

Solid State Relays Industrial, 1-Phase DCS Types RD 0605 -D, RD 2001 -D, RD 3501 -D



- DC Solid State Relay
- Rated operational current: 1 and 5 ADC
- Operational voltage range: Up to 350 VDC
- Input range: 3 to 32 VDC
- Isolation: OPTO (input-output) 4000 VACrms

Product Description

The DC switching relay is used in applications in which there is a need for fast switching of small DC loads with a high input/output isolation of more

than 4000 VACrms. The DC switching transistor relay always switches ON and OFF in accordance with the applied control voltage.

Ordering Key

RD 06 05 -D

- Solid State Relay
- Switching mode
- Rated operational voltage
- Rated operational current
- Control voltage

Type Selection

| Switching mode | Rated operational voltage | Rated operational current | Control voltage |
|-----------------|--|---------------------------|-----------------|
| D: DC switching | 06: 60 VDC 20: 200 VDC 35: 350 VDC | 01: 1 ADC 05: 5 ADC | -D: 3 to 32 VDC |

Selection Guide

| Rated operational voltage | Control voltage | Rated operational current | |
|---------------------------|-----------------|---------------------------|------------|
| 60 VDC | 3 to 32 VDC | 1 ADC | 5 ADC |
| 200 VDC | 3 to 32 VDC | RD 2001 -D | RD 0605 -D |
| 350 VDC | 3 to 32 VDC | RD 3501 -D | |

General Specifications

| | RD 0605 -D | RD 2001 -D | RD 3501 -D |
|----------------------------|-------------|--------------|--------------|
| Operational voltage range | 3 to 60 VDC | 3 to 200 VDC | 3 to 350 VDC |
| Off-state blocking voltage | ≥ 60 VDC | ≥ 200 VDC | ≥ 350 VDC |
| Approval | CSA | CSA | CSA |
| CE-marking | Yes | Yes | Yes |

Input Specifications

| | RD 2001 -D RD 3501 -D | RD 0605 -D |
|---------------------------------------|--------------------------|-------------|
| Control voltage range | 3 to 32 VDC | 3 to 32 VDC |
| Pick-up voltage | ≤ 3 VDC | ≤ 3 VDC |
| Drop-out voltage | ≥ 1 VDC | ≥ 1 VDC |
| Reverse voltage | ≤ 32 VDC | ≤ 32 VDC |
| Activating frequency | ≤ 100 Hz | ≤ 100 Hz |
| Input impedance | 1 kΩ | 1 kΩ |
| Response time pick-up @ V in ≥ 5 V | ≤ 100 μs | ≤ 100 μs |
| Response time drop-out | ≤ 1 ms | ≤ 1 ms |
| Input pulse rise and fall time | ≤ 100 μs | no limit |

Output Specifications

| | RD 2001 -D RD 3501 -D | RD 0605 -D |
|--|--------------------------|-------------------|
| Rated operational current DC 1 | 1 A | 5 A |
| Minimum operational current | 1 mA | 1 mA |
| Rep. overload current t=1 s | ≤ 2 A | ≤ 10 A (15A@80ms) |
| Off-state leakage current @ rated voltage | ≤ 1 mA | ≤ 1 mA |
| On-state voltage drop @ rated current | ≤ 1.5 V | ≤ 1.5 V |

Thermal Specifications

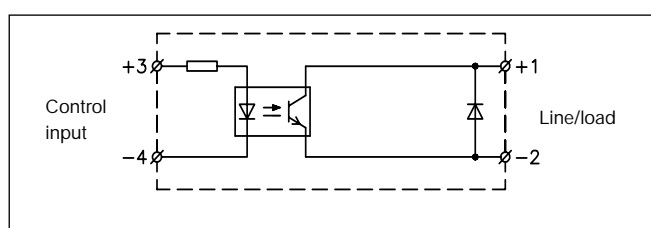
| | |
|-------------------------------------|---------------------------------|
| Operating temperature | -20° to +70°C (-4° to +158°F) |
| Storage temperature | -40° to +100°C (-40° to +212°F) |
| Junction temperature | ≤ +150°C (+302°F) |
| R _{th} junction to case | ≤ 3 K/W |
| R _{th} junction to ambient | ≤ 15 K/W |

Insulation

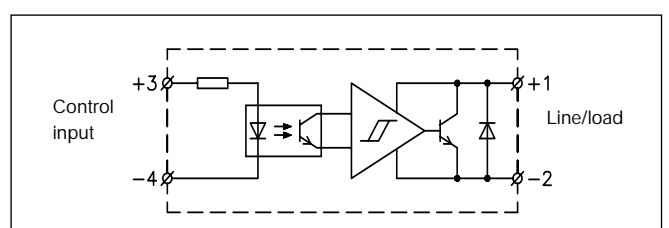
| | |
|--|----------------------|
| Rated isolation voltage Input to output | ≥ 4000 VACrms |
| Rated isolation voltage Output to case | ≥ 4000 VACrms |
| Insulation resistance Input to output | ≥ 10 ¹⁰ Ω |
| Insulation resistance Output to case | ≥ 10 ¹⁰ Ω |
| Insulation capacitance Input to output | ≤ 8 pF |
| Insulation capacitance Output to case | ≤ 50 pF |

Wiring Diagrams

RD 2001-D RD 3501-D



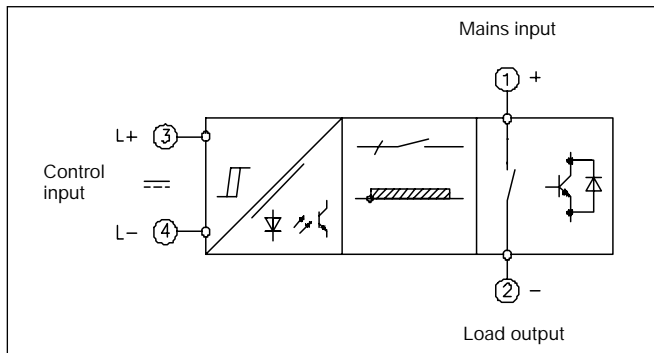
RD 0605 -D



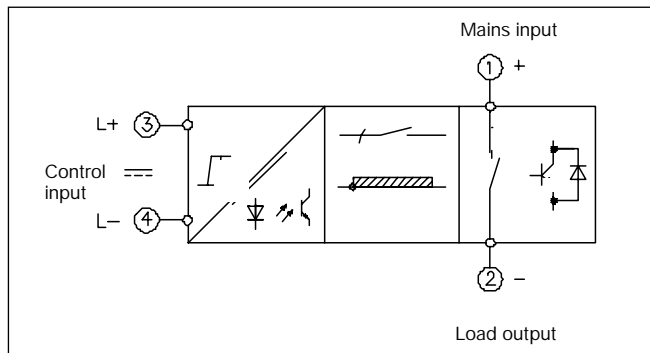


Functional Diagrams

RD 0605-D

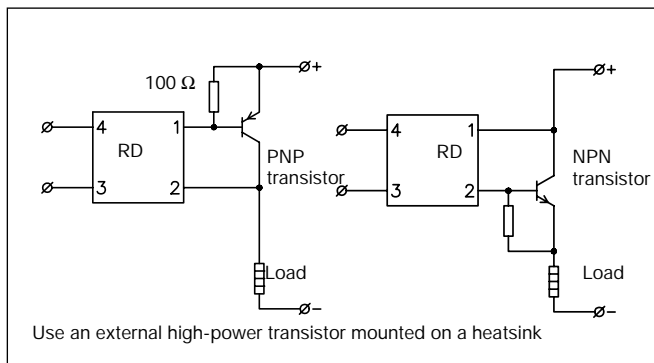


RD 2001-D RD 3501-D

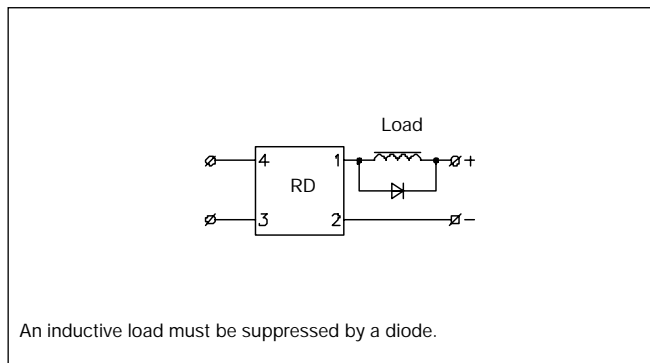


Applications

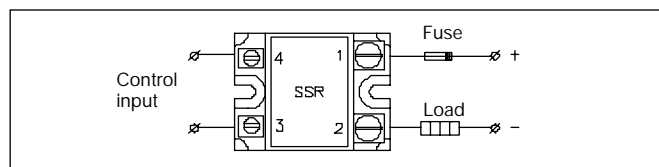
High-power switching



Inductive load



Fusing



Heatsink Dimensions

RD 0605 -D

| Load current [A DC] | Thermal resistance [K/W] | | | | | |
|---------------------|--------------------------|------|------|------|------|-----|
| | 20 | 30 | 40 | 50 | 60 | 70 |
| 5 | 10.7 | 9.3 | 8 | 6.7 | 5.3 | 4 |
| 4 | 13.3 | 11.7 | 10 | 8.3 | 6.7 | 5 |
| 3 | - | - | 13.3 | 11.1 | 8.8 | 6.7 |
| 2 | - | - | - | - | 13.3 | 10 |
| 1 | - | - | - | - | - | - |

T_A
Ambient temp. [°C]

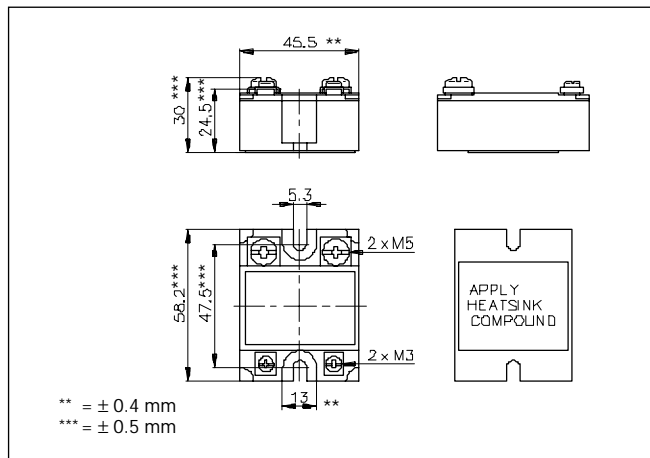
Heatsink Selection

| Carlo Gavazzi Heatsink (see Accessories) | Thermal resistance |
|--|-------------------------------------|
| No heatsink required RHS 100 Assy | $R_{th\ s-a} > 12.5$ K/W 3.0 K/W |

Compare the value found in the current versus temperature chart with the standard heatsink values and select the heatsink with the next lower value.

Frequency = 0 to 10 Hz.
Types RD 2001-D and RD 3501-D require no heatsinking.

Dimensions



Housing Specifications

| | |
|------------------|--------------------|
| Weight | Approx. 110 g |
| Housing material | Noryl GFN 1, black |
| Base plate | Aluminium |
| Potting compound | Polyurethane |
| Relay | |
| Mounting screws | M5 |
| Mounting torque | ≤ 1.5 Nm |
| Control terminal | |
| Mounting screws | M3 x 6 |
| Mounting torque | ≤ 0.5 Nm |
| Power terminal | |
| Mounting screws | M5 x 6 |
| Mounting torque | ≤ 2.4 Nm |

Accessories

Protection cover
Heatsinks
DIN rail adapter
Varistors
Fuses

For further information refer to "General Accessories".