

60W Single Output LED Power Supply

PLN-60 series



Features :

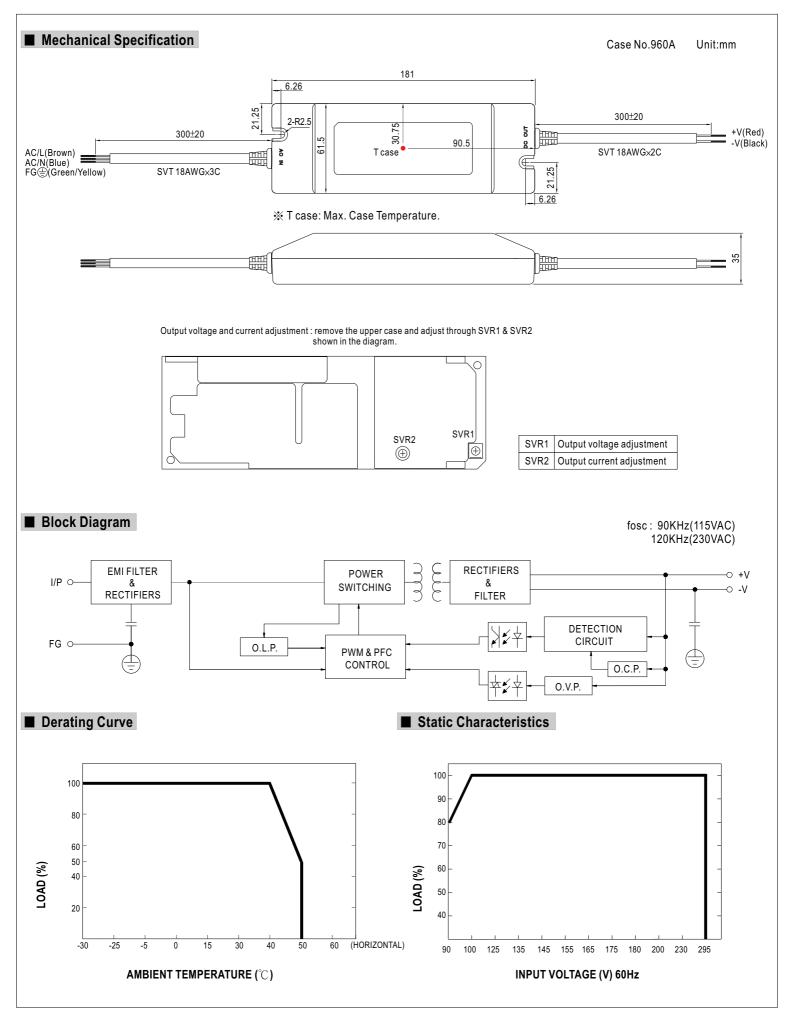
- Universal AC input / Full range (up to 295VAC)
- High efficiency 89%
- Protections:Short circuit/Over load/Over voltage/Over temperature
- Cooling by free air convection
- Built-in constant current limiting circuit with adjustable OCP level
- Fully isolated plastic case with IP64 level
- Built-in active PFC function
- IP64 design for indoor or outdoor installations
- Pass LPS
- UL1310 Class 2 power unit
- 100% full load burn-in test
- High reliability
- Suitable for LED lighting and moving sign applications (Note.2)
- Suitable for dry / damp locations
- Compliance to worldwide safety regulations for lighting
- 2 years warranty

E	307	F \	110 M	/ W/	SELV	LPS	(for 48V only)	c RL us	(except for 48V)	P64 (P	APPROVED	CE	
SPECIFICATIO	N													

VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	5A 0~5A 60W 2Vp-p 11.5~13V Can be adjuste 3%~ -25%. Ca ±10% ±3.0% ±5.0% 1500ms / 230V	15V 10.5 ~15V 4A 0 ~ 4A 60W 2.4Vp-p 14.5 ~ 16.2V d by internal poter n be adjusted by internal poter		24V 16.8 ~24V 2.5A 0 ~ 2.5A 60W 2.7Vp-p 24 ~ 26V meter SVR2	27V 18.9~27V 2.3A 0~2.3A 62.1W 2.7Vp-p 25~30V	36V 25.2 ~ 36V 1.7A 0 ~ 1.7A 61W 3.6Vp-p 32.5 ~ 39V	48V 33.6 ~ 48V 1.3A 0 ~ 1.3A 62.5W 4.6Vp-p						
RATED CURRENT CURRENT RANGE RATED POWER RIPPLE & NOISE (max.) Note.2 VOLTAGE ADJ. RANGE Note.5 CURRENT ADJ. RANGE Note.5 VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	5A 0~5A 60W 2Vp-p 11.5~13V Can be adjuste 3%~ -25%. Ca ±10% ±3.0% ±5.0% 1500ms / 230V	4A 0 ~ 4A 60W 2.4Vp-p 14.5 ~ 16.2V d by internal poter	3A 0 ~ 3A 60W 1.8Vp-p 19.5 ~ 22V ntial meter SVR1	2.5A 0~2.5A 60W 2.7Vp-p 24~26V	2.3A 0~2.3A 62.1W 2.7Vp-p	1.7A 0~1.7A 61W 3.6Vp-p	1.3A 0 ~ 1.3A 62.5W						
CURRENT RANGE RATED POWER RIPPLE & NOISE (max.) Note.2 VOLTAGE ADJ. RANGE Note.5 CURRENT ADJ. RANGE Note.5 VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	0 ~ 5A 60W 2Vp-p 11.5 ~ 13V Can be adjuste 3% ~ -25%. Ca ±10% ±3.0% ±5.0% 1500ms / 230V	0 ~ 4A 60W 2.4Vp-p 14.5 ~ 16.2V d by internal poter	0 ~ 3A 60W 1.8Vp-p 19.5 ~ 22V ntial meter SVR1	0 ~ 2.5A 60W 2.7Vp-p 24 ~ 26V	0 ~ 2.3A 62.1W 2.7Vp-p	0~1.7A 61W 3.6Vp-p	0~1.3A 62.5W						
RATED POWER RIPPLE & NOISE (max.) Note.2 VOLTAGE ADJ. RANGE Note.5 CURRENT ADJ. RANGE Note.5 VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	60W 2Vp-p 11.5 ~ 13V Can be adjuste 3% ~ -25%. Ca ±10% ±3.0% ±5.0% 1500ms / 230V	60W 2.4Vp-p 14.5 ~ 16.2V d by internal poter	60W 1.8Vp-p 19.5 ~ 22V ntial meter SVR1	60W 2.7Vp-p 24 ~ 26V	62.1W 2.7Vp-p	61W 3.6Vp-p	62.5W						
RIPPLE & NOISE (max.) Note.2 VOLTAGE ADJ. RANGE Note.5 CURRENT ADJ. RANGE Note.5 VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	2 2Vp-p 11.5 ~ 13V Can be adjuste 3% ~ -25%. Ca ±10% ±3.0% ±5.0% 1500ms / 230V	2.4Vp-p 14.5 ~ 16.2V d by internal poter	1.8Vp-p 19.5 ~ 22V ntial meter SVR1	2.7Vp-p 24 ~ 26V	2.7Vp-p	3.6Vp-p							
VOLTAGE ADJ. RANGE Note.5 CURRENT ADJ. RANGE Note.5 VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	11.5 ~ 13V Can be adjuste 3% ~ -25%. Ca ±10% ±3.0% ±5.0% 1500ms / 230V	14.5 ~ 16.2V d by internal poter	19.5 ~ 22V ntial meter SVR1	24 ~ 26V			4.6Vp-p						
VOLTAGE ADJ. RANGE Note.5 CURRENT ADJ. RANGE Note.5 VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	11.5 ~ 13V Can be adjuste 3% ~ -25%. Ca ±10% ±3.0% ±5.0% 1500ms / 230V	14.5 ~ 16.2V d by internal poter	19.5 ~ 22V ntial meter SVR1	24 ~ 26V									
CURRENT ADJ. RANGE Note.5 VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	Can be adjuste 3% ~ -25%. Ca ±10% ±3.0% ±5.0% 1500ms / 230V	d by internal poter	ntial meter SVR1				43.6 ~ 51.8V						
VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	3% ~ -25%. Ca ±10% ±3.0% ±5.0% 1500ms / 230V			eter SVR2									
VOLTAGE TOLERANCE Note.3 LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	±10% ±3.0% ±5.0% 1500ms / 230V				5 3% ~ -25%. Can be adjusted by internal potential meter SVR2								
LINE REGULATION LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	±3.0% ±5.0% 1500ms / 230V												
LOAD REGULATION SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	±5.0% 1500ms / 230V												
SETUP TIME VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)	1500ms / 230V/												
VOLTAGE RANGE Note.4 FREQUENCY RANGE POWER FACTOR (Typ.)		1500ms / 230VAC 3000ms / 115VAC at full load											
FREQUENCY RANGE POWER FACTOR (Typ.)	190~295VAC	Note.4 90 ~ 295VAC 127 ~ 417VDC											
POWER FACTOR (Typ.)	4 90~295VAC 127~417VDC 47~63Hz												
())	4/ ~ 03HZ PF>0.98/115VAC, PF>0.9/230VAC, PF>0.9/277VAC at full load (Please refer to "Power Factor Characteristic" curve)												
	85%	86%	-	87%	88%		89%						
EFFICIENCY (Typ.)			87.5%	0170	00%	89%	09%						
	0.8A/115VAC 0.4A/230VAC												
INRUSH CURRENT (max.)	40A/230VAC												
LEAKAGE CURRENT	<0.75mA / 240VAC												
OVER CURRENT	95~110%												
	Protection type : Constant current limiting, recovers automatically after fault condition is removed Hiccup mode, recovers automatically after fault condition is removed.												
SHORT CIRCUIT													
OVER VOLTAGE	13.8 ~ 16V	17.5 ~ 21V	23 ~ 26V	28 ~ 32V	31 ~ 35V	41 ~ 46V	54 ~ 60V						
			voltage, re-power o										
OVER TEMPERATURE	$95^{\circ}C \pm 10^{\circ}C$ (TSW1) detect on heatsink of power transistor												
	Protection type : Shut down o/p voltage, recovers automatically after temperature goes down												
WORKING TEMP.	-30 ~ +50°C (Refer to "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, 2G 12min./1cycle, period for 72min. each along X, Y, Z axes												
SAFETY STANDARDS	UL879, UL8750, UL1310 Class 2, TUV EN61347-1, EN61347-2-13 independent												
SAFETT STANDARDS	CAN/CSA C22.2 No. 223-M91(except for 48V); J61347-1, J61347-2-13, IP64 approved												
AFETY & WITHSTAND VOLTAGE		I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FG:0.5KVAC											
ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH												
EMC EMISSION													
EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024,EN61547, light industry level, criteria A												
MTBF	497.8Khrs min	MIL-HDBK-21	7F (25°C)										
DIMENSION	181*61.5*35mm (L*W*H)												
PACKING	0.5Kg; 24pcs/1	3Kg/0.75CUFT											
 All parameters NOT specia Ripple & noise are measure Tolerance : includes set up 	ed at 20MHz of tolerance, line r nder low input v isted through the region is within requirements fo	bandwidth by usi egulation and loa oltage. Please ch e SVR1 on the PC 70% ~100% rate r some specific sp onent that will be	ng a 12" twisted p id regulation. eck the static cha CB ; limit of output d output voltage. ystem design.	air-wire terminate racteristics for mo constant current This is the suitable pination with final e	d with a 0.1uf & 47 re details. level can be adjus operation region equipment. Since I	7uf parallel capacito ted through the SV for LED related app EMC performance v	'R2 on the PCB. olications, but pleas						
IS EN EN DI P/ 1 2 3	OLATION RESISTANCE MC EMISSION MC IMMUNITY TBF MENSION ACKING . All parameters NOT specia . Ripple & noise are measur . Tolerance : includes set up . Derating may be needed . Dortput voltage can be adju . Constant current operation reconfirm special electrical	ITHSTAND VOLTAGE I/P-O/P:3.75K OLATION RESISTANCE I/P-O/P:100M (Compliance to MC EMISSION MC EMISSION Compliance to Compliance to MC IMMUNITY Compliance to TBF 497.8Khrs min. MENSION 181*61.5*35mr ACKING 0.5Kg; 24pcs/1 . All parameters NOT specially mentioned ar Ripple & noise are measured at 20MHz of Tolerance : includes set up tolerance, line r . Derating may be needed under low input v. Output voltage can be adjusted through the Constant current operation region is within reconfirm special electrical requirements fo. . The power supply is considered as a comp	ITHSTAND VOLTAGE I/P-O/P:3.75KVAC I/P-FG:1.1 OLATION RESISTANCE I/P-O/P:100M Ohms / 500VDC / / MC EMISSION Compliance to EN55015, EN550 MC IMMUNITY Compliance to EN61000-4-2,3,4 TBF 497.8Khrs min. MENSION 181*61.5*35mm (L*W*H) CKING 0.5Kg; 24pcs/13Kg/0.75CUFT All parameters NOT specially mentioned are measured at 22 Ripple & noise are measured at 20MHz of bandwidth by usi. Tolerance : includes set up tolerance, line regulation and log Derating may be needed under low input voltage. Please ch Output voltage can be adjusted through the SVR1 on the Pt Constant current operation region is within 70% ~100% rate reconfirm special electrical requirements for some specific sy. The power supply is considered as a component that will be	ITHSTAND VOLTAGE I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FC OLATION RESISTANCE I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH MC EMISSION Compliance to EN55015, EN55022 (CISPR22) Class MC IMMUNITY Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024 TBF 497.8Khrs min. MENSION 181*61.5*35mm (L*W*H) ACKING 0.5Kg; 24pcs/13Kg/0.75CUFT A Bipple & noise are measured at 230VAC input, rated p. Ripple & noise are measured at 200HZ of bandwidth by using a 12" twisted p. Tolerance : includes set up tolerance, line regulation and load regulation. Derating may be needed under low input voltage. Please check the static chag. Output voltage can be adjusted through the SVR1 on the PCB ; limit of output Constant current operation region is within 70% ~100% rated output voltage. Teconfirm special electrical requirements for some specific system design. The power supply is considered as a component that will be operated in combined as a component that will be operated in combined as a component that will be operated in combined as a component that will be operated in combined as a component that will be operated in combined as a component that will be operated in combined as a component that will be operated in combined as a component that will be operated in combined as a component that will be operated in combined as a component that will be operated in combined as a component that will be operated in combined	ITHSTAND VOLTAGE I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FG:0.5KVAC OLATION RESISTANCE I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH MC EMISSION Compliance to EN55015, EN55022 (CISPR22) Class B, EN61000-3-2 MC IMMUNITY Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024,EN61547, light in TBF 497.8Khrs min. MIL-HDBK-217F (25°C) MENSION 181*61.5*35mm (L*W*H) 0.5Kg; 24pcs/13Kg/0.75CUFT ACKING 0.5Kg; 24pcs/13Kg/0.75CUFT 0.8Kg; 24pcs/13Kg/0.75CUFT All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C o 0.8Kg; 24pcs/13Kg/0.75CUFT All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C o 0.8Kg; 24pcs/13Kg/0.75CUFT Operating may be needed under low input voltage. Please check the static characteristics for more confirm may be needed under low input voltage. Please check the static characteristics for more Output voltage can be adjusted through the SVR1 on the PCB ; limit of output constant current 1 Constant current operation region is within 70% ~100% rated output voltage. This is the suitable reconfirm special electrical requirements for some specific system design. The power supply is considered as a component that will be operated in combination with final effect the state output voltage. This is the suitable provide the supply is considered as a component that will be operated in combination with final effect the supply is considered as a component that	ITHSTAND VOLTAGE I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FG:0.5KVAC OLATION RESISTANCE I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH MC EMISSION Compliance to EN55015, EN55022 (CISPR22) Class B, EN61000-3-2 Class C (≥ 75% lc MC IMMUNITY Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024,EN61547, light industry level, criter TBF 497.8Khrs min. MIL-HDBK-217F (25°C) MENSION 181*61.5*35mm (L*W*H) 0.5Kg; 24pcs/13Kg/0.75CUFT ACKING 0.5Kg; 24pcs/13Kg/0.75CUFT A Bipple & noise are measured at 230VAC input, rated load and 25°C of ambient temperar Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47 Tolerance: includes set up tolerance, line regulation and load regulation. Derating may be needed under low input voltage. Please check the static characteristics for more details. Output voltage can be adjusted through the SVR1 on the PCB ; limit of output constant current level can be adjust. Constant current operation region is within 70% ~100% rated output voltage. This is the suitable operation region reconfirm special electrical requirements for some specific system design. The power supply is considered as a component that will be operated in combination with final equipment. Since I	ITHSTAND VOLTAGE I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FG:0.5KVAC OLATION RESISTANCE I/P-O/P:3.75KVAC I/P-FG:1.88KVAC O/P-FG:0.5KVAC OLATION RESISTANCE I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH MC EMISSION Compliance to EN55015, EN55022 (CISPR22) Class B, EN61000-3-2 Class C (≥ 75% load); EN61000-3-3 MC IMMUNITY Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024,EN61547, light industry level, criteria A TBF 497.8Khrs min. MIL-HDBK-217F (25°C) MENSION 181*61.5*35mm (L*W*H)						

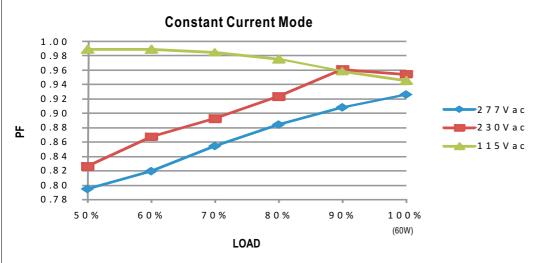


PLN-60 series



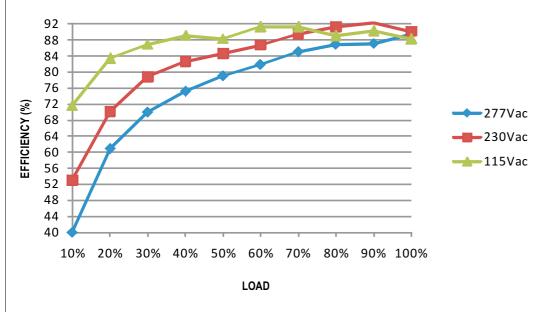


Power Factor Characteristic



■ EFFICIENCY vs LOAD (48V Model)

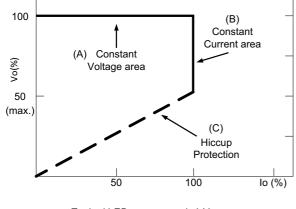
PLN-60 series possess superior working efficiency that up to 89% can be reached in field applications.



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