，高级豁免考核级别
- 创新的热管理技术，智能保护电源寿命
- 多电流、宽电压，适用不同功率的LED
- Class 2电源，全防护塑胶外壳
- 符合SELV安全特低电压标准
- 过载、过温、短路保护，可自动恢复
- 适合室内Ⅰ、Ⅱ、Ⅲ类灯具应用
- 高达50,000小时的额定寿命
- 5年保修期（采用红宝石电容）

T-PWM™
超深度调光技术

无频闪
IEEE 1789
高频豁免考核级别

Dimmable:
0.01-100%

（认证图标仅代表产品正在进行这一系列的认证申请，认证资质以产品实物为准）

Triac ELV | T-PWM 超深度调光技术 | 无频闪 IEEE 1789 | 多电流 | 短路保护 | 过载保护 | 过温保护

技术参数

型号		SE-9-350-700-G1T	SE-12-100-400-G1T	SE-15-350-700-G1T
输出	输出电压	2-12Vdc	9-42Vdc	9-42Vdc
	最大输出电压	≤22V	≤50V	≤50V
	工作电流范围	350-700mA	100-400mA	350-700mA
	负载功率范围	0.7W-8.4W	0.9W-12W	3.15W-15W
	频闪级别	无可视频闪/高频豁免考核级别		
	调光范围	0~100%，调光深度0.01%		
	低频电流纹波(<120Hz)	<3%		
	电流精度	±5%		
	纹波与噪声	≤4V		
	PWM频率	3600Hz		
输入	调光接口	Triac前沿/ELV后沿		
	输入电压	220-240Vac		
	频率范围	50/60Hz		
	输入电流	≤0.08A/230Vac	≤0.09A/230Vac	≤0.1A/230Vac
	功率因数	PF>0.9/230Vac (满载)		PF>0.95/230Vac (满载)
	谐波THD	THD<15%/230Vac (满载)		THD<10%/230Vac (满载)
	效率 (Typ)	>70%@700mA	>78%@300mA	>80%@350mA
	浪涌电流	冷启动10A(在50% Ipeak下测试twidth=200us)/230Vac		
	抗浪涌	L-N: 1kV		
	漏电流	<0.5mA/230Vac		
环境	工作温度	ta: -20 ~ 45°C tc: 90°C		
	工作湿度	20 ~ 95%RH, 无冷凝		
	储存温度,湿度	-40 ~ 80°C, 10 ~ 95%RH		
	温度系数	±0.03%/°C (-20°C ~ 45°C)		
	耐振动	10-500HZ, 2G 12分钟/周期，X,Y,Z轴各72分钟。		
保护	过载保护	负载超过额定功率≥1.02-1.35倍时自动保护，减轻负载自动恢复。		
	过温保护	根据PCB温度超标情况(≥110°C)，智能调节电流输出或关闭，后可自动恢复。PCB温度<90°C时，自动恢复正常输出。		
	短路保护	输出线路短路自动关闭，可自动恢复。		
安规和电磁规格	耐压	输入对输出：3750Vac		
	绝缘阻抗	输入对输出：100MΩ/500VDC/25°C/70%RH		
	安全规范	CCC 中国 GB19510.1，GB19510.14		
		TUV 德国 EN61347-1，EN61347-2-13，EN62493		
		CE 欧盟 EN61347-1，EN61347-2-13，EN62384		
		KC 韩国 KC61347-1，KC61347-2-13		
		RCM 澳洲 AS61347-1，AS61347-2-13		
		ENEC 欧洲 EN61347-1，EN61347-2-13，EN62384		
		CB CB成员国 IEC61347-1，IEC61347-2-13		
		EAC 俄罗斯 IEC61347-1，IEC61347-2-13		
	电磁兼容发射	CCC 中国 GB/T17743，GB17625.1		
		CE 欧盟 EN55015，EN61000-3-2，EN61000-3-3，EN61547		
		KC 韩国 KN15，KN61547		
		RCM 澳洲 EN55015，EN61000-3-2，EN61000-3-3，EN61547		
		EAC 俄罗斯 IEC62493，IEC61547，EH55015		
	电磁兼容抗扰度	EN6100-4-2,3,4,5,6,8,11, EN61547		
	频闪测试	IEEE 1789		
其他	产品尺寸	111×35×20mm(L×W×H)		
	包装尺寸	122×36×22mm(L×W×H)		
	产品重量	77.5g±10g		

LED电流选择

DIP 开关

	DIP开关								
SE-9-350-700-G1T	电流输出	350mA	400mA	450mA	500mA	550mA	600mA	650mA	700mA
	电压输出	2-12V	2-12V	2-12V	2-12V	2-12V	2-12V	2-12V	2-12V
	功率输出	0.7-4.2W	0.8-4.8W	0.9-5.4W	1-6W	1.1-6.6W	1.2-7.2W	1.3-7.8W	1.4-8.4W

	DIP开关							
SE-12-100-400-G1T	电流输出	100mA	150mA	200mA	250mA	300mA	350mA	400mA
	电压输出	9-42V	9-42V	9-42V	9-42V	9-40V	9-34V	9-30V
	功率输出	0.9-4.2W	1.35-6.3W	1.8-8.4W	2.25-10.5W	2.7-12W	3.15-11.9W	3.6-12W

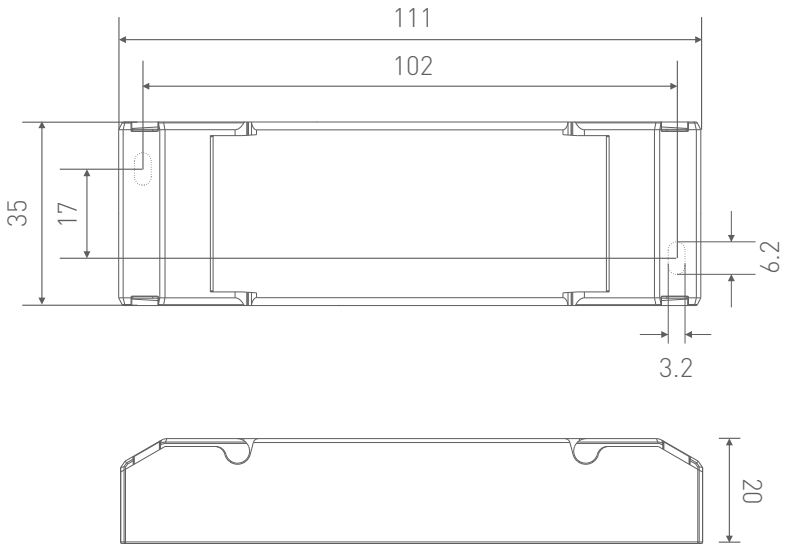
	DIP开关								
SE-15-350-700-G1T	电流输出	350mA	400mA	450mA	500mA	550mA	600mA	650mA	700mA
	电压输出	9-42V	9-37.5V	9-33V	9-30V	9-27V	9-25V	9-23V	9-21.5V
	功率输出	3.15-14.7W	3.6-15W	4.05-14.85W	4.5-15W	4.95-14.85W	5.4-15W	5.85-14.95W	6.3-15.05W

ON OFF

* DIP开关设置不同的电流后，需要断电后再通电，这样新设置的电流才有效。
* 假设LED的电压是3V/颗：电源9-42V的输出电压范围可串联3-14颗LED，9-21.5V的输出电压范围可串联3-7颗LED， 最大串联数量以LED实际电压为准。

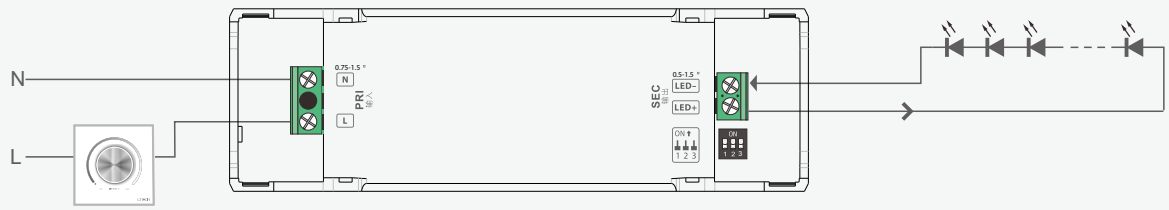
尺寸图

单位：mm



连线图

Triac/ELV 连接方式



Triac前沿/ELV后沿调光器
0~100%调光

线径：0.75-1.5㎟(22-16AWG)
剥线长度：4.5mm-5mm

线径：0.5-1.5㎟(22-16AWG)
剥线长度：4.5mm-5mm

保护盖应用图

1.在侧板使用工具撬起保护盖。

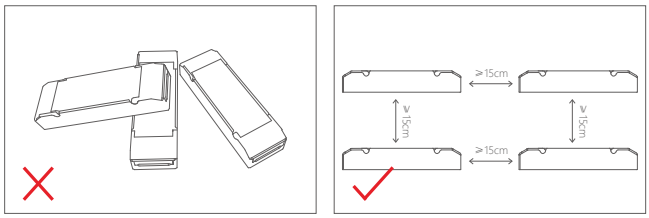
2.使用工具撬起压线板侧边即可拆下。

3.使用螺丝批按照接线图接线。

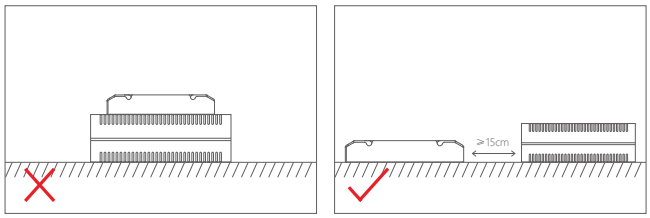
4.向下推压线板，可固定线。

5.合上保护盖。

安装注意事项

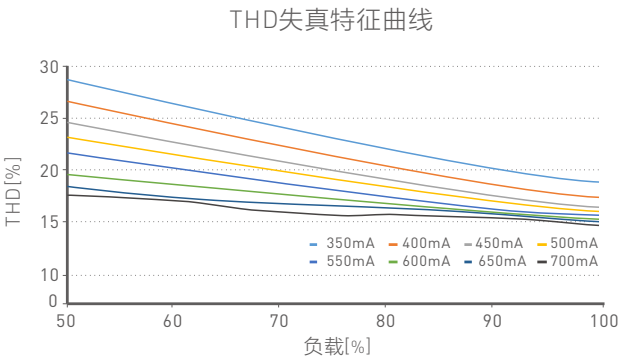


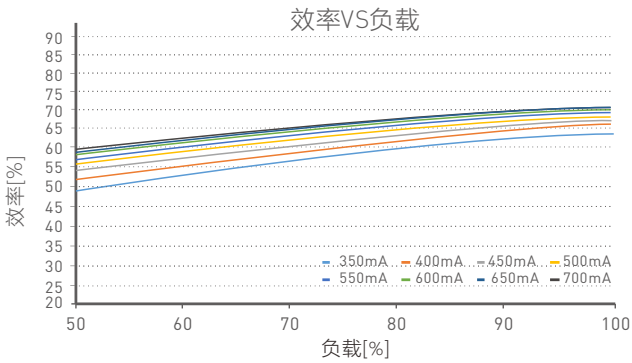
请勿将产品堆叠摆放，产品与产品间隔距离应≥15cm，避免影响产品散热和使用寿命。

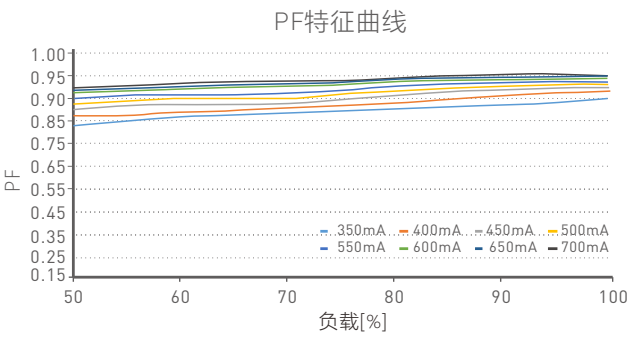


请勿将产品置于电源上方，与电源间隔距离应≥15cm，避免影响产品散热而减少使用寿命。

关系图表

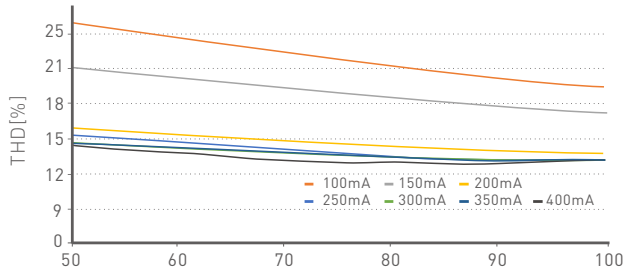




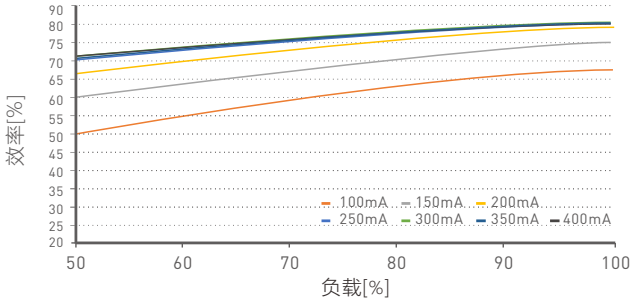


SE-9-350-700-G1T

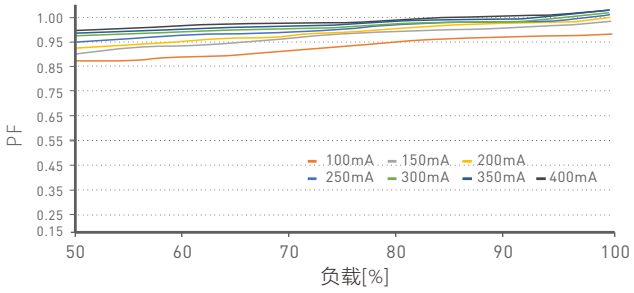
THD失真特征曲线



效率VS负载

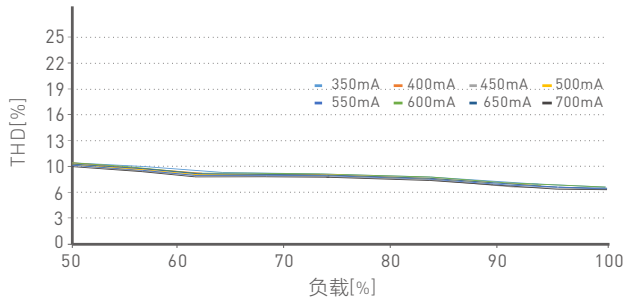


PF特征曲线

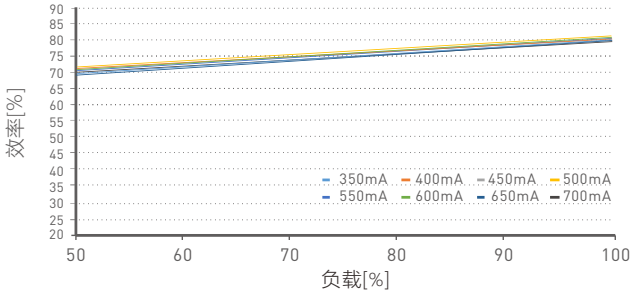


SE-12-100-400-G1T

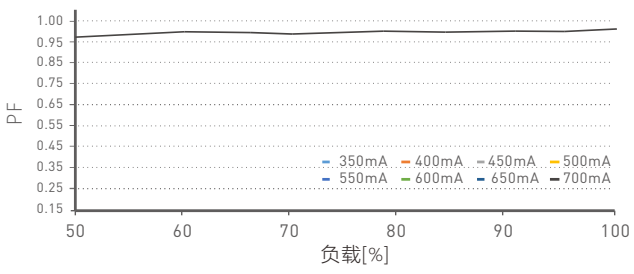
THD失真特征曲线



效率VS负载



PF特征曲线



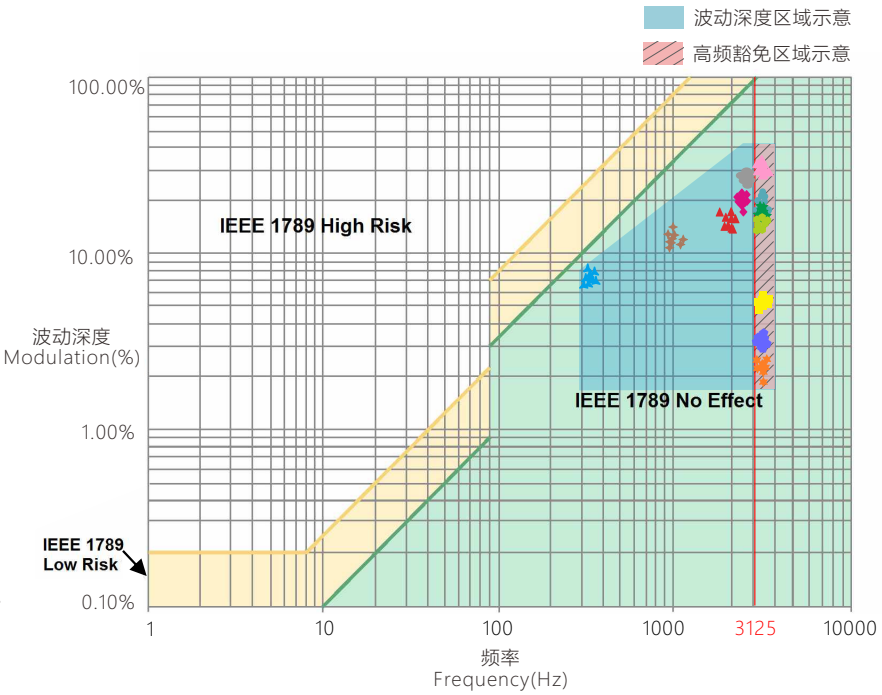
SE-15-350-700-G1T

频闪测试表

IEEE 1789

低风险区域（Low Risk）的波动深度（Modulation）限值	
光输出波形频率 *f*	限值（%）
f ≤ 8Hz	0.2
8Hz < *f* ≤ 90Hz	0.025 × *f*
90Hz < *f* ≤ 1250Hz	0.08 × *f*
f > 1250Hz	免除考核
无风险区域（No Effect）的波动深度（Modulation）限值	
光输出波形频率 *f*	限值（%）
f ≤ 10Hz	0.1
10Hz < *f* ≤ 90Hz	0.01 × *f*
90Hz < *f* ≤ 3125Hz	(0.08/2.5) × *f*
f > 3125Hz	免除考核（高频豁免）

亮度
0.1%
1%
5%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%



右图标识为不同电流档的测试结果。

100%亮度时输出频率为0Hz，对应波动深度为0%，无法在右图中示意。

注意事项

- 请由具有专业资格的人员进行调试安装。
- 雷特产品（专有型号除外）不能防水，需避免日晒雨淋，如安装在户外，请用防水箱。
- 良好的散热条件会延长产品的使用寿命，请把产品安装在通风良好的环境。
- 请检查使用的工作电压是否符合产品的参数要求。
- 使用的电线直径大小必须能足够负载连接的LED灯具，并确保接线牢固。
- 通电调试前，应确保所有接线正确，以避免因接线错误而导致灯具损坏。
- 如果发生故障，请勿私自维修；如果有疑问，请联系供应商。

✻ 本说明书的内容如有变更，恕不另行通知。若内容与您使用的功能有所不同，则以实物为准。如有疑问，请与供应商联系。

保修条例

- 自出厂之日起保修服务期为5年。
- 在保修服务期内出现产品质量问题雷特将给予免费修理或更换服务。

非保修条例：

属下列情况不在免费保修或更换服务范围之内：

- 已经超出保修服务期；
- 过高电压、超负载、操作不当等人为造成的损坏；
- 产品外形严重损坏或变形；
- 自然灾害以及人力不可抗拒原因造成的损坏；
- 产品保修标签和产品唯一条形码损坏；
- 无雷特签订的合同或发票凭证。

1. 修理或更换是雷特对客户的唯一补救措施。雷特不承担任何附带引起的损害赔偿责任，除非在适用法律范围之内。
2. 雷特享有修正或调整本保修条款的权利，并以书面形式发布为准。

更新日志

版本	更改日期	更改内容	更改人
A0	2021.02.21	正稿。	许淑钧
A1	2021.04.01	增加技术参数、电流选择图和关系图表的内容。更新保护盖应用图。	许淑钧
A2	2021.12.24	修改产品丝印。	许淑钧