MEAN WELL 323388

MEAN WELL RS-50-5 AC to DC Power Supply User Manual

Model: RS-50-5 (323388)

1. Introduction

This manual provides essential information for the safe and effective operation of the MEAN WELL RS-50-5 AC to DC Power Supply. The RS-50-5 is a single output power supply designed to convert AC input to a stable 5V DC output at 10 Amps, providing 50 Watts of power. Please read this manual thoroughly before installation and use.

2. Safety Information

Always observe the following safety precautions to prevent injury or damage to the unit:

- Ensure proper grounding.
- Do not operate the power supply in wet or damp conditions.
- Disconnect power before making any connections or adjustments.
- Do not open the casing; there are no user-serviceable parts inside.
- Ensure adequate ventilation to prevent overheating.
- Verify input voltage compatibility before connecting to power.

3. Product Features and Overview

The MEAN WELL RS-50-5 power supply offers robust features for reliable performance:

- Universal AC input / Full range (88-264VAC @ 47-63Hz).
- Protections: Short circuit, Overload, Over voltage.
- Cooling by free air convection.
- LED indicator for power on.
- 100% full load burn-in test.
- Utilizing 105°C long life electrolytic capacitors.
- Withstand 300VAC surge input for 5 seconds.
- High operating temperature up to 70°C.

- Withstand 5G vibration test.
- No load power consumption <0.5W.
- High efficiency, long life and high reliability.

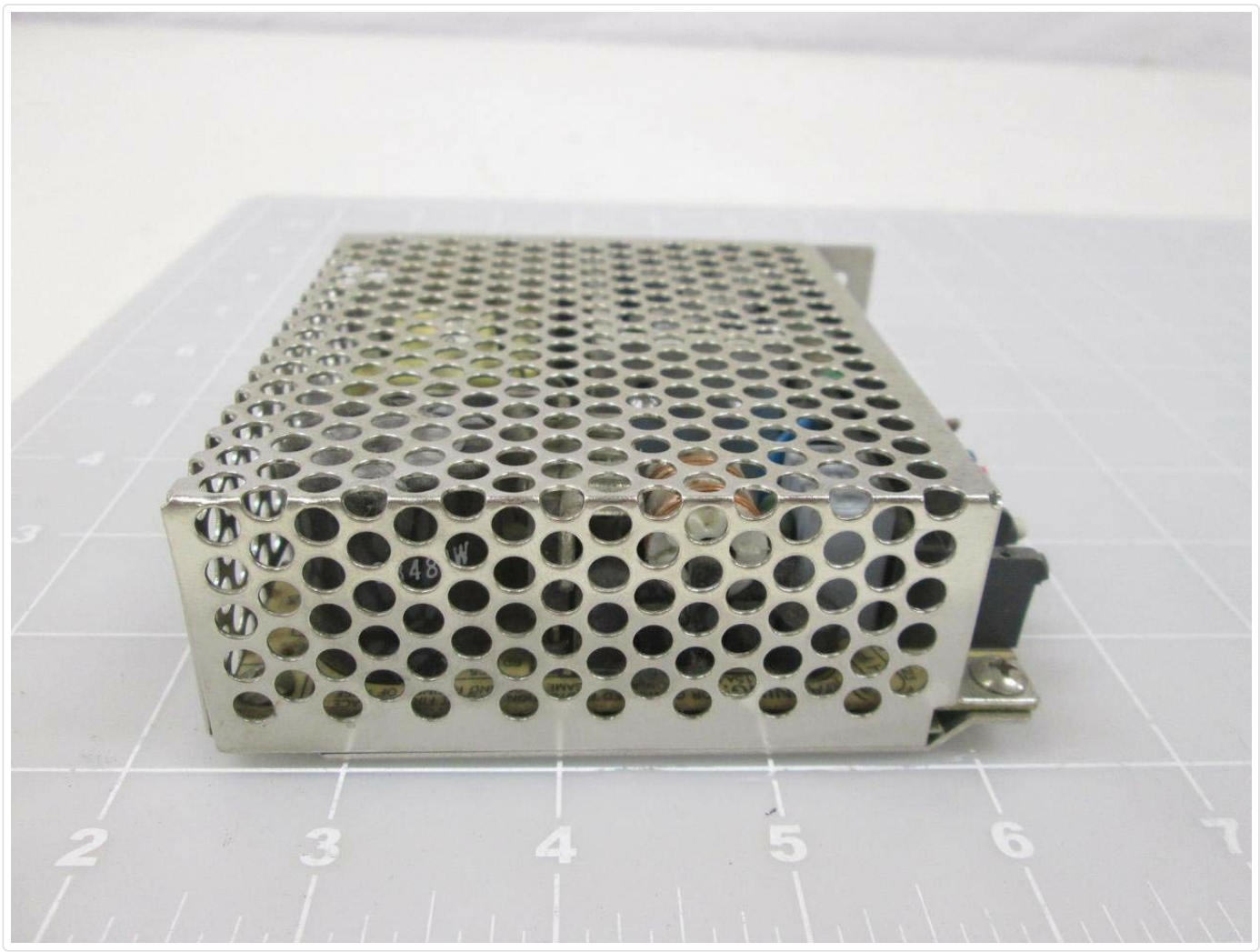


Figure 3.1: Top-down view of the MEAN WELL RS-50-5 power supply, showing its perforated metal casing designed for passive cooling.

Figure 3.2: Side view of the MEAN WELL RS-50-5 power supply, highlighting its compact dimensions and ventilation holes.

4. Specifications

Detailed technical specifications for the RS-50-5 model:

Parameter	Value
Product Dimensions (L x W x H)	3.9 x 3.82 x 1.42 inches
Item Weight	0.01 ounces
Input Voltage	88-264VAC @ 47-63Hz
Output Voltage	5V DC
Output Current	10 Amps
Output Wattage	50 Watts
Ripple and Noise (mV p-p)	80
Load Regulation	1.0 percent
Line Regulation	0.5 percent
Cooling Method	Air (Free Air Convection)
Manufacturer	Mean Well

Parameter	Value
Model Number	323388 (RS-50-5)

MEAN WELL

50W Single Output Switching Power Supply

RS-50 series

■ Features :

- Universal AC input / Full range
- Protections: Short circuit / Overload / Over voltage
- Cooling by free air convection
- LED indicator for power on
- 100% full load burn-in test
- All using 105℃ long life electrolytic capacitors
- Withstand 300VAC surge input for 5 second
- High operating temperature up to 70℃
- Withstand 5G vibration test
- No load power consumption<0.5W
- High efficiency, long life and high reliability
- 3 years warranty

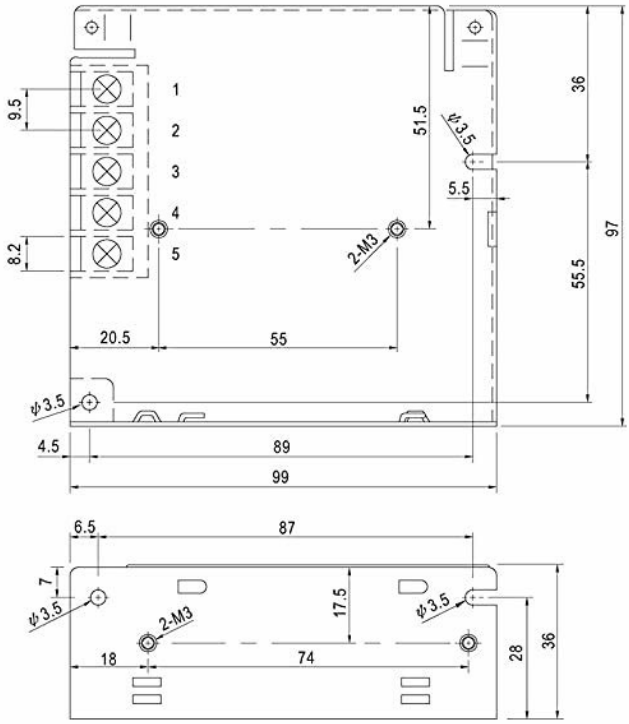
SPECIFICATION

MODEL		RS-50-3.3	RS-50-5	RS-50-12	RS-50-15	RS-50-24	RS-50-48
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	48V
	RATED CURRENT	10A	10A	4.2A	3.4A	2.2A	1.1A
	CURRENT RANGE	0 ~ 10A	0 ~ 10A	0 ~ 4.2A	0 ~ 3.4A	0 ~ 2.2A	0 ~ 1.1A
	RATED POWER	33W	50W	50.4W	51W	52.8W	52.8W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	120mVp-p	120mVp-p	120mVp-p	200mVp-p
	VOLTAGE ADJ. RANGE	3V ~ 3.6V	4.75 ~ 5.5V	10.8 ~ 13.2V	13.5 ~ 16.5V	22 ~ 27.2V	42 ~ 54V
	VOLTAGE TOLERANCE Note.3	±3.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION Note.4	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION Note.5	±2.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	500ms, 30ms/230VAC 1200ms, 30ms/115VAC at full load					
	HOLD UP TIME (Typ.)	60ms/230VAC 14ms/115VAC at full load					
INPUT	VOLTAGE RANGE	88 ~ 264VAC 125 ~ 373VDC (Withstand 300VAC surge for 5sec. Without damage)					
	FREQUENCY RANGE	47 ~ 63Hz					
	EFFICIENCY(Typ.)	78%	83%	84.5%	86%	88%	89%
	AC CURRENT (Typ.)	1.3A/115VAC 0.8A/230VAC					
	INRUSH CURRENT (Typ.)	COLD START 33A/230VAC					
	LEAKAGE CURRENT	<2mA / 240VAC					
PROTECTION	OVERLOAD	110 ~ 150% rated output power					
		Protection type : Hiccup mode, recovers automatically after fault condition is removed					
	OVER VOLTAGE	3.8 ~ 4.45V	5.75 ~ 6.75V	13.8 ~ 16.2V	17.25 ~ 20.25V	27.6 ~ 32.4V	55.2 ~ 64.8V
		Protection type : Hiccup mode, recovers automatically after fault condition is removed					
ENVIRONMENT	WORKING TEMP.	-25 ~ +70℃ (Refer to "Derating Curve")					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH					
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃)					
	VIBRATION	10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes					
SAFETY & EMC (Note 6)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 , CCC GB4943 approved					
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC					
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C/ 70% RH					
	EMC EMISSION	Compliance to EN55022 (CISPR22) Class B, EN61000-3-2,-3,GB9254 class B,GB17625.1					
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; EN61000-6-2 (EN50082-2), heavy industry level, criteria A					
OTHERS	MTBF	228Khrs min. MIL-HDBK-217F (25℃)					
	DIMENSION	99*97*36mm (L*W*H)					
	PACKING	0.41Kg; 45pcs/19.5Kg/0.9CUFT					
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ 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. Line regulation is measured from low line to high line at rated load. 5. Load regulation is measured from 0% to 100% rated load. 6. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com)						

Figure 4.1: Product label showing input/output specifications and certifications for the RS-50-5.

Mechanical Specification

Case No. 905B Unit:mm

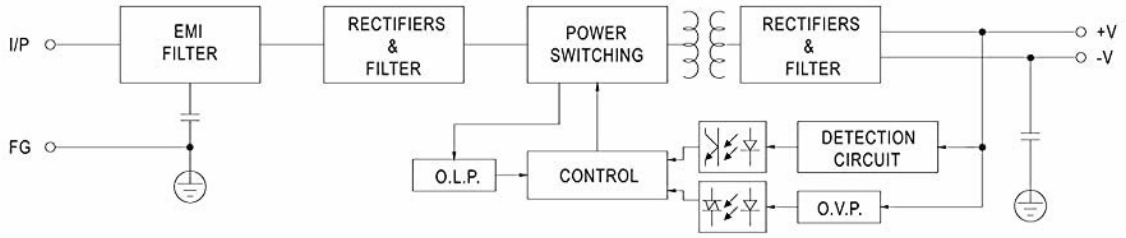


Terminal Pin No. Assignment

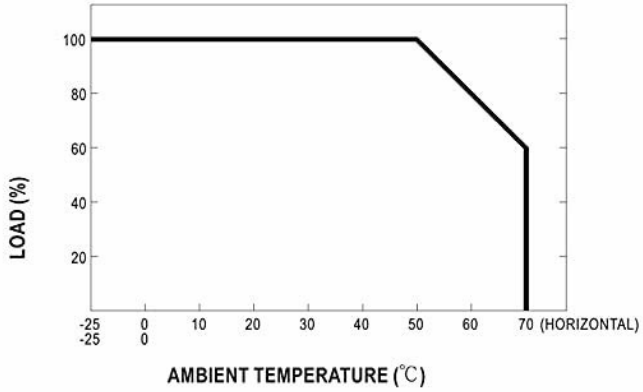
Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4	DC OUTPUT -V
2	AC/N	5	DC OUTPUT +V
3	FG ⏚		

Block Diagram

fosc : 60KHz



Derating Curve



Output Derating VS Input Voltage

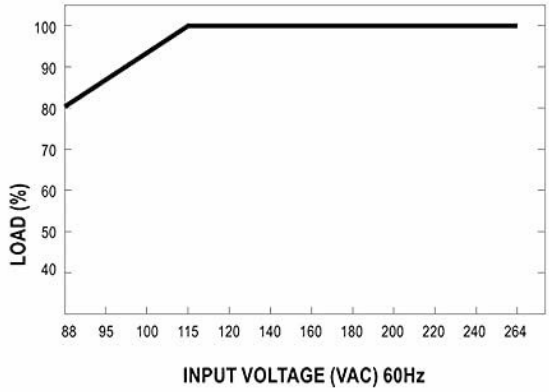


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Figure 4.2: Mechanical drawing with dimensions and a block diagram illustrating the internal components and signal flow of the RS-50-5 power supply.

5. Setup and Installation

Follow these steps for proper setup:

1. **Mounting:** Securely mount the power supply in a well-ventilated area. Ensure sufficient clearance around the unit for air circulation to facilitate cooling.
2. **Input Connection:** Connect the AC input (88-264VAC, 47-63Hz) to the designated input terminals (AC/L, AC/N). Refer to Figure 4.2 for terminal assignments. It is crucial to connect the protective earth (FG) terminal to a reliable ground.
3. **Output Connection:** Connect your DC load to the output terminals (+V, -V). Ensure correct polarity. The power supply provides 5V DC.
4. **Voltage Adjustment:** The output voltage can be finely adjusted via the potentiometer located near the green LED indicator. Use a small screwdriver to turn the potentiometer clockwise to increase voltage or counter-clockwise to decrease it. Adjust within the specified range (4.75V - 5.5V).
5. **Pre-Power Check:** Before applying power, double-check all connections for tightness and correct polarity. Ensure no bare wires are touching.

Note: Power connectors are not included with the unit. You will need to provide appropriate wiring for input and output connections.

6. Operating Instructions

Once properly installed and connected, the RS-50-5 power supply is ready for operation:

- **Power On:** Apply AC power to the input terminals. The green LED indicator on the unit will illuminate, indicating that the power supply is active.
- **Load Application:** Connect your device or circuit to the DC output terminals. The power supply is designed to deliver a stable 5V output up to 10 Amps.
- **Monitoring:** While operating, ensure the power supply has adequate ventilation. The unit is designed to operate efficiently and remain cool under normal load conditions.
- **Overload Protection:** The unit features overload protection. If the output current exceeds the rated 10 Amps, the power supply may enter protection mode to prevent damage. Reduce the load if this occurs.
- **Over Voltage Protection:** If the output voltage exceeds a safe limit, the unit will activate over voltage protection.
- **Short Circuit Protection:** The power supply is protected against short circuits at the output.

Refer to the derating curves in Figure 4.2 to understand the power supply's performance limits under varying ambient temperatures and input voltages.

7. Maintenance

The MEAN WELL RS-50-5 power supply is designed for long-term, reliable operation with minimal maintenance. However, periodic checks can help ensure optimal performance:

- **Cleaning:** Keep the power supply clean and free from dust and debris. Use a soft, dry cloth for cleaning. Do not use liquid cleaners or solvents.
- **Ventilation:** Ensure that the ventilation holes are not obstructed. Blocked ventilation can lead to overheating and reduced lifespan.
- **Connections:** Periodically check all input and output connections to ensure they remain secure and free from corrosion.
- **Environmental Conditions:** Operate the power supply within its specified temperature and humidity ranges to prevent premature failure.

No internal user-serviceable parts are present. Any repairs should be performed by qualified personnel only.

8. Troubleshooting

If you encounter issues with your RS-50-5 power supply, consider the following:

Problem	Possible Cause	Solution
No output voltage / LED off	No input power; Blown fuse; Internal fault.	Check AC input connection and power source. If power is present and LED is off, the unit may be faulty.
Output voltage too low or fluctuating	Overload; Loose connections; Incorrect voltage adjustment.	Reduce load. Check all wiring connections. Adjust output voltage using the potentiometer (see Section 5).
Unit is hot to the touch	Insufficient ventilation; Overload.	Ensure adequate airflow around the unit. Reduce the connected load to within specifications.
Unit shuts down intermittently	Overload protection activated; Over-temperature protection.	Reduce load. Improve ventilation. Allow unit to cool down before restarting.

If problems persist after attempting these solutions, contact a qualified technician for assistance.

9. Warranty Information

Specific warranty details for the MEAN WELL RS-50-5 power supply are typically provided at the point of purchase or with the product packaging. Please refer to your purchase documentation for warranty terms and conditions. Generally, MEAN WELL products are known for their reliability and often come with a manufacturer's warranty against defects in materials and workmanship.

10. Support

For technical support, inquiries, or service requests regarding your MEAN WELL RS-50-5 power supply, please contact the retailer or distributor from whom you purchased the product. They can provide assistance or direct you to the appropriate MEAN WELL support channels.