

**AC-DC Converter****LAF350-220S24W****90Vac to 264Vac Input; 24Vdc Output****RoHS Compliant****Features**

- Compliance with the RoHS EU Directive 2011/65/EU & (EU)2015/863
- Wide input voltage range
- Low noise output
- High reliability output
- Input under voltage protection
- Over current protection
- Over voltage protection
- Short-circuit protection
- Over temperature protection
- Meets IEC/UL/EN 62368-1

**Applications**

- LED Display
- Industrial Equipment

**Description**

The LAF350-220S24W power is an AC/DC converter. It offers a wide input voltage range of 90Vac to 264Vac, and defines a output power 350W with 24Vdc rated output.

The modules are fully protected against input under voltage, output overvoltage, overcurrent, and overtemperature and short-circuit conditions.

## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only, functional operation of the device is not implied at these or any other conditions in excess of those given in the operations sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect the device reliability.

Parameters	Units	Specifications		Notes & conditions
		Min.	Max.	
Operating Ambient Temperature <sup>(1)</sup>	°C	-40	85	Test point is 3cm distance over the central of base plate
Storage Temperature	°C	-40	85	
Operating Humidity	RH (%)	10	90	Non-condensing
Storage Humidity	RH (%)	10	95	Non-condensing
Salt Fog	Concentration 5%, 35°C, pH 6.5~7.2, 8Hours.			

### Note:

- The unit is cooled via the heat sink casting with thermal grease between the external heat sink and the PSU. The unit will be conduction cooled and there could be zero airflow. When external heat sink could not support enough heat dissipation capability under high temperature conditions, the PSU could enter into over temperature protection mode with automatic recovery mode.

## Electrical Specifications

Unless otherwise indicated, specifications apply over all operating input voltage, resistive load, and room temperature conditions.

### AC Input Characteristics

Parameters	Units	Specifications			Notes & conditions
		Min.	Typ.	Max.	
Operating Input Voltage	Vac	90	110/220	264	
Input Frequency Range	Hz	47	50/60	63	
Inrush Current	A	-	-	40	110Vac 25°C
		-	-	60	220Vac 25°C
PF		0.95	-	-	Full load @110Vac&220Vac
Holdup Time	ms	10	-	-	Max.Load= 350W with Vin ≥110VAC, 25°C

**DC Output Characteristics**

The following parameters must be met at all operating conditions including all input frequencies (47Hz – 63Hz), voltages (90VAC – 264VAC), and temperatures (-40°C, 25°C, and 85°C).

Parameters	Units	Specifications			Notes & conditions
		Min.	Typ.	Max.	
Output voltage set point	Vdc	23.52	24	24.48	
Output Current	A	-	-	14.6	Rely on the external heat sink provide heat dissipation condition.
Output Voltage Tolerance	%Vo	-	-	±3	The output voltage should be measured on the PCB or on Pin 3/Pin4 without load on Pin 3/Pin4. Vo decrease by Io increase.
Load Regulation	%Vo	-	-	±2	
Line Regulation	%Vo	-	-	±1	
Output Overshoot	%Vo	-	-	5	
Ripple and Noise	mVp-p	-	-	300	0.1+10uF load, 20MHz band width
Dynamic Response	%Vo	-	-	±5	25%-75%-25%, 1A/μs.
	ms	-	-	200	
Output Power	W	-	-	350	See note 2
Maximum Output Capacitance	μF	-	-	3300	350W output
Turn on Delay	ms	-	-	3000	

**Note:**

- Output power when start up, 0~350W (Full temperature range, PSU starts up output power).  
Output continuous power, 0~350W (When assembly onto a suitable external heatsink, heat test output power).

**Protection Characteristics**

Parameters	Units	Specifications			Notes & conditions
		Min.	Typ.	Max.	
Output Over Voltage Protection	Vdc	25	-	30	Io=8.33A, Hiccup mode. Automatic recovery
Output Over Current Protection	A	19	-	24	Hiccup mode Automatic recovery

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Short Circuit Protection			-	Yes	-	Hiccup mode Automatic recovery
Over Temperature Protection		°C	85	-	100	Po=250W@220Vac, Heat-sink=2000cm <sup>2</sup> . Automatic recovery
Input Undervoltage Lockout	Turn-off Threshold	Vac	-	-	88	Automatic recovery
	Turn-on Threshold	Vac	-	-	90	
	Hysteresis	Vac	2	-	-	

### General Specifications

Parameters	Units	Specifications			Notes & conditions
		Min.	Typ.	Max.	
Efficiency	%	89	90.5	-	115Vac input 300W, 50Hz, 25°C
	%	91.5	93	-	230Vac input 300W, 50Hz, 25°C
Noise	dB	-	-	50	
Enable		-	Yes	-	
MTBF <sup>(3)</sup>	Hour	750,000	-	-	Telcordia SR-332 Issue 4, 2016
FIT		-	-	1,000	10 <sup>9</sup> hours
Weight	g	-	540	-	
Service Lifespan	Year	-	-	10	

**Note:**

3. Calculated Reliability based on Telcordia SR-332 Issue 2: Method 1 Case 3 (VIN=230Vac, Io=14.6A, TA=25°C, conduction cooled, 90% confidence)

### Isolation Specifications

Parameters	Units	Specifications			Notes & conditions	
		Min.	Typ.	Max.		
Isolation Voltage	Input-Output	Vac	3000	-	-	Test duration 1 minute, leakage current less than 10mA, no arcing or

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						breakdown. Or 4300Vdc. Test duration 1 minute, leakage current less than 10mA, no arcing or breakdown. Or 2200Vdc.
	Input-Safety Ground	Vac	1500	-	-	Test duration 1 minute, leakage current less than 5mA, no arcing or breakdown
	Output- Safety Ground	Vdc	750	-	-	

### EMC Specifications

Parameters	Criterion	Specifications
Conducted Emissions	EN55032 Class B	
Radiated Emissions	EN55032 Class B	With a metallic housing.
Surge	IEC61000-4-5	Level 4
Voltage Dips and Interruptions	IEC 61000-4-11 Class 2	
Voltage fluctuations and flicker	IEC 61000-3-3	
Fast transient	IEC 61000-4-4	Level 3

### Safety

Parameters		Units	Specifications			Notes & conditions
			Min.	Typ.	Max.	
Insulation Resistance	Input-Output	MΩ	100	-	-	500Vdc test
Leakage Current		<3.5mA(264Vac, 50Hz)				
Safety Standards		Compliant to IEC 62368-1, UL 62368-1, EN 62368-1 and GB4943				

## Derating Test Setup

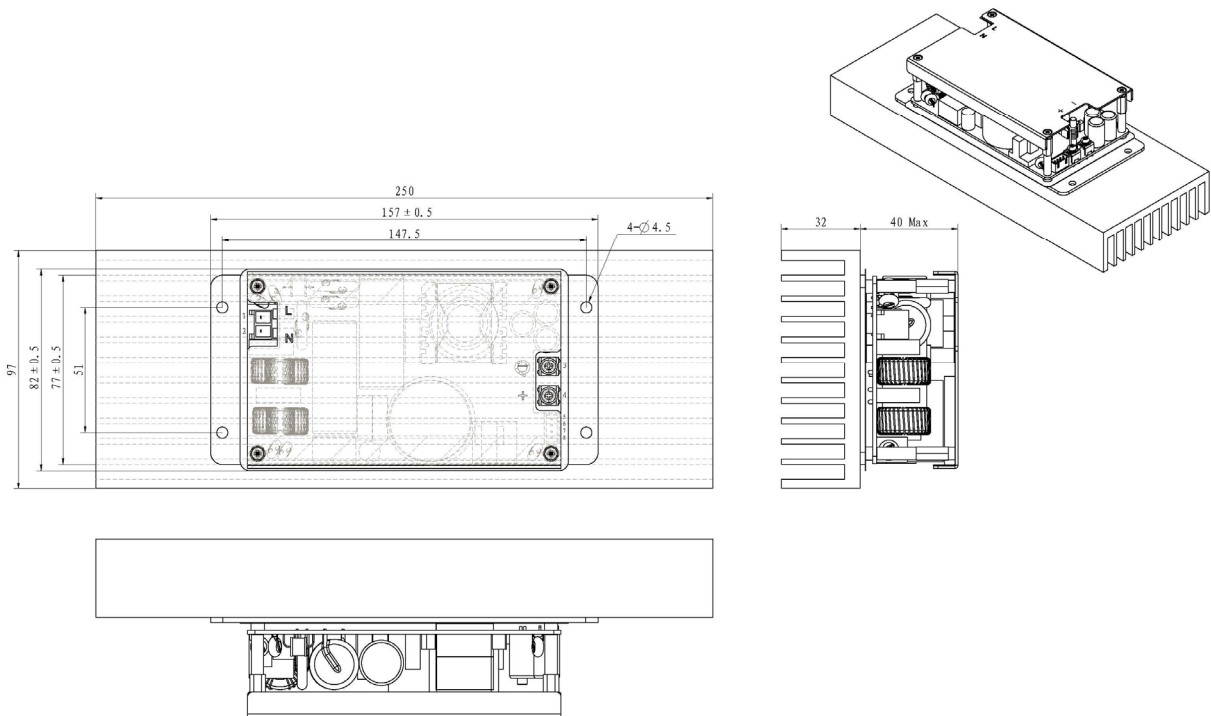


Figure 1. Product heat dissipation configuration diagram

## Note:

1. Thermal grease should be used between the external heatsink and power supply's baseplate.
2. Fasten the four screws of the power supply.
3. Size of the external heatsink is for reference only.
4. Under above assembly condition, when baseplate central position of PSU within  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ , it could output power of 350W without derating.

## Outline Diagram

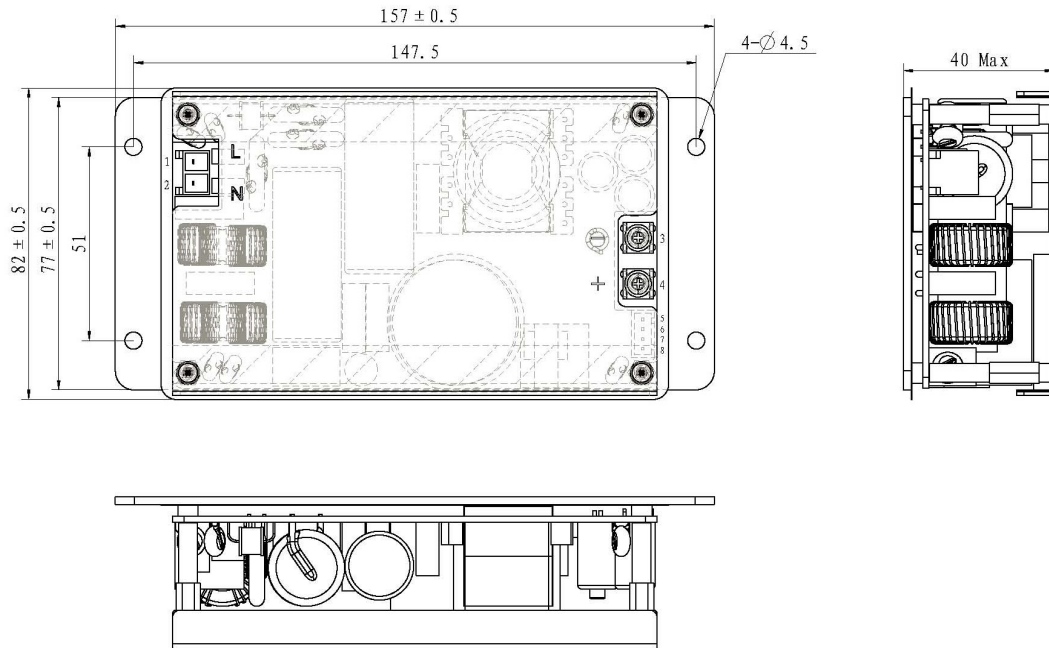


Figure 2. Outline Diagram

Dimensions are in millimeters.

Unspecified dimensional tolerance:  $\pm 0.25\text{mm}$

## Connectors

### Input connector

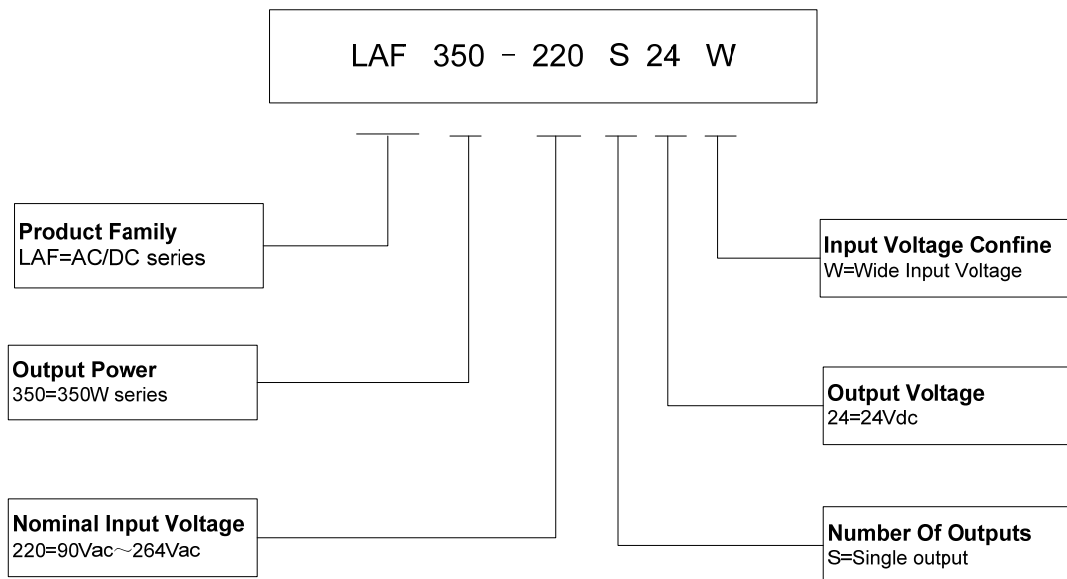
Pin Name	Pin Order	Function	P/N
L	Pin 1	AC input	TE Connectivity, 5-1376382-1
N	Pin 2	AC input	

### Output and Signal Connectors

Pin Name	Pin Order	Function	P/N
GND	Pin 3	Ground	YAZHOULONG PCB-11M3
+24V	Pin 4	24V Output voltage	
+5VCC	Pin 5	Standby 5V/200mA output	A2501H-4P(CTJ) 1343-000-004-1(TELE-DATACOM)
GND	Pin 6	Ground	
Enable	Pin 7	Control module open and shut down(high level(3~10Vdc) to shutdown module, leave open	

		or GND to open module)	
AC_Fail	Pin 8	OC output When AC input is within specified limits, it's left open; When AC line dropout, it's low level.	

## Naming Rules On Models



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