LCLCTC LCDS4048ZA2

LCLCTC 40A AC-AC Solid State Relay User Manual

Model: LCDS4048ZA2

1. Introduction

This manual provides essential information for the safe and effective installation, operation, and maintenance of the LCLCTC 40A AC-AC Solid State Relay (SSR). This device is designed for controlling AC loads with an AC control signal, featuring an integrated heatsink and compatibility with DIN rail mounting for industrial applications.

2. Safety Information

WARNING: Electrical shock hazard. Installation and maintenance should only be performed by qualified personnel. Disconnect all power before working on the relay or connected circuits.

- Ensure the control voltage and load voltage are within the specified ranges for this model.
- Verify correct wiring connections before applying power.
- Do not exceed the maximum load current rating of 40 Amps.
- Adequate heat dissipation is crucial for reliable operation. Ensure proper ventilation, especially when mounting multiple relays.
- In the off state, a small off-state leakage current (less than 5mA) may be present. Consider this for sensitive applications.

3. Product Overview

The LCLCTC 40A AC-AC Solid State Relay is a compact and efficient device for switching AC power. It integrates a heatsink and is designed for easy installation on a DIN rail.

Key Features:

- **Integrated Heatsink:** The relay comes with its own heatsink, eliminating the need for a separate purchase and simplifying installation.
- **DIN Rail Mounting:** Equipped with mounting rail clips for convenient installation in distribution boxes and industrial control panels.

- **Compact Design:** With a width of only 0.964 inches (2.45 cm), it is suitable for installations in narrow spaces.
- **Optocoupler Isolation:** Provides electrical isolation between the control circuit and the load circuit, enhancing safety and protecting control electronics.

Dimensions and Weight:

The relay has product dimensions of approximately 3.25 x 0.96 x 3.48 inches (82.5 x 24.5 x 88 mm) and weighs about 7.8 ounces (181 grams).

Image: Product dimensions and weight for the LCLCTC Solid State Relay. The image shows the relay with measurements: 3.25in (82.5mm) length, 3.01in (76.5mm) height, 0.96in (24.5mm) width, and a radiator height of 2.05in (52mm). The package dimensions are 3.47in (88mm) length, 1.26in (32mm) width, and 3.27in (83mm) height. The product weight is 181g and load current is 40A.

Image: A side view of the LCLCTC Solid State Relay, clearly showing the integrated heatsink fins. The heatsink is a crucial component for thermal management.

4. Installation

DIN Rail Mounting:

The LCLCTC Solid State Relay is designed for quick and secure installation on standard DIN rails. The integrated clips allow for easy attachment and removal.

Image: Two LCLCTC Solid State Relays mounted on a DIN rail. An inset shows a close-up of the guide rail buckle mechanism, illustrating how the relay securely attaches to the rail.

Wiring Diagram:

Refer to the following diagram for proper wiring connections. Ensure all connections are tight and secure to prevent arcing or overheating.

Image: Wiring diagram for the LCLCTC 40A AC-AC Solid State Relay. Input terminals (3 and 4) connect to the AC 70-280VAC control signal. Output terminals (1 and 2) connect to the AC power supply (24-480VAC) and the load. A note warns about off-state leakage current being less than 5mA and advises caution for specific applications.

Input (Control) Terminals (3 & 4): Connect your AC control signal (70-280V AC) to these terminals. The relay activates when the control voltage is applied.
Output (Load) Terminals (1 & 2): Connect the AC power supply (24-480V AC) and the load in series to these terminals. The relay switches the load power.
NOTE: In the off state, the off-state leakage current is less than 5mA. This scenario may not be applicable for all sensitive loads. Please consider this characteristic carefully before use.

5. Operating Instructions

Selecting the Correct SSR:

Choosing the appropriate Solid State Relay depends on the type of load and its operating current. The LCLCTC LCDS4048ZA2 is an AC-AC type relay.

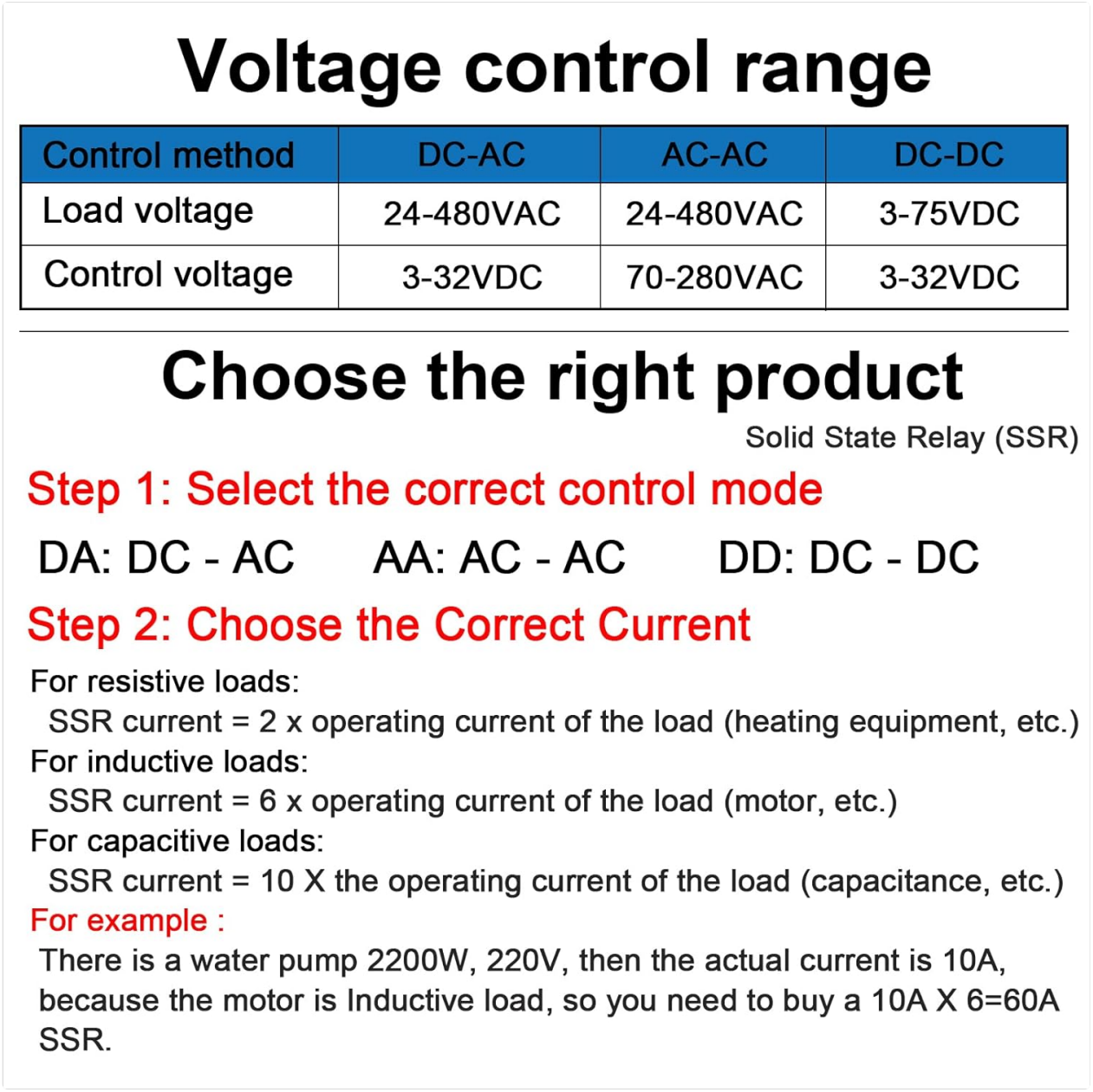

Image: A guide for selecting the correct Solid State Relay. It shows a table with different control methods (DC-AC, AC-AC, DC-DC) and their corresponding load and control voltage ranges. Below the table, it provides steps to choose the right product, including selecting the control mode (DA: DC-AC, AA: AC-AC, DD: DC-DC) and calculating the correct current based on load type (resistive, inductive, capacitive) with an example for an inductive load.

Step 1: Select the correct control mode. This model is an AC-AC type (AA).
Step 2: Choose the Correct Current Rating. The current rating of the SSR should be selected based on the load type:

- **For resistive loads (e.g., heating equipment):** SSR current = 2 x operating current of the load.
- **For inductive loads (e.g., motors):** SSR current = 6 x operating current of the load.
- **For capacitive loads:** SSR current = 10 x operating current of the load.

Example: If a water pump (inductive load) operates at 2200W, 220V, its operating current is 10A (2200W / 220V). For an inductive load, you would need an SSR with a current rating of 10A x 6 = 60A. Therefore, a 40A SSR might not be sufficient for this specific inductive load.

6. Maintenance

The LCLCTC Solid State Relay is designed for long-term, maintenance-free operation under normal

conditions. However, proper thermal management is essential.

Heat Dissipation:

Although the relay includes an integrated heatsink, consider the following for optimal performance and longevity:

- Ensure adequate airflow around the relay, especially in enclosed spaces.
- When installing multiple solid-state relays side-by-side, heat dissipation can be reduced. If multiple SSRs are used in close proximity, it is recommended to add cooling fans according to the actual situation to prevent overheating.

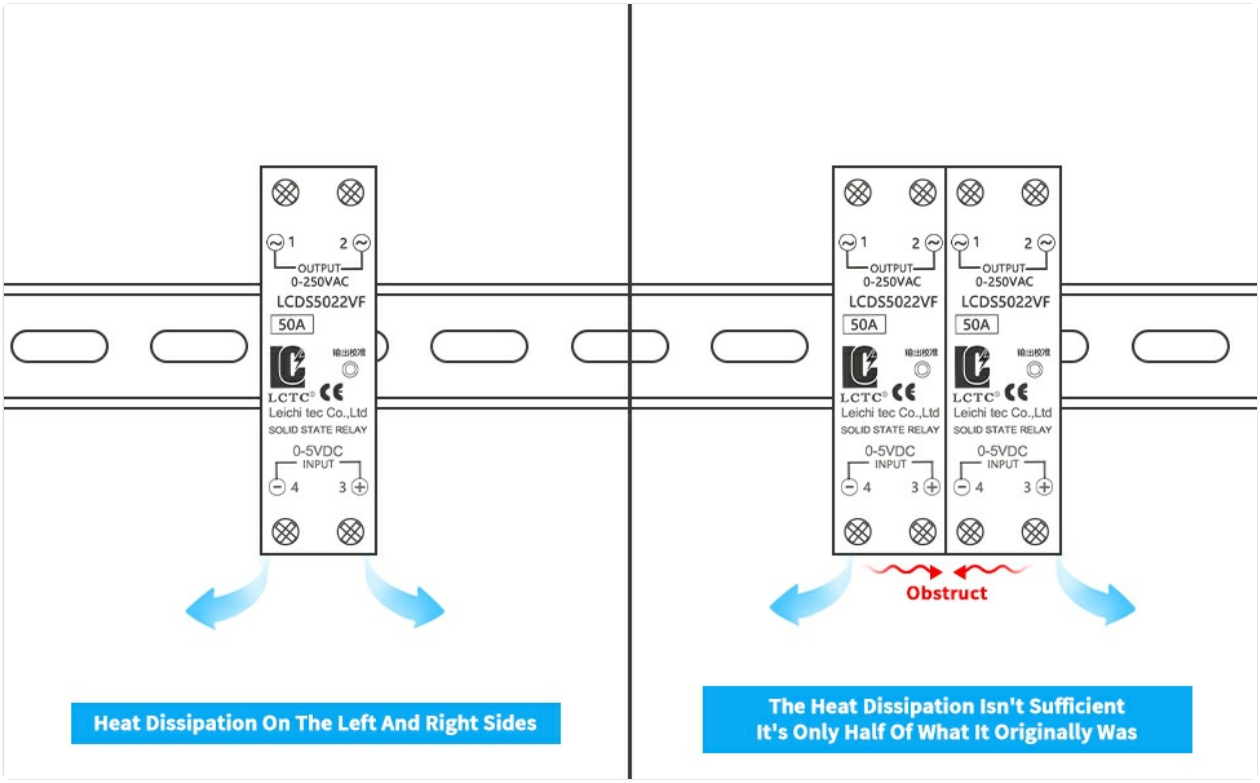

Image: Illustrates proper heat dissipation for a single Solid State Relay on a DIN rail, showing airflow from the left and right sides. It contrasts this with a scenario where heat dissipation is obstructed, indicating insufficient cooling.

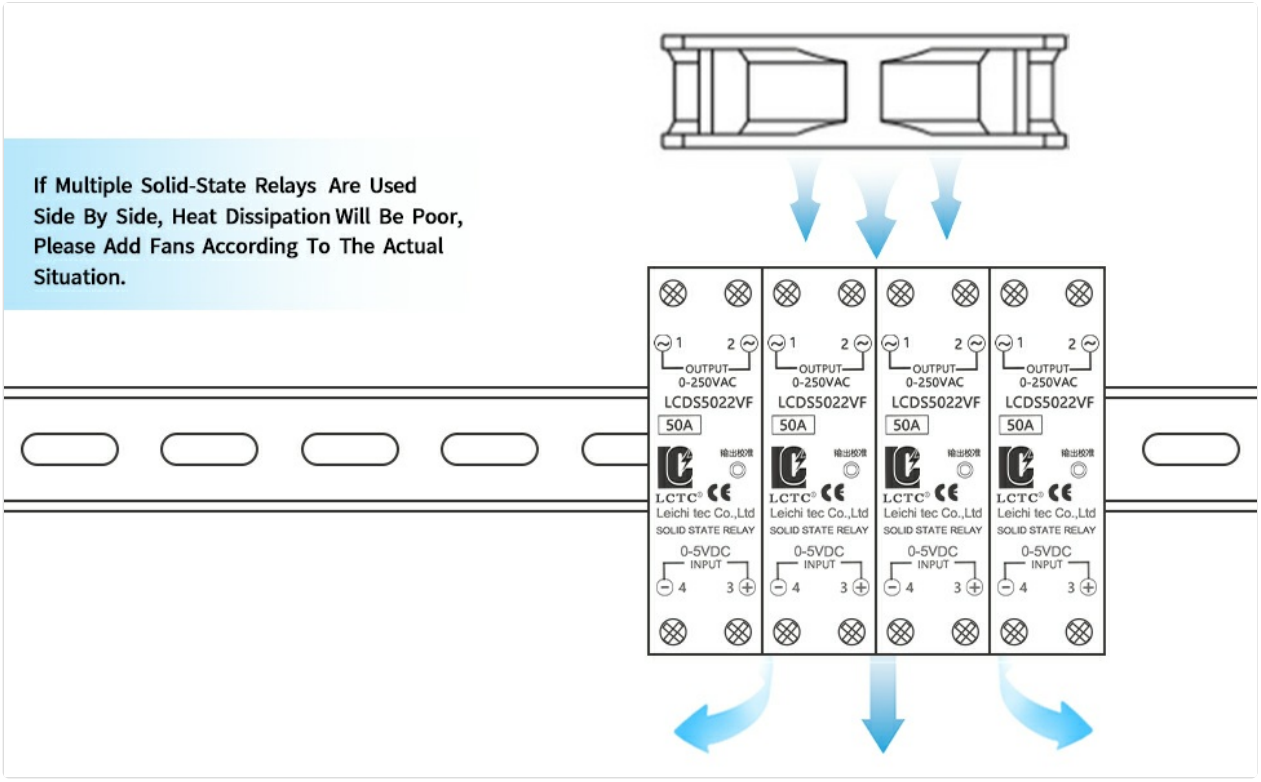

Image: Demonstrates the importance of additional cooling when multiple Solid State Relays are mounted side-by-side on a DIN rail. It shows four relays in close proximity and recommends adding fans to ensure adequate heat dissipation.

7. Troubleshooting

If you encounter issues with your LCLCTC Solid State Relay, consider the following common troubleshooting steps:

- **Relay not activating:**
  - Verify that the control voltage (70-280V AC) is correctly applied to terminals 3 and 4.
  - Check for loose wiring connections at the input terminals.
  - Ensure the control signal is stable and within the specified voltage range.
- **Load not receiving power:**
  - Confirm that the main AC power supply (24-480V AC) is connected to the output terminals 1 and 2.
  - Check for loose wiring connections at the output terminals.
  - Ensure the load itself is functional and correctly wired.
  - Verify that the load current does not exceed the 40A rating of the SSR, especially for inductive or capacitive loads which require higher SSR current ratings (refer to Section 5).
- **Relay overheating:**
  - Ensure adequate ventilation around the relay.
  - If multiple relays are installed closely, consider adding a cooling fan.
  - Verify that the load current is not consistently near or above the maximum rating, which can lead to excessive heat generation.
- **Unexpected behavior (e.g., load partially on when off):**
  - This could be due to the off-state leakage current (less than 5mA). For very sensitive loads, this small current might be noticeable. Consider adding a snubber circuit or a small dummy load in parallel with the main load if this is an issue.

If problems persist after these checks, contact LCLCTC customer support for further assistance.

8. Specifications

Specification	Value
Brand	LCLCTC
Model	LCDS4048ZA2
Control Type	AC to AC
Input (Control) Voltage	70-280V AC
Output (Load) Voltage	24-480V AC
Current Rating	40 Amps
Maximum Switching Current	40 Amps
Minimum Switching Voltage	70 Volts (AC)
Wattage	19200 watts (Max)
Connector Type	Quick Connect
Contact Material	Copper
Contact Type	Normally Open
Mounting Type	DIN Rail Mount
Operation Mode	Automatic
Product Dimensions	3.25 x 0.96 x 3.48 inches
Item Weight	7.8 ounces
Specification Met	CE
UPC	704415208517
ASIN	B0BVFTLJZM

9. What's in the Box

The product package includes:

- 1 x LCLCTC 40A AC-AC Solid State Relay (Model: LCDS4048ZA2)

10. Warranty and Support

For warranty information or technical support, please refer to the product packaging or contact the seller directly through your purchase platform. Keep your purchase receipt for warranty claims.