

# D-HR Series

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



- **5kV, 7.5kV, 10kV or 15kV Isolation**
- **Low Contact Resistance**
- **1x10<sup>14</sup> 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	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	10	10	15
Switching Power Max.	W		50	50	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	1000	7000	10000
Switching Current Max.	A	DC or AC peak	3	2	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	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	<0.2	<0.2
Lifetime	Operations	dry switching	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>	10 <sup>9</sup>
		50W switching	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>
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)	50(15)	250(100)	250(100)
Insulation Resistance	Ωmin		1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>	1x10 <sup>14</sup>

Coil Specification		Unit	Condition			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	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	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	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	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						
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	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		Unit	Value
Isolation contact/coil	kV		17
Insulation resistance contact to all terminals	Ωmin (typical)		1x10 <sup>14</sup>
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.

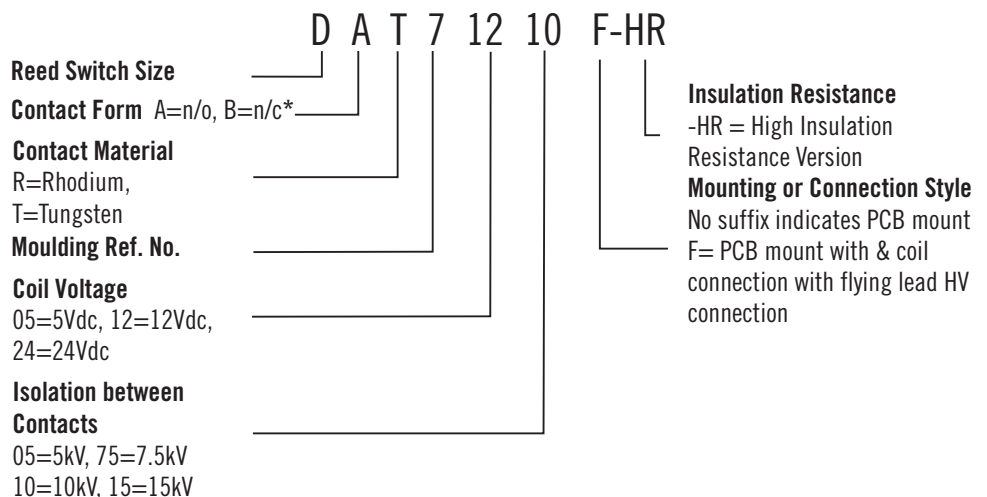
The rhodium contact relays have low contact resistance, while the tungsten contact relays can switch higher voltages.

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 D-HR 2019

### Part Numbering System



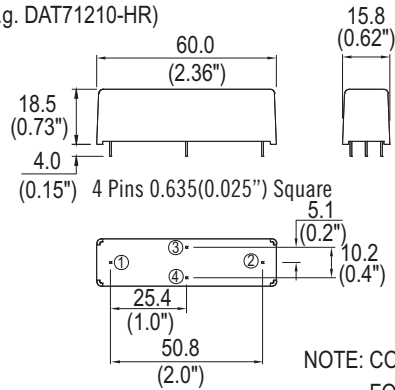
\* Form B (n/c) is not available on 15kV models

www.cynergy3.com

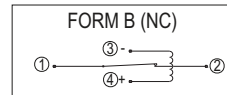
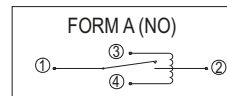
**MECHANICAL**

**STANDARD**

(e.g. DAT71210-HR)



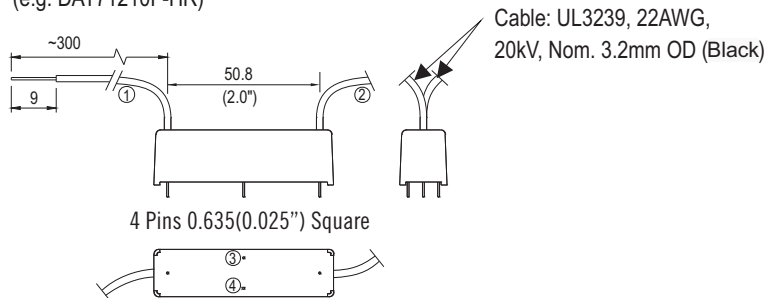
**CIRCUIT DIAGRAMS  
(ALL VARIANTS)**



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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