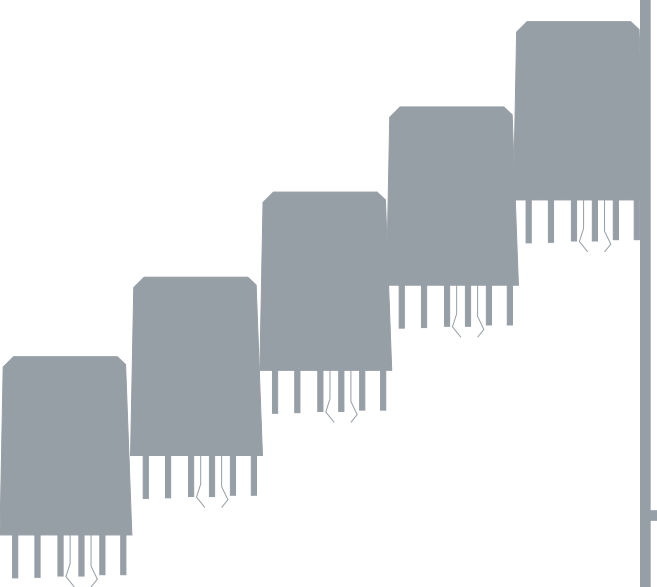
SECTION 5

LATCHING, SEQUENCE AND STEPPER RELAYS

5 TO 30 AMPERES



711

755/250ML

285/388ML

303

B255

385

311

PHONE: (843) 393-5778 FAX: (843) 393-4123 EMAIL: info@magnecraft.com

MAGNETIC LATCHING RELAYS

Magnecraft & Struthers-Dunn
Your Contact for Industrial Relays

PRODUCT		711	755 / 250ML	285 / 388ML
				
L X W X H (INCHES)		2.90 x 1.54 x 1.40	2.89 x 1.37 x 1.94	1.90 x 1.53 x 1.40
FEATURES		• IMPULSE SEQUENCING RELAY • 3 - WAY TERMINALS, SOLDER, PLUG-IN, OR 0.187 QUICK CONNECT, • HOLDS LAST SET POSITION WITH NO POWER REQUIRED	• PERMANENT MAGNETIC LATCHING RELAY • 11 PIN OCTAL SOCKET • DUAL COIL LATCHING • SELF-MAINTAINING SET AND RESET COILS MAINTAINS LAST POSITION WITHOUT POWER • AC OR DC COILS OPTIONAL BLOWOUT MAGNET • OPTIONAL SILVER TIN OXIDE CONTACTS	• PERMANENT MAGNETIC LATCHING RELAY • 3-WAY TERMINALS, SOLDER, PLUG-IN OR 0.187 QUICK CONNECT DUAL COIL LATCHING • SELF-MAINTAINING SET AND RESET COILS • MAINTAINS LAST POSITION WITHOUT POWER AC OR DC COILS • OPTIONAL SILVER TIN OXIDE CONTACTS
COIL	**UNITS**			
Standard Voltage AC:	50/60 Hz	12, 24, 110 / 120	12, 24, 110 / 120, 240	12, 24, 110 / 120, 220 / 240
DC:		12 , 24, 48, 110 / 125	6, 12 , 24, 48, 110 / 125	12, 24
Coil Power AC (60 Hz):	VA	1.8	2.0	2.1
Coil Power DC:	W	1.8	1.64	1.9
Insulation System Per UL Standard 1446:		Class B (130ºC)	Class B (130ºC)	Class B (130ºC)
CONTACTS				
Contact Configuration:		**DPDT**	**DPDT**	**PDT SPDT-DM-DB**
Contact Material:		Silver alloy, gold flashed	Silver alloy, gold flashed	Silver alloy, gold flashed
Contact Resistance (Initial):	m Ohms	50	50	50
Contact Rating AC Amperes (AC1):	A	12	16	10
Contact Rating AC Voltage:	V	240	240	240
Contact Rating DC Amperes (DC1):	A	12	16	10
Contact Rating DC Voltage:	V	28	28	28
Horse Power (AC):	Hp	1/3 @120	1/3 @ 120 V	1/3 @ 120 V
Horse Power (AC):	Hp	1/2 @ 240	1/2 @ 240 V	1/2 @ 240 V
TIMING				
Operate Time:	ms	35	30	30
Release Time:	ms	35	30	30
DIELECTRIC STRENGTH				
Coil to Contacts:	V rms	1500	2500	2500
Insulation Resistance:	megohms minimum@VDC	100 @ 5 VDC or 0.5 W	100 @ 5 VDC or 0.5 W	100 @ 5 VDC or 0.5 W
TEMPERATURE				
Operating, AC Lower:	ºC	- 40	-30	-40
Operating, AC Upper:	ºC	+70	+70	+70
Operating, DC Lower:	ºC	- 40	-30	-40
Operating, DC Upper:	ºC	+70	+75	+75
Storage, Lower:	ºC	- 45	-30	-45
Storage, Upper:	ºC	+105	+105	+105
LIFE EXPECTANCY				
Electrical @ Rated Load (AC1):	operations	100,000	100,000	100,000
Mechanical @ no Load :	operations	10,000,000	10,000,000	10,000,000
MISCELLANEOUS				
Cover Protection Category:	IP	40	40	40
Weight:	grams	110	170	87
MATING SOCKETS SEE SECTION 7		70-463-1	70-750D8-1, 70-750D11-1,70-464-1, 70-465-1, 70-169-1, 70-170-1,	70-463-1, 70-124-1, 70-124-2, 70-178-1, 70-178-2,
AGENCY APPROVALS		c UL us PENDING	c UL us UL Recognized File No. E43641	c UL us UL Recognized File No. E43641
PAGE NUMBER		PAGE 5	PAGE 6, 7	PAGE 8, 9

MECHANICAL LATCHING RELAYS

	303	B255	385	311
				
	2.90 x 1.53 x 1.40	2.63 x 1.47 x 4.56	3.04 x 1.67 x 2.392	2.65 x 1.47 x 4.56
	• PERMANENT MAGNETIC LATCHING RELAY • 0.25 TERMINALS, SOLDER, OR QUICK CONNECT OPTIONAL OPTIONAL CLASS F INSULATION • DUAL COIL LATCHING • SELF-MAINTAINING SET AND RESET COILS MAINTAINS LAST POSITION WITHOUT POWER • AC OR DC COILS OPTIONAL BLOWOUT MAGNET • OPTIONAL STUD, FLANGE OR DIN MOUNT	• 2 COIL MECHANICAL LATCHING RELAY • SINGLE LEVEL SOCKET WIRING • CONTINUOUS DUTY COILS BOTH COILS MAY BE ENERGIZED AT SAME TIME • OPTIONAL BLOWOUT MAGNET • OPTIONAL BIFURCATED CONTACT • UP TO 4PST OR 3PDT	• 2 COIL MECHANICAL LATCHING RELAY • 3 POLES PER COIL • AC & DC COILS • 0.187 QUICK CONNECT OR SOLDER • DIN OR PANEL MOUNT BOTH COIL MAY BE ENERGIZED AT THE SAME TIME • UP TO 6PDT 3 POLES PER COIL	• SEQUENCE (STEPPING) RELAY • SINGLE COIL CONTINUOUS DUTY • CONTACT TRANSFER MINERALIZING OR • INDUSTRIAL PLUG-IN CONSTRUCTION
	110 / 120 12, 24	6, 12, 24, 110 / 120, 220 / 240 6, 12 , 24, 48, 110 / 125	6, 12, 24, 110 / 120, 220 / 240 6, 12 , 24, 48, 110 / 125	6, 12, 24, 110 / 120, 220 / 240 6, 12 , 24, 48, 110 / 125
	2.1 1.9	5.0 2.0	2.0 2.6	5.0 2.0
	Class B (130ºC), Class F (155ºC)	Class B (130ºC)	Class B (130ºC), Class F (155ºC)	Class B (130ºC)
	DPDT	**UP TO 4PST OR 3PDT**	**DPDT, 4PDT & 6PDT**	**DPDT**
	Silver alloy, gold flashed	Silver alloy, gold flashed	SIlver alloy, gold flashed	Silver alloy,
	50	50	50	50
	30 277	10 120	15/3 277/ 600	5 120
	30 28	10 24	10 28	5 30
	1/3 @ 120 V 1/2 @ 208 V to 600 V	None None	1/3 @120 1/2 @ 208 to 600	None None
	30 30	25 20	25 25	35 35
	4000	1500	2000	1500
	100 @ 5 VDC or 0.5 W	100 @ 5 VDC or 0.5 W	100 @ 5 VDC or 0.5 W	100 @ 5 VDC or 0.5 W
	-40 +60	-10 +60	-40 +70	-10 +60
	-40 +65	-10 +60	-40 +70	-10 +60
	-40 +105	-40 +105	-40 +105	-40 +105
	100,000	100,000	100,000	100,000
	10,000,000	10,000,000	10,000,000	10,000,000
	40	50	40	50
	170	215	85	190
	-	278390D	-	278390D
	c UL us UL Recognized File No. E13224	c UL us UL Recognized File No. E13224	c UL us PENDING	c UL us UL Recognized File No. E7104
	PAGE 10, 11	PAGE 12, 13	PAGE 14, 15	PAGE 16, 17

LATCHING, SEQUENCE, STEPPER AND IMPULSE RELAYS

APPLICATION DATA

Latching relays are often confused with sequence, or stepper, and impulse relays. These are in fact three distinctly different types of devices, although in many cases one might be used to mimic the function of another.

LATCHING RELAYS

Latching relays require one pulse of coil power to move their contacts in one direction, and another, separate one to move them back. Repeated pulses from the same input have no effect. Latching relays are useful in applications where power must be conserved since they require none to maintain their last position, or where it is desirable to have a relay that stays where it was during an interruption of power. They are most often divided into two sub- categories, magnetic latch and mechanical latch.

Magnetic latch relays employ either a permanent or "remanent" magnet to hold their last set Position. The permanent magnet type has the advantage, in that it will not lose its memory no matter how long it is left in one position, while the remanent type if left latched will eventually lose its magnetic charge and drop out. It will also operate backwards if the reset side is subjected to excessive voltage, while the permanent magnet types will tolerate extreme overvoltage to either input without malfunction or damage. The rest of this discussion will address only permanent magnet types.

Permanent magnet latch relays can have either single or dual coils. They will operate in one direction when power is applied with one polarity, and will reset when polarity is reversed on the single coil types, or when properly polarized voltage is applied to the reset coil of a dual version. Most dual coil types can also be used as single coil versions if necessary or desirable. Nearly all AC controlled magnetic latch relays have single coils that employ steering diodes to differentiate between operate and reset commands.

Mechanical latching relays use a catch device to hold their contacts in their last set Position until commanded to change state, usually by means of energizing a second coil. These types are often constructed in such a manner that when the operate coil is energized the contacts will go to the operated position regardless of whether the reset coil is energized or not. They will stay in that position only if the reset coil is not energized when power is removed from the operate side. This " operate coil dominant" operation can be especially useful in certain applications where it is desirable to have the relay function as a non-latching type unless an event has occurred, at which time the reset coil is de-energized. Packaging machinery that places several units into a single container would be a good example.

SEQUENCE RELAYS

Sequence or stepper relays change the state of their contacts upon successive pulses of power to a single coil. Most employ some form of ratchet and cam assembly that requires several pulses to make one revolution of the cams. Many, but not all, have their cams arranged so that each contact transfers with each pulse. That is, if a contact is open it will close, if closed it will open. By utilizing two sets of double-throw contacts, these devices can perform a number of useful functions. They are most commonly used to equalize wear on two devices that are used to perform a single function. As each command for a device to operate is received, the one that did not operate last is energized. One of the most common uses of this function is sewage lift stations where two pumps sit side by side with only one operating at a time in normal service.

Sequence relays can also be used to perform other repetitive functions by altering the arrangement or number of lobes on their cams. For example, a sequence could be set up controlling two loads with successive pulses where one would come on, then the other, then both , then both would go off. Literally any such sequence is possible that has a number of steps that will divide evenly into the number of pulses required to rotate the cam one full turn.

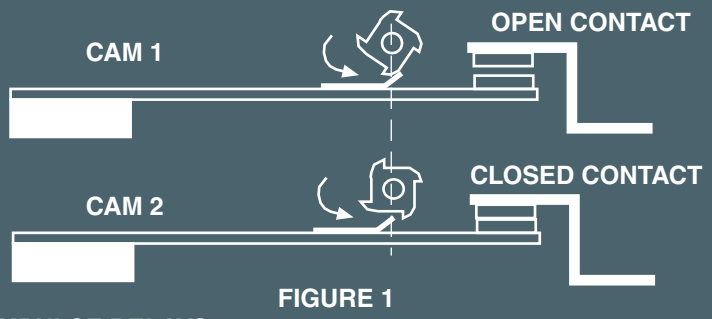


FIGURE 1

IMPULSE RELAYS

Impulse relays are a form of sequence relay that will only perform the first function described earlier, each contact transfers on each pulse. In many cases the terms sequence and impulse can be used interchangeably, but not all.

Many impulse relays are made up of a magnetic latch relay and a solid state steering circuit that, upon application of power, determines which position the relay is in and energizes the opposite coil. The contacts transfer and hold that position when power is removed. When reenergized the contacts transfer again and hold that position, and so on.

Impulse relays can be used as wear equalizers. They are also well suited for applications such as turning a single device on or off from one or more locations with a single momentary switch or push button at each station. For example, a conveyor could be started and/or stopped from multiple locations by means of a single button at each position.

711 IMPULSE SEQUENCING RELAY

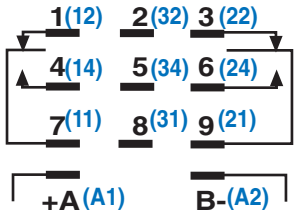
DPDT, 12 AMPS

UL Recognized
File No. E13224

FEATURES — BENEFITS

FEATURES	BENEFITS
ELECTRONIC STEERING CIRCUIT	TOGGLES LOADS ON/OFF (LOAD SHARING)
PERMANENT MAGNETIC LATCH	HOLDS LAST POSITION INDEFINITELY
INDUSTRY STANDARD BLADE BASE	DIRECTLY REPLACES OTHER MANUFACTURES
LED INDICATORS	VISUALLY INDICATES STEERING DIRECTION

WIRING DIAGRAM
(VIEWED FROM PIN END)



INPUT SIGNAL

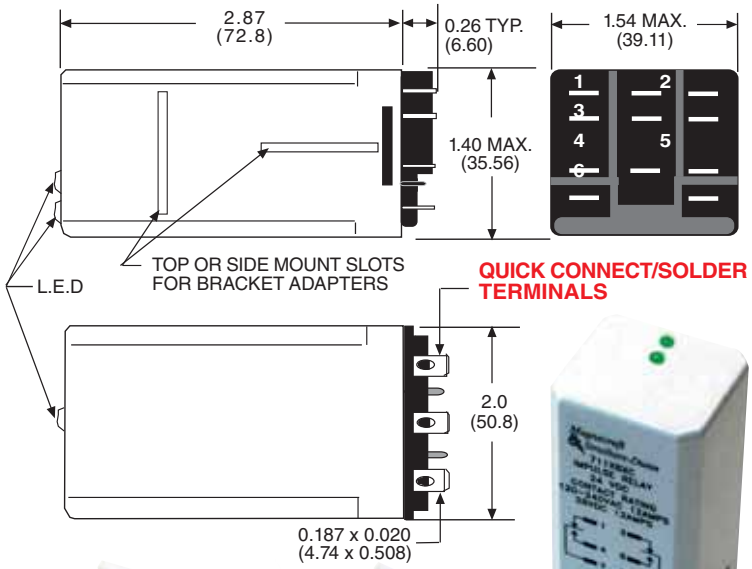
ALTERNATE NEMA OR IEC ( ) NUMBERS VIEWED FROM PIN SIDE

TYPE 711 IS AN ALTERNATING RELAY USED FOR LOAD SHARING OR TOGGLING ON / OFF OF ONE LOAD. EACH MOMENTARY PULSE, OR RE - APPLICATION OF INPUT VOLTAGE TOGGLES RELAY CONTACT. ONCE TRANSFERRED RELAY POSITION IS MAINTAINED INDEFINITELY BY INTERNAL MAGNETS.

GENERAL SPECIFICATIONS (@ 25°C)

	UNITS	
COIL		
Pull-in Voltage AC (50/60 Hz):≤	% of nominal	85
Pull-in Voltage DC:≤	% of nominal	85
Dropout Voltage AC (50/60 Hz):≥	% of nominal	Not applicable
Dropout Voltage DC:≥	% of nominal	Not applicable
Maximum Voltage:	% of nominal	110
Resistance Tolerance:	% ±	10
Coil Power AC (50/60 Hz):	VA	1.8
Coil Power DC:	W	1.8
Insulation System Per UL Standard 1446:		Class B (130°C)
Duty:		Intermittent
CONTACTS		
Contact Material:		Silver alloy, gold flashed
Contact Rating AC Amperes (AC1):	A	12
Contact Rating AC Voltage:	V	240
Contact Rating DC Amperes (DC1):	A	12
Contact Rating DC Voltage:	V	28
Horse Power (AC):	HP	1/3 @ 120
Horse Power (AC):	HP	1/2 @ 240
Pilot Duty (60 Hz):		Not applicable
Minimum Recommended Load:	ma	100 @ 5 VDC or 0.5 W
TIMING		
Operate Time:	ms	35
Release Time:	ms	35
DIELECTRIC STRENGTH		
Coil to Contacts:	V rms	1500
Across Open Contacts:	V rms	500
Pole to Pole:	V rms	1500
Insulation Resistance:	megohms minimum @VDC	1000 @ 500
TEMPERATURE		
Operating, AC Lower:	°C	-45
Operating, AC Upper:	°C	+70
Operating, DC Lower:	°C	-45
Operating, DC Upper:	°C	+70
Storage, Lower:	°C	-45
Storage, Upper:	°C	+105
LIFE EXPECTANCY		
Electrical @ Rated Load (AC1):	operations	100,000
Mechanical @ no Load :	operations	10,000,000
MISCELLANEOUS		
Operating Position:		Any
Insulation Material:		Molded plastic
Enclosure Material:		Clear Polycarbonate
Cover Protection Category:	IP	40
Weight:	grams	110

OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



DIN ADAPTER
16-711C4

FLANGE ADAPTER
16-711C1

TOP OR SIDE MOUNT BRACKET ADAPTERS

ORDERED AND SHIPPED SEPARATELY

Mating Socket
70-463-1
See section 7

STANDARD PART NUMBERS	NOMINAL INPUT VOLTAGE
AC OPERATED, 12 AMP	
711XBXCL-24A	24 VAC
711XBXCL-120A	120 VAC
DC OPERATED, 12 AMP	
711XBXCL-12D	12 VDC
711XBXCL-24D	24 VDC
711XBXCL-110D	110 VDC

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755/250ML OCTAL BASE MAGNETIC LATCHING RELAY

c UL us
UL Recognized
File No. E43641

FEATURES	BENEFITS
11 PIN OCTAL BASE:	EASILY INSTALLED IN EXISTING OR READILY AVAILABLE SOCKETS
16 AMP CONTACT RATING:	ACCOMMODATES MOST CONTROL CIRCUIT LOADS
PERMANENT MAGNET LATCHING MECHANISM:	STAYS IN LAST SET POSITION INDEFINITELY WITH NO EXTERNAL POWER REQUIRED

GENERAL SPECIFICATIONS (@ 25°C)

	UNITS	
COIL		
Pull-in Voltage AC (50/60 Hz):≤	% of nominal	85
Pull-in Voltage DC:≤	% of nominal	80
Dropout Voltage AC (50/60 Hz):≥	% of nominal	Not applicable
Dropout Voltage DC:≥	% of nominal	Not applicable
Maximum Voltage:	% of nominal	500
Resistance Tolerance:	% ±	10
Coil Power AC (50/60 Hz):	VA	2
Coil Power DC:	W	1.64
Insulation System Per UL Standard 1446:		Class B (130°C)
Duty:		Single coil Continuous Dual coil intermittent
CONTACTS		
Contact Material:		Silver alloy, gold flashed
Contact Rating AC Amperes (AC1):	A	16
Contact Rating AC Voltage:	V	240
Contact Rating DC Amperes (DC1):	A	16
Contact Rating DC Voltage:	V	28
Horse Power (AC):	HP	1/3 @ 120 V
Horse Power (AC):	HP	1/2 @ 240 V
Pilot Duty (60 Hz):		Not applicable
Minimum Recommended Load:	ma	100 @ 5 VDC or 0.5 W
TIMING		
Operate Time:	ms	30
Release Time:	ms	30
DIELECTRIC STRENGTH	V rms	2500
Coil to Contacts:	V rms	1500
Across Open Contacts:	V rms	2500
Pole to Pole:	V rms	Not applicable
Contacts to Frame:	megohms	1000 @ 500
Insulation Resistance:	minimum @VDC	
TEMPERATURE		
Operating, AC Lower:	°C	-30
Operating, AC Upper:	°C	+70
Operating, DC Lower:	°C	-30
Operating, DC Upper:	°C	+75
Storage, Lower:	°C	-30
Storage, Upper:	°C	+105
LIFE EXPECTANCY		
Electrical @ Rated Load (AC1):	operations	100,000
Mechanical @ no Load :	operations	10,000,000
MISCELLANEOUS		
Operating Position:		Any
Insulation Material:		Molded plastic
Enclosure Material:		Clear Polycarbonate
Cover Protection Category:	IP	40
Weight:	grams	170

MAGNETIC LATCHING RELAY WITH 11 PIN OCTAL BASE. OPERATES BY PULSED INPUT. PERMANENT MAGNET MAINTAINS LAST POSITION.

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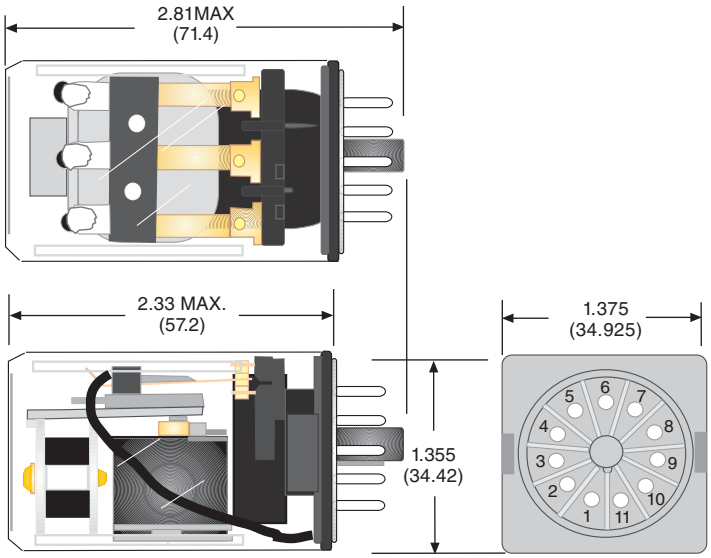
755/250ML OCTAL BASE MAGNETIC LATCHING RELAY

DPDT, 16 AMPS

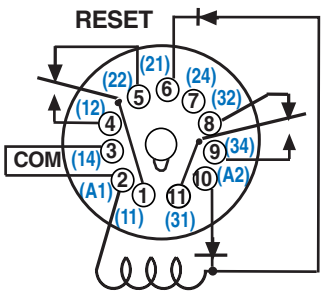
OUTLINE DIMENSIONS

DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).

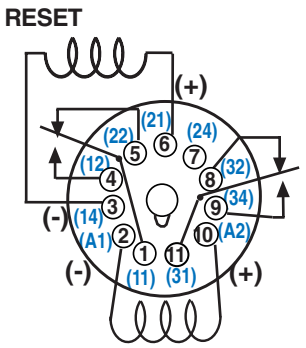


8 PIN OCTAL BASE
NOT SHOWN

WIRING DIAGRAM
(VIEWED FROM PIN END)



AC OPERATE



DC OPERATE

ALTERNATE NEMA
OR IEC ( ) NUMBERS
VIEWED FROM
PIN SIDE

ORDERING CODE

755	XBX		C		-120A

CLASS:

CONTACT CONFIGURATION:
DPDT: **XBX**

OPTIONS:
MAGNETIC BLOWOUT: **CODE 69**
SILVER TIN CONTACTS: **CODE 36**

PLAIN COVER:
CODE C

DUAL COIL:
CODE D (DC ONLY)

SINGLE COIL:
NO CODE

COIL VOLTAGE:
6, 12, 24, 120, 220/230, 240 **ADD "A" FOR AC COILS**
6, 12, 24, 48, 110 **ADD "D" FOR DC COILS**

Mating Sockets
70-750D8-1, 70-750D11-1,
70-464-1, 70-465-1: SCREW/DIN
70-169-1, 70-170-1: SCREW/PANEL
See section 7

STANDARD PART NUMBERS		COIL MEASURED @ 25 °C		
NEW PART NUMBER	SUPERCEDES	NOMINAL INPUT VOLTAGE	OPERATE VOLTAGE MIN.	NOMINAL RESISTANCE (OHMS)
AC OPERATED SINGLE COIL, 16 AMP				
755XBXC-24A	W250AML2CPX-8	24 VAC	19.2 VAC	740 Ω
755XBXC-120A	W250AML2CPX-9	120 VAC	96 VAC	10,000 Ω
755XBXC-240A	W250AML2CPX-10	240 VAC	192 VAC	36,00 Ω
DC OPERATED DUAL COIL, 16 AMP				
755XBXCD-12D	W250ML2CPX-6	12 VDC	8.4 VDC	88/88 Ω
755XBXCD-24D	W250ML2CPX-7	24 VDC	16.7 VDC	350/350 Ω
755XBXCD-110D	W250ML2CPX-8	110 VDC	77 VDC	9000/9000 Ω

RETROFITS IDEC RR2KP-U, SEE END OF SECTION 5 FOR CROSS REFERENCE

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285/388ML SQUARE BASE MAGNETIC LATCHING RELAY

UL Recognized
File No. E43641

Recognized Component mark for Canada and the United States.

COMPLIES WITH REQUIREMENTS OF

* IEC STANDARDS 947-4-1 AND 947-5-1 LOW VOLTAGE DIRECTIVE
* IEC = INTERNATIONAL ELECTROTECHNICAL COMMISSION
* CE TESTING AND EVALUATION PERFORMED BY THE UNDERWRITERS LABORATORIES AS A THIRD PARTY PARTICIPANT

FEATURES	BENEFITS
11 PIN BLADE TERMINAL SQUARE BASE:	ACCEPTS STANDARD 0.187" QUICK CONNECT TERMINALS AS WELL AS EXISTING READILY AVAILABLE SOCKETS
CONSERVATIVE 10 AMP CONTACT RATING:	WILL TOLERATE SIGNIFICANT ACCIDENTAL OVERLOADS WITHOUT PREMATURE FAILURE
3 AMP 600 VAC CONTACT RATING:	ACCOMMODATES NEARLY ALL CONTROL CIRCUIT VOLTAGES

GENERAL SPECIFICATIONS (@ 25°C)

	UNITS	
COIL		
Pull-in Voltage AC (50/60 Hz):≤	% of nominal	85
Pull-in Voltage DC:≤	% of nominal	80
Dropout Voltage AC (50/60 Hz):≥	% of nominal	Not applicable
Dropout Voltage DC:≥	% of nominal	Not applicable
Maximum Voltage:	% of nominal	500
Resistance Tolerance:	% ±	10
Coil Power AC (50/60 Hz):	VA	2.1
Coil Power DC:	W	1.9
Insulation System Per UL Standard 1446:		Class B (130°C)
Duty:		Single coil Continuous Dual coil intermittent
CONTACTS		
Contact Material:		Silver alloy, gold flashed
Contact Rating AC Amperes (AC1):	A	10
Contact Rating AC Voltage:	V	240
Contact Rating DC Amperes (DC1):	A	10
Contact Rating DC Voltage:	V	28
Horse Power (AC):	HP	1/3 @ 120 V
Horse Power (AC):	HP	1/2 @ 240 V
Pilot Duty (60 Hz):		Not applicable
Minimum Recommended Load:	ma	100 @ 5 VDC or 0.5 W
TIMING		
Operate Time:	ms	30
Release Time:	ms	30
DIELECTRIC STRENGTH		
Coil to Contacts:	V rms	2500
Across Open Contacts:	V rms	1500
Pole to Pole:	V rms	2500
Contacts to Frame:	V rms	Not applicable
Insulation Resistance:	megohms minimum @VDC	1000 @ 500
TEMPERATURE		
Operating, AC Lower:	°C	-40
Operating, AC Upper:	°C	+70
Operating, DC Lower:	°C	-40
Operating, DC Upper:	°C	+75
Storage, Lower:	°C	-45
Storage, Upper:	°C	+105
LIFE EXPECTANCY		
Electrical @ Rated Load (AC1):	operations	100,000
Mechanical @ no Load :	operations	10,000,000
MISCELLANEOUS		
Operating Position:		Any
Insulation Material:		Molded plastic
Enclosure Material:		Clear Polycarbonate
Cover Protection Category:	IP	40
Weight:	grams	87

MAGNETIC LATCHING RELAY WITH SQUARE BASE. OPERATES BY PULSED INPUT. PERMANENT MAGNET MAINTAINS LAST POSITION.

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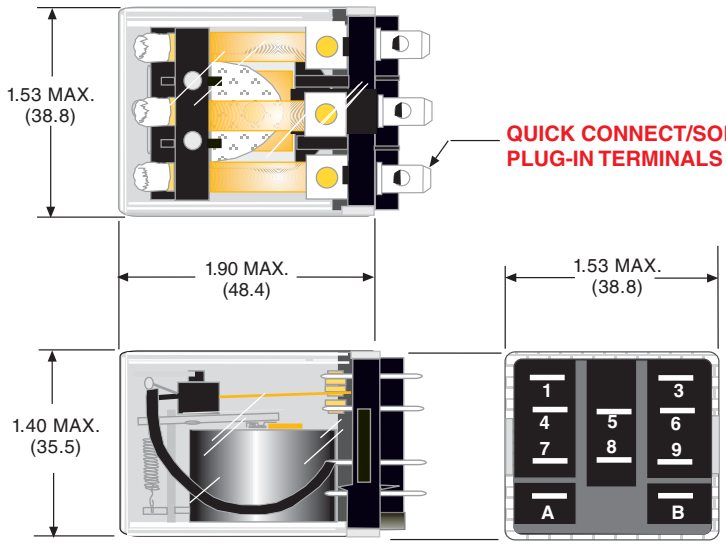
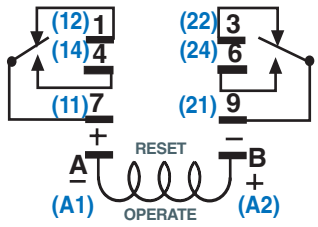
285/388ML SQUARE BASE MAGNETIC LATCHING RELAY

DPDT, 10 AMPS

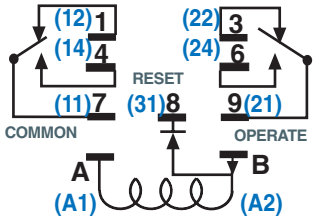
OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



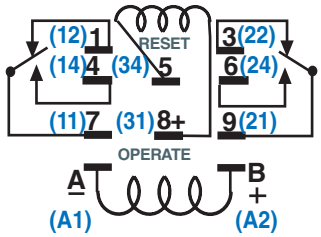
WIRING DIAGRAM
(VIEWED FROM PIN END)



SINGLE COIL (DC)

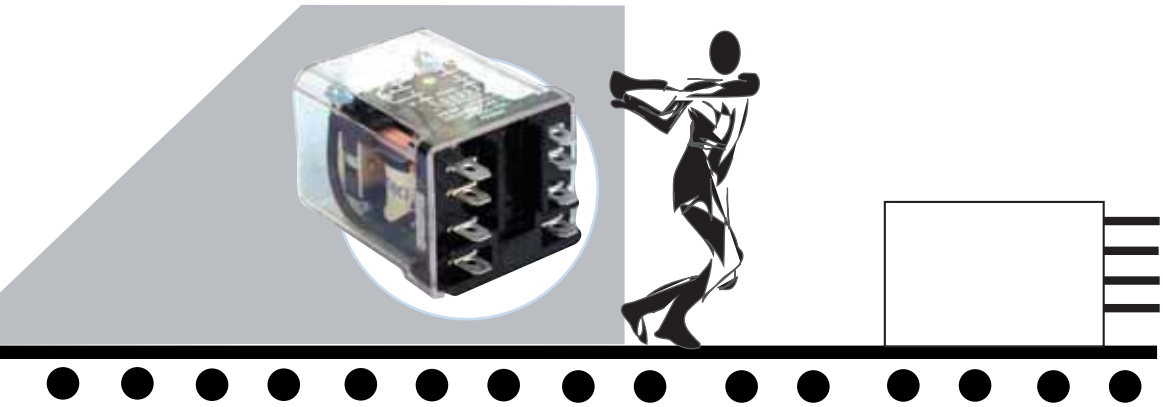


SINGLE COIL (AC)



DUAL COIL (DC)

ALTERNATE NEMA
OR IEC ( ) NUMBERS
VIEWED FROM
PIN SIDE



Mating Sockets
70-463-1: SCREW/DIN, 70-124-1: SOLDER
70-178-1, 70-178-2: PRINTED CIRCUIT
70-124-2: QUICK CONNECT
See section 7

ORDERING CODE

285 XBX C -120A

CLASS:

CONTACT CONFIGURATION:
DPDT: **XBX**

PLAIN COVER:
CODE C

COIL VOLTAGE:
6, 12, 24, 120, 220/230, 240 **ADD "A" FOR AC COILS**
6, 12, 24, 48, 110 **ADD "D" FOR DC COILS**

STANDARD PART NUMBERS	EQUIVALENT PART NUMBERS	COIL MEASURED @ 25 °C	
		NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED, SINGLE COIL, 10 AMP			
285XBXC-120A	W388AMLCPX-9	120 VAC	10,000 Ω
DC OPERATED, SINGLE COIL, 10 AMP			
285XBXC-12D	W388MLCPX-6	12 VDC	120 Ω
285XBXC-24D	W388MLCPX-7	24 VDC	470 Ω
DC OPERATED, DUAL COIL, 10 AMP			
285XBXCD-12D	W388ML2CPX-6	12 VDC	88/88 Ω
285XBXCD-24D	W388ML2CPX-7	24 VDC	350/350 Ω

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303 SQUARE BASE POWER MAGNETIC LATCHING RELAYS

UL Recognized
File No. E13224

FEATURES	BENEFITS
0.250" QUICK CONNECT/ SOLDER TERMINALS:	SIMPLE INSTALLATION, WILL ACCEPT FULLY INSULATED (BOOTED) TERMINALS
2 MM CONTACT GAPS:	MEETS NEARLY ALL INTERNATIONAL REQUIREMENTS FOR SPACING
COMPACT DESIGN:	HANDLES "CONTACTOR LOADS" IN A CONTROL RELAY PACKAGE.
WIDE SELECTION OF COVER STYLES AND OPTIONS:	CAN BE "CUSTOMIZED" AS NEEDED WITHOUT EXCESSIVE COST OR MINIMUMS

GENERAL SPECIFICATIONS (@ 25°C)

	UNITS	
COIL		
Pull-in Voltage AC (50/60 Hz):≤	% of nominal	85
Pull-in Voltage DC:≤	% of nominal	80
Dropout Voltage AC (50/60 Hz):≥	% of nominal	Not applicable
Dropout Voltage DC:≥	% of nominal	Not applicable
Maximum Voltage:	% of nominal	500
Resistance Tolerance:	% ±	10
Coil Power AC (50/60 Hz):	VA	2
Coil Power DC:	W	1.64
Insulation System Per UL Standard 1446:		Class B (130°C) Class F (155°C)
Duty:		Continuous
CONTACTS		
Contact Material:		Silver alloy, gold flashed
Contact Rating AC Amperes (AC1):	A	30
Contact Rating AC Voltage:	V	277
Contact Rating DC Amperes (DC1):	A	30
Contact Rating DC Voltage:	V	28
Horse Power (AC):	HP	1/3 @ 120 V
Horse Power (AC):	HP	1/2 @ 208 V to 600 V
Pilot Duty (60 Hz):		Not applicable
Minimum Recommended Load:	ma	100 @ 5 VDC or 0.5 W
TIMING		
Operate Time:	ms	30
Release Time:	ms	30
DIELECTRIC STRENGTH		
Coil to Contacts:	V rms	4000
Across Open Contacts:	V rms	1000
Pole to Pole:	V rms	2200
Contacts to Frame:	V rms	Not applicable
Insulation Resistance:	megohms minimum @VDC	1000 @ 500
TEMPERATURE		
Operating, AC Lower:	°C	-40
Operating, AC Upper:	°C	+60
Operating, DC Lower:	°C	-40
Operating, DC Upper:	°C	+65
Storage, Lower:	°C	-40
Storage, Upper:	°C	+105
LIFE EXPECTANCY		
Electrical @ Rated Load (AC1):	operations	100,000
Mechanical @ no Load :	operations	10,000,000
MISCELLANEOUS		
Operating Position:		Any
Insulation Material:		Molded plastic
Enclosure Material:		Clear Polycarbonate
Cover Protection Category:	IP	40
Weight:	grams	170

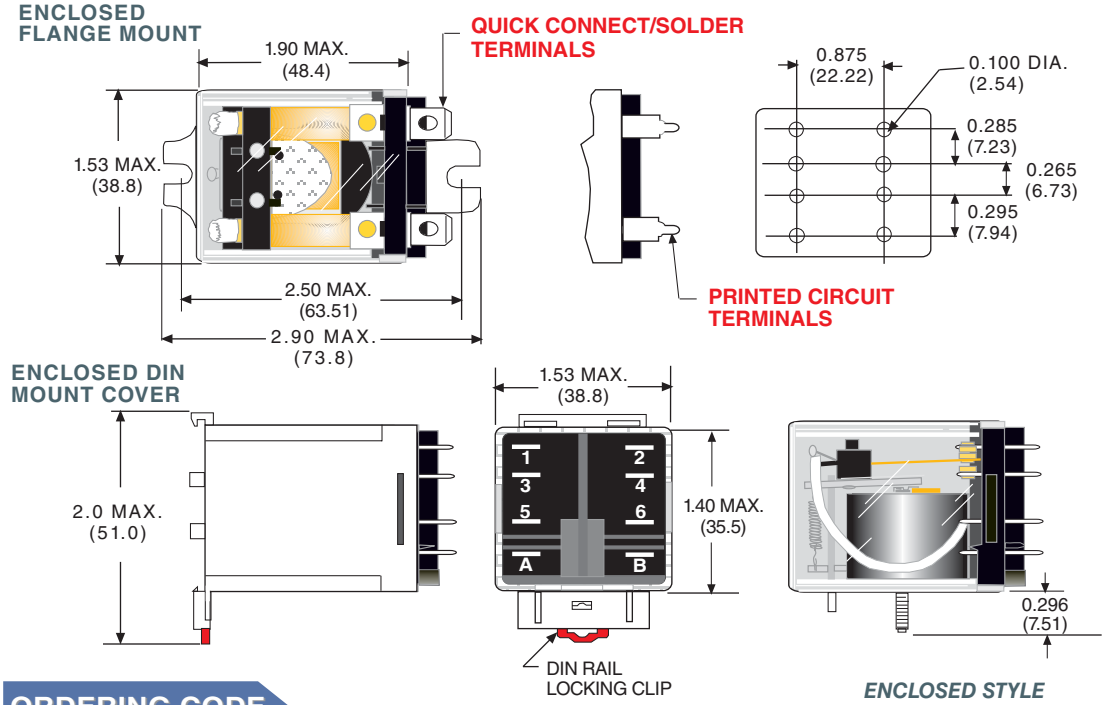
MAGNETIC LATCHING RELAY WITH SQUARE BASE. OPERATES BY PULSED INPUT AND MAINTAINS LAST POSITION.

THE CLASS 303 RELAY HAS BEEN DESIGNED FOR INSTALLATION OF FULLY INSULATED 0.250" QUICK CONNECT TERMINALS. CONTACT GAPS ARE 2 MILLIMETERS WIDE TO MEET MOST STANDARDS FOR CREEPAGE AND CLEARANCE. THE OPTIONAL MAGNETIC BLOWOUT ALLOWS FOR HIGH VOLTAGE DC SWITCHING APPLICATIONS. ITS LATCH MECHANISM KEEPS IT IN ITS LAST SET POSITION UNTIL COMMANDED TO CHANGE BY MEANS OF A SEPARATE SIGNAL.

303 SQUARE BASE POWER MAGNETIC LATCHING RELAYS

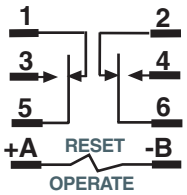
DPDT, 30 AMPS

OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).

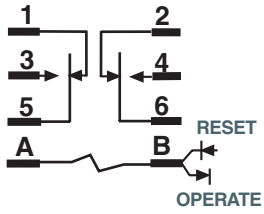


ENCLOSED STYLE CHOICE OF 6 -32 STUD OR TAPPED CORE WITH ANTI ROTATION TAB.

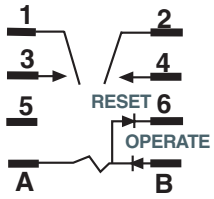
WIRING DIAGRAM
(VIEWED FROM PIN END)



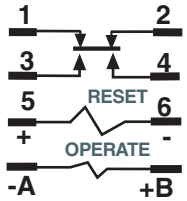
XBX DPDT
(SINGLE COIL)



XBX DPDT
(AC SINGLE COIL)



BXX DPST - N.O.
(AC SINGLE COIL)



XHX SPDT - N.C. - N.O.
(DB - DM), (DUAL COIL)

ORDERING CODE

F	303	XBX	C1		L	-240A

COILS:
130ºC: **NO CODE**, 155ºC: **CODE F**

CLASS:
303 - 30 AMPS RATING WITH 0.25 QUICK CONNECT/SOLDER TERMINALS

CONTACT ARRANGEMENTS:
XBX: DPDT, BXX: DPST-N.O.
XHX: SPDT - DM -DB, XXB: DPST-N.C.

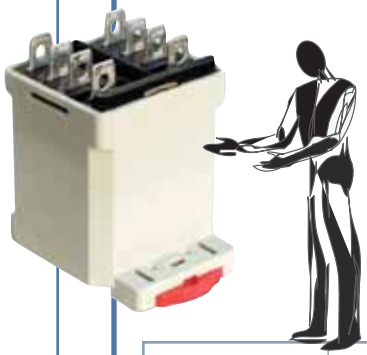
CONSTRUCTION STYLE:
*ENCLOSED, PLAIN COVER: **CODE C**
ENCLOSED, SIDE FLANGE MOUNT: **CODE C1**
ENCLOSED, 6-32 TAPPED CORE & ANTI-ROTATION TAB: **CODE CS2**
ENCLOSED, 6-32 STUD & ANTI-ROTATION TAB: **CODE CS2**
ENCLOSED, TOP FLANGE MOUNT: **CODE C3**
ENCLOSED, DIN MOUNT: **CODE C4**

TERMINALS STYLE:
SOLDER/QUICK CONNECT TERMINALS: **NO CODE**
*PRINTED CIRCUITS TERMINALS: **CODE T**

OPTIONS:
L.E.D. STATUS LAMP: **CODE L** (NOT AVAILABLE **W/CODE 4**)
MAGNET BLOWOUT: **CODE 69**
DUAL COIL: **CODE D

COIL VOLTAGE:
6, 12, 24, 120, 240 **ADD "A" FOR AC COILS**
6, 12, 24, 48, 110-125 **ADD "D" FOR DC COILS**

* Note: Code "C" Recommended To Be Used With Printed Circuit Terminals
** Note: Dual Coil Not Available On Xbx Contact Arrangement



STANDARD PART NUMBERS	CONTACT CONFIGU-RATION	COIL MEASURED @ 25 °C NOMINAL INPUT VOLTAGE	COIL MEASURED @ 25 °C NOMINAL RESISTANCE (OHMS)
AC OPERATED, SINGLE COIL, 30 AMP			
303BXXC3-120A	DPST-N.O	120 VAC	6300 Ω
303XBXC1-120A	DPDT	120 VAC	6300 Ω
DC OPERATED, SINGLE COIL, 30 AMP			
303XBXC1-24D	DPDT	24 VDC	300 Ω
303XBXC4-24D	DPDT	24 VDC	300 Ω
303XBX69C-24D	DPDT	24 VDC	300 Ω
DC OPERATED, DUAL COIL, 30 AMP			
303XHXC1D-12D	SPDT-N.C.-N.O. (DB-DM)	12 VDC	70/70 Ω

RETROFITS POTTER & BRUMFIELD KUB
SEE END OF SECTION 5 FOR CROSS REFERENCE

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B255 INDUSTRIAL PLUG - IN LATCHING RELAY

UL Recognized
File No. E13224

UL Listed industrial control equipment 225G when used with 27390D socket

FEATURES — BENEFITS

FEATURES	BENEFITS
INDUSTRIAL PLUG-IN CONSTRUCTION	ULTIMATE RUGGEDNESS & RELIABILITY.
2 COILS WITH OPERATE COIL DOMINANT	VERSATILE OPERATION
MULTIPLE CONTACT ARRANGEMENTS AND AVAILABLE OPTIONS	CAN BE PURCHASED EXACTLY AS NEEDED
GOLD DIFFUSED CONTACTS STANDARD	WILL NOT TARNISH, LOW CONTACT RESISTANCE FOR THE LIFE OF THE RELAY

GENERAL SPECIFICATIONS (@ 25ºC)

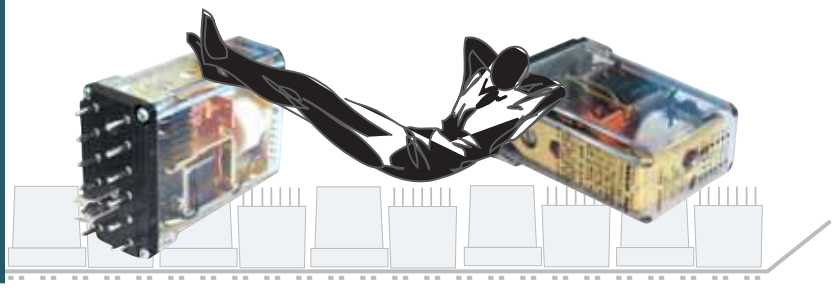
	UNITS	
COIL		
Pull-in Voltage AC (50/60 Hz):≤	% of nominal	85
Pull-in Voltage DC:≤	% of nominal	80
Dropout Voltage AC (50/60 Hz):≥	% of nominal	Not applicable
Dropout Voltage DC:≥	% of nominal	Not applicable
Maximum Voltage:	% of nominal	110
Resistance Tolerance:	% ±	10
Coil Power AC (50/60 Hz):	VA	5
Coil Power DC:	W	2
Insulation System		
Per UL Standard 1446:		Class B (130ºC)
Duty:		Continuous
CONTACTS		
Contact Material:		Silver alloy, gold flashed
Contact Rating AC Amperes (AC1):	A	10
Contact Rating AC Voltage:	V	120
Contact Rating DC Amperes (DC1):	A	10
Contact Rating DC Voltage:	V	24
Horse Power (AC):	HP	None
Horse Power (AC):	HP	None
Pilot Duty (60 Hz):		Not applicable
Minimum Recommended Load:	ma	100 @ 5 VDC or 0.5 W
TIMING		
Operate Time:	ms	25
Release Time:	ms	20
DIELECTRIC STRENGTH		
Coil to Contacts:	V rms	1500
Across Open Contacts:	V rms	1500
Pole to Pole:	V rms	1500
Contacts to Frame:	V rms	1500
Insulation Resistance:	megohms minimum @VDC	1000 @ 500
TEMPERATURE		
Operating, AC Lower:	ºC	-10
Operating, AC Upper:	ºC	+60
Operating, DC Lower:	ºC	-10
Operating, DC Upper:	ºC	+60
Storage, Lower:	ºC	-40
Storage, Upper:	ºC	+105
LIFE EXPECTANCY		
Electrical @ Rated Load (AC1):	operations	100,000
Mechanical @ no Load :	operations	10,000,000
MISCELLANEOUS		
Operating Position:		Any
Insulation Material:		Molded plastic
Enclosure Material:		Clear Polycarbonate
Cover Protection Category:	IP	50
Weight:	grams	215

UL CONTACT LOAD RATINGS TABLE

VOLTS	MAKE	CARRY	BREAK	
			RESISTIVE	INDUCTIVE
24 VDC	30 A	10 A	10 A	10 A
120 VAC	30 A	10 A	10 A	3 A
240 VAC	30 A	10 A	5 A	1 A
28 VDC	30 A	10 A	10 A	3 A
125 VDC	30 A	10 A	0.5 A	0.1 A
**FOR VERSIONS WITH SUFFIX "69" PERMANENT MAGNET BLOWOUTS				
125 VDC SM*	30 A	10 A	1.5 A	0.5 A
125 VDC DM	30 A	10 A	4 A	1.5 A
250 VDC SM	30 A	10 A	0.5 A	150 A
250 VDC DM	30 A	10 A	1.5 A	0.5 A
**FOR VERSIONS WITH SUFFIX "33" BIFURCATED CONTACTS				
120 VAC	1.5 A	5 A	5 A	2 A
240 VAC	7.5 A	2.5 A	2.5 A	1 A

** RELAYS WITH CODE 69 FEATURE (CHECK WITH FACTORY FOR UL & CSA LISTING)
* SM = SINGLE MAKE DM = DOUBLE MAKE

THE CLASS B255 IS A TWO COIL LATCHING VERSION OF THE GENERAL PURPOSE TYPE 219 RELAY. WHEN THE OPERATE COIL IS MOMENTARILY ENERGIZED, THE RELAY MECHANICALLY LATCHES IN THE ENERGIZED POSITION AND REMAINS IN THE ENERGIZED POSITION WITH THE POWER REMOVED FROM THE COIL. THE SECOND COIL WHEN MOMENTARILY ENERGIZED, PROVIDES ELECTRICAL RESET OF THE CONTACTS. ALL CONTACTS OPERATE FROM A COMMON ARMATURE TO PREVENT CONTACT OVERLAPPING. COILS ARE RATED FOR CONTINUOUS DUTY. NUCLEAR QUALIFIED VERSIONS ARE AVAILABLE. CONTACT THE FACTORY FOR DETAILS.



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B255 INDUSTRIAL PLUG - IN LATCHING RELAY

UP TO 3PDT, 10 AMPS

COIL SPECIFICATIONS @ 25ºC — AC COIL DATA (50/60 Hz)

NOMINAL VOLTAGE	RESET COIL (3 VA)		OPERATE COIL (5 VA)	
	RESISTANCE OHMS ±10%	COIL CURRENT (mA)	RESISTANCE OHMS ±10%	COIL CURRENT (mA)
6	3.0	840	1.10	800
12	14.5	256	4.20	410
24	52.0	150	15.5	200
120	1450	26.5	540	45.0
240	5000	4.8	1815	13.2

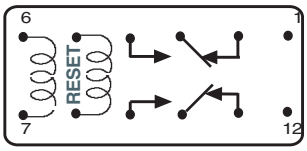
Current inrush on all AC coils is less than twice the listed milliamperes ratings as shown in the AC coil data table. Currents shown in table measured at 60 Hz.

COIL SPECIFICATIONS @ 25ºC — DC COIL DATA

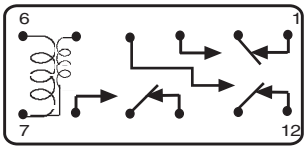
NOMINAL VOLTAGE	RESET COIL (1.4 W)		OPERATE COIL (1.8 W)	
	RESISTANCE OHMS ±10%	COIL CURRENT (mA)	RESISTANCE OHMS ±10%	COIL CURRENT (mA)
6	21.0	286	15.5	385
12	85.0	141	63.5	189
24	300	80	250	96.0
115/125	8000	14.4	6200	20.0

DC relays, 1.8 Watts (2.5 W @ 125VDC)

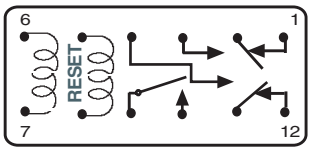
WIRING DIAGRAM (VIEWED FROM PIN END)



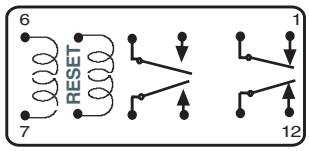
B255XBXP (DPDT)



B255XCXP (3PDT)



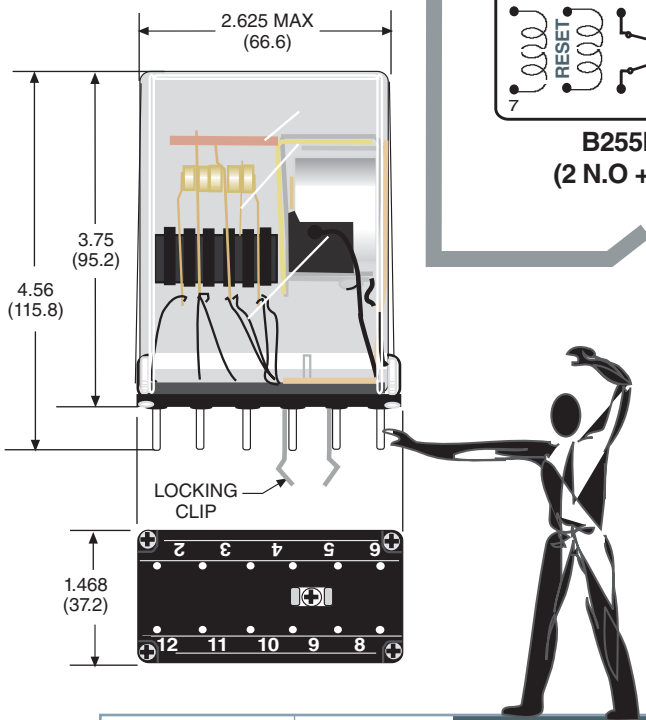
B255ABXP (DPDT + 1 N. O.)



B255BXBP (2 N.O + 2 N. C.)

OUTLINE DIMENSIONS

DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



Mating Socket
27390D
See section 7

ORDERING CODE

B255 | XCX | P | LM | -120A

CLASS:
B255 2 COIL LATCH PLUG-IN

CONTACT ARRANGEMENTS:
XBX: DPDT
XCX: 3PDT
ABX: SPST-NO & 2 FORM C
BXB: DPST-NO & 2 FORM B

STANDARD FEATURES:
POLYCARBONATE COVER: **CODE "P"**

OPTIONAL FEATURES:
INDICATOR LAMP ACROSS BOTH COILS: **CODE "L"**
MANUAL ACTUATOR: **CODE "M"**
LIGHT & ACTUATOR: **CODE "LM"**
PERM. MAGNET BLOWOUT: **CODE "69"**
BIFURCATED CONTACTS: **CODE "33"**
DC COIL SUPPRESSION: **CODE "V"**
AC COIL SUPPRESSION: **CODE "V1"**

COIL VOLTAGE:
6, 12, 24, 120, 240 **ADD "A" FOR AC COILS**
6, 12, 24, 115-125 **ADD "D" FOR DC COILS**

STANDARD PART NUMBERS	CONTACT CONFIGU-RATION	COIL MEASURED @ 25 ºC NOMINAL INPUT VOLTAGE	COIL MEASURED @ 25 ºC NOMINAL RESISTANCE (OHMS)
AC OPERATED, 10 AMP			
B255BXBP-120A	2 N.O. +2 N.C.	120 VAC	540/1450 Ω
B255XBXP-120A	DPDT	120 VAC	540/1450 Ω
B255XCXP-120A	3PDT	120 VAC	540/1450 Ω
DC OPERATED, DUAL COIL, 10 AMP			
B255BXBP-24D	DPDT	24 VDC	250/300 Ω

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385 DIN / PANEL MOUNTABLE LATCHING RELAY

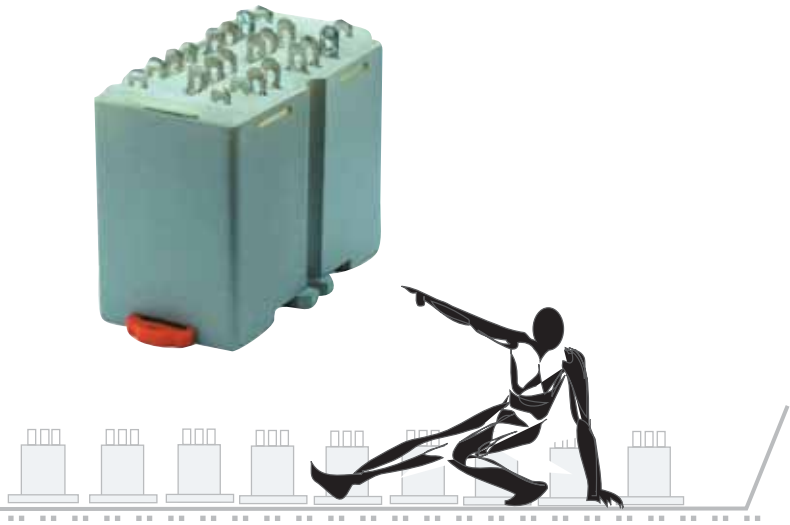
c UL us
PENDING

FEATURES	BENEFITS
UP TO 6PDT 15 AMP CONTACT:	MAXIMUM FLEXIBILITY OF USES EASILY HANDLES MODERATELY HEAVY LOADS
3 AMP 600 VAC RATING:	SUITABLE FOR NEARLY ALL CONTROL VOLTAGES
DIN RAIL/PANEL MOUNTABLE:	RAPID INSTALLATION -CAN REPLACE EXISTING OPEN TYPES SUCH AS POTTER & BRUMFIELD KUB WITHOUT PANEL MODIFICATION
RECTIFIED COILS ON AC TYPES:	RUNS COOLER & QUIETER, USES LESS ENERGY.

GENERAL SPECIFICATIONS (@ 25°C)

	UNITS	
COIL		
Pull-in Voltage AC (50/60 Hz):≤	% of nominal	85
Pull-in Voltage DC:≤	% of nominal	80
Dropout Voltage AC (50/60 Hz):≥	% of nominal	Not applicable
Dropout Voltage DC:≥	% of nominal	Not applicable
Maximum Voltage:	% of nominal	110
Resistance Tolerance:	% ±	10
Coil Power AC (50/60 Hz):	VA	2
Coil Power DC:	W	2.6
Insulation System Per UL Standard 1446:		Class B (130°C), F(155°C)
Duty:		Intermittent
CONTACTS		
Contact Material:		Silver alloy, gold flashed
Contact Rating AC Amperes (AC1):	A	15 / 3
Contact Rating AC Voltage:	V	277/ 600
Contact Rating DC Amperes (DC1):	A	10
Contact Rating DC Voltage:	V	28
Horse Power (AC):	HP	1/3 @120
Horse Power (AC):	HP	1/2 @ 208 to 600
Pilot Duty (60 Hz):		Not applicable
Minimum Recommended Load:	ma	100 @ 5 VDC or 0.5 W
TIMING		
Operate Time:	ms	25
Release Time:	ms	25
DIELECTRIC STRENGTH		
Coil to Contacts:	V rms	2000
Across Open Contacts:	V rms	500
Pole to Pole:	V rms	1500
Contacts to Frame:	V rms	Not applicable
Insulation Resistance:	megohms minimum @VDC	1000 @ 500
TEMPERATURE		
Operating, AC Lower:	°C	-40
Operating, AC Upper:	°C	+70
Operating, DC Lower:	°C	-40
Operating, DC Upper:	°C	+70
Storage, Lower:	°C	-40
Storage, Upper:	°C	+105
LIFE EXPECTANCY		
Electrical @ Rated Load (AC1):	operations	100,000
Mechanical @ no Load :	operations	10,000,000
MISCELLANEOUS		
Operating Position:		Any
Insulation Material:		Molded plastic
Enclosure Material:		Clear Polycarbonate
Cover Protection Category:	IP	40
Weight:	grams	85

THE CLASS 385 RELAY IS A MECHANICALLY LATCHED, ELECTRICALLY RESET RELAY, IT CAN BE FURNISHED WITH TWO, FOUR OR SIX SETS OF DOUBLE THROW CONTACTS, AND ALL POPULAR COIL VOLTAGES. AC COIL TYPES INCORPORATE BUILT IN RECTIFIERS FOR MAXIMUM COIL EFFICIENCY AND MINIMAL HEATING FOR CONTINUOUS DUTY CAPABILITY. ALL TERMINALS ARE STANDARD 0.187 INCH QUICK CONNECT AND ARE ALSO PIERCED FOR DIRECT SOLDER CONNECTION IF DESIRED. THE MOLDED PLASTIC DUST COVER SNAPS ONTO A STANDARD DIN RAIL, AS WELL AS INCORPORATING MOUNTING SLOTS THAT EXACTLY MATCH POTTER & BRUMFIELD'S KUB. UNLIKE MOST MECHANICAL LATCH RELAYS, THE 385 DOES NOT HAVE A DOMINANT COIL. IF BOTH COILS ARE ENERGIZED AT THE SAME TIME, ALL OF THE NORMALLY OPEN CONTACTS CLOSE, AND ALL NORMALLY CLOSED CONTACTS OPEN. WHICH EVER COIL IS DE-ENERGIZED FIRST, RELEASES AND LOCKS THE OTHER SIDE IN ITS ENERGIZED POSITION.



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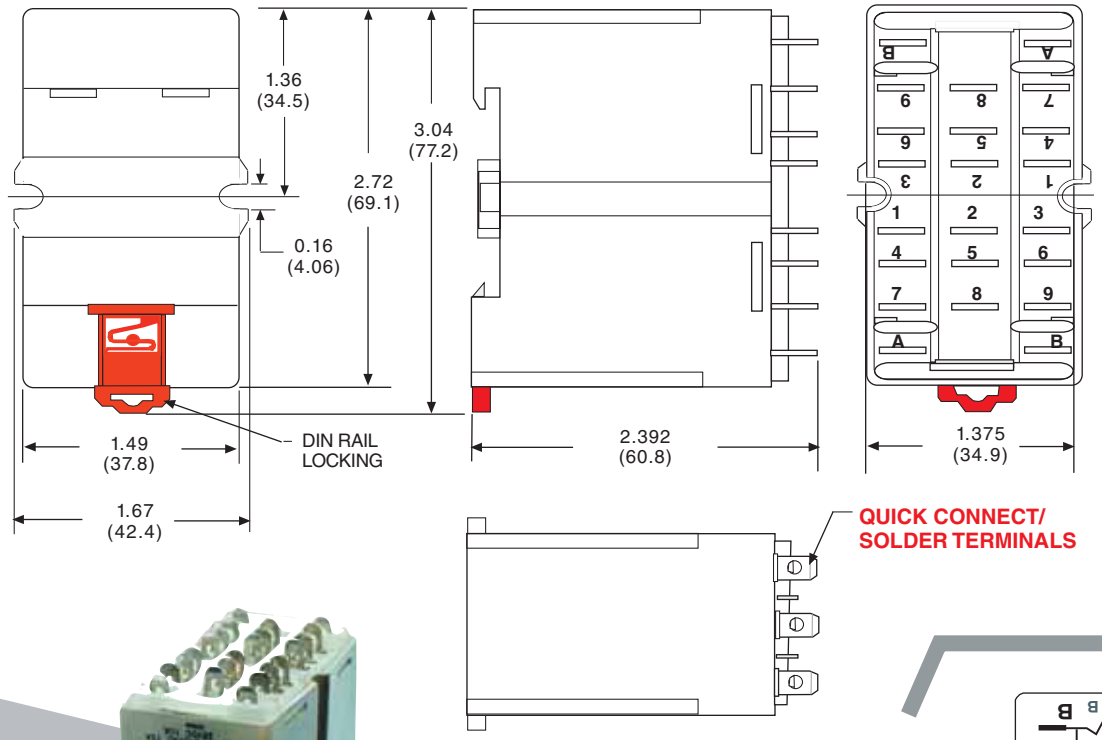
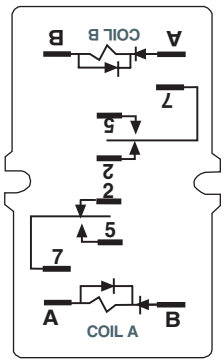
385 DIN / PANEL MOUNTABLE LATCHING RELAY

DPDT, 4PDT & 6PDT 15 AMPS

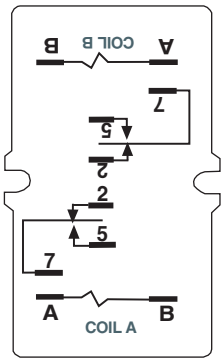
OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



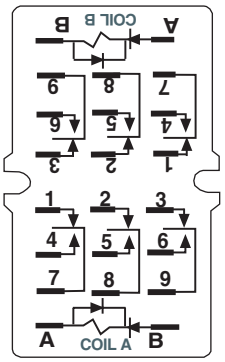
WIRING DIAGRAM
(VIEWED FROM PIN END)



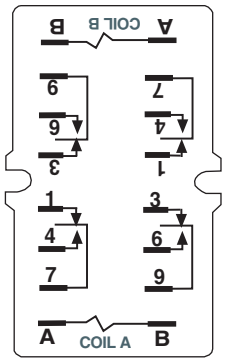
385XBX DPDT
(AC COIL)



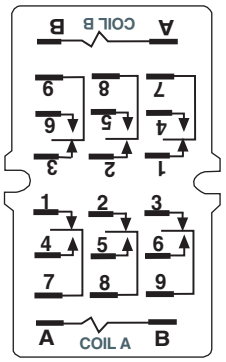
385XBX DPDT
(DC COIL)



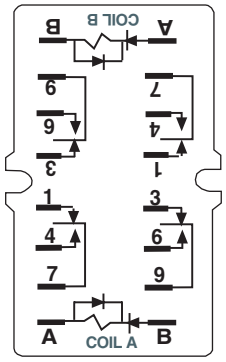
XFX 6PDT
(AC COIL)



XDX 4PDT
(DC COIL)



XFX 6PDT
(DC COIL)



XDX 4PDT
(AC COIL)

ORDERING CODE

F	385	XBX	-240A

COILS:
130ºC: **NO CODE**,
155ºC: **CODE F**

CLASS:
385 - 15 AMPS RATING WITH 0.187" QUICK CONNECT/ SOLDER TERMINALS

CONTACT ARRANGEMENTS:
XBX: DPDT,
XDX: 4PDT
XFX: 6PDT

COIL VOLTAGE:
6, 12, 24, 120, 240 **ADD "A" FOR AC COILS**
6, 12, 24, 48, 110-125 **ADD "D" FOR DC COILS**

STANDARD PART NUMBERS	CONTACT CONFIGU-RATION	COIL MEASURED @ 25 °C NOMINAL INPUT VOLTAGE	COIL MEASURED @ 25 °C NOMINAL RESISTANCE (OHMS)
AC OPERATED, DUAL COIL, 15 AMP			
385XDX-120A	4PDT	120 VAC	4800/4800 Ω
DC OPERATED, 15 AMP			
385XDX-12D	4PDT	12 VDC	85/85 Ω
385XDX-24D	4PDT	24 VDC	340/340 Ω

RETROFITS POTTER & BRUMFIELD KUB
SEE END OF SECTION 5 FOR CROSS REFERENCE

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311 SEQUENCE (STEPPER) RELAY

c UL us
UL Recognized
File No. E7104

FEATURES	BENEFITS
INDUSTRIAL PLUG-IN CONSTRUCTION:	RUGGED & RELIABLE
TRANSFER ON RELEASE VERSION AVAILABLE :	EXTRA LONG LIFE WHEN LOAD IS ENERGIZED ONLY WHEN THE 311'S COIL IS ON.
NON-STANDARD SEQUENCES AVAILABLE	CAN BE CUSTOMIZED WITH ANY SEQUENCE DIVISIBLE INTO EIGHT

GENERAL SPECIFICATIONS (@ 25ºC)

	UNITS	
COIL		
Pull-in Voltage AC (50/60 Hz):≤	% of nominal	85
Pull-in Voltage DC:≤	% of nominal	80
Dropout Voltage AC (50/60 Hz):≥	% of nominal	Not applicable
Dropout Voltage DC:≥	% of nominal	Not applicable
Maximum Voltage:	% of nominal	110
Resistance Tolerance:	% ±	10
Coil Power AC (50/60 Hz):	VA	5
Coil Power DC:	W	2
Insulation System Per UL Standard 1446:		Class B (130ºC)
Duty:		Continuous
CONTACTS		
Contact Material:		Silver alloy
Contact Rating AC Amperes (AC1):	A	5
Contact Rating AC Voltage:	V	120
Contact Rating DC Amperes (DC1):	A	5
Contact Rating DC Voltage:	V	30
Horse Power (AC):	HP	None
Horse Power (AC):	HP	None
Pilot Duty (60 Hz):		Not applicable
Minimum Recommended Load:	ma	100 @ 5 VDC or 0.5 W
TIMING		
Operate Time:	ms	35
Release Time:	ms	30
DIELECTRIC STRENGTH		
Coil to Contacts:	V rms	1500
Across Open Contacts:	V rms	500
Pole to Pole:	V rms	1500
Contacts to Frame:	V rms	Not applicable
Insulation Resistance:	megohms minimum @VDC	1000 @ 500
TEMPERATURE		
Operating, AC Lower:	ºC	-10
Operating, AC Upper:	ºC	+60
Operating, DC Lower:	ºC	-10
Operating, DC Upper:	ºC	+60
Storage, Lower:	ºC	-40
Storage, Upper:	ºC	+105
LIFE EXPECTANCY		
Electrical @ Rated Load (AC1):	operations	100,000
Mechanical @ no Load :	operations	10,000,000
MISCELLANEOUS		
Operating Position:		Any
Insulation Material:		Molded plastic
Enclosure Material:		Clear Polycarbonate
Cover Protection Category:	IP	50
Weight:	grams	190

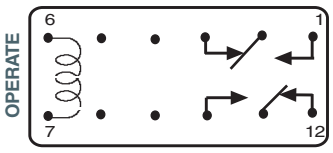
THE CLASS A311 RELAY IS A SEQUENCING VERSION OF THE CLASS 219 GENERAL PURPOSE RELAY. CONTACTS TRANSFER ON EACH IMPULSE TO THE COIL. MODELS ARE AVAILABLE WITH CONTACTS TRANSFERRING WHEN COIL IS ENERGIZED OR WHEN DE-ENERGIZED. A DOUBLE CAM MOVEMENT, ONE CAM PER SNAP SWITCH, ALLOWS ONE OR BOTH CONTACTS TO BE ENERGIZED OR DE-ENERGIZED WITH THE CAM ROTATING ONE HALF STEP WHEN THE COIL IS ENERGIZED AND THE OTHER HALF STEP WHEN THE COIL IS DE-ENERGIZED ASSURES RELIABLE SEQUENCING OF THE TWO SPDT SNAP SWITCHES.

311 SEQUENCE (STEPPER) RELAY

Magnecraft Struthers-Dunn Your Contact for Industrial Relays

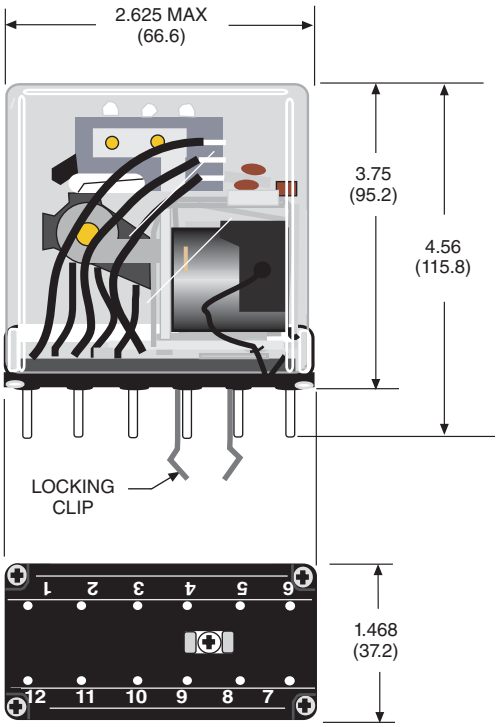
DPDT, 5 AMPS

WIRING DIAGRAM
(VIEWED FROM PIN END)



A311XBXP
A311XBXPR*
(DPDT)
TRANSFER ON RELEASE

OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



ORDERING CODE

A311	XBX	P	R	L	-120A

CLASS:
A311 INDUSTRIAL PLUG-IN , SEQUENCE RELAY, 5 AMP, DPDT

CONTACT ARRANGEMENTS:
XBX: DPDT

STANDARD FEATURES:
PLUG-IN WITH POLYCARBONATE COVER: **CODE P**

CONTACT TRANSFER:
WHEN COIL IS ENERGIZED: **NO CODE**
WHEN COIL IS DE-ENERGIZED: **CODE R**

OPTIONS:
INDICATOR LAMP: **CODE L**
COIL SUPPRESSION: **CODE V**

COIL VOLTAGE:
6, 12, 24, 120, 240 **ADD "A" FOR AC COILS**
6, 12, 24, 48, 110-125 **ADD "D" FOR DC COILS**

Mating Socket
27390D
See section 7

STANDARD PART NUMBERS	COIL MEASURED @ 25 °C	
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED, 5 AMP		
A311XBXP-120A	120 VAC	540 Ω
A311XBXP-240A	240 VAC	1815 Ω
A311XBXPR-120A	120 VAC	540 Ω
DC OPERATED, 5 AMP		
A311XBXP-24D	24 VDC	250 Ω
A311XBXPR-24D	24 VDC	250 Ω

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CROSS REFERENCE GUIDE

MAGNECRAFT & STRUTHERS-DUNN	POTTER & BRUMFIELD	MIDTEX
711XBXC-12D	KUR-11D15-12	619-11B200
711XBXC-24D	KUR-11D15-24	619-11C200
711XBXC-48D	KUR-11D15-48	619-11D200
711XBXC-110D	KUR-11D15-110	619-11F200

MAGNECRAFT & STRUTHERS-DUNN	IDEC
755XBXC-24A	RR2KP-U-AC24
755XBXC-120A	RR2KP-U-AC120
755XBXC-240A	RR2KP-U-AC240
755XBXCD-12D	RR2KP-U-DC12
755XBXCD-24D	RR2KP-U-DC24
755XBXCD-110D	RR2KP-U-DC110

MAGNECRAFT & STRUTHERS-DUNN	POTTER & BRUMFIELD
W388AMLCPX-9	285XBXC-120A	KUL11A15S-120
W388MLCPX-6	285XBXC-12D	KUL11D15S-12
W388MLCPX-7	285XBXC-24D	KUL11D15S-24
W388ML2CPX-6	285XBXCD-12D	KUL11D15D-12
W388ML2CPX-7	285XBXCD-24D	KUL11D15D-24

MAGNECRAFT & STRUTHERS-DUNN	POTTER & BRUMFIELD
385XDX-120A	KB-17AG-120 OR KUB-17A15-120
385XDX-12D	KB-17DG-12 OR KUB-17D15-12
385XDX-24D	KB-17DG-24 OR KUB-17D15-24

U. S. A.

MAGNECRAFT & STRUTHERS-DUNN
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OFFICE MUNICH
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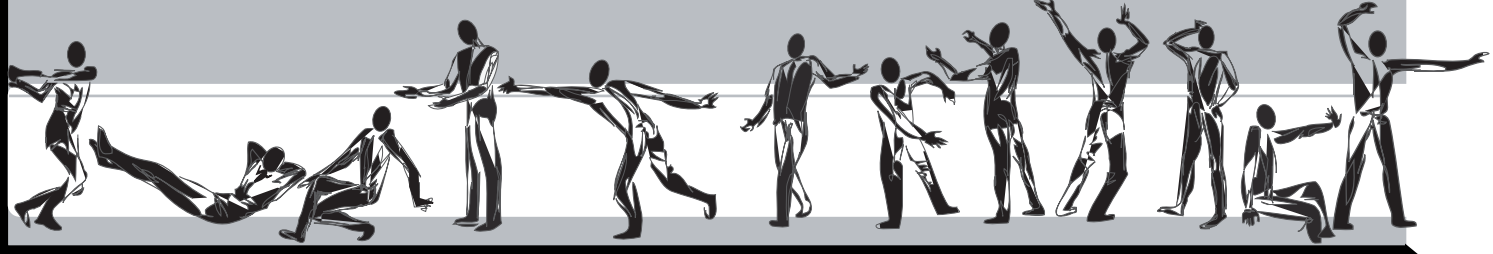
D 81476 MUNCHEN/GERMANY
TEL.: 4989 75080310 FAX: 4989 7559344
EMAIL: renatesteinback@magnecraft.de

FOR LATCHING RELAYS APPLICATION ENGINEERING ASSISTANCE

Joe Zintel, PRODUCT MANAGER
FAX: (847) 441-2522
EMAIL: jzintel@magnecraft.com



THE CROSS REFERENCE IS INTENDED TO MATCH FOOT PRINT, INTERNAL WIRING, AND CONTACT LOAD RATINGS.
CONSTRUCTION FEATURES AND GENERAL SPECIFICATIONS SHOULD BE COMPARED IF EXACT REPLACEMENT IS REQUIRED.