MEAN WELL RSP-2400-24

Mean Well RSP-2400-24 AC to DC Power Supply User Manual

Model: RSP-2400-24 | Brand: MEAN WELL

1. Introduction

This manual provides comprehensive instructions for the safe and efficient operation, installation, and maintenance of the Mean Well RSP-2400-24 AC to DC Power Supply. This high-performance power supply delivers a single 24 Volt output at 100 Amps, providing 2.4 Kilowatts of power. Please read this manual thoroughly before using the product.

Figure 1.1: Mean Well RSP-2400-24 AC to DC Power Supply. This image shows the overall physical appearance of the power supply unit, highlighting its robust metal casing and terminal connections.

2. Safety Instructions

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

- Ensure proper grounding before connecting the power supply.
- Do not operate the unit in wet or damp conditions.
- Verify input voltage and current ratings match your power source.
- Avoid blocking ventilation openings to prevent overheating.
- Only qualified personnel should perform installation and maintenance.
- Disconnect power before making any connections or adjustments.

3. Product Features

The Mean Well RSP-2400-24 power supply incorporates several advanced features:

- AC input active surge current limiting.
- High efficiency up to 90%.
- Built-in active Power Factor Correction (PFC) function (PF>0.95).
- Comprehensive protections: short circuit, overload, over voltage, over temperature.
- Fan alarm and forced air cooling by built-in DC fan with speed control.
- Output voltage trim function (20% to 110% of rated output voltage).
- High power density: 12.5W/inch^3.

- Current sharing capability for up to 2 units.
- Alarm signal output via relay contact and TTL signal.
- Output connector type: Lug terminal female.

4. Mechanical Specification

Detailed mechanical dimensions and component layout are provided below for installation planning.

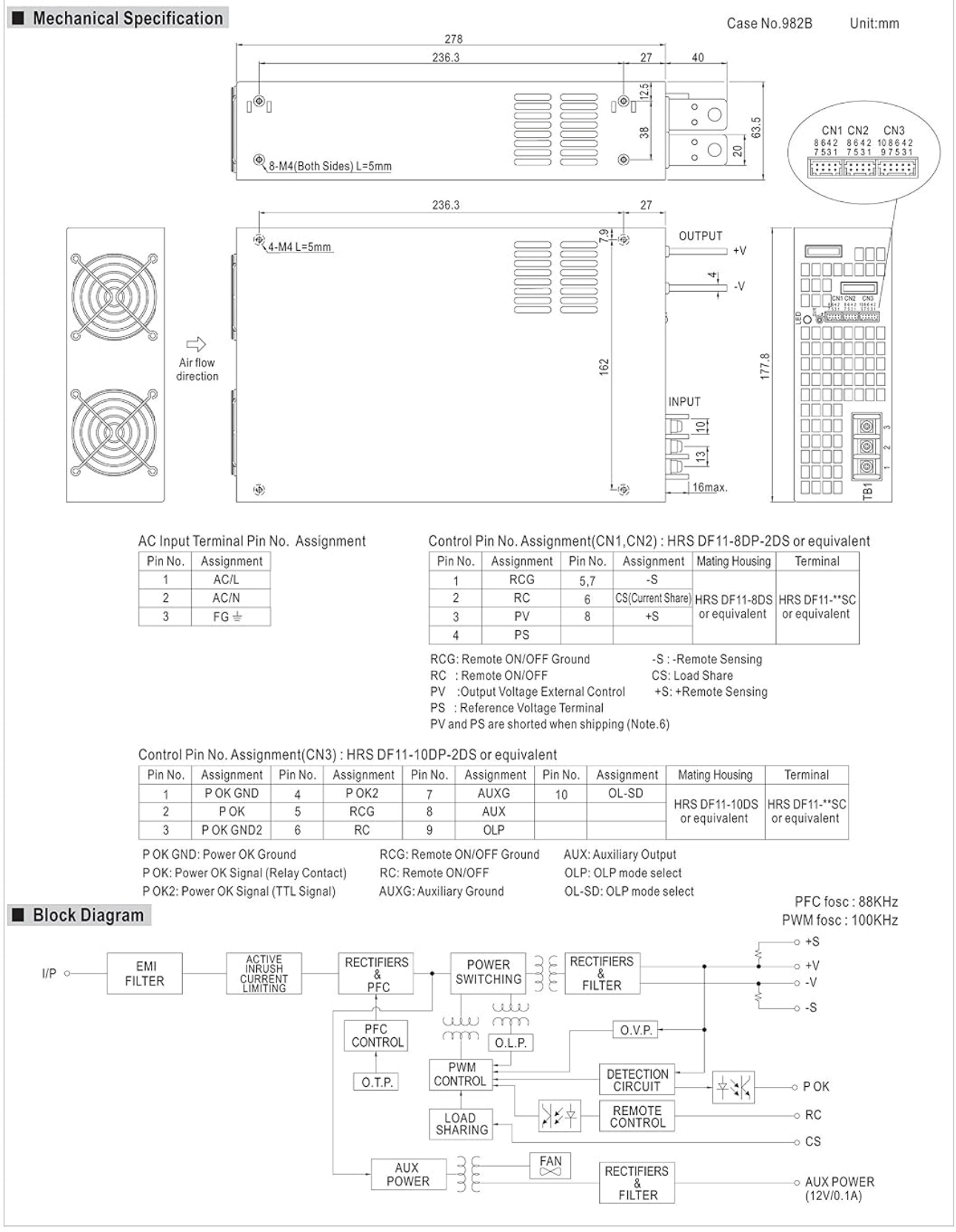


Figure 4.1: Mechanical drawing of the RSP-2400 series power supply. This diagram illustrates the physical dimensions, mounting hole locations, and general layout of the input/output terminals and cooling fans. Key dimensions are provided in millimeters.

The diagram shows the overall dimensions of 278mm (L) x 177.8mm (W) x 63.5mm (H), along with details for mounting holes (M4, L=5mm) and air flow direction for the cooling fans.

5. Setup and Installation

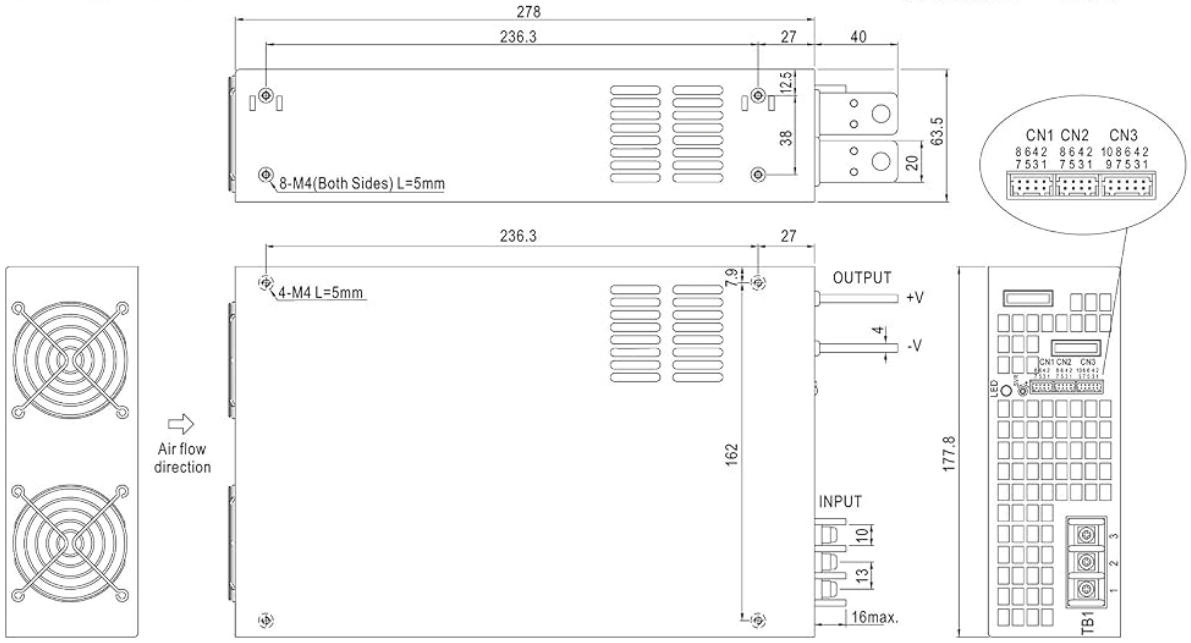
5.1. AC Input Terminal Pin Assignment

Connect the AC input according to the following pin assignments:

MEAN WELL 2400W Single Output Power Supply **RSP-2400** series

■ Mechanical Specification

Case No.982B Unit:mm



AC Input Terminal Pin No. Assignment

Pin No.	Assignment
1	AC/L
2	AC/N
3	FG ⏚

Control Pin No. Assignment(CN1,CN2) : HRS DF11-8DP-2DS or equivalent

Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	RCG	5,7	-S	HRS DF11-8DS or equivalent	HRS DF11-**SC or equivalent
2	RC	6	CS(Current Share)		
3	PV	8	+S		
4	PS				

RCG: Remote ON/OFF Ground
RC : Remote ON/OFF
PV :Output Voltage External Control
PS : Reference Voltage Terminal
PV and PS are shorted when shipping (Note.6)

-S : -Remote Sensing
CS: Load Share
+S: +Remote Sensing

Control Pin No. Assignment(CN3) : HRS DF11-10DP-2DS or equivalent

Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	P OK GND	4	P OK2	7	AUXG	10	OL-SD	HRS DF11-10DS or equivalent	HRS DF11-**SC or equivalent
2	P OK	5	RCG	8	AUX				
3	P OK GND2	6	RC	9	OLP				

P OK GND: Power OK Ground
P OK: Power OK Signal (Relay Contact)
P OK2: Power OK Signal (TTL Signal)

RCG: Remote ON/OFF Ground
RC: Remote ON/OFF
AUXG: Auxiliary Ground

AUX: Auxiliary Output
OLP: OLP mode select
OL-SD: OLP mode select

■ Block Diagram

PFC fosc : 88KHz
PWM fosc : 100KHz

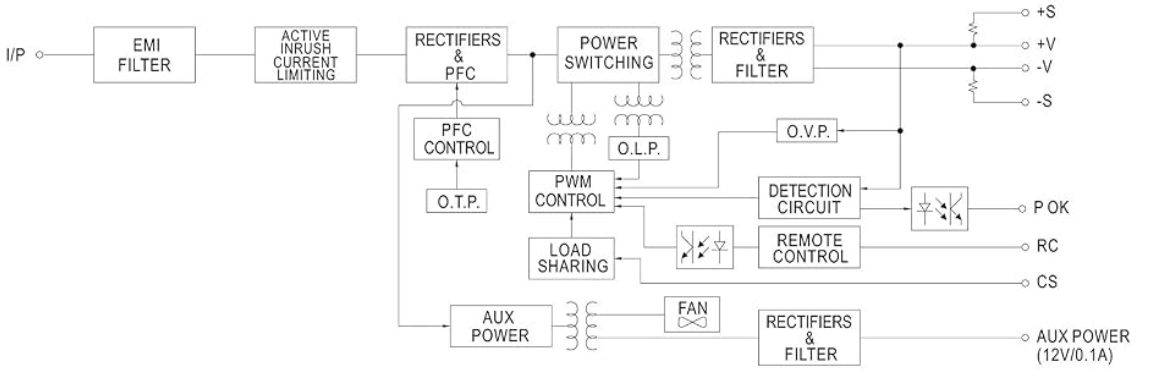


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Figure 5.1: AC Input Terminal Pin Assignment. This section of the mechanical drawing details the connections for the AC input, including AC/L, AC/N, and FG (Frame Ground) terminals.

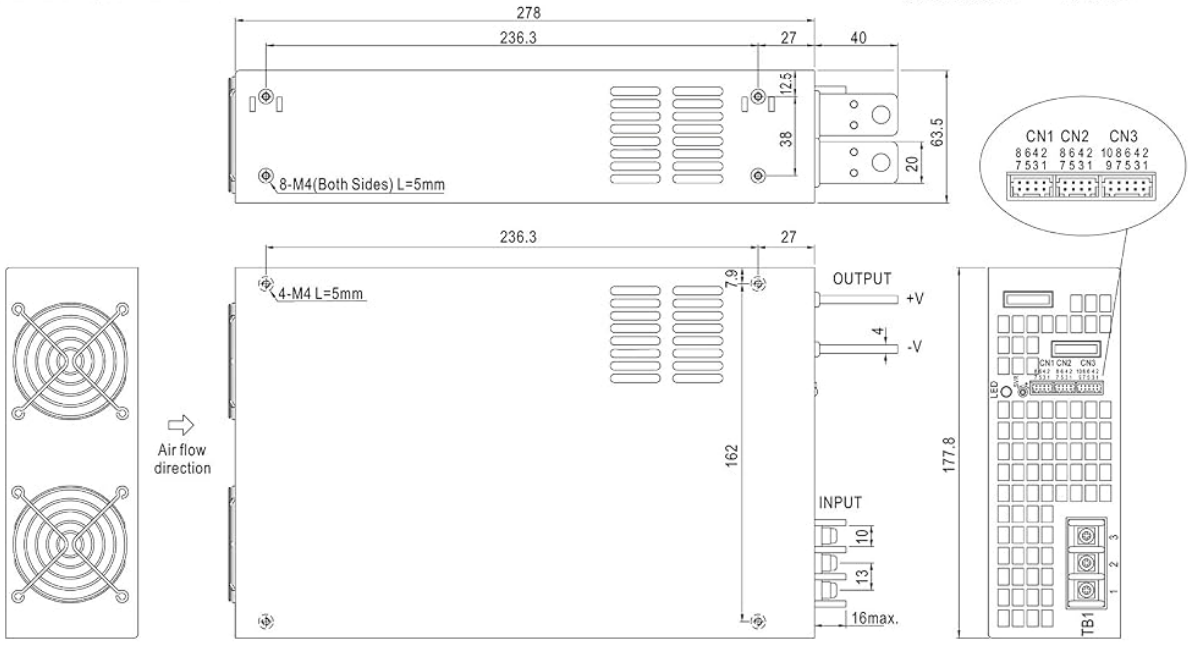
Pin No.	Assignment
1	AC/L
2	AC/N
3	FG

5.2. Control Pin No. Assignment

The control pins (CN1, CN2, CN3) allow for remote control and monitoring functions. Refer to the diagram for detailed assignments.

■ Mechanical Specification

Case No.982B Unit:mm



AC Input Terminal Pin No. Assignment

Pin No.	Assignment
1	AC/L
2	AC/N
3	FG ⏚

Control Pin No. Assignment(CN1,CN2) : HRS DF11-8DP-2DS or equivalent

Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	RCG	5,7	-S	HRS DF11-8DS or equivalent	HRS DF11-**SC or equivalent
2	RC	6	CS(Current Share)		
3	PV	8	+S		
4	PS				

RCG: Remote ON/OFF Ground
RC : Remote ON/OFF
PV :Output Voltage External Control
PS : Reference Voltage Terminal
PV and PS are shorted when shipping (Note.6)

-S : -Remote Sensing
CS: Load Share
+S: +Remote Sensing

Control Pin No. Assignment(CN3) : HRS DF11-10DP-2DS or equivalent

Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	P OK GND	4	P OK2	7	AUXG	10	OL-SD	HRS DF11-10DS or equivalent	HRS DF11-**SC or equivalent
2	P OK	5	RCG	8	AUX				
3	P OK GND2	6	RC	9	OLP				

P OK GND: Power OK Ground
P OK: Power OK Signal (Relay Contact)
P OK2: Power OK Signal (TTL Signal)

RCG: Remote ON/OFF Ground
RC: Remote ON/OFF
AUXG: Auxiliary Ground

AUX: Auxiliary Output
OLP: OLP mode select
OL-SD: OLP mode select

■ Block Diagram

PFC fosc : 88KHz
PWM fosc : 100KHz

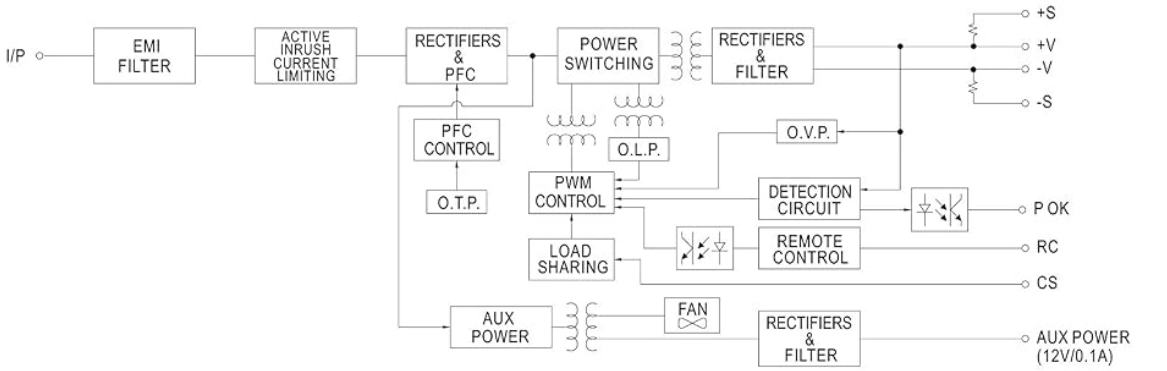


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Figure 5.2: Control Pin No. Assignment for CN1, CN2, and CN3. This part of the mechanical drawing provides a detailed pinout for the control connectors, including functions like Remote ON/OFF, Current Share, and Auxiliary output.

Pin No.	Assignment	Mating Housing	Terminal

Pin No.	Assignment	Mating Housing	Terminal
1	RCG	HRS DF11-8DP-2DS or equivalent	HRS DF11-**SC or equivalent
2	RC		
3	PV		
4	PS	HRS DF11-8DS or equivalent	HRS DF11-**SC or equivalent
5	CS (Current Share)		
6	+S		
7	-S		

RCG: Remote ON/OFF Ground
RC: Remote ON/OFF
PV: Output Voltage External Control
PS: Power Supply Status Signal
CS: Load Share
+S, -S: Remote Sensing (Note 6)

Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	P OK GND	6	RCG	10	OL-SD	HRS DF11-10DP-2DS or equivalent	HRS DF11-**SC or equivalent
2	P OK	7	RC				
3	P OK GND2	8	AUX				
4	P OK2	9	AUXG				
5	P OK GND						

P OK: Power OK Signal (Relay Contact)
P OK2: Power OK Signal (TTL Signal)
AUX: Auxiliary Output
AUXG: Auxiliary Ground
OL-SD: OLP mode select
OLP: OLP mode select

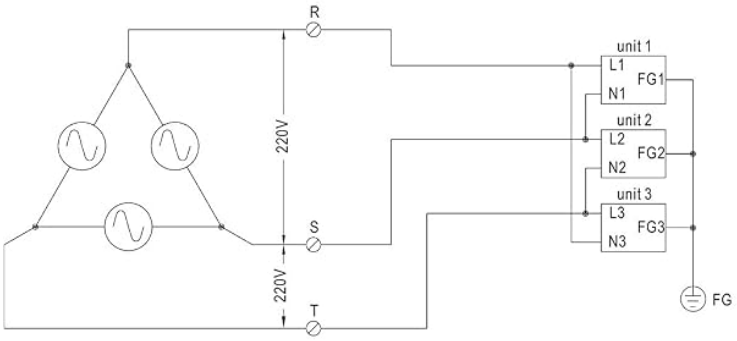
5.3. Three Phase Connection

The RSP-2400 series can be configured for 3-phase power systems. Refer to the diagrams for standard configurations.

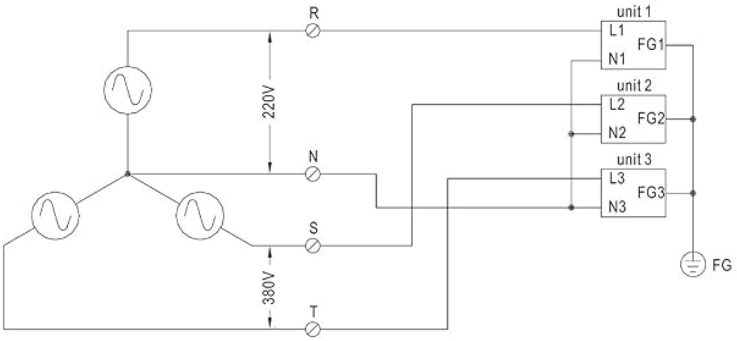
6.Three Phase Connect

Users can exploit three units of RSP-2400(unit 1 ,unit 2,unit 3) to work with 3 ψ power system. Please refer to following diagrams for configuration.

■ FIG. A: 3 ψ 3W 220VAC SYSTEM (STANDARD MODEL FOR STOCK)



■ FIG. B: 3 ψ 4W 220/380VAC SYSTEM



■ FIG. C: 3 ψ 4W 190/110VAC SYSTEM

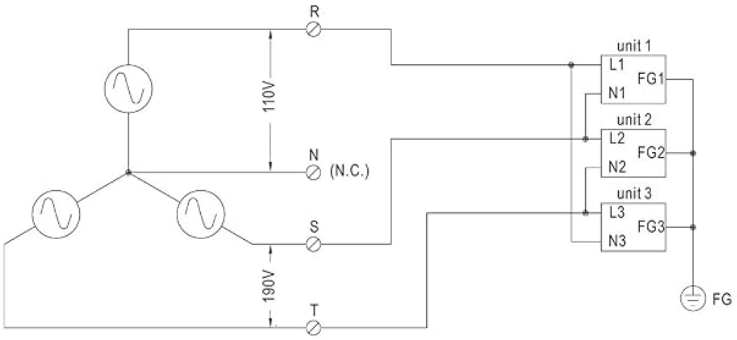


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Figure 5.3: Three Phase Connection Diagrams. This image displays three different configurations for connecting the RSP-2400 units to a 3-phase power system: 3-wire 220VAC, 3-wire 220/380VAC, and 3-wire 190/110VAC systems. Each diagram shows the wiring for multiple units (Unit 1, Unit 2, Unit 3) and their connection to the R, N, T, and FG lines.

FIG. A: 3∅ 3W 220VAC SYSTEM (STANDARD MODEL FOR STOCK): Illustrates connection for a 3-wire, 220VAC three-phase system.

FIG. B: 3∅ 4W 220/380VAC SYSTEM: Illustrates connection for a 4-wire, 220/380VAC three-phase system.

FIG. C: 3∅ 4W 190/110VAC SYSTEM: Illustrates connection for a 4-wire, 190/110VAC three-phase system.

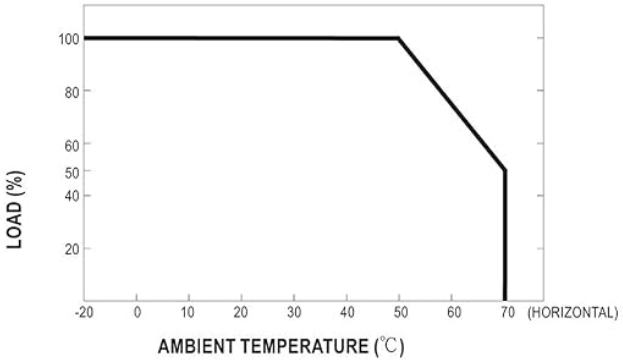
6. Operation

6.1. Remote ON/OFF Function

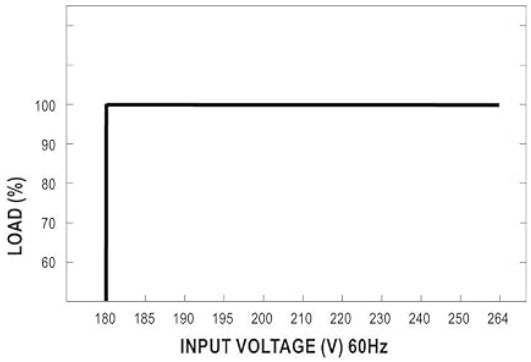
The power supply can be remotely turned ON or OFF by applying voltage to the control pins (CN1 & CN2 & CN3). Refer to the following table and diagrams for connection examples.

Connection Method	Fig. 1.2(A)	Fig. 1.2(B)	Fig. 1.2(C)
SW Logic	Output on	SW Open	SW Open
	Output off	SW Close	SW Close

Derating Curve



Static Characteristics



Function Manual

1.Remote ON/OFF

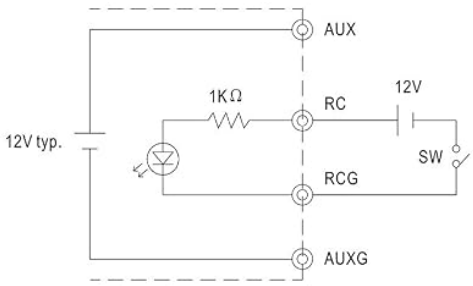
(1)Remote ON/OFF control becomes available by applying voltage in CN1 & CN2 & CN3.
(2)Table 1.1 shows the specification of Remote ON/OFF function.
(3)Fig.1.2 shows the example to connect Remote ON/OFF control function.

Table 1.1 Specification of Remote ON/OFF

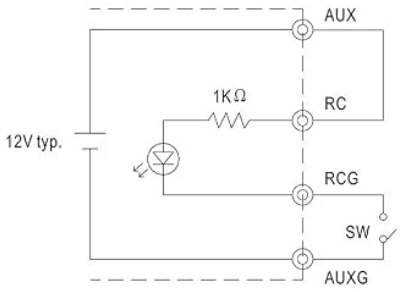
Connection Method		Fig. 1.2(A)	Fig. 1.2(B)	Fig. 1.2(C)
SW Logic	Output on	SW Open	SW Open	SW Close
	Output off	SW Close	SW Close	SW Open

Fig.1.2 Examples of connecting remote ON/OFF

(A)Using external voltage source



(B)Using internal 12V auxiliary output



(C)Using internal 12V auxiliary output

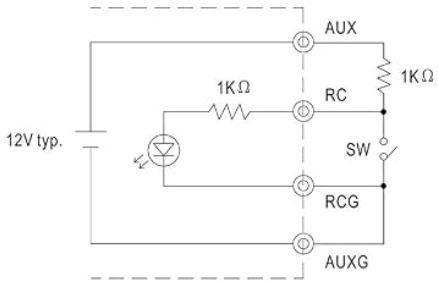


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Figure 6.1: Examples of connecting remote ON/OFF. This image provides three circuit diagrams (A, B, C) illustrating different methods for implementing the remote ON/OFF function using external voltage sources or the internal 12V auxiliary output, showing connections to AUX, RCG, RC, SW, and AUXG pins.

(A) Using external voltage source: Connect an external 12V source to control the SW pin.

(B) Using internal 12V auxiliary output: Utilize the power supply's internal 12V AUX output for control.

(C) Using internal 12V auxiliary output: Another configuration using the internal 12V AUX output for control.

6.2. Alarm Signal Output

The power supply provides alarm signals via P OK and P OK2 GND pins. An external voltage source is required for this function.

Function	Description	Output of alarm (P OK, Relay Contact)	Output of alarm (P OK2, TTL Signal)
P OK	The signal is "Low" when the power supply is above 80% of the rated output voltage.	Low (0.5V max at 500mA)	Low (0.5V max at 10mA)
	The signal turns to be "High" when the power supply is under 80% of the rated output voltage or Power Fail.	High or open (External applied voltage, 500mA max.)	High or open (External applied voltage, 10mA max.)

2.Alarm Signal Output

(1)Alarm signal is sent out through "P OK" & "P OK GND" and P OK2 & P OK GND2 pins.
(2)An external voltage source is required for this function.
(3)Table 2.1 explains the alarm function built-in the power supply.

Function	Description	Output of alarm(P OK, Relay Contact)	Output of alarm(P OK2, TTL Signal)
P OK	The signal is "Low" when the power supply is above 80% of the rated output voltage-Power OK	Low (0.5V max at 500mA)	Low (0.5V max at 10mA)
	The signal turns to be "High" when the power supply is under 80% of the rated output voltage-Power Fail	High or open (External applied voltage, 500mA max.)	High or open (External applied voltage, 10mA max.)

Table 2.1 Explanation of alarm

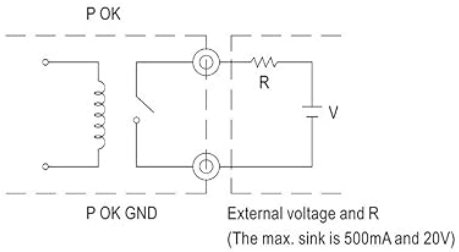


Fig. 2.2 Internal circuit of P OK (Relay, total is 10W)

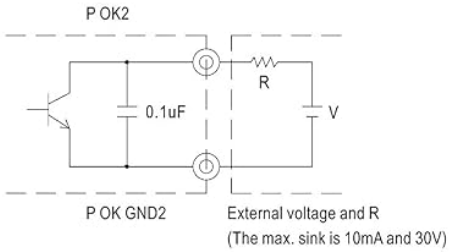


Fig. 2.3 Internal circuit of P OK2 (Open collector method)

3.Output Voltage TRIM

(1)PV(PIN3) and PS(PIN4) of CN1 or CN2 must be disconnected if "Output Voltage TRIM" function is used. Otherwise, the internal electrical components may be damaged, and the power supply unit may thus be out of order.
(2)Connecting an external DC source between PV & -S on CN1 or CN2, and +S & +V, -S & -V also need to be connected that is shown in Fig. 3.1.
(3)Adjustment of output voltage is possible between 20~110%(Typ.) of the rated output which is shown in Fig. 3.2. Reducing output current is required when the output voltage is trimmed up.

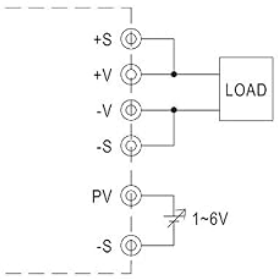


Fig. 3.1 Add on 1~6V external voltage

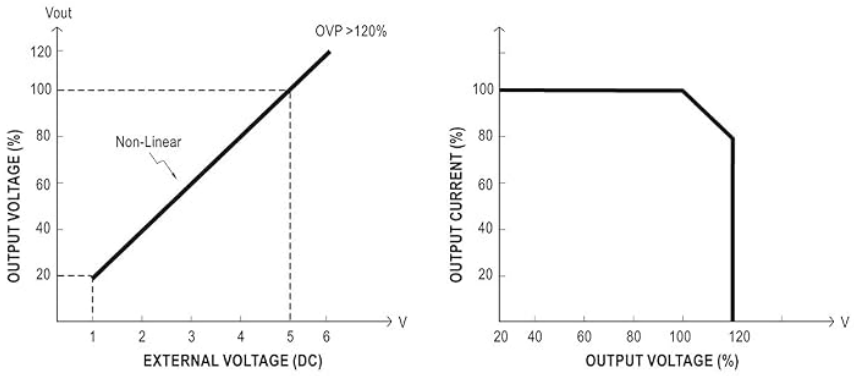


Fig. 3.2 Output voltage trimming

Figure 6.2: Internal circuit of P OK (Relay, total is 10W) and P OK2 (Open collector method). These diagrams show the internal circuitry for the alarm signal outputs, including connections for external voltage and resistance for both P OK and P OK2.

6.3. Output Voltage Trim

The output voltage can be trimmed between 20% and 110% of the rated output voltage. The PV (PIN3) and PS

(PIN4) of CN1 or CN2 must be disconnected if "Output Voltage TRIM" function is used. Otherwise, the internal electrical components may be damaged, and the power supply unit may thus be out of order.

2.Alarm Signal Output

(1)Alarm signal is sent out through "P OK" & "P OK GND" and P OK2 & P OK GND2 pins.
(2)An external voltage source is required for this function.
(3)Table 2.1 explains the alarm function built-in the power supply.

Function	Description	Output of alarm(P OK, Relay Contact)	Output of alarm(P OK2, TTL Signal)
P OK	The signal is "Low" when the power supply is above 80% of the rated output voltage-Power OK	Low (0.5V max at 500mA)	Low (0.5V max at 10mA)
	The signal turns to be "High" when the power supply is under 80% of the rated output voltage-Power Fail	High or open (External applied voltage, 500mA max.)	High or open (External applied voltage, 10mA max.)

Table 2.1 Explanation of alarm

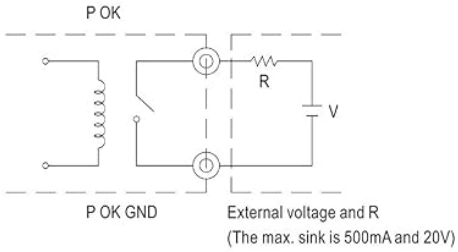


Fig. 2.2 Internal circuit of P OK (Relay, total is 10W)

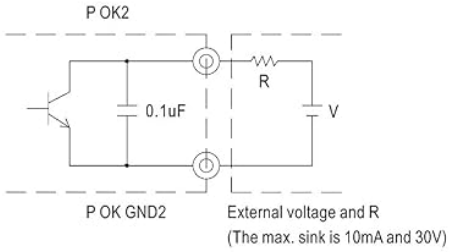


Fig. 2.3 Internal circuit of P OK2 (Open collector method)

3.Output Voltage TRIM

(1)PV(PIN3) and PS(PIN4) of CN1 or CN2 must be disconnected if "Output Voltage TRIM" function is used. Otherwise, the internal electrical components may be damaged, and the power supply unit may thus be out of order.
(2)Connecting an external DC source between PV & -S on CN1 or CN2, and +S & +V, -S & -V also need to be connected that is shown in Fig. 3.1.
(3)Adjustment of output voltage is possible between 20~110%(Typ.) of the rated output which is shown in Fig. 3.2. Reducing output current is required when the output voltage is trimmed up.

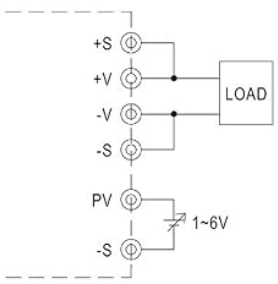


Fig. 3.1 Add on 1~6V external voltage

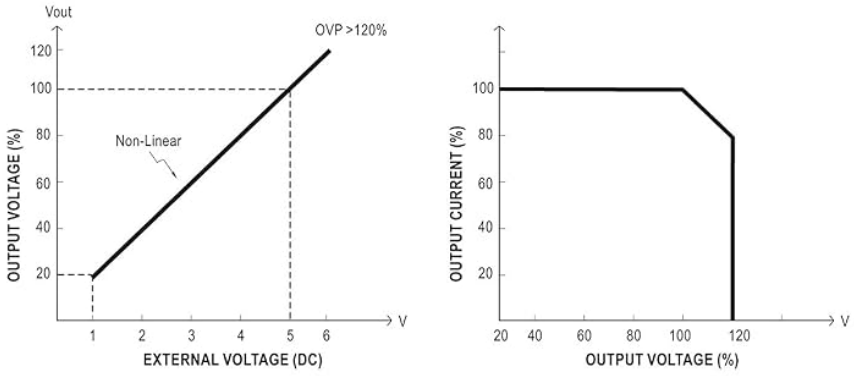


Fig. 3.2 Output voltage trimming

Figure 6.3: Output Voltage Trimming. This section of the image includes a diagram showing how to add an external 1-6V external voltage for trimming, and two graphs: one illustrating output voltage vs. external voltage, and another showing output current vs. output voltage percentage.

- Connect +S and -S to the load.
- Connect +V and -V to the load.
- Adjustment of output voltage is possible between 20-110% (Typ.) of the rated output which is shown in Fig. 3.2. Reducing output current is required when the output voltage is trimmed up.

6.4. Current Sharing

Up to 2 units can share current in parallel. For optimal performance, ensure the voltage difference among each output should be minimized (less than 0.2V).

4.Current Sharing

(1)Parallel operation is available by connecting the units shown as below
(+S,-S and CS are connected mutually in parallel):

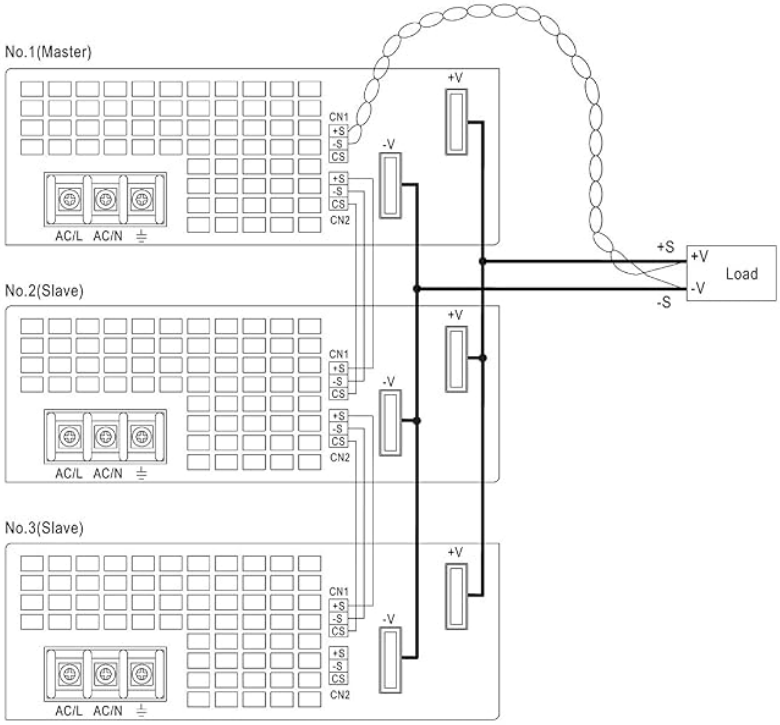
(2)The voltage difference among each output should be minimized that less than 0.2V is required.

(3)The total output current must not exceed the value determined by the following equation.
(Output current at parallel operation)=(The rated current per unit)×(Number of unit)×0.9

(4) In parallel operation 3 units is the maximum, please consult the manufacturer for other applications.

(5) When remote sensing is used in parallel operation, the sensing wire must be connected only to the master unit.

(6) Wires of remote sensing should be kept at least 10 cm from input wires.



(7) Under parallel operation, the "output voltage trim" function is not available.

(8) When in parallel operation, the minimum output load should be greater than 3% of total output load (Min. Load >3% rated current per unit×number of unit)

5.Select O.L.P mode

(1)Remove the shorting connector on CN3 that is shown in Fig 5.1, the O.L.P. mode will be "continuous constant current limiting".

(2)Insert the shorting connector on CN3 that is shown in Fig 5.2, the O.L.P. mode will be "constant current limiting with delay shutdown after 5 seconds, re-power on to recover".

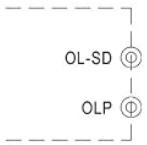


Fig. 5.1 Remove the CN3
OLP Mode : constant current limiting

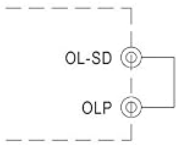


Fig. 5.2 Insert the CN3
OLP Mode : constant current limiting with delay shutdown after 5 seconds

Figure 6.4: Current Sharing Connection. This diagram illustrates how to connect multiple RSP-2400 units (Master, Slave 2, Slave 3) in parallel for current sharing, showing the connections for AC/L, AC/N, FG, +V, -V, +S, and -S terminals.

- Connect +S, -S, and CS (Current Share) pins in parallel.
- The total output current must not exceed the value determined by the following equation: (Output current at

parallel operation) = (Rated output per unit) × (Number of unit) × 0.9.

- For parallel operation with 3 units or more, consult the manufacturer for specific applications.
- Ensure remote sensing wires are kept at least 10 cm from input wires.
- Under parallel operation, the "output voltage trim" function is not available.
- When in parallel operation, the minimum output load should be greater than 3% of total output load (Min. Load >3% rated current per unit × number of unit).

6.5. OLP Select (Overload Protection)

The OLP (Overload Protection) mode can be selected by modifying the connector on CN3.

4.Current Sharing

(1)Parallel operation is available by connecting the units shown as below
(+S,-S and CS are connected mutually in parallel):

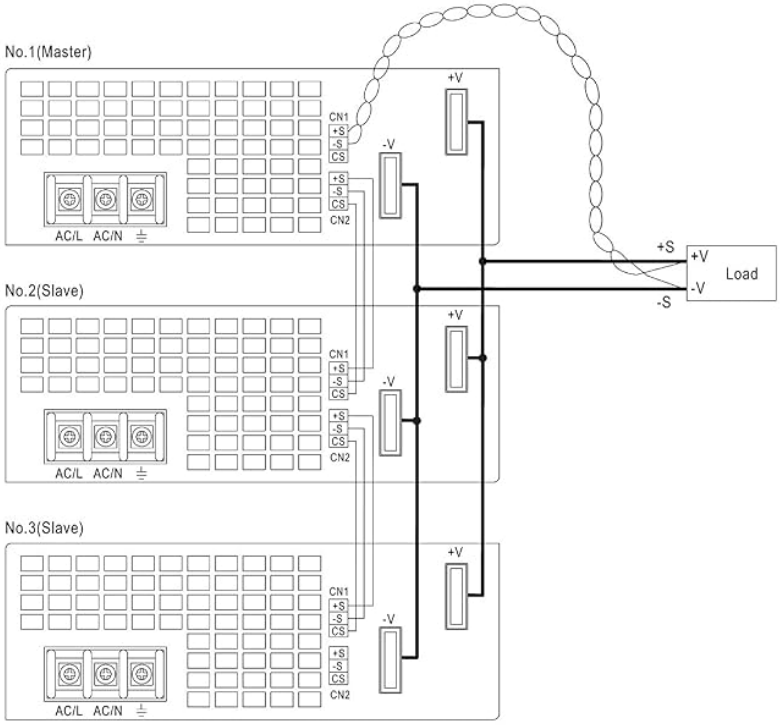
(2)The voltage difference among each output should be minimized that less than 0.2V is required.

(3)The total output current must not exceed the value determined by the following equation.
(Output current at parallel operation)=(The rated current per unit)×(Number of unit)×0.9

(4) In parallel operation 3 units is the maximum, please consult the manufacturer for other applications.

(5) When remote sensing is used in parallel operation, the sensing wire must be connected only to the master unit.

(6) Wires of remote sensing should be kept at least 10 cm from input wires.



(7) Under parallel operation, the "output voltage trim" function is not available.

(8) When in parallel operation, the minimum output load should be greater than 3% of total output load (Min. Load >3% rated current per unit×number of unit)

5.Select O.L.P mode

(1)Remove the shorting connector on CN3 that is shown in Fig 5.1, the O.L.P. mode will be "continuous constant current limiting".

(2)Insert the shorting connector on CN3 that is shown in Fig 5.2, the O.L.P. mode will be "constant current limiting with delay shutdown after 5 seconds, re-power on to recover".

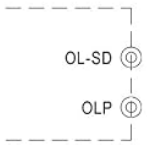


Fig. 5.1 Remove the CN3
OLP Mode : constant current limiting

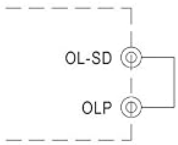


Fig. 5.2 Insert the CN3
OLP Mode : constant current limiting with delay shutdown after 5 seconds

Figure 6.5: OLP Mode Selection. This section of the image shows two diagrams: one for removing the shorting connector on CN3 for "constant current limiting" OLP mode, and another for inserting the shorting connector on CN3 for "constant current limiting with delay shutdown after 5 seconds" OLP mode.

- **Removing the shorting connector on CN3:** The O.L.P. mode will be "continuous constant current limiting".
- **Inserting the shorting connector on CN3:** The O.L.P. mode will be "constant current limiting with delay

shutdown after 5 seconds, re-power on to recover".

7. Maintenance

Regular maintenance ensures the longevity and reliable operation of your power supply.

- **Cleaning:** Periodically clean the exterior of the unit and ventilation openings with a soft, dry cloth. Ensure the power supply is disconnected from all power sources before cleaning. Do not use liquid cleaners.
- **Inspection:** Regularly inspect cables and connections for any signs of wear, damage, or loose connections.
- **Ventilation:** Ensure that the area around the power supply is clear and that airflow to the cooling fans is not obstructed.
- **Environmental Conditions:** Operate the power supply within its specified temperature and humidity ranges.

8. Troubleshooting

This section provides solutions to common issues you might encounter.

Problem	Possible Cause	Solution
No output voltage	No AC input power; Remote ON/OFF is OFF; Internal fuse blown; Overload protection activated.	Check AC input connection and power source; Verify Remote ON/OFF settings; Contact service if fuse is suspected; Reduce load and cycle power.
Output voltage unstable	Loose connections; Overload; Faulty load.	Check all connections; Ensure load is within specifications; Test with a different load.
Overheating	Blocked ventilation; Excessive ambient temperature; Overload.	Clear obstructions from vents; Ensure adequate airflow; Reduce ambient temperature; Reduce load.
Fan not operating	Fan failure; Unit not under sufficient load/temperature to activate fan.	Check if the unit is hot enough to require fan operation; If fan still doesn't work when hot, contact service.

If the problem persists after attempting these solutions, please contact customer support.

9. Specifications

Key technical specifications for the Mean Well RSP-2400-24 AC to DC Power Supply:

Parameter	Value
Model Number	RSP-2400-24
Brand	MEAN WELL
Output Voltage	24 Volts
Output Current	100 Amps
Output Wattage	2400 Watts
Efficiency	Up to 90%

Parameter	Value
Power Factor Correction (PFC)	Active PFC, PF>0.95
Dimensions (L x W x H)	11.02 x 7.09 x 2.56 inches (278 x 177.8 x 63.5 mm)
Weight	7.28 Pounds (3.3 Kilograms)
Cooling Method	Forced air cooling by built-in DC fan
Protections	Short circuit, Overload, Over voltage, Over temperature
Connector Type	Lug terminal female
Compatible Devices	Personal Computer (*Note: This is a general classification, actual compatibility depends on power requirements.*)

10. Warranty and Support

For warranty information and technical support, please refer to the official MEAN WELL website or contact your authorized distributor. Keep your purchase receipt as proof of purchase for warranty claims.
For further assistance, please visit: www.meanwell.com