High Voltage Dry Reed Relays

for up to 15kV

Features

- ***SoftCenter*® construction**
- **Up to 15 kV stand-off**
- **Up to 12.5 kV switching**
- **Small size**
- **Easy mounting**
- **Long life**
- **Fully encapsulated**

Series 60 - Chassis mounting with solder connections on the top face

Series 65 - Printed circuit mounting

The Series 60 and 65 ranges of high voltage reed relays have been manufactured for many years and remain popular due to their small size and ease of use.

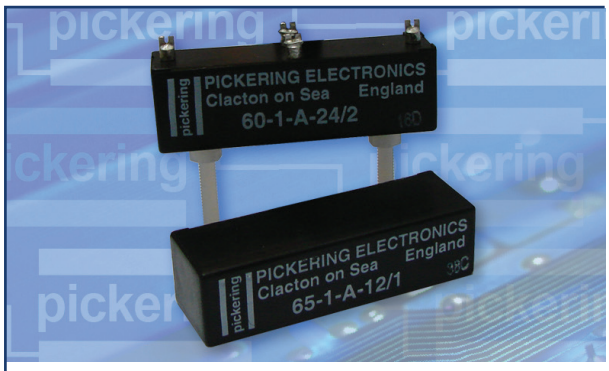
They are available for up to 15kV stand-off, 12.5kV switching at 50 Watts maximum. Tungsten plated contacts ensure a long and reliable life.

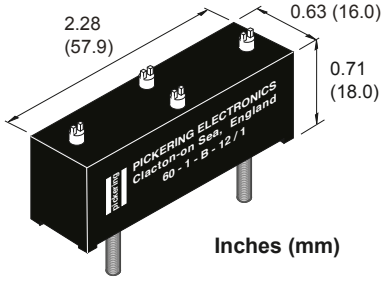
Both Form A (energize to make) and Form B (energize to break) configurations are available and it is usually possible to achieve a Form C (change-over) function by using a Form A and a Form B type together.

Form B types are magnetically biased and should not be mounted directly onto ferrous metal chassis or less than 1.5 inches (38mm) away from other relays as the coil operating voltage characteristics will be altered due to magnetic interaction. The coils of Form B relays are polarity sensitive, the positive connection is identified by a red spot.

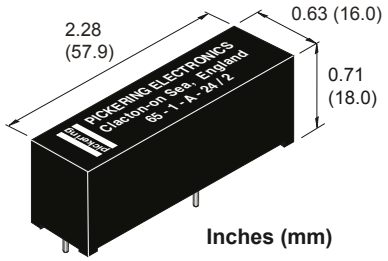
Form A types can be mounted on ferrous chassis but a space of 1 inch (25mm) should be allowed between adjacent relays. 5, 12, and 24 volt coils are available as standard other voltages can be supplied to special order, please contact our sales office.

If similar relays with “push-on” connectors are preferred, please look at our Series 62 and Series 63.





Series 60



Series 65

Switch Ratings

- **1 Form A (energize to make)** Switch Number 1
  5kV stand-off. 3.5kV switching at up to 50 Watts
- **1 Form A (energize to make)** Switch Number 2
  10kV stand-off. 7.5kV switching at up to 50 Watts
- **1 Form A (energize to make)** Switch Number 3
  15kV stand-off. 12.5kV switching at up to 50 Watts
- **1 Form B (energize to break)** Switch Number 1
  5kV stand-off. 3.5kV switching at up to 50 Watts
- **1 Form B (energize to break)** Switch Number 2
  10kV stand-off. 7.5kV switching at up to 50 Watts

Series 60, 65 switch ratings - The contact ratings for each switch type are shown below:

Switch No	Switch form	Power rating	Max. switch current	Max. carry current	Max. switching volts	Max. stand-off volts	Life expectancy ops typical (see Note[2] below)	Operate time inc bounce (max)	Release time
1	A or B	50 W	3 A (Note[1])	3 A	3500	5000	10^7	3 ms	2 ms
2	A or B	50 W	3 A (Note[1])	3 A	7500	10000	10^7	3 ms	2 ms
3	A	50 W	3 A (Note[1])	3 A.	12500	15000	10^7	3 ms	2 ms

Operating voltages

Coil voltage - nominal	Must operate voltage - maximum at 25°C	Must release voltage - minimum at 25°C
5 V	3.75 V	0.5 V
12 V	9 V	1.2 V
24 V	18 V	2.4 V

Series 60 Coil data and type numbers

Device type	Type Number	Coil (V)	Coil resistance	Max. contact resistance (initial)	Insulation resistance (minimum)		Capacitance (typical) (see Note[3] below)	
					Switch to coil	Across switch	Closed switch to coil	Across open switch
1 Form A (energize to make) Switch No. 1 (5kV Stand-Off)	60-1-A-5/1 60-1-A-12/1 60-1-A-24/1	5 12 24	35 Ω 150 Ω 500 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	3 pF	0.15 pF
1 Form A (energize to make) Switch No. 2 (10kV Stand-Off)	60-1-A-5/2 60-1-A-12/2 60-1-A-24/2	5 12 24	35 Ω 150 Ω 500 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	3 pF	0.15 pF
1 Form A (energize to make) Switch No. 3 (15kV Stand-Off)	60-1-A-5/3 60-1-A-12/3 60-1-A-24/3	5 12 24	20 Ω 50 Ω 200 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	3 pF	0.15 pF
1 Form B (energize to break) Switch No. 1 (5kV Stand-Off)	60-1-B-5/1 60-1-B-12/1 60-1-B-24/1	5 12 24	35 Ω 150 Ω 500 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	3 pF	0.15 pF
1 Form B (energize to break) Switch No. 2 (10kV Stand-Off)	60-1-B-5/2 60-1-B-12/2 60-1-B-24/2	5 12 24	35 Ω 150 Ω 500 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	3 pF	0.15 pF

Series 65 Coil data and type numbers

Device type	Type Number	Coil (V)	Coil resistance	Max. contact resistance (initial)	Insulation resistance (minimum)		Capacitance (typical) (see Note[3] below)	
					Switch to coil	Across switch	Closed switch to coil	Across open switch
1 Form A (energize to make) Switch No. 1 (5kV Stand-Off)	65-1-A-5/1 65-1-A-12/1 65-1-A-24/1	5 12 24	35 Ω 150 Ω 500 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	3 pF	0.15 pF
1 Form A (energize to make) Switch No. 2 (10kV Stand-Off)	65-1-A-5/2 65-1-A-12/2 65-1-A-24/2	5 12 24	35 Ω 150 Ω 500 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	3 pF	0.15 pF
1 Form B (energize to break) Switch No. 1 (5kV Stand-Off)	65-1-B-5/1 65-1-B-12/1 65-1-B-24/1	5 12 24	35 Ω 150 Ω 500 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	3 pF	0.15 pF
1 Form B (energize to break) Switch No. 2 (10kV Stand-Off)	65-1-B-5/2 65-1-B-12/2 65-1-B-24/2	5 12 24	35 Ω 150 Ω 500 Ω	0.12 Ω	10^{12} Ω	10^{12} Ω	3 pF	0.15 pF

Environmental specification

Standard operating temperature range: -20 to +85 °C.

Note: The upper temperature limit can be extended to +125 °C if the coil drive voltage is increased to accommodate the resistance/temperature coefficient of the copper coil winding. This is approximately 0.4% per °C. This means that at 125 °C the coil drive voltage will need to be increased by approximately 40 x 0.4 =16% to maintain the required magnetic drive level. Please contact sales@pickeringrelay.com for assistance if necessary.

Vibration: Maximum 20 G

Shock: Maximum 50 G

Note[1] Important - Current Rating

This is the maximum current rating at 50 Watts. If, for example, you wish to switch 5000 volts, the maximum current will be 10mA. Multiply your instantaneous switching current by the voltage to be switched, to ensure that you do not exceed this 50 Watts rating. Capacitive inrush currents can sometimes be high due to the voltages involved, if possible insert a series resistance into the circuit to limit this. Contact our Technical Department for assistance if required.

Note[2] Life expectancy

The life of a reed relay depends upon the switch load and end of life criteria. For example, for an 'end of life' contact resistance specification of 1 Ω, switching low loads (10 V at 10 mA resistive) or when 'cold' switching, typical life is approx 10 x 10^6 ops. At the maximum load (resistive), typical life is 1 x 10^6 ops. In the event of abusive conditions, e.g. high currents due to capacitive inrushes, this figure reduces considerably. Pickering will be pleased to perform life testing with any particular load condition.

Note[3] Capacitance across open switch

The capacitance across the open switch was measured with other connections guarded.

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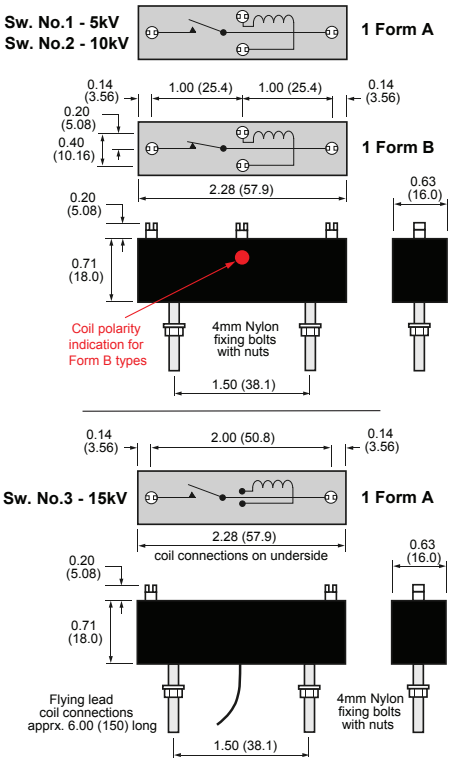
For a full list of agents and representatives visit: **pickeringrelay.com/agents**

ISO9001 Manufacture of Reed Relays FM 29036

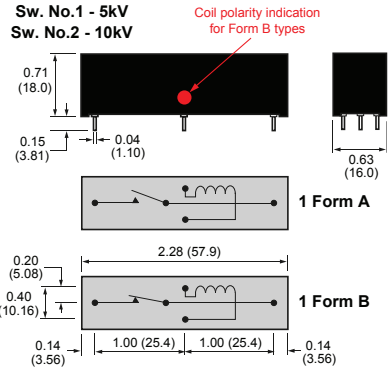
Pin Configuration and Dimensional Data

Dimensions in Inches (Millimeters in brackets)

Series 60 Chassis mounting



Series 65 PCB mounting



Important: For all Form B types, the correct coil polarity must be observed. The positive connection is shown by the red spot on the package.

3D Models: Interactive models of the complete range of Pickering relay products can be downloaded from the web site.

Order Code

60 - 1 - A - 5 / 2

- Series
- Number of reeds
- Switch form
- Coil voltage
- Switch number (See table adjacent)

Other Pickering HV reed relays

If similar relays with push on connections are preferred, please look at our Series 62 and 63. If your requirement is for voltages up to 3kV, please look at our Series 104 Single-in-Line relays.

Help

If you need any technical advice or other help, for example, any special tests that you would like carried out, please do not hesitate to contact our Technical Sales Department. We will always be pleased to discuss Pickering relays with you.
email: techsales@pickeringrelay.com

Please ask us for a FREE evaluation sample.