

1" x 0.1" GRID RELAYS

HRB ■ MMRB ■ MRB ■ 922A



DESCRIPTION

The 1" x 0.1" grid relay series is a general purpose series that is pin-for-pin compatible with most competitor relays. Some configurations of this relay series are capable of switching up to 1000 Volts and up to 2 Amps with a maximum 50 Watt switching. Input/output isolation is as high as 2000 Volt peak for the HRB and MMRB. The series includes Form-A, Form-B and Form-C models, some of which have up to 6 poles.

FEATURES

- Standard nominal voltages include 5, 12 and 24 volts
- Electromagnetic shield
- Multi-pole configurations
- 1.0" x 0.15" pin spacing available
- FCC Part 68 compatible

APPLICATIONS

- Telecom
- Instrumentation
- General purpose electronics
- Industrial
- Process control

APPROVALS

- UL Recognized (MRB)

RATINGS (@ 25° C)

Parameter	Min	Typ	Max	Unit
Switching Voltage				
HRB			1000	Volts
MRB			200	Volts
MMRB			500	Volts
Switching Current				
HRB/MMRB			2	Amps
MRB			0.5	Amps
Carry Current				
HRB/MMRB			3	Amps
MRB			1	Amps
Switching Frequency				
HRB/MMRB			200	Hz
MRB			500	Hz
Contact Resistance				
HRB			70	mΩ
MMRB			100	mΩ
MRB			200	mΩ

(See detailed specifications for more information.)

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SPECIFICATIONS

All parameters are at 25°C unless otherwise stated.
Operate voltage, release voltage, and coil resistance will change approximately 0.4%/°C as ambient temperature varies.

PARAMETER	CONDITIONS	SYMBOL	HRB			MMRB			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Contact Ratings									
Switching Voltage	Max DC/PeakAC Resistive	V _L	-	-	1000	-	-	500	Volts
Switching Current	Max DC/PeakAC Resistive	I _L	-	-	2	-	-	2	Amps
Carry Current	Max DC/PeakAC Resistive	I _c	-	-	3	-	-	3	Amps
Contact Rating	Max DC/PeakAC Resistive	-	-	-	50	-	-	50	Watts
Life Expectancy	Signal Level 1.0V 10mA Rated Loads ⁽¹⁾	-	1000	2000	-	200	300	-	x10 ⁶ Ops x10 ⁶ Ops
Static Contact Resistance	50mV, 10mA	CR	-	-	70	-	-	100	mΩ
Dynamic Contact Resistance	.5V, 50mA at 100Hz, 1.5 msec	DCR	-	N/A	-	-	N/A	-	mΩ
Contact Material		-	-	Hg	-	-	Hg	-	-
Hg Content		-	-	40	-	-	16	-	mgrams
Relay Specifications									
Insulation Resistance	Between all isolated pins at 100V, 25°C, 40% RH	IR	10 ⁸	-	-	10 ⁸	10 ¹⁰	-	Ω
Capacitance		-	-	-	0.6	-	-	1.5	p
Across Open Contacts		-	-	-	4	-	-	2.5	pF
Open Contact to Coil		-	-	-	-	-	-	-	-
Dielectric Strength	Between Contacts	-	2000	-	-	2000	-	-	VDC/PeakAC
	Contacts to Coil	I/O	1400	-	-	1400	-	-	VDC/PeakAC
Operate Time, no bounce	At Nominal Coil Voltage	T _{OP}	-	-	-	-	-	-	ms
	10Hz Square Wave	-	-	-	3.00	-	1.6	2.70	-
Release Time	Zener-Diode Suppression	T _{REL}	-	-	2.00	-	1.4	1.75	ms
Environmental Ratings									
Storage Temperature		T _A	-40	-	+105	-40	-	+105	°C
Operating Temperature		T _O	-38	-	+85	-38	-	+75	°C
Soldering Temperature	Applied to pins, 5 sec. max.	-	-	-	+260	-	-	+260	°C
Vibration Resistance (Survival)	10Hz - 500Hz	G	-	-	10	-	-	10	Gs
Shock Resistance (Survival)	11±1ms, 1/2 Sine Wave	S	-	-	30	-	-	30	Gs
Weight		-	-	5.1	-	-	5.3	-	grams

(1) For further information, consult factory

(2) Relay must be mounted vertically. Pin 1 is up.

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SPECIFICATIONS

All parameters are at 25°C unless otherwise stated.
Operate voltage, release voltage, and coil resistance will change approximately 0.4%/°C as ambient temperature varies.

PARAMETER	CONDITIONS	SYMBOL	MRB			922A			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Contact Ratings									
Switching Voltage	Max DC/PeakAC Resistive	V _L	-	-	200	-	-	125	Volts
Switching Current	Max DC/PeakAC Resistive	I _L	-	-	0.75	-	-	0.25	Amps
Carry Current	Max DC/PeakAC Resistive	I _c	-	-	1.5	-	-	0.4	Amps
Contact Rating	Max DC/PeakAC Resistive	-	-	-	10	-	-	3	Watts
Life Expectancy	Signal Level 1.0V 10mA Rated Loads ⁽¹⁾	-	300	500	-	-	100	-	x10 ⁶ Ops x10 ⁶ Ops
Static Contact Resistance	50mV, 10mA	CR	-	-	200	-	-	200	mΩ
Dynamic Contact Resistance	.5V, 50mA at 100Hz, 1.5 msec	DCR	-	-	200	-	-	200	mΩ
Contact Material		-	-	Rh	-	-	Ru	-	-
Hg Content		-	-	N/A	-	-	N/A	-	mgrams
Relay Specifications									
Insulation Resistance	Between all isolated pins at 100V, 25°C, 40% RH	IR	10 ¹⁰	-	-	10 ⁸	-	-	Ω
Capacitance		-	-	-	1	-	-	-	pF
Across Open Contacts		-	-	-	2	-	-	-	pF
Open Contact to Coil		-	-	-	-	-	-	-	-
Dielectric Strength	Between Contacts	-	250	-	-	-	-	-	VDC/PeakAC
	Contacts to Coil	I/O	1400	-	-	-	-	-	VDC/PeakAC
Operate Time	At Nominal Coil Voltage	T _{OP}	-	1	2	-	1.5	-	ms
including bounce	10Hz Square Wave		-	0.50	2	-	2	-	ms
Release Time	Zener-Diode Suppression	T _{REL}	-	-	-	-	-	-	ms
Environmental Ratings									
Storage Temperature		T _A	-40	-	+105	-40	-	+105	°C
Operating Temperature		T _O	-20	-	+85	-38	-	+85	°C
Soldering Temperature	Applied to pins, 5 sec. max.	-	-	-	+260	-	-	+260	°C
Vibration Resistance (Survival)	10Hz - 500Hz	G	-	-	10	-	-	10	Gs
Shock Resistance (Survival)	11±1ms, 1/2 Sine Wave	S	-	-	20	-	-	30	Gs
Weight		-	-	5.8	-	-	-	5.1	grams

(1) For further information, consult factory

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COIL SPECIFICATIONS

Units	Coil Voltage			Coil Resistance			Operate Voltage			Release Voltage			Nominal Input Power		
	Volts			Ω			Volts			Volts			mW		
Conditions				+/- 10% (25°C)			Must operate by (25°C)			Must release by (25°C)					
Part #	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max
HRB1A05		5	12	180	200	220				3.75	0.15				125
HRB1A12		12	26	837	930	1023				9	0.7				155
HRB1A24		24	53	3348	3720	4092				18	1.4				155
HRB2A05		5	9	90	100	110				3.75	0.15				250
HRB2A12		12	23	607.5	675	742.5				9	0.7				213
HRB2A24		24	45	2232	2480	2728				18	1.4				232
HRB3A05		5	8	72	80	88				3.75	0.15				313
HRB3A12		12	18	338	375	413				9	0.7				384
HRB3A24		24	36	1350	1500	1650				18	1.4				384
HRB4A05		5	8	54	60	66				3.75	0.15				417
HRB4A12		12	18	315	350	385				9	0.7				411
HRB4A24		24	31	900	1000	1100				18	1.4				576
HRB5A05		5	7	41	45	50				3.75	0.15				556
HRB5A12		12	17	252	280	308				9	0.7				514
HRB5A24		24	30	828	920	1012				18	1.4				626
HRB6A05		5	7	36	40	44				3.75	0.15				625
HRB6A12		12	15	189	210	231				9	0.7				686
HRB6A24		24	31	792	880	968				18	1.4				655
MMRB1A05		5	12	180	200	220				3.75	0.15				125
MMRB1A12		12	26	837	930	1023				9	0.7				155
MMRB1A24		24	53	3348	3720	4092				18	1.4				155
MMRB2A05		5	9	90	100	110				3.75	0.15				250
MMRB2A12		12	23	608	675	743				9	0.7				213
MMRB2A24		24	45	2232	2480	2728				18	1.4				232
MMRB3A05		5	8	72	80	88				3.75	0.15				313
MMRB3A12		12	18	338	375	413				9	0.7				384
MMRB3A24		24	36	1350	1500	1650				18	1.4				384
MMRB4A05		5	8	54	60	66				3.75	0.15				417
MMRB4A12		12	18	315	350	385				9	0.7				411
MMRB4A24		24	31	900	1000	1100				18	1.4				576
MMRB5A05		5	7	41	45	50				3.75	0.15				556
MMRB5A12		12	17	252	280	308				9	0.7				514
MMRB5A24		24	30	828	920	1012				18	1.4				626
MMRB6A05		5	7	36	40	44				3.75	0.15				625
MMRB6A12		12	15	189	210	231				9	0.7				686
MMRB6A24		24	31	792	880	968				18	1.4				655

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Units	Coil Voltage			Coil Resistance			Operate Voltage			Release Voltage			Nominal Input Power		
	Volts			Ω			Volts			Volts			mW		
Conditions				+/- 10% (25°C)			Must operate by (25°C)			Must release by (25°C)					
Part #	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max
MRB1A05		5	13	203	225	248			3.75	0.15					111
MRB1A06		6	16	306	340	374			4.5	0.15					106
MRB1A12		12	32	1260	1400	1540			9	0.7					103
MRB1A24		24	57	3906	4340	4774			18	1.4					133
MRB2A05		5	9	95	105	116			3.75	0.15					238
MRB2A06		6	12	162	180	198			4.5	0.15					200
MRB2A12		12	24	657	730	803			9	0.7					197
MRB2A24		24	45	2250	2500	2750			18	1.4					230
MRB3A05		5	8	74	82	90			3.75	0.15					305
MRB3A06		6	11	117	130	143			4.5	0.15					277
MRB3A12		12	22	513	570	627			9	0.7					253
MRB3A24		24	36	1386	1540	1694			18	1.4					374
MRB4A05		5	8	54	60	66			3.75	0.15					417
MRB4A06		6	10	90	100	110			4.5	.15					360
MRB4A12		12	16	248	275	303			9	0.7					524
MRB4A24		24	32	981	1090	1199			18	1.4					528
MRB5A05		5	7	41	45	50			3.75	0.15					
MRB5A06		6	8	63	70	77			4.5	0.15					514
MRB5A12		12	17	252	280	308			9	0.7					514
MRB5A24		24	30	828	920	1012			18	1.4					626
MRB6A05		5	6	29	32	35			3.75	0.15					781
MRB6A06		6	7	45	50	55			4.5	0.15					720
MRB6A12		12	15	189	210	231			9	0.7					686
MRB6A24		24	31	810	900	990			18	1.4					640
MRB1B05		5	6	270	300	330			3.75	0.4					83
MRB1B12		12	15	1116	1240	1364			9	1					116
MRB1B24		24	30	5220	5800	6380			18	2					99
MRB2B05		5	6	74	82	90			3.75	0.4					305
MRB2B12		12	15	513	570	627			9	1					253
MRB2B24		24	30	2097	2330	2563			18	2					247
MRB1N05		5		45	50	55			3.75	0.4					500
MRB1N06		6		74	82	90			4.5	0.5					440
MRB1N12		12		207	230	253			9	1					626
MRB1N24		24		810	900	990			18	2					640
MRB2N05		5		25	28	31			3.75	0.4					893
MRB2N06		6		41	45	50			4.5	0.5					800
MRB2N12		12		167	185	204			9	1					778
MRB2N24		24		720	800	880			18	2					720
MRB1L01		5		81	90	99			3.75	Latch					N/A
MRB2L02		5		99	110	121			3.75	Latch					N/A
922A05C1C		5		180	200	220			3.75	0.4					125
922A06C1C		6		243	270	297			4.5	0.5					133
922A12C1C		12		972	1080	1188			9	1					133
922A24C1C		24		3888	4320	4752			18	2					133

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COIL SPECIFICATIONS

Units	Coil Voltage			Coil Resistance			Operate Voltage			Release Voltage		
	Volts			W			Volts			Volts		
Conditions				+/- 10% (25°C)			Must operate by (25°C)			Must release by (25°C)		
Part #	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max
922A05C2C		5		90	100	110			3.75	0.4		
922A06C2C		6		131	145	160			4.5	0.5		
922A12C2C		12		567	630	693			9	1		
922A24C2C		24		2268	2520	2772			18	2		
922A05C3C		5		68	75	83			3.75	0.4		
922A06C3C		6		81	90	99			4.5	0.5		
922A12C3C		12		324	360	396			9	1		
922A24C3C		24		1188	1320	1452			18	2		
922A05C4C		5		45	50	55			3.75	0.4		
922A06C4C		6		63	70	77			4.5	0.5		
922A12C4C		12		252	280	308			9	1		
922A24C4C		24		1008	1120	1232			18	2		
MRB1A1505		5		203	225	248			3.75	0.15		
MRB1A1506		6		306	340	374			4.5	0.15		
MRB1A1512		12		1260	1400	1540			9	0.7		
MRB1A1524		24		3906	4340	4774			18	1.4		
MRB2A1505		5		72	80	88			3.75	0.15		
MRB2A1506		6		117	130	143			4.5	0.15		
MRB2A1512		12		513	570	627			9	0.7		
MRB2A1524		24		1395	1550	1705			18	1.4		
MRB3A1505		5		54	60	66			3.75	0.15		
MRB3A1506		6		90	100	110			4.5	0.15		
MRB3A1512		12		405	450	495			9	0.7		
MRB3A1524		24		981	1090	1199			18	1.4		
MRB4A1505		5		29	32	35			3.75	0.15		
MRB4A1506		6		45	50	55			4.5	0.15		
MRB4A1512		12		189	210	231			9	0.7		
MRB4A1524		24		810	900	990			18	1.4		

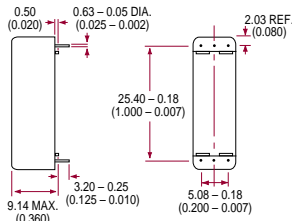
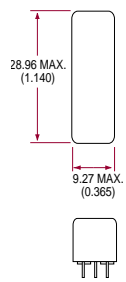
1" x 0.1" GRID RELAYS

HRB ■ MMRB ■ MRB ■ 922A

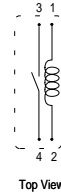
MECHANICAL DIMENSIONS

DIMENSIONS
mm
(inches)

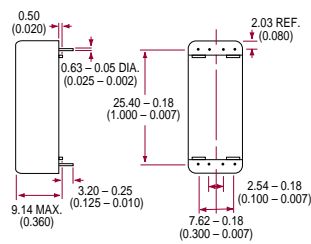
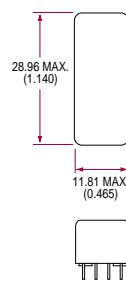
1.0 x 0.1 1A



1.0 x 0.1 1A



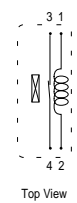
1.0 x 0.1 2A/1C/1B/1L



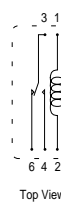
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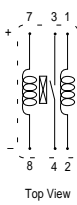
1.0 x 0.1 1B



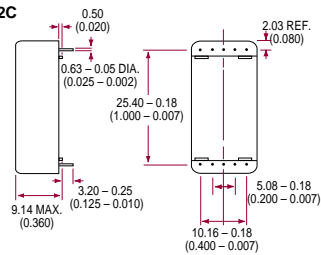
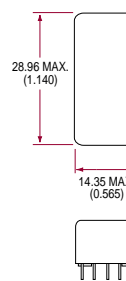
1.0 x 0.1 1C



1.0 x 0.1 1L



1.0 x 0.1 3A/2B/1N/2L/2C



1.0 x 0.1 3A



1.0 x 0.1 2B



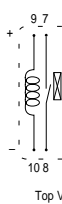
1.0 x 0.1 2C



1.0 x 0.1 1N



1.0 x 0.1 2L



Note: HRB must be mounted vertically. Pin 1 is up.

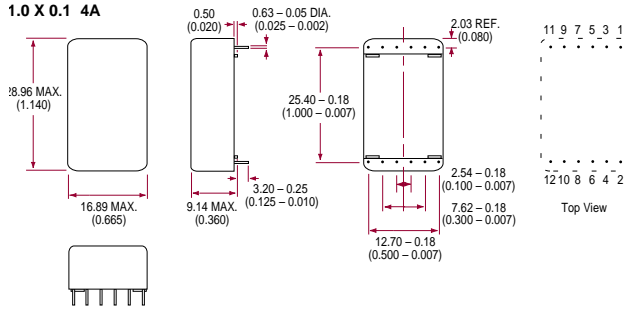
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1" x 0.1" GRID RELAYS

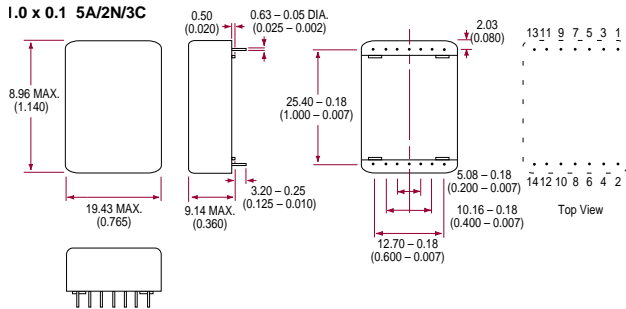
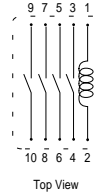
HRB ■ MMRB ■ MRB ■ 922A

MECHANICAL DIMENSIONS

DIMENSIONS
mm
(inches)



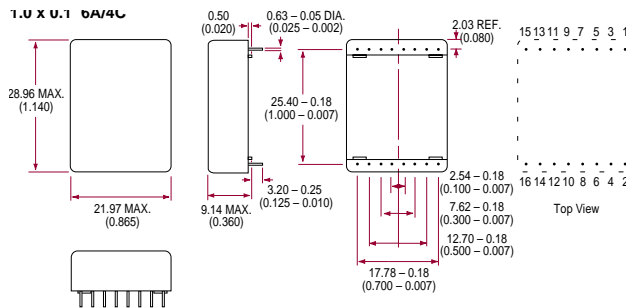
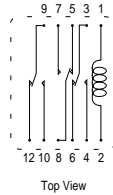
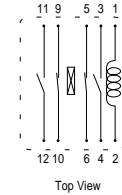
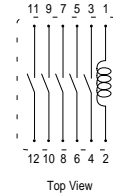
1.0 X 0.1 4A



1.0 x 0.1 5A

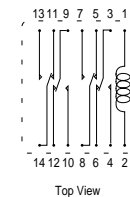
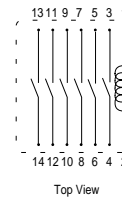
1.0 x 0.1 2N

1.0 x 0.1 3C



1.0 x 0.1 6A

1.0 x 0.1 4C



Note: HRB must be mounted vertically. Pin 1 is up.

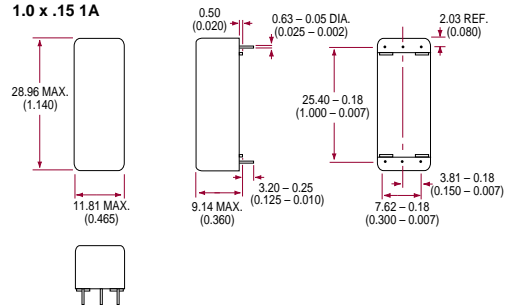
1" x 0.1" GRID RELAYS

HRB ■ MMRB ■ MRB ■ 922A

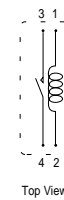
MECHANICAL DIMENSIONS

DIMENSIONS
mm
(inches)

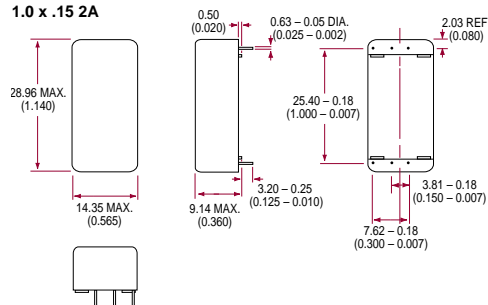
1.0 x .15 1A



1.0 x .15 1A



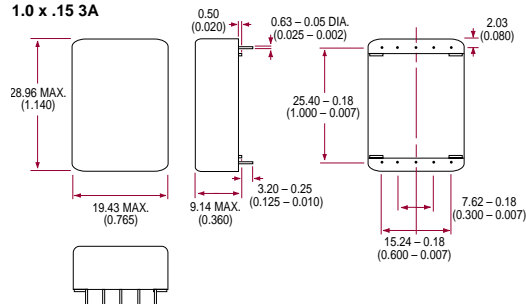
1.0 x .15 2A



1.0 x .15 2A



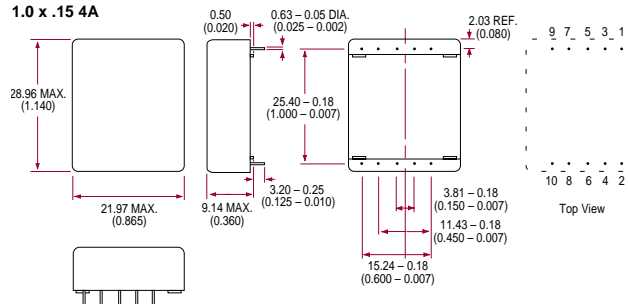
1.0 x .15 3A



1.0 x .15 3A



1.0 x .15 4A



1.0 x .15 4A



Note: HRB must be mounted vertically. Pin 1 is up.

USA 1-877-4REMTECH Europe 32-11-300868 Japan 81-3-3667-3302 Ext. 2419
HongKong/China/Korea 852-2880-6773 Taiwan 886-2-2726-2177 Singapore/Far East 65-296-3388

1" x 0.1" GRID RELAYS

HRB ■ MMRB ■ MRB ■ 922A

ORDERING INFORMATION

A complete part number is represented by the digits below.

