



### ■ Features :

- Universal AC input / Full range (up to 295VAC)
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Output voltage and constant current level adjustable
- Built-in active PFC function
- IP66 design for indoor or outdoor installations
- Cooling by free air convection
- 100% full load burn-in test
- High reliability
- Suitable for LED lighting and moving sign applications
- Compliance to worldwide safety regulations for lighting
- Suitable for dry / damp / wet locations
- 3 years warranty

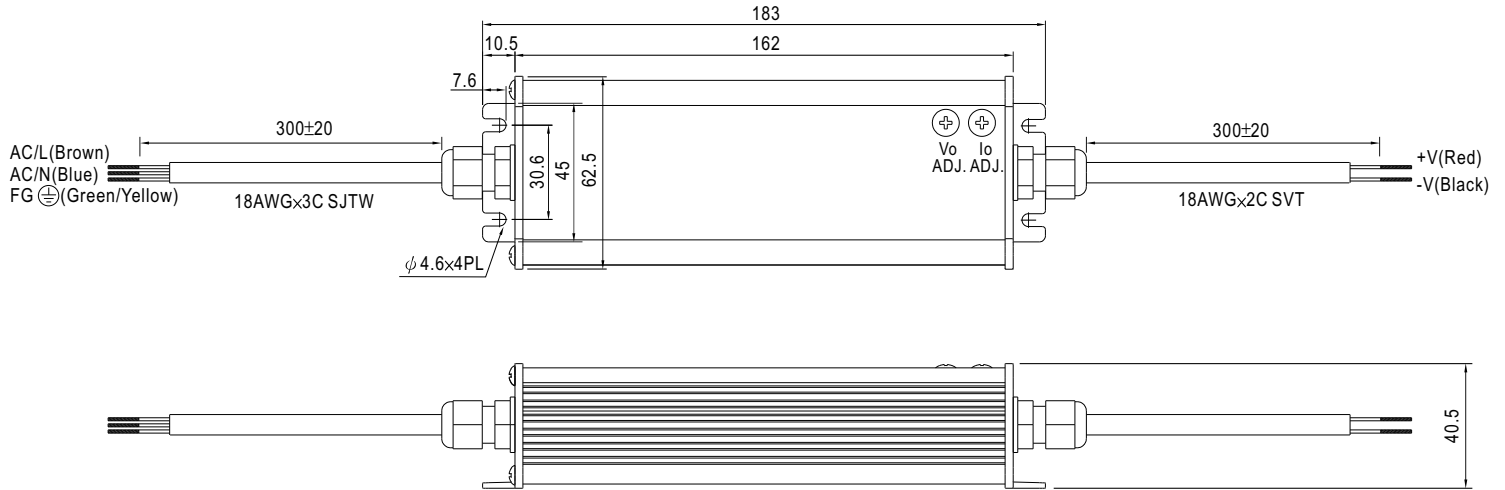


### SPECIFICATION

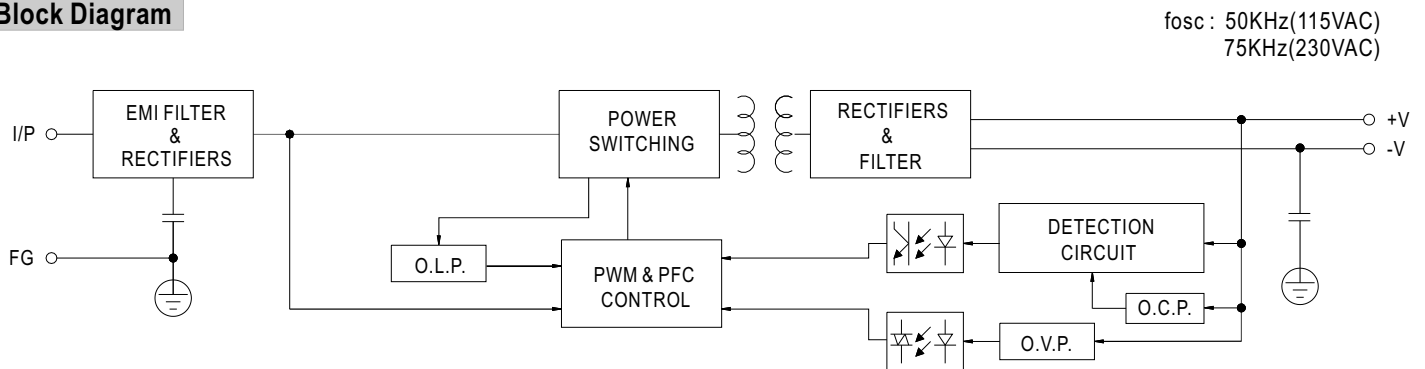
MODEL		CEN-60-12	CEN-60-15	CEN-60-20	CEN-60-24	CEN-60-30	CEN-60-36	CEN-60-42	CEN-60-48	CEN-60-54	
OUTPUT	DC VOLTAGE	12V	15V	20V	24V	30V	36V	42V	48V	54V	
	CONSTANT CURRENT OPERATION VOLTAGE Note.5	9 ~ 12V	11.25 ~ 15V	15 ~ 20V	18 ~ 24V	22.5 ~ 30V	27 ~ 36V	31.5 ~ 42V	36 ~ 48V	40.5 ~ 54V	
	RATED CURRENT	5A	4A	3A	2.5A	2A	1.7A	1.45A	1.3A	1.15A	
	CURRENT RANGE	0 ~ 5A	0 ~ 4A	0 ~ 3A	0 ~ 2.5A	0 ~ 2A	0 ~ 1.7A	0 ~ 1.45A	0 ~ 1.3A	0 ~ 1.15A	
	RATED POWER	60W	60W	60W	60W	60W	61.2W	60.9W	62.4W	62.1W	
	RIPPLE & NOISE (max.) Note.2	2Vp-p	2.4Vp-p	1.8Vp-p	2.4Vp-p	3Vp-p	3.6Vp-p	4Vp-p	4.6Vp-p	5Vp-p	
	VOLTAGE ADJ. RANGE (svr1)	10.8 ~ 13.5V	13.5 ~ 17V	17 ~ 22V	22 ~ 27V	27 ~ 33V	33 ~ 40V	37 ~ 46V	43 ~ 53V	49 ~ 58V	
	CURRENT ADJ. RANGE (svr2)	3.75 ~ 5A	3 ~ 4A	2.3 ~ 3A	1.9 ~ 2.5A	1.5 ~ 2A	1.3 ~ 1.7A	1.1 ~ 1.45A	1 ~ 1.3A	0.9 ~ 1.15A	
	VOLTAGE TOLERANCE Note.3	±10%									
	LINE REGULATION	±3.0%									
LOAD REGULATION	±5.0%										
SETUP TIME	1400ms / 230VAC 2800ms / 115VAC at full load										
INPUT	VOLTAGE RANGE Note.4	90 ~ 295VAC		127 ~ 417VDC							
	FREQUENCY RANGE	47 ~ 63Hz									
	POWER FACTOR (Typ.)	PF ≥ 0.9 at 75 ~ 100% load, 115VAC / 230VAC ; PF > 0.97 / 115VAC PF > 0.95 / 230VAC at full load									
	EFFICIENCY (Typ.)	86%	87%	88%	89%	90%	90%	90%	91%	91%	
	AC CURRENT (Typ.)	0.8A/115VAC		0.4A/230VAC							
	INRUSH CURRENT (Typ.)	45A/230VAC									
LEAKAGE CURRENT	<0.75mA / 240VAC										
PROTECTION	OVER CURRENT	95 ~ 110% Protection type : Constant current limiting, recovers automatically after fault condition is removed									
	SHORT CIRCUIT	Hiccup mode, recovers automatically after fault condition is removed									
	OVER VOLTAGE	14.5 ~ 17V	17.5 ~ 21V	22.8 ~ 26V	28 ~ 34V	34 ~ 38V	41 ~ 46V	47 ~ 52V	54 ~ 60V	59 ~ 65V	
	OVER TEMPERATURE	85°C ±10°C (RTH1) Protection type : Shut down o/p voltage, re-power on to recover									
ENVIRONMENT	WORKING TEMP.	-30 ~ +70°C (Refer to output load derating curve)									
	WORKING HUMIDITY	20 ~ 95% RH non-condensing									
	STORAGE TEMP., HUMIDITY	-40 ~ +80°C, 10 ~ 95% RH									
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)									
	VIBRATION	10 ~ 500Hz, 5G 12min./1cycle, period for 72min. each along X, Y, Z axes									
SAFETY & EMC	SAFETY STANDARDS	UL8750, TUV EN61347-1, EN61347-2-13, IP66 approved									
	WITHSTAND VOLTAGE	I/P-O/P:3.75KVAC		I/P-FG:1.88KVAC		O/P-FG:0.5KVAC					
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH									
	EMI CONDUCTION & RADIATION	Compliance to EN55015									
	HARMONIC CURRENT	Compliance to EN61000-3-2 Class C (≥ 75% load) ; EN61000-3-3									
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, EN61547, light industry level (surge 4KV), criteria A									
	MTBF	523.4Khrs min. MIL-HDBK-217F (25°C)									
OTHERS	DIMENSION	183*62.5*40.5mm (L*W*H)									
	PACKING	0.56Kg;24pcs/14.4Kg/1.11CUFT									
NOTE	<ol style="list-style-type: none"> <li>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</li> <li>2. Ripple &amp; noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf &amp; 47uf parallel capacitor. Direct connecting to LEDs is not suggested for models with "RIPPLE &amp; NOISE" &gt;±10% and using additional drivers is highly recommended.</li> <li>3. Tolerance : includes set up tolerance, line regulation and load regulation.</li> <li>4. Derating may be needed under low input voltage. Please check the static characteristics for more details.</li> <li>5. Constant current operation region is within 75% ~ 100% rated output voltage. This is the suitable operation region for LED related applications, but please reconfirm special electrical requirements for some specific system design.</li> <li>6. The power supply 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.</li> </ol>										

**Mechanical Specification**

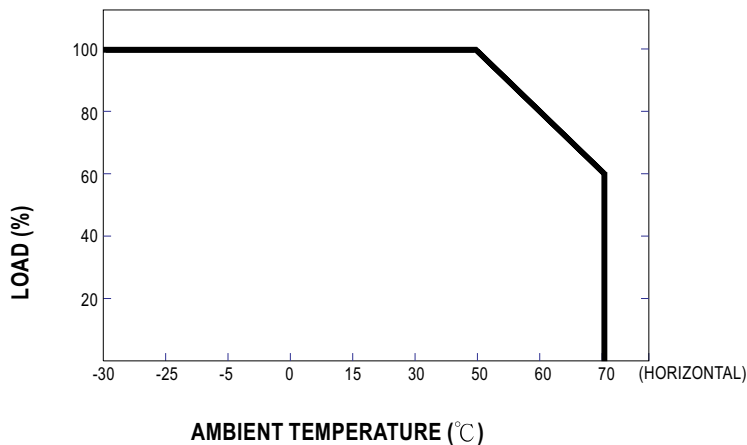
Case No.993B Unit:mm



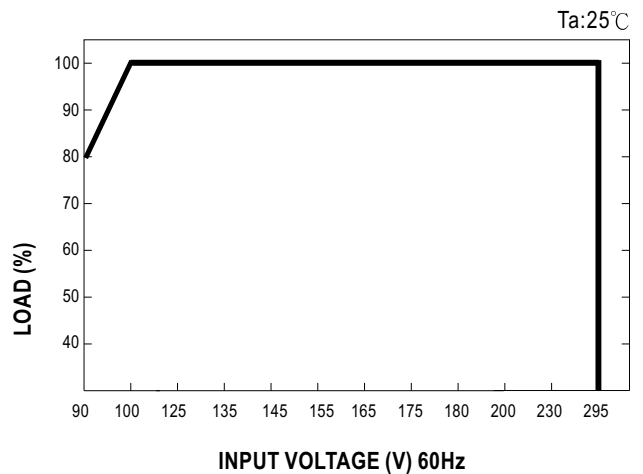
**Block Diagram**



**Derating Curve**



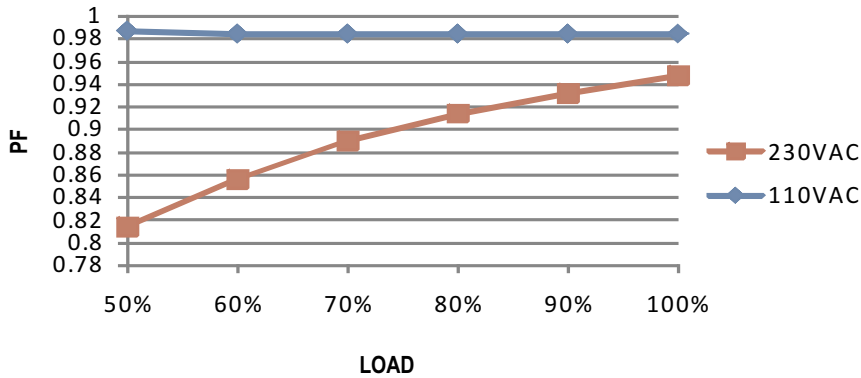
**Static Characteristics**



**Power Factor Characteristic**

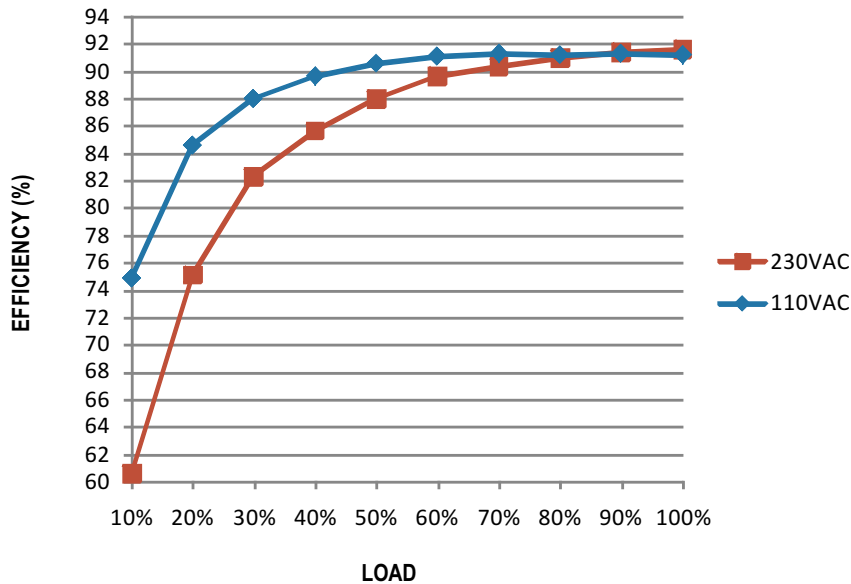
Power factor will be higher than 0.9 when output loading is 75% or higher.

**Constant Current Mode**



**EFFICIENCY vs LOAD (48V Model)**

CEN-60 series possess superior working efficiency that up to 91% can be reached in field applications.

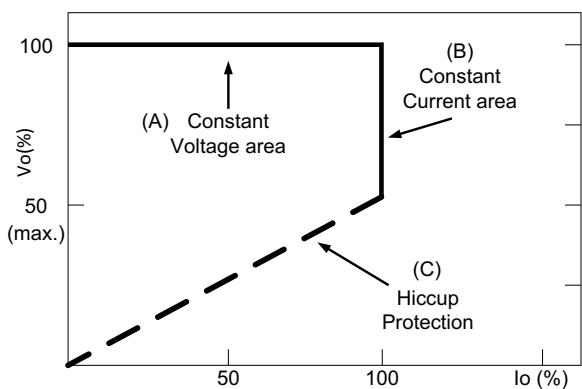


**DRIVING METHODS OF LED MODULE**

There are two major kinds of LED drive method "direct drive" and "with LED driver".

A typical LED power supply may either work in "constant voltage mode (CV) or constant current mode (CC)" to drive the LEDs.

Mean Well's LED power supply with CV+ CC characteristic can be operated at both CV mode [with LED driver, at area (A)] and CC mode [direct drive, at area (B)].



Typical LED power supply I-V curve