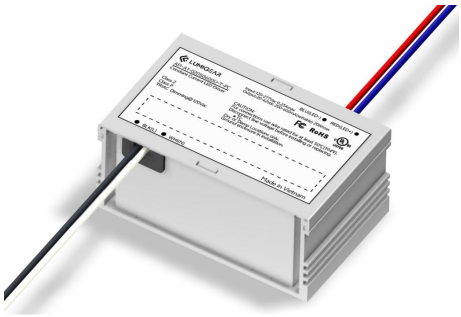
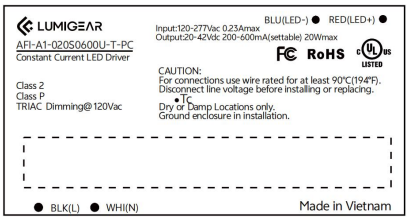
AFI-A1-XXXSXXXXU-T-PC

10-20w Programmable, 1% dimming, Triac, Constant Current Series





Features & Benefits

- Universal AC Input Voltage(120-277VAC, Triac dimming@120VAC)
- Compact design, silicone potted for better thermal performance
- Phase cut dimming, dim down to 1%
- Suitable for indoor use
- UL Class2, Class P
- Combination Wave 2KV, Ringwave 2.5KV
- Operating temperature: -25℃~+55℃
- Comply with Title 24, UL8750

Programmable features:

- Output current(1mA step)
- Over Temperature Protection: Foldback mode, Linear decrease mode
- Programmable RMS voltage with turn-on , turn-off and full brightness

Model List

Model Name	Rated Input Voltage	Max Output Power(Total)	Output Current(Total)	Rated Output Voltage	Efficiency	Dimension
AFI-A1-010S0300U-T-PC	120-277VAC	10W max.	100-300mA	20-42VDC	87%	53*32.8*24.6 mm 2.1×1.3×0.9 in.
AFI-A1-020S0600U-T-PC	120-277VAC	20W max.	200-600mA	20-42VDC	89%	53*32.8*24.6 mm 2.1×1.3×0.9 in.

Approvals

TRIAC c UL us LISTED CLASS P

Model name code

AFI-A1 - 010S 0300 U – T – PC

① ② ③ ④ ⑤ ⑥

①	Series	AFI Series
②	Output power	Maximum output power: 10W
③	Output current(max)	Maximum output current: 300mA
④	Input voltage	120-277VAC
⑤	Dimming Control	TRIAC
⑥	Programmable	USB-PC

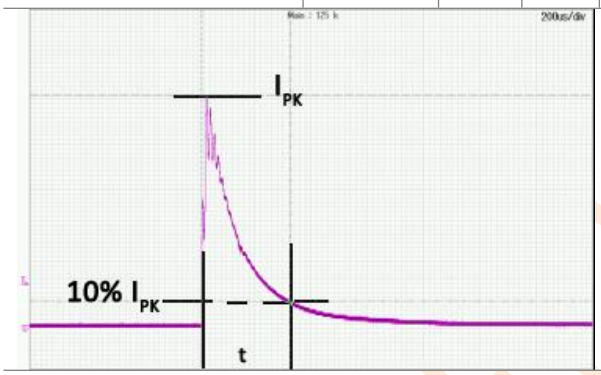
www.lumigear.com
sales@lumigear.com

Specification:

Parameters	Symbols	Test Conditions / Comment	Min	Typ	Max	Units
INPUT						
Input Voltage	V_{IN}		108		305	V_{AC}
Rated Input Voltage	$V_{IN\ RATED}$		120		277	V_{AC}
	$V_{IN\ RATED\_TRIAC}$	Phase Cut Dimming		120		V_{AC}
Input Frequency	f_{line}		47	50/60	63	Hz
Input Current	I_{IN}	AFI-A1-010, Full Load, V_{IN} = 120V_{AC}			0.12	A
		AFI-A1-020, Full Load, V_{IN} = 120V_{AC}			0.23	A
Inrush Current	I_{INRUSH}	Cold Start, V_{IN} = 277V_{AC}			30	A
Leakage Current	$I_{Leakage}$	V_{IN} = 277V_{AC} 60Hz			0.75	mA

Number of Drivers per MCB(Circuit Breaker)

MCB type	B10	C10	D10	B13	C13	D13	B16	C16	D16	B20	C20	D20
120V_{AC}	16	18	21	21	24	28	26	30	34	32	37	43
277V_{AC}	15	25	50	19	32	65	24	40	81	30	50	101



Input Voltage	Inrush Current	t(us)10%-10%
120VAC	8.0A	254
277VAC	15.8A	208
347VAC	NA	NA

General Characteristics

Power Factor	PF	20-100% load, V_{IN} = 120V_{AC}	0.9			PF
		50-100% load, V_{IN} = 277V_{AC}	0.9			
Total Harmonic Distortion	THD	20-100% load, V_{IN} = 120V_{AC}			20	%
		50-100% load, V_{IN} = 277V_{AC}			20	%
Turn On Delay Time	T_{on_delay}	Cold Start, Without Dimmer			0.5	S
		Cold Start, 1% Dimming, Vout=36V			1.0	S
Efficiency	η	AFI-A1-010, I_{OUT}=300mA, V_{IN}=120V_{AC}, Steady state	84	86		%
		AFI-A1-020, I_{OUT}=600mA, V_{IN}=120V_{AC}, Steady state	86	88		%
		AFI-A1-010, I_{OUT}=300mA, V_{IN}=277V_{AC}, Steady state	85	87		%
		AFI-A1-020, I_{OUT}=600mA, V_{IN}=277V_{AC}, Steady state	87	89		%

OUTPUT

Output Current Tolerance	t	I_{OUT}=(50-100%)I_{MAX}			5	%
		I_{OUT}=(MIN.-49%)I_{MAX}			7	%
Output Current Range	I_{OUT}	AFI-A1-010	3		300	mA

www.lumigear.com
sales@lumigear.com

		AFI-A1-020	6		600	mA
Output Voltage	V_{OUT}		20		42	V
Line Regulation	$V_{OUT-LINE}$				5	%
Load Regulation	$I_{OUT-LOAD}$	V_{OUT} from MIN. to MAX.			5	%
Ripple Current	$I_{OUT-RIPPLE}$	Full Load, (Iomax-Iomin)/(Iomax+Iomin)			30	%
Output Current Overshoot	$I_{OVERSHOOT}$	Turning Power ON			10	%

Phase Cut Dimming

The unit is compatible With Leading-edge and Trailing-edge Dimmer.

Input Voltage	$V_{IN-TRIAC\ DIM}$			120		V_{AC}
Suggest Load Range	$P_{Suggest}$	V_{IN} = 120 V_{AC}	50		100	%

Compatible Phase Cut Dimmer List

No.	Mfg.	Model	Remark	No.	Mfg.	Model	Remark
1	Lutron	MACL-153M		6	Lutron	DVELV-300P	
2	Lutron	DVRP-253P		7	Lutron	NTELV-300	
3	Lutron	PD-6WCL		8	Lutron	DVCL-153P	
4	Lutron	PD-5NE		9	Leviton	IPE04	
5	Lutron	MA-PRO		10	Leviton	DSE06	

Programming

The driver is programmable , Please contact LUMIGEAR for details.

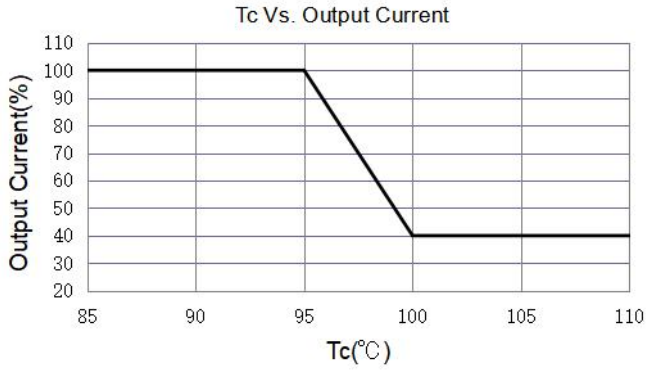
NO.	Item	Default Setting
1	Output current(1mA step)	See"Model list" for each model
2	Over Temperature Protection: Foldback mode, Linear decrease mode	See "Protection" section
3	Programmable RMS voltage with turn-on , turn-off and full brightness for phase cut dimming	Turn on at 18V_{AC}, turn off at 15V_{AC}, Clamp at 30V_{AC}, full brightness at 108V_{AC}

P2.0 Female Plug **Caution:** Programming port is NOT isolated from primary side	Programming software	"LUMIGEAR Programming Tool"					
	Programming tool	"Lumigear tool box"					
	Operating voltage			5		V	

Protection

Over Voltage Protection	V_{OVP}	The unit will recover automatically after fault conditions is removed.		60		V
Over Temp. Protection	T_{OTP}	Current linear reduced when hotspot greater than T_{OTP}		95		℃
Short Circuit Protection	The unit will recover automatically after fault conditions is removed.					

www.lumigear.com
sales@lumigear.com

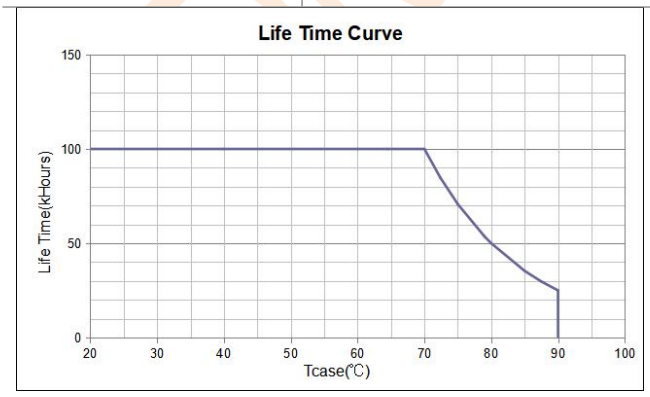


Environment

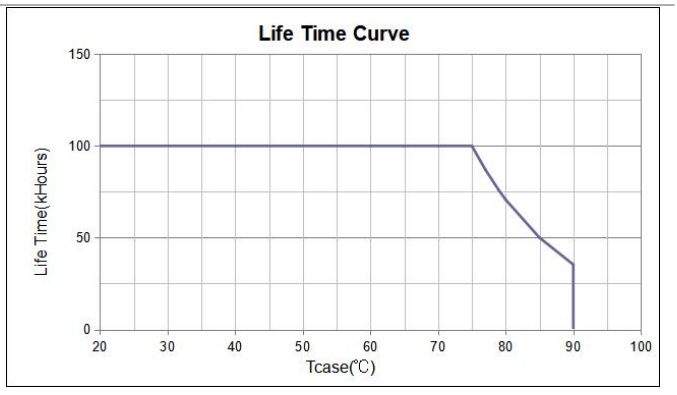
Storage Temperature	$T_{Storage}$	Humidity: 5% RH to 95% RH	-40	-	+85	℃
Ambient Operating Temperature	T_a		-25	-	+55	℃
Max. Case Temperature	T_c	Hot spot on case			90	℃
Operating Relative Humidity	H_a	Non-Condensing	10		90	%
Acoustic Noise		Measured from 1 meter			24	dBA
Cooling	Convection Cooling					
IP Rating	Dry and damp UL approved					

Others

Life Time	T_{Life}	AFI-A1-010, Full load, 80℃ case temperature	50			kHrs
		AFI-A1-020, Full load, 85℃ case temperature	50			kHrs
SVEF	T_{SVEF}	Full Load, 25℃ ambient temperature	200			kHrs
Net Weight	W_{NET}			TBD		g
Warranty	AFI-A1-010, 5 Years Warranty at T_c ≤80℃					
	AFI-A1-020, 5 Years Warranty at T_c ≤85℃					
Flicker	Title 24					



AFI-A1-010 life time curve



AFI-A1-020 life time curve

Safety Compliance

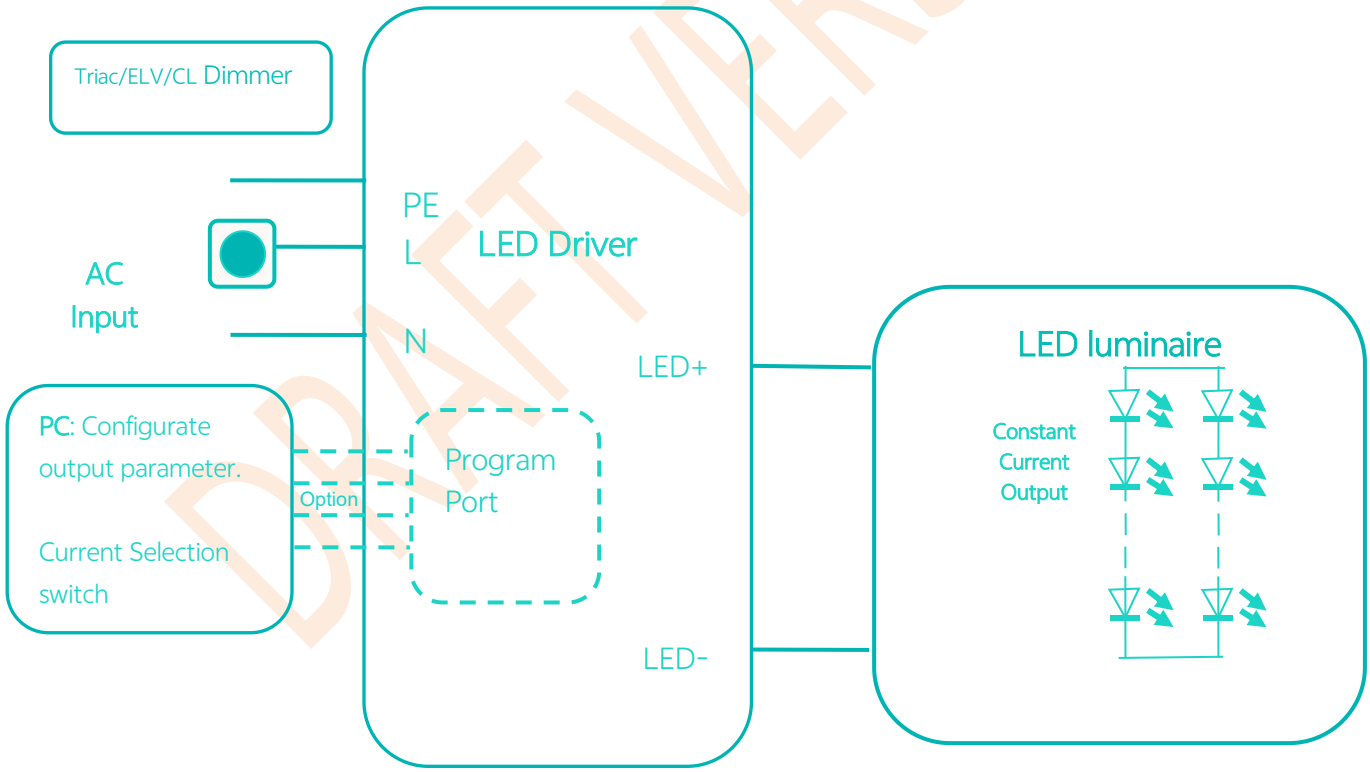
CUL/UL	UL8750, CAN/CSA-C22.2 No. 250.13

Electromagnetic Compliance

EMC Requirements	Standard	Conditions
EMI Emissions	FCC Title 47 Part 15	Class B at $120V_{AC}$, Class A at $277V_{AC}$
Voltage Fluctuations and Flicker	IEC61000-3-3	
Immunity Compliance	IEC 61000-4-2	±8kV air Discharge, ±6kV Contact Discharge
	ANSI/IEEE C62.41-2002	± 2kV Common and Differential Mode, test at 2 Ω, 5 strikes/1minute interval (40 total strikes)
	ANSI/IEEE C62.41.1-2002	2.5kV Ring Wave, test at 30Ω 7 Strikes/1 minute interval, Common and Differential mode, 56 total strikes
	IEC 61000-4-11	>95% dip, 5 period; 30% dip, 25 periods; 95% reduction, 250 periods
	IEC 61000-4-4	± 2kV Direct couple to Line input, 5kHz repitition rate, 15mS duration, 300mS period. 7 coupling paths, 1 minute per path (14 total combinations)

Note: Unless otherwise specified, all the above parameters are measured at ambient temperature of 25℃ and rated voltage.

Typical Application

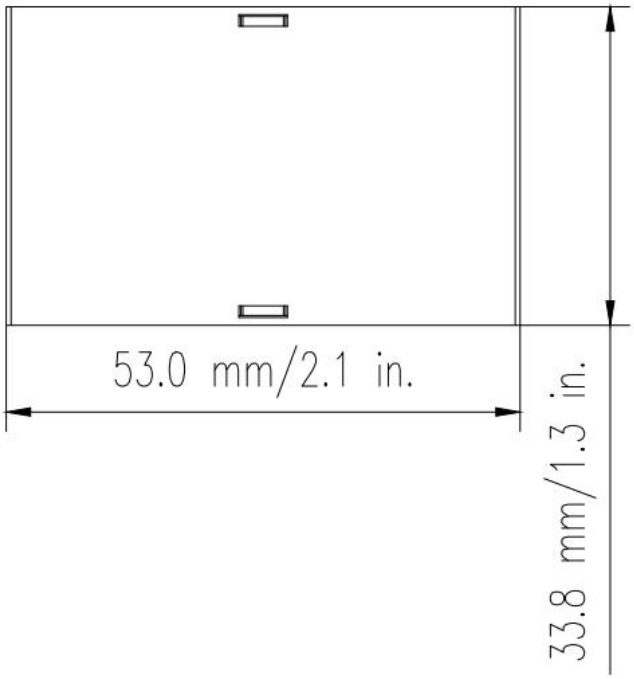


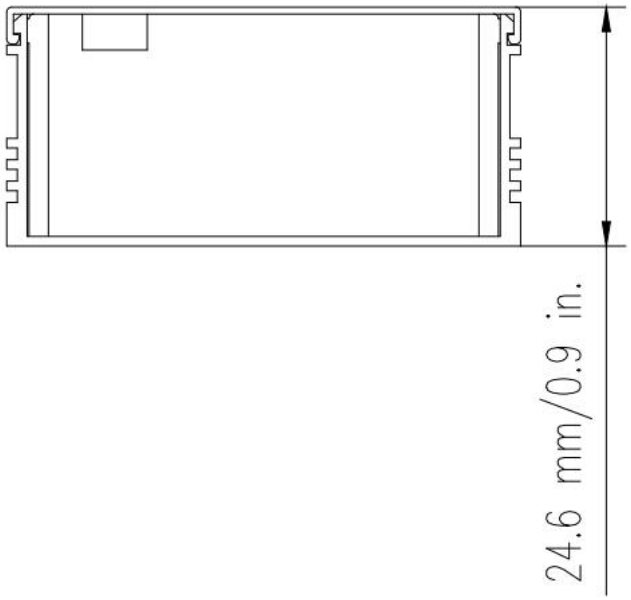
www.lumigear.com
sales@lumigear.com

Packaging

Driver quantity (pcs)	Layer	Weight (kg)	Outer dimensions of Carton L*W*H(mm)
TBD	TBD	TBD	TBD

Mechanical Drawing:





www.lumigear.com
sales@lumigear.com