

## D-HR Series

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



- 5kV, 7.5kV, 10kV or 15kV isolation
- Low contact resistance
- $1 \times 10^{14}$  Ohms minimum insulation resistance
- PCB or flying leads 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*
			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		$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$	$1 \times 10^{14}$

Coil Specification	V	DC	5V			12V			24V			5V			12V			24V			5V			12V			24V			5V			12V			24V		
			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 Operate 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	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	DC or AC peak	17
Insulation resistance contact to all terminals	Ωmin		$1 \times 10^{14}$
Environmental			
Operating Temp range	°C		-20 to +70

#### Part Numbering System

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.

**Reed Switch Size**

**Contact Form** A=n/o, B=n/c\*

**Contact Material**

R=Rhodium,

T=Tungsten

**Moulding Ref. No.**

**Coil Voltage**

05=5Vdc, 12=12Vdc,

24=24Vdc

**Isolation between**

**Contacts**

05=5kV, 75=7.5kV

10=10kV, 15=15kV

D A T 7 12 10 F-HR

**Insulation Resistance**

-HR = High Insulation Resistance Version

**Mounting or Connection Style**

No suffix indicates PCB mount

F= PCB mount with & coil

connection with flying lead HV

connection

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

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

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cynergy3-d-hr-v2



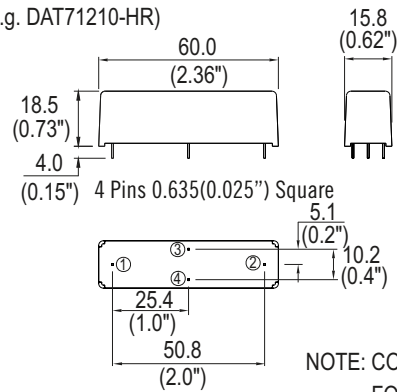
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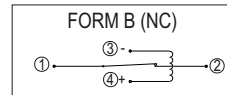
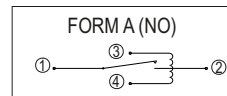
**MECHANICAL**

**STANDARD**

(e.g. DAT71210-HR)



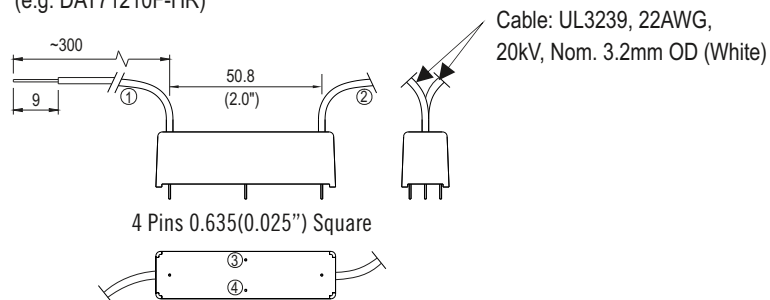
**CIRCUIT DIAGRAMS  
(ALL VARIANTS)**



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.

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

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