EverSale HRP-600-24

Mean Well HRP-600-24 Single Output Power Supply User Manual

Model: HRP-600-24

1. Introduction

This manual provides essential information for the safe and efficient operation of the Mean Well HRP-600-24 Single Output Power Supply. It covers mechanical specifications, terminal assignments, internal block diagrams, performance characteristics, setup procedures, operating guidelines, maintenance, troubleshooting, and detailed technical specifications. Please read this manual thoroughly before installation and use.

2. Mechanical Specifications

The HRP-600-24 power supply features a robust design with specific dimensions and mounting options. Understanding these specifications is crucial for proper installation and integration into your system.

Figure 1: Mechanical drawing of the HRP-600-24 power supply. The unit measures approximately 218mm in length, 105mm in width, and 63.5mm in height. It includes mounting holes (4-M4 L=6 and 8-M4 L=4) for secure installation. Airflow direction is indicated for proper cooling. The input/output terminals and adjustment potentiometers are also shown.

- **Dimensions:** 218mm (L) x 105mm (W) x 63.5mm (H).
- **Mounting:** Features multiple M4 screw holes for secure panel mounting.
- **Cooling:** Forced air cooling via a built-in DC fan. Ensure adequate airflow as indicated in the diagram.

3. Terminal Assignments

Correct terminal connection is vital for safe and proper operation. Refer to the tables below for detailed pin assignments.

3.1 AC Input Terminal Pin Assignment

Pin No.	Assignment
1	AC/L (Live)
2	AC/N (Neutral)
3	FG (Frame Ground)

3.2 DC Output Terminal Pin Assignment

Pin No.	Assignment
1-3	-V (Negative Output)
4-6	+V (Positive Output)

3.3 Connector Pin No. Assignment (CN100)

Connector CN100 is compatible with HRS DF11-4DP-2DS or equivalent connectors.

Pin No.	Assignment	Mating Housing	Terminal
1	DC-OK	HRS DF11-4DS or equivalent	HRS DF11-**SC or equivalent
2	GND		
3	+S		
4	-S		

4. Block Diagram

The block diagram illustrates the internal functional architecture of the HRP-600-24 power supply, highlighting key components and their interconnections.

Figure 2: Internal block diagram of the HRP-600-24 power supply. The diagram shows the input (I/P) and frame ground (FG) connections leading to an EMI filter. This is followed by an active inrush current limiting circuit, rectifiers & PFC, and a power switching stage. The output then goes through another set of rectifiers & filter. Control circuits include PFC control and PWM control, with protection features like O.T.P. (Over Temperature Protection), O.L.P. (Over Load Protection), and O.V.P. (Over Voltage Protection) integrated into the detection circuit. A DC OK signal is also provided.

- **EMI Filter:** Reduces electromagnetic interference.
- **Active Inrush Current Limiting:** Prevents high current surges during power-on.
- **Rectifiers & PFC:** Converts AC to DC and performs Power Factor Correction.
- **Power Switching:** High-frequency switching for efficient power conversion.
- **PFC Control & PWM Control:** Regulates power factor and output voltage/current.
- **Detection Circuit:** Monitors for Over Temperature (O.T.P.), Over Load (O.L.P.), and Over Voltage (O.V.P.) conditions.
- **DC OK Signal:** Provides an indication of stable DC output.

5. Performance Curves

These curves illustrate the operational characteristics and limitations of the power supply under various environmental and input conditions.

5.1 Derating Curve

Figure 3: Derating Curve. This graph shows the maximum permissible load percentage as a function of ambient temperature. The power supply can operate at 100% load up to approximately 50°C. Beyond this temperature, the load capacity linearly decreases, reaching about 50% load at 70°C. Operation above 70°C is not recommended.

5.2 Output Derating VS Input Voltage

Figure 4: Output Derating VS Input Voltage. This curve indicates the maximum load percentage the power supply can deliver based on the input voltage (at 60Hz). The unit can deliver 100% load when the input voltage is above approximately 100V. Below this, the load capacity decreases, reaching about 80% load at 85V input. Ensure the input voltage is within the specified range for optimal performance.

6. Setup

Follow these steps for safe and correct installation of the HRP-600-24 power supply.

1. **Mounting:** Securely mount the power supply using the designated M4 screw holes. Ensure the mounting surface is stable and can support the unit's weight.
2. **Ventilation:** Position the unit to allow for proper airflow as indicated in the mechanical drawing (Figure 1). Do not obstruct the fan or ventilation openings. Maintain adequate clearance around the unit for heat dissipation.
3. **Wiring:** Connect the AC input wires (Live, Neutral, Ground) to the corresponding terminals as per Section 3.1. Ensure all connections are tight and secure to prevent loose contacts and potential hazards.
4. **DC Output Connection:** Connect the DC load to the +V and -V output terminals as per Section 3.2. Observe correct polarity.
5. **Remote Sense/Control (Optional):** If using remote sense or remote ON/OFF control, connect the CN100 connector as per Section 3.3. Remote sense helps compensate for voltage drop across the load wires.
6. **Grounding:** Ensure the frame ground (FG) terminal is properly connected to earth ground for safety.

7. Operating Instructions

Once installed, the HRP-600-24 power supply is designed for straightforward operation.

- **Power On:** Apply AC input voltage within the specified range (Universal AC input / Full range). The unit will power on and provide DC output.
- **Output Voltage Adjustment:** If equipped, use the SVR1 (Vo ADJ.) potentiometer to fine-tune the output voltage within its adjustable range. Refer to the mechanical drawing for its location.
- **Monitoring:** The DC OK signal (if connected) indicates stable output. Monitor the load to ensure it remains within the power supply's capacity, especially considering ambient temperature and input voltage derating curves.
- **Protection Features:** The unit includes built-in protections against short circuit, overload, over voltage, and over temperature. In case of a fault, the power supply may shut down to protect itself and the connected load. Address the fault condition before restarting.

8. Maintenance

The HRP-600-24 power supply is designed for long-term reliability with minimal maintenance. However, periodic checks can help ensure optimal performance.

- **Cleaning:** Periodically inspect the ventilation openings and fan for dust accumulation. Clean with compressed air or a soft brush to maintain proper airflow. Ensure power is disconnected before cleaning.
- **Connections:** Routinely check all input and output wiring connections for tightness and signs of corrosion. Re-tighten if necessary.
- **Environment:** Ensure the operating environment remains within the specified temperature and humidity ranges. Avoid exposure to excessive dust, moisture, or corrosive substances.
- **Fan Operation:** Listen for unusual noises from the cooling fan, which could indicate a potential issue.

9. Troubleshooting

If the power supply is not functioning as expected, refer to the following common issues and their potential solutions.

- **No Output Voltage:**
  - Check AC input power: Ensure the power cord is securely connected and the AC source is active.
  - Check input fuse/breaker: Verify that the circuit breaker or fuse supplying power to the unit has not tripped.
  - Verify wiring: Confirm all input and output connections are correct and secure.
  - Overload/Short Circuit: Disconnect the load and check if the output voltage returns. If so, the load may be drawing too much current or have a short circuit.
  - Over Temperature: Allow the unit to cool down. Ensure proper ventilation.
- **Output Voltage is Unstable or Incorrect:**
  - Check load: Ensure the load is not fluctuating excessively or drawing intermittent high currents.
  - Remote Sense: If remote sense is used, verify connections. If not used, ensure +S and -S terminals are properly connected to +V and -V respectively at the power supply output.
  - Input Voltage: Confirm the AC input voltage is stable and within the specified operating range.
- **Unit Shuts Down Periodically:**
  - Overload: The load may be exceeding the power supply's capacity. Reduce the load.
  - Over Temperature: Check for blocked ventilation or high ambient temperatures. Refer to the derating curve.
  - Intermittent Short Circuit: Inspect the load and wiring for intermittent short circuits.

If these steps do not resolve the issue, contact technical support.

10. Specifications

Detailed technical specifications for the HRP-600-24 power supply.

Parameter	Value
Model Number	LI series HRP-600-24
Output Voltage	24V
Output Current	25A
Output Power	600W
Input Voltage	Universal AC input / Full range (withstand 300VAC surge for 5s)
PFC Function	Built-in active PFC function
Protections	Short circuit, Overload, Over voltage, Over temperature
Current Limiting	Built-in constant current limiting circuit
Remote Sense	Built-in remote sense function
DC OK Signal	Built-in DC OK signal
No Load Power Consumption	<0.75W
Remote ON/OFF Control	Built-in remote ON/OFF control
Standby Output	5V / 0.3A standby output
Current Sharing	Built-in current sharing (HRPG-600-24 / 36 / 48)
Cooling Method	Forced air cooling by built-in DC fan
Profile	1U low profile
Test	100% full load burn-in test
Product Dimensions	8.58 x 4.13 x 2.5 inches (218 x 105 x 63.5 mm)
ASIN	B07MKPPXY7
UPC	888777017830
Manufacturer	Mean Well
Date First Available	December 29, 2018

11. Warranty

The Mean Well HRP-600-24 power supply comes with a **5-year warranty** from the date of purchase. This warranty covers defects in materials and workmanship under normal use. Please retain your proof of purchase for warranty claims. The warranty does not cover damage caused by improper installation, misuse, unauthorized modifications, or natural disasters.

12. Support

For technical assistance, troubleshooting beyond this manual, or warranty inquiries, please contact your authorized Mean Well distributor or the point of purchase. When contacting support, please have your product model number (HRP-600-24) and purchase information readily available.

Manufacturer: Mean Well
Brand: EverSale