



DENKI SEIGYO

DSR1- _A-AA SERIES

Single Phase AC-AC Solid State Relay (SSR)



Category

Solid State Relay / Single Phase AC-AC SSR

Manufacturer

Denki Seigyo

1. PRODUCT OVERVIEW

The **Denki Seigyo DSR1- _A-AA Series** is a premium industrial-grade **single-phase AC-AC solid state relay (SSR)** designed for high-speed, silent, and contactless switching of AC loads.

The relay utilizes advanced semiconductor switching technology with optical isolation to provide reliable switching performance, long operational life, and superior electrical safety.

Available in both **zero-cross** and **random turn-on** versions, the DSR1 series is ideal for industrial automation, heater control, HVAC systems, lighting circuits, motor control, and process automation.

Key Benefits

- Silent switching without contact noise
 - Long life without mechanical wear
 - High-speed switching performance
 - Excellent surge current capability
 - Compact industrial housing
 - Maintenance-free operation
 - High dielectric isolation strength
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2. PRODUCT FEATURES

Feature	Description
Control Type	AC Input / AC Output
Switching Type	Zero-cross / Random-on
Input Voltage	80–250 VAC
Output Voltage	24–480 VAC
Load Current Range	10A to 100A
Isolation	Optical isolation
Mounting	Panel / Heat sink
Indicator	Built-in LED
Housing	Flame-retardant thermoplastic
Compliance	CE / RoHS

3. MODEL STRUCTURE

Example: DSR1-40A-AA

Code	Description
D	Denki Seigyo
SR	Solid State Relay
1	Single Phase
40A	Rated Current
A	AC Input
A	AC Output

4. TECHNICAL SPECIFICATIONS

General Specifications

Parameter	Specification
Model	DSR1- _A-AA
Type	Single Phase SSR
Control Method	AC Input / AC Output
Input Frequency	47–63 Hz
Output Type	Triac / SCR Switching



Input Specifications

Parameter	Specification
Input Voltage	80–250 VAC
Input Current	≤ 15 mA
Input Indicator	LED
Trigger Method	AC Control

Output Specifications

Parameter	Specification
Output Voltage	24–480 VAC
Rated Current	10A / 25A / 40A / 60A / 80A / 100A
Surge Current	10 × Rated Current
ON-State Voltage Drop	≤ 1.6V
OFF-State Leakage Current	≤ 10 mA

Switching Characteristics

Parameter	Specification
Turn-on Type	Zero-cross / Random-on
Turn-on Time	≤ 10 ms
Turn-off Time	≤ 10 ms

Insulation Specifications

Parameter	Specification
Dielectric Strength	2500 VAC
Insulation Resistance	≥ 100 MΩ @ 500VDC
Isolation Method	Optical Isolation

Environmental Specifications

Parameter	Specification
Operating Temperature	–25°C to +80°C
Storage Temperature	–30°C to +100°C
Humidity	45–85% RH



Parameter	Specification
Cooling Method	Natural / Forced Cooling

5. MECHANICAL DIMENSIONS

Standard SSR Housing

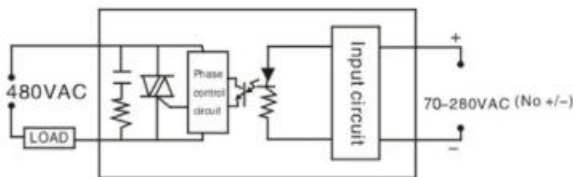
Parameter	Dimension
Length	Approx. 62 mm
Width	Approx. 45 mm
Height	Approx. 24 mm
Weight	Approx. 150–250 g

Mechanical Features

- Compact industrial housing
- Heat sink compatible design
- Screw terminal connections
- High thermal conductivity baseplate

6. WIRING DIAGRAM

AC INPUT / AC OUTPUT CONNECTION



7. OPERATION PRINCIPLE

The DSR1- A-AA SSR uses an optically isolated semiconductor switching circuit.

When AC voltage is applied to the input terminals, the internal triac or SCR output stage switches the AC load.



Zero-Cross Type

- Turns ON near AC zero crossing
- Reduces surge current and EMI
- Ideal for heaters and resistive loads

Random Turn-On Type

- Instant switching at any AC phase angle
- Suitable for motor and inductive loads
- Supports phase-angle control applications

8. APPLICATIONS

The DSR1-_A-AA Series is suitable for:

- Industrial heating systems
- Temperature controllers
- Lighting control systems
- HVAC equipment
- Motor and pump switching
- Packaging machinery
- Industrial ovens
- Process automation systems
- Power distribution systems

9. ORDERING INFORMATION

Model	Input Voltage	Output Voltage	Rated Current	Switching Type
DSR1-10A-AA	80–250 VAC	24–480 VAC	10 A	Zero-cross
DSR1-25A-AA	80–250 VAC	24–480 VAC	25 A	Zero-cross
DSR1-40A-AA	80–250 VAC	24–480 VAC	40 A	Zero-cross
DSR1-60A-AA	80–250 VAC	24–480 VAC	60 A	Random-on
DSR1-80A-AA	80–250 VAC	24–480 VAC	80 A	Random-on
DSR1-100A-AA	80–250 VAC	24–480 VAC	100 A	Zero-cross



10. INSTALLATION NOTES

- Use appropriate heat sink for high-current applications
- Ensure proper ventilation around the SSR
- Tighten screw terminals securely
- Use suitable fuse or breaker protection
- Avoid exceeding rated current limits
- Apply thermal compound between SSR and heat sink

11. PRODUCT SUMMARY

The **Denki Seigyo DSR1-_A-AA Single Phase AC-AC Solid State Relay** combines:

- High-speed switching performance
- Silent operation
- Long operational life
- Excellent electrical isolation
- Compact industrial design
- Reliable industrial-grade performance

The DSR1 series provides dependable and maintenance-free AC switching for industrial automation and power control systems.

DENKI SEIGYO

Industrial Automation Components