

# High-Reliability Electromechanical Power Relays and Contactors for Space, Aviation, Defense and Downhole Drilling Applications



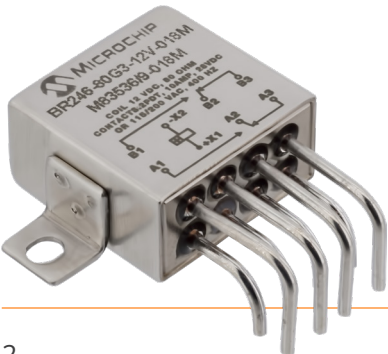


### Mission-Critical and High-Reliability Electromechanical Power Relays

We design, test, and manufacture a wide range of standard and custom relays, Remote Power Controllers (RPCs), contactors, time delay relays, and current sensors. These high-reliability products target applications in space, military and commercial aerospace, general aviation and downhole drilling industries.

Our relays are hermetically sealed, all-welded, miniature and available in standard or custom options. Relay ratings range from 1 to 25A and comply with M83536, M39016, M6106. Remote Power Controllers (RPCs) ratings range from 1 to 200A and comply with M83383. Our quality management systems are certified to AS9100 and MIL-STD-790 standards.

For over 60 years, we have established a formidable reputation for delivering high-quality, mission-critical electromechanical power relays for aerospace applications. Our space-grade relays have a proven flight history in groundbreaking projects such as Mars rovers and the International Space Station. We adhere to strict MIL-STD-approved materials while maintaining an ISO 5-compliant assembly and class 100,000 environment during manufacturing in accordance with ISO 14644-1. Our extensive testing laboratory and manufacturing expertise allow us to offer custom solutions that meet the rigorous NASA-EEE-INST-002 standards and exceptional protection against harsh environments, pollutants and contaminants.

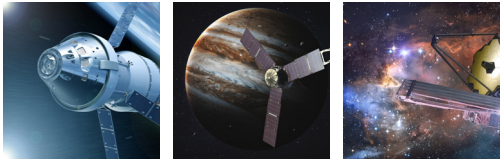






### Advantages of Our Power Relays

- Spectrum of current ratings for design flexibility
- Adherence to M83536, M39016 and M5757 standards
- High reliability to withstand the harsh conditions of the most demanding space and defense applications
- Rated current of 100,000 cycles and 400,000 cycles of mechanical life
- Military qualification (QPL) and custom parts available

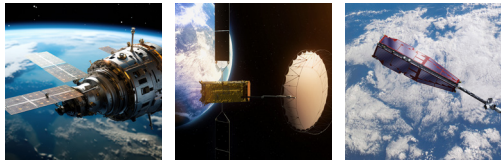
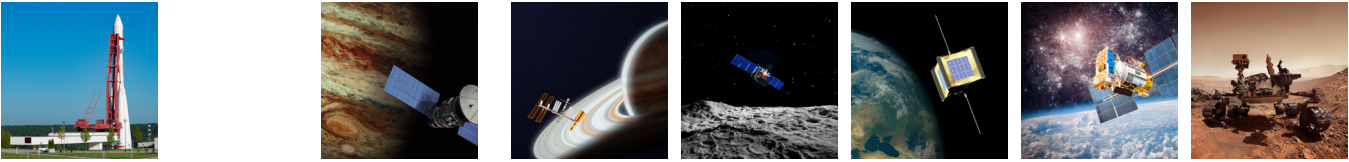


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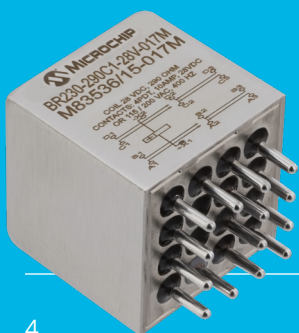
1945-1970      1971-1990      1991-2000      2001-2005      2006-2010      2011-2023



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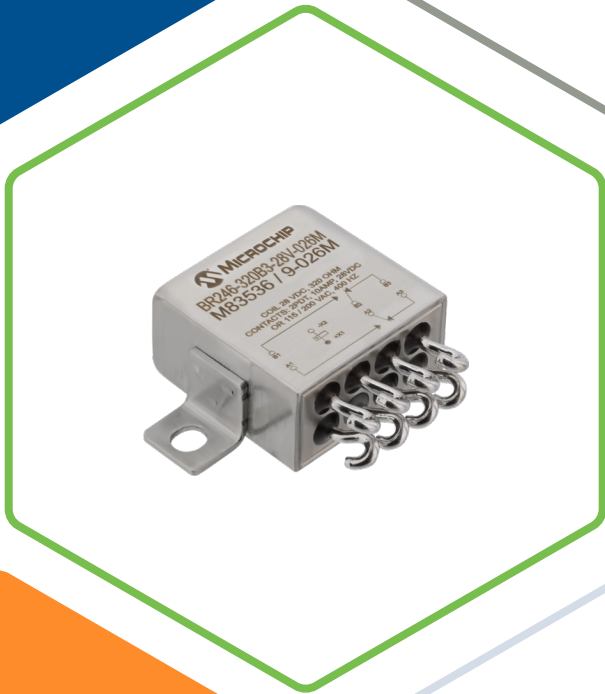
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Series		BR8	BR13	BR15	BR19	BR20	BR23	BR24
<b>Features</b>		Crystal can Dry circuit to 2A  All-welded construction	Crystal can Dry circuit to 5A  All-welded construction	Crystal can Dry circuit to 10A  All-welded construction	Crystal can Dry circuit to 10A  All-welded construction	Crystal can Dry circuit to 10A  All-welded construction Magnetic latching	Crystal can Dry circuit to 10A  All-welded construction Magnetic latching	Crystal can Dry circuit to 10A  All-welded construction Suppressed coil available
<b>Hermetically Sealed</b>		Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Contacts</b>	Form	2 Form C	2 Form C	4 Form C	2 Form C	2 Form C	4 Form C	2 Form C
	Rating (Resistive)	10–50 $\mu$ A @ 10–50 mV 2A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	5A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub> 3A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub> 2A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10 mA @ 30 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub> 7.5A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub> 5A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10 mA @ 30 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub> 5A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10 mA @ 30 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10 mA @ 30 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10–50 $\mu$ A @ 10–50 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>
<b>Coil Voltage</b>		6, 12, 26, 115 V <sub>DC</sub>	6, 12, 26, 115 V <sub>DC</sub>	6, 12, 26, 115 V <sub>DC</sub> , 115 V <sub>AC</sub>	6, 12, 26, 48, 115 V <sub>DC</sub> , 115 V <sub>AC</sub>	6, 12, 26, 48, 115 V <sub>DC</sub>	6, 12, 26, 48, 115 V <sub>DC</sub>	6, 12, 26 V <sub>DC</sub>
<b>Operating Power at Pick-Up Voltage</b>		250 mW or 150 mW	250 mW, 150 mW or 40 mW	1000 mW, 500 mW or 400 mW	500 mW or 175 mW	250 mW or 130 mW	500 mW or 250 mW	400 mW
<b>Dielectric Strength</b>		Between all points: 1000 Vrms Between open contacts: 750 Vrms	Between all points: 1000 Vrms	Between all points: 1250 Vrms Between open contacts: 1250 Vrms	Between all points: 1250 Vrms Between open contacts: 1250 Vrms	Between all points: 1250 Vrms Between open contacts: 1250 Vrms	Between all points: 1250 Vrms Between open contacts: 1250 Vrms	Between all points: 1250 Vrms Between open contacts: 1250 Vrms
<b>Typical Life Operations (at Rated Load)</b>	Electrical	100,000	100,000	100,000	100,000	100,000	100,000	100,000
<b>Maximum Size in Inches (L x W x H) (Less Mounting Brackets)</b>		0.790 x 0.360 x 0.870 or 1.190	0.810 x 0.410 x 0.900 or 1.29	1.075 x 1.000 x 1.300	1.075 x 0.515 x 1.300	1.075 x 0.515 x 1.300	1.075 x 1.000 x 1.300	1.015 x 0.515 x 0.885
<b>Terminals</b>	Plug-In	-	-	-	-	-	-	-
	Solder Pin	X	X	X	X	X	X	X
	Solder Hook	X	X	X	X	X	X	X
<b>MIL-SPEC Type (Reference)</b>		MIL-R-5757	MIL- PRF-39016	MIL- PRF-39016	MIL- PRF-39016	MIL- PRF-39016	MIL- PRF-39016	MIL- PRF-39016



Series		BR230	BR230D	BR231	BR231D	BR246	BR246D	BR247
<b>Features</b>		Miniature Low level to 10A All-welded construction	Miniature 10A All-welded construction DC- suppressed coils	Miniature Low level to 10A All-welded construction Magnetic latching	Miniature 10A All-welded construction Magnetic latching DC- suppressed coils	Miniature Low level to 10A All-welded construction	Miniature 10A All-welded construction DC- suppressed coils	Miniature Low level to 10A All-welded construction Magnetic latching
<b>Hermetically Sealed</b>		Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Contacts</b>	Form	4 Form C	4 Form C	4 Form C	4 Form C	2 Form C	2 Form C	2 Form C
	Rating (Resistive)	10-50 $\mu$ A @ 10-50 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10-50 $\mu$ A @ 10-50 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10-50 $\mu$ A @ 10-50 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10-50 $\mu$ A @ 10-50 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10-50 $\mu$ A @ 10-50 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10-50 $\mu$ A @ 10-50 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	10-50 $\mu$ A @ 10-50 mV 10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>
<b>Coil Voltage</b>		6, 12, 28, 48 V <sub>DC</sub> , 115 V <sub>AC</sub>	6, 12, 28, 48 V <sub>DC</sub>	6, 12, 28, 48 V <sub>DC</sub> , 115 V <sub>AC</sub>	6, 12, 28, 48 V <sub>DC</sub>	6, 12, 28, 48 V <sub>DC</sub> , 115 V <sub>AC</sub>	6, 12, 28, 48 V <sub>DC</sub>	6, 12, 28, 48 V <sub>DC</sub> , 115 V <sub>AC</sub>
<b>Operating Power at Pick-Up Voltage</b>		500 mW	500 mW	500 mW	500 mW	500 mW	500 mW	500 mW
<b>Dielectric Strength</b>		Between all points: 1250 Vrms	Between all points: 1250 Vrms	Between all points: 1250 Vrms	Between all points: 1250 Vrms	Between all points: 1250 Vrms	Between all points: 1250 Vrms	Between all points: 1250 Vrms
		Between open contacts: 1250 Vrms	Between open contacts: 1250 Vrms	Between open contacts: 1250 Vrms	Between open contacts: 1250 Vrms	Between open contacts: 1250 Vrms	Between open contacts: 1250 Vrms	Between open contacts: 1250 Vrms
<b>Typical Life Operations (at Rated Load)</b>	Electrical	100,000	100,000	100,000	100,000	100,000	100,000	100,000
<b>Maximum Size in Inches (L x W x H) (Less Mounting Brackets)</b>		1.025 x 1.025 x 1.010	1.025 x 1.025 x 1.010	1.025 x 1.025 x 1.010	1.025 x 1.025 x 1.010	1.025 x 0.525 x 1.010 or 1.125	1.025 x 0.525 x 1.010 or 1.125	1.025 x 0.525 x 1.010 or 1.125
<b>Terminals</b>	Plug-In	X	X	X	X	X	X	X
	Solder Pin	X	X	X	X	X	X	X
	Solder Hook	X	X	X	X	X	X	X
<b>MIL-SPEC Type (Reference)</b>		Qualified to MIL- PRF-83536	Qualified to MIL- PRF-83536	Qualified to MIL- PRF-83536	Qualified to MIL- PRF-83536	Qualified to MIL- PRF-83536	Qualified to MIL- PRF-83536	Qualified to MIL- PRF-83536

Series		BR247D	BR250	BR250D	700	701	702	703
<b>Features</b>		Miniature 10A All-welded construction Magnetic latching DC-suppressed coils	Miniature 25A All-welded construction	Miniature 25A All-welded construction DC-suppressed coils	Remote power controller Up to 200A Auxiliary contacts available AC-only applications	Remote power controller Up to 200A Auxiliary contacts available DC-only applications	Remote power controller Up to 200A Auxiliary contacts available AC/DC applications	Remote power controller Up to 100A Auxiliary contacts available AC 3-Phase applications
<b>Hermetically Sealed</b>		Yes	Yes	Yes	No	No	No	No
<b>Contacts</b>	Form	2 Form C	1 Form C	1 Form C	1 Form X	1 Form X	1 Form X	3 Form X
	Rating (Resistive)	10A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	25A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	25A @ 28 V <sub>DC</sub> or 115 V <sub>AC</sub>	Up to 200A @ 115 V <sub>AC</sub>	Up to 200A @ 28 V <sub>DC</sub>	Up to 100A @ 115 V <sub>AC</sub> or 28 V <sub>DC</sub>	Up to 200A @ 115 V <sub>AC</sub> or 208 V <sub>AC</sub>
<b>Coil Voltage</b>		6, 12, 28, 48 V <sub>DC</sub>	6, 12, 28, 48 V <sub>DC</sub> , 115 V <sub>AC</sub>	6, 12, 28, 48 V <sub>DC</sub>	28 V <sub>DC</sub>	28 V <sub>DC</sub>	28 V <sub>DC</sub> , 115 V <sub>AC</sub>	28 V <sub>DC</sub>
<b>Operating Power at Pick-Up Voltage</b>		500 mW	500 mW	500 mW	N/A	N/A	N/A	N/A
<b>Dielectric Strength</b>		Between all points: 1250 Vrms Between open contacts: 1250 Vrms	Between all points: 1250 Vrms Between open contacts: 1250 Vrms	Between all points: 1250 Vrms Between open contacts: 1250 Vrms	Between all points: 1500 Vrms Between open contacts: 1350 Vrms	Between all points: 1500 Vrms Between open contacts: 1350 Vrms	Between all points: 1500 Vrms Between open contacts: 1350 Vrms	Between all points: 1500 Vrms Between open contacts: 1350 Vrms
<b>Typical Life Operations (at Rated Load)</b>	Electrical	100,000	100,000	50,000	50,000	50,000	50,000	50,000
<b>Maximum Size in Inches (L × W × H) (Less Mounting Brackets)</b>		1.025 × 0.525 × 1.010 or 1.125	1.025 × 0.525 × 1.010 or 1.125	1.025 × 0.525 × 1.010 or 1.125	4.260 × 1.200 × 3.250	4.260 × 1.200 × 3.250	4.260 × 1.200 × 3.250	4.260 × 3.690 × 2.250
<b>Terminals</b>	Plug-In	X	X	X	MIL-C-39029 Connector	MIL-C-39029 Connector	MIL-C-39029 Connector	MIL-C-39029 Connector
	Solder Pin	X	X	X				
	Solder Hook	X	X	X				
<b>MIL-SPEC Type (Reference)</b>		Qualified to MIL-PRF-83536	Qualified to MIL-PRF-6106	Qualified to MIL-PRF-6106	Designed to meet MIL-PRF-83383	Designed to meet MIL-PRF-83383	Designed to meet MIL-PRF-83383	Designed to meet MIL-PRF-83383





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