



# DENKI SEIGYO

## DSR-3AA-\_A SERIES

### Three Phase AC-AC Solid State Relay (SSR)



## Category

Solid State Relay / Three Phase AC-AC SSR

## Manufacturer

Denki Seigyo

## 1. PRODUCT OVERVIEW

The **Denki Seigyo DSR-3AA-\_A Series** is a premium industrial-grade **three-phase AC-AC solid state relay (SSR)** designed for high-power, contactless switching of AC loads in industrial automation and power control systems.

Built with advanced semiconductor switching technology and optical isolation, the DSR-3AA-\_A Series delivers silent operation, high-speed response, and maintenance-free performance without mechanical wear or contact arcing.

The relay supports both **zero-cross** and **random turn-on** switching modes, making it suitable for industrial heaters, motors, HVAC systems, lighting control, compressors, and high-power three-phase applications.

### Key Benefits

- High-power three-phase AC switching
- Silent operation without contact noise
- Long service life without mechanical wear
- High surge current capability
- Excellent dielectric isolation
- Compact industrial housing
- Heat sink compatible design
- Maintenance-free operation



## 2. PRODUCT FEATURES

Feature	Description
Control Type	AC Input / AC Output
Switching Type	Zero-cross / Random-on
Input Voltage	80–250VAC or 3–32VDC
Output Voltage	24–480VAC
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: DSR-3AA-40A

Code	Description
D	Denki Seigyo
SR	Solid State Relay
3AA	Three Phase AC-AC Type
40A	Rated Load Current

## 4. TECHNICAL SPECIFICATIONS

### General Specifications

Parameter	Specification
Model	DSR-3AA-_A
Type	Three Phase SSR
Control Method	AC Input / AC Output
Output Technology	SCR / Triac Switching



## Input Specifications

Parameter	Specification
Input Voltage	80–250VAC or 3–32VDC
Input Current	≤ 15 mA
Input Frequency	47–63 Hz
Input Indicator	LED

## Output Specifications

Parameter	Specification
Output Voltage	24–480VAC
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
Cooling Method	Natural / Forced Cooling

## 5. MECHANICAL DIMENSIONS

### Standard Three-Phase SSR Housing

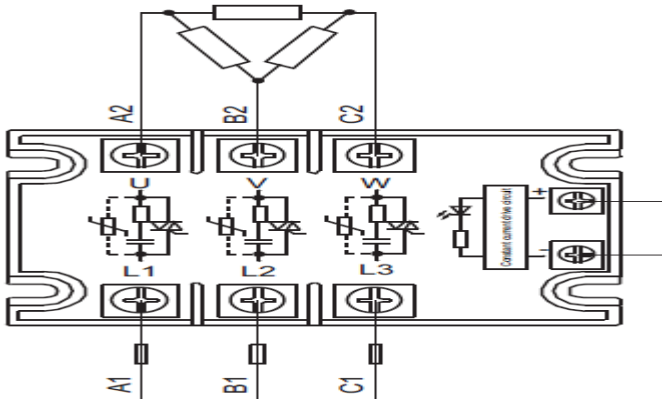
Parameter	Dimension
Length	Approx. 105 mm
Width	Approx. 75 mm
Height	Approx. 38 mm
Weight	Approx. 280 g

### Mechanical Features

- Compact industrial housing
- Heat sink compatible baseplate
- Heavy-duty screw terminal connections
- High thermal conductivity structure

## 6. WIRING DIAGRAM

### THREE PHASE AC INPUT / AC OUTPUT CONNECTION





## 7. OPERATION PRINCIPLE

The DSR-3AA-\_A Series uses optically isolated semiconductor switching circuits to control three-phase AC loads.

When a control signal is applied to the input terminals, the internal SCR or triac output stage activates all three phases simultaneously.

### Zero-Cross Switching

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

### Random Turn-On Switching

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

## 8. APPLICATIONS

The DSR-3AA-\_A Series is suitable for:

- Industrial heating systems
- Three-phase motor control
- Industrial furnaces
- HVAC systems
- Pump and compressor control
- Lighting control systems
- Process automation systems
- Packaging machinery
- Manufacturing equipment
- Power distribution systems

## 9. ORDERING INFORMATION

Model	Input Voltage	Output Voltage	Rated Current	Switching Type
DSR-3AA-25A	80–250VAC	24–480VAC	25A	Zero-cross
DSR-3AA-40A	80–250VAC	24–480VAC	40A	Zero-cross
DSR-3AA-60A	80–250VAC	24–480VAC	60A	Zero-cross
DSR-3AA-80A	80–250VAC	24–480VAC	80A	Random-on
DSR-3AA-100A	80–250VAC	24–480VAC	100A	Random-on



## 10. INSTALLATION NOTES

- Use proper heat sink for high-current applications
- Ensure sufficient ventilation around SSR
- Tighten terminals securely before operation
- Use recommended fuse or circuit breaker protection
- Avoid exceeding rated current limits
- Apply thermal compound between SSR and heat sink

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## 11. PRODUCT SUMMARY

The **Denki Seigyo DSR-3AA-\_A Three Phase AC-AC Solid State Relay** combines:

- High-power three-phase switching
- Silent operation
- Long operational life
- Excellent electrical isolation
- Maintenance-free performance
- Compact industrial design

The DSR-3AA Series delivers reliable, efficient, and high-performance three-phase AC switching for industrial automation and power control systems.

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# DENKI SEIGYO

**Industrial Automation Components**