




Magnetic Hydraulic Circuit Breakers

Product Facts

- Designed for the international market
- Ratings to 50 amps
- Heavy duty #10-32 stud connections (W9)
- Optional 10 amp auxiliary switch
- Optional snap-in mounting (W6)
- Several delay curve options
- Trip free operation
- UL Recognized as Supplementary Protector under UL 1077, File E69543 
- CSA Certified as a Supplementary Protector, File LR15734 
- VDE Approved to VDE 0642/EN 60 934 (Circuit Breakers for Equipment) License No. 73782 



Typical Resistance and Impedance

Current (Amps)	DC Resistance (Ohms)	50/60 Hz. Impedance (Ohms)	400 Hz. Impedance (Ohms)
0.2	90	90	180
1.0	1.2	1.2	2.0
2.0	0.28	0.28	0.50
5.0	0.04	0.04	0.05
10.0	0.013	0.013	0.025
20.0	0.004	0.005	0.0065
30.0	0.0027	0.002	0.004
40.0	0.002	0.002	0.003
50.0	0.0015	0.0015	0.0025

Tolerance: 0.1 – 4.99 ± 15%; 5 – 9.99 ± 20%; 10 – 15 ± 25%; 16 – 30 ± 50%.

Specifications

Electrical Data

Auxiliary Switch — See Auxiliary Switch Ratings Table 2 for details.

Calibration — Breakers will hold 100% of rated current. Breakers may trip between 101% and 124% of rated load (149% for 400 Hz. units and 134% for

AC/DC units). Breakers must trip at 125% of rated load and above (150% for 400 Hz. units and 135% for AC/DC units).

Dielectric Strength — 50/60 or 400 Hz. — 1500V; DC — 1100V.

Insulation Resistance — 100 Megohms at 500 VDC.

Endurance — 10,000 on/off cycles — 6000 at rated load, 4000 at no load. Units tested at six cycles per minute, 1 second on and 9 seconds off at 25°C ambient.

Mechanical/Environmental Data

Operating Temperature — -40°C to +85°C.

Humidity — Meets requirements of MIL-STD-202 method 103.

Shock — Tested per MIL-STD-202, method 213, test condition C (100g @ 6 ms).

Vibration — Tested per MIL-STD-202, method 201, 10-55 Hz., 0.06" [1.52 mm] total excursion in 2 planes.

Fungus and Moisture Resistance — Special moisture resistant finish applied to all ferrous parts. Plastic parts are made of inherently fungus resistant material.

Marking — W6 units have ON and OFF molded on the rocker of rocker actuated units (rocker actuated VDE units have international "1" and "0"). W9 units have ON and OFF molded into the area at the base of the toggle. International "1" and "0" symbols are marked on the toggle for both W6 and W9.

Mounting — Panel mounted units are mounted with two #6-32 screws from the front of the panel. Metric models for use with M3 x 0.5 screws are available. Units with snap-in mounting option snap through the front of the panel. To maintain published performance specifications, units should not be mounted more than 90° from their normal upright position.

Weight — Approximately 2.5 ounces per pole.

Approvals and Ratings Table 1

W6 Series		UL/CSA (All Circuit Functions)		
Maximum Voltage	Frequency (Hz)	Current Phase	Capacity (Amps)	Interrupting Rating (Amps)
65	DC	—	0.2-50	2,000
277	50/60	1	0.2-20	5,000
277	50/60	1	21-50	2,500
277/480	50/60	3Ø-Wye	0.2-20	5,000
250	400	1	0.2-20	2,500
250	400	1	21-50	1,250
250	400	3Ø-Wye	0.2-20	2,500

W9 Series		UL/CSA (All Circuit Functions)		
Maximum Voltage	Frequency (Hz)	Current Phase	Capacity (Amps)	Interrupting Rating (Amps)
65	DC	—	0.2-50	2,000
277	50/60	1	0.2-50	5,000
277/480	50/60	3Ø-Wye	0.2-20	5,000
250	400	1	0.2-50	2,500
250	400	3Ø-Wye	0.2-50	2,500

W6 Series		VDE (Circuit Function X)		
Maximum Voltage	Frequency (Hz)	Current Phase	Capacity (Amps)	Interrupting Rating (Amps)
65	DC	—	0.2-50	2,000
250	50/60	1	0.2-30	5,000
250	50/60	1	31-50	2,000
415/240	50/60	3Ø	0.2-30	5,000

W9 Series		VDE (Circuit Function X)		
Maximum Voltage	Frequency (Hz)	Current Phase	Capacity (Amps)	Interrupting Rating (Amps)
65	DC	—	0.2-50	2,000
250	50/60	1	0.2-30	5,000
250	50/60	1	31-50	2,000
415/240	50/60	3Ø	0.2-30	5,000

Approvals and Ratings Table 2

UL/CSA			
Switch Number	Voltage 50/60 Hz.	Current (Amps)	Terminals W x T x L
A	125	10	.093 x .020 x .250 2.36 x .51 x 6.40

For complete product information, reference catalog 1308242.

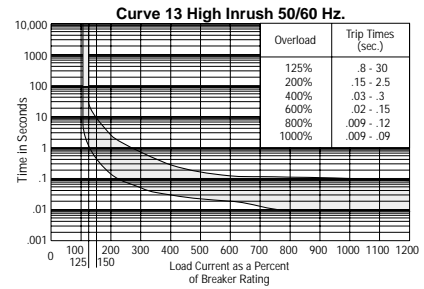
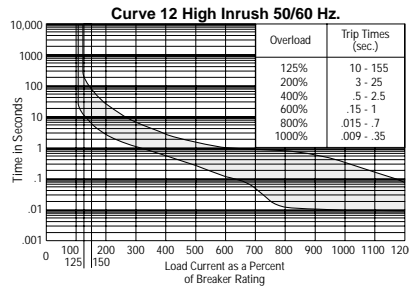
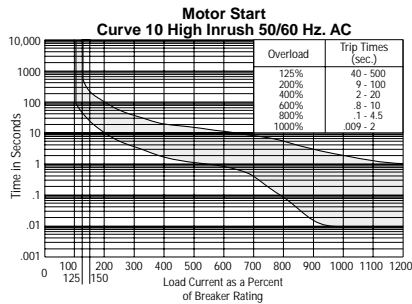
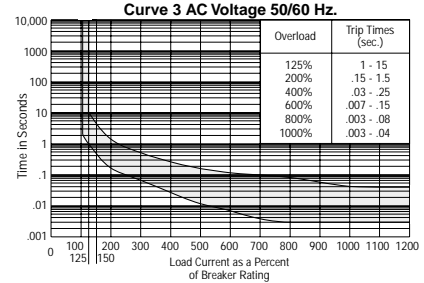
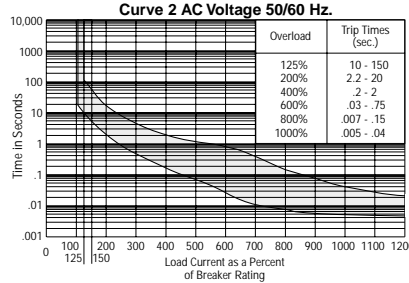
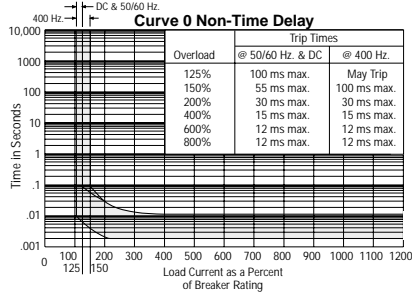


Relays

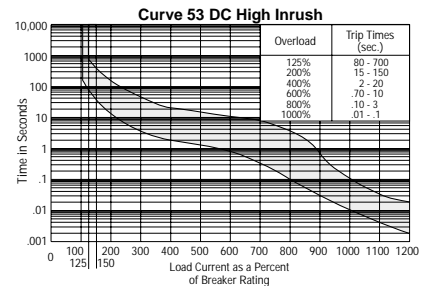
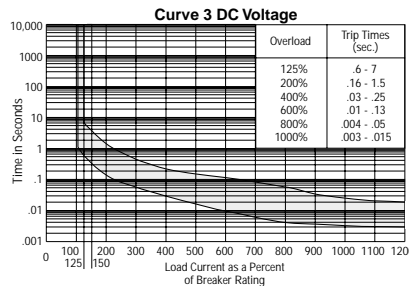
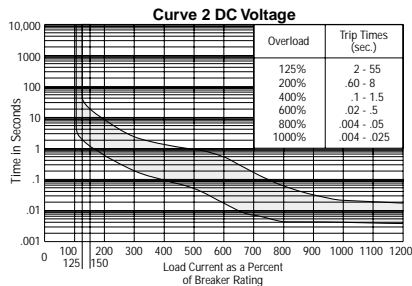
Magnetic Hydraulic Circuit Breakers (Continued)

Time vs. Current Trip Curves for W6 Series and W9 Series

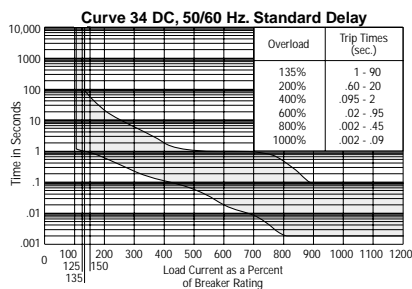
AC 50/60 Hz.



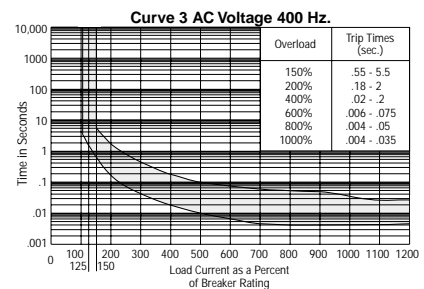
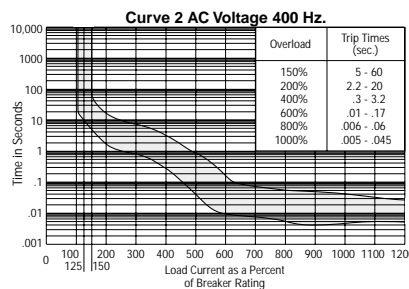
DC



AC/DC



AC 400 Hz.



Note: For instantaneous curves for all voltages refer to Curve 0 Non-Time Delay under the AC 50/60 Hz. heading.

For complete product information, reference catalog 1308242.

Magnetic Hydraulic Circuit Breakers (Continued)

Pulse Tolerance Specifications

Pulse tolerance is defined as a single pulse of a half sine wave (1/2 cycle or 8 milliseconds) that will not trip the breaker. An inertia wheel

for increased pulse tolerance is available by specifying "P" after the time delay curve number in the ordering information. The table at right lists pulse tolerance values of standard and inertia delay models.

Voltage	Time Delay Curve	Pulse Tolerance Value	
		Standard	Inertia Delay
AC 50/60 Hz.	2	7.5	18
	3	6	18
	10	18	30
	12	18	30
	13	18	30
AC 400 Hz.	2	6.5	18
	3	5.5	18

To determine pulse tolerance multiply breaker rating by value in table. For example, a 2A breaker with time delay curve 3 has a standard pulse tolerance of 12A (2A x 6). The same breaker with an inertia delay has a pulse tolerance of 36A (2A x 18).

Ordering Information — W6 Series

Typical Part Number: **W 67 — X 2 Q 1 2 — 20**

Circuit Breaker Mounting
W = #6-32 mounting threads
M = M3.0 x 0.5 mounting threads
X = Snap in mounting (Not available in rocker actuated models)

Number of Poles
67 = Single pole 68 = Two pole 69 = Three pole 70 = Four pole

Circuit Function (Only X is VDE approved)
A = Series trip with auxiliary switch (.093" QC) X = Series trip

Actuator (One actuator per pole)
1 = Black toggle 3 = Black rocker 5 = Red rocker 9 = Red toggle
2 = White toggle 4 = White rocker 6 = Grey rocker

Termination
Q = .250" QC (DIN 46 244) 25A Max. VDE S = #8-32 screw T = #10-32 screw
Note: "T" termination must be used for all ratings of 31 amps or above.

VDE Approval
Blank = UL/CSA approved breaker
V = VDE approved breaker without auxiliary switch

Amp Rating (Consult TYCO for other values)

0.20	0.75	2.0	3.5	6.0	8.0	11.0	20.0	35.0	50.0
0.25	1.0	2.5	4.0	7.0	9.0	12.0	25.0	40.0	
0.50	1.5	3.0	5.0	7.5	10.0	15.0	30.0	45.0	

Time Delay Curve
0 = Instantaneous 10 = AC high inrush (Motor start)
2 = Standard delay 12 = AC high inrush version of #2
3 = Short delay 13 = AC high inrush version of #3
53 = DC high inrush 34 = Combination AC/DC standard delay

Notes: Curves may be specified with increased pulse tolerance for 1/2 cycle by adding "P" after curve. See delay curve section for availability and details.

Maximum Line Voltage (See Table 1 for current ranges)

UL/CSA Types	1 = 277 VAC, 50/60 Hz 2 = 277/480 3 = 250 VAC, 400 Hz 5 = 65 VDC 7 = AC/DC 277 VAC or 65 VDC (Delay curve 34 must be specified)	VDE Types	1 = 250 VAC, 415/240 VAC 5 = 65 VDC 7 = AC/DC 250 VAC, 415/240 VAC, 65 VDC (Delay curve 34 must be specified)
---------------------	---	------------------	---

Stock Items - We recommend that our authorized distributors stock the following items for immediate delivery.

W67-A2Q12-5	W67-X2Q12-5	W67-X2Q13-1	W67-X2Q13-25	W67-X2Q52-15	W68-X2Q12-5	W68-X2Q12-30	W69-X2Q12-15
W67-A2Q12-10	W67-X2Q12-7	W67-X2Q13-2	W67-X2Q13-30	W67-X2Q52-20	W68-X2Q12-7	W68-X2Q13-15	W69-X2Q12-20
W67-X2Q10-3	W67-X2Q12-10	W67-X2Q13-3	W67-X2Q50-5	W67-X2Q52-30	W68-X2Q12-10	W68-X2Q110-10	W69-X2Q12-25
W67-X2Q10-5	W67-X2Q12-15	W67-X2Q13-10	W67-X2Q50-10	W67-X2Q110-15	W68-X2Q12-15	W68-X2Q110-20	W69-X2Q12-30
W67-X2Q12-2	W67-X2Q12-20	W67-X2Q13-15	W67-X2Q52-5	W67-X2Q110-20	W68-X2Q12-20	W69-X2Q12-5	W69-X2Q110-20
W67-X2Q12-3	W67-X2Q12-30	W67-X2Q13-20	W67-X2Q52-10	W68-X2Q12-3	W68-X2Q12-25	W69-X2Q12-10	W69-X2Q110-30

Ordering Information — W9 Series

Typical Part Number: **W 91 — X 1 1 2 — 20**

Circuit Breaker Mounting
W = #6-32 mounting threads
M = M3.0 x 0.5 mounting threads

Number of Poles
91 = Single pole 92 = Two pole 93 = Three pole 94 = Four pole

Circuit Function (Only X is VDE approved)
A = Series trip with auxiliary switch (.093" QC) X = Series trip

Actuator (One actuator per pole)
1 = Black toggle 2 = White toggle

Maximum Line Voltage (See Table 1 for current ranges)

UL/CSA Types	1 = 227 VAC, 50/60 Hz 2 = 277/480 3 = 250 VAC, 400 Hz 5 = 65 VDC 7 = AC/DC 277 VAC or 65 VDC (Delay curve 34 must be specified)	VDE Types	1 = 250 VAC, 415/240 VAC 5 = 65 VDC 7 = AC/DC 250 VAC, 415/240 VAC, 65 VDC (Delay curve 34 must be specified)
---------------------	---	------------------	---

VDE Approval
Blank = UL/CSA approved breaker
V = VDE approved breaker without auxiliary switch

Amp Rating (Consult TYCO for other values)

0.20	0.75	2.0	3.5	6.0	8.0	11.0	20.0	35.0	50.0
0.25	1.0	2.5	4.0	7.0	9.0	12.0	25.0	40.0	
0.50	1.5	3.0	5.0	7.5	10.0	15.0	30.0	45.0	

Time Delay Curve
0 = Instantaneous 10 = AC high inrush (Motor start)
2 = Standard delay 12 = AC high inrush version of #2
3 = Short delay 13 = AC high inrush version of #3
53 = DC high inrush 34 = Combination AC/DC standard delay

Notes: Curves may be specified with increased pulse tolerance for 1/2 cycle by adding "P" after curve. See delay curve section for availability and details.

Stock Items - We recommend that our authorized distributors stock the following items for immediate delivery.

W91-X112-1	W91-X112-15	W91-X113-15	W91-X152-40	W92-X112-5	W92-X112-30	W92-X1110-30	W93-X112-30
W91-X112-2	W91-X112-20	W91-X150-5	W91-X152-50	W92-X112-7	W92-X112-40	W93-X112-5	W93-X112-40
W91-X112-3	W91-X112-40	W91-X152-10	W91-X1110-20	W92-X112-10	W92-X112-50	W93-X112-10	W93-X112-50
W91-X112-5	W91-X112-50	W91-X152-15	W92-X112-1	W92-X112-15	W92-X113-15	W93-X112-15	W93-X1110-20
W91-X112-7	W91-X113-5	W91-X152-20	W92-X112-2	W92-X112-20	W92-X113-20	W93-X112-20	W93-X1110-30
W91-X112-10	W91-X113-10	W91-X152-30	W92-X112-3	W92-X112-25	W92-X1110-20	W93-X112-25	

For complete product information, reference catalog 1308242.

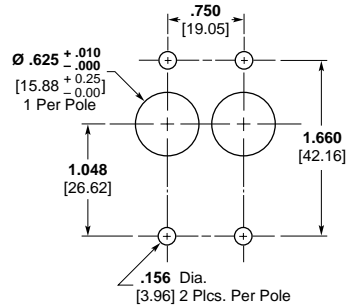
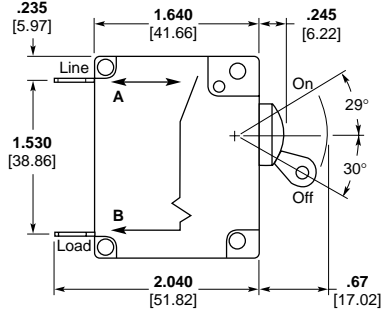


Relays

Magnetic Hydraulic Circuit Breakers (Continued)

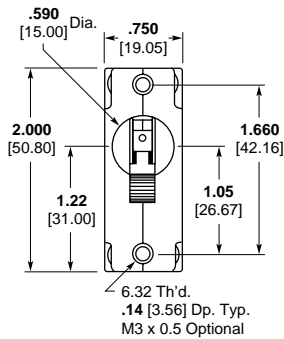
**Outline Dimensions —
Toggle Actuator Models**

W6 Series

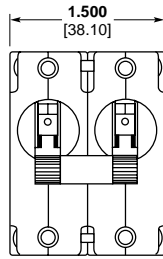


Panel Mounting Cutout

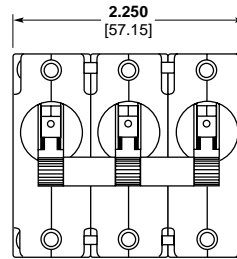
W6 Series



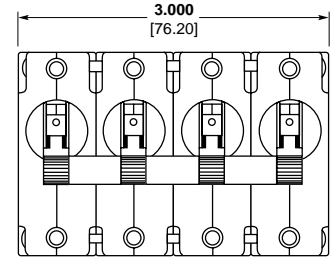
1 Pole



2 Pole



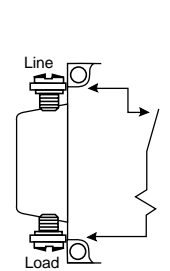
3 pole



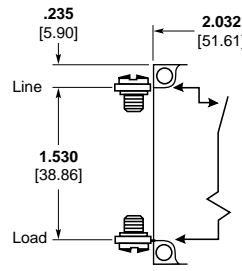
4 Pole

Note:

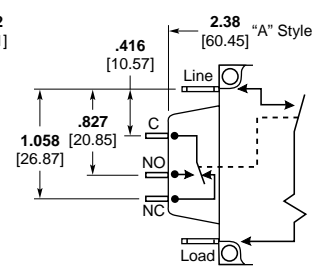
Multi-pole models furnished with separate handle tie hardware.



**VDE Models
W/Screw Terminals**



**UL/CSA Models
W/Screw Terminals**



**UL/CSA/VDE Models
W/Aux. Switch**

Notes:

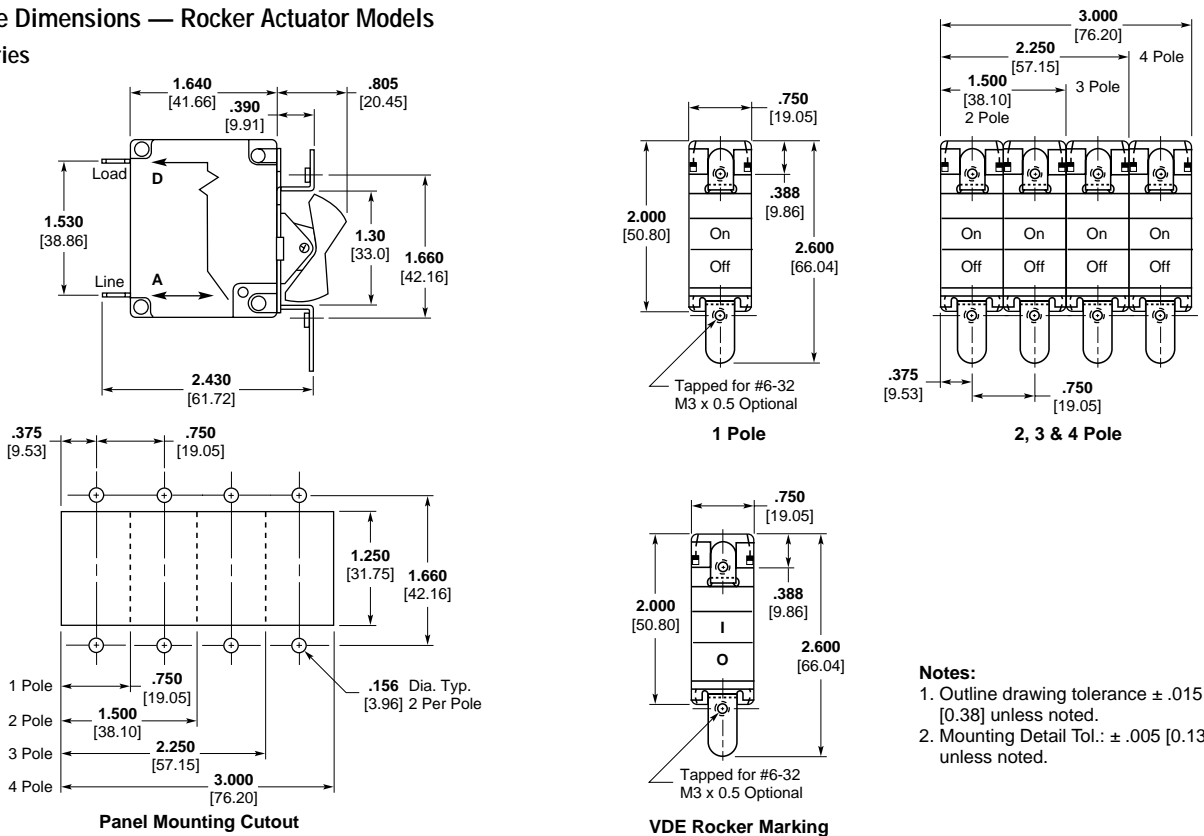
1. Terminal protrusion dimensions are referenced from back of mounting panel.
2. Main terminals are male quick connect type .250 [6.35] wide x .031 [.79] thick x .377 [9.58] long. Optional 8-32 x .250 [6.35] or 10-32 x .250 [6.35] screw type.
3. Panel mounting cutout detail mtg. detail tol.: ±.005 [.13] unless noted. Add additional cutouts to correspond to number of poles. Outline drawing tolerance ± .015 [.38] unless noted.

For complete product information, reference catalog 1308242.

Magnetic Hydraulic Circuit Breakers (Continued)

Outline Dimensions — Rocker Actuator Models

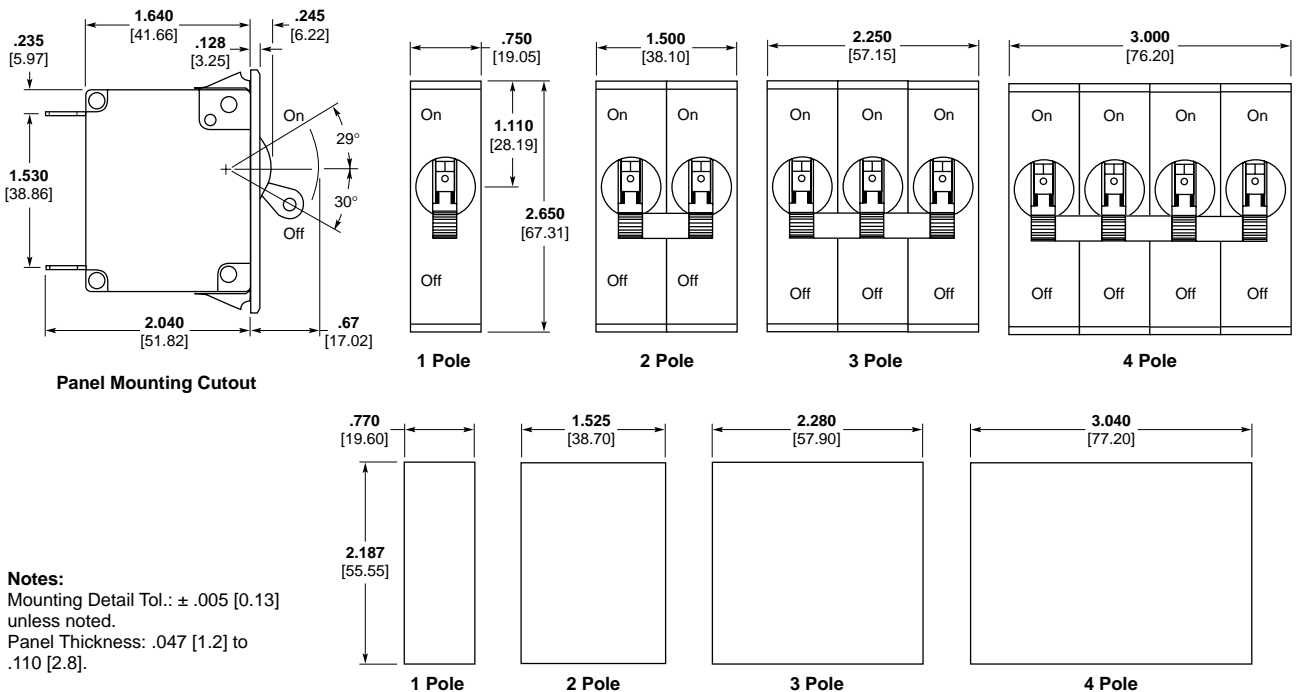
W6 Series



- Notes:**
 1. Outline drawing tolerance $\pm .015$ [0.38] unless noted.
 2. Mounting Detail Tol.: $\pm .005$ [0.13] unless noted.

Outline Dimensions — Snap-in Mounted Models

W6 Series



- Notes:**
 Mounting Detail Tol.: $\pm .005$ [0.13] unless noted.
 Panel Thickness: .047 [1.2] to .110 [2.8].

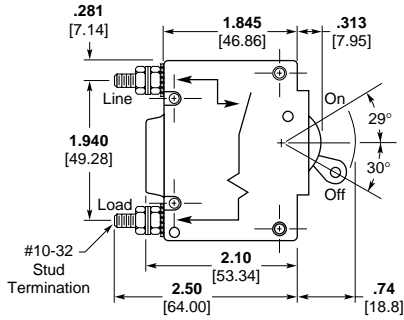
For complete product information, reference catalog 1308242.



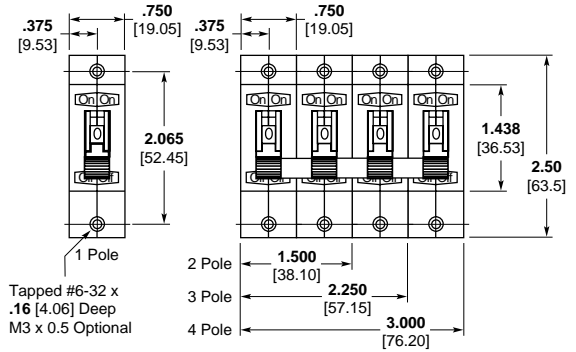
Magnetic Hydraulic Circuit Breakers (Continued)

Outline Dimensions

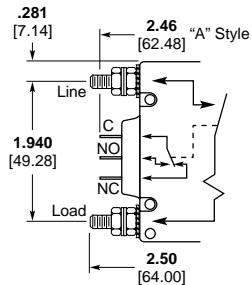
W9 Series



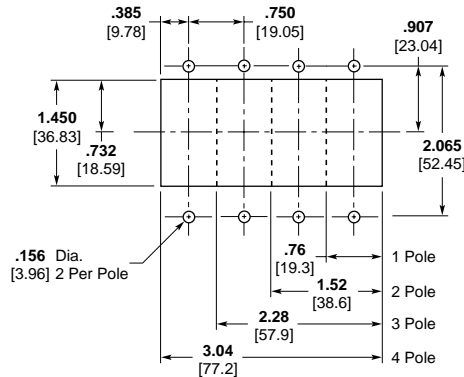
Series Trip Model



Series Trip Model



**Series Trip Model
With Common Enclosed
Auxiliary Switch**



Panel Mounting Cutout Detail

Notes:

1. Terminal protrusion dimensions are referenced from the back of the mounting panel.
2. Mounting detail tolerance $\pm .005$ [0.13] unless noted.
3. Outline drawing tolerance $\pm .015$ [0.38] unless noted.

For complete product information, reference catalog 1308242.

Hermetically Sealed General Purpose Low Signal to 5A Multicontact AC or DC Relay

Product Facts

- Miniature size from 2 pole to 4 pole
- UL Approved for Class 1 Division 2 hazardous locations
- Appropriate for use in a broad range of applications
- Various contact materials available for specific load requirements
- File E22575
- File LR15734



Specifications

Contact Data @ 25°C

Arrangements — 2 Form C (DPDT), 4 Form C (4PDT).

Expected Life — 10 million operations, mechanical; 100,000 operations min. at rated loads. Ratings are based on tests of relays with ungrounded frames.

Initial Breakdown Voltage — 500V rms, 60 Hz., between open contacts. 1240V rms, 60 Hz., between all other elements.

KHS Contact Ratings

Class I Division II Hazardous Location — 5 A @ 28 VDC/120 VAC

UL 508 (Industrial Control) — 3 A @ 28 VDC/120 VAC; 1/10 HP @ 120 VAC.

Coil Data @ 25°C

Voltage — From 6 to 120 VDC, and 6 to 120 VAC, 50/60 Hz.

Nom. Power — DC coils — 0.9 watt; 0.5 watt minimum operate @ 25° C.
AC coils — 1.2 VA; .055 VA minimum operate @ 25° C.

Max Power — DC coils — 2.0 watts @ 25° C.

Duty Cycle — Continuous.

Initial Breakdown Voltage — 500 V rms, 60 Hz.

Operate Data @ 25°C

Must-Operate Voltage — DC — 75% of nominal voltage.
AC — 85 % of nominal voltage.

Contact Ratings

Contact Code	Material	Resistive Rating	
		Minimum	Maximum
1	Silver	100 MA @ 12 VAC/12 VDC	3 A @ 120 VAC/28 VDC
2*	Silver-cadmium oxide	500 MA @ 12 VAC/12 VDC	5 A @ 120 VAC/28 VDC
3	Gold-silver-nickel	10 mA @ 12 VAC/12 VDC	2 A @ 120 VAC/28 VDC

Note: Relays should only carry a maximum of 15 amps continuously for all poles combined.

Coil Data

Nominal Voltage	DC Coils		AC Coils	
	Resistance In Ohms ± 10% @ 25°C	Nominal Inductance In Henrys	Resistance In Ohms ± 15%	Nominal AC Current In mA
5	32	.072	—	—
6	40	.08	10.5	200
12	160	.28	43	100
24	650	1.0	160	52
48	2,600	4.5	668	25
110*	11,000	17.0	—	—
120*	—	—	3,900	11.0

*Note: For 220 and 240 VDC, uses series dropping 5W resistor of 11,000Ω.

Operate Time — 13 ms typical @ nominal voltage (excluding bounce).

Release Time — 6 ms typical @ nominal voltage (excluding bounce).

Environmental Data

Temperature Range — Operating — - 45° C to + 70° C.
Storage — - 60°C to +130° C.

Mechanical Data

Mountings — #3-48 stud or sockets with printed circuit or solder terminals.

Termination — Solder/socket terminals. (Printed circuit terminals are available on a special order basis.)

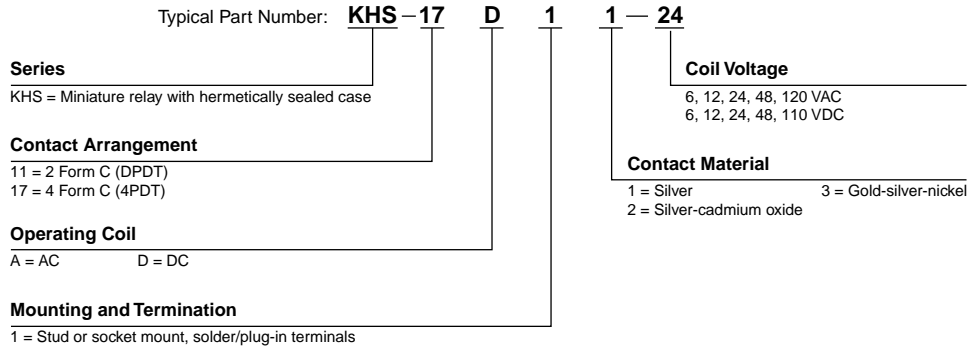
Enclosures — Hermetically sealed steel enclosure.

Weight — 1.6 oz. approx. (45g).

For complete product information, reference catalog 1308242.

Hermetically Sealed General Purpose Low Signal to 5A Multicontact AC or DC Relay (Continued)

Ordering Information

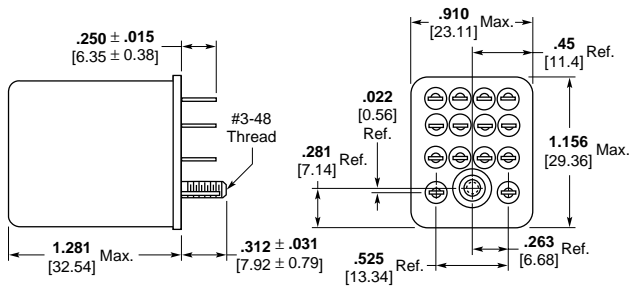


Note: Do not ground KHS frame without consulting Tyco Electronics for load levels.

Stock Items — The following items are more likely to be maintained in stock for immediate delivery.

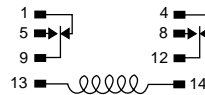
- | | | |
|---------------|--------------|---------------|
| KHS-17A11-24 | KHS-17D11-12 | KHS-17D11-110 |
| KHS-17A11-120 | KHS-17D11-24 | KHS-17D12-12 |
| KHS-17A12-120 | KHS-17D11-48 | KHS-17D12-24 |

Outline Dimensions

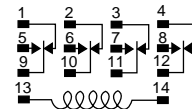


2 & 4 Pole

Wiring Diagrams (Bottom Views)



2 Pole



4 Pole

Class 1 Div. 2 Group A, B, C & D Hazards

For complete product information, reference catalog 1308242.

Hermetically Sealed General Purpose Low Signal to 5A Multicontact AC or DC Relay (Continued)

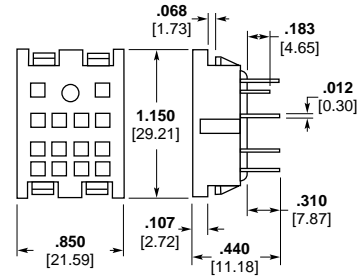
Sockets For KHS Series

Socket Description

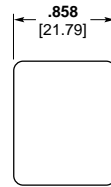
Industrial Part No.	No. of Poles	Terminal and Length	Grounding Provision	Socket Material
27E006*	4	Solder .375 9.53	Yes	Nylon
27E007*	4	P.C. .218 5.54	Yes	Nylon
27E023*	4	P.C. .218 5.54	No	Nylon
27E220*	2	P.C. .218 5.54	No	Nylon
27E166**	4	Screw	Yes	Glass-filled Polyester
27E894**	4	Screw	No	Glass-filled Polyester

* UL Recognized, file E22575
 ** UL Recognized, file E59244

Sockets listed in **boldface type** above are more likely to be available from stock for immediate delivery.



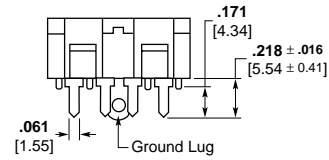
4-Pole Socket



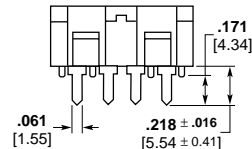
Recommended Chassis Thickness .031 [1.79] to .062 [1.57]

Socket punch Greenlee part 5015115.0, Type 731R available from Greenlee Tool Co., Rockford Illinois. (4-pole)

Recommended Chassis Cutouts For Mounting Sockets

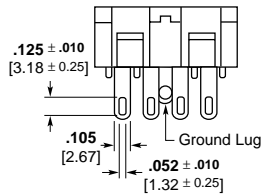


Printed Circuit Terminals With Grounding Lug

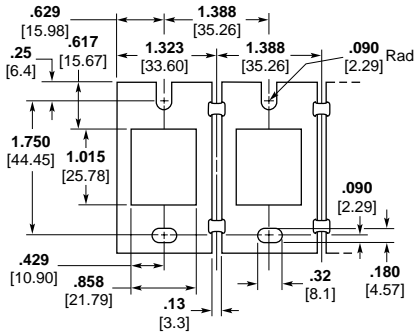


Printed Circuit Terminals Without Grounding Lug

Caution: Printed circuit sockets are manufactured with "floating" (Loose) terminals. This permits them to align with holes in the circuit board and with the relay terminals. During the mounting and soldering of the socket, vertical float should be eliminated and the terminals seated on the board. (This may be accomplished by inserting a dummy relay in the socket.) Failure to eliminate float may cause fracture of the solder joint or separation of the copper conductor from the printed circuit board when a relay is inserted in the socket after soldering.

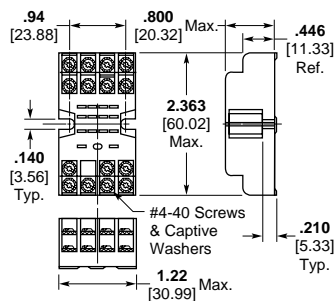


Pierced Solder Terminals



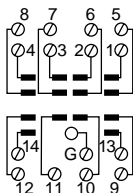
Mounting Strip 37D633

37D633 will mount eight solder terminal sockets in one length of aluminum strip measuring 10.97" x 2.25" x .062 [278.6 x 57.15 x 1.57].

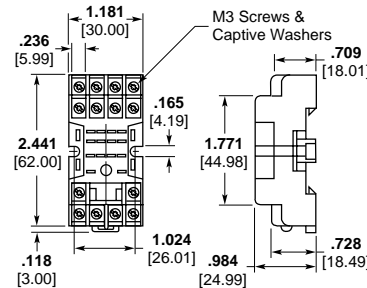


Screw Terminal Socket 27E166

Relays with solder terminals are required for use with screw terminal sockets.

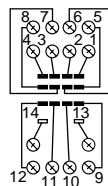


27E166 Terminal Location Top View



Screw Terminal DIN Rail, Snap-Mount Socket 27E894

(Use with mounting track 24A110)





27E894 Terminal Location Top View

For complete product information, reference catalog 1308242.



5 to 10 Amp Hermetically Sealed General Purpose Relay

Product Facts

- Industry standard octal-type termination for quick installation
- Contact arrangements from 1 Form C (SPDT) to 3 Form C (3PDT)
- UL recognized for Class I, Div. 2 Hazardous locations, Groups A, B, C, D
- File E81558 
- File LR15734 



Specifications

Contact Data @ 25°C

Arrangements — 1 Form C (SPDT), 2 Form C (DPDT) and 3 Form C (3PDT).

Materials — Silver or silver-cadmium oxide.

Expected Life — 10 million operations min., mechanical; 100,000 operations min. @ rated loads.

UL Contact Ratings @ 25°C
UL Class I, Div.2, Hazardous Loc.

Contact Code	Arrangement	Contact Rating
Y (Silver)	1, 2, 3 Poles	5 A @ 120 VAC
		3 A @ 240 VAC
G (Silver-Cad. Oxide)	1, 2, 3 Poles	1/10 HP @ 120 VAC
		1/6 HP @ 240 VAC
		10 A @ 240 VAC
		1/6 HP @ 120 VAC

UL Contact Ratings @ 25°C
UL 508 Industrial Control

Contact Code	Arrangement	Contact Rating
Y, G (Silver)	1, 2, 3 Poles	3 A @ 120 VAC
		3 A @ 28 VDC
		1/10 HP @ 120 VAC

Coil Data @ 25°C

	Nominal Voltage	DC Resistance (Ω) ± 10%	Nominal Coil Current (mA)
DC Coils	6	32	188
	12	120	100
	24	472	51
	48	1,800	26.6
	110	10,000	11.5
	220	Use 110 V relay with 10,000 Ω 5W Resistor in series	
AC Coils	6	6	335
	12	24	168
	24	85	84
	120	2,250	17.5
	240	9,110	8.75

Initial Dielectric Strength

Between Open Contacts — 500V rms.

Between All Elements — 1,500V rms.

Coil Data @ 25°C

Coil Power —
Nominal — 1.2W (DC Models); 2VA (AC Models).
Maximum — 3W (DC Models); 4VA (AC Models).

Duty Cycle — Continuous.

Initial Insulation Resistance — 1000 Megohms, min.

Operate Data @ 25°C

Must-Operate Voltage —
DC — 75% or less of nominal voltage.
AC — 85% or less of nominal voltage.

Operate Time (Excluding Bounce) — 15 ms typical @ nominal voltage.

Release Time (Excluding Bounce) — 10 ms typical @ nominal voltage.

Environmental Data

Temperature Range —
AC — -45°C to +55°C.
DC — -45°C to +70°C.

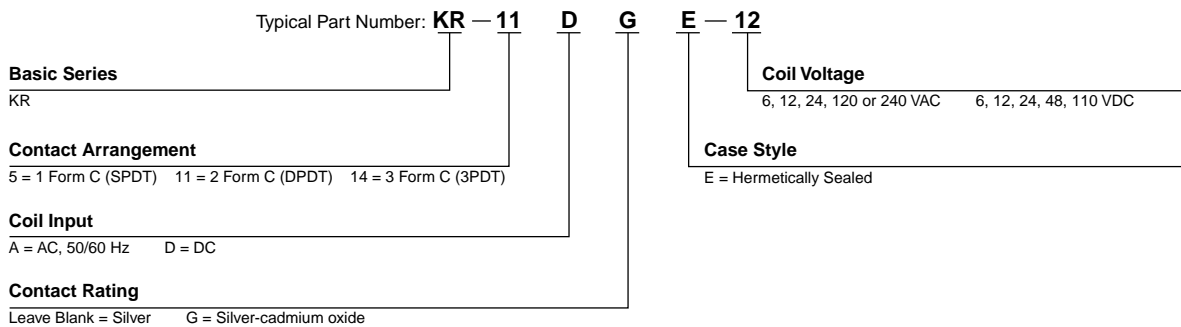
Mechanical Data

Termination — Octal-type plug.

Enclosures — Hermetically sealed metal case.

Weight — 3.0 oz. (85g) approximately.

Ordering Information



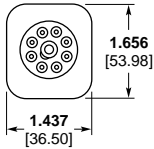
Stock Items — The following items are more likely to be maintained in stock for immediate delivery.

- | | | |
|--------------|--------------|-------------|
| KR-11AE-120 | KR-11DGE-12 | KR-14DGE-24 |
| KR-11AGE-120 | KR-11DGE-24 | |
| KR-11DE-24 | KR-14AGE-120 | |

For complete product information, reference catalog 1308242.

5 to 10 Amp Hermetically Sealed General Purpose Relay (Continued)

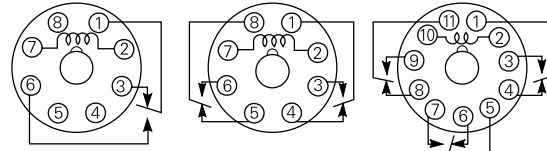
Outline Dimensions



Height: 2.125" [53.98 mm] max.



Wiring Diagrams (Bottom Views)



KR5

KR11

KR14

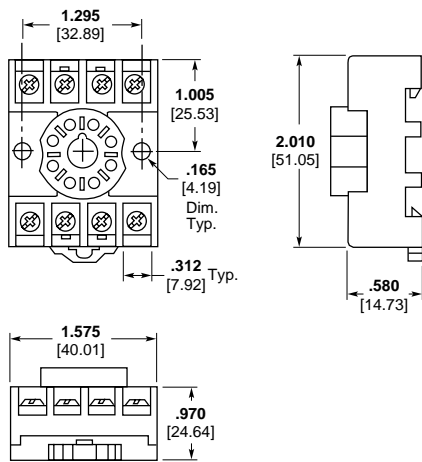
Sockets For KR Series Relays

The following sockets are likely to be maintained in stock for immediate delivery.

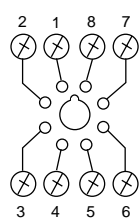
**Screw Terminal, DIN Rail Snap-Mount Sockets
(Use with mounting track 24A110)**

27E891 and 27E892 sockets have M3.5 screw terminals which accept up to two #12 AWG wires. Rated 10 amps @ 300 VAC and meets UL 94V-0.

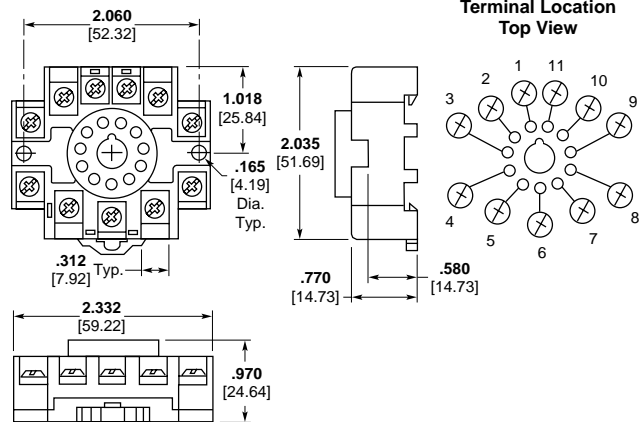
**27E891
10A, 300 VAC**



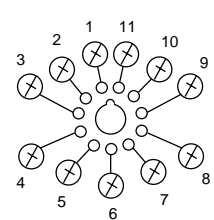
**Terminal Location
Top View**



**27E892
10A, 300 VAC**

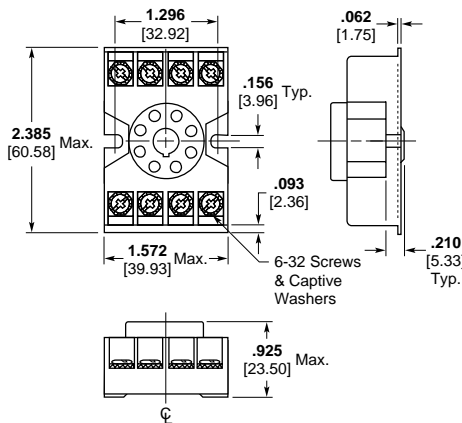


**Terminal Location
Top View**

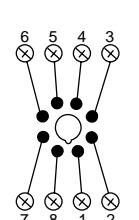


Screw Terminal Sockets

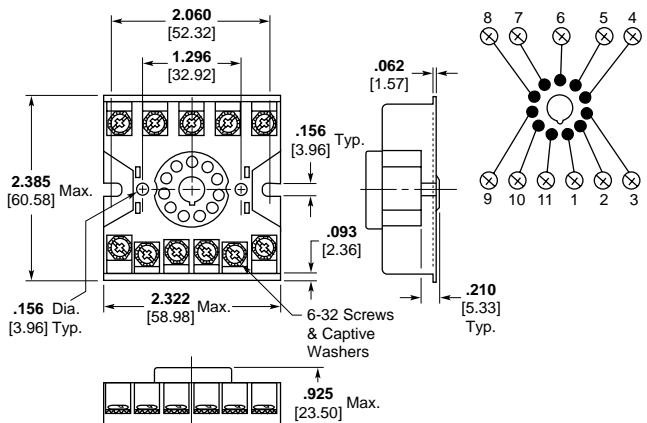
**27E122
10A, 300 VAC**



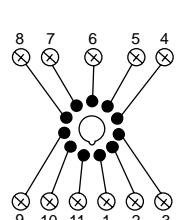
Terminal Location



**27E123
10A, 300 VAC**



Terminal Location



For complete product information, reference catalog 1308242.



Relays

10 Amp Rotary Relay For Demanding Shock & Vibration Applications

Product Facts

- AC and DC coils, latching and non-latching
- 4PDT through 24PDT contact arrangements
- Contacts will not chatter when relays are subjected to high-impact shock blows of 2000 ft. -lbs



Small 4PDT



Medium 24PDT

Specifications

Contact Data

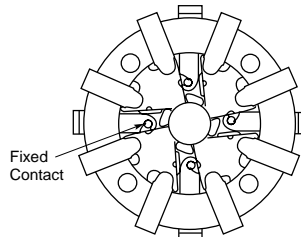
Arrangements — 4 Form C (4PDT) through 24 Form C (24 PDT).

Contact Ratings

Single Contacts	Two Contacts in Series
10 A, 115 VAC	3 A, 440 VAC
3 A, 28 VDC	15 A, 115 VAC
0.8 A, 125 VDC	1.5 A, 125 VDC

The above AC contact ratings are based on contact loads having a 50% power factor. The DC contact ratings are based on resistive loads.

Contact Section

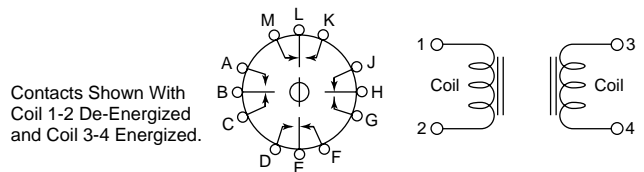


Operate Data @ 25°C

Type	Typ. Operate Time (ms)	Typ. Release Time (ms)
Small AC Non-Latching	5 to 12	5 to 18
Small DC Non-Latching	15 to 30	5 to 15
Small AC Latching	6 to 12	N/A
Small DC Latching	10 to 16	N/A
Medium AC Non-Latching	6 to 12	6 to 20
Medium DC Non-Latching	65 to 90	10 to 30
Medium AC Latching	8 to 14	N/A
Medium DC Latching	30 to 80	N/A

Latching Two-Position Types —

Except for the latching feature, MDR latching relays utilize the same general construction as non-latching types. They have two sets of coils and provide a latching two-position operation.



Contacts Shown With Coil 1-2 De-Energized and Coil 3-4 Energized.

Coils Must be Energized Alternately, Not Simultaneously.

Environmental Data

Temperature Range —
Standard models — 0°C to +65°C.
Special order models — 0°C to +90°C.

Mechanical Data

Termination — #5-40 screw terminals supplied.

Weight (Approx.) —

Small —
4 & 8PDT — 32 oz. (0.914 kg);
12PDT — 33 oz. (0.943 kg).
Medium —
16PDT — 72 oz. (2.04 kg);
24PDT — 74 oz. (2.10 kg).

For complete product information, reference catalog 1308242.

10 Amp Rotary Relay For Demanding Shock & Vibration Applications (Continued)

Ordering Information and Coil Characteristics - No models in this series are maintained in stock.

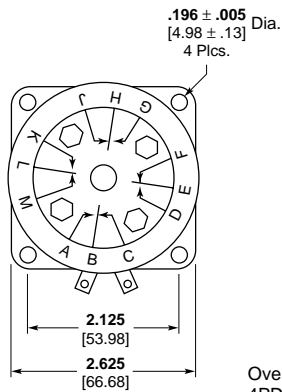
Type	Part Number	Contacts	Coil Voltage (60 Hz. for AC)	Coil Current (Amps)	DC Coil Resistance (Ohms)	Coil Power* (Watts)	Breakdown (Volts RMS)
Small Non-Latching	MDR-131-1	4PDT	115 VAC	0.215	66	6.5	1,230
	MDR-131-2	4PDT	440 VAC	0.045	1,256	5.1	1,880
	MDR-135-1	4PDT	28 VDC	0.362	76	10.0	1,308
	MDR-137-8	4PDT	125 VDC	0.082	1,520	10.3	2,375
	MDR-134-1	8PDT	115 VAC	0.215	66	6.5	1,230
	MDR-134-2	8PDT	440 VAC	0.045	1,256	5.1	1,880
	MDR-136-1	8PDT	28 VDC	0.362	76	10.0	1,308
	MDR-138-8	8PDT	125 VDC	0.082	1,520	10.3	2,375
	MDR-163-1	12PDT	115 VAC	0.230	62	6.9	1,230
	MDR-163-2	12PDT	440 VAC	0.055	940	6.3	1,880
Medium Non-Latching	MDR-170-1	16PDT	115 VAC	0.620	8.4	17.0	1,230
	MDR-170-2	16PDT	440 VAC	0.160	107	17.0	1,880
	MDR-172-1	16PDT	28 VDC	0.667	42	18.7	1,308
	MDR-173-1	16PDT	125 VDC	0.125	1,024	16.0	2,375
	MDR-141-1	24PDT	115 VAC	0.620	8.4	17.0	1,230
	MDR-141-2	24PDT	440 VAC	0.160	107	17.0	1,880
	MDR-167-1	24PDT	28 VDC	0.667	42	18.7	1,308
Small Latching	MDR-67-2	4PDT	115 VAC	0.150	210	5.5	1,230
	MDR-4091	4PDT	440 VAC	0.020	4,500	3.0	1,880
	MDR-67-3	4PDT	28 VDC	0.778	36	21.8	1,308
	MDR-5060	4PDT	125 VDC	0.164	760	20.6	2,375
	MDR-4076	8PDT	115 VAC	0.150	210	5.5	1,230
	MDR-4092	8PDT	440 VAC	0.020	4,500	3.0	1,880
	MDR-5035	8PDT	28 VDC	0.778	36	21.8	1,308
	MDR-5061	8PDT	125 VDC	0.164	760	20.6	2,375
Medium Latching	MDR-6064	12PDT	115 VAC	0.380	24	12.0	1,230
	MDR-7020	12PDT	28 VDC	0.316	88.6	8.8	1,308
	MDR-66-4	16PDT	115 VAC	0.380	24	12.0	1,230
	MDR-7036	16PDT	125 VDC	0.083	1,500	10.4	2,375

*Actual Wattmeter readings.

Outline Dimensions

Tolerances: Decimals ± .010 [±.25] Unless Otherwise Specified.

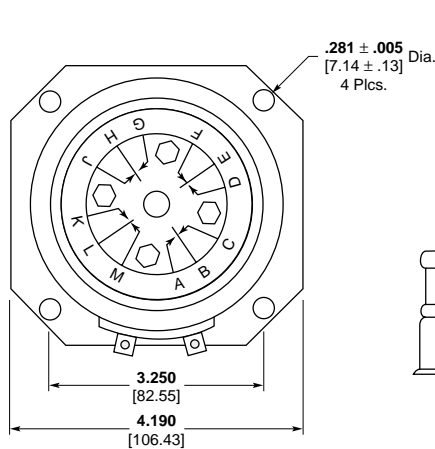
Small Models



Overall Height
 4PDT 3.13 [79.5] Max.
 8PDT 3.53 [89.7] Max.
 12PDT 3.88 [98.6] Max.

Coil and Contact Terminal Screws
 #5-40 Supplied.

Medium Models



Overall Height
 12PDT 4.63 [117.6] Max.
 16PDT 5.00 [127.0] Max.
 24PDT 5.75 [146.1] Max.

Coil and Contact Terminal Screws #5-40 Supplied.

For complete product information, reference catalog 1308242.



Relays



QPL and Commercial-Off-The-Shelf Models

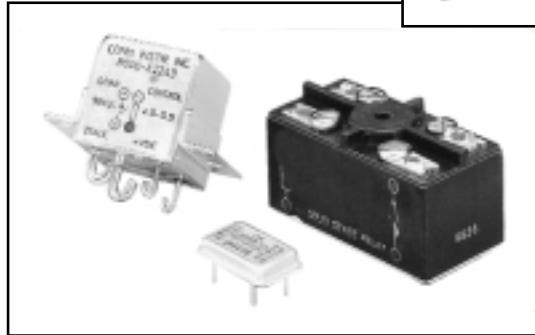
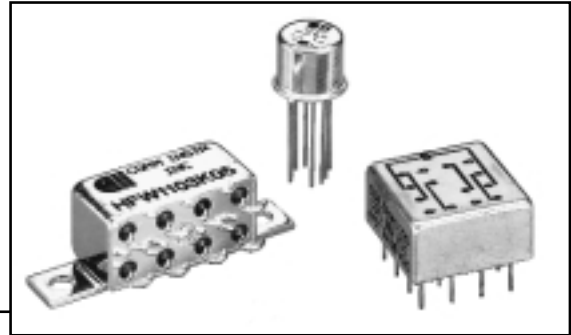
Product Facts

- Low-power relays
- Electronic products
- High voltage relays & contactors
- Power contactors, sensors, monitors & distribution systems

CII Low Power Relays

- TO-5, .100 [2.54] grid, 1/5 size, 1/10 size, half-size and full-size relays
- Low level to 10 amp ratings
- 1 form C (SPDT) to 6 form C (6PDT) arrangements
- Latching & non-latching types
- High-rel space and RF models

For more details see catalogs 1309311 and 1309312



CII Electronic Products

- Solid state relays
- Time delay relays with solid state or electromechanical output
- Voltage, frequency and phase sensors
- Various package types

For more details see catalog 1309311

KILOVAC High Voltage Relays & Contactors

- Vacuum and gas-filled enclosures
- Up to 70kV isolation
- Carry from milliamps to 110 amps
- 1 form A (SPST-NO) to 4 form C (4PDT) arrangements
- PC board and panel mount types

For more details see catalog 1309313



HARTMAN Power Contactors, Sensors, Monitors & Distribution Systems

- Hermetic or gasket seal
- Repairable models
- High shock, vibration and acceleration types
- Conventional, plug-in or bus bar mounting
- Easily tailored to meet specific customer requirements

For more details see catalog 1309314