

MEAN WELL RS-150-15

MEAN WELL RS-150-15 Single Output Switching Power Supply User Manual

Model: RS-150-15

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the MEAN WELL RS-150-15 Single Output Switching Power Supply. This high-efficiency power supply delivers a stable 15V DC output with a rated current of 10A, providing 150W of power. It is designed for various industrial and scientific applications, featuring robust protection mechanisms and a compact design.

2. SAFETY INFORMATION AND IMPORTANT NOTES

Please read all safety instructions carefully before installation and operation to prevent injury or damage to the unit. Keep this manual for future reference.

- **General Safety:** This power supply is considered a component and must be installed into a final equipment. The final equipment must be re-confirmed to meet all relevant EMC directives.
- **Input Voltage Selection:** The unit supports both 88-132VAC and 176-264VAC input ranges, selectable via a switch. Ensure the correct voltage is selected before connecting to the AC mains.
- **Environmental Conditions:** Operate the power supply within the specified working temperature (-25°C to +70°C) and humidity (20% to 95% RH non-condensing) ranges. Avoid exposure to excessive moisture or extreme temperatures.
- **Cooling:** The unit is cooled by free air convection. Ensure adequate airflow around the power supply to prevent overheating.
- **Protection Features:** The power supply includes built-in protections against short circuit, overload, and over voltage. In case of a fault, the unit will enter hiccup mode and automatically recover once the fault condition is removed.
- **Wiring:** All parameters are measured at 230VAC input, rated load, and 25°C ambient temperature unless otherwise specified. Ripple and noise are measured with a 12" twisted pair-wire terminated with 0.1uF & 47uF parallel capacitors.
- **Installation:** Ensure proper grounding (FG) connection for safety.
- **Power-On Sequence:** Turning the power supply ON/OFF very quickly may increase the setup time.

3. FEATURES

- Universal AC input / Full range (selectable by switch)
- Protections: Short circuit, overload, over voltage
- Cooling by free air convection
- LED indicator for power on
- 100% full load burn-in test
- Utilizes 105°C long life electrolytic capacitors
- Withstands 300VAC surge input for 5 seconds
- High operating temperature up to 70°C
- Withstands 5G vibration test
- High efficiency, long life, and high reliability

4. SETUP AND INSTALLATION

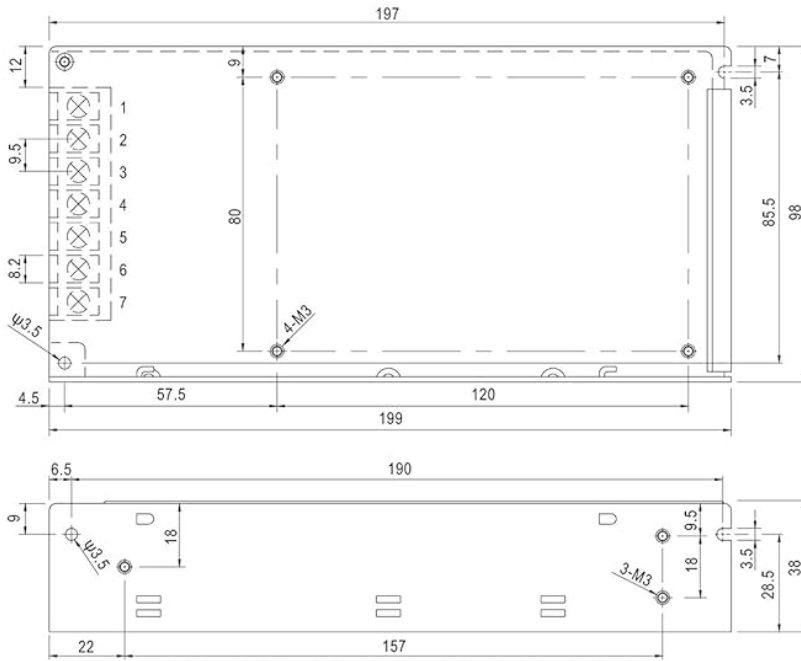
Proper installation is crucial for the safe and reliable operation of the power supply. Refer to the mechanical specifications and terminal assignments for correct wiring.

4.1 Mechanical Dimensions and Mounting

The power supply features a compact design for easy integration. Ensure sufficient space for air circulation around the unit for optimal cooling.

Mechanical Specification

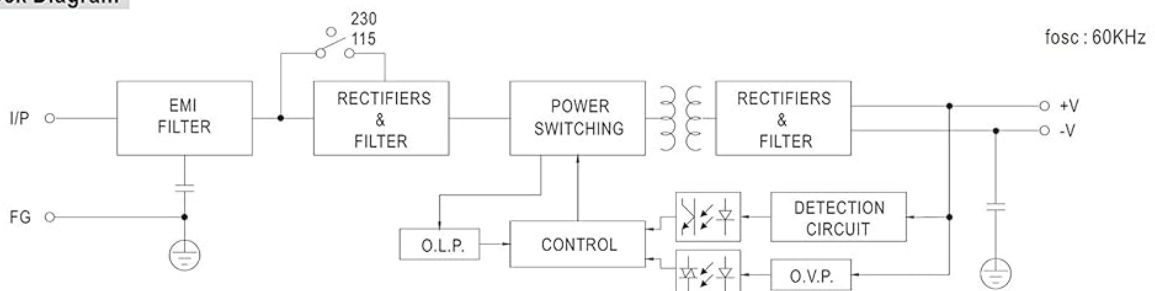
Case No. 902A Unit:mm



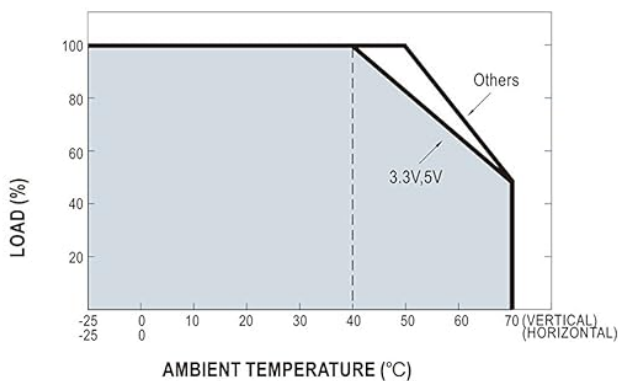
Terminal Pin No. Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/L	4,5	DC OUTPUT -V
2	AC/N	6,7	DC OUTPUT +V
3	FG \perp		

Block Diagram



Derating Curve



Static Characteristics

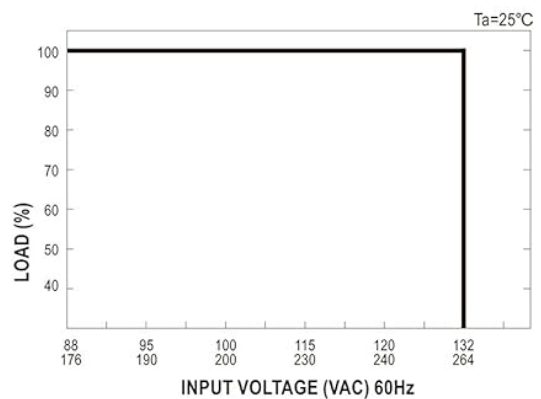


Figure 1: Mechanical dimensions and mounting points of the RS-150-15 power supply. Dimensions are in millimeters. The unit measures 197mm (L) x 98mm (W) x 38mm (H).

Mount the power supply securely using the designated mounting holes as shown in Figure 1. Ensure the mounting surface is stable and can support the weight of the unit (approximately 0.7 kg).

4.2 Terminal Assignment

Connect the input and output wires according to the terminal assignments below. Use appropriate wire gauges for the current ratings to prevent overheating.

Table 1: Terminal Pin Assignment

Pin No.	Assignment	Pin No.	Assignment
1	AC/N	4, 5	DC OUTPUT -V
2	AC/L	6, 7	DC OUTPUT +V
3	FG (Frame Ground)		

Important: Ensure the Frame Ground (FG) terminal is properly connected to earth ground for safety.

4.3 Input Voltage Selection

The RS-150-15 has a switch to select between 88-132VAC and 176-264VAC input voltage ranges. **Before connecting the power supply to the AC mains, verify that the switch is set to match your local AC supply voltage.** Incorrect voltage selection can damage the unit.

5. OPERATING INSTRUCTIONS

Once properly installed and wired, the power supply is ready for operation.

- Power On:** Connect the AC input to the power supply. The LED indicator on the unit will illuminate, indicating that the power supply is active.
- Output Voltage Adjustment:** The output voltage can be adjusted within the range of 13.5V to 16.5V using the internal potentiometer. Use a voltmeter to accurately set the desired output voltage.
- Load Connection:** Connect your DC load to the +V and -V output terminals. Ensure the load does not exceed the rated current of 10A or the rated power of 150W.
- Derating Curve:** For operation at higher ambient temperatures or lower input voltages, refer to the derating curves in the specifications section to ensure the power supply operates within its safe limits.



- Features :
- 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°C long life electrolytic capacitors
- Withstand 300VAC surge input for 5 second
- High operating temperature up to 70°C
- Withstand 5G vibration test
- High efficiency, long life and high reliability
- 3 years warranty



SPECIFICATION

MODEL	RS-150-3.3	RS-150-5	RS-150-12	RS-150-15	RS-150-24	RS-150-48	
OUTPUT	DC VOLTAGE	3.3V	5V	12V	15V	24V	48V
	RATED CURRENT	30A	26A	12.5A	10A	6.5A	3.3A
	CURRENT RANGE	0 ~ 30A	0 ~ 26A	0 ~ 12.5A	0 ~ 10A	0 ~ 6.5A	0 ~ 3.3A
	RATED POWER	99W	130W	150W	150W	156W	158.4W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	120mVp-p	120mVp-p	120mVp-p	200mVp-p
	VOLTAGE ADJ. RANGE	3.2V ~ 3.5V	4.75 ~ 5.5V	11.4 ~ 13.2V	14.25 ~ 16.5V	22.8 ~ 26.4V	45.6 ~ 52.8V
	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	800ms, 20ms/230VAC 1200ms, 30ms/115VAC at full load					
HOLD UP TIME (Typ.)	28ms/230VAC 20ms/115VAC at full load						
INPUT	VOLTAGE RANGE	88 ~ 132VAC / 176 ~ 264VAC selected by switch		248 ~ 373VDC(Withstand 300VAC surge for 5sec. Without damage)			
	FREQUENCY RANGE	47 ~ 63Hz					
	EFFICIENCY(Typ.)	74%	78%	83%	84%	86%	87%
	AC CURRENT (Typ.)	3A/115VAC 2A/230VAC					
	INRUSH CURRENT (Typ.)	COLD START 40A/230VAC					
	LEAKAGE CURRENT	<2mA / 240VAC					
PROTECTION	OVERLOAD Note.8	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
ENVIRONMENT	WORKING TEMP.	-25 ~ +70°C (Refer to "Derating Curve")					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH					
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)					
	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 approved					
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC 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					
OTHERS	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN61000-6-2 (EN50082-2), heavy industry level, criteria A					
	MTBF	244Khrs min. MIL-HDBK-217F (25°C)					
	DIMENSION	199*98*38mm (L*W*H)					
PACKING	0.7Kg; 20pcs/15Kg/0.8CUFT						
NOTE	<ol style="list-style-type: none"> 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. 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) 7. Length of set up time is measured at cold first start. Turning ON/OFF the power supply very quickly may lead to increase of the set up time. 8. Extra consideration should be taken when selecting output wiring for 3.3V and 5V models. This is to prevent the protection modes for overload and short circuit from becoming constant power. 						

File Name:RS-150-SPEC 2011-08-19

Figure 2: Specification sheet for the RS-150-15, including derating curves and static characteristics. The derating curve illustrates the maximum permissible load at various ambient temperatures, while static characteristics show performance across input voltage ranges.

6. MAINTENANCE

The MEAN WELL RS-150-15 power supply is designed for long-term, reliable operation with minimal maintenance. However, adhering to the following guidelines will help ensure its longevity:

- **Keep Clean:** Periodically inspect the unit for dust accumulation, especially around ventilation openings. Clean with a soft, dry cloth or compressed air. Do not use liquid cleaners.
- **Ensure Airflow:** Verify that the free air convection cooling is not obstructed. Maintain adequate clearance around the power supply.
- **Environmental Control:** Operate the unit within the specified temperature and humidity ranges. Avoid environments with high levels of corrosive gases or excessive vibration.
- **Connection Integrity:** Periodically check all input and output connections to ensure they are secure and free from corrosion.

7. TROUBLESHOOTING

If the power supply is not functioning as expected, consider the following common issues and their solutions:

- **No Output / LED Off:**
 - Check the AC input connection and ensure power is supplied to the unit.
 - Verify the input voltage selection switch is set correctly for your AC mains.
 - Inspect the input fuse (if accessible and replaceable) for continuity.
- **Intermittent Output / Hiccup Mode:**
 - This indicates that one of the protection features (short circuit, overload, or over voltage) has been activated.
 - Disconnect the load and check for short circuits in your external circuit.
 - Ensure the load current does not exceed 10A and the power does not exceed 150W.
 - Check if the output voltage is set too high (above 16.5V).
 - Allow the unit to cool down if it has been operating in a high-temperature environment, as over-temperature protection may be active.
- **Output Voltage Incorrect:**
 - Use a voltmeter to measure the output voltage.
 - Adjust the internal potentiometer to set the desired output voltage within the 13.5V to 16.5V range.
 - Ensure the load is not drawing excessive current, which could cause voltage drop.

If the problem persists after performing these checks, contact qualified service personnel.

8. SPECIFICATIONS (MODEL: RS-150-15)

The following table details the technical specifications for the MEAN WELL RS-150-15 power supply.

Characteristic	Value
OUTPUT	
DC Voltage	15V
Rated Current	10A
Rated Power	150W

Characteristic	Value
Ripple & Noise (max.)	120mVp-p
Voltage ADJ. Range	13.5 ~ 16.5V
Voltage Tolerance	±1.0%
Line Regulation	±0.5%
Load Regulation	±0.5%
Setup, Rise, Hold Time	800ms, 30ms, 10ms (at 230VAC full load)
INPUT	
Voltage Range	88 ~ 132VAC / 176 ~ 264VAC (selected by switch)
Frequency Range	47 ~ 63Hz
Efficiency (Typ.)	84%
AC Current (Typ.)	2.5A/230VAC
Inrush Current (Typ.)	COLD START 40A/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	17.25 ~ 20.25V. Protection type: Hiccup mode, recovers automatically after fault condition is removed.
Over Temperature	Yes
ENVIRONMENT	
Working Temperature	-25 ~ +70°C (Refer to Derating Curve)
Working Humidity	20 ~ 95% RH non-condensing
Storage Temperature	-40 ~ +85°C, 10 ~ 95% RH
Temperature Coefficient	±0.03%/°C (0~50°C)
Vibration	10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes
SAFETY & EMC	
Safety Standards	UL60950-1, TUV EN60950-1 approved
Withstand Voltage	I/P-O/P:3KVAC, I/P-FG:1.5KVAC, 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

Characteristic	Value
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	244Khrs min. MIL-HDBK-217F (25°C)
Dimension (L x W x H)	197 x 98 x 38mm
Weight	0.7Kg

9. WARRANTY AND SUPPORT

The MEAN WELL RS-150-15 Switching Power Supply comes with a **3-year warranty** from the date of purchase, covering defects in materials and workmanship under normal use. For warranty claims or technical support, please contact your authorized MEAN WELL distributor or reseller.

For additional information or specific technical inquiries, please refer to the official MEAN WELL website or contact their customer service department.