



Magnecraft & Struthers-Dunn
Your Contact for Relays

SECTION 3

POWER RELAYS & CONTACTORS
15 TO 300 AMPERES



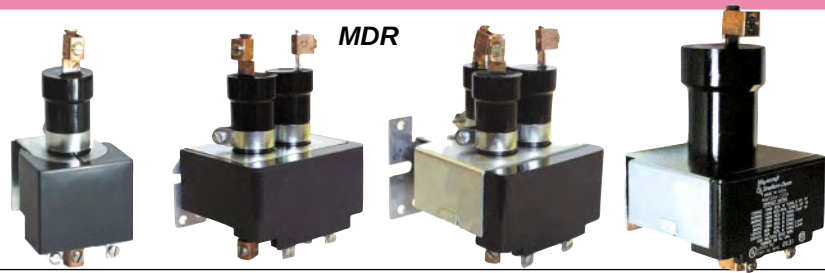
RELAY SERIES



199

ISO 9002

L W H
2.43-3.12 x 2.50 x 2.53



L W H
SEE PAGE XX

FEATURES

- PANEL MOUNT, OPEN STYLE CONSTRUCTION
- MULTI CONTACT CONFIGURATIONS UP TO 50 AMPS SWITCHING
- MAGNETIC BLOWOUT FOR DC SWITCHING
- CLASS "B" INSULATION SYSTEM
- SCREW OR BOX TERMINAL WIRE CONNECTIONS.
- AUXILIARY SWITCH.

- MERCURY DISPLACEMENT RELAY (MDR)
- UP TO 3 POLES, NO , NC OR COMBINATIONS OF NO & NC
- UP TO 100 AMPS SWITCHING
- LOW CONTACT RESISTANCE
- QUIET OPERATION RECYCLE PROGRAM

CONTACT DATA

CONTACT CONFIGURATION:

SEE CATALOG PAGE

1 TO 3PST-NO OR NC

CONTACT MATERIAL:

SILVER CADMIUM OXIDE,

MERCURY

CONTACT RESISTANCE:

50 MILLIOHMS (INITIAL)

2 - 3 MILLIOHMS (INITIAL)

MAX. CONTACT RATING:

SCREW TERMINAL:
30 AMPS UP TO 300 VAC, 28 VDC
BOX TERMINAL:
SPST-DM -UP TO 50 AMPS .
SCREW TERMINAL WITH MAGNETIC
BLOWOUT UP TO 20AMP @ 110 VDC

35 TO 100 AMPS @ 120-480VAC.
35-50 AMPS @ 600VAC
100 AMPS, 24-48 VDC
80 AMPS, 120VDC

COIL DATA

STANDARD VOLTAGE

AC:

24, 120 & 240 VAC

DC:

6, 12, 24 & 110 VDC

120 & 240 VAC

24 VDC

NOMINAL COIL POWER
VA: (VAC)
WATTS: (VDC)
INSULATION SYSTEM PER
UL STANDARD 1446

10 VA
2.0 WATTS

33 VA
9 WATTS

CLASS B

CLASS B

GENERAL DATA

AMBIENT TEMPERATURE
OPERATING:

- 30° C to + 50° C (AC.)
- 30° C to + 60° C (DC.)
- 50° C to + 100° C

- 35° C to + 60° C

STORAGE:

DIELECTRIC STRENGTH:
(COIL TO FRAME)

2200 V rms

2650 V rms

LIFE EXPECTANCY
ELECTRICAL:
MECHANICAL:

100,000 OPERATIONS
5 ,000,000 OPERATIONS

100,000 OPERATIONS
5,000,000 OPERATIONS

AGENCY APPROVALS

LISTED
367G

UL Listed
File No. E43641

LISTED
367G

UL Listed
File No. E52197

PAGE NUMBER

PAGE 3 - 12

PAGE 13 - 18



275



B101



101/102/103

L W H
3.62 x 2.985 x 2.75

- 2 COIL, COMPACT MOTOR REVERSING CONTACTOR
- 0.250 QUICK CCONNECT TERMINALS WITH UP TO 4 OPTIONAL AUXILIARY SWITCHES
- ENCAPSULATED COIL USED FOR AC OR DC MODELS
- MECHANICAL INTERLOCK, CENTER OFF WHEN BOTH COILS NOT ENERGIZED

L W H
2.84 x 2.80 x 2.90

- HEAVY DUTY DC SOLENOID STYLE CONTACTOR.
- DIN - RAIL OR PANEL MOUNT
- RATED UP TO 100 AMPS CONTINUOUS
- AWG 2 -12 PRESSURE WIRE CONNECTOR
- AC COILS AVAILABLE

L W H
SEE PAGE:XXXX

- HEAVY DUTY DC SOLENOID STYLE CONTACTOR
- CHOICE OF CONTACT CONFIGURATIONS
- RATED UP TO 300 AMPS CONTINUOUS
- AC COILS AVAILABLE

DUAL 3PST-NO (REVERSING)

SILVER CADMIUM OXIDE

100 MILLIOHMS (INITIAL)

1 HP @120 VAC (1-2-3 PHASE)
1.5 HP @ 240 VAC
3 HP @ 480 TO 600 VAC (2-3 PHASE)
15AMPS RESISTIVE
@ 120 VAC/30VDC

12 to 240 VAC
12 to 110 VDC

17 VA
5 WATTS

CLASS B

- 45° C to + 50° C (AC)
- 45° C to + 70° C (DC)

2500 V rms

100,000 OPERATIONS
5,000,000 OPERATIONS

SPST-NO OR NC

SILVER CADMIUM OXIDE

50 MILLIOHMS (INITIAL)

100 AMPS @ 120/240 VAC,30 VDC

-
12, 28, 48 VDC

-
11 WATTS

CLASS B

- 45° C to + 65° C (DC)

1500 V rms

100,000 OPERATIONS
500,000 OPERATIONS

SEE CATALOG PAGE

SILVER CADMIUM OXIDE

50 MILLIOHMS (INITIAL)

100 TO 300 AMPS
@ 120/240 VAC, 30 VDC

-
12, 28, 48 VDC

-
UP TO 14 WATTS

CLASS B

- 45° C to + 60° C (DC)

1500 V rms

100,000 OPERATIONS
500,000 OPERATIONS



**SPDT, DPDT, DPST-N.O.,
SPST-N.C.-D.B. & SPST-N.O.-D.M.,
10 TO 50 AMPS**



LISTED
367G



UL Listed
File No. E43641



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

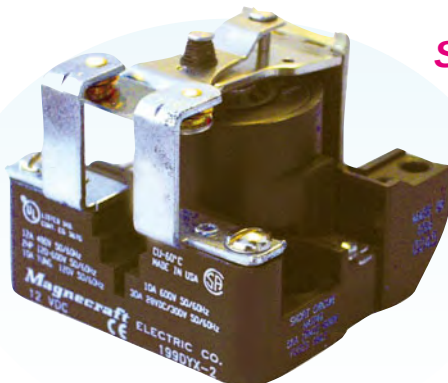
**MANUFACTURED UNDER
ISO 9002**

Optional metal enclosure
available, see page 12

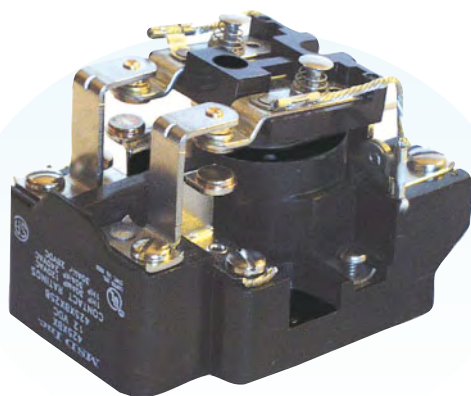
**CLASS "B" COIL
INSULATION SYSTEM**



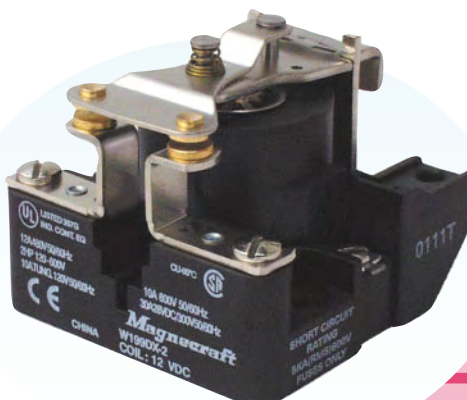
199 SPDT
30 AMP, 1-1/2 Hp



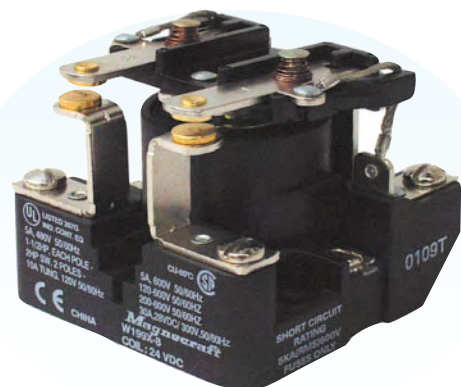
199 SPST-NC-DB
30 AMPS, 2 Hp



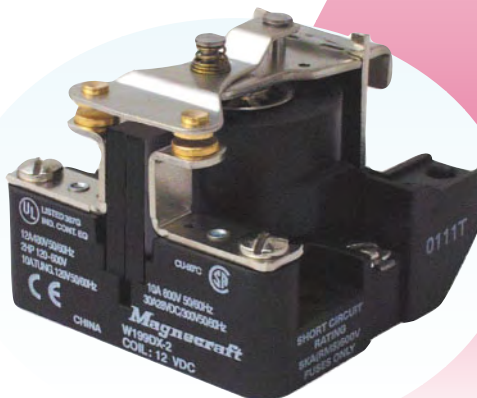
199 DPDT
30 AMP, 1-1/2 Hp PER POLE
2 Hp-2 POLE SWITCHING



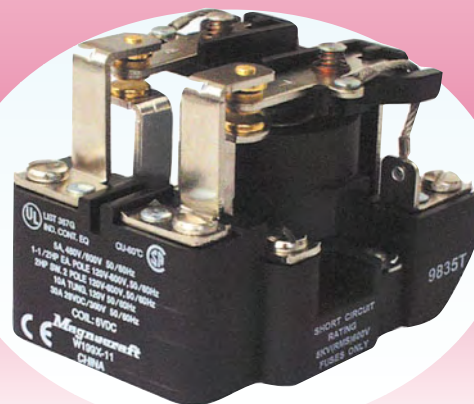
199 SPST-NO-DM
30 AMPS, 2 Hp



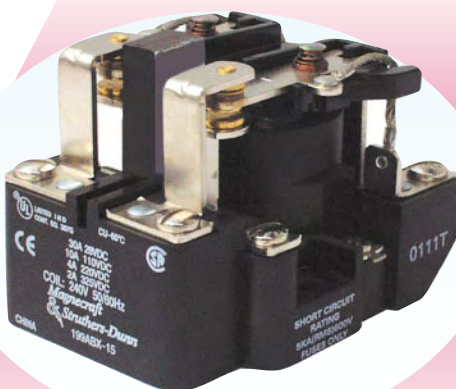
199 DPST-NO
30 AMPS, 1-1/2 Hp PER POLE
2 Hp - 2 POLE SWITCHING



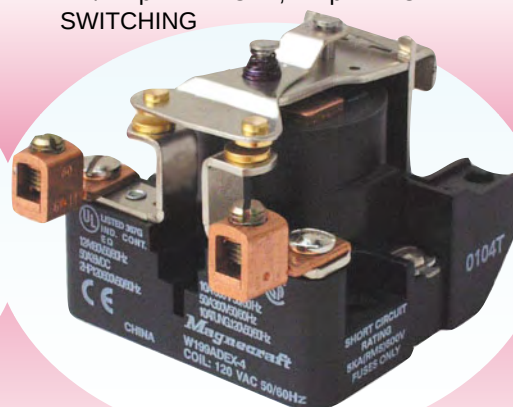
199DB SPST-NO-DM
WITH MAGNETIC BLOWOUT FOR DC ARC
QUENCHING 20 AMPS, 110 VDC



199H DPDT
40 AMPS GENERAL PURPOSE,
1-1/2 Hp PER POLE; 2 Hp - 2 POLE
SWITCHING



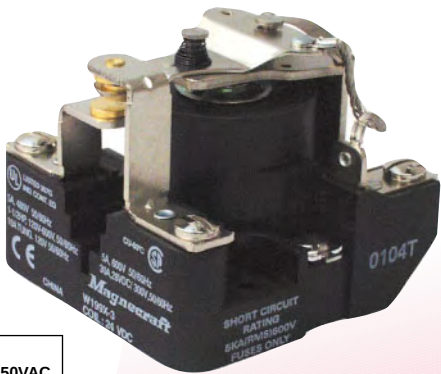
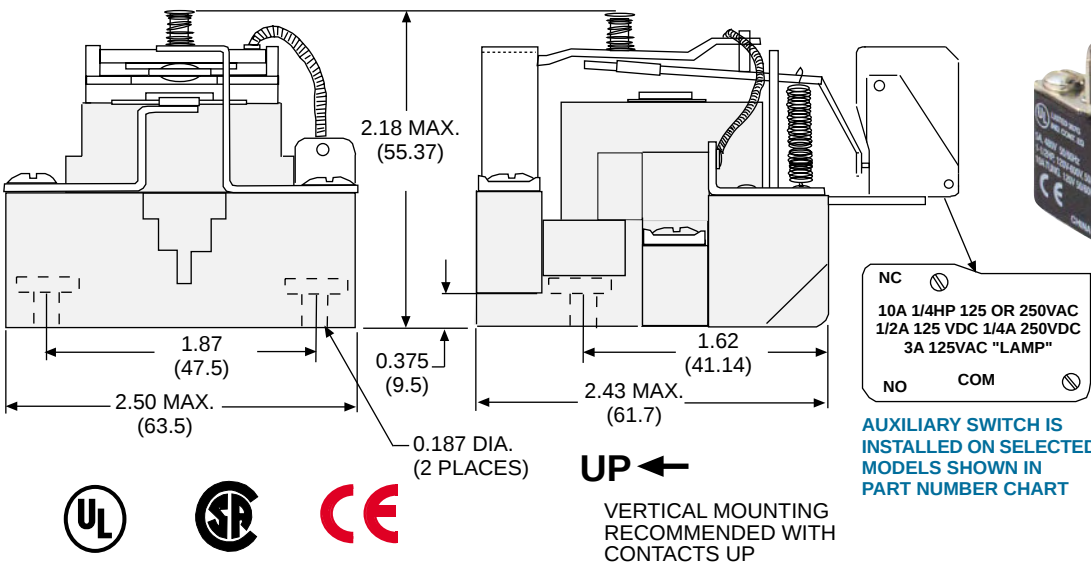
199B DPDT
WITH MAGNETIC BLOWOUT FOR DC ARC
QUENCHING 10 AMPS, 110 VDC



199DE SPST-NO-DM
WITH BOX TERMINALS.
50 AMPS, 2 Hp

SPDT, 30 AMPS

OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



Optional metal enclosure available, see page 12

GENERAL SPECIFICATIONS

COIL
Pull-in Voltage: 85% of nominal voltage or less for AC coils
80% of nominal voltage or less for DC coils
Dropout Voltage: 10% of nominal voltage or more @ 25°C
Coil Resistance: ± 10% @ 25°C
Coil Power: 2.0 Watts DC., 10 VA (60Hz) AC @ 25°C
Max. Coil Dissipation: DC Coils-4 watts max.
Duty: Continuous

CONTACTS
Contact Material: Silver cadmium oxide, gold flashed
5/16" diameter standard
Contact Rating: 30 amps up to 300 VAC, 50/60Hz
5 amps @ 480/600 VAC, 50/60HZ 0.75 pf
Inductive load. 1-1/2 Hp motor load @ 120 thru
600 VAC, 50/60 Hz. 30 Amps @ 28 VDC
resistive load. 15 Amps tungsten @ 120 VAC
NEMA A 600 pilot duty 50/60Hz
Auxiliary Switch: 10 amps 1/4 Hp 125 or 250VAC
1/2 amp 125 VDC 1/4 amp 250 VDC
3 amps 125 VAC "Lamp"

TIMING
Operate Time: 40 milliseconds max. @ nominal voltage
Release Time: 30 milliseconds max. @ nominal voltage

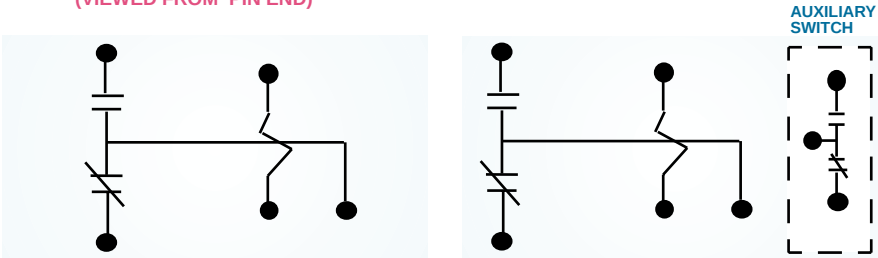
DIELECTRIC STRENGTH
Between Open Contacts: 1500 V rms
Mutually Insulated
Conductive elements: 2200 V rms

TEMPERATURE
Operating Range: (AC) -30°C to +50°C,
(DC) -30°C +60°C
Non-Operating Storage Range: -55°C to +100°C

LIFE EXPECTANCY
Electrical: 100,000 operations
Mechanical: @ rated resistive load
1,000,000 operations @ no load

MISCELLANEOUS
Coil Terminals: 6-32 combination head screws
Load Terminals: 8-32 combination head screws
Base Material: Molded phenolic,
UL recognized (QMFZ2)
Weight: 227 grams approx.

WIRING DIAGRAM
(VIEWED FROM PIN END)

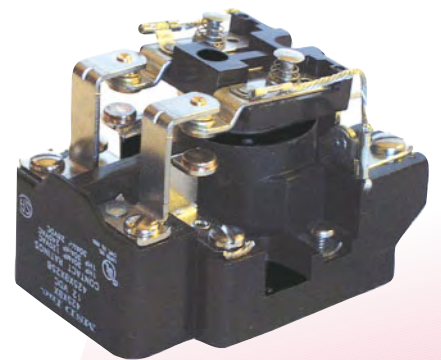
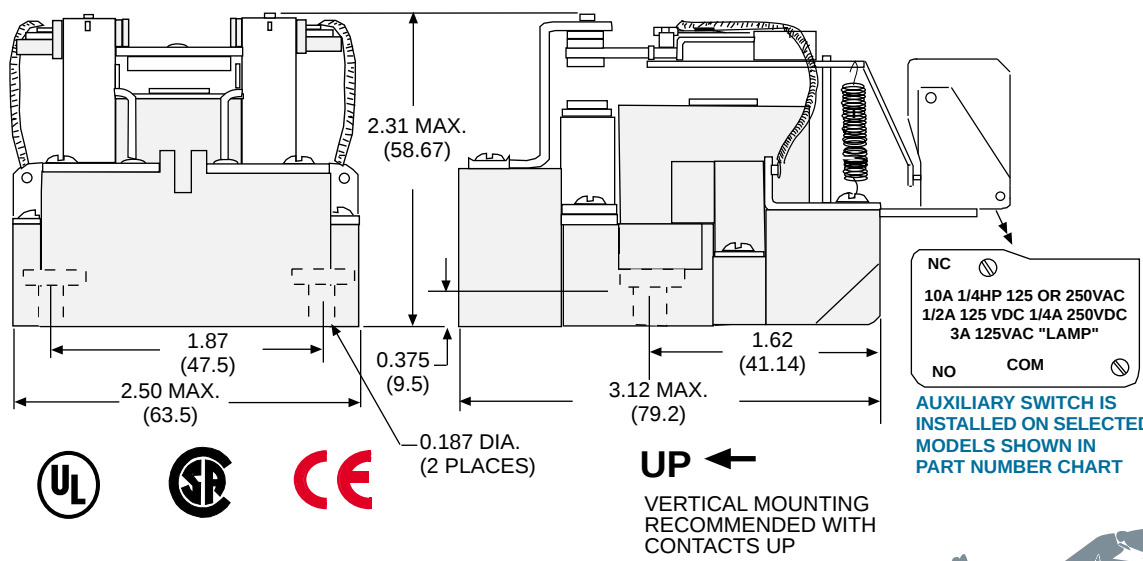


STANDARD PART NUMBERS	COIL MEASURED @ 25°C	
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED W199AX-4	120 VAC	290 Ω
AC OPERATED WITH SPDT AUXILIARY SWITCH W199AMX-4	120 VAC	290 Ω
DC OPERATED W199X-2	12 VDC	70 Ω
W199X-3	24 VDC	290 Ω
DC OPERATED WITH SPDT AUXILIARY SWITCH W199MX-2	12 VDC	70 Ω
W199MX-3	24 VDC	290 Ω

OTHER COIL VOLTAGES ARE AVAILABLE ON SPECIAL ORDER. CONTACT FACTORY FOR SPECIAL REQUIREMENTS.

DPDT, 30 AMPS

OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



Optional metal enclosure available, see page 12

GENERAL SPECIFICATIONS

COIL

- Pull-in Voltage: 85% of nominal voltage or less for AC coils
80% of nominal voltage or less for DC coils
- Dropout Voltage: 10% of nominal voltage or more @ 25°C
- Coil Resistance: ± 10% @ 25°C
- Coil Power: 2.0 watts DC., 10 VA (60Hz) AC @ 25°C
- Max. Coil Dissipation: DC coils-4 matts max.
- Duty: Continuous.

CONTACTS

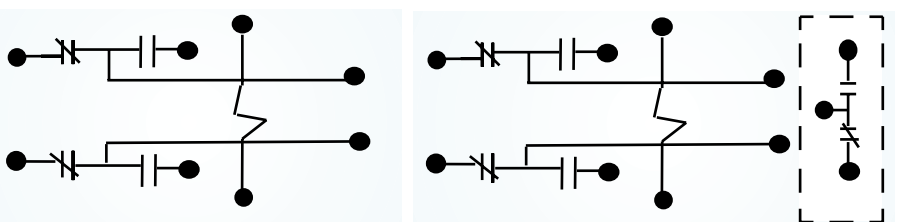
- Contact Material: Silver cadmium oxide, gold flashed 5/16" diameter standard.
- Contact Rating: 30 amps up to 300 VAC, 50/60Hz
5 amps @ 480/600 VAC, 50/60Hz 0.75 pf inductive load. 1-1/2 Hp motor load each pole @ 120 thru 600 VAC, 50/60 Hz. 2 Hp motor load @ 200 to 600 VAC. when using two poles to switch both sides of load.
30 amps @ 28 VDC resistive load
15 amps tungsten @ 120 VAC
NEMA A 600 pilot duty 50/60Hz
- Auxiliary Switch: 10 amps 1/4 Hp 125 or 250VAC
1/2 amp 125 VDC 1/4 amp 250 VDC
3 amps 125 VAC "Lamp"

TIMING

- Operate Time: 40 milliseconds max. @ nominal voltage
- Release Time: 30 milliseconds max. @ nominal voltage

WIRING DIAGRAM

(VIEWED FROM PIN END)



OTHER COIL VOLTAGES ARE AVAILABLE ON SPECIAL ORDER.
CONTACT FACTORY FOR SPECIAL REQUIREMENTS.

DIELECTRIC STRENGTH

- Between Open Contacts: 1500 V rms
- Mutually Insulated
- Conductive elements: 2200 V rms

TEMPERATURE

- Operating Range: (AC) -30°C to +50°C, (DC) -30°C +60°C
- Non-Operating Storage Range: -55°C to +100°C

LIFE EXPECTANCY

- Electrical: 100,000 operations @ rated resistive load
- Mechanical: 1,000,000 operations @ no load

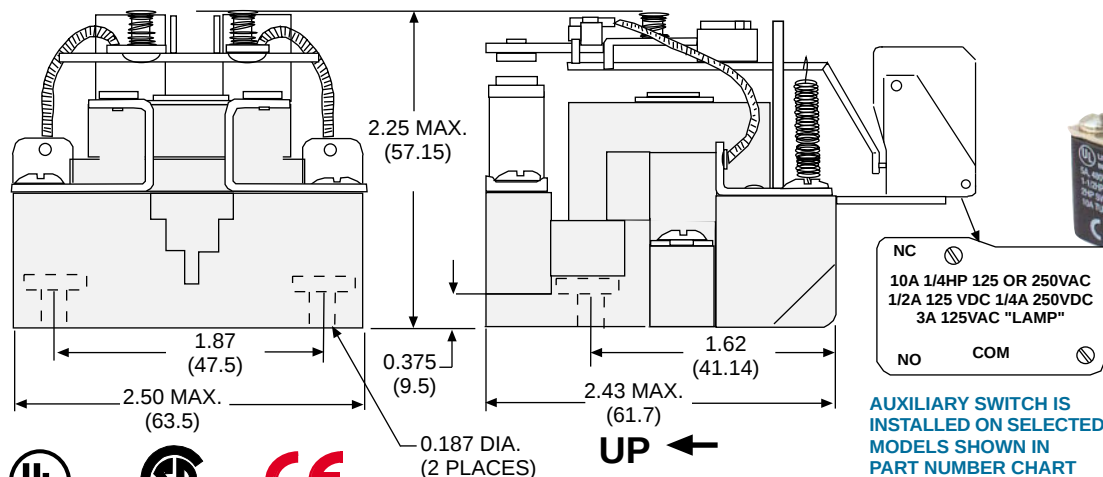
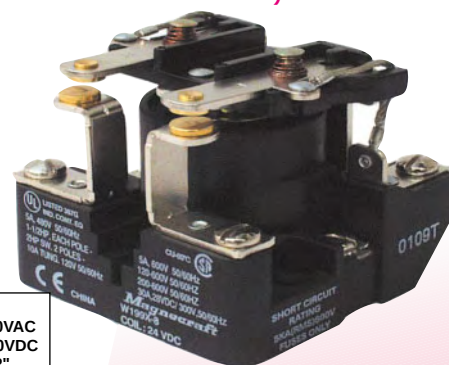
MISCELLANEOUS

- Coil Terminals: 6-32 combination head screws
- Load Terminals: 8-32 combination head screws
- Base Material: Molded phenolic, UL recognized (QMFZ2)
- Weight: 311 grams approx.

STANDARD PART NUMBERS	COIL MEASURED @ 25°C	
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED		
W199AX-13	24 VAC	12 Ω
W199AX-14	120 VAC	290 Ω
W199AX-15	240 VAC	1200 Ω
AC OPERATED WITH SPDT AUXILIARY SWITCH		
W199AMX-63	24 VAC	12 Ω
W199AMX-64	120 VAC	290 Ω
W199AMX-65	240 VAC	1200 Ω
DC OPERATED		
W199X-11	6 VDC	18 Ω
W199X-12	12 VDC	70 Ω
W199X-13	24 VDC	290 Ω
W199X-14	110 VDC	6000 Ω
DC OPERATED WITH SPDT AUXILIARY SWITCH		
W199MX-49	6 VDC	18 Ω
W199MX-50	12 VDC	70 Ω
W199MX-51	24 VDC	290 Ω
W199MX-52	110 VDC	6000 Ω

DPST-N.O., 30 AMPS**OUTLINE DIMENSIONS**

DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).

**UP** ←VERTICAL MOUNTING
RECOMMENDED WITH
CONTACTS UPOptional metal enclosure
available, see page 12**GENERAL SPECIFICATIONS****COIL**

Pull-in Voltage:	85% of nominal voltage or less for AC coils, 80% of nominal voltage or less for DC coils
Dropout Voltage:	10% of nominal voltage or more @ 25°C
Coil Resistance:	± 10% @ 25°C
Coil Power:	2.0 Watts DC., 10 VA (60Hz) AC @ 25°C
Max. Coil Dissipation:	DC coils 4 watts max
Duty:	Continuous.

CONTACTS

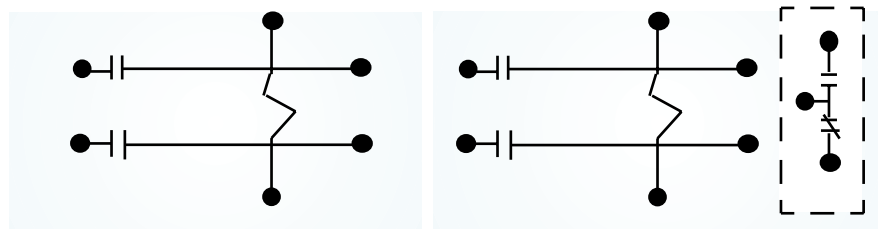
Contact Material:	Silver cadmium oxide, gold flashed. 5/16" diameter standard
Contact Rating:	30 amps up to 300 VAC, 50/60Hz, 5 amps @ 480/600VAC, 0.75 pf Inductive load. 1-1/2 Hp motor load (each pole) @120 thru 600 VAC, 50/60 Hz. 2 Hp motor load @ 200 thru 600 VAC, 50/60 Hz only when using two poles to switch both sides of load. 30 amps @ 28 VDC resistive load each poles. 15 amps tungsten @ 120 VAC. NEMA A600 pilot duty 50/60Hz.
Auxiliary Switch:	10 amps 1/4 Hp 125 or 250VAC 1/2 amp 125 VDC 1/4 amp 250 VDC 3 amps 125 VAC "Lamp"

TIMING

Operate Time:	40 milliseconds max. @ nominal voltage
Release Time:	30 milliseconds max. @ nominal voltage

WIRING DIAGRAM

(VIEWED FROM PIN END)

**DIELECTRIC STRENGTH**

Between Open Contacts:	1500 V rms
Mutually Insulated	
Conductive elements:	2200 V rms

TEMPERATURE

Operating Range:	(AC) -30°C to +50°C, (DC) -30°C to +60°C
Non-Operating Storage Range:	-55°C to +100°C

LIFE EXPECTANCY

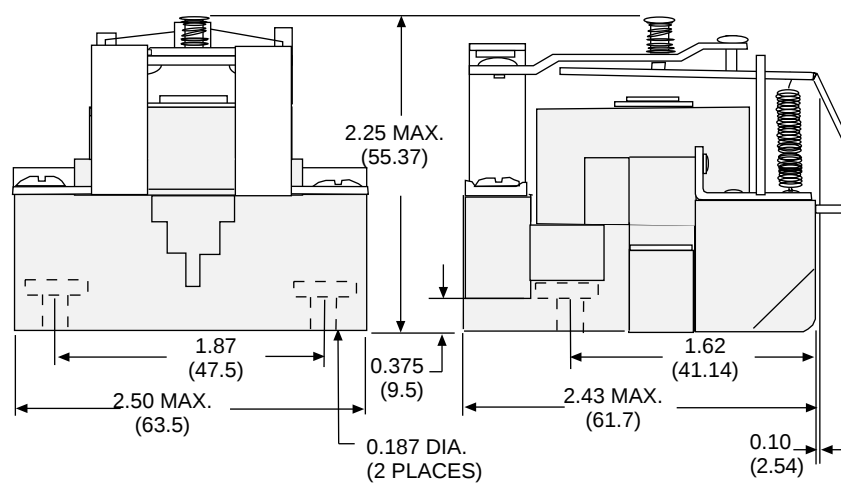
Electrical:	100,000 operations @ rated resistive load
Mechanical:	1,000,000 operations @ no load

MISCELLANEOUS

Coil Terminals:	6-32 combination head screws
Load Terminals:	8-32 combination head screws
Base Material:	Molded phenolic, UL recognized (QMFZ2)
Weight:	255 grams approx

STANDARD PART NUMBERS	COIL MEASURED @ 25°C	
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED		
W199AX-8	24 VAC	12 Ω
W199AX-9	120 VAC	290 Ω
W199AX-10	240 VAC	1200 Ω
AC OPERATED WITH SPDT AUXILIARY SWITCH		
W199AMX-33	24 VAC	12 Ω
W199AMX-34	120 VAC	290 Ω
W199AMX-35	240 VAC	1200 Ω
DC OPERATED		
W199X-7	12 VDC	70 Ω
W199X-8	24 VDC	290 Ω
DC OPERATED WITH SPDT AUXILIARY SWITCH		
W199MX-26	12 VDC	70 Ω
W199MX-27	24 VDC	290 Ω

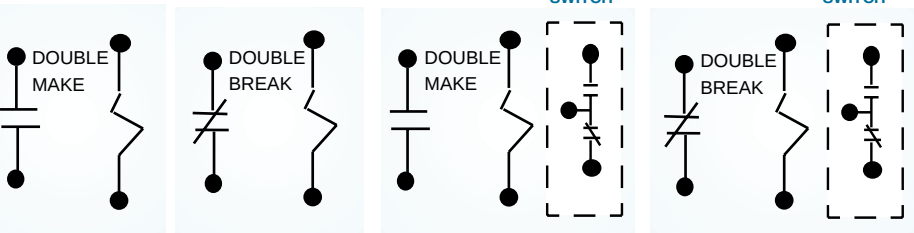
OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



GENERAL SPECIFICATIONS

- COIL**
 - Pull-in Voltage: 85% of nominal voltage or less for AC coils
80% of nominal voltage or less for DC coils
 - Dropout Voltage: 10% of nominal voltage or more @ 25°C
 - Coil Resistance: ± 10% @ 25°C
 - Coil Power: 2.0 watts DC., 10 VA (60Hz) AC @ 25°C
 - Max. Coil Dissipation: DC coils - 4 watts max
 - Duty: Continuous
- CONTACTS**
 - Contact Material: Silver cadmium oxide, gold flashed.
5/16" diameter standard.
 - Contact Rating
 - 30 amps up to 300 VAC, 50/60Hz
 - 5 amps @ 480/600 VAC, 50/60Hz
 - 12 amps @ 480 VAC, 10 amps @ 600 VAC, 50/60Hz 0.75 pf inductive load.
 - 2 Hp motor load @ 120 thru 600 VAC, 50/60 Hz. 30 amps @ 28 VDC resistive load.
 - 15 amps tungsten @ 120 VAC
 - NEMA A600 pilot duty 50/60Hz
 - 10 amps @ 120/240 VAC, 50/60 Hz
 - 1/4Hp. 120/240 VAC, 50/60 Hz
 - 1/2 amps @ 125 VDC, 1/4 amp @ 250 VDC
 - Auxiliary Switch:
 - 10 amps 1/4 Hp 125 or 250VAC
 - 1/2 amp 125 VDC 1/4 amp 250 VDC
 - 3 amps 125 VAC "Lamp"
- TIMING**
 - Operate Time: 40 milliseconds max. @ nominal voltage
 - Release Time: 30 milliseconds max. @ nominal voltage

WIRING DIAGRAM
(VIEWED FROM PIN END)

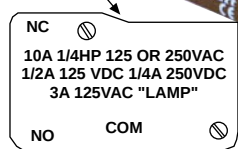


OTHER COIL VOLTAGES ARE AVAILABLE ON SPECIAL ORDER.
CONTACT FACTORY FOR SPECIAL REQUIREMENTS.

SPST
N.C.- D.B.

SPST-N.C.- D. B. OR
SPST-N.O.- D.M., 30 AMPS

Optional metal enclosure
available, see page 12



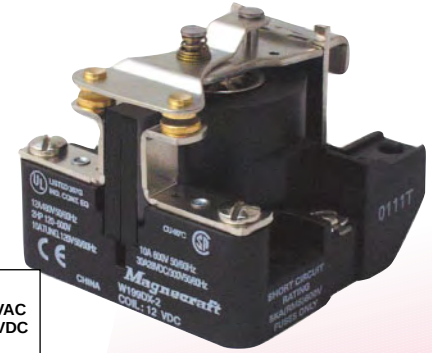
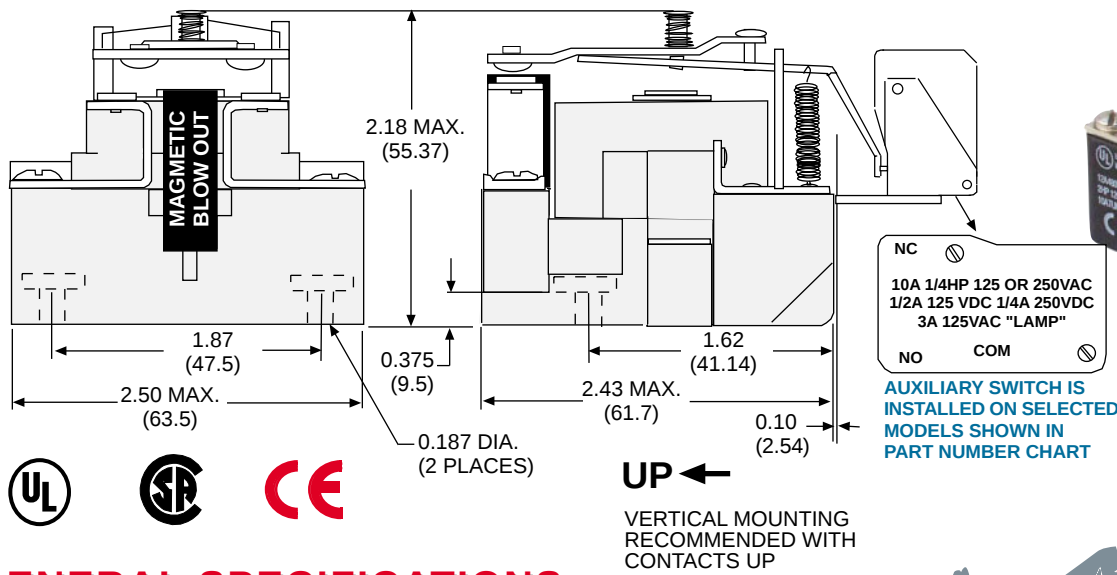
AUXILIARY SWITCH IS
INSTALLED ON SELECTED
MODELS SHOWN IN
PART NUMBER CHART



SPST
N.O.- D.M.

- DIELECTRIC STRENGTH**
 - Between Open Contacts: 1500 V rms
 - Mutually Insulated
 - Conductive elements: 2200 V rms
- TEMPERATURE**
 - Operating Range: (AC) -30°C to +50°C,
(DC) -30°C +60°C
 - Non-Operating Storage Range: -55°C to +100°C
- LIFE EXPECTANCY**
 - Electrical: 100,000 operations
@ rated resistive load
 - Mechanical: 1,000,000 operations @ no load
- MISCELLANEOUS**
 - Coil Terminals: 6-32 combination head screws
 - Load Terminals: 8-32 Ccombination head screws
 - Base Material: Molded phenolic, UL recognized (QMFZ2)
 - Weight: 227 grams approx.

STANDARD PART NUMBERS	CONTACT CONFIGU- RATION	COIL MEASURED @ 25°C	
		NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED			
W199ADX-4	SPST-NO-DM	120 VAC	290 Ω
W199ADX-5	SPST-NO-DM	240 VAC	1200 Ω
AC OPERATED WITH SPDT AUXILIARY SWITCH			
W199ADMX-4	SPST-NO-DM	120 VAC	290 Ω
W199ADMX-5	SPST-NO-DM	240 VAC	1200 Ω
DC OPERATED			
W199DYX-2	SPST-NC-DB	12 VDC	70 Ω
W199DX-2	SPST-NO-DM	12 VDC	70 Ω
W199DX-3	SPST-NO-DM	24 VDC	290 Ω
DC OPERATED WITH SPDT AUXILIARY SWITCH			
W199DYMx-2	SPST-NC-DB	12 VDC	70 Ω
W199DMX-2	SPST-NO-DM	12 VDC	70 Ω
W199DMX-3	SPST-NO-DM	24 VDC	290 Ω

**SPST-N. O., 30 AMPS
20 AMPS @ 110 VDC****OUTLINE DIMENSIONS**
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).**Optional metal enclosure
available, see page 12****GENERAL SPECIFICATIONS****COIL**

Pull-in Voltage:	85% of nominal voltage or less for AC coils 80% of nominal voltage or less for DC coils
Dropout Voltage:	10% of nominal voltage or more @ 25°C
Coil Resistance:	± 10% @ 25°C
Coil Power:	10 VA (60Hz) AC @ 25°C
Max. Coil Dissipation:	DC coils-4 watts max.
Duty:	Continuous.

CONTACTS

Contact Material:	Silver cadmium oxide, gold flashed. 5/16" diameter standard.
Contact Rating:	30 amps up to 300 VAC, 50/60Hz 12 amps @ 480 VAC, 10 Amps @ 600 VAC, 50/60Hz 0.75 pf Inductive load. 1-1/2 Hp motor load @ 120 thru 600 VAC, 50/60 Hz. 30 amps @ 28 VDC resistive load 15 amps tungsten @ 120 VAC NEMA A600 pilot duty 50/60Hz
DC Rating:	20 Amps @ 110 VDC, resistive; 8 amps @ 220 VDC resistive, 4 Amps @ 325VDC resistive. 2 amps @ 500 VDC resistive. For inductive loads, contacts must be derated accordingly. Capacitive loads must have current limiting to insure that inrush current will not exceed 100 amps.
Auxiliary Switch:	10 amps 1/4 Hp 125 or 250VAC 1/2 amp 125 VDC 1/4 amp 250 VDC 3 amps 125 VAC "Lamp"

TIMING

Operate Time:	40 milliseconds max. @ nominal voltage
Release Time:	30 milliseconds max. @ nominal voltage

DIELECTRIC STRENGTH

Between Open Contacts:	1500 V rms
Mutually Insulated	
Conductive elements:	2200 V rms

TEMPERATURE

Operating Range:	(AC) -30°C to +50°C, (DC) -30°C to +60°C
Non-Operating Storage Range:	-55°C to +100°C

LIFE EXPECTANCY

Electrical:	100,000 operations @ rated resistive load
Mechanical:	1,000,000 operations @ no load

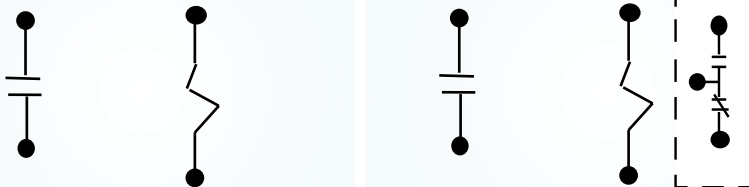
MISCELLANEOUS

Coil Terminals:	6-32 combination head screws
Load Terminals:	8-32 combination head screws
Base Material:	Molded phenolic, UL recognized (QMFZ2)
Weight:	227 grams approx.

WIRING DIAGRAM

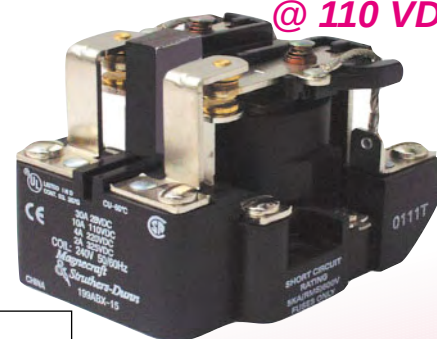
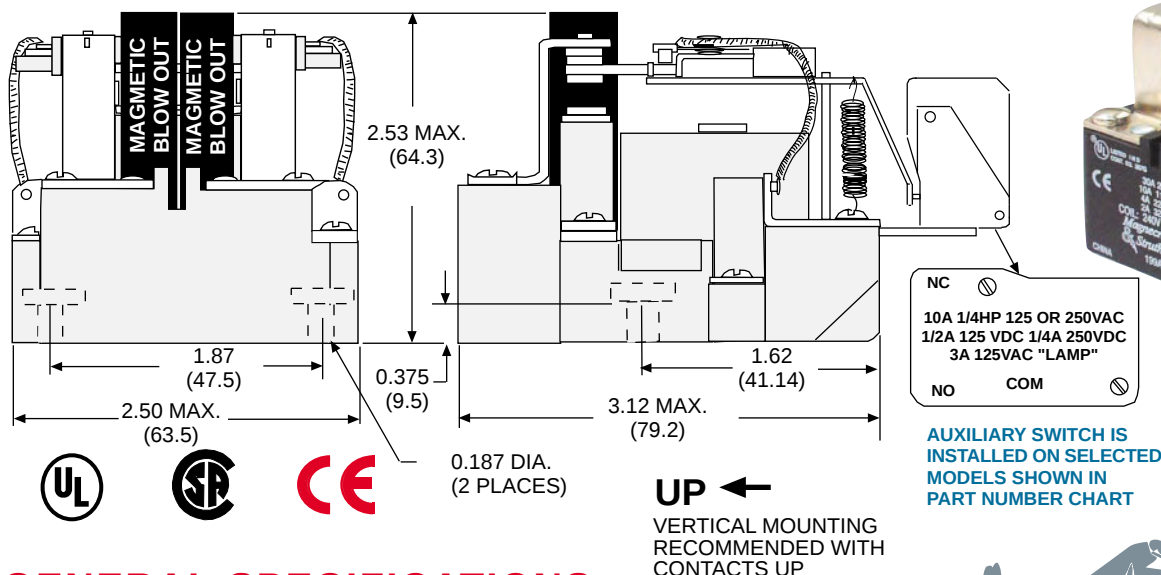
(VIEWED FROM PIN END)

AUXILIARY SWITCH



OTHER COIL VOLTAGES ARE AVAILABLE ON SPECIAL ORDER. CONTACT FACTORY FOR SPECIAL REQUIREMENTS.

STANDARD PART NUMBERS	COIL MEASURED @ 25°C	
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED		
W199ADB-X-4	120 VAC	290 Ω
AC OPERATED WITH SPDT AUXILIARY SWITCH		
W199ADB-MX-4	120 VAC	290 Ω
DC OPERATED		
W199DBX-3	24 VDC	290 Ω
W199DBX-6	48 VDC	1200 Ω
DC OPERATED WITH SPDT AUXILIARY SWITCH		
W199DBM-X-3	24 VDC	290 Ω
W199DBM-X-2	48 VDC	1200 Ω

**DPDT, 30 AMPS 10 AMPS
@ 110 VDC****OUTLINE DIMENSIONS**
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).Optional metal enclosure
available, see page 12AUXILIARY SWITCH IS
INSTALLED ON SELECTED
MODELS SHOWN IN
PART NUMBER CHART**GENERAL SPECIFICATIONS****COIL**

Pull-in Voltage: 85% of nominal voltage or less for AC coils
80% of nominal voltage or less for DC coils

Dropout Voltage: 10% of nominal voltage or more @ 25°C

Coil Resistance: $\pm 10\%$ @ 25°C

Coil Power: 2.0 watts DC., 10 VA (60Hz) AC @ 25°C

Max. Coil Dissipation: DC coils - 4 watts max.

Duty: Continuous.

CONTACTS

Contact Material: Silver cadmium oxide, gold flashed.
5/16" diameter standard.

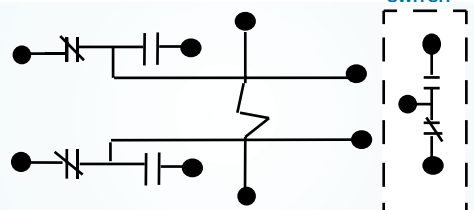
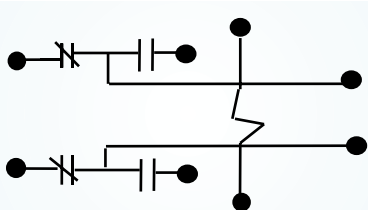
Contact Rating: 30 amps up to 300VAC, 50/60Hz
5 amps @ 480/600 VAC, 50/60Hz 0.75 pf
Inductive load. 1-1/2 Hp motor load (each pole)
@ 120 thru 600 VAC, 50/60 Hz. 2 Hp motor load
@ 120 thru 600 VAC, 50/60 Hz only when using
two poles to switch both sides of load. 30 amps
@ 28 VDC resistive load.
15 amps tungsten @ 120 VAC
NEMA A 600 pilot duty 50/60Hz

DC Rating: 10 amps @110VDC, resistive; 4 Amps @220VDC,
resistive, 2 amps @ 325VDC resistive. For inductive
loads, contacts must be derated accordingly.
Capacitive loads must have current limiting to
insure that inrush current will not exceed 50 amps

Auxiliary Switch: 10 amps 1/4 Hp 125 or 250VAC
1/2 amp 125 VDC 1/4 amp 250 VDC
3 amps 125 VAC "Lamp"

WIRING DIAGRAM

(VIEWED FROM PIN END)

OTHER COIL VOLTAGES ARE AVAILABLE ON SPECIAL ORDER.
CONTACT FACTORY FOR SPECIAL REQUIREMENTS.**DIETIMING**

Operate Time: 40 milliseconds max. @ nominal voltage

Release Time: 30 milliseconds max. @ nominal voltage.

ELECTRIC STRENGTH

Between Open Contacts: 1500 V rms

Mutually Insulated

Conductive elements: 2200 V rms

TEMPERATURE

Operating Range: (AC) -30°C to +50°C,
(DC) -30°C to +60°C

Non-Operating Storage
Range: -55°C to +100°C

LIFE EXPECTANCY

Electrical: 100,000 operations
@ rated resistive load

Mechanical: 1,000,000 operations @ no load

MISCELLANEOUS

Coil Terminals: 6-32 combination head screws

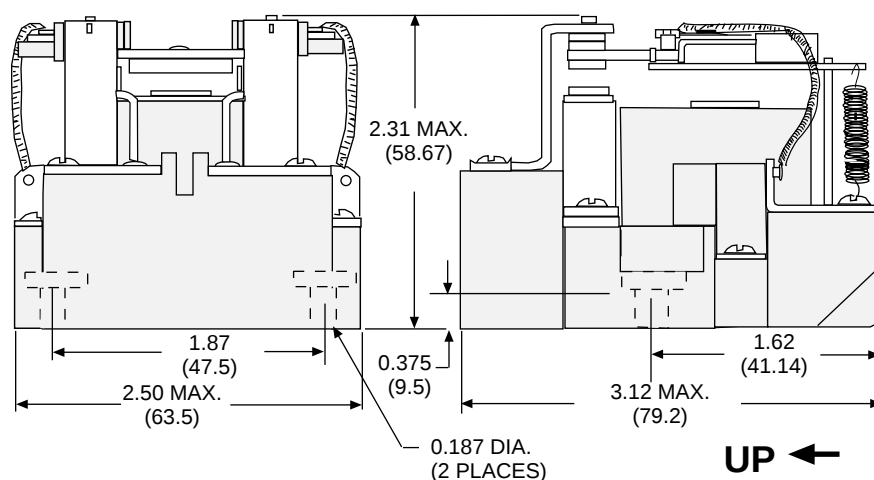
Load Terminals: 8-32 combination head screws

Base Material: Molded phenolic, UL recognized (QMF
312 grams approx.

STANDARD PART NUMBERS	COIL MEASURED @ 25°C	
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED		
W199ABX-14	120 VAC	290 Ω
AC OPERATED WITH SPDT AUXILIARY		
W199ABMX-7	120 VAC	290 Ω
DC OPERATED		
W199BX-13	24 VDC	290 Ω
W199BX-14	110 VDC	6000 Ω
DC OPERATED WITH SPDT AUXILIARY		
W199BMX-13	24 VDC	290 Ω
W199BMX-14	110 VDC	6000 Ω

DPDT, 40 AMPS**OUTLINE DIMENSIONS**

DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).

Optional metal enclosure
available, see page 12**UP** ←VERTICAL MOUNTING
RECOMMENDED WITH
CONTACTS UP**GENERAL SPECIFICATIONS****COIL**

Pull-in Voltage: 85% of nominal voltage or less for AC coils
80% of nominal voltage or less for DC coils

Dropout Voltage: 10% of Nominal voltage or more @ 25°C

Coil Resistance: ± 10% @ 25°C

Coil Power: 2.0 watts DC., 10 VA (60Hz) AC @ 25°C

Max. Coil Dissipation: DC coils-4 watts max

Duty: Continuous

CONTACTS

Contact Material: Silver cadmium oxide, gold flashed.
5/16" diameter standard

Contact Rating: 40 amps up to 300 VAC, 50/60Hz
5 amps @ 480/600 VAC, 50/60Hz 0.75 pf
inductive load. 1-1/2 Hp motor load esch pole
@ 120 thru 600 VAC, 50/60 Hz.
2 Hp motor load @ 200 to 600 VAC
when using two poles to switch both sides
of load.
40 amps @ 28 VDC resistive load
15 amps tungsten @ 120 VAC
NEMA A600 pilot duty 50/60Hz

Operate Time: 40 milliseconds max. @ nominal voltage

Release Time: 30 milliseconds max. @ nominal voltage

TIMING**DIELECTRIC STRENGTH**

Between Open Contacts: 1500 V rms

Mutually Insulated

Conductive elements: 2200 V rms

TEMPERATURE

Operating Range: (AC) -30°C to +50°C,
(DC) -30°C to +60°C

Non-Operating Storage
Range: -55°C to +100°C

LIFE EXPECTANCY

Electrical: 100,000 operations
@ rated resistive load

Mechanical: 1,000,000 operations @ no load

MISCELLANEOUS

Coil Terminals: 6-32 combination head screws

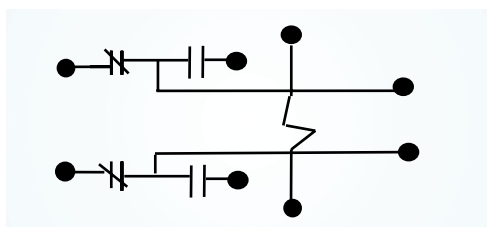
Load Terminals: 8-32 combination head screws

Base Material: Molded phenolic, UL recognized
(QMFZ2)

Weight: 311 grams approx.

WIRING DIAGRAM

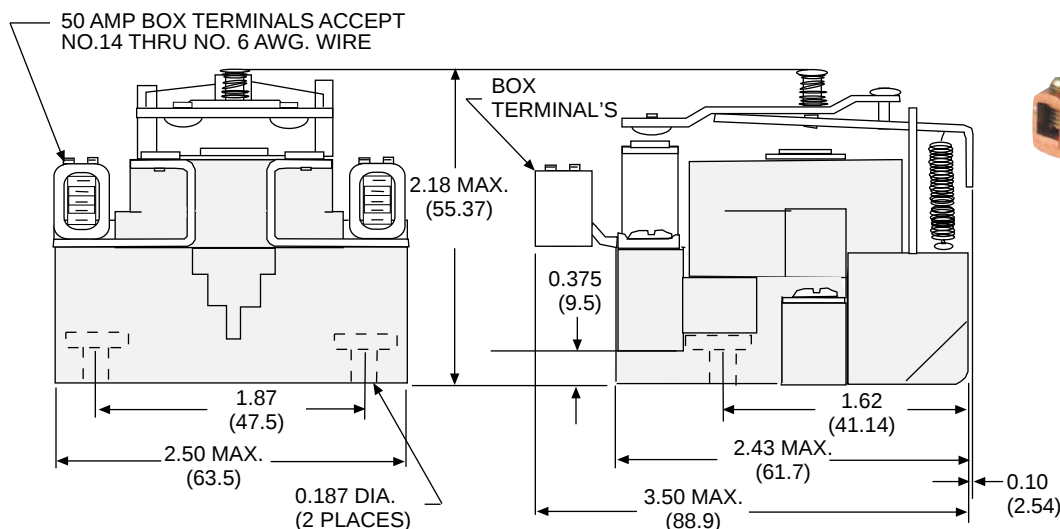
(VIEWED FROM PIN END)

AUXILIARY CONTACTS AND OTHER COIL VOLTAGES ARE AVAILABLE ON SPECIAL ORDER.
CONTACT FACTORY FOR SPECIAL REQUIREMENTS.

STANDARD PART NUMBERS	COIL MEASURED @ 25°C	
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED		
W199AHX-13	24 VAC	12 Ω
W199AHX-14	120 VAC	290 Ω
W199AHX-15	240 VAC, 60 Hz	1200 Ω
DC OPERATED		
W199HX-13	24 VDC	290 Ω
W199HX-14	110 VDC	6000 Ω

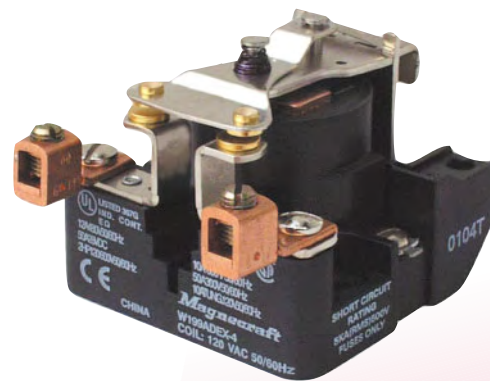
SPST-N.O.- D.M., 50 AMPS

OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



UP ←

VERTICAL MOUNTING
RECOMMENDED WITH
CONTACTS UP



Optional metal enclosure
available, see page 12

GENERAL SPECIFICATIONS

COIL

Pull-in Voltage:	85% of nominal voltage or less for AC coils 80% of nominal voltage or less for DC coils
Dropout Voltage:	10% of nominal voltage or more @ 25°C
Coil Resistance:	± 10% @ 25°C
Coil Power:	2.0 watts DC., 10 VA (60Hz) AC @ 25°C
Max. Coil Dissipation:	DC coils-4 watts max.
Duty:	Continuous.

CONTACTS

Contact Material:	Silver cadmium oxide, gold flashed. 5/16" diameter standard.
Contact Rating	50 amps up to 300VAC, 50/60Hz 50 amps @ 28 VDC resistive load, loads must have current limiting to insure that inrush current will not exceed 100 amps NEMA A600 pilot duty 50/60Hz

TIMING

Operate Time:	40 milliseconds max. @ nominal voltage
Release Time:	30 milliseconds max. @ nominal voltage.

DIELECTRIC STRENGTH

Between Open Contacts:	1500 V rms
Mutually Insulated	
Conductive elements:	2200 V rms

TEMPERATURE

Operating Range:	(AC) -30°C to +50°C, (DC) -30°C to +60°C
Non-Operating Storage Range:	-55°C to +100°C

LIFE EXPECTANCY

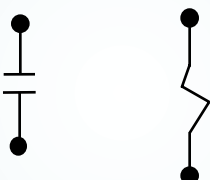
Electrical:	100,000 operations @ rated resistive load
Mechanical:	1,000,000 operations @ no load

MISCELLANEOUS

Coil Terminals:	6-32 Combination head screws
Load Terminals:	AMG 2-12 Pressure wire connector
Base Material:	Molded phenolic, UL recognized (QMFZ2)
Weight:	227 grams approx.

WIRING DIAGRAM

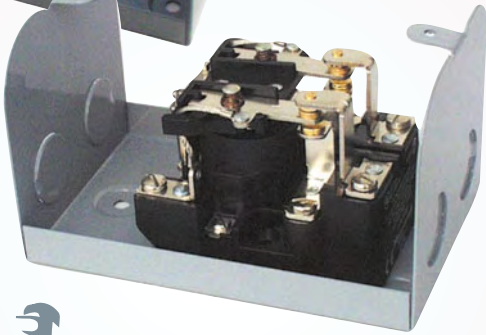
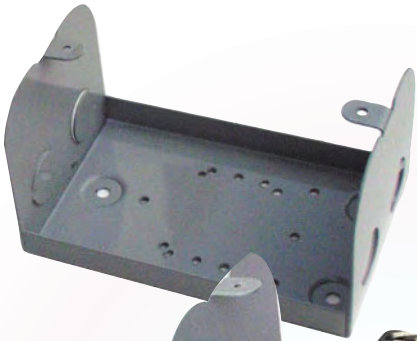
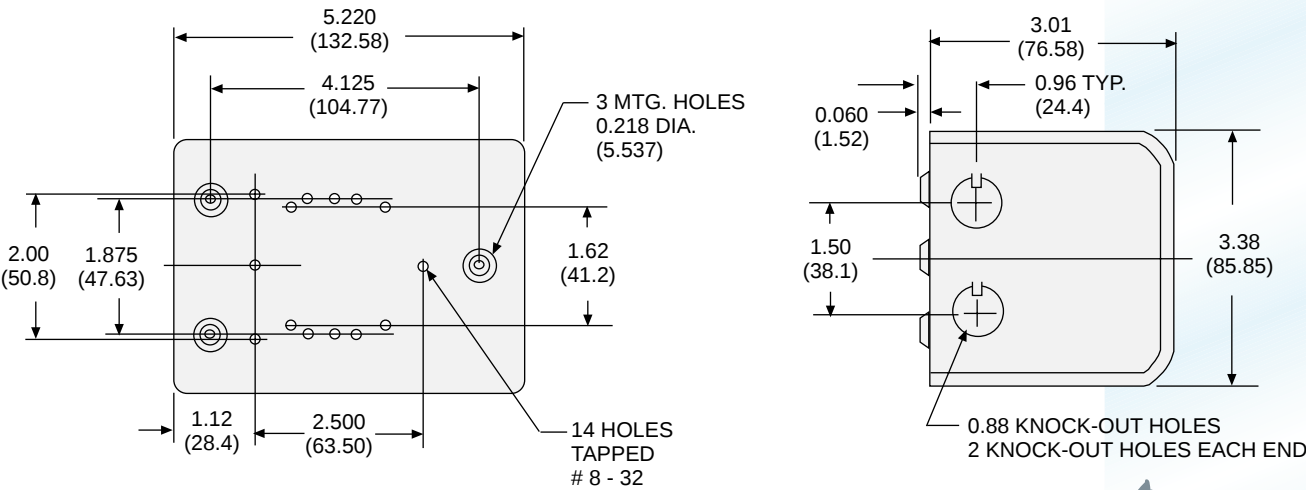
(VIEWED FROM PIN END)



STANDARD PART NUMBERS	COIL MEASURED @ 25°C	
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
AC OPERATED WITH SCREW TERMINALS		
W199ADEX-4	120 VAC	290 Ω
DC OPERATED WITH SCREW TERMINALS		
W199DEX-3	24 VDC	290 Ω

OUTLINE DIMENSIONS

DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).

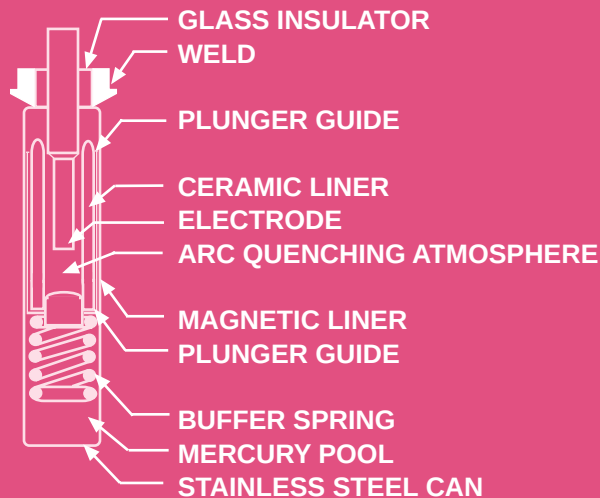


STANDARD PART NUMBER	DESCRIPTION
50-1289-1	UNIVERSAL MOUNT METAL ENCLOSURE

COVER & RELAY MOUNTING SCREWS INCLUDED

APPLICATION DATA

MERCURY DISPLACEMENT TUBE



PRINCIPLE OF OPERATION

The sectional view shows our normally open style Mercury Displacement tube with the plunger assembly floating on the mercury pool.

When the coil power is off, the mercury level is below the electrode tip. No electrical path exists between the electrode and mercury pool.

When coil power is applied, the plunger is drawn down into the mercury by the pull of the magnetic field. This action raises the mercury level, so it covers the end of the electrode closing the circuit.

When coil power is turned off, the buoyant force of the mercury causes the plunger assembly to rise, dropping the mercury level, and breaking the circuit.

APPLICATION DATA

Mercury Displacement relays are ideal for adverse environments-

-Where high inrushes are encountered
-Where hermetically sealed contact operation is required because of corrosive, dirty, or moist ambient conditions.
-Where use does not permit contact maintenance.
-Where reduced noise levels are required.
-Where minimum weight and size are desired.

DESIGN FEATURES

Mercury Displacement Relays provide a perpetually self-renewing contact to assure maximum contact life and minimum contact resistance. Conventional contactors are destroyed by pitting and welding under high load conditions. MDR's have a single moving part that floats free on a pool of mercury. There are no hinges, pivots, pins or mechanical linkage to wear out or break. The result is a life expectancy which exceeds other types of comparable size contactors handling the same loads and duty cycle.

Liquid Mercury Contact - provides a new contact surface with every actuation. Mercury is self-renewing and does not pit, weld, disintegrate or oxidize.

Hermetic sealing - provides internal and external protection from arcing.

Inert Gas atmosphere - contactor tube is evacuated, then pressurized with a combination of gases which extinguish arcing and contribute to long life.

The pressurized gases provide for a high dielectric withstanding voltage between contact surfaces.

Low Contact Resistance - Large electrode and mercury volume creates low contact resistance and provides high inrush current capability.

Quiet Operation - Switch clacking normally associated with conventional hard contactors is eliminated with mercury displacement tubes and the buffer spring assembly.

APPLICATION OF "M" SERIES VS "ML" SERIES

The series "ML" is physically the same as the "M" series except for the type of gases used in the contactor tubes. The "ML" series was developed for use with resistive and tungsten loads on AC power ONLY. The "ML" series will give much greater life than the "M" series for these types of loads and is intended for high activation use, such as molding machines or ovens. The "ML" series, however is not intended for use with motor loads on AC power, or for resistive, tungsten, or motor loads on DC power. The "M" series, which is our universal series is rated to be used on all types of loads resistive, tungsten, and motor for both AC and DC power.

RECOMMENDED FUSE PROTECTION

MDR's are capable of accepting high inrush currents however, short circuit currents can damage the contactor. Fast acting fuses should be used in-line with the contactor load to protect against short circuit fault current. UL class J and class RK-1 fuses are recommended.

**1, 2 & 3 POLES, 35, 60 AMPS
& 1 POLE 100 AMPS**

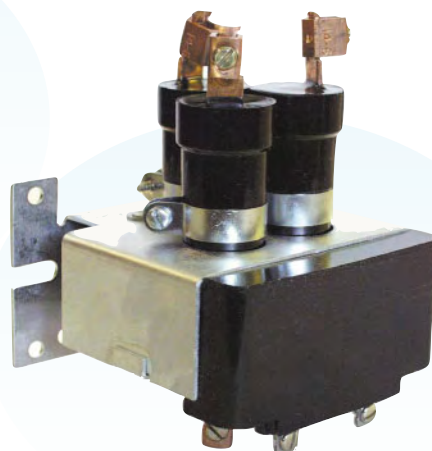


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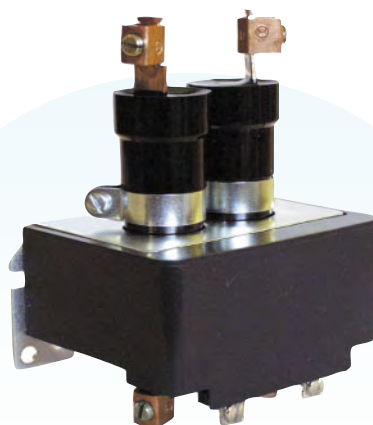
MDR'S ARE IDEAL FOR SWITCHING
RESISTIVE, TUNGSTEN,
AND MOTOR LOADS FOR BOTH
AC AND DC APPLICATIONS.



MDR 1 POLE
35 & 60 AMPS



MDR 3 POLE
35 & 60 AMPS



MDR 2 POLE
35 & 60 AMPS



MDR 1 POLE
100 AMPS

**HERMETICALLY SEALED
STAINLESS STEEL TUBES**
*Every contactor tube is hermetically
sealed for maximum life.
The MDR provides protection
to the user from arcing and other hazards
of switching heavy loads with exposed
contacts.*

**DISPOSAL OF TUBES THAT ARE
NO LONGER OPERABLE**

Magnecraft, at no charge, will accept and
properly dispose of mercury tubes which
are no longer operable.

All you need to do is prepay the freight.

Return the tube(s) to:

Magnecraft & Struthers-Dunn
Attn: Manufacturing Manager
MDR Recycling
700 Orange Street
Darlington, SC 29532-3793

GENERAL SPECIFICATIONS

COIL

Frequency of Operation: 60 per minute max
80% of nominal voltage, typ
Pull-in voltage: AC & DC coils
Dropout voltage: 78% of nominal voltage, typical AC coils
65% of nominal voltage, typical DC coils

CONTACTS

Material: Mercury.
Contact resistance: 0.002 ohm M60 & M100
0.003 ohm M30 & M30

TIMING

Operate: 50 milliseconds typical
Dropout: 80 milliseconds typical

DIELECTRIC STRENGTH

Across open Contact: 2650 V rms

TEMPERATURE

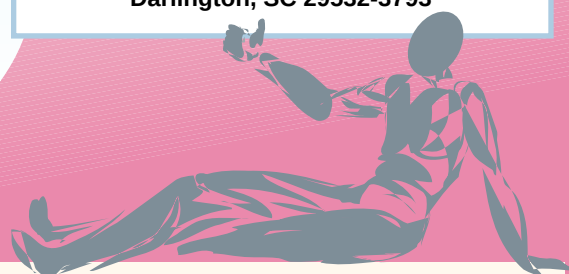
Operating: - 35°C to + 60°C Under continuous load

LIFE EXPECTANCY

Electrical: 100,000 operations
@ rated resistive load.
Mechanical: 5,000,000 operations @ no load

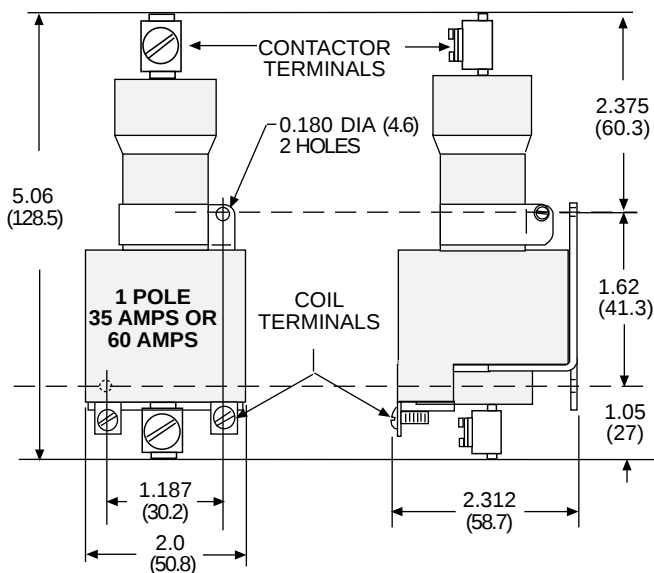
MISCELLANEOUS

Insulation Material: Class B - 130°C
Load Terminals: M35 pressure connectors for
AWG 6-14 wire;
M60 pressure connectors for
AWG 2-12 wire;
M100 pPressure connectors for
AWG 1-8 wire
Mounting: Vertical ±10°C
Options: Combination of SPST-NO & SPST-NC
contact configurations. Available. Other
coil voltages available. Time delay
module offered consult factory for details



1, 2 & 3 POLES, 35 & 60 AMPS

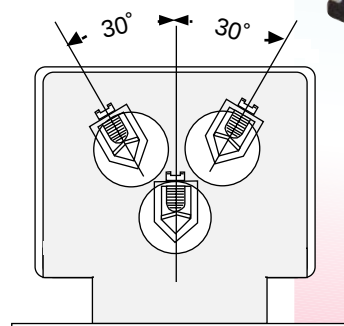
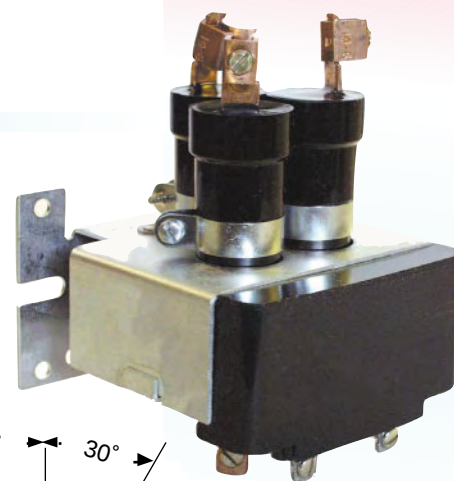
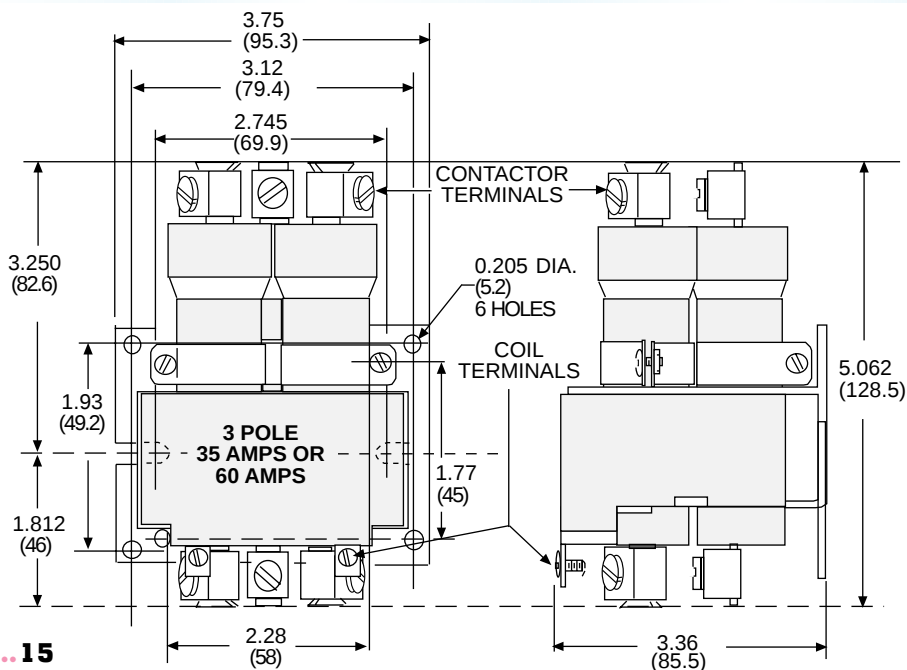
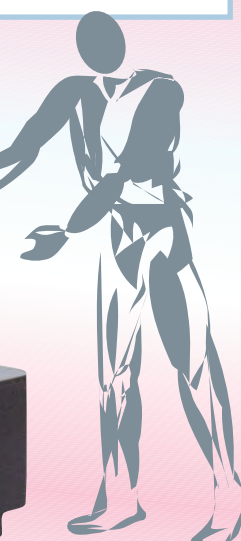
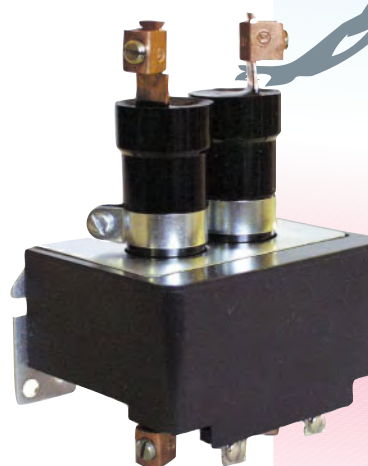
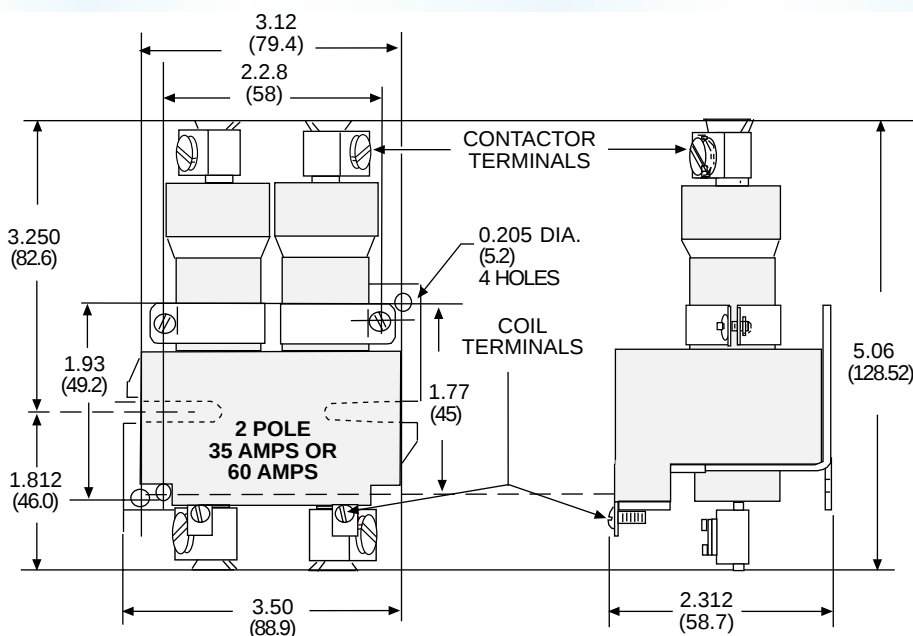
OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



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NOTE:
THE OUTLINES FOR THE N.C.
VERSIONS ARE NOT SHOWN.
THE TUBE IS POSITIONED
APPROXIMATELY 0.43 INCHES
(11 MM) LOWER IN THE COIL.
THE OVERALL HEIGHT IS THE
SAME AS THE N.O. VERSION.



1, 2 & 3 POLES, 35 AMPS**UL CONTACT RATINGS TABLE FOR M35A-M35B**

VOLTAGE	HP		MOTOR AMPS		RESISTIVE AMPS	TUNGSTEN AMPS
	1Ø	3Ø	1Ø	3Ø		
120VAC	3*	5*	34	30	35*	35*
240VAC	5*	7.5*	28	19	35*	17
480VAC	5*	10*	14	14	35*	9
600VAC	5*	10*	11.2	11	35*	7
24VDC	1/2		27		35*	35*
48VDC	1/2		13.5		35*	35*
125VDC	1/2		5.2		16*	16*
250VDC	1/2		2.6		12*	12*

* UL and CSA Listed
SEE MDR GENERAL SPECIFICATIONS AND DIMENSIONS.

UL CONTACT RATINGS TABLE FOR ML35A-ML35B

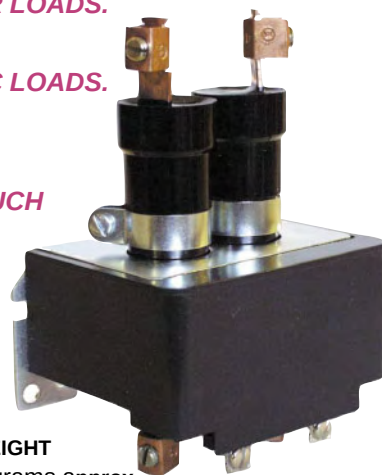
VOLTAGE	RESISTIVE AMPS	TUNGSTEN AMPS
120VAC	35*	35*
240 VAC	35*	17
480VAC	35*	9
600VAC	35*	7

* UL and CSA Listed

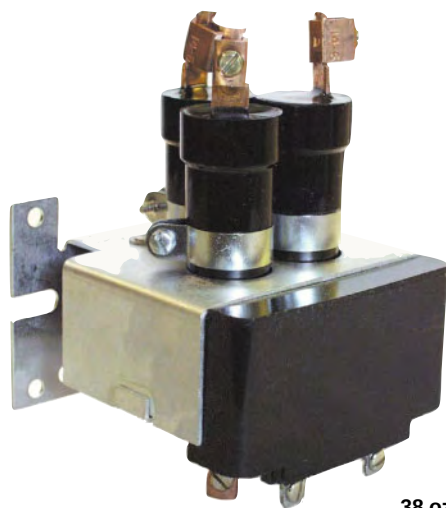
CLASS WM35
SWITCHES RESISTIVE,
TUNGSTEN, AND MOTOR LOADS.
HIGH INRUSH CAPACITY.
RECOMMENDED FOR DC LOADS.

CLASS WML35
RECOMMENDED FOR MUCH
LONGER LIFE WHEN
SWITCHING AC
RESISTIVE AND
TUNGSTEN LOADS.

WEIGHT
13 oz, 370 grams approx



WEIGHT
26 oz, 738 grams approx



WEIGHT
38 oz, 1078 grams approx

↑
UP
RECOMMENDED
MOUNTING
POSITION ±10°

UL LISTED
367G
UL Listed
File No. E52197

**COIL MEASURED @ 25°C**

STANDARD PART NUMBERS	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)	NOMINAL COIL CURRENT
1 POLE NORMALLY OPEN CONTACT			
WM35A-120A	120 VAC	700 Ω	0.058 AMP
WM35A-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	2,800 Ω	0.029 AMP
WM35A-24D	24 VDC	186 Ω	0.120 AMP
2 POLE NORMALLY OPEN CONTACT			
WM35AA-120A	120 VAC	218 Ω	0.135 AMP
WM35AA-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	1,200 Ω	0.063 AMP
WM35AA-24D	24 VDC	98 Ω	0.232 AMP
3 POLE NORMALLY OPEN CONTACT			
WM35AAA-120A	120 VAC	111 Ω	0.220 AMP
WM35AAA-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	430 Ω	0.117 AMP
WM35AAA-24D	24 VDC	63 Ω	0.375 AMP
1 POLE NORMALLY CLOSED CONTACT			
WM35B-120A	120 VAC	460 Ω	0.115 AMP
ML SERIES 1 POLE NORMALLY OPEN CONTACT			
WML35A-120A	120 VAC	700 Ω	0.058 AMP
WML35A-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	2,800 Ω	0.029 AMP
ML SERIES 2 POLE NORMALLY OPEN CONTACT			
WML35AA-120A	120 VAC	218 Ω	0.135 AMP
WML35AA-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	1,200 Ω	0.063 AMP
ML SERIES 3 POLE NORMALLY OPEN CONTACT			
WML35AAA-120A	120 VAC	111 Ω	0.220 AMP
WML35AAA-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	430 Ω	0.117 AMP

OTHER COIL VOLTAGES AVAILABLE, CONSULT FACTORY FOR DETAILS

1, 2 & 3 POLES, 60 AMPS**UL CONTACT RATINGS TABLE FOR M60A-M60B**

VOLTAGE	HP		MOTOR AMPS		RESISTIVE AMPS	TUNGSTEN	
	1Ø	3Ø	1Ø	3Ø		AMPS "A" (N.O.)	AMPS "B" (N.C.)
120VAC	3*	5*	34	30	60*	60*	45*
240VAC	5*	10*	28	28	60*	30	22.5
480VAC	7.5*	15*	21	21	60*	15	11.2
600VAC	7.5*	15*	16	17	50 **	12	9
24VDC	3/4		39		60*	50*	50*
48VDC	3/4		19.5		60*	50*	50*
125VDC	3/4		7.4		40*	40*	40*
250VDC	3/4		3.7		20*	20*	20*

* UL and CSA Listed ** 3 POLE 40 AMPS PER POLE
SEE MDR GENERAL SPECIFICATIONS AND DIMENSIONS.



UL Listed
File No. E52197

**UL CONTACT RATINGS TABLE FOR ML60A-60B**

VOLTAGE	RESISTIVE AMPS	TUNGSTEN	
		AMPS "A" (N.O.)	AMPS "B" (N.C.)
120VAC	60*	60*	45*
240VAC	60*	30	22.5
480VAC	60*	15	11.2
600VAC	50 **	12	9

* UL and CSA Listed ** 3 POLE 40 AMPS PER POLE

**CLASS WM60**

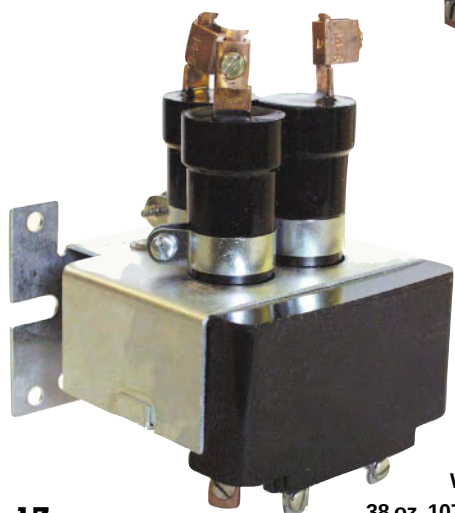
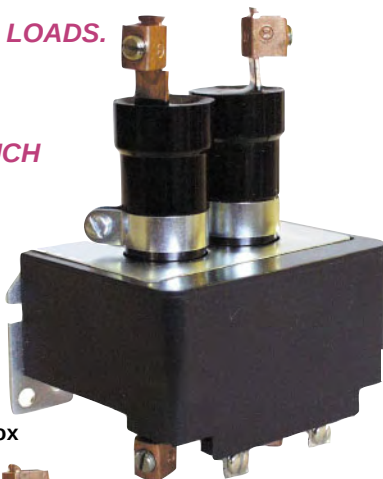
**SWITCHES RESISTIVE,
TUNGSTEN, AND MOTOR LOADS
HIGH INRUSH CAPACITY.
RECOMMENDED FOR DC LOADS.**

WEIGHT
13 oz, 370 grams approx

CLASS WML60

**RECOMMENDED FOR MUCH
LONGER LIFE WHEN
SWITCHING AC
RESISTIVE AND
TUNGSTEN LOADS.**

WEIGHT
26 oz, 738 grams approx



UP
↑
RECOMMENDED
MOUNTING
POSITION ±10

WEIGHT
38 oz, 1078 grams approx

COIL MEASURED @ 25°C

STANDARD PART NUMBERS	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)	NOMINAL COIL CURRENT
1 POLE NORMALLY OPEN CONTACT			
WM60A-120A	120 VAC	700 Ω	0.058 AMP
WM60A-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	2,800 Ω	0.029 AMP
WM60A-24D	24 VDC	186 Ω	0.120 AMP
2 POLE NORMALLY OPEN CONTACT			
WM60AA-120A	120 VAC	218 Ω	0.135 AMP
WM60AA-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	1,200 Ω	0.063AMP
WM60AA-24D	24 VDC	98 Ω	0.232 AMP
3 POLE NORMALLY OPEN CONTACT			
WM60AAA-120A	120 VAC	111 Ω	0.220 AMP
WM60AAA-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	430 Ω	0.117 AMP
WM60AAA-24D	24 VDC	63 Ω	0.375 AMP
1 POLE NORMALLY CLOSED CONTACT			
WM60B-120A	120 VAC	460 Ω	0.115 AMP
ML SERIES 1 POLE NORMALLY OPEN CONTACT			
WML60A-120A	120 VAC	700 Ω	0.058 AMP
WML60A-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	2,800 Ω	0.029 AMP
ML SERIES 2 POLE NORMALLY OPEN CONTACT			
WML60AA-120A	120 VAC	218 Ω	0.135 AMP
WML60AA-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	1,200 Ω	0.063AMP
ML SERIES 3 POLE NORMALLY OPEN CONTACT			
WML60AAA-120A	120 VAC	111 Ω	0.220 AMP
WML60AAA-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	430 Ω	0.117 AMP

OTHER COIL VOLTAGES AVAILABLE, CONSULT FACTORY FOR DETAILS

UL CONTACT RATINGS TABLE

VOLTAGE	RESISTIVE AMPS	TUNGSTEN AMPS	HORSEPOWER SINGLE PHASE
120VAC	100	100*	3
240VAC	100	60	5
480VAC	100	30*	15
600VAC	80*	24*	10*
24VDC	100	100	1.5*
48VDC	100	100	1.5*
125VDC	80	80	1.5*
250VDC	40	40	1.5*

*NON UL RATING

CLASS WM100

**CAPABLE OF SWITCHING 100 AMP
LOADS UP TO 480 VAC / 48 VDC**

GENERAL SPECIFICATIONS

COIL

Frequency of Operation: 60 per minute max
 Pull-in voltage: 80% of nominal voltage, typ. AC & DC coils
 Dropout voltage: 78% of nominal voltage, typ. AC coils
 65% of nominal voltage, typ. DC coils

CONTACTS

Material: Mercury
 Contact resistance: 2 milliohm typical

TIMING

Operate: 50 milliseconds typical
 Dropout: 100 milliseconds typical

DIELECTRIC STRENGTH

Across open Contact: 2650 V rms

TEMPERATURE

Operating: - 35°C to + 60°C under continuous load

LIFE EXPECTANCY

Electrical: 100,000 operations
 @ rated resistive load
 Mechanical: 5,000,000 operations @ no load

MISCELLANEOUS

Insulation Material: Class B - 130°C.
 Connections: Pressure connectors for #1-8 AWG wire
 Options: Other coil voltages available
 consult factory for details
 Weight: 15.9 oz. 450 grams approx.

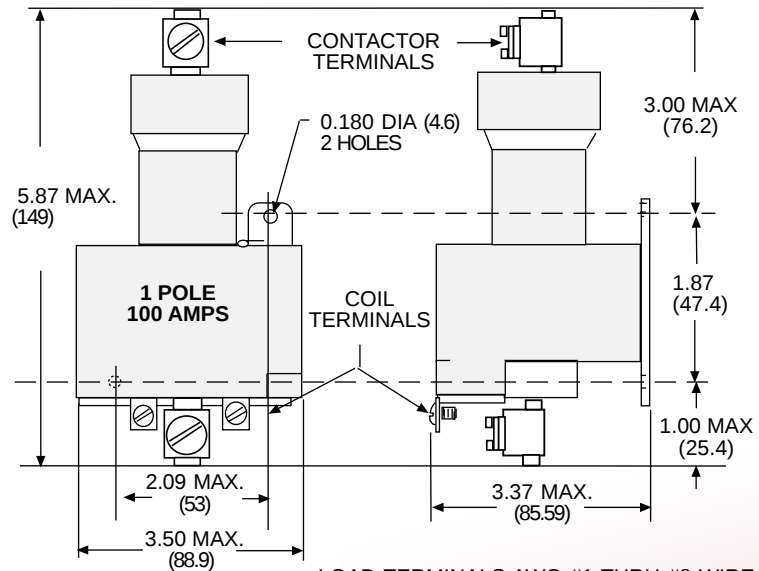
1 POLE 100 AMPS

UL LISTED
 367G
 UL Listed
 File No. E52197



OUTLINE DIMENSIONS

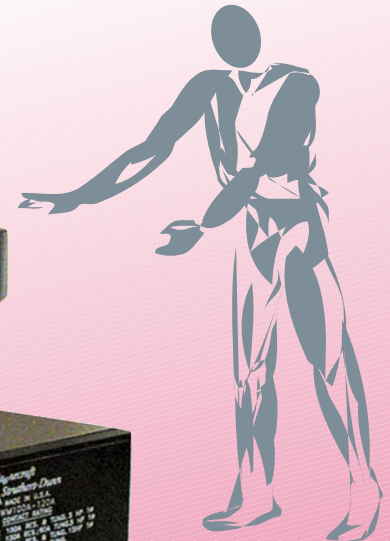
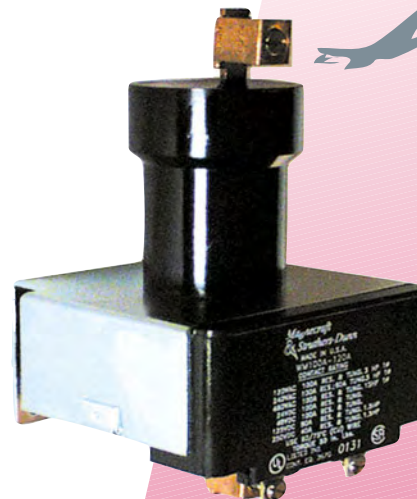
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



LOAD TERMINALS AWG #1 THRU #8 WIRE

UP

VERTICAL MOUNTING
 RECOMMENDED ±10°



COIL MEASURED @ 25°C

STANDARD PART NUMBERS	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)	NOMINAL COIL CURRENT
AC OPERATED NORMALLY OPEN CONTACT			
WM100A-120A	120 VAC	73.5 Ω	0.225 AMP
WM100A-240A	240 VAC, 60Hz/ 220 VAC, 50Hz	300 Ω	0.138 AMP
WM100A-24D	24 VDC	53 Ω	0.380 AMP

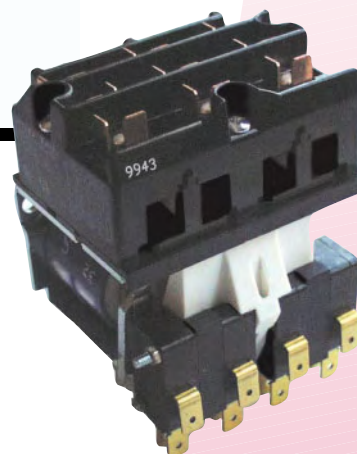
UL CONTACT RATINGS TABLE

LOAD VOLTAGE	PHASE	MOTOR LOAD	RESISTIVE LOAD
120 VAC	1-2-3	1 HP	15 AMPS
240 VAC	1	1.5 HP	10 AMPS
240 VAC	2-3	3 HP	10 AMPS
480/600 VAC	2-3	3 HP	5 AMPS
30 VDC	-	-	15 AMPS
125 VDC	-	-	5 AMPS

NOTE: AC CONTACTS RATED WITH ALL CONTACTS IN USE, NOT RATED PER POLE.

1 TO 3 HP, 15 AMPS

UL us
UL Recognized
File No. E13224B



THE SERIES A275 IS A COMPACT, 2-COIL, MECHANICALLY INTERLOCKED MOTOR REVERSING RELAY. APPLICATIONS INCLUDE:

INDUSTRIAL DOOR OPERATORS

ELECTRIC HOISTS

ELECTRONIC WHEEL BALANCING

THE A275 HAS 1/4" QUICK CONNECT TERMINALS ON THE COILS, CONTACTS AND AUXILIARY SWITCHES. THE MECHANICAL INTERLOCK WILL NOT JAM, EVEN IF BOTH COILS ARE SIMULTANEOUSLY ENERGIZED.

GENERAL SPECIFICATIONS**COIL**

Pull-in Voltage:	85% of nominal voltage or less for AC coils 80% of nominal voltage or less for DC coils,
Dropout Voltage:	10% of nominal voltage or more @ 25 °C
Max. allowed voltage:	110%
Coil Resistance:	± 10% @ 25°C
Duty:	Continuous

CONTACTS

Contact Material:	Silver cadmium oxide
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TIMING

Operate Time:	50 mS Max. @ nominal voltage
Release Time:	30 mS Max. @ nominal voltage

DIELECTRIC STRENGTH

All Mutually Insulated Points:	2500 V rms between all mutually Insulated current carrying parts and those parts to ground
Insulation Resistance:	500 VDC exceeds 1000 megohms

TEMPERATURE

Temperature Rating:	AC: -45°C to +50°C @ rated operation DC: -45°C to +70 °C @ rated operation
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LIFE EXPECTANCY

Mechanical:	5,000,000 operations @ no load 100,000 operations @ rated load
Electrical:	500,000 operations @ 1/2 rated load

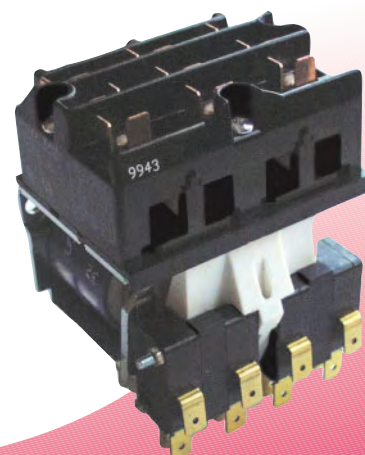
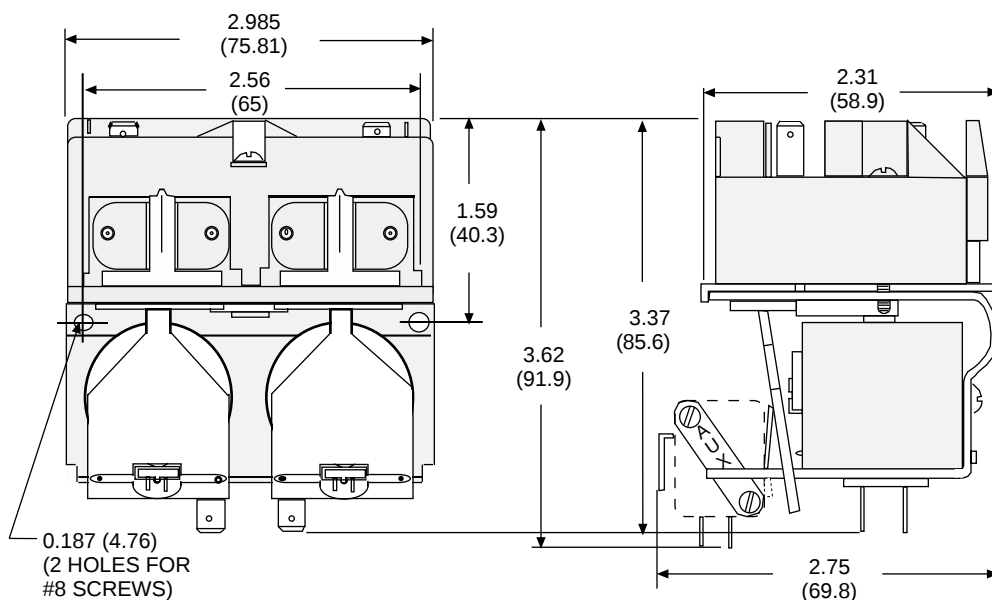
MISCELLANEOUS

Weight:	1 pound approx.
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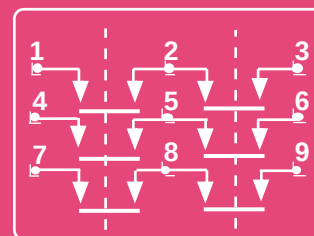
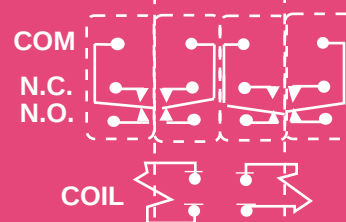


OUTLINE DIMENSIONS

DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).

**WIRING DIAGRAM**

(VIEWED FROM PIN END)

**MECHANICAL INTERLOCK****AUXILIARY CONTACT SNAP SWITCHES****ORDERING CODE FOR RELAYS****A275 KXX 90 -24****CLASS:**

A275, 0.250 TERMINALS, MOTOR REVERSING. CONTINUOUS, 1 & 2 HP, 3 POLE MODELS

CONTACT ARRANGEMENTS:

KXX (3PDM-NO., PER COIL)

OPTIONS:2 AUX. CONTACTS, EACH SPDT (1 PER COIL) 0.250 QUICK CCONNECT TERMINALS - **CODE 90**4 AUX. CONTACTS, EACH SPDT (2 PER COIL) 0.250 QUICK CCONNECT TERMINALS - **CODE 91**TUNGSTEN CONTACTS - **CODE 97**RECTIFIED COIL - **CODE V2****COIL VOLTAGE:****AC:** 12, 24, 120, 208 & 240 **ADD "A" FOR AC COILS****DC:** 12, 24, 48 & 120 **ADD "D" FOR DC COILS**

OTHER COIL VOLTAGES AVAILABLE, CONTACT FACTORY FOR SPACIAL REQUIREMENTS.

STANDARD PART NUMBERS**AC OPERATED**

A275KXX-24A

A275KXX-120A

A275KXX90-24A

A275KXX90-120A

A275KXX91-24A

A275KXX91-120A

DC OPERATED

A275KXX-24D

A275KXX90-24D

A275KXX91-24D

COIL MEASURED @ 25°C**NOMINAL INPUT VOLTAGE****NOMINAL RESISTANCE (OHMS)**

24 / 24 VAC

120 / 120 VAC

24 / 24 VAC

120 / 120 VAC

24 / 24 VAC

120 / 120 VAC

24 / 24 VDC

24 / 24 VDC

24 / 24 VDC

4.8 Ω

125 Ω

4.8 Ω

125 Ω

4.8 Ω

125 Ω

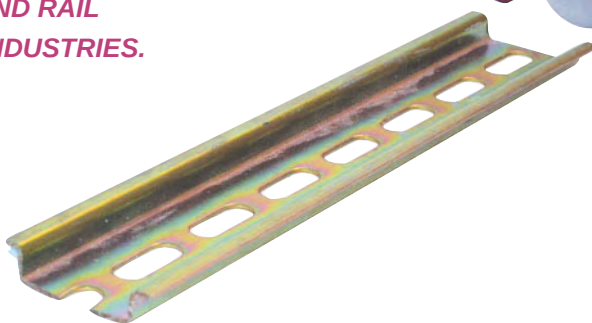
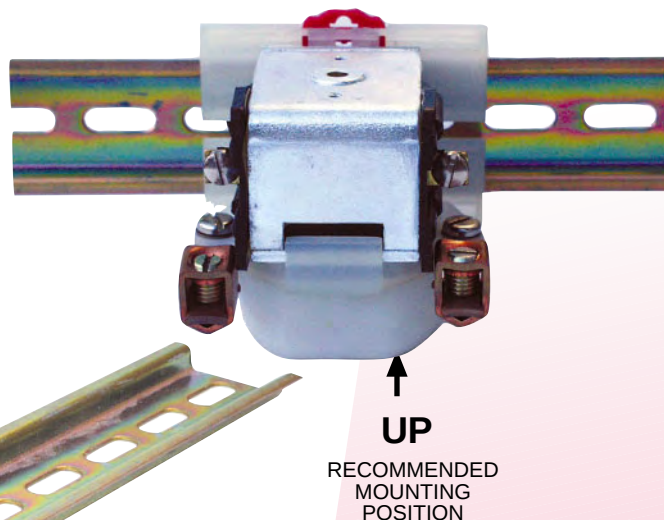
125 Ω

125 Ω

125 Ω

**SPST-N.O.-D.M. OR
SPST-N.C.-D.B.,
100 AMPS**

THE CLASS B101, IS A DC SOLENOID-ACTUATED, HEAVY DUTY CONTACTOR. EACH CONTACTOR HAS A SINGLE POLE, DOUBLE-MAKE OR DOUBLE-BREAK CONTACT, DIN-RAIL MOUNTING IS STANDARD. CONTACTS ARE ENCLOSED IN A MOLDED PLASTIC COVER. THE SERIES B101 IS RATED AT 100 AMPS CONTINUOUS DUTY. STOCK COILS ARE SPECIFIED FOR VDC. THE POWERFUL MAGNETIC STRUCTURE CREATES A HIGH CONTACT PRESSURE WHICH RESULTS IN VERY RELIABLE, LOW RESISTANCE CONTACTS. THE B101 IS SUITABLE FOR POWER APPLICATIONS IN TELECOMMUNICATIONS, ELEVATOR AND RAIL MASS TRANSIT, AS WELL AS OTHER INDUSTRIES.



GENERAL SPECIFICATIONS

COIL

Pull-in Voltage:	80% of nominal voltage or less for DC coils,
Dropout Voltage:	10% of nominal voltage or more @ 25°C
Max. allowed voltage:	± 110%
Coil Resistance:	± 10% @ 25°C
Duty:	Continuous.

CONTACTS

Contact Material:	Silver cadmium oxide.
Contact Rating:	100 amps @ 120/240 VAC 100 amps @ 28 VDC

TIMING

Operate Time:	60 mS max. @ nominal voltage.
Release Time:	30 mS max. @ nominal voltage.

DIELECTRIC STRENGTH

All Mutually Insulated Points:	1500 V rms between all mutually Insulated current carrying parts and those parts to ground.
Insulation Resistance:	500 VDC exceeds 1000 megohms.

TEMPERATURE

Temperature Rating: -45°C to +65°C @ rated operation.

LIFE EXPECTANCY

Mechanical:	5,000,000 operations @ no load
Electrical:	100,000 operations @ rated load.

TERMINALS

Coil Terminals:	#6-32
Load Terminals:	AWG 2-12 pressure wire connector

MISCELLANEOUS

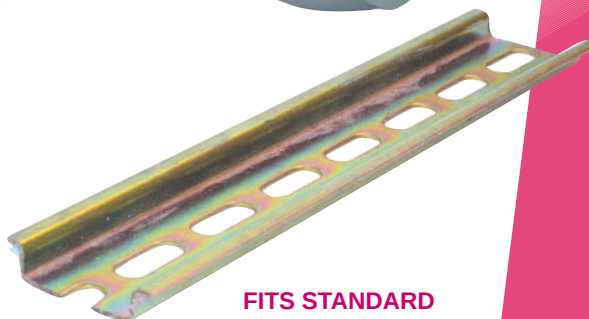
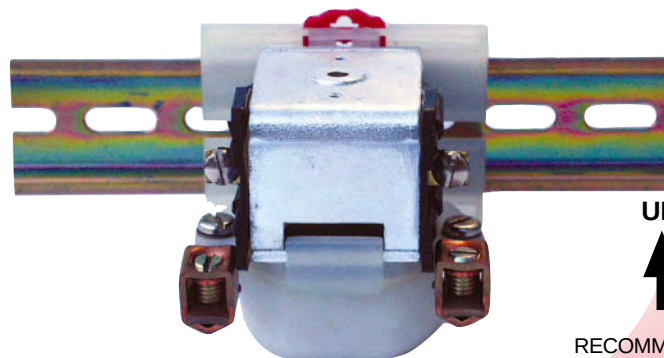
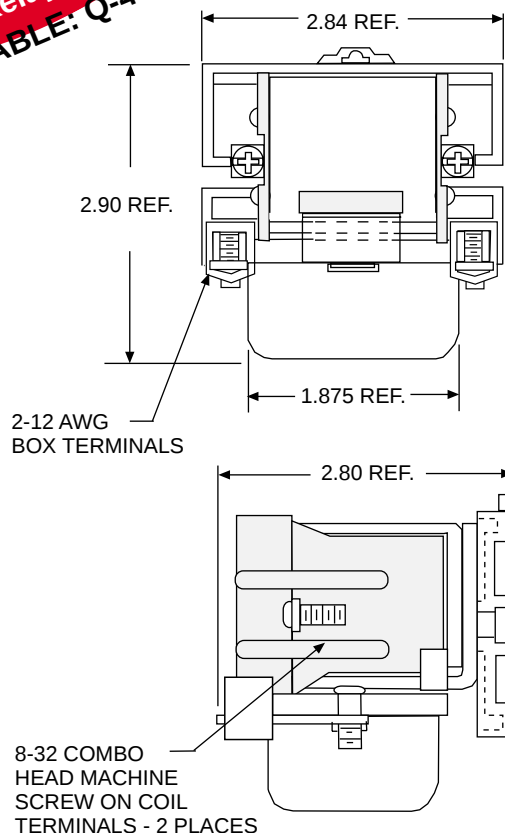
Mounting:	Panel or 35 mm DIN-rail
Weight:	370 grams approx.



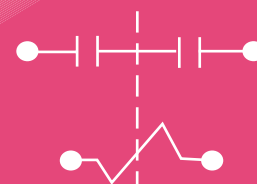
**SPST-N.O.-D.M. OR
SPST-N.C.-D.B.,
100 AMPS**

NEW
From The Market
Leader in Industrial
Relays
AVAILABLE: Q-4-02

OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



WIRING DIAGRAM
(VIEWED FROM PIN END)



ORDERING CODE FOR RELAYS

CLASS: B101 HXX -28D
100 AMP, 1 POLE

CONTACT ARRANGEMENTS:
HXX 1 POLE N.O.-D.M.
XXH 1 POLE N.C.-D.B.

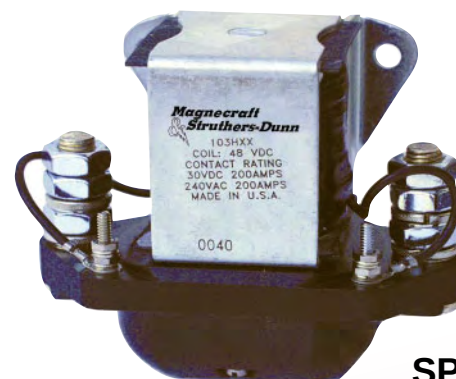
COIL VOLTAGE:
12, 28 & 48 ADD "D" FOR DC COILS

OPTIONS (CONSULT FACTORY)
AC COIL INPUT VOLTAGES
NON STANDARD DC COIL VOLTAGES

STANDARD PART NUMBERS	CONTACT CONFIGU- RATION	COIL MEASURED @ 25°C	
		NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)
B101HXX-12D	N.O.-D.M.	12 VDC	16.5 Ω
B101HXX-28D	N.O.-D.M.	28 VDC	92 Ω
B101HXX-48D	N.O.-D.M.	48 VDC	235 Ω
B101XXH-12D	N.C.-D.B.	12 VDC	16.5 Ω
B101XXH-28D	N.C.-D.B.	28 VDC	92 Ω
B101XXH-48D	N.C.-D.B.	48 VDC	235 Ω

THE CLASS 101, 102 AND 103 ARE DC SOLENOID-ACTUATED, HEAVY DUTY CONTACTORS. SINGLE POLE CONTACTS ARE ENCLOSED WITH A MOLDED PLASTIC COVER. THE CLASS 101 IS RATED AT 100 AMPS* CONTINUOUS DUTY, THE CLASS 102 IS RATED AT 200 AMPS* CONTINUOUS, AND THE CLASS 103 IS RATED AT 300 AMPS* CONTINUOUS. COILS ARE SPECIFIED FOR DC, AS STANDARD. THE POWERFUL MAGNETIC STRUCTURE CREATES VERY HIGH CONTACT PRESSURE WHICH RESULTS IN VERY RELIABLE AND LOW RESISTANCE CONTACTS, MAKING THEM SUITABLE FOR POWER APPLICATIONS IN TELECOMMUNICATIONS, ELEVATOR AND RAIL MASS TRANSIT, AS WELL AS OTHER INDUSTRIES.

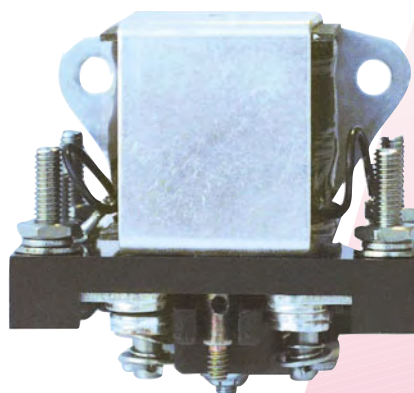
* UL PENDING. EXISTING RATING IS 50, 100 AND 200 AMPS, RESPECTIVELY



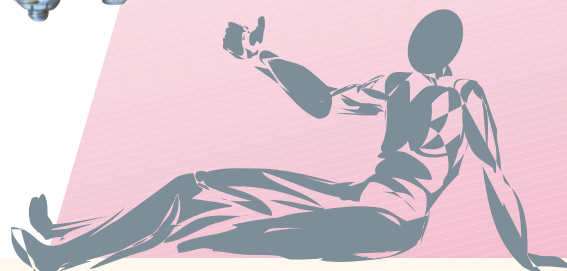
SPST



RECOMMENDED
MOUNTING
POSITION



DPST



GENERAL SPECIFICATIONS

COIL

Pull-in Voltage:	80% of nominal voltage or less for DC coils,
Dropout Voltage:	10% of nominal voltage or more @ 25°C
Max. allowed voltage:	110%
Coil Resistance:	±10% @ 25°C
Duty:	Continuous.

CONTACTS

Contact Material:	Silver cadmium oxide.
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TIMING

Operate Time:	60 mS max. @ nominal voltage
Release Time:	30 mS max. @ nominal voltage

DIELECTRIC STRENGTH

All Mutually Insulated	
Points:	1500 V rms between all mutually Insulated current carrying parts and those parts to ground.
Insulation Resistance:	500 VDC exceeds 1000 megohms.

TEMPERATURE

Temperature Rating:	-45°C to +65°C @ rated operation.
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LIFE EXPECTANCY

Mechanical:	5,000,000 operations @no load
Electrical:	100,000 operations @ rated load.

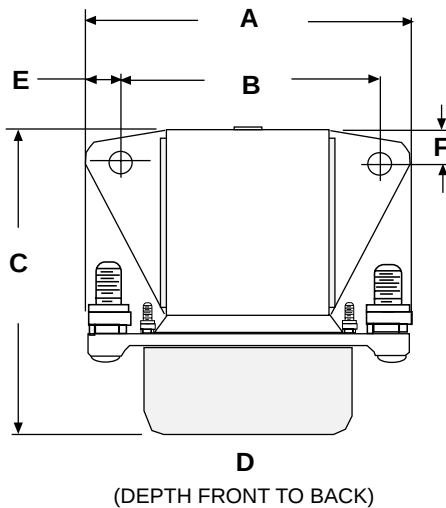
TERMINALS

Coil Terminals:	101: #6-32 102: #8-32 103: #8-32
Load Terminals:	101: #10-32 102: #1/4-20 103: #3/8-18

MISCELLANEOUS

Mounting:	Clearance holes, ea. 0.265 in dia
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OUTLINE DIMENSIONS
DIMENSIONS SHOWN IN INCHES & (MILLIMETERS).



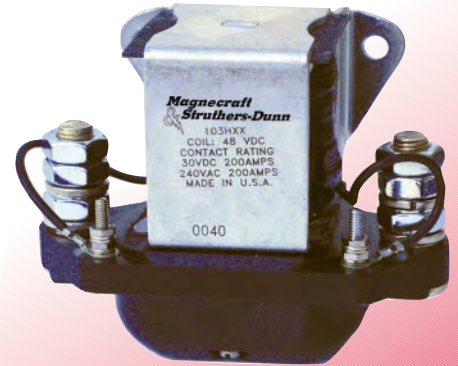
DIMENSIONS

DIM.	102, 1 POLE	103, 1 POLE	101, 2 POLE	102, 2 POLE	103, 2 POLE
A	3.38 (85.7)	4.25 (107.9)	2.56 (65.0)	3.25 (82.6)	4.50 (114.3)
B	2.25 (57.1)	2.40 (60.9)	1.87 (47.4)	2.25 (57.1)	2.40 (60.9)
C	3.22 (81.8)	3.53 (89.7)	2.50 (63.5)	3.13 (79.4)	3.63 (92.1)
D	2.09 (53.0)	2.65 (67.3)	2.13 (54.0)	2.75 (69.9)	3.50 (88.9)
E	0.56 (14.2)	0.92 (23.3)	0.40 (10.1)	0.56 (14.2)	0.92 (23.3)
F	0.50 (12.7)	0.56 (14.2)	0.43 (10.9)	0.50 (12.7)	0.56 (14.2)

UP



RECOMMENDED
MOUNTING
POSITION



NOMINAL VOLTAGE	RESISTANCE (OHMS) -10%				
	102, 1 POLE	103, 1 POLE	101, 2 POLE	102, 2 POLE	103, 2 POLE
12 VDC	17	15.3	9	10.7	15.3
28 VDC	75	59	98	75	59
48 VDC	290	245	150	290	245
110-125 VDC	1560	1420	1475	1560	1420

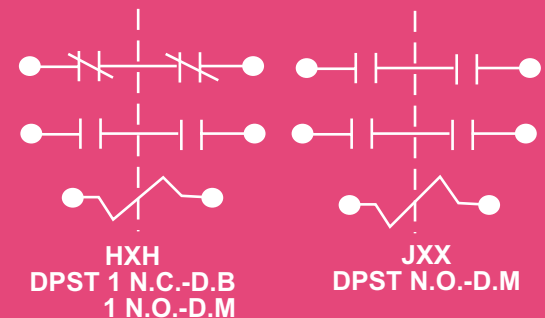
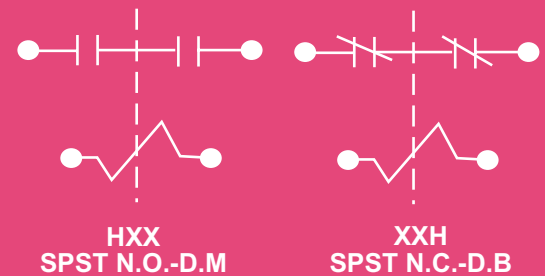
RESISTANCE LOAD (AMPS)

NOMINAL VOLTAGE	AC CONTACT RATINGS*		
	SERIES 101	SERIES 102	SERIES 103
120 VAC 60Hz	100	200	300
240 VAC 60Hz	100	200	300
DC CONTACT RATINGS			
	100	200	300

*UL PENDING

WIRING DIAGRAM

(VIEWED FROM PIN END)



ORDERING CODE FOR RELAYS

CLASS: 102 HXX -28D

101 SCREW TERM., 100 AMP
102 SCREW TERM., 200 AMP
103 SCREW TERM., 300 AMP

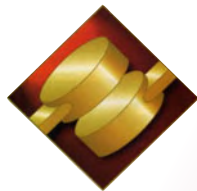
CONTACT ARRANGEMENTS:

HXX 1 POLE N.O.-D.M.*
HXH 2 POLE -1 N.C.-D.B. AND 1 N.O.-D.M.
JXX 2 POLE N.O.-D.M.
XXH 1 POLE N.C.-D.M.*

COIL VOLTAGE:

12, 28, 48, 110-125 ADD "D" FOR DC COILS

OPTIONS (CONSULT FACTORY)
AC COIL INPUT VOLTAGES
NON STANDARD DC COIL VOLTAGES
* 102 AND 103 ONLY, FOR 101 SEE B101 PAGE ?



SECTION 3 CROSS REFERENCE GUIDE

MAGNECRAFT	STRUTHERS-DUNN	POTTER & BRUMFIELD	OMRON	DELTRON	TYCO
W199AX-4	A425XAX-120A	PRD5AG0-120 / PRD5AY0-120	MGN1C-AC120	20239-83	9-1393127-9 / 1393128-5
W199AMX-4		PRDA5AGA-120 / PRDA5AYA-120			
W199X-2	A425XAX-12D	PRD5DG0-12 / PRD5DY0-12	MGN1C-DC12	20243-81	1-1393128-2 / 1-1393128-6
W199X-3	A425XAX-24D	PRD5DG0-24 / PRD5DY0-24	MGN1C-DC24	20243-82	1-1393128-3 / 1-1393128-7
W199MX-2		PRDA5DGA-12 / PRDA5DYA-12			
W199MX-3		PRDA5DGA-24 / PRDA5DYA-24			
W199AX-13	A425XBX-24A	PRD11AG0-24 / PRD11AY0-24	MGN2C-AC24	20241-82	1-1393127-1 / 2-1393127-9
W199AX-14	A425XBX-120A	PRD11AG0-120 / PRD11AY0-120	MGN2C-AC120	20241-83	1-1393127-9 / 2-1393127-6
W199AX-15	A425XBX-240A	PRD11AG0-240 / PRD11AY0-240	MGN2C-AC240	20241-84	1-1393127-2 / 3-1393127-0
W199AMX-63	A425XBX90-24A	PRDA11AGA-24 / PRDA11AYA-24		20246-82	
W199AMX-64	A425XBX90-120A	PRDA11AGA-120 / PRDA11AYA-120		20246-83	
W199AMX-65	A425XBX90-240A	PRDA11AGA-240 / PRDA11AYA-240		20246-84	
W199X-11	A425XBX-6D	PRD11DG0-6 / PRD11DY0-6	MGN2C-DC6		
W199X-12	A425XBX-12D	PRD11DG0-12 / PRD11DY0-12	MGN2C-DC12	20245-81	3-1393127-5 / 6-1393127-1
W199X-13	A425XBX-24D	PRD11DG0-24 / PRD11DY0-24	MGN2C-DC24	20245-82	3-1393127-8 / 6-1393127-2
W199X-14	A425XBX-110D	PRD11DG0-110 / PRD11DY0-110	MGN2C-DC110	20245-84	3-1393127-4 / 6-1393127-0
W199MX-49		PRDA11DGA-6 / PRDA11DYA-6			
W199MX-50	A425XBX90-12D	PRDA11DGA-12 / PRDA11DYA-12		20247-81	
W199MX-51	A425XBX90-24D	PRDA11DGA-24 / PRDA11DYA-24		20247-82	
W199MX-52	A425XBX90-110D	PRDA11DGA-110 / PRDA11DYA-110		20247-84	
W199AX-8	A425BXX-24A	PRD7AG0-24 / PRD7AY0-24	MGN2A-AC24	20240-82	9-1393129-6 / 1393130-9
W199AX-9	A425BXX-120A	PRD7AG0-120 / PRD7AY0-120	MGN2A-AC120	20240-83	9-1393129-5 / 1393130-7
W199AX-10	A425BXX-240A	PRD7AG0-240 / PRD7AY0-240	MGN2A-AC240	20240-84	9-1393129-7 / 1-1393130-0
W199AMX-33		PRDA7AGA-24 / PRDA7AYA-24		20248-82	
W199AMX-34		PRDA7AGA-120 / PRDA7AYA-120		20248-83	
W199AMX-35	A425BXX90-240A	PRDA7AGA-240 / PRDA7AYA-240		20248-84	
W199X-7	A425BXX-12D	PRD7DG0-12 / PRD7DY0-12	MGN2A-DC12	20244-81	1-1393130-5 / 2-1393130-8
W199X-8	A425BXX-24D	PRD7DG0-24 / PRD7DY0-24	MGN2A-DC24	20244-82	1-1393130-6 / 2-1393130-9
W199MX-26	A425BXX90-12D	PRDA7DGA-12 / PRDA7DYA-12		20249-81	
W199MX-27		PRDA7DGA-24 / PRDA7DYA-24		20249-82	
W199ADX-4	A425HXX-120A	PRD3AG0-120 / PRD3AY0-120	MGN1X-AC120	20238-83	6-1393127-9 / 7-1393127-9
W199ADX-5	A425HXX-240A	PRD3AG0-240 / PRD3AY0-240	MGN1X-AC240	20238-84	7-1393127-1 / 8-1393127-1
W199DYX-2	A425XXH-12D	PRD4DG0-12 / PRD4DY0-12		20336-81	
W199ADMX-4	A425HXX90-120A	PRDA3AGA-120 / PRDA3AYA-120			
W199ADMX-5	A425HXX90-240A	PRDA3AGA-240 / PRDA3AYA-240			
W199DYM-2					
W199DX-2	A425HXX-12D	PRD3DG0-12 / PRD3DY0-12	MGN1X-DC12	20242-81	8-1393127-3 / 9-1393127-5
W199DX-3	A425HXX-24D	PRD3DG0-24 / PRD3DY0-24	MGN1X-DC24	20242-82	8-1393127-4 / 9-1393127-6
W199DMX-2	A425HXX90-12D	PRDA3DGA-12 / PRDA3DYA-12			
W199DMX-3	A425HXX90-24D	PRDA3DGA-24 / PRDA3DYA-24			
W199ADB-4	A425HXX69-120A	PRD3AJ0-120 / PRD3AH0-120			7-1393127-4 / 7-1393127-3
W199ADB-4		PRDA3AJA-120 / PRDA3AHA-120			
W199DBX-3	A425HXX69-24D	PRD3DJ0-24 / PRD3DH0-24			
W199DBX-6	A425HXX69-48D	PRD3DJ0-48 / PRD3DH0-48			
W199DBM-3		PRDA3DJA-24 / PRDA3DHA-24			
W199DBM-2		PRDA3DJA-48 / PRDA3DHA-48			

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.



SECTION 3 CROSS REFERENCE GUIDE

MAGNECRAFT	STRUTHERS-DUNN	POTTER & BRUMFIELD	OMRON	DELTRON	TYCO
W199ABX-14	A425XBX69-120A	PRD11AJ0-120 / PRD11AH0-120	MGN2CM-AC120	20919-83	2-1393127-0 / 1-1393127-6
W199ABMX-7	A425XBX6990-120A	PRDA11AJA-120 / PRDA11AHA-120			
W199BX-13	A425XBX69-24D	PRD11DJ0-24 / PRD11DH0-24			
W199BX-14	A425XBX69-110D	PRD11DJ0-110 / PRD11DH0-110	MGN2CM-DC110	20918-84	4-1393127-6
W199BMX-13	A425XBX6990-24D	PRDA11DJA-24 / PRD11DHA-24			
W199BMX-14	A425XBX6990-110D	PRDA11DJA-110 / PRDA11DHA-110			
W199ADEX-4		PRD3AP4-120			7-1393127-6
W199DEX-3		PRD3DP4-24			9-1393127-1
50-1289-1		35D013			

MAGNECRAFT & STRUTHERS-DUNN	DURAKOOL	MDI
WM35A-120A	BFL-7032	35NO-120A
WM35A-240A	BFL-7034	35NO-220A
WM35A-24D	BFL-7048	35NO-24D
WM35AA-120A	BFL2-7027	235NO-120A
WM35AA-240A	BFL2-7029	235NO-240A
WM35AA-24D	BFL2-7032	235NO-24D
WM35AAA-120A	BFL3-7024	335NO-120A
WM35AAA-240A	BFL3-7026	335NO-240A
WM35AAA-24D	BFL3-7038	335NO-24D
WM35B-120A		35NC-120A
WM60A-120A	BFC-717	60NO-120A
WM60A-240A	BFC-719	60NO-220A
WM60A-24D	BFC-722	60NO-24D
WM60AA-120A	BFC2-727	260NO-120A
WM60AA-240A	BFC2-729	260NO-240A
WM60AA-24D	BFC2-733	260NO-24D
WM60AAA-120A	BFC3-708	360NO-120A
WM60AAA-240A	BFC3-710	360NO-240A
WM60AAA-24D	BFC3-721	360NO-24D
WM100A-120A	CFC-718	100NO-120A
WM100A-240A	CFC-720	100NO-220A
WM100A-24D	CFC-723	100NO-24D

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