



# R Series

## R1 General-Purpose Relay



R1 General-Purpose Relay

Madison Company offers a full range of relays for custom applications. Our engineers are available to review customers' specifications and suggest the proper relays for their applications.

This DPDT relay device provides electrical isolation for all Madison single-level switches. Relay coils are available for 110 VAC, 220 VAC or 12 VDC applications. The isolated output contacts can be used to switch a wide variety of voltages. The peak power of the device being controlled should not exceed the rated load. The relay can be used for solenoid valves, pumps and alarm applications that do not exceed the listed ratings. The 30 amp load rating can eliminate the need for a pump motor starter in some applications.

### Terminal Configuration (switch protection)

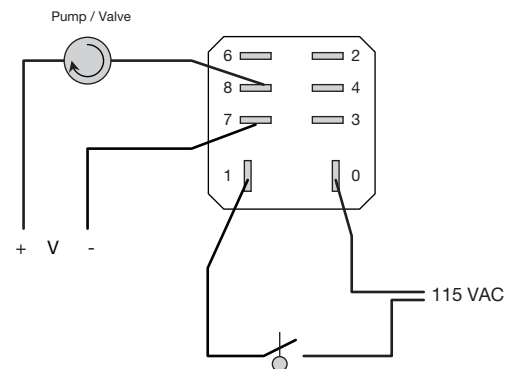
1. Apply the input power through the Float Switch and attach to terminals 1 and 0 as shown.
2. Connect one line of the switched power to pin 8. Connect the other power lead through the switched device and to the desired operation terminal (pin 6 or 7).

#### Switched Terminals

7 Normally Closed	3 Normally Closed
6 Normally Open	2 Normally Open
8 Common (6-7)	4 Common (2-3)

#### Output Contact Ratings

(8-6, 8-7 or 4-2, 4-3)  
 30A @ 277 VAC  
 20A @ 28 VDC  
 1 Hp @ 120 VAC  
 3 Hp @ 240 VAC



## Features

- 30A DPST-NO and DPDT switching capabilities
- Control compressor loads to 3.5 tons, 25.3 FLA, 110 LRA
- Extended life:
  - > 300,000 operations @ 30A, 240 VAC (DC coil)
  - > 100,000 operations @ 30A, 240 VAC (AC coil)
- Meets UL873, UL508 and VDE 8mm spacing requirements
- UL Class F construction; UL approved for 600 VAC switching
- Conforms to VDE 0435, 0631 & 0700
- Screw terminal version available

# Specifications

## Electrical:

**Contact Ratings** – @ 25°C (77°F) with relay properly vented.

Remove tape over vent hole after soldering and cleaning.

**Arrangements** – 2 Form A (DPST-NO) and 2 Form C (DPDT)

**Maximum Load Ratings** –

*Normally Open Contacts:*

30A @ 120/277 VAC, resistive; 10A @ 600 VAC, resistive;

1 Hp @ 120 VAC, 3 Hp @ 240 VAC;

1.5 Hp @ 480 VAC, 1.5 Hp @ 600 VAC;

110 LRA, 25.3 FLA @ 240 VAC with DC coil\*;

60 LRA, 14 FLA @ 240 VAC with AC coil;

3A @ 240 VAC pilot duty; 20A @ 28 VDC; TV10 @ 120 VAC

VDE Rating (Flange Mount): 25A @ 400 VAC, 100K Ops.

(30K Ops. for Form C Models)

VDE Rating (PC Mount): 30A @ 400 VAC, 100K Ops.

(30K Ops. for Form C Models)

*Normally Closed Contacts:*

3A @ 28 VDC or 277 VAC, 2A @ 480 VAC, 1A @ 600 VAC

VDE Rating (Flange or PC Mount): 3A @ 400 VAC, 30K Ops.

**Minimum Load Ratings** –

Normally Open Contacts: 500 mA @ 12 VAC/VDC

Normally Closed Contacts: 100 mA @ 6 VAC/VDC

**Expected Mechanical Life** – 5 million operations

**Expected Electrical Life** – 100,000 operations at rated load

**ARI 780-86 Endurance Test (section 6.6)** – HVAC Definite

Purpose Contactor Standard

*Normally Open Contacts:*

Single Phase/Two Pole (Both poles together switching a single load)

100 LRA, 25.3 FLA, 200K operations (DC Coil)

Single Phase Per Pole (Single load per pole)

110 LRA, 18 FLA, 200K operations (DC Coil)

60 LRA, 14 FLA, 200K operations (AC Coil)

## Initial Dielectric Strength:

**Between Contacts & Coil** – 4,000 V rms, 50/60 Hz.

**Between Open Contacts** – 1,500 V rms, 50/60 Hz.

**Between Poles** – 2,000 V rms, 50/60 Hz.

## Initial Insulation Resistance:

**Between Mutually Insulated Elements** – 10<sup>9</sup> ohm min. @ 500 VDC

## Coil:

**Voltage** – 12-110 VDC and 12-277 VAC

**Nominal Power** – AC Coil: 4.0 VA; DC Coil: 1.7 W

**Coil Temp. Rise** – 35°C/W (95°C/W)

**Maximum Coil Temp.** – 155°C (311°F)

**Duty Cycle** – Continuous

*All specifications are subject to change without notice.*

## Operational:

**Must Operate Voltage** –

AC Coil: 80% of nominal voltage or less

DC Coil: 75% of nominal voltage or less

**Must Release Voltage** – 10% of nominal voltage or more

**Initial Operate Time\*\*** – 15 ms typical (25 ms max. w/ bounce)

**Initial Release Time\*\*** – 10 ms typical (25 ms max. w/ bounce)

**Maximum Operating Frequency** – 14 operations per minute

## Environmental:

**Temperature Range** –

Storage: -55°C to 155°C (-67°F to 311°F)

Operating: AC Coil: -40°C to 65°C (-40°F to 149°F)

DC Coil: -40°C to 85°C (-40°F to 185°F)

**Vibration** – 0.065" (1.65mm) double amplitude for 10-55 Hz., functional

**Shock, Operational** – 10g for 11 ms, 1/2 sine wave pulse with no contact opening > 100 ms

**Shock, Mechanical** – 100g for 11 ms, 1/2 sine wave pulse

**Flammability** – UL 94V-0

## Mechanical:

**Termination** – Printed circuit terminals; 0.250" (6.35mm)

quick connects for coil and contacts; 0.187" (4.75mm)

quick connects for coil and 0.250" (6.35mm) quick

connects for contacts; or M4 screws with captive pressure plates for coil and contacts

**Enclosure** – Unsealed plastic dust cover or immersion cleanable, tape-sealed plastic cover

**Weight** – Approx. 3 oz. (86 g)

## Conditions:

All parametric, environmental and life tests are performed according to EIA Standard RS-407-A at standard test conditions (25°C ambient, 20-50% RH, 29.5 ± 1" Hg.), unless otherwise noted.

\* FLA and LRA ratings are compatible with 3.5 ton compressor applications

\*\* Nominal voltage, no coil suppression, excluding bounce



*Sensor solutions for today and the future™*



**Madison Company 800-466-5383 www.madisonco.com**

27 Business Park Drive, Branford, CT 06405 • 203-488-4477 • Fax: 203-481-5036 • E-mail: info@madisonco.com

**Madison Europe** – Phone: + 31 (0) 548 659 034 • Fax: + 31 (0) 548 659 010 • E-mail: europe@madisonco.eu