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
- $1x10^{14}$ Ohms minimum insulation resistance
- 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)
Insulation Resistance	Ω min	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$	$1x10^{14}$

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

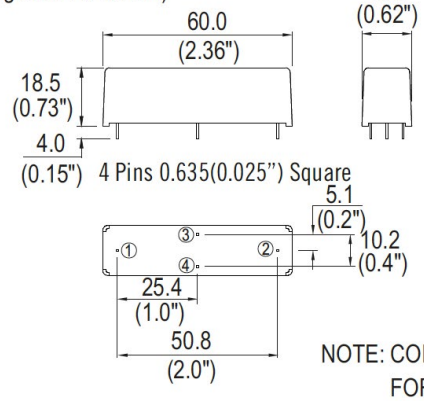
Contact	Unit Condition	5kV SPNO	5kV SPNC	7.5kV SPNO	7.5kV SPNC	10kV SPNO	10kV SPNC	15kV SPNO*
Coil		**5V 12V 24V**	**5V 12V 24V**	**5V 12V 24V**	**5V 12V 24V**	**5V 12V 24V**	**5V 12V 24V**	**5V 12V 24V**
Must Operate Voltage	V DC	3.7 9 20	3.7 9 20	3.7 9 20	3.7 9 20	3.7 9 20	3.7 9 20	3.7 9 20
Must Release 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
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
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
Resistance	Ω	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								
Isolation contact/coil	kV DC or AC peak	17						
Insulation resistance contact to all terminals	Ω min	$1x10^{14}$						
Environmental Operating Temp range	°C	-20 to +70						

DIMENSIONS

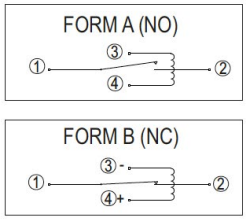
All dimensions are in millimeters.

STANDARD

(e.g. DAT71210-HR)



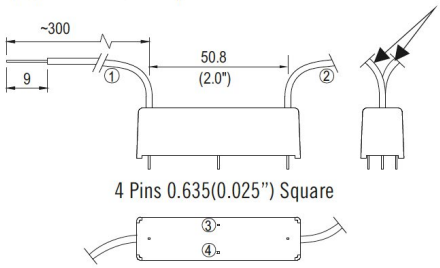
CIRCUIT DIAGRAMS
(ALL VARIANTS)



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

ORDERING OPTIONS

Example : DAT71210F-HR

D	A	T	7	12	10	F	-	HR

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

Mounting or Connection Style

No suffix indicates PCB mount
F = PCB mount with & coil connection with flying lead HV connection

Insulation Resistance

HR = High Insulation Resistance Version

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

Please refer to this document for circuit design notes:-
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