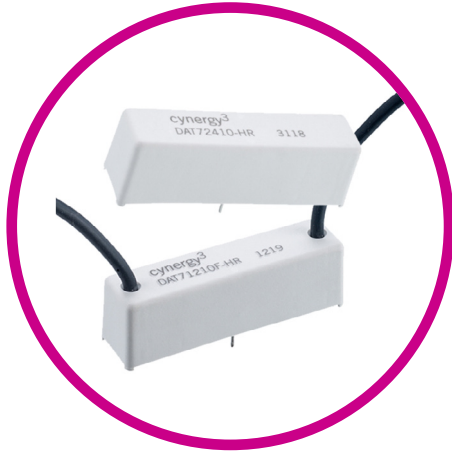


## | D-HR SERIES

HIGH INSULATION RESISTANCE, HIGH VOLTAGE RELAYS, 5KV, 7.5KV, 10KV & 15KV



Very high isolation voltages, up to 15kV, are achieved through the use of high vacuum reed switches. Rhodium or tungsten contacts 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, whilst the tungsten contact relays can switch higher voltages.

### Features

- 5kV, 7.5kV, 10kV or 15kV isolation
- Low contact resistance
- Insulation resistance  $1 \times 10^{12}$  Ohms minimum,  $1 \times 10^{14}$  Ohms typical
- PCB or flying leads connections
- Ideal for sensitive test and measurement circuits which require low leakage current losses

## SPECIFICATIONS

| Contact                     | 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)    |
| Contact                     | Unit Condition             | 5kV SPNO |          |          | 5kV SPNC |            |          | 7.5kV SPNO |          |           | 7.5kV SPNC |           |          | 10kV SPNO*  |
| Coil                        |                            | 5V       | 12V      | 24V      | 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    |
| 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  |
| 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 |
| 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 |
| Resistance                  | Ω                          | 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                                | Unit Condition                                                | Value                   |
|--------------------------------------|---------------------------------------------------------------|-------------------------|
| Isolation contact/coil               | kV DC or AC peak                                              | 17                      |
| Insulation resistance min. (typical) | Ω, Between all isolated pins at 1000V, 20°C ±5°C, 45% RH ±10% | $10^{12}$ ( $10^{14}$ ) |
| Environmental Operating Temperature  | °C                                                            | -20 to +70              |

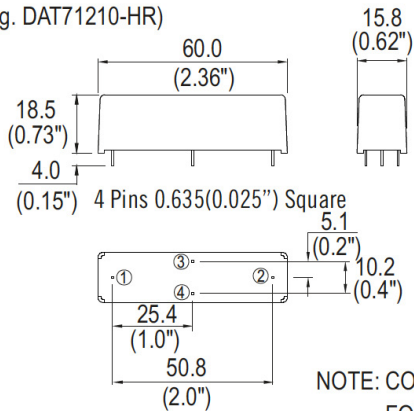
\* Form B (n/c) is not available on 15kV models.

## DIMENSIONS

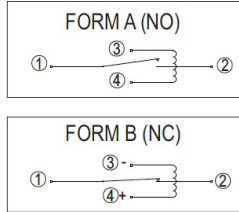
All dimensions are in millimeters.  
Tolerances acc. to ISO 2768 class m

### STANDARD

(e.g. DAT71210-HR)



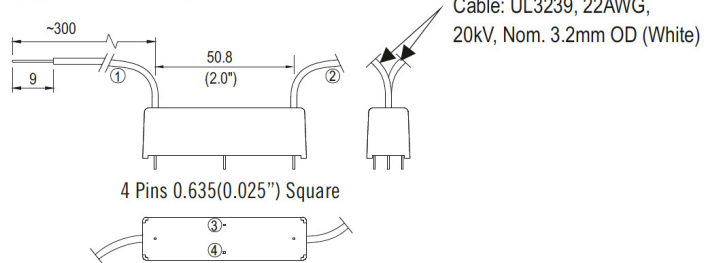
### CIRCUIT DIAGRAMS (ALL VARIANTS)



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.

Please refer to this document for circuit design notes:-

<https://www.cynergy3.com/blog/reed-relay-application-notes>

|                                                                                                             | D | A | T | 7 | 12 | 10 | F | - | HR |
|-------------------------------------------------------------------------------------------------------------|---|---|---|---|----|----|---|---|----|
| <b>Reed Switch Size</b>                                                                                     |   |   |   |   |    |    |   |   |    |
| <b>Contact Form</b>                                                                                         |   |   |   |   |    |    |   |   |    |
| <b>A</b> = n/o<br><b>B</b> = n/c*                                                                           |   |   |   |   |    |    |   |   |    |
| <b>Contact Material</b>                                                                                     |   |   |   |   |    |    |   |   |    |
| <b>R</b> = Rhodium<br><b>T</b> = Tungsten                                                                   |   |   |   |   |    |    |   |   |    |
| <b>Moulding Ref. No.</b>                                                                                    |   |   |   |   |    |    |   |   |    |
| <b>Coil Voltage</b>                                                                                         |   |   |   |   |    |    |   |   |    |
| <b>05</b> = 5Vdc<br><b>12</b> = 12Vdc<br><b>24</b> = 24Vdc                                                  |   |   |   |   |    |    |   |   |    |
| <b>Isolation between Contacts</b>                                                                           |   |   |   |   |    |    |   |   |    |
| <b>05</b> = 5kV<br><b>75</b> = 7.5kV<br><b>10</b> = 10kV<br><b>15</b> = 15kV                                |   |   |   |   |    |    |   |   |    |
| <b>Mounting or Connection Style</b>                                                                         |   |   |   |   |    |    |   |   |    |
| No suffix indicates PCB mount<br><b>F</b> = PCB mount with & coil connection with flying lead HV connection |   |   |   |   |    |    |   |   |    |
| <b>Insulation Resistance</b>                                                                                |   |   |   |   |    |    |   |   |    |
| <b>HR</b> = High Insulation Resistance Version                                                              |   |   |   |   |    |    |   |   |    |

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

Please refer to this document for circuit design notes:-

<https://www.cynergy3.com/blog/reed-relay-application-notes>

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