

# MEAN WELL ELG-100 Series 70 to 100W Constant Voltage and Constant Current LED Driver Owner's Manual

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MEAN WELL ELG-100 Series 70 to 100W Constant Voltage and Constant Current LED Driver



#### **Features**

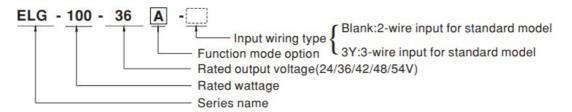
- Constant Voltage +Constant Current mode output
- · Metal housing design with functional Ground
- · Built-in active PFC function
- · Class 2 power unit
- No load /Standby power consumption < 0.5W
- IP67/IP65 rating for indoor or outdoor installations
- Function options: output adjustable via potentiometer; 3 in 1 dimming (dim-to-off); Smart timer dimming; DALI
- Typical lifetime>50000 hours
- 5 years warranty

## **Applications**

- · LED street lighting
- · LED architectural lighting
- LED bay lighting
- · LED floodlighting
- Type "HL" for use in Class I, Division 2 hazardous (Classified) location.

#### **Description**

ELG-100 series is a 100W AC/DC LED driver featuring the dual mode constant voltage and constant current output. ELG-100 operates from 100-360VAC and offers models with different rated voltages ranging between 24V and 54V. Thanks to the high efficiency up to 91%, with the fanless design, the entire series is able to operate for -40C~ +90C case temperature under free air convection. The design of metal housing and IP67/IP65 ingress protection level allows this series to fit both indoor and outdoor applications. ELG-100 is equipped with various function options, such as dimming methodologies, So as to provide the optimal design flexibility for the LED lighting system.



Туре	IP Level	Function	Note
Blank	IP67	Io and Vo fixed.	In Stock
Α	IP65	Io and Vo adjustable through built-in potentiometer.	In Stock
В	IP67	3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance)	In Stock
AB	IP65	Io and Vo adjustable through built-in potentiometer & 3 in 1 dimming function (0~10Vdc, 10V PWM signal and resistance)	In Stock
DA	IP67	DALI control technology.	In Stock
Dx	IP67	Built-in Smart timer dimming function by user request.	By request
D2	IP67	Built-in Smart timer dimming and programmable function.	In Stock

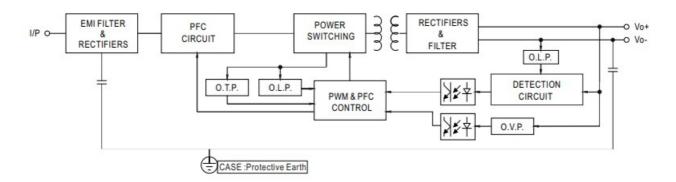
# **SPECIFICATION**

MODEL		ELG-100-24	ELG-100-36	ELG-100-42	ELG-100-48	ELG-100-54		
	DC VOLTAGE	24V	36V	42V	48V	54V		
	CONSTANT CURRENT REGION Note.2	12 ~ 24V	18 ~ 36V	21 ~ 42V	24 ~ 48V	27 ~ 54V		
	RATED CURRENT	4.0A	2.66A	2.28A	2A	1.78A		
		200VAC ~ 305VAC						
	DATED DOWED	96W	95.76W	95.76W	96W	96.12W		
	RATED POWER	100VAC ~ 180VAC						
		70W	70W	70W	70W	70W		
	RIPPLE & NOISE (max.) Note.3	200mVp-p	250mVp-p	250mVp-p	300mVp-p	350mVp-p		
	VOLTAGE AD L DANGE	Adjustable for A/AB-Type	only (via the built-in pote	ntiometer)	10	28.0		
	VOLTAGE ADJ. RANGE	21.6 ~ 26.4V	32.4 ~ 39.6V	37.8 ~ 46.2V	43.2 ~ 52.8V	48.6 ~ 59.4V		
OUTPUT	CURRENT AR L DANCE	Adjustable for A/AB-Type	only (via the built-in pote	ntiometer)				
	CURRENT ADJ. RANGE	2~4A	1.33 ~ 2.66A	1.14 ~ 2.28A	1~2A	0.89 ~ 1.78A		
	VOLTAGE TOLERANCE Note.4	±3.0%	±2.5%	±2.5%	±2.0%	±2.0%		
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%		
	LOAD REGULATION	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%		
	SETUP, RISE TIME Note.6	1000ms, 80ms/115VAC 500ms, 100ms/230VAC						
	HOLD UP TIME (Typ.)	15ms/115VAC 10ms/230VAC						
	VOLTAGE RANGE Note.5	100 ~ 305VAC 142 ~ 431VDC continue,320VAC for 24Hrs; 360VAC for 1Hr (Please refer to "STATIC CHARACTERISTIC" section)						
	FREQUENCY RANGE	47 ~ 63Hz						
	POWER FACTOR	PF≥0.97/115VAC, PF≥0.95/230VAC, PF≥0.92/277VAC@full load (Please refer to "POWER FACTOR (PF) CHARACTERISTIC" section)						
	TOTAL HARMONIC DISTORTION	THD< 20%(@load≥50%/115VC; @load≥60%/230VAC; @load≥75%/277VAC) (Please refer to "TOTAL HARMONIC DISTORTION(THD)" section)						
INPUT	EFFICIENCY (Typ.)	88%	89%	90%	90%	91%		
	AC CURRENT	1.1A / 115VAC 0.6A / 230VAC 0.5A / 277VAC						
	INRUSH CURRENT(Typ.)	COLD START 60A(twidth=850µs measured at 50% lpeak) at 230VAC; Per NEMA 410						
	MAX. No. of PSUs on 16A CIRCUIT BREAKER	3 units (circuit breaker of type B) / 6 units (circuit breaker of type C) at 230VAC						
	LEAKAGE CURRENT	<0.75mA/277VAC						
	NO LOAD / STANDBY POWER CONSUMPTION	No load power consumption <0.5W for Blank / A / Dx / D2-Type Standby power consumption <0.5W for B / AB / DA-Type						

8 =	OVER OURRENT	95~108%							
PROTECTION	OVER CURRENT	Constant current limiting, recovers automatically after fault condition is removed							
	SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed							
	OVER VOLTA OF	28 ~ 34V	41~48V	47 ~ 54V	54~62V	62 ~ 72V			
	OVER VOLTAGE	Shut down output	voltage, re-power on to re	cover					
	OVER TEMPERATURE	Shut down output voltage, re-power on to recover							
	WORKING TEMP.	Tcase=-40 ~ +90°C (Please refer to "OUTPUT LOAD vs TEMPERATURE" section)							
	MAX. CASE TEMP.	Tcase=+90°C							
THE STATE OF THE S	WORKING HUMIDITY	20 ~ 95% RH non-condensing							
ENVIRONMENT	STORAGE TEMP., HUMIDITY	-40 ~ +80°C, 10 ~ 95% RH							
	TEMP. COEFFICIENT	±0.03%/°C (0~60°C)							
	VIBRATION	10 ~ 500Hz, 5G 12r	min./1cycle, period for 72n	nin. each along X, Y, Z	axes				
	SAFETY STANDARDS	UL8750(type"HL"), CSA C22.2 No. 250.13-12; IEC/BS EN/EN/AS/NZS 61347-1, IEC/BS EN/EN/AS/NZS 61347-2-13 independent, BS EN/EN62384; EAC TP TC 004;BIS IS15885(for 24/24A/24B/24DA/36/36A/36B/42/42A/42ADA/42B/48/48B/54/54ADA/54B only); GB19510.1, GB19510.14; IP65 or IP67; KC61347-1, KC61347-2-13 approved							
SAFETY &	DALI STANDARDS	Compliance to IEC62386-101,102,(207 by request) for DA Type only							
EMC	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC I/P-FG:2.0KVAC O/P-FG:1.5KVAC							
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH							
	EMC EMISSION	Compliance to BS EN/EN55015,BS EN/EN61000-3-2 Class C (@load ≥ 60%); BS EN/EN61000-3-3;GB17743, GB17625.1; EAC TP TC 020; KC KN15,KN61547							
	EMC IMMUNITY	Compliance to BS EN/EN61000-4-2,3,4,5,6,8,11; BS EN/EN61547, light industry level (surge immunity Line-Earth 6KV, Line-Line 4KV); EAC TP TC 020; KC KN15, KN61547							
	MTBF	978.2K hrs min. Telcordia SR-332 (Bellcore) 282.9Khrs min. MIL-HDBK-217F (25°C)							
OTHERS	DIMENSION	199*63*35.5mm (L	*W*H)						
_	PACKING	0.85kg; 16pcs/14.2kg/0.72CUFT							
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated current and 25°C of ambient temperature. 2. Please refer to "DRIVING METHODS OF LED MODULE". For DA-Type, Constant Current region is 60%~100% of maximum voltage under rated power delivery. 3. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 4. Tolerance: includes set up tolerance, line regulation and load regulation. 5. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details. 6. Length of set up time is measured at first cold start. Turring ON/OFF the driver may lead to increase of the set up time. 7. The driver is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again. 8. This series meets the typical life expectancy of >50,000 hours of operation when Tcase, particularly (tc) point (or TMP, per DLC), is about 80°C or less. 9. Please refer to the warranty statement on MEAN WELL's website at http://www.meanwell.com 10. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft). 11. For any application note and IP water proof function installation caution, please refer our user manual before using. https://www.meanwell.com/Upload/PDF/LED_EN.pdf 12. D2 models need to be programmed in the state of loading. 13. To fulfill requirements of the latest ErP regulation for lighting fixtures, this LED power supply can only be used behind a switch without permanently connected to the mains.  X Product Liability Disclaimer: For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx								

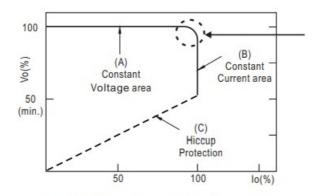
# **Block Diagram**

PFC fosc: 50~120KHz PWM fosc: 60~130KHz



## **DRIVING METHODS OF LED MODULE**

\* This series is able to work in either Constant Current mode (a direct driveway) or Constant Voltage mode (usually through an additional DC/DC driver) to drive the LEDs.

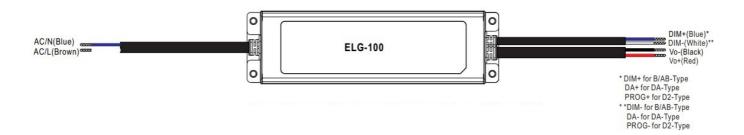


Typical output current normalized by rated current (%)

In the constant current region, the highest voltage at the output of the driver depends on the configuration of the end systems. Should there be any compatibility issues, please contact MEAN WELL. 

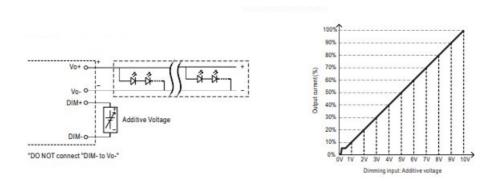
This characteristic applies to Blank/A/B/AB/DX/D2-Type, For DA-Type, the Constant Current area is 60%~100% Vo.

#### **DIMMING OPERATION**

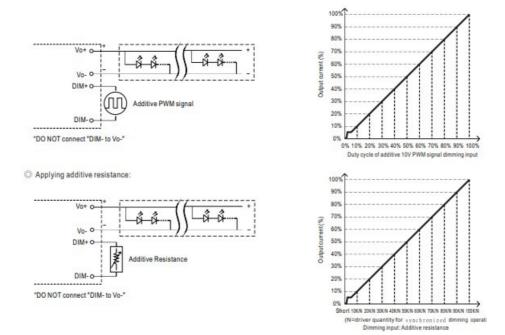


### #3 in 1 dimming function (for B/AB-Type)

- Output constant current level can be adjusted by applying one of the three methodologies between DIM+ and DIM-:
- 0-10VDC, or 10V PWM signal or resistance.
- Direct connecting to LEDs is suggested. It is not suitable to be used with additional drivers.
- Dimming source current from power supply: 100uA (typ.)
- · Applying additive 010VDC



Applying additive 10V PWM signal (frequency range 100Hz ~ 3KHz):

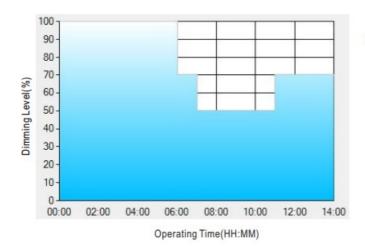


#### Note:

- 1. Min. dimming level is about 8% and the output current is not defined when 0%< lout<8%.
- 2. The output current could drop down to 0% when dimming input is about  $0k\Omega$  or 0Vdc, or 10V PWM signal with 0% duty cycle.

### \* DALI Interface (primary side; for DA-Type)

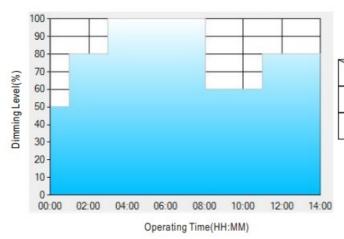
- Apply DALI signal between DA+ and DA-.
- DALI protocol comprises 16 groups and 64 addresses.
- First step is fixed at 8% of output.
- \*Smart timer dimming function (for Dxx-Type by User definition) MEAN WELL Smart timer dimming primarily provides the adaptive proportion dimming profile for the output constant current level to perform up to 14 consecutive hours. 3 dimming profiles hereunder are defined accounting for the most frequently seen applications. If other options may be needed, please contact MEAN WELL for details.



Set up for D01-Type in Smart timer dimming software program:

	T1	T2	Т3	T4
TIME**	06:00	07:00	11:00	
LEVEL**	100%	70%	50%	70%

- TIME matches Operating Time in the diagram whereas LEVEL matches Dimming Level.
   Example: If a residential lighting application adopts D01-Type, when turning on the power supply at 6:00pm, for instance:
- The power supply will switch to the constant current level at 100% starting from 6:00pm.
- The power supply will switch to the constant current level at 70% in turn, starting from 0:00am, which is 06:00 after the power supply turns on.
- The power supply will switch to the constant current level at 50% in turn, starting from 1:00am, which is 07:00
  after the power supply turns on.
- The power supply will switch to the constant current level at 70% in turn, starting from 5:00am, which is 11:00 after the power supply turns on.
- The constant current level remains till 8:00am, which is 14:00 after the power supply turns on.



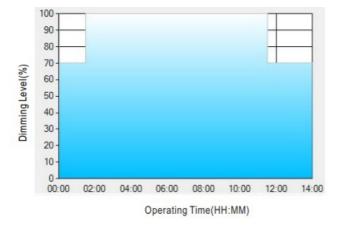
Set up for D02-Type in Smart timer dimming software program:

	T1	T2	Т3	T4	T5	
TIME**	01:00	03:00	8:00	11:00		
LEVEL**	50%	80%	100%	60%	80%	

• \*\*: TIME matches Operating Time in the diagram whereas LEVEL matches Dimming Level.

**Example:** If a street lighting application adopts D02-Type, when turning on the power supply at 5:00pm, for instance:

- The power supply will switch to the constant current level at 50% starting from 5:00pm.
- The power supply will switch to the constant current level at 80% in turn, starting from 6:00pm, which is 01:00 after the power supply turns on.
- The power supply will switch to the constant current level at 100% in turn, starting from 8:00pm, which is 03:00 after the power supply turns on.
- The power supply will switch to the constant current level at 60% in turn, starting from 1:00am, which is 08:00 after the power supply turns on.
- The power supply will switch to the constant current level at 80% in turn, starting from 4:00am, which is 11:00
  after the power supply turns on. The constant current level remains till 6:30am, which is 14:00 after the power
  supply turns on.

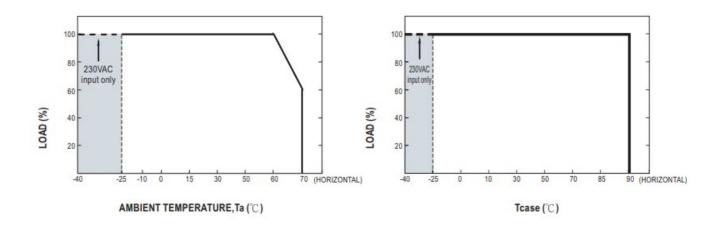


Set up for D03-Type in Smart timer dimming software program:

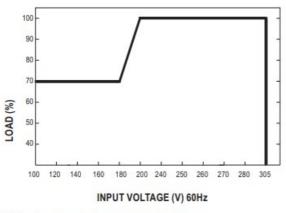
	T1	T2	Т3
TIME**	01:30	11:00	
LEVEL**	70%	100%	70%

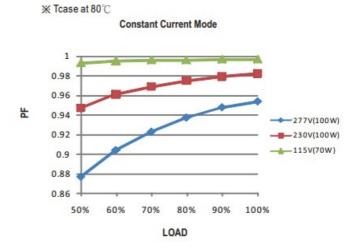
- \*\*: TIME matches Operating Time in the diagram whereas LEVEL matches Dimming Level.
   Example: If a tunnel lighting application adopts D03-Type, when turning on the power supply at 4:30pm, for instance:
- The power supply will switch to the constant current level at 70% starting from 4:30pm.
- The power supply will switch to the constant current level at 100% in turn, starting from 6:00pm, which is 01:30 after the power supply turns on.
- The power supply will switch to the constant current level at 70% in turn, starting from 5:00am, which is 11:00 after the power supply turns on. The constant current level remains till 6:30am, which is 14:00 after the power supply turns on.

### **OUTPUT LOAD vs TEMPERATURE**



STATIC CHARACTERISTIC / POWER FACTOR (PF) CHARACTERISTIC

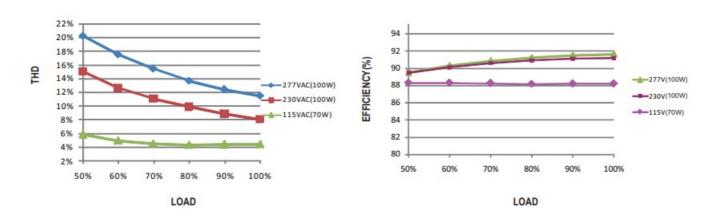




※ De-rating is needed under low input voltage.

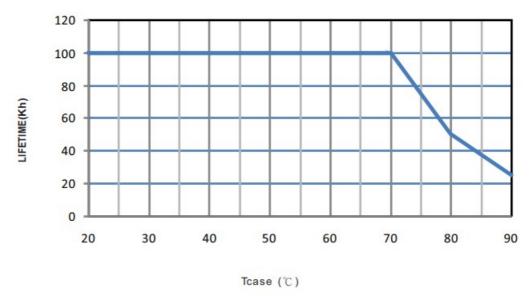
## ❖De-rating is needed under low input voltage

## TOTAL HARMONIC DISTORTION (THD) / EFFICIENCY vs LOAD



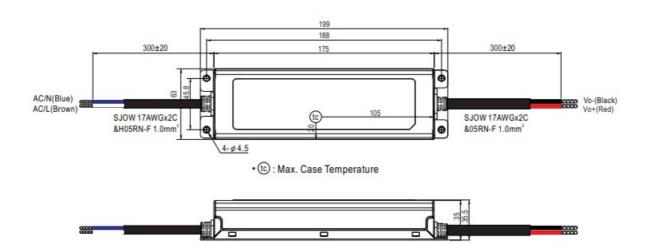
- \* 54V Model, Tcase at 80°C
- ELG-100 series possess superior working efficiency that up to 91% can be reached in field applications.
- \* 54V Model, Tcase at 80°C

### **LIFE TIME**

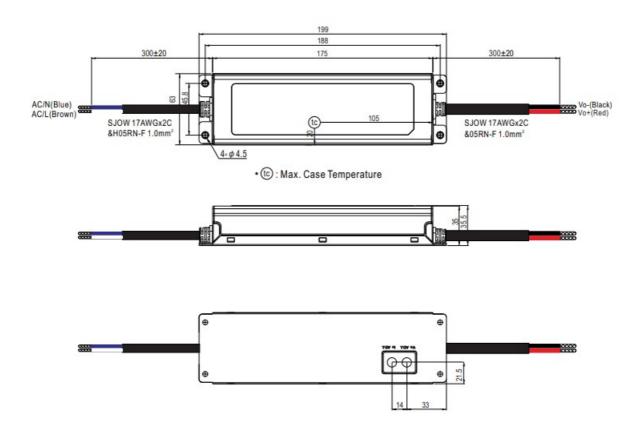


# **Mechanical Specification**

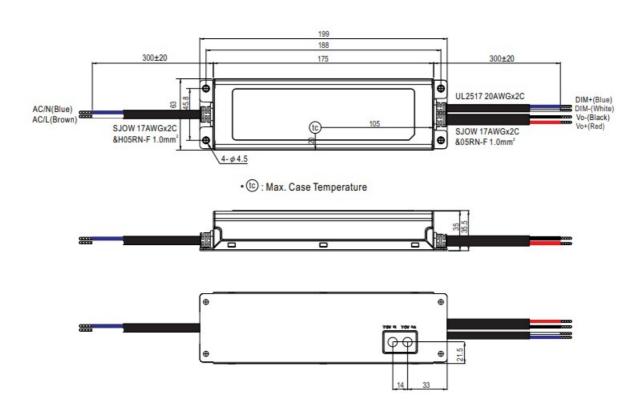
# \* Blank-Type



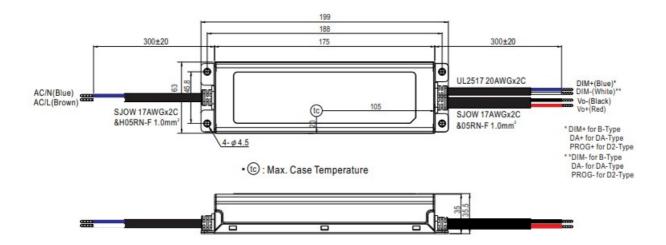
❖ A-Type



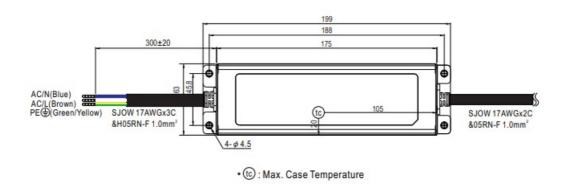
# \* AB-Type



❖ B/DA/D2-Type



#### \* 3Y Model (3-wire input)



- Note 1: Please connect the case to PE for the complete EMC deliverance and safety use.
- Note 2: Please contact MEAN WELL for the input wiring option with PE.

### **Documents / Resources**



MEAN WELL ELG-100 Series 70 to 100W Constant Voltage and Constant Current LED Dri ver [pdf] Owner's Manual

ELG-100 Series 70 to 100W Constant Voltage and Constant Current LED Driver, ELG-100 Series, 70 to 100W Constant Voltage and Constant Current LED Driver, Constant Voltage and Constant Current LED Driver, Constant Current LED Driver, Current LED Driver, LED Driver

#### References

- Installation Manual-MEAN WELL Switching Power Supply Manufacturer
- Product Liability Disclaimer-MEAN WELL Switching Power Supply Manufacturer

Manuals+,