LTECH

TD-10-100-450-G1TS
TD-10-350-700-G1TS
TD-10-650-1000-G1TS

Triac/ELV

Intelligent LED Driver (Constant Current)

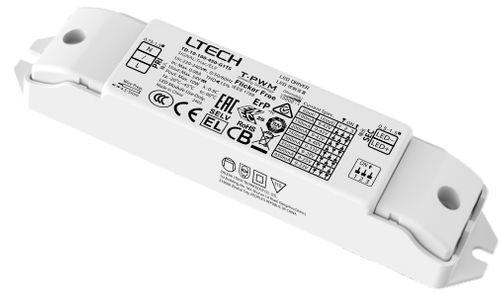
- Small size and light weight.The housing is made from V0 flame retardant PC materials from SAMSUNG/COVESTRO.
- Support Leading edge(Triac), Trailing edge(ELV).
- With soft-on and fade-in dimming function, enhancing your visual comfort.
- T-PWM™ dimming technology allows continuous and flicker-free images under high-speed photography.
- Dimming from 0~100%, down to 0.01%.
- The whole dimming process is flicker-free with high frequency exemption level.
- Multiple current levels and wide voltage range. Suitable for different power of LEDs.
- Class 2 LED driver, Safety Extra Low Voltage (SELV).
- Innovative thermal management technology intelligently protects the life of the LED driver.
- Overheat, overload, short circuit protection and automatic recovery.
- Suitable for ClassⅠ/Ⅱ/Ⅲ indoor light fixtures.
- Up to 50,000-hour life time.
- 5-year warranty (Rubycon capacitor).

0~100% Diming

T-PWM™ Dimming Technology

Flicker Free
IEEE 1789

Dimmable:
10000 : 1



The certification icon represents on-going certification applications only, and final certification qualification is subject to actual products.

Triac ELV | T-PWM Dimming Technology | Flicker Free IEEE 1789 | Multiple Current | Short Circuit Protection | Over Load Protection | Overheat Protection

Technical Specs

Model		TD-10-100-450-G1TS	TD-10-350-700-G1TS	TD-10-650-1000-G1TS
Features	Output Type	Constant Current		
	Dimming Interface	Triac/ELV		
	Output Feature	Isolation		
	Protection Grade	IP20		
	Insulation Grade	Class II (Suitable for class I/ II /III light fixtures)		
OUTPUT	Output Voltage	≤54Vdc	≤35Vdc	≤22Vdc
	Output Voltage Range	9-42Vdc	9-24Vdc	2-12Vdc
	Output Current	100-450mA	350-700mA	650-1000mA
	Output Power	Max. 10W		
	Output Power Range	0.9-10W	3.15-10W	1.3-10W
	Dimming Range	0~100%, down to 0.01%		
	LF Current Ripple	<3%		
	Current Accuracy	±5%		
	PWM Frequency	≤3600Hz		
INPUT	DC Voltage Range	200-280Vdc (Dimming is not available)		
	AC Voltage Range	220-240Vac		
	Rated Voltage	230Vac		
	Frequency	0/50/60Hz		
	Input Current	≤0.08A/230Vac		≤0.12A/230Vac
	Power Factor	PF>0.9/230Vac, at full load		
	Efficiency (Typ.)	THD<15%@230Vac, at full load		THD<18%@230Vac, at full load
	Efficiency (Typ.)	>78%@250mA	>76%@400mA	>75%@900mA
	Inrush Current	Cold start 10A@230Vac (Test twidth=300us tested under 50% Ipeak)		
	Anti Surge	L-N: 1KV		
	Leakage Current	Max. 0.5mA		
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 (-20~45°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 ofthe 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: 100MΩ/500VDC/25°C/70%RH		
	Safety Standards	CCC — China	GB 19510.1, GB 19510.14	
		CE — European Union	EN 61347-1, EN 61347-2-13, EN 62493	
		KC — Korea	KC 61347-1, KC 61347-2-13	
		TUV — Germany	EN 61347-1, EN 61347-2-13, EN 62493	
		ENEC — Europe	EN 61347-1, EN 61347-2-13, EN 62384	
		CB — CB Member States	IEC 61347-1, IEC 61347-2-13	
		RCM — Australia	AS/NZS 61347.1, AS 61347.2.13	
		BIS — India	IS 15885 (PART 2/SEC 13)	
		EAC — Russia	IEC 61347-1, IEC 61347-2-13	
	EMC Emission	CCC — China	GB/T 17743, GB 17625.1	
		CE — European Union	EN IEC 55015, EN IEC 61000-3-2, EN 61000-3-3	
		KC — Korea	KS C 9815, KS C 9547	
		RCM — Australia	EN IEC 55015, EN IEC 61000-3-2, EN 61000-3-3	
		EAC — Russia	IEC 62493, IEC 61547, EH 55015, IEC 61000-3-2, IEC 61000-3-3	
	EMC Immunity	EN 61000-4-2,3,4,5,6,8,11, EN 61547		
ErP	Power Consumption	Standby power consumption	No standby mode	
		Networked standby	No networked standby mode (No Phase-cut signal, no power consumption)	
		No-load power consumption	Without no-load mode	
	Flicker/Stroboscopic Effect	IEEE 1789	Meet IEEE 1789 standard/High frequency exemption level	
		CIE SVM	Pst LM≤1.0, SVM≤0.4	
	DF	Phase factor	DF≥0.9	
OTHERS	Life Time	50000 hours		
	Warranty	5 years		

LED Current Selection

8 current levels are optional by DIP switch setting

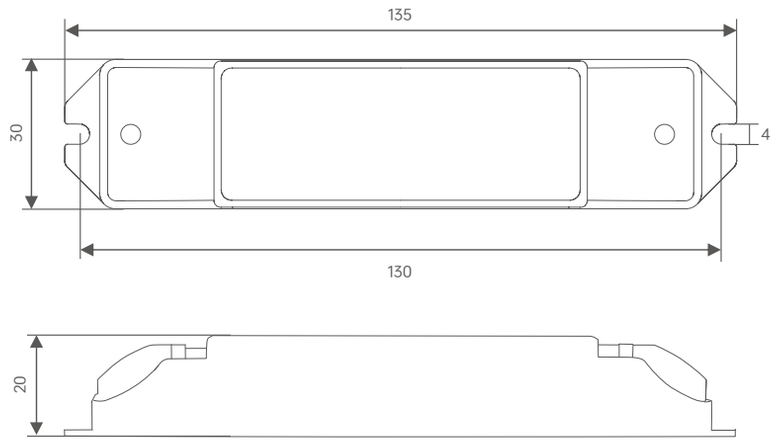
DIP Switch									
TD-10-100-450-G1TS	Output Current	100mA	150mA	200mA	250mA	300mA	350mA	400mA	450mA
	Output Voltage	9-42V	9-42V	9-42V	9-40V	9-33V	9-28V	9-25V	9-22V
	Output Power	0.9-4.2W	1.4-6.3W	1.8-8.4W	2.3-10W	2.7-9.9W	3.2-9.8W	3.6-10W	4.1-9.9W
TD-10-350-700-G1TS	Output Current	350mA	400mA	450mA	500mA	550mA	600mA	650mA	700mA
	Output Voltage	9-24V	9-24V	9-22V	9-20V	9-18V	9-16V	9-15V	9-14V
	Output Power	3.15-8.4W	3.6-9.6W	4.05-9.9W	4.5-10W	4.95-9.9W	5.4-9.6W	5.85-9.8W	6.3-9.8W
TD-10-650-1000-G1TS	Output Current	650mA	700mA	750mA	800mA	850mA	900mA	950mA	1000mA
	Output Voltage	2-12V	2-12V	2-12V	2-12V	2-12V	2-12V	2-12V	2-12V
	Output Power	1.3-7.8W	0.4-8.4W	1.5-9W	1.6-9.6W	1.7-9.35W	1.8-9.9W	1.9-9.5W	2-10W

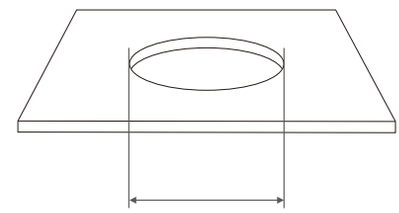
ON / OFF

* After setting the current via DIP switches, power off and then power on the driver to make the new current setting effective.
* E.g. LED 3.2V/pcs: 3-24V can power 1-7pcs LEDs in series, 3-14V can power 1-4pcs LEDs, the max quantity of LEDs in series will be subject to the actual voltage of LEDs.

Product Size

Unit: mm

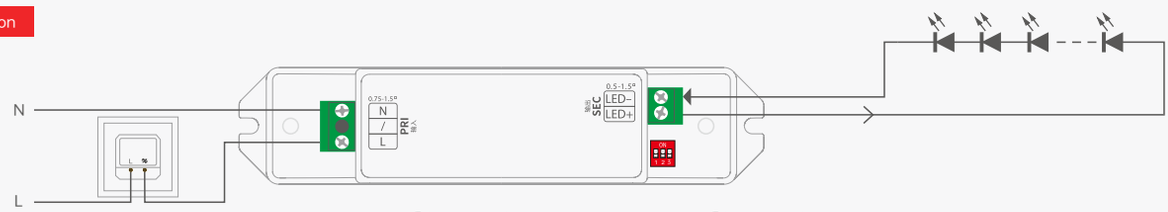




Minimum hole size: ϕ37mm (1,46")

Wiring Diagram

Triac Connection

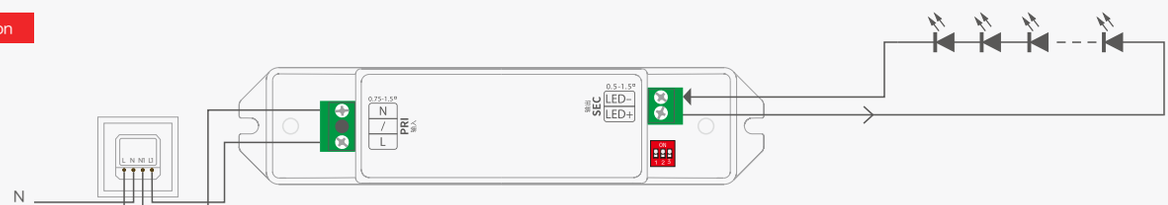


Triac dimmer
0-100% dimming range

Wire diameter: 0.75-1.5□ (22-16AWG)
Strip length: 4.5-5mm

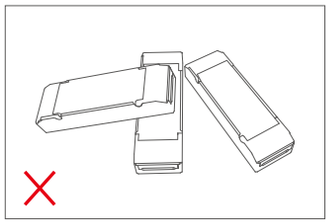
Wire diameter: 0.5-1.5□ (22-16AWG)
Strip length: 4.5-5mm

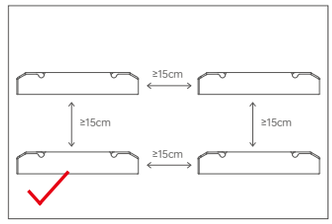
ELV Connection



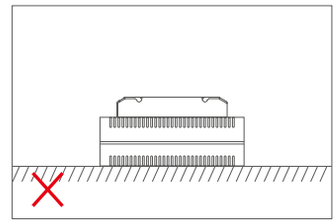
ELV dimmer
0-100% dimming range

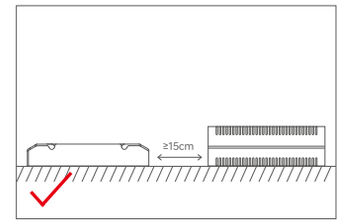
Installation Precautions





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.

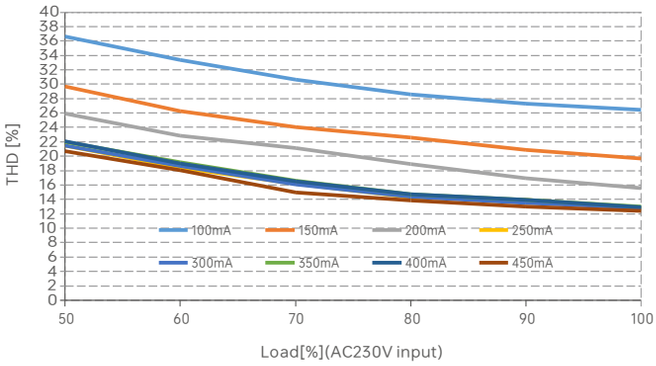




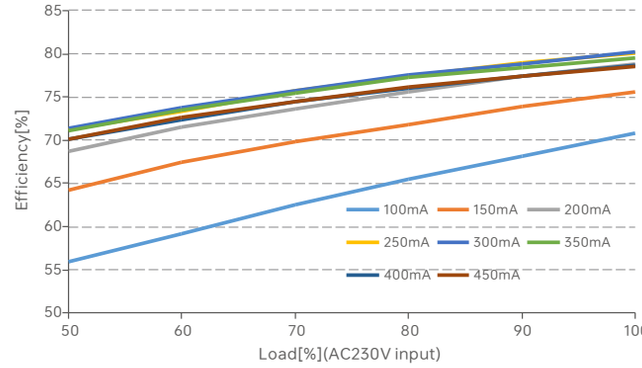
Please not place the products on LED drivers. The distance between the product and the driver should be ≥15cm so as not to affect heat dissipation and shorten the lifespan of the products.

Relationship Diagrams

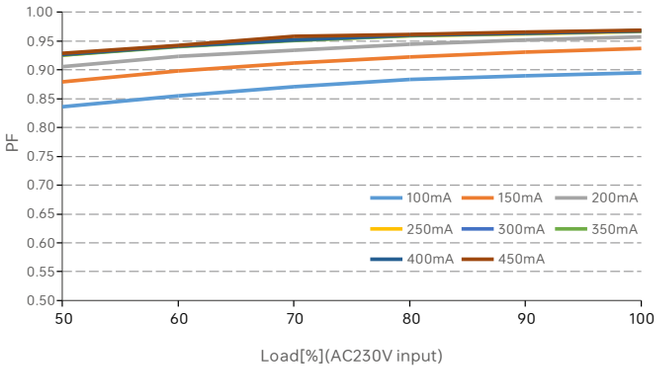
THD distortion characteristic curve



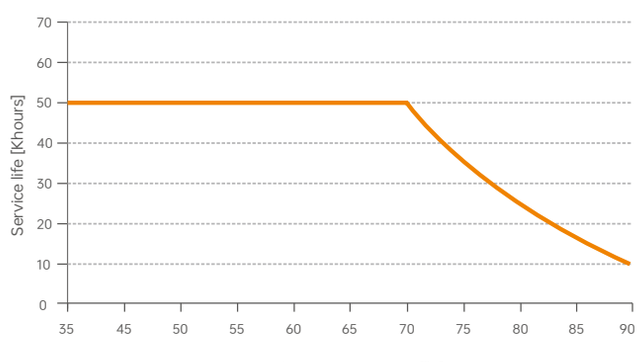
Efficiency VS Load



PF characteristic curve

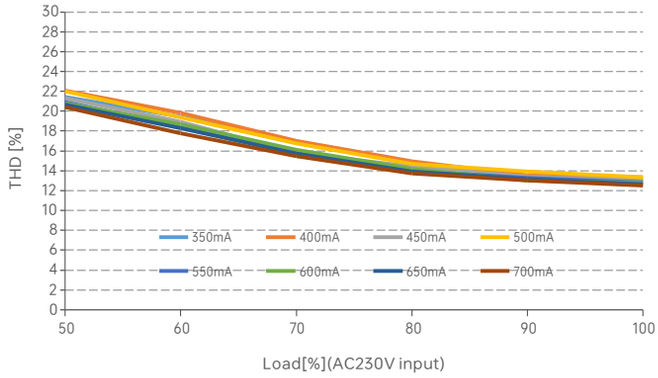


Graph of the relationship between service life and enclosure temperature

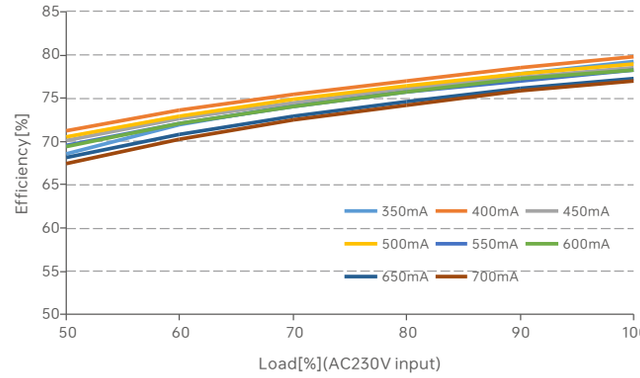


TD-10-100-450-G1TS

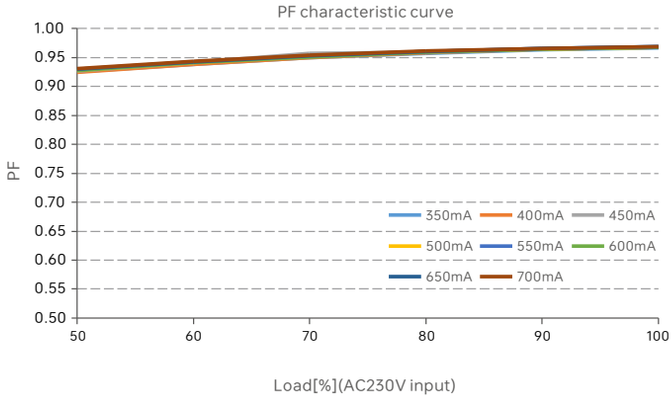
THD distortion characteristic curve



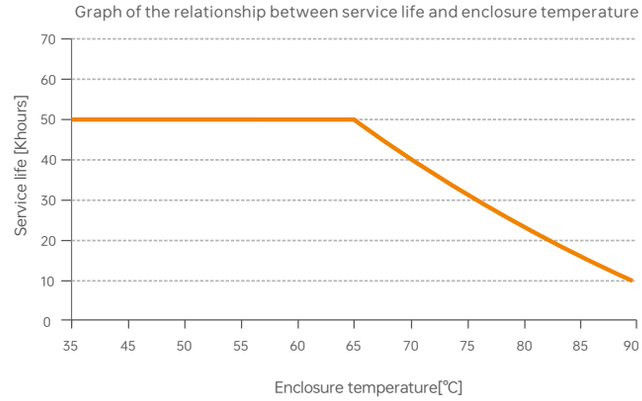
Efficiency VS Load



PF characteristic curve

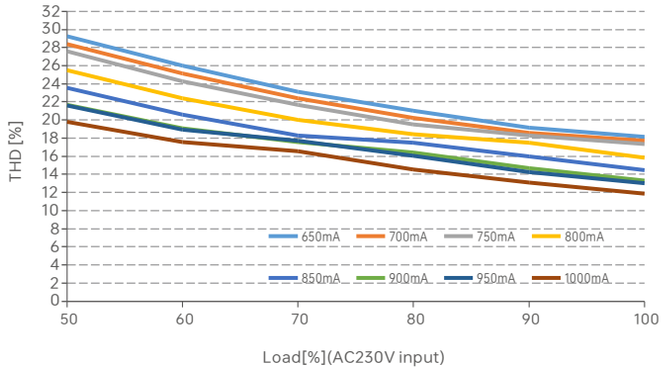


Graph of the relationship between service life and enclosure temperature

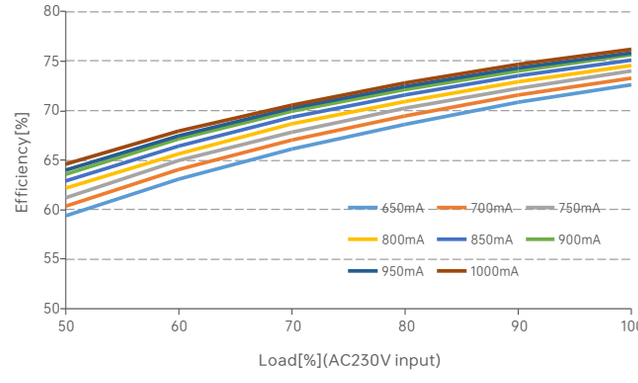


TD-10-350-700-G1TS

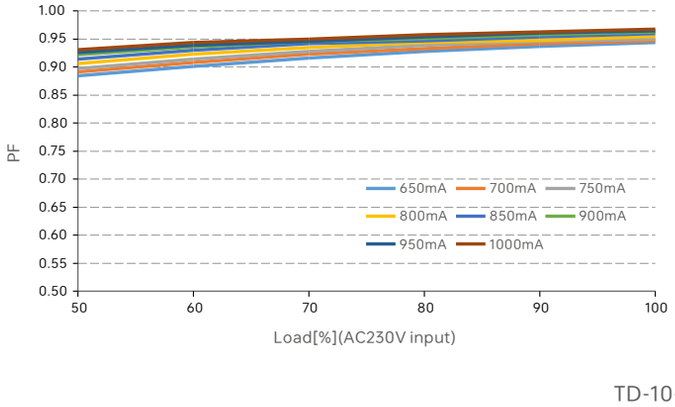
THD distortion characteristic curve



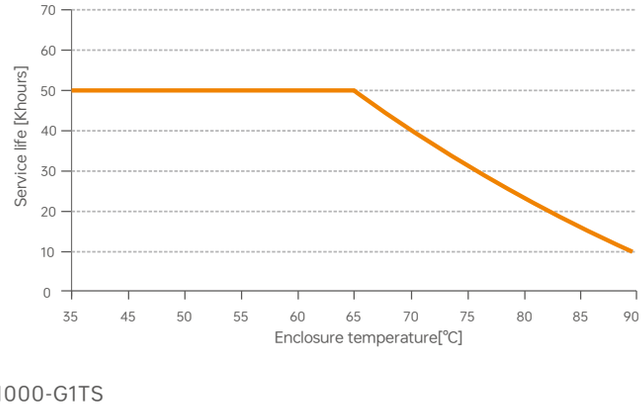
Efficiency VS Load



PF characteristic curve



Graph of the relationship between service life and enclosure temperature



TD-10-650-1000-G1TS

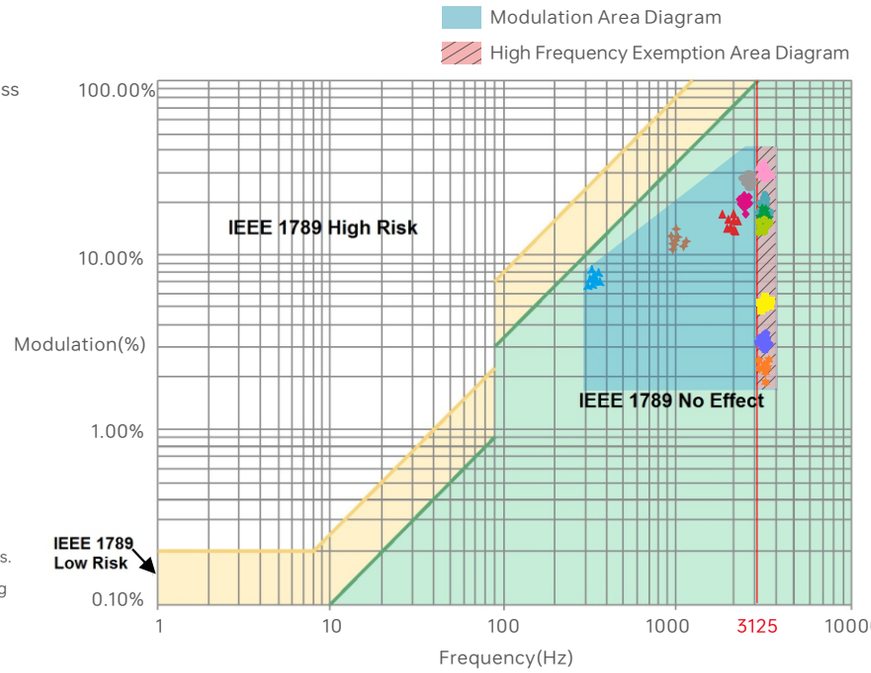
Flicker Test Form

IEEE 1789

Limit of Modulation in low risk area	
Waveform frequency of Optical output	limit (%)
f ≤ 8Hz	0.2
8Hz < f ≤ 90Hz	0.025 × f
90Hz < f ≤ 1250Hz	0.08 × f
f > 1250Hz	Exemption assessment
Limit of Modulation in no effect area	
Waveform frequency of Optical output	limit (%)
f ≤ 10Hz	0.1
10Hz < f ≤ 90Hz	0.01 × f
90Hz < f ≤ 3125Hz	(0.08/2.5) × f
f > 3125Hz	Exemption assessment (High frequency exemption)

Brightness

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



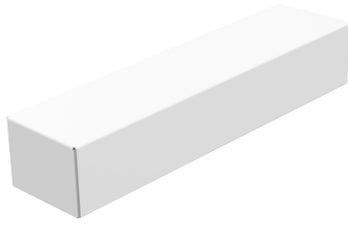
Marks in the right chart were tested results of different current ranges.

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

Packaging Specifications

Model	TD-10-100-450-G1TS / TD-10-350-700-G1TS / TD-10-650-1000-G1TS
Carton Dimensions	350×285×180mm(L×W×H)
Quantity	30 PCS/Layer; 5 Layers/Carton; 150 PCS/Carton
Weight	0.08 kg/PC; 12.8 kg/Carton

Packaging Image



Inner Packaging Box

Carton Packaging

Transportation and Storage

1. Transportation

Products can be shipped via vehicles, boats and planes.

During transportation, products should be protected from rain and sun. Please avoid severe shock and vibration during the loading and unloading process.

2. Storage

The storage conditions should comply with the Class I Environmental Standards. The products that have been stored for more than six months are recommended to be re-inspected and can be used only after they have been qualified.

Attentions

- This product must be installed and adjusted by a qualified professional.
- This product is 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 life the product. Please install the product in a environment with good ventilation.
- Please check whether the working voltage used complies with the parameter requirements of the product.
- Before you power on the product, please make sure all the wiring is correct in case of incorrect connection that may cause a short circuit and damage the components, or trigger aaccident.
- If a fault occurs, please do not attempt to fix the product by yourself. If you have any question, please contact the supplier.

✻ 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	2024.11.01	Original version	Li Haipeng

LTECH

TD-10-100-450-G1TS
TD-10-350-700-G1TS
TD-10-650-1000-G1TS

Triac/ELV

LED智能调光驱动器 (恒流型)

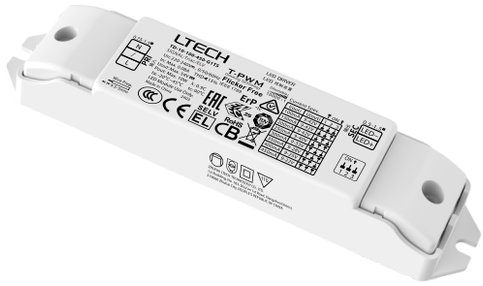
- 体积小、重量轻；外壳采用科思创/三星PC阻燃V0级原料
- 前沿(Triac)，后沿(ELV)切相调光
- 带软启动渐亮功能，让人眼视觉更舒服
- T-PWM 超深度调光技术，呈现高级感
- 0-100%全程调光无可视频闪, 高频豁免考核级别
- 调光范围0~100%，LED从0.01%开始调光
- 多电流、宽电压，适用不同功率的LED
- 创新的热管理技术, 智能保护电源寿命
- 短路、过温、过载, 可自动恢复
- 常规使用下寿命可达5万小时
- 5年保修期 (采用红宝石电容)

0~100%调光

T-PWM
超深度调光技术

无频闪
IEEE 1789
高频豁免考核级别

Dimmable:
10000∶1



SELV RoHS ErP

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 | 过温保护 | 短路保护 | 过载保护

技术参数

型号		TD-10-100-450-G1TS	TD-10-350-700-G1TS	TD-10-650-1000-G1TS
特征	输出类型	恒流		
	调光接口	Triac/ELV		
	输出特征	隔离		
	防护等级	IP20		
	绝缘等级	II 类 (适用于室内 I 、II 、III类灯具)		
输出	最大输出电压	≤54Vdc	≤35Vdc	≤22Vdc
	输出电压范围	9-42Vdc	9-24Vdc	2-12Vdc
	工作电流范围	100-450mA	350-700mA	650-1000mA
	输出功率	Max. 10W		
	负载功率范围	0.9-10W	3.15-10W	1.3-10W
	调光范围	0~100%，调光深度: Max. 0.01%		
	低频电流纹波	＜3%		
	电流精度	±5%		
	PWM调光频率	≤3600Hz		
输入	直流电压范围	200-280Vdc (调光不可用)		
	交流电压范围	220-240Vac		
	额定电压	230Vac		
	频率范围	0/50/60Hz		
	输入电流	≤0.08A/230Vac		
	功率因数	PF＞0.9/230Vac (满载)		
	谐波THD	THD＜15%@230Vac（满载）	THD＜15%@230Vac（满载）	THD＜18%@230Vac（满载）
	效率(Typ.)	＞78%@250mA	＞76%@400mA	＞75%@900mA
	浪涌电流	冷启动10A (在50%Ipeak下测twidth=300us)@230Vac		
	抗浪涌	L-N: 1KV		
	漏电流	Max. 0.5mA		
环境	工作温度	ta: -20°C ~ 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	GB 19510.1, GB 19510.14	
		CE 欧盟	EN 61347-1，EN 61347-2-13，EN 62493	
		KC 韩国	KC 61347-1, KC 61347-2-13	
		TUV 德国	EN 61347-1, EN 61347-2-13, EN 62493	
		ENEC 欧洲	EN 61347-1，EN 61347-2-13，EN 62384	
		CB CB成员国	IEC 61347-1, IEC 61347-2-13	
		RCM 澳洲	AS/NZS 61347.1，AS 61347.2.13	
		BIS 印度	IS 15885(PART 2/SEC 13)	
		EAC 俄罗斯	IEC 61347-1，IEC 61347-2-13	
	电磁兼容发射	CCC 中国	GB/T 17743，GB 17625.1	
		CE 欧盟	EN IEC 55015，EN IEC 61000-3-2，EN 61000-3-3	
		KC 韩国	KS C 9815, KS C 9547	
		RCM 澳洲	EN IEC 55015，EN IEC 61000-3-2，EN 61000-3-3	
		EAC 俄罗斯	IEC 62493，IEC 61547，EH 55015，IEC 61000-3-2, IEC 61000-3-3	
	电磁兼容抗扰度	EN 61000-4-2,3,4,5,6,8,11, EN 61547		
ErP	功耗	待机功耗	无待机模式	
		网络待机功耗	无网络待机功耗 (可控硅信号为0时，电源功耗为0)	
		空载功耗	无空载模式	
	频闪/频闪效应	IEEE 1789	满足无影响/高频豁免考核级别	
		CIE SVM	Pst LM≤1.0， SVM≤0.4	
	DF	相位因素	DF≥0.9	
其他	寿命	50,000小时		
	质保	5年		

LED电流选择

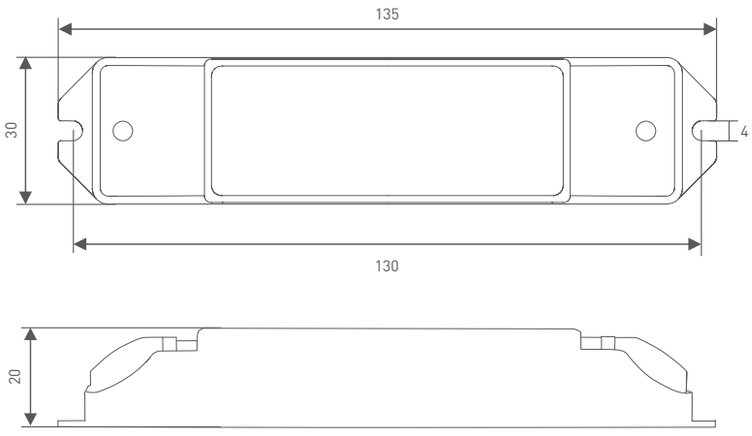
DIP开关快速选择 8 档电流值

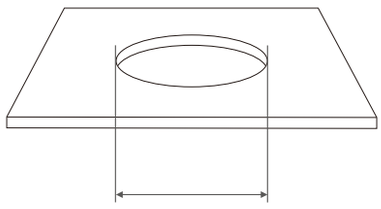
DIP开关										
TD-10-100-450-G1TS	电流输出	100mA	150mA	200mA	250mA	300mA	350mA	400mA	450mA	ON
	电压输出	9-42V	9-42V	9-42V	9-40V	9-33V	9-28V	9-25V	9-22V	
	功率输出	0.9-4.2W	1.4-6.3W	1.8-8.4W	2.3-10W	2.7-9.9W	3.2-9.8W	3.6-10W	4.1-9.9W	
TD-10-350-700-G1TS	电流输出	350mA	400mA	450mA	500mA	550mA	600mA	650mA	700mA	
	电压输出	9-24V	9-24V	9-22V	9-20V	9-18V	9-16V	9-15V	9-14V	OFF
	功率输出	3.15-8.4W	3.6-9.6W	4.05-9.9W	4.5-10W	4.95-9.9W	5.4-9.6W	5.85-9.8W	6.3-9.8W	
TD-10-650-1000-G1TS	电流输出	650mA	700mA	750mA	800mA	850mA	900mA	950mA	1000mA	
	电压输出	2-12V	2-12V	2-12V	2-12V	2-11V	2-11V	2-10V	2-10V	
	功率输出	1.3-7.8W	0.4-8.4W	1.5-9W	1.6-9.6W	1.7-9.35W	1.8-9.9W	1.9-9.5W	2-10W	

* 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3.2V/颗：电源3-24V的输出电压范围可串联1-7颗LED，3-14V的输出电压范围可串联1-4颗LED，最大串联数量以LED实际电压为准。

尺寸图

单位: mm

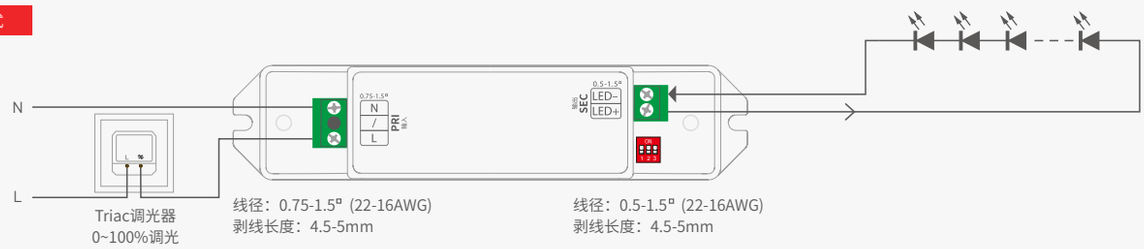




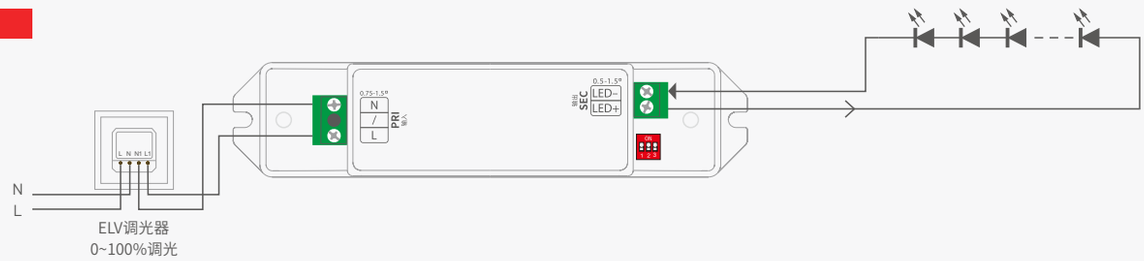
最小开孔尺寸:ϕ37mm (1,46'')

连接应用图

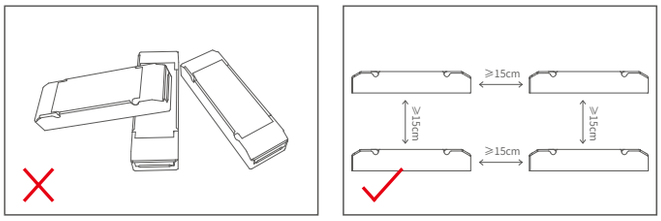
Triac 连接方式



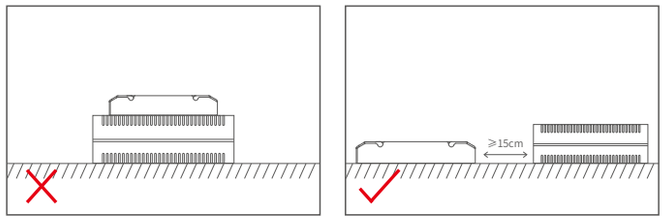
ELV 连接方式



安装注意事项



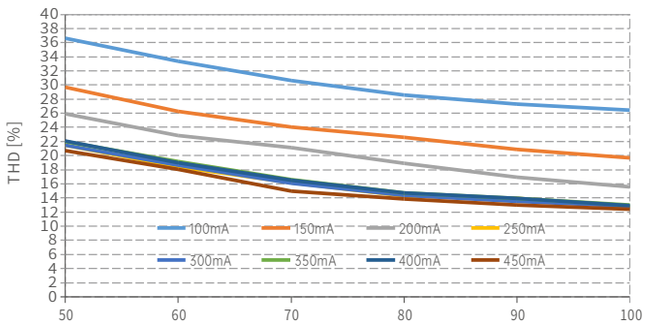
请勿将产品堆叠摆放，产品与产品间隔距离应≥15cm，避免影响产品散热和使用寿命。



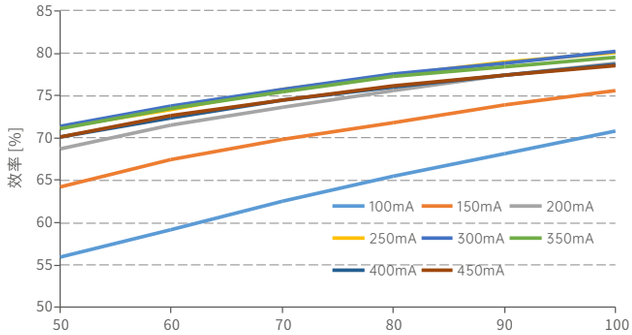
请勿将产品置于电源上方，与电源间隔距离应≥15cm，避免影响产品散热而减少使用寿命。

关系图表

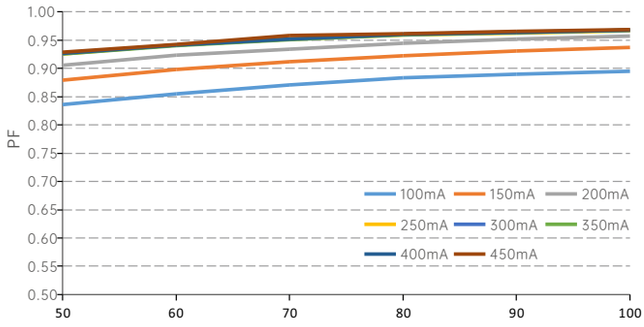
THD失真特征曲线



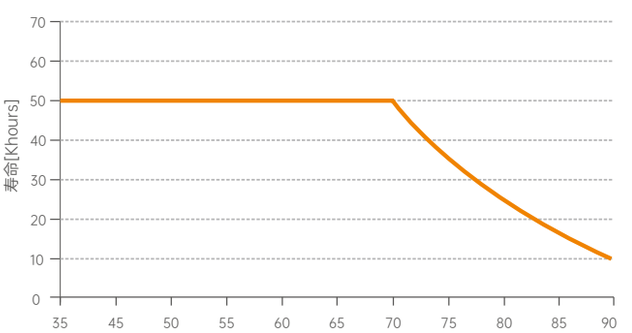
效率VS负载



PF特征曲线

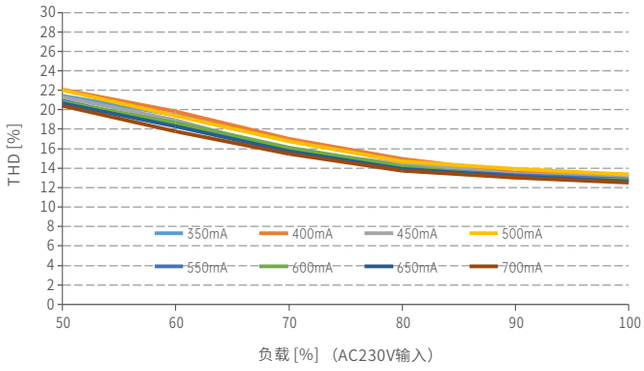


寿命与外壳温度关系图

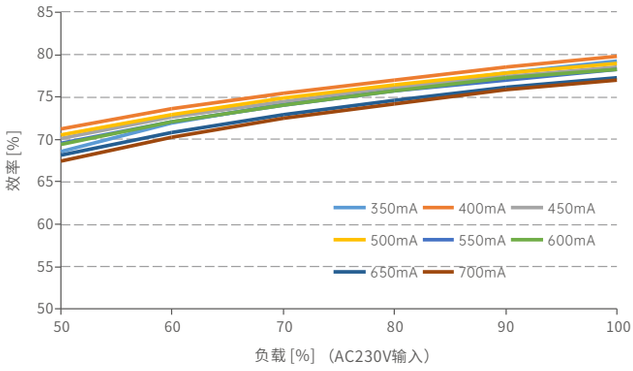


TD-10-100-450-G1TS

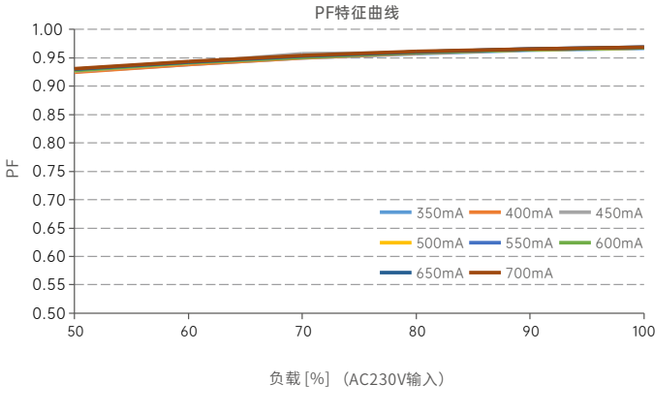
THD失真特征曲线



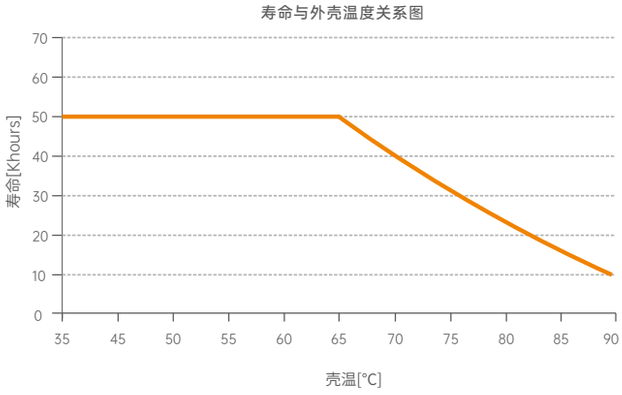
效率VS负载



PF特征曲线

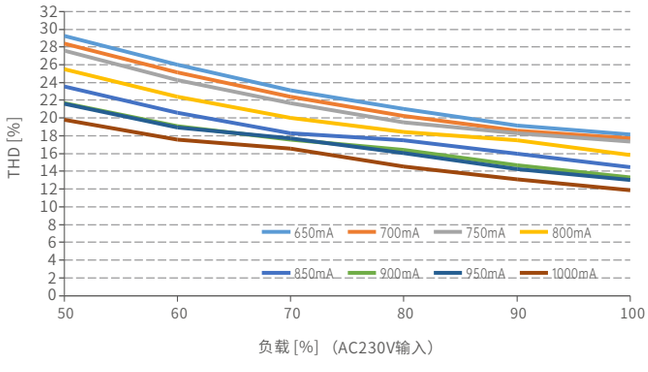


寿命与外壳温度关系图

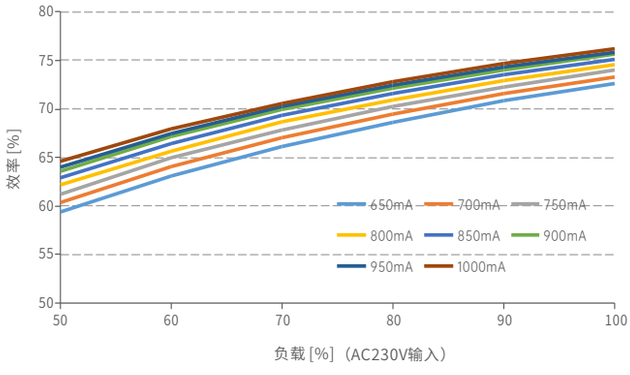


TD-10-350-700-G1TS

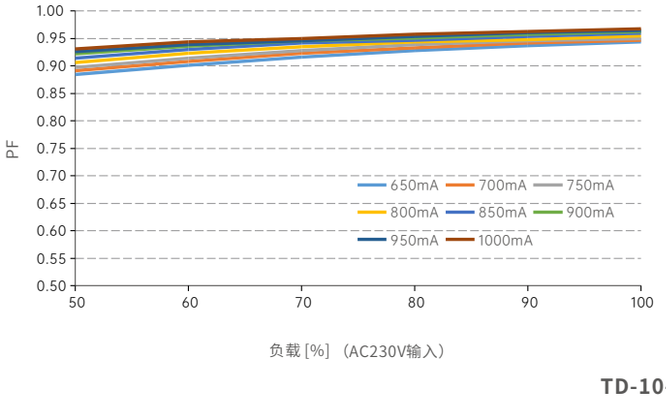
THD失真特征曲线



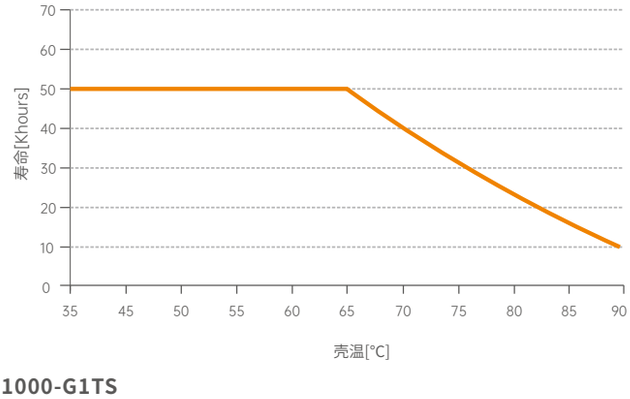
效率VS负载



PF特征曲线



寿命与外壳温度关系图



TD-10-650-1000-G1TS

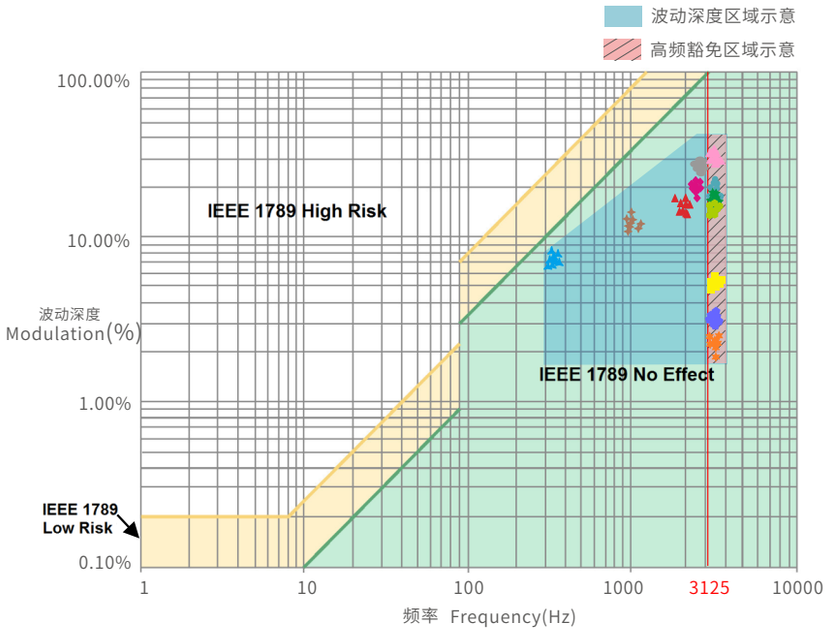
频闪测试表

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（%）
$f \leqslant 8Hz$	0.2
$8Hz < f \leqslant 90Hz$	$0.025 \times f$
$90Hz < f \leqslant 1250Hz$	$0.08 \times f$
$f > 1250Hz$	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（%）
$f \leqslant 10Hz$	0.1
$10Hz < f \leqslant 90Hz$	$0.01 \times f$
$90Hz < f \leqslant 3125Hz$	$(0.08/2.5) \times f$
$f > 3125Hz$	免除考核（高频豁免）

亮度

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



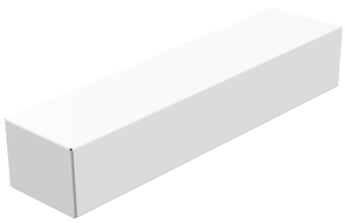
右图标识为不同电流档的测试结果。

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。

包装规格

型号	TD-10-100-450-G1TS / TD-10-350-700-G1TS / TD-10-650-1000-G1TS
包装箱尺寸	350×285×180mm(L×W×H)
数量	30PCS/层；5层/箱；150PCS/箱
重量	0.08kg/PC; 12.8kg/箱

包装样式图



内包装盒

整箱包装

运输和贮存

1. 运输

产品适用车、船、飞机交通运输工具运输。

在运输中，应使用遮蓬进行防雨和防晒，并保持文明装卸，不应有剧烈振动、撞击等。

2. 贮存

贮存符合I类环境的规定。贮存期限超过6个月的产品建议重新检验，合格后方可使用。

注意事项

- 本产品请由具有专业资格的人员进行调试安装；
- 本产品(专有型号除外)不能防水，需避免日晒雨淋。如安装在户外，请使用防水箱；
- 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；
- 通电调试前，确保所有接线正确且牢固，以免短路损坏部件，触发事故；
- 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，欢迎向我司授权的经销商咨询。

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	2024.11.01	正稿	黎海鹏