

D-HR Series

High Insulation Resistance, High Voltage Relays - 5kV, 7.5kV, 10kV & 15kV



- **5kV, 7.5kV, 10kV or 15kV Isolation**
- **Low Contact Resistance**
- **1x10¹⁴ Ohms Minimum Insulation Resistance**
- **PCB or Flying Lead Connections**
- **Ideal for sensitive test and measurement circuits which require low leakage current losses**

| Contact Specification | | Unit | Condition | 5kV SPNO | | 5kV SPNC | | 7.5kV SPNO | | 7.5kV SPNC | | 10kV SPNO | | 10kV SPNC | | 15kV SPNO* |
|-----------------------------|------------|-------------------------|-----------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Contact Material | | | | Rhodium | Tungsten | Rhodium | Tungsten | Rhodium | Tungsten | Rhodium | Tungsten | Rhodium | Tungsten | Rhodium | Tungsten | Tungsten |
| Isolation across contacts | kV | DC or AC peak | | 5 | 5 | 5 | 5 | 7.5 | 7.5 | 7.5 | 7.5 | 10 | 10 | 10 | 10 | 15 |
| Switching Power Max. | W | | | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Switching Voltage Max. | V | DC or AC peak | | 1000 | 3500 | 1000 | 3500 | 1000 | 5000 | 1000 | 5000 | 1000 | 7000 | 1000 | 7000 | 10000 |
| Switching Current Max. | A | DC or AC peak | | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 2 |
| Carry Current Max | A | DC or AC peak | | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 2 |
| Capacitance across contacts | pF | coil to screen grounded | | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| Lifetime | Operations | dry switching | | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ | 10 ⁹ |
| | | 50W switching | | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ | 10 ⁶ |
| Contact Resistance | mΩ | max (typical) | | 50(15) | 250(100) | 50(15) | 250(100) | 50(15) | 250(100) | 50(15) | 250(100) | 50(15) | 250(100) | 50(15) | 250(100) | 250(100) |
| Insulation Resistance | Ωmin | | | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ | 1x10 ¹⁴ |

| Coil Specification | | | | 5V | | | 12V | | | 24V | | | 5V | | | 12V | | | 24V | | | 5V | | | 12V | | | 24V | | | 5V | | | 12V | | | 24V | | |
|----------------------|----|--------------|--|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|--|--|-----|--|--|
| Must Operate Voltage | V | DC | | 3.7 | 9 | 20 | 3.7 | 9 | 20 | 3.7 | 9 | 20 | 3.7 | 9 | 20 | 3.7 | 9 | 20 | 3.7 | 9 | 20 | 3.7 | 9 | 20 | 3.7 | 9 | 20 | 3.7 | 9 | 20 | 3.7 | 9 | 20 | | | | | | |
| Must Release Voltage | V | DC | | 0.5 | 1.25 | 4 | 0.5 | 1.25 | 4 | 0.5 | 1.25 | 4 | 0.5 | 1.25 | 4 | 0.5 | 1.25 | 4 | 0.5 | 1.25 | 4 | 0.5 | 1.25 | 4 | 0.5 | 1.25 | 4 | 0.5 | 1.25 | 4 | 0.5 | 1.25 | 4 | | | | | | |
| Operate Time | ms | diode fitted | | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | | | | | | |
| Release Time | ms | diode fitted | | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | | | | | | |
| Resistance | Ω | | | 28 | 150 | 780 | 38 | 240 | 925 | 28 | 150 | 780 | 38 | 240 | 925 | 28 | 150 | 780 | 38 | 240 | 925 | 28 | 150 | 780 | 38 | 240 | 925 | 16 | 95 | 350 | | | | | | | | | |

Note: The operate / release voltage and coil resistance will change at a rate of 0.4% per degree C. Values are stated at room temperature (20 degrees C)

| Relay Specification | | | | | |
|--|----------------|--|--|--|--------------------|
| Isolation contact/coil | kV | | | | 17 |
| Insulation resistance contact to all terminals | Ωmin (typical) | | | | 1x10 ¹⁴ |
| Environmental | | | | | |
| Operating Temp range | °C | | | | -20 to +70 |

Please refer to this document for circuit design notes:-
<http://www.cynergy3.com/blog/application-notes-reed-relays-0>

Very high isolation voltages - up to 15kV - are achieved through the use of high vacuum reed switches with either rhodium or tungsten contacts which make these relays suitable for high reliability applications, such as cardiac defibrillators, test equipment and high voltage power supplies.

The rhodium contact relays have low contact resistance, while the tungsten contact relays can switch higher voltages.

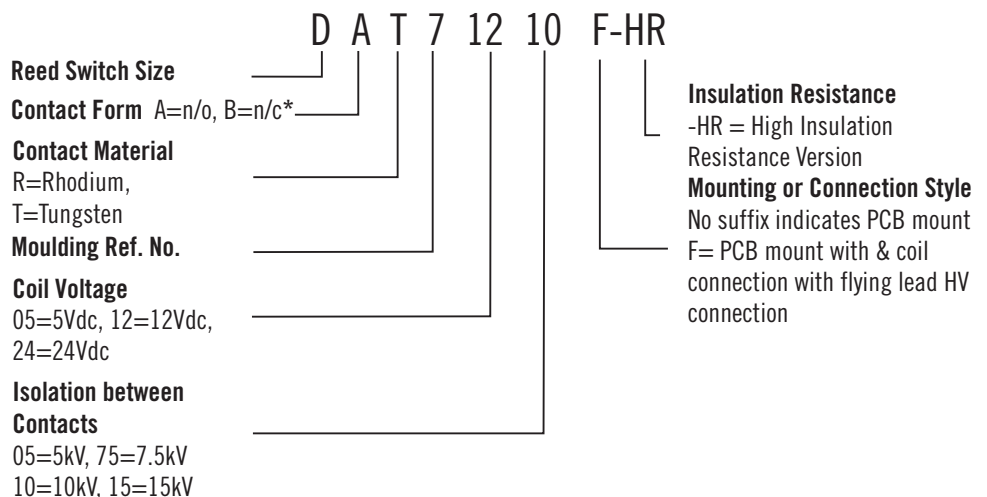
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Part Numbering System



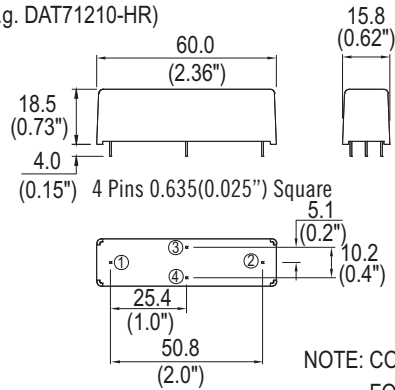
* Form B (n/c) is not available on 15kV models

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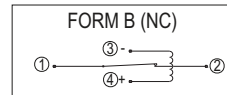
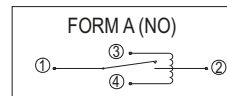
MECHANICAL

STANDARD

(e.g. DAT71210-HR)



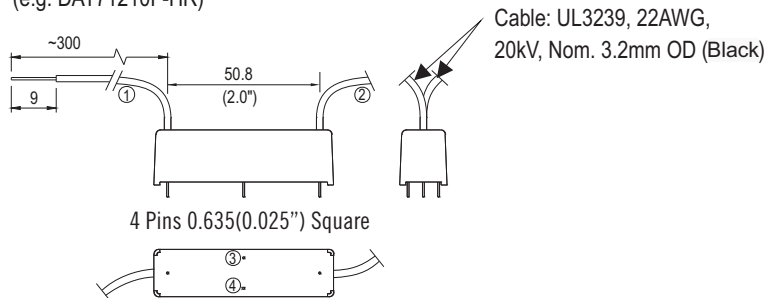
**CIRCUIT DIAGRAMS
(ALL VARIANTS)**



NOTE: COIL POLARITY IS IMPORTANT FOR FORM B VARIANT ONLY.

FLYING LEAD

(e.g. DAT71210F-HR)



NOTE: PINS WHICH ARE NOT NUMBERED HAVE NO ELECTRICAL CONNECTION.

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Please refer to this document for circuit design notes:-
<http://www.cynergy3.com/blog/application-notes-reed-relays-0>

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