

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.

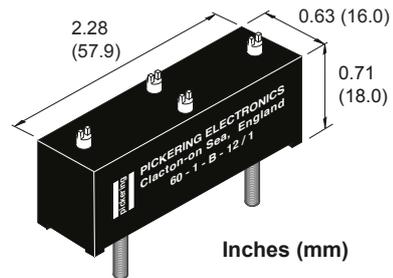
They are available for up to 15kV stand-off, 12.5kV switching at 50 Watts maximum. Tungsten plated contacts ensure a long and reliable life.

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.

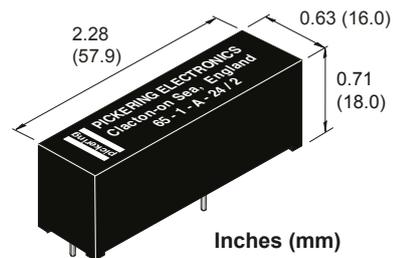
Form B types are magnetically biased and should not be mounted directly onto ferrous metal chassis or less than 1.5 inches (38mm) away from other relays as the coil operating voltage characteristics will be altered due to magnetic interaction. The coils of Form B relays are polarity sensitive, the positive 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	5	35 Ω	0.12 Ω	10 ¹² Ω	10 ¹² Ω	3 pF	0.15 pF
	60-1-A-12/1	12	150 Ω					
	60-1-A-24/1	24	500 Ω					
1 Form A (energize to make) Switch No. 2 (10kV Stand-Off)	60-1-A-5/2	5	35 Ω	0.12 Ω	10 ¹² Ω	10 ¹² Ω	3 pF	0.15 pF
	60-1-A-12/2	12	150 Ω					
	60-1-A-24/2	24	500 Ω					
1 Form A (energize to make) Switch No. 3 (15kV Stand-Off)	60-1-A-5/3	5	20 Ω	0.12 Ω	10 ¹² Ω	10 ¹² Ω	3 pF	0.15 pF
	60-1-A-12/3	12	50 Ω					
	60-1-A-24/3	24	200 Ω					
1 Form B (energize to break) Switch No. 1 (5kV Stand-Off)	60-1-B-5/1	5	35 Ω	0.12 Ω	10 ¹² Ω	10 ¹² Ω	3 pF	0.15 pF
	60-1-B-12/1	12	150 Ω					
	60-1-B-24/1	24	500 Ω					
1 Form B (energize to break) Switch No. 2 (10kV Stand-Off)	60-1-B-5/2	5	35 Ω	0.12 Ω	10 ¹² Ω	10 ¹² Ω	3 pF	0.15 pF
	60-1-B-12/2	12	150 Ω					
	60-1-B-24/2	24	500 Ω					

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	5	35 Ω	0.12 Ω	10 ¹² Ω	10 ¹² Ω	3 pF	0.15 pF
	65-1-A-12/1	12	150 Ω					
	65-1-A-24/1	24	500 Ω					
1 Form A (energize to make) Switch No. 2 (10kV Stand-Off)	65-1-A-5/2	5	35 Ω	0.12 Ω	10 ¹² Ω	10 ¹² Ω	3 pF	0.15 pF
	65-1-A-12/2	12	150 Ω					
	65-1-A-24/2	24	500 Ω					
1 Form B (energize to break) Switch No. 1 (5kV Stand-Off)	65-1-B-5/1	5	35 Ω	0.12 Ω	10 ¹² Ω	10 ¹² Ω	3 pF	0.15 pF
	65-1-B-12/1	12	150 Ω					
	65-1-B-24/1	24	500 Ω					
1 Form B (energize to break) Switch No. 2 (10kV Stand-Off)	65-1-B-5/2	5	35 Ω	0.12 Ω	10 ¹² Ω	10 ¹² Ω	3 pF	0.15 pF
	65-1-B-12/2	12	150 Ω					
	65-1-B-24/2	24	500 Ω					

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

Note¹ 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.

Note² 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 10⁶ ops. At the maximum load (resistive), typical life is 1 x 10⁶ 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.

Note³ Capacitance across open switch

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

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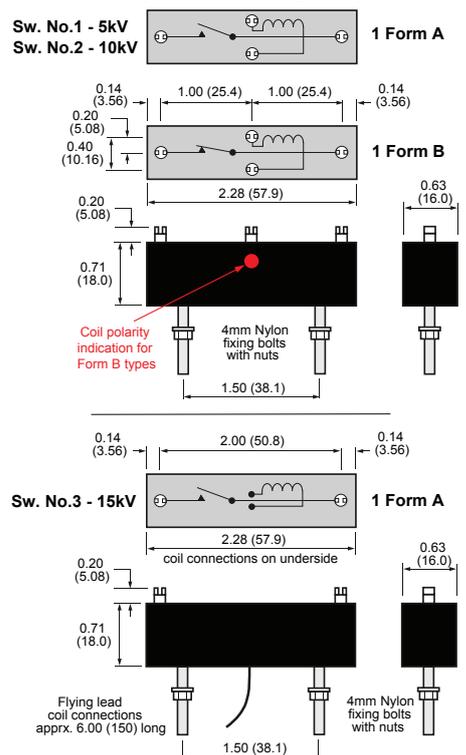
For a full list of agents and representatives visit: pickeringrelay.com/agents



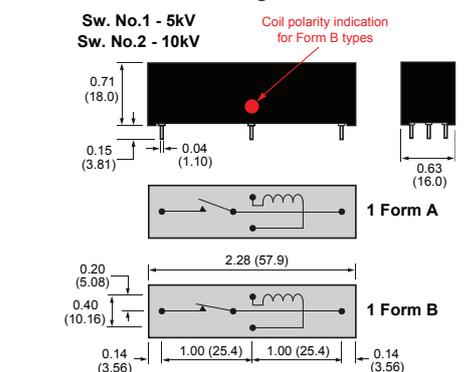
Pin Configuration and Dimensional Data

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 Pickering relay products can be downloaded here: pickeringrelay.com/3d-models

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.

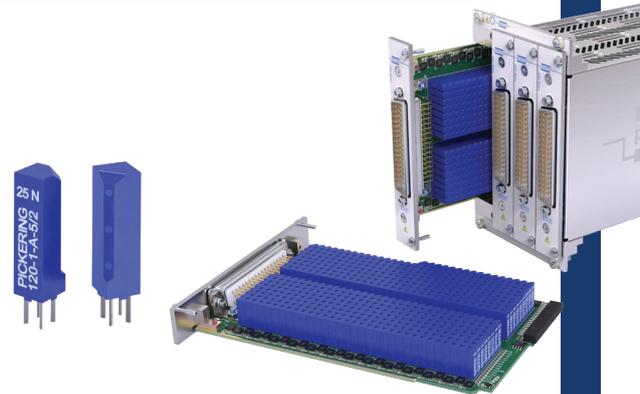


Why Pickering Electronics?

Because Quality Matters

Pickering Electronics continue to lead the high-end reed relay market through innovative product design, high performance components and exceptional quality control.

Part of the privately-owned Pickering Group, company operations employ around 200 staff across quality accredited factories in the UK and Czech Republic, supplying demanding Aerospace, Infrastructure, Test & Measurement and ATE applications worldwide.



Reliability through quality – 50 Year reputation for exceptional product life longevity derived from continuous staged manufacturing inspection, strenuous full range thermal cycling and 100% testing for all operating parameters.



Reliability through design – Environmentally compliant designs and unique Softcenter® technology combine to create an optimised assembly that minimises internal lifetime stresses, extending working life and contact stability.



Switching Performance – Compared with common bobbin based products, our formerless coil constructions maximise magnetic efficiency resulting in faster switching speeds, optimal switching action and several orders of extended lifetime at operational extremes.



Cost & Size Performance – Industry leading mu-metal magnetically screened packages deliver ultra-high PCB packing densities, saving significant cost and space.



Designers toolkit – Free samples, worldwide tech support and an unrivalled range of specialist and custom devices, Pickering engineers work alongside customers to deliver problem solving solutions for complex and challenging applications.



Quality Assurance and compliance - certified to ISO 9001-2015 and audited by the British Standards Institution. Committed to RoHS & REACH compliance.



Distribution – An established global network of group sales offices supported by local agents and distributors, Pickering operate an established logistical supply chain worldwide.



The Pickering Group – Employing around 400 staff across 8 sites in the UK and CZ, Pickering Electronics are a key technology partner for Pickering Interfaces and Pickering Connect, supporting the design and manufacture of high performance modular signal switching and simulation systems.