

■ Features :

- 180-264VAC input only
- Fully encapsulated with IP67 level
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Cooling by free air convection
- Pass LPS
- 100% full load burn-in test
- Suitable for LED lighting and moving sign applications
- High reliability / Low cost
- 2 years warranty

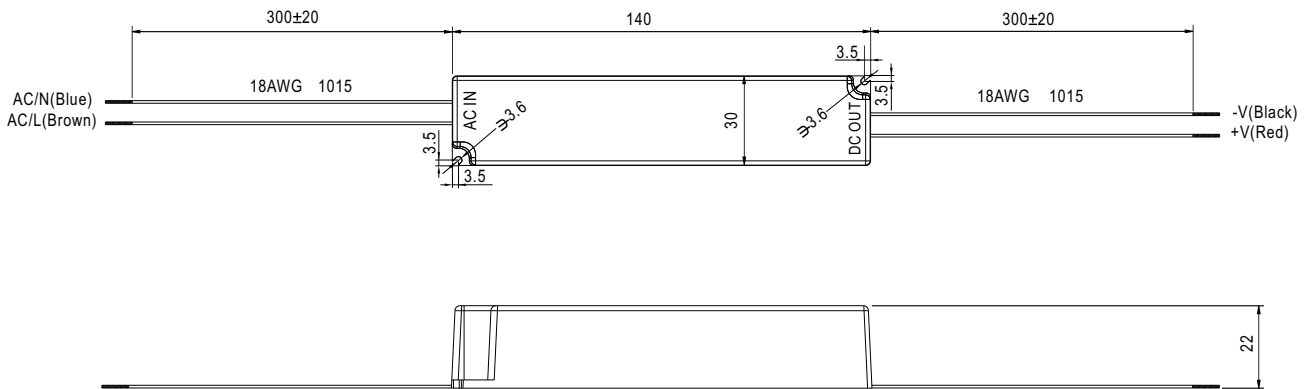
SPECIFICATION

LPS IP67

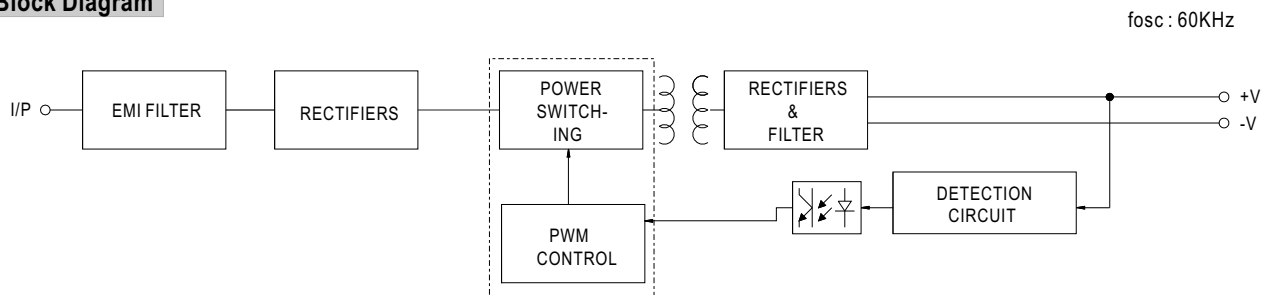
MODEL		LPH-18-12	LPH-18-24	LPH-18-36
OUTPUT	DC VOLTAGE	12V	24V	36V
	RATED CURRENT	1.5A	0.75A	0.5A
	CURRENT RANGE	0 ~ 1.5A	0 ~ 0.75A	0 ~ 0.5A
	RATED POWER	18W	18W	18W
	RIPPLE & NOISE (max.) Note.2	120mVp-p	150mVp-p	200mVp-p
	VOLTAGE TOLERANCE Note.3	±3.0%		
	LINE REGULATION	±1.0%		
	LOAD REGULATION	±2.0%		
	SETUP, RISE TIME	1500ms, 30ms / 230VAC		
HOLD UP TIME (Typ.)	50ms/230VAC at full load			
INPUT	VOLTAGE RANGE	180 ~ 264VAC 254 ~ 370VDC		
	FREQUENCY RANGE	47 ~ 63Hz		
	EFFICIENCY(Typ.)	78%	82%	83%
	AC CURRENT	0.3A/230VAC		
	INRUSH CURRENT(max.)	Cold start 50A/230VAC		
LEAKAGE CURRENT	0.25mA / 240VAC			
PROTECTION	OVER CURRENT	Above 105% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed		
	OVER VOLTAGE	13.8~ 16.2V	27.6~ 32.4V	41.4 ~ 48.6V
	OVER TEMPERATURE	Tj 170 t typically (U1) Detect on main control IC Protection type : Hiccup mode, recovers automatically after temperature goes down		
ENVIRONMENT	WORKING TEMP.	-30 ~ 70°C (Refer to output load derating curve)		
	WORKING HUMIDITY	20 ~ 90% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-40 ~ +80°C, 10 ~ 95% RH		
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)		
SAFETY & EMC (Note 4)	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes		
	SAFETY STANDARDS	TUV EN60950-1, IP67 approved; design refer to UL1310 Class 2, EN61347-2-13, CAN/CSA C22.2 No. 223-M91		
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC		
	ISOLATION RESISTANCE	I/P-O/P:>100M Ohms / 500VDC / 25°C / 70% RH		
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22) Class B		
OTHERS	HARMONIC CURRENT	Compliance to EN61000-3-2 Class A, EN61000-3-3		
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, Light industry level, criteria A		
	MTBF	1200.6K hrs min. MIL-HDBK-217F (25)		
NOTE	DIMENSION	140*30*22(L*W*H)		
	PACKING	0.175Kg; 70pcs/13.3Kgs/0.71CUFT		
<p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. 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.</p>				

Mechanical Specification

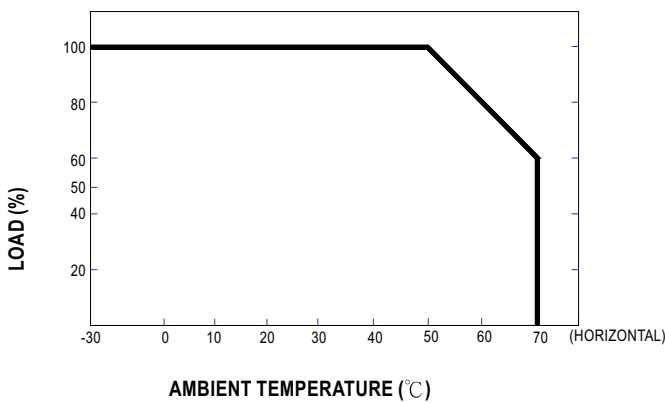
Unit:mm



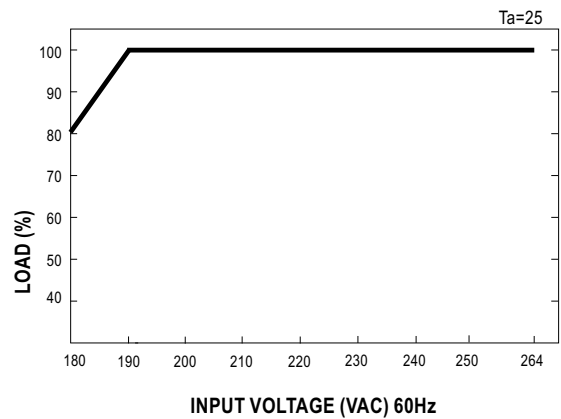
Block Diagram



Derating Curve



Static Characteristics



MODEL : LPH-18-12

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 120 mVp-p (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	V1: 36 mVp-p (Max)	PASS
2	OUTPUT VOLTAGE TOLERANCE	V1: -3 %~ +3 % (Max)	I/P: 190VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25°C	V1: -0.208 %~ +0.208 %	PASS
3	LINE REGULATION	V1: -1 %~ +1 % (Max)	I/P: 190 VAC ~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0 %~ 0 %	PASS
4	LOAD REGULATION	V1: -2 %~ +2 % (Max)	I/P: 230 VAC O/P:FULL -MIN LOAD Ta:25°C	V1: 0 %~ 0 %	PASS
5	SET UP TIME	230VAC/ 1500 ms (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 856.6 ms	PASS
6	RISE TIME	230VAC/ 30 ms (Max)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230 VAC/ 7.34 ms	PASS
7	HOLD UP TIME	230VAC/ 50 ms (Typ)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	230VAC/ 57.6 ms	PASS
8	OVER/UNDERSHOOT TEST	<±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	TEST: < 5 %	PASS
9	DYNAMIC LOAD	V1: 1200 mVp-p	I/P: 230 VAC O/P: (1)FULL /Min LOAD 90%DUTY/1KHZ (2)FULL /Min LOAD 50%DUTY/120HZ Ta:25°C	(1) 426 mVp-p (2) 740 mVp-p	PASS

INPUT FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180 VAC~ 264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25°C	120 V~ 264 V	PASS
			I/P: LOW-LINE-3V= 177 V HIGH-LINE+15%= 300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 180 VAC ~264 VAC O/P:FULL-MIN LOAD Ta:25°C	TEST: OK	PASS
3	EFFICIENCY	78 % (Typ)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	80.02 %	PASS
4	INPUT CURRENT	230 V/ 0.3 A (Typ)	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 0.15 A/ 230VAC	PASS
5	INRUSH CURRENT	230 V/ 50 A (max) COLD START	I/P: 230 VAC O/P:FULL LOAD Ta:25°C	I = 45.6 A/ 230VAC	PASS

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	>105% RATED OUTPUT POWER	I/P: 264 VAC I/P: 230 VAC I/P: 190 VAC O/P:TESTING Ta:25°C	149 %/264VAC 141 %/ 230VAC 129 %/190 VAC Hiccup Mode	PASS
2	OVER VOLTAGE PROTECTION	CH1: 13.8 V~ 16.2 V	I/P: 230 VAC O/P:MIN LOAD Ta:25°C	15.28 V/ 230VAC Shut off o/p voltage, clamping by zener diode	PASS
3	OVER TEMPERATURE PROTECTION	SPEC: Tj 170°C O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Hiccup Mode , recovers automatically after temperature goes down	PASS
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P: FULL LOAD Ta:25°C	NO DAMAGE Hiccup Mode	PASS

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT	
1	TEMPERATURE RISE TEST	MODEL : LPH-18-12 1. ROOM AMBIENT BURN-IN : 2 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 25.2 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P: 230 VAC O/P: 100% LOAD Ta= 45.3 °C			PASS	
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P: 230 VAC O/P: 130 % LOAD Ta:25°C	TEST : OK	PASS	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P: 230 VAC O/P: 100 % LOAD Ta= -30 °C	TEST : OK	PASS	
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P: 272 VAC O/P:FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	PASS	
5	TEMPERATURE COEFFICIENT	± 0.03 %(0-50°C)	I/P: 230 VAC O/P:FULL LOAD	± 0.01 %(0-50°C)	PASS	
6	VIBRATION TEST	1 Carton & 1 Set Operating at I/P: VAC NO LOAD (1) Waveform: Sine Wave (2) Frequency:10-500Hz (3) Sweep Time:10min/sweep cycle (4) Acceleration:2G (5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25°C		TEST : OK	PASS	

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	LPH-18-12 SUPPOSE C 105 I/P: 230 VAC O/P:FULL LOAD I/P: 230 VAC O/P:FULL LOAD	IS THE MOST CRITICAL COMPONENT Ta= 25 °C LIFE TIME= 434526.9 HRS Ta 50 °C LIFE TIME= 60279 HRS		PASS
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 1200.6K HRS			PASS

SAFETY TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3.0 KVAC/min	I/P-O/P: 3.6 KVAC/min Ta:25°C	I/P-O/P: 0.791 mA NO DAMAGE	PASS
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ	I/P-O/P: 500 VDC Ta:25°C	I/P-O/P: >9999 MΩ NO DAMAGE	PASS
4	LEAKAGE CURRENT	< 0.25 mA / 240VAC	I/P: 264 VAC O/P:NO LOAD Ta:25°C	L-FG: 0.072 mA N-FG: 0.071 mA	PASS

E.M.C TEST

NO	TEST ITEM	SPECICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230/240/220 VAC/50HZ O/P:100%/75%/50%/25% LOAD Ta:25°C	PASS	PASS
2	CONDUCTION	EN55022 CLASS B	I/P:230 VAC (50HZ) /115V(60HZ) O/P:FULL/50% LOAD Ta:25°C	PASS Test by certified Lab	PASS
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ)/115V(60HZ) O/P:FULL LOAD Ta:25°C	PASS Test by certified Lab	PASS
4	E.S.D	EN61000-4-2 LIGHT INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
5	E.F.T	EN61000-4-4 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25°C	CRITERIA A	PASS
7	Test by certified Lab & Test Report Prepare				

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	U1 Rated VIPER22A : 730 V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz Ta:25°C	(1) 508 V (2) 524 V (3) 520 V (4) 500 V	PASS
2	Diode Peak Voltage	D 100 Rated HER302 : 100 V 3 A	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz Ta:25°C	(1) 57.2 V (2) 56.4 V (3) 58.0 V (4) 58.0 V	PASS
3	Clamp Diode Peak Voltage	D1 Rated GP20A : 800 V 2 A	I/P:High-Line +3V = 267 V O/P: (1)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (2)Dynamic Load 50% Load/ Min. Load 90%Duty/1KHz Ta:25°C	(1) 544 V (2) 556 V	PASS
4	Input Capacitor Voltage	C 5 Rated CAPXON : 27 u / 400 V 105 °C / KM Series	I/P:High-Line +3V =267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Burn-IN 0.5 Hour Ta:25°C	(1) 316 V (2) 316 V (3) 312 V	PASS
5	Control IC Voltage Test	U 1 Rated VIPER22A : 50 V	I/P:High-Line +3V =267 V O/P:(1) Output Short (2)O.L.P Ta:25°C	(1) 14.5 V (2) 14.5 V	PASS

2007/11/26 A50-G058

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2008/2/29	RD SAMPLE	PASS	SKY	LIUWY
2008/4/29	PRODUCT SAMPLE (W0804C311)	PASS	SKY	LIUWY
2008/7/11	PRODUCT SAMPLE (W0805D011)	PASS	SKY	LIUWY