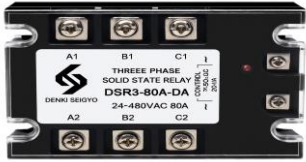




DENKI SEIGYO

DSR-3DA-_A SERIES

Three Phase DC-AC Solid State Relay (SSR)



Category

Solid State Relay / Three Phase DC-AC SSR

Manufacturer

Denki Seigyo

1. PRODUCT OVERVIEW

The **Denki Seigyo DSR-3DA-_A Series** is a premium industrial-grade **three-phase DC-AC solid state relay (SSR)** designed for high-performance, contactless switching of three-phase AC loads using low-voltage DC control signals.

Built with advanced semiconductor switching technology and optical isolation, the relay provides silent operation, fast switching response, and maintenance-free performance without mechanical wear or contact arcing.

The DSR-3DA-_A Series supports both **zero-cross** and **random turn-on** switching modes, making it suitable for industrial heaters, motors, HVAC systems, process automation, and high-power three-phase control applications.

2. KEY FEATURES

- Three-phase AC load switching with DC control input
- Zero-cross and random turn-on models available
- Silent operation without mechanical noise
- No contact wear or switching arc
- High dielectric isolation strength
- Built-in LED operation indicator
- Compact industrial housing



- Long operational life
- High surge current capability
- Maintenance-free design
- Heat sink mountable structure
- Suitable for resistive and inductive loads

3. MODEL STRUCTURE

Example:

DSR-3DA-40A

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

4. PRODUCT DESCRIPTION

The DSR-3DA-_A Series provides reliable and efficient switching of three-phase AC loads using low-voltage DC control signals.

Its wide control input range (**3–32VDC**) enables direct PLC and controller interfacing, while the output supports AC load switching up to **480VAC**.

Built-in optical isolation ensures high electrical safety, stable switching performance, and strong resistance against industrial electrical interference.

5. TECHNICAL SPECIFICATIONS

General Specifications

Parameter	Specification
Model	DSR-3DA-_A
Type	Three Phase Solid State Relay
Manufacturer	Denki Seigyo
Control Type	DC Input / AC Output



Input Specifications

Parameter	Specification
Input Voltage	3–32VDC
Input Current	≤ 15 mA
Input Type	DC Control
Input Indicator	Built-in LED

Output Specifications

Parameter	Specification
Output Voltage	24–480VAC
Rated Current	10A / 25A / 40A / 60A / 80A / 100A
Frequency Range	47–63Hz
ON-State Voltage Drop	≤ 1.6V
OFF-State Leakage Current	≤ 10 mA
Surge Current	10 × rated current

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	2500VAC
Insulation Resistance	≥ 100 MΩ @ 500VDC
Isolation Method	Optical Isolation



Mechanical Specifications

Parameter	Specification
Housing Material	Flame-retardant thermoplastic
Mounting Method	Panel / Heat sink mounting
Cooling Method	Natural / Forced air cooling
Terminal Type	Screw terminal

Environmental Specifications

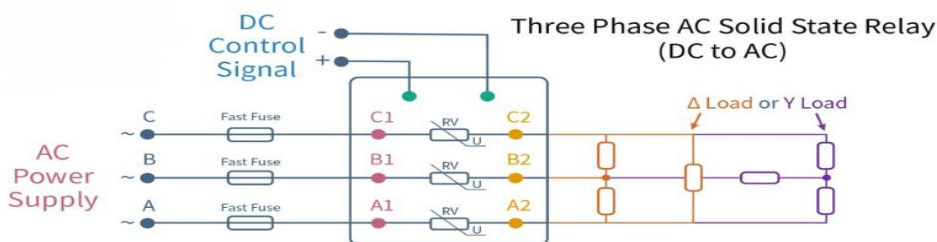
Parameter	Specification
Operating Temperature	-25°C to +80°C
Storage Temperature	-30°C to +100°C
Humidity	45-85% RH
Compliance	CE, RoHS

6. MECHANICAL DIMENSIONS

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

7. WIRING DIAGRAM

THREE PHASE DC INPUT / AC OUTPUT CONNECTION





8. OPERATION PRINCIPLE

The DSR-3DA-_A Series uses optically isolated semiconductor switching circuits to control three-phase AC loads using DC control signals.

When DC voltage is applied to the input terminals, the internal SCR/triac switching stage activates all three output phases simultaneously.

Zero-Cross Switching

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

Random Turn-On Switching

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

Silent Operation

- No mechanical contact noise
- No spark or contact wear

Long Service Life

- Semiconductor switching eliminates mechanical failure

Industrial Reliability

- High surge endurance and electrical isolation

Stable Performance

- Reliable continuous-duty operation
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10. APPLICATIONS

The DSR-3DA-_A Series is suitable for:

- Industrial automation systems
- Three-phase heater control
- Industrial furnaces
- Motor and pump control
- HVAC systems
- Process automation equipment
- Packaging machinery
- Manufacturing systems
- Power distribution panels

11. ORDERING INFORMATION

Model	Control Voltage	Output Voltage	Rated Current	Switching Type
DSR-3DA-25A	3–32VDC	24–480VAC	25A	Zero-cross
DSR-3DA-40A	3–32VDC	24–480VAC	40A	Zero-cross
DSR-3DA-60A	3–32VDC	24–480VAC	60A	Random-on
DSR-3DA-80A	3–32VDC	24–480VAC	80A	Random-on
DSR-3DA-100A	3–32VDC	24–480VAC	100A	Zero-cross

12. INSTALLATION NOTES

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

Designed for industrial automation and power control systems, the DSR-3DA-_A Series delivers reliable and efficient three-phase switching performance with Denki Seigyo industrial quality.

DENKI SEIGYO

Industrial Automation Components