



Figure 1. Physical Photos of ALRS12V5AT

## FEATURES

- Input Voltage Range: 90V ~ 264VAC
- Output Current: 5A
- High Efficiency: >80%
- Withstand 300VAC Surge Input for 5s
- Protections: Short Circuit/Overload/Over-voltage/Over Temperature
- Forced Air Cooling
- Built-in Cooling Fan On-Off Control
- 1U Low Profile
- Withstand 5G Vibration Test
- Wide Operating Temperature Range:  $-10^{\circ}\text{C} \sim 60^{\circ}\text{C}$
- Protection Level: IP20
- PFC Function: NO

## APPLICATIONS

The 60W single output switching power supply can be

used in various applications that require a stable and efficient power supply. Here are some common applications:

1. Industrial automation equipment: Switching power supplies are commonly used in industrial automation equipment such as motor controllers, programmable logic controllers (PLCs), and robotic systems.
2. LED lighting: LED lighting requires a constant and stable power supply to function effectively. A 60W single output switching power supply can provide the necessary power to run LED lighting systems.
3. Telecom and networking equipment: Switching power supplies are widely used in telecom and networking equipment such as routers, switches, and modems.
4. Audio and video equipment: High-end audio and video equipment such as amplifiers, mixers, and video monitors require a stable power supply to ensure optimal performance.
5. Medical equipment: Medical equipment such as ultrasound machines, X-ray machines, and CT scanners require a reliable and stable power supply to ensure accurate readings and diagnoses.
6. Gaming systems: High-end gaming systems require a high-power output to run efficiently. A 60W single output switching power supply can provide the necessary power to run gaming systems.
7. Mining equipment: Cryptocurrency mining equipment requires a stable and efficient power supply to run continuously. A 60W single output switching power supply can be used to power mining equipment such as ASIC miners.

Overall, this 60W single output switching power supply is a versatile power supply that can be used in a wide range of applications that require a stable and efficient power supply.

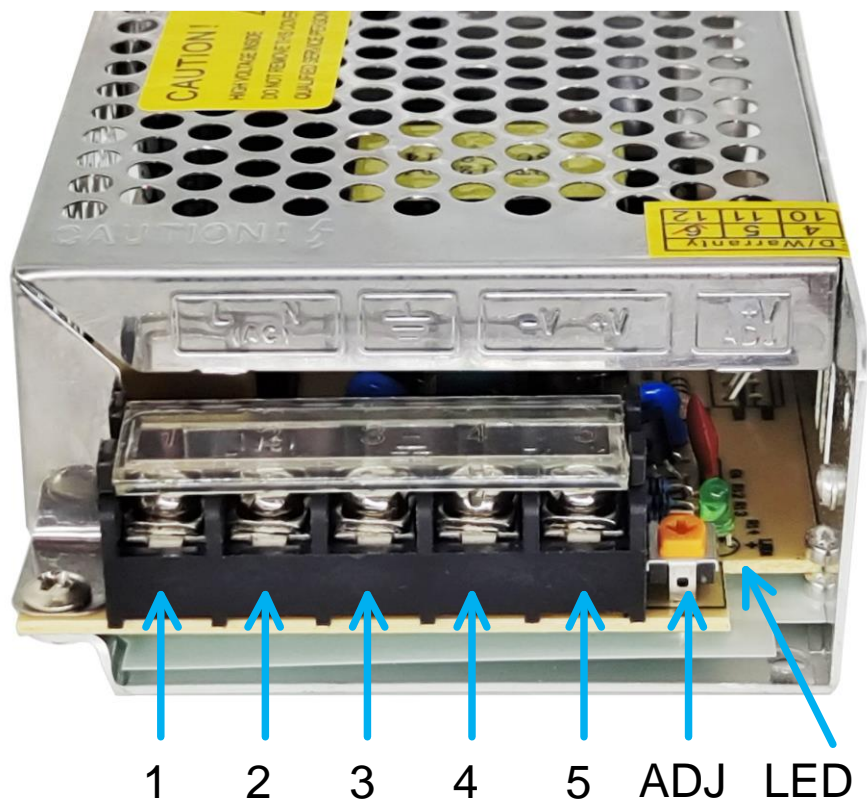


Table 1. Pin Names and Functions

| No. | Name | Description                        | Type                    |
|-----|------|------------------------------------|-------------------------|
| 1   | L    | Line terminal: AC Input Voltage    | Power input             |
| 2   | N    | Neutral terminal: AC Input Voltage | Power input             |
| 3   | FG   | Power Ground                       | Ground for power supply |
| 4   | V-   | Negative DC Output Voltage         | Power output            |
| 5   | V+   | Positive DC Output Voltage         | Power output            |
| ADJ | ADJ  | Adjust the Output Voltage          | Analog input            |



### DESCRIPTION AND SPECIFICATIONS

ALRS12V5AT is a highly efficient 60W single-output enclosed power supply with a 36mm low profile design. Equipped with a built-in long-life fan, this power supply can operate effectively at full load under temperatures ranging from -10°C to 60°C.

Not only does it offer high efficiency at over 80%, but it also comes with complete protection functions and 5G anti-vibration capability, ensuring reliability and safety in industrial applications. Moreover, it complies with international safety regulations, making it a top choice for a wide range of industrial applications.

Overall, the ALRS12V5AT power supply offers an ideal solution for industries seeking a compact, durable, and high-performance power supply that can operate in extreme conditions with complete safety and reliability.

Table 1. Specifications

| INPUT                    |                                 |   |       |      |       |                   |
|--------------------------|---------------------------------|---|-------|------|-------|-------------------|
| Parameter                | Symbol                          | Test Conditions   | Min.  | Typ. | Max.  | Unit/Note         |
| Input Voltage            | $V_{IN}$                        |   | 90    |      | 264   | VAC               |
| Input Current            | $I_{IN}$                        | $V_{IN}=110V$   |       | 0.75 |       | A                 |
|                          |                                 | $V_{IN}=264V$   |       | 0.35 |       | A                 |
| Leakage Current          |                                 | $V_{IN}=260V$   |       |      | 0.5   | mA                |
| Inrush Current           |                                 | $V_{IN}=110V$   |       | 4.2  |       | A                 |
|                          |                                 | $V_{IN}=264V$   |       | 2.1  |       | A                 |
| OUTPUT                   |                                 |   |       |      |       |                   |
| Parameter                | Symbol                          | Test Conditions   | Min.  | Typ. | Max.  | Unit/Note         |
| Output Power             | P                               |   |       |      | 60    | W                 |
| Output Voltage           | $V_{OUT}$                       |   | 11.94 | 12   | 12.06 | V                 |
| Rated Output Current     | $I_{OUT}$                       |   | 0     |      | 5     | A                 |
| Output Current Range     |                                 | $V_{IN}=110V$   | 0     |      | 4     | A                 |
|                          |                                 | $V_{IN}=264V$   | 0     |      | 5     | A                 |
| Output Voltage Tolerance |                                 |   | ±0.1% |      |       |                   |
| Line Regulation          | $\Delta V_{OUT}/\Delta V_{VPS}$ | Input voltage change: ±1%   | -0.5  |      | 0.5   | %                 |
| Load Regulation          | $\Delta V_{OUT}/\Delta I_{OUT}$ | Load change from 10% to 100%  | -0.5  |      | 0.5   | %                 |
| Ripple & Noise           |                                 |   |       |      | 120   | mV <sub>p-p</sub> |
| Efficiency               | $\eta$                          |   |       | 80   |       | %                 |
| Temperature Coefficient  |                                 | Full Load @ 0 ~ 50°C  | -0.03 |      | 0.03  | %/°C              |
| Over Load Protection     |                                 | Protection type: Shutdown the output voltage, Reset: Automatic Recovery | 105   |      | 150   | %                 |



| GENERAL CHARACTERISTIC            |            |                 |                |      |      |           |
|-----------------------------------|------------|-----------------|----------------|------|------|-----------|
| Parameter                         | Symbol     | Test Conditions | Min.           | Typ. | Max. | Unit/Note |
| Isolation Resistance              |            |                 |                | 100  |      | MΩ        |
| Frequency                         | $f_{sw}$   |                 | 50             |      | 60   | Hz        |
| Withstand Voltage                 |            |                 |                | 1.5  |      | kVAC      |
| Start Time                        | $t_s$      |                 |                | 200  |      | ms        |
| Rise Time                         | $t_r$      |                 |                | 50   |      | ms        |
| Hold Up Time                      | $t_h$      |                 |                | 20   |      | ms        |
| Operating Temperature Range       | $T_{opr}$  |                 | -10            |      | 60   | °C        |
| Operating Relative Humidity Range | $RH_{opr}$ |                 | 20             |      | 90   | %         |
| Storage Temperature Range         | $T_{stg}$  |                 | -20            |      | 85   | °C        |
| Storage Relative Humidity Range   | $RH_{stg}$ |                 | 10             |      | 95   | %         |
| External Dimensions               |            |                 | 110×78×36      |      |      | mm        |
|                                   |            |                 | 4.33×3.07×1.42 |      |      | inch      |
| Weight                            |            |                 |                | 230  |      | g         |
|                                   |            |                 |                | 0.51 |      | lbs       |
|                                   |            |                 |                | 8.11 |      | Oz        |

## Block Diagram

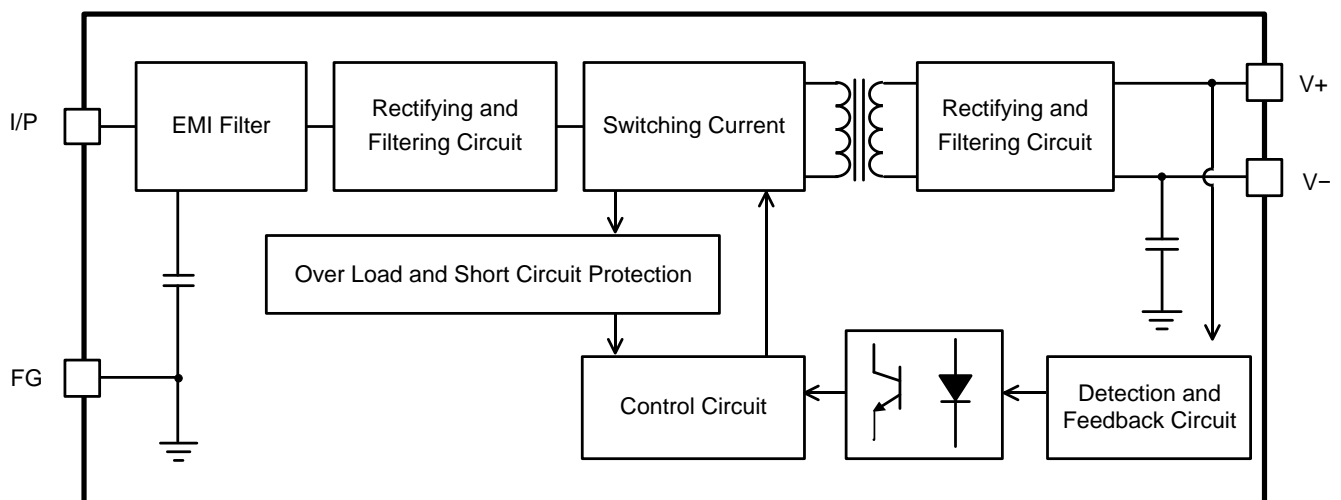
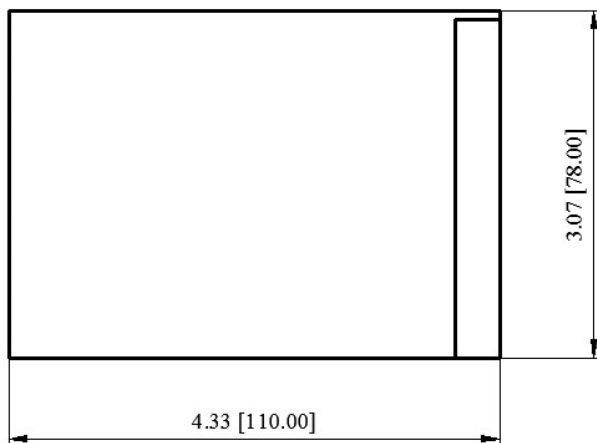
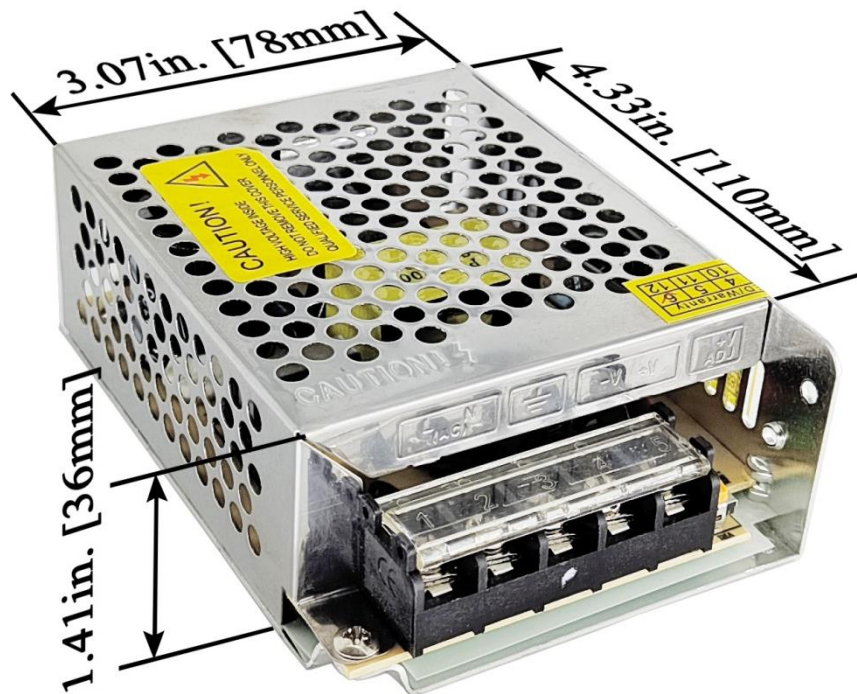


Figure 2. Power Supply Function Block Diagram



### OUTLINE DIMENSIONS



|            |                 |
|------------|-----------------|
| Front View | Side View       |
| Top View   | Unit: inch [mm] |

Figure 3. Outline Dimensions



### NAMING CONVENTION

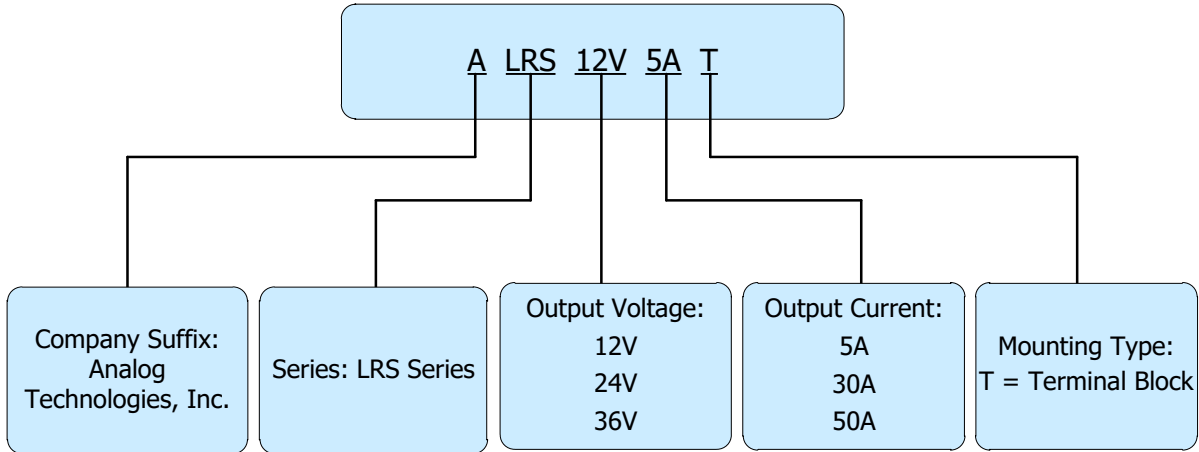


Figure 4. Naming Convention

### ORDING INFORMATION

| Part Number | Buy Now |
|-------------|---------|
| ALRS12V5AT  | * *     |

\*: both and are our online store icons. Our products can be ordered from either one of them with the same pricing and delivery time.

Table 4. ALRS12V5AT Families with Different Current

| Product Model | Input Voltage | Output Voltage | Output Current | Output Power | Datasheet | Buy Now* |
|---------------|---------------|----------------|----------------|--------------|-----------|----------|
|               | V             | V              | A              | W            |           |          |
| ALRS12V1R3AT  | 90 ~ 264      | 12             | 1.3            | 15           |           | * *      |
| ALRS12V2R2AT  | 90 ~ 264      | 12             | 2.2            | 25           |           | * *      |
| ALRS12V3AT    | 90 ~ 264      | 12             | 3              | 36           |           | * *      |
| ALRS12V5AT    | 90 ~ 264      | 12             | 5              | 60           |           | * *      |
| ALRS12V8R4AT  | 90 ~ 264      | 12             | 8.4            | 100          |           | * *      |
| ALRS12V10AT   | 90 ~ 264      | 12             | 10             | 120          |           | * *      |
| ALRS12V12R5AT | 90 ~ 264      | 12             | 12.5           | 150          |           | * *      |
| ALRS12V15AT   | 90 ~ 264      | 12             | 15             | 180          |           | * *      |
| ALRS12V16R7AT | 90 ~ 264      | 12             | 16.7           | 200          |           | * *      |
| ALRS12V20AT   | 90 ~ 264      | 12             | 20             | 240          |           | * *      |



| Product Model | Input Voltage | Output Voltage | Output Current | Output Power | Datasheet | Buy Now* |
|---------------|---------------|----------------|----------------|--------------|-----------|----------|
|               | V             | V              | A              | W            |           |          |
| ALRS12V25AT   | 90 ~ 264      | 12             | 25             | 300          |           | * *      |
| ALRS12V30AT   | 90 ~ 264      | 12             | 30             | 360          |           | * *      |
| ALRS12V40AT   | 90 ~ 264      | 12             | 40             | 480          |           | * *      |
| ALRS12V50AT   | 90 ~ 264      | 12             | 50             | 600          |           | * *      |
| ALRS24VR65AT  | 90 ~ 264      | 24             | 0.65           | 15           |           | * *      |
| ALRS24V1R1AT  | 90 ~ 264      | 24             | 1.1            | 25           |           | * *      |
| ALRS24V1R5AT  | 90 ~ 264      | 24             | 1.5            | 36           |           | * *      |
| ALRS24V2R5AT  | 90 ~ 264      | 24             | 2.5            | 60           |           | * *      |
| ALRS24V4R2AT  | 90 ~ 264      | 24             | 4.2            | 100          |           | * *      |
| ALRS24V5AT    | 90 ~ 264      | 24             | 5              | 120          |           | * *      |
| ALRS24V7R5AT  | 90 ~ 264      | 24             | 7.5            | 180          |           | * *      |
| ALRS24V8R4AT  | 90 ~ 264      | 24             | 8.4            | 200          |           | * *      |
| ALRS24V10AT   | 90 ~ 264      | 24             | 10             | 240          |           | * *      |
| ALRS24V12R5AT | 90 ~ 264      | 24             | 12.5           | 300          |           | * *      |
| ALRS24V15AT   | 90 ~ 264      | 24             | 15             | 360          |           | * *      |
| ALRS24V20AT   | 90 ~ 264      | 24             | 20             | 480          |           | * *      |

\*Note: See Figure 4.

## NOTICE

1. It is important to carefully read and follow the warnings, cautions, and product-specific notes provided with electronic components. These instructions are designed to ensure the safe and proper use of the component and to prevent damage to the component or surrounding equipment. Failure to follow these instructions could result in malfunction or failure of the component, damage to surrounding equipment, or even injury or harm to individuals. Always take the necessary precautions and seek professional assistance if unsure about proper use or handling of electronic components.
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