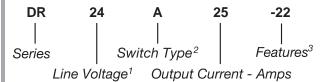


# Single Output to 30A 510 Vac DIN-Rail Solid-State Relay

| Part Number | Description        |
|-------------|--------------------|
| DR24D25     | 25A 275 Vac Output |
| DR24A25     | 25A 275 Vac Output |
| DR24A25-22  | 25A 275 Vac Output |
| DR48D25-21  | 25A 480 Vac Output |
| DR48D25     | 25A 510 Vac Output |
| DR48R25     | 25A 510 Vac Output |
| DR48A25     | 25A 510 Vac Output |
| DR48A25-22  | 25A 510 Vac Output |
| DR48D30     | 30A 510 Vac Output |

# **Part Number Explanation**



#### NOTES

- 1) Line Voltage (nominal): 24 = 240 Vac; 48 = 480Vac
- 2) Switch Type: D = Zero-cross turn-on; A = Zero-cross, AC control; R = Random turn-on
- 3) Features: 21 = self turn-on suppression; 22 = 24 Vac control

### **MECHANICAL SPECIFICATION**

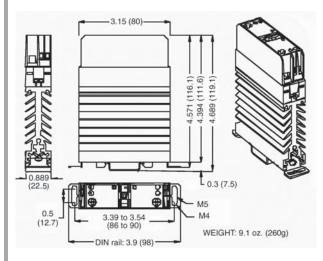


Figure 1 — DR relays; dimensions in inches (mm)



## **FEATURES/BENEFITS**

- Mounting and dismounting on DIN rail without any tool or directly mountable on panel
- Zero-cross and random models; thyristors output
- Large control range
- Green control LED
- Very high immunity
- · Low leakage current
- Internal transient suppression

### **DESCRIPTION**

The Series DR single-phase DIN-rail relays are designed for all types of loads. The relays utilize optical isolation to protect the control from load transients. DR relays have an integral heat sink, and can be mounted and dismounted onto a DIN rail without any tools. The relays may also be panel mounted. All relays offer a green control LED and transient suppression.

## **APPLICATIONS**

- Heating control
- Motor control
- Industrial and process control

#### **APPROVALS**

Series DR relays are pending UL recognition.

### **TYPICAL APPLICATION**

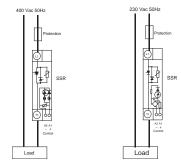
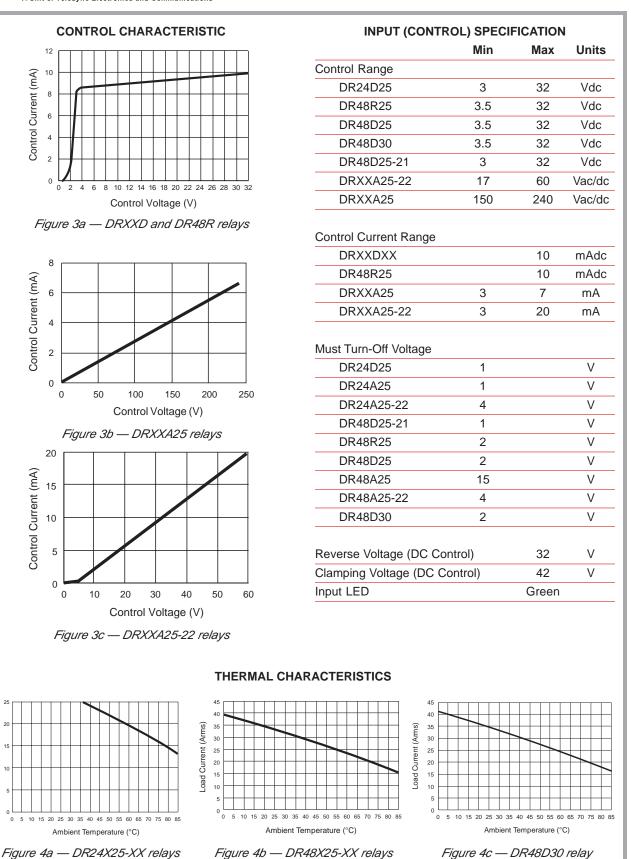


Figure 2 — DR relay DC control (left) and DR relay AC control (right)



Load Current (Arms)





| OUTPUT (LOAD) SPECIFICATION |                                 |          |            | OUTPUT (LOAD) SPECIFICATION (Continued)  |  |         |                  |
|-----------------------------|---------------------------------|----------|------------|--|--|---------|------------------|
|                             | Min                             | Max      | Unit       |  | Min  | Max     | Unit             |
| Operating Range             |                                 |          |            | Thermal Resistance (June                 | tion to Air)                                   |         |                  |
| DR24                        | 12                              | 275      | Vrms       | DR24                                     |  | 3.8     | °C/W             |
| DR48D25-21                  | 12                              | 480      | Vrms       | DR48X25                                  |  | 3.3     | °C/W             |
| DR48                        | 24                              | 510      | Vrms       | DR48D30                                  |  | 3.2     | °C/W             |
| Peak Voltage                |                                 |          |            | Off-State Leakage Curren                 | t (60Hz)                                       | 1       | mA               |
| DR24                        |                                 | 600      | Vpeak      |  |  |         |                  |
| DR48                        |                                 | 1200     | Vpeak      | Turn-On Time (60Hz)                      |  |         |                  |
|                             |                                 |          |            | DRXXD                                    |  | 8.3     | ms               |
| Clamping Voltage            |                                 |          |            | DRXXA                                    |  | 24.9    | ms               |
| DR24 (@1mA)                 |                                 | 430      | V          | DR48R25                                  |  | 0.1     | ms               |
| DR48D25-21 (ON              | voltage, typical)               | 950      | V          |  |  |         |                  |
| DR48 (@1mA)                 |                                 | 820      | V          | Turn-Off Time (60Hz)                     |  |         |                  |
|                             |                                 |          |            | DRXXD                                    |  | 8.3     | ms               |
| Load Current Range (S       | See Figure 4)                   |          |            | DRXXA                                    |  | 24.9    | ms               |
| DRXXX25-XX                  | .005                            | 25       | Arms       | DR48R25                                  |  | 8.3     | ms               |
| DR48D30                     | .005                            | 30       | Arms       |  |  |         |                  |
|                             |                                 |          |            | Operating Frequency Ran                  | ge 0.1   | 440     | Hz               |
| Zero-Cross Window (T        | vpical)                         |          |            | Off-State dv/dt                          |  | 500     | V/µs             |
| DR24                        | ,                               | 10       | V          |  |  |         |                  |
| DR48D25-21                  |                                 | 10       | V          | I <sup>2</sup> t for match fusing (<8.3m | ıs)  |         |                  |
| DR48R25                     | F                               | Random   | <u> </u>   | DR24                                     | <u>,                                      </u> | 312     | A <sup>2</sup> S |
| DR48D25                     |                                 | 20       | V          | DR48X25                                  |  | 1500    | A <sup>2</sup> S |
| DR48A25                     |                                 | 20       | V          | DR48D30                                  |  | 5000    | A <sup>2</sup> S |
| DR48A25-22                  |                                 | 20       | V          |  |  |         |                  |
| DR48D30                     |                                 | 20       | V          |  |  |         |                  |
|                             |                                 |          |            | ENVIRONMENT                              | AL SPECIF                                      | ICATION |                  |
| Non-Repetitive Overloa      | ad Current (See F               | Figure 5 | <i>i</i> ) |  | Min  | Max     | Unit             |
| DR24                        | <u>aa Garronii (GGG )</u>       | 250      | A          | Storage Temperature                      | -30  | 100     | °C               |
| DR48X25                     |                                 | 550      | A          | Operating Temperature                    | -30  | 80      | °C               |
| DR48D30                     |                                 | 1000     | A          | Input-Output Isolation                   | 4000   |         | Vrms             |
| DIV-10D00                   |                                 | 1000     |            |  |  |         |                  |
| On-State Voltage Drop       | (Typical)                       |          |            | Output-Case Isolation                    |  |         |                  |
| DR24                        | (Τγρισαι)                       | 0.85     | V          | DR24                                     | 2500   |         | Vrms             |
| DR48X25                     |                                 | 0.83     |            | DR48                                     | 4000   |         | Vrms             |
| レハサリハとリ                     |                                 | 0.9      | V          |  |  |         |                  |
| UB/18U30                    |                                 | 0.73     |            | Insulation Resistance                    | 100  |         | $M\Omega$        |
| DR48D30                     |                                 |          |            | Rated Impulse Voltage                    | 4000   |         | V                |
|                             | ion (Typical)                   |          |            |  |  |         |                  |
|                             | ion (Typical)<br>0.9xl+0.015xl² |          | W          |  |  |         |                  |
| Output Power Dissipat       |                                 |          | W          |  |  |         |                  |

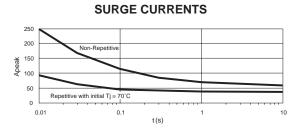


Figure 5a — DR24 relays

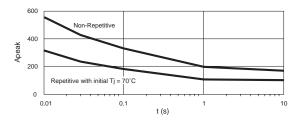


Figure 5b — DR48X25 relays

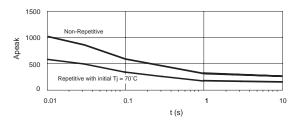


Figure 5c — DR48D30 relay

### **DIN-RAIL MOUNTING**

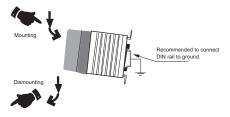


Figure 6 — DR relay

### **PANEL MOUNTING**

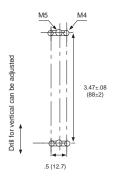
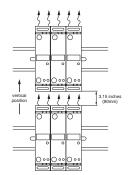


Figure 7 — DR relay

#### NOTES:

- Connections: For output terminals, the wire cross sections must be adapted to the load current and to the overcurrent protection device characteristics. The relay rated voltage must be adapted to the mains rated voltage. These relays use screw clamp connections.
- 2. Mounting: Only in vertical position.

  Protect heat-sensitive materials as well as people from contact with the heat sink. For non vertical mounting, the load current must be derated by 50%. The SSR requires air convection. Lack of air convection produces an abnormal heating. Keep a distance between the upper SSR and the lower SSR (see figure on the right). In case of zero space between two SSRs, reduce the load current. It's suggested to maintain the heat sink temperature under 90°C. Forced cooling significantly improves the thermal performances.



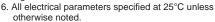
 Typical application loads: The DR relay may handle motor and resistive loads. For different loads, check the inrush

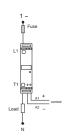
current at turn-ON and possible overvoltages at turn-OFF or contact the factory.

- Incandescent lamps Inrush current is generally 10 times the current nominal for 10ms.
- Electric discharge lamp These loads often have overcurrent at turn-ON and overvoltage at turn-OFF. Use 480Vac SSR on 240Vac mains.
- Transformer loads Very high inrush current, up to 100 times the nominal current.
- Capacitive loads Very high current at turn-On and overvoltage at turn-Off. Use only zero-cross models.
- 4. Protection: To protect the SSR against a short-circuit of the load, use a fuse with a I²t value = 1/2 I²t value.
- 5. EMC:

Immunity: Immunity levels of the DR comply with EN61000-4-4 &5.

Emission: The system integrator must ensure that systems containing SSRs comply with the requirements of any rules and regulations applicable at the system level. The very low zero-cross voltage (<20V) improves the conducted emission level in comparison with most SSRs with zero-cross voltage higher than 50V.





# **CONNECTIONS**

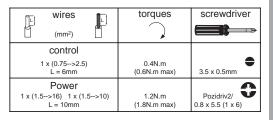


Figure 8 — DR relay