ORDERING INFORMATION

I State the following:

a. P & B type
b. Mounting required
c. Type of enclosure if any
d. Terminals
e. Conditions; i.e., humidity, temperature, shock vibration, finish, etc.

II Contact Characteristics

a. Arrangement
b. Voltage (AC or DC)
c. Current (In rush and steady state)
d. Type of load (lamp, resistive, capacitive, etc.)
e. Open circuit voltage
f. Frequency and number of operations required.

III Coil Characteristics

a. Normal Voltage or Current and frequency
b. Maximum Voltage or Current
c. Pull-in V or I with tolerance
d. Drop-out V or I with tolerance, if required
e. Resistance, if required to match circuit characteristics
f. Duty cycle
g. Operate and release time; maximum and minimum

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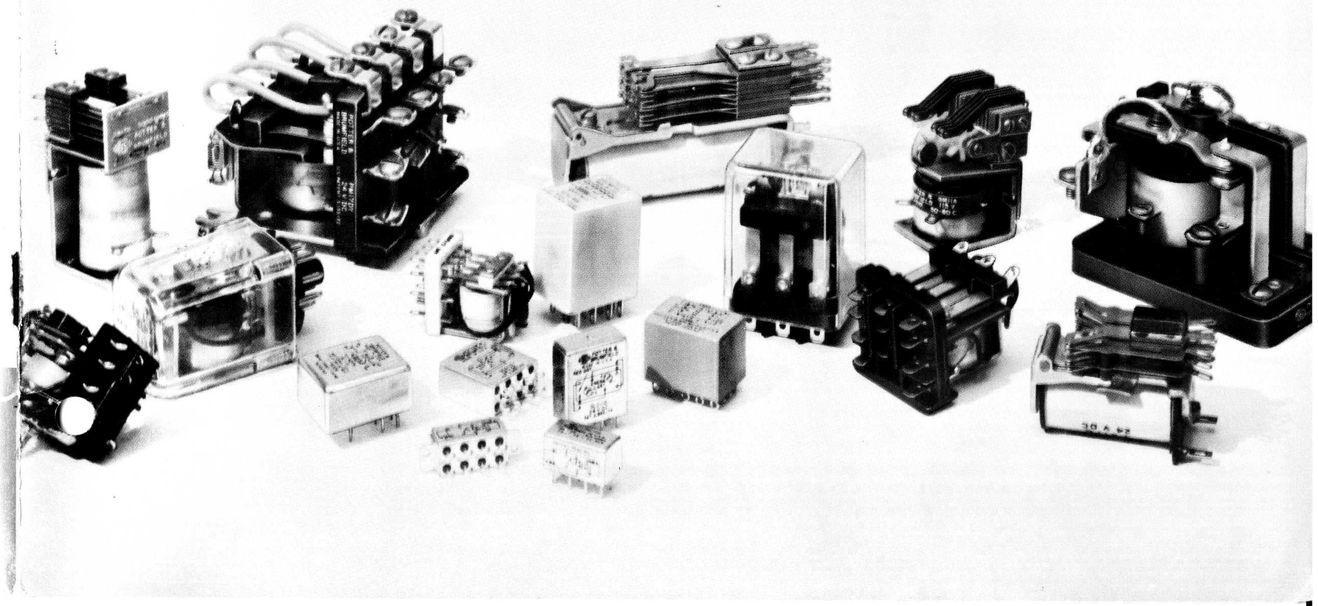
INDUSTRIAL • AEROSPACE/MILITARY RELAYS BY POTTER & BRUMFIELD



INDUSTRIAL • AEROSPACE/MILITARY
RELAYS
BY POTTER & BRUMFIELD

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GENERAL INFORMATION

CONTACTS

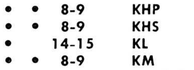
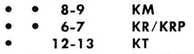
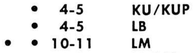
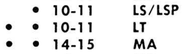
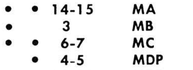
P&B standard relays carry a number to designate contact arrangements. Abbreviations are used for indicating the switching arrangement of each number:

1—SPST-NO	**7**—DPST-NO	**13**—3PST-NC	**19**—5PST-NC
2—SPST-NC	**8**—DPST-NC	**14**—3PDT	**20**—5PDT
3—SPST-NO-DB	**9**—DPST-NO-DB	**15**—4PST-NO	**21**—6PST-NO
4—SPST-NC-DB	**10**—DPST-NC-DB	**16**—4PST-NC	**22**—6PST-NC
5—SPDT	**11**—DPDT	**17**—4PDT	**23**—6PDT
6—SPDT-DB	**12**—3PST-NO	**18**—5PST-NO	

SP—Single Pole 3P—Three Pole SB—Single Break ST—Single Throw
DP—Double Pole 4P—Four Pole DB—Double Break DT—Double Throw
DM—Double Make NO—Normally Open NC—Normally Closed

For other than standard relays shown in the above table P&B relays are designed in accordance with alphabetical indicators (Form A, B, C, etc.), which denote the switching arrangement:

CONTACT FORMS

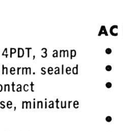
Design	Sequence	Symbol	Form
SPST-NO	Make (1)		A
SPST-NC	Break (1)		B
SPDT	Break (1)—Make (2)		C
SPDT	Make (1) before Break (2)		D
	Break (1)—Make (2) before Break (3)		E

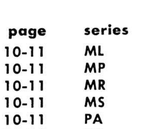
UNDERWRITERS' LABORATORIES LISTINGS

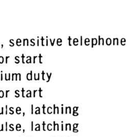
Certain appliance, motor control, industrial, and other relay applications require U/L listed relays. In Canada, the Canadian Standards Association listing may be necessary. Many P&B relays carry U/L listing or U/L component recognition, and CSA listings, thus saving manufacturers the extra cost and time required to have new designs examined.

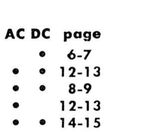
TERMINALS

The choice of terminals is almost infinite; screw type, threaded stud, snap on tab, pierced or wire solder lug, taper tab, octal base and other plug-in types meet every connection requirement. Terminals can also be supplied for printed or dip solder circuitry.


Taper tab

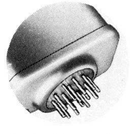

Snap-on solderless

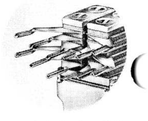

Pierced solder lug


Tube type octal plug

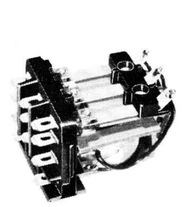

AN type connector

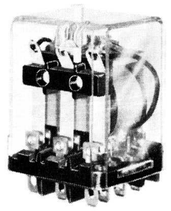

Standard screw terminals


Up to 20 pin plug-in

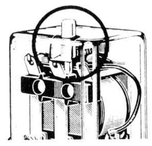

For printed circuitry

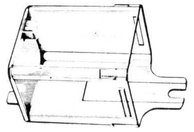
NEW Versatile, low cost KU relays with many optional features
SERIES

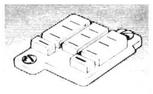

KU


KUP

KU-KUP SERIES Designed for fast installation on modern production lines, KU series open and KUP series enclosed relays offer an unusually wide choice of optional features at relatively low cost. Optional features include: Open relays (KU series) with three different mounting arrangements; two types of heat and shock-resistant cases with three different mounting arrangements (KUP series); a push-button for manually checking circuits, as well as a neon lamp wired in parallel with the coil to indicate that power is reaching the relay are avaialable on certain versions. Another optional feature is a special nylon 10-ampere rated socket and also a socket with printed circuit pins that make the KU-KUP series plug-in relays.


All KUP relays (except with stud on end of case) are available with push-to-test button which operates the movable contacts for manually checking circuits.


Two styles of heat and shock resistant polycarbonate dust covers can be furnished. One plain, the other with slotted flanges for direct-to-chassis mounting.


A nylon socket with solder terminals—rated for carrying 10 amperes—or with printed circuit pins, can be supplied for the KU and KUP (plain case) series making them plug-in relays.

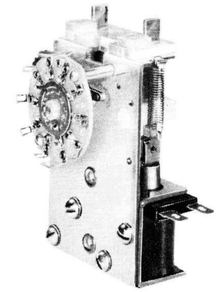
SPECIFICATIONS

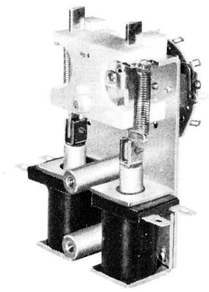
Description: 5 or 10 amperes general purpose relay.
Expected Life: 10,000,000 mechanical operations.
Breakdown Voltage: 1,500V rms 60 Hz between all elements; 500V rms 60 Hz open contacts.
TERMINALS: Either .187" or .205" quick-connect/solder.
SOCKETS: Nylon, accepts .187" quick-connect terminals. Choice of solder or printed circuit terminals.
Mounting: Please see page 19.

CONTACTS:
Arrangements: To 3 Form C.
Rating: 5 or 10 amperes @ 28V DC or 120V AC resistive.
Material: Gold-flashed fine silver and silver-cadmium oxide are standard. Tungsten and 3/32" gold alloy available.

COILS:
Voltage: DC to 110V; AC to 240V 60 Hz.
Power: DC 1.2 W; AC 1 and 2 poles 2.0 VA; AC 3 poles 2.7 VA.
Resistance: 16,500 ohms maximum.

NEW Solenoid operated GR bi-directional stepping relays
SERIES


FRONT


BACK

GR SERIES The GR series is a bi-directional stepping relay employing two solenoids for contact operation. Audio control, speed, temperature or other factors may be increased or decreased remotely with this versatile impulse/stepping relay. Vending machines, accounting and inventory control equipment and other devices that necessitate adding and subtracting functions are typical applications.

The contacts are switched by either of two solenoids. When a solenoid is energized, its plunger activates a pawl that engages a ratchet which rotates a shaft one step. The shaft rotation advances a ten-position wafer switch in a clockwise or counter-clockwise direction, depending upon which coil is energized. The GR can also be furnished with a cam operated set of up to 1 Form C (SPDT) contacts operating in addition to the wafer switch. Reliability of the GR is enhanced by its positive-acting solenoids, and its unique electro-mechanical design.

SPECIFICATIONS

Description: Bi-directional impulse/stepping relay operated by solenoids.
Breakdown Voltage: 500 volts rms 60 Hz between all elements and ground.
Temperature Range: —45°C to +45°C (intermittent duty only).
Terminals: .187" quick-connect/solder standard.

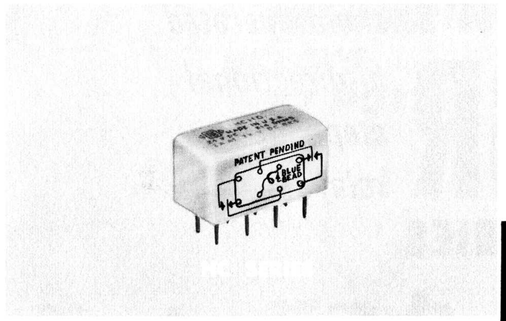
CONTACTS:
Arrangements: Single-pole 10-position wafer switch, single deck. Single-pole 10-position auxiliary switch with up to 1 Form C (SPDT) cam operated contacts.
Material: Silver standard.
Ratings: Wafer switch to 2 amps 120 volts AC 60 Hz (non-inductive). Separate (cam-operated) contacts: to 3 amps 120 volts AC 60 Hz (non-inductive).

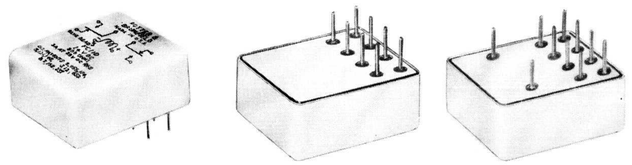
COILS:
Voltage: AC: to 240 volts, 60 Hz. Please consult factory for other voltages.
Duty: AC: 50% coil duty cycle — intermittent, 5 minutes maximum on, 5 minutes minimum off.
Treatment: Solenoid coils are potted in epoxy.

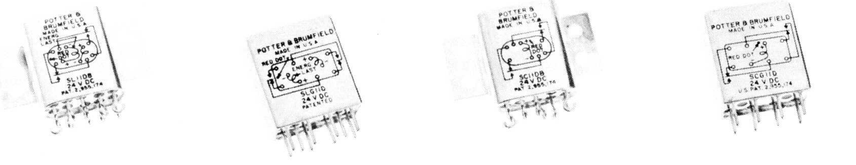
MOUNTING:
Two 6-32 tapped mounting bosses on .875 centers.

See back cover for ordering information.

POTTER & BRUMFIELD HIGH PERFORMANCE RELAYS







TL SERIES SL/SLG SERIES SC/SCG SERIES

INDIVIDUAL DATA SHEETS FOR EACH RELAY AVAILABLE UPON REQUEST

Potter & Brumfield hermetically welded, microminiature relays utilize a permanent magnet and polarized dual coil construction. A unique magnetic configuration provides simultaneous attraction and repulsion of the balanced armature. The resulting high holding forces enable the relays to reliably operate from 150g to 200g shock and 30g vibration to 2000 Hz, and withstand 400g linear acceleration without contact opening.

Unusually fast operating times and high contact pressures are characteristics of these relays. These relays are designed for operation over the ambient temperature range of −65°C to 125°C.

They meet or exceed all applicable requirements of MIL-R-5757D and MSFC-SPEC-339.

HC SERIES Designed with reliability uppermost in mind, this half-size crystal case unit requires approximately ⅛ cubic inch of space and only weighs approx. ¼ ounce. Construction of the contact assembly provides an effective combination of contact bifurcation and wipe to insure low contact resistance and increased switching reliability over the life of the relay, particularly in low level applications.

TL SERIES Setting a new concept of high performance and reliability, the TL is a 4PDT microminiature magnetic latching relay. It is designed specifically for severe environs encountered in missile applications. The exceptionally small size of the TL, only 0.65 cubic inch, facilitates high-density packaging.

Various coil arrangements are available. The two-coil relay is normally operated by pulsing each coil alternately, observing proper coil polarity. If required, the relay can be made to operate in either direction by either coil by reversing the polarity of the applied voltage. A single coil can be furnished if even greater sensitivity is desired. Direction of switching is then again dependent on reversal of applied voltage to obtain the proper polarity.

SC/SCG SERIES These are the non-latching or conventionally operated microminiature versions of general crystal case configuration. A red dot on the header designates the positive coil terminal.

These relays are widely used in applications demanding greatest reliability under conditions of severe shock, vibration, and acceleration and over extreme temperature ambients.

A wide variety of mountings and terminals is available. The "G" suffix denotes terminals spaced on 0.1" grid multiples.

SL/SLG SERIES These are the latching versions of the SC/SCG relays and are operated by:

(1) pulsing each coil alternately, observing coil polarity (approximately 230 milliwatts required to pull in @ 25°C), or

(2) connecting coils in series and operating from a reversing (polarized) power source (approximately 180 milliwatts required to pull in @ 25°C).

Their ability to remain firmly latched in either armature position without applied coil power can significantly reduce power supply drains. The coils withstand continuous duty if a pulsing source is not available, but when this mode of operation is used a means must be provided to de-energize one coil before energizing the other. For polar operation this provision is not required.

SERIES	COIL					OPERATE (Speed) @ +25°C.	DIELECTRIC STRENGTH	CONTACTS				AMBIENT TEMPERATURE RANGE IN °C.	SHOCK 11MS duration	VIBRATION	LINEAR ACCELERATION	DIMENSIONS*		TERMINALS
	NOMINAL DC VOLTAGE	APPROX. OPERATE POWER @ +25°C.	POWER AT NOMINAL VOLTAGE @ +25°C.	NOMINAL RESISTANCE @ +25°C.	DUTY			ARRANGEMENTS	MATERIAL (Standard)	RATING (100,000 operations min.)	RESISTANCE at rated load					MOUNTING† (approx.)	ENCLOSURES (approx. in inches)	
FC / FCH	to 110V	DC: 160 MW	approx. 0.65 watts	20,000 ohms max.	continuous	3.5 MS max. @ nominal voltage	1000V rms 60 Hz except 750V between open contacts	Bifurcated DPDT (only)	Gold plated silver alloy	FC: Dry circuit to 3 amps, 28V DC resistive FCH: Same to 5 amps	FC: Before life .05 ohms After life .1 ohm max. FCH: .020 ohm before life, after life .040 ohm max.	−65 min. +125 max.	150g (note 1)	30g from 55 to 2000 Hz, .195" max. displacement from 10 to 55 Hz using approved mounting. (note 1)	400g (note 1)	Grid-spaced printed circuit board	Sealed: L. 1.100 H. .485 W. .925	Plug-in pins, hook solder
FL / FLH	to 80V per coil (note 3)	DC: 150 MW to pull-in (note 2)	approx. 0.65 watts	10,000 ohms max. (note 2)	continuous	3.5 MS max. @ nominal voltage	1000V rms 60 Hz except 750V between open contacts	Bifurcated DPDT (only)	Gold plated silver alloy	FL: Dry circuit to 3 amps 28V DC resistive FLH: Same to 5 amps	FL: Before life .05 ohms After life .1 ohm max. FLH: .020 ohm before life, after life .040 ohm max.	−65 min. +125 max.	150g (note 1)	30g from 55 to 2000 Hz, .195" max. displacement from 10 to 55 Hz using approved mounting. (note 1)	400g (note 1)	Grid-spaced printed circuit board	Sealed: L. 1.100 H. .485 W. .925	Plug-in pins, hook solder
SC / SCG (note 4)	to 110V	DC: 260 MW to pull-in	approx. 1 watt	20,000 ohms max.	continuous	3 MS max. @ nominal voltage	1000V rms 60 Hz except 500V between open contacts	DPDT (only)	Gold on silver	2 amps @ 30V DC resistive. Upon request: 3 amps @ 30V DC.	Before life .05 ohms After life .1 ohm max.	−65 min. +125 max.	200g (note 1)	30g from 55 to 2000 Hz, .195" max. displacement from 10 to 55 Hz using approved mounting. (note 1)	400g (note 1)	See table below	Sealed: SC / SCG L. .795 / .800 H. .900 / .900 W. .359 / .400	Hook end solder terminals, miniature plug-in or 3" flexible leads
SL / SLG (note 4)	to 96V per coil (note 3)	DC: 230 MW to pull-in (note 2)	approx. 1 watt	10,000 ohms max. (note 2)	continuous	3 MS max. @ nominal voltage	1000V rms 60 Hz except 500V between open contacts	DPDT (only)	Gold on silver	2 amps @ 30V DC resistive. Upon request: 3 amps @ 30V DC.	Before life .05 ohms After life .1 ohm max.	−65 min. +125 max.	200g (note 1)	30g from 55 to 2000 Hz, .195" max. displacement from 10 to 55 Hz using approved mounting. (note 1)	400g (note 1)	See table below	Sealed: SL / SLG L. .795 / .800 H. .900 / .900 W. .359 / .400	Hook end solder terminals, miniature plug-in or 3" flexible leads
TL																		
Two Coils:	to 100V	250 MW	1 watt	9,150 ohms max.	continuous	6 MS max. @ nominal voltage	1000V rms 60 Hz except 500V between open contacts and coil to case	Bifurcated 4PDT (only)	Gold plated silver alloy	Dry circuit to 3 amps 28V DC resistive	Before life .033 ohms After life .066 ohm max.	−65 min. +125 max.	150g (note 1)	30g from 55 to 2000 Hz, .195" total displacement from 10 to 55 Hz. (note 1)	400g (note 1)	See table below	Sealed: L. 1.040 H. .76 W. .73	Plug-in pins or hook-end solder
Single Coil:	to 100V	125 MW	0.5 watt	18,250 ohms max.														
HC	to 75V	180 MW	0.72 watt	7,500 ohms	continuous	3 MS max. @ nominal voltage	1000V rms 60 Hz except 500V between open contacts and coil to case	Bifurcated DPDT (only)	Gold plated silver alloy	Dry circuit to 2 amps 28V DC resistive	Before life .05 ohms After life .1 ohm max.	−65 min. +125 max.	150g (note 1)	20g to 3000 Hz. 1.30" total displacement from 10 to 55 Hz. (note 1)	400g (note 1)	See table below	Sealed: L. .810 H. .410 W. .410	Plug-in pins or hook-end solder

NOTES: 1. No contact opening.
2. Each coil.
3. Specify voltage for both operate and reset coils.
4. Suffix "G" denotes grid header for printed circuit adaptation.

*Standard dimensions. For dimensional tolerances consult the factory.
†For mounting information, see pages 18 and 19.

FC/FCH SERIES This is a non-latching, conventionally operated microminiature relay with a motor structure similar to the SC/SCG series. The FC/FCH configuration, however, is particularly suited for printed circuit applications. Their smallest dimension is perpendicular and their header is parallel to the plane of the mounting surface for compactness between printed circuit boards.

The contacts are of bifurcated design with high contact forces and a generous amount of wiping action assuring low contact resistance for dry circuit and the difficult intermediate (or minimum current) load areas—as well as maximum rated loads.

This ultra reliable contact switching may be accomplished with as little as 160 milliwatts @ 25°C. The "H" suffix denotes 5 amp contact rating instead of the standard 3 amp.

FL/FLH SERIES These are the latching versions of the FC/FCH series and are operated by:

(1) pulsing each coil alternately, observing coil polarity (approximately 150 milliwatts required to pull in @ 25°C), or

(2) connecting coils in series and operating from a reversing (polarized) power source (approximately 120 milliwatts required to pull in @ 25°C).

HC MOUNTING

PLUG-IN HEADER	Plain Case	Shoulder Brackets	Shoulder Brackets with offset holes		
HOOK-END SOLDER	Plain Case	Shoulder Brackets	Shoulder Brackets with offset holes	Flat Mounting Plate with 2 holes	Studs on top of case

TL MOUNTING

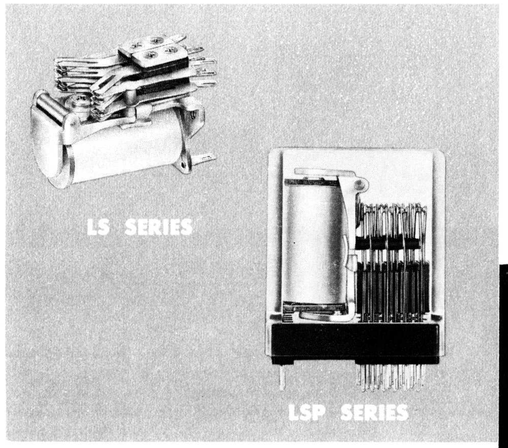
PLUG-IN HEADER	Plain Case	Shoulder Brackets .300" from base	Shoulder Brackets .19" from base		Studs On Header	Shoulder Brackets (3) ..19" from base
HOOK-END SOLDER	Plain Case	Shoulder Brackets .300" from base	Shoulder Brackets .19" from base	Flat Mounting Plate with 4 holes		Shoulder Brackets (3) .19" from base

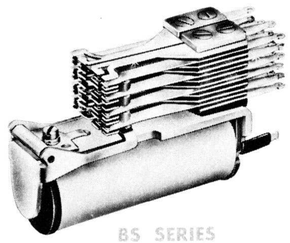
SC/SCG and SL/SLG MOUNTING DESIGNATIONS

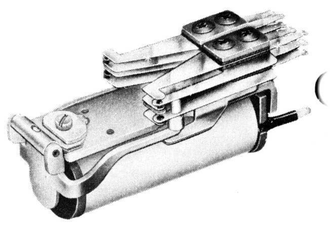
Mounting	Plug-In Header	Hook-End Solder	3" Flexible Leads
Plain case	D	DD	DL
Shoulder brackets .375 in. from base	DF	DA	DO
even with base		DE	
offset holes .135 in. from base	DP		
Flat mounting plate with 4 holes		DB	DN
Studs on side of case	DG	DC	DM

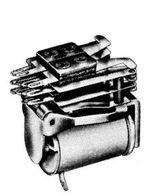
See back cover for ordering information.

POTTER & BRUMFIELD TELEPHONE TYPE RELAYS




BS SERIES


LT SERIES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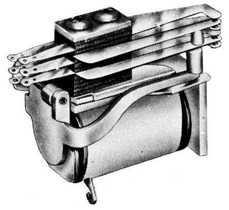
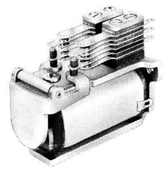
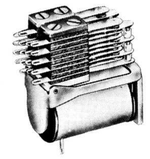
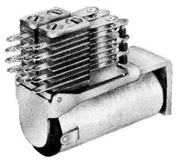

GS SERIES


MF SERIES


MG SERIES


MH SERIES


ML SERIES

LS-LSP SERIES The LS open and LSP plastic enclosed relays are reliable, medium coil relays with a life expectancy of 100,000,000 mechanical and 100,000 electrical operations at rated load. Both are available with up to 24 springs (12 per stack). The modular concept of the LSP relay assembly consists of three components: (1) an LST relay with taper tab terminations which plug into (2) a rectangular socket and (3) a plastic cover that snaps over the socket. Each of the three components of the LSP series can be ordered as separate items.

Two sizes each of sockets and covers are available. The smaller size has a 16 pin socket for from 1 to 4 Form C; the larger size has a 28 pin socket for from 5 to 8 Form C contact arrangements.

BS SERIES A versatile, long coil relay for telephone systems, computers, automatic test equipment and many other applications. Long coil construction provides minimum sensitivities of 25 milliwatts for DC relays and 17.9 volt-amps for AC relays. Can be furnished for DC applications with operate or release delay slugs. Bifurcated contacts. Extensive life test indicates BS series will operate over 300,000,000 cycles (mechanical). Can be equipped with two snap-action switches in lieu of spring stacks or with one stack and a single snap-action switch.

LT SERIES A fast acting, inherently reliable long coil relay with sensitivities of 25 milliwatts per movable arm. Single contact arms, sturdy frame construction and a full width hinge bearing capable of a minimum of 50 million operations (mechanical), are all part of the standard LT design. Designated as the LTD for DC voltage operation and LTL for sensitive DC current operation. Can be built with two section windings or slugs for operate and release time delays. Available open, hermetically sealed or in a protective enclosure. All feature a wide range of terminals and mountings.

TS SERIES Designed to meet the need for a short coil relay with sensitivity approaching a long coil relay. DC relays can be furnished with two concentric windings or with slugs for operate or release time delays. TS relays can be furnished with up to 20 springs (10 per stack) for DC operation or 12 springs (6 per stack) for AC operation. Available with printed circuit, taper tab or hook solder terminals.

GS SERIES A short coil relay with a minimum sensitivity of 50 milliwatts. This versatile relay can be furnished for AC or DC operation with a wide range of contact combinations and special features. Available with a variety of terminals all located for front panel connections. Can be equipped with two snap-action switches in lieu of spring stacks or with one stack and a single snap-action switch. The compact design of GS relays makes them ideal for multiple switching applications where space and weight are factors.

MF SERIES Unusually low coil temperature rise is an inherent quality of this small-size, telephone type relay. Designed to operate continuously on AC power, this rise does not exceed 20°C for a 4 Form C relay at 120V 50/60 Hz at 25°C ambient. No expensive cooling need be used even when a large number of MF relays are used in an enclosed chassis. Sensitivity approximates 2.3 voltamperes. Contact forms up to 6 Form C are practical.

SERIES	COIL			TIME VALUES		CONTACTS			MECHANICAL LIFE (Cycles)	DIMENSIONS*		WT. (approx.) (open)
	VOLTAGE	POWER* @ +25°C	RESISTANCE (In Ohms)	OPERATE	RELEASE	MAXIMUM NUMBER OF SPRINGS	CONTACT MATERIAL	RATING (100,000 cycles) Resistive Loads		MOUNTING (standard) (approximate)	(approx. in inches) Length x Width x Height	
BS	DC: to 220V	DC: 25MW/movable arm min. 8 watts max.	DC: 100,000 max.	DC: 5 to 120 MS	DC: 5 to 600 MS	DC: 28 (14/stack)	1/16" dia. twin palladium, standard	4 amps @ 120V 60 Hz	300 million min.	Two 8-32 tapped holes on ¾" centers	Min. 3⅜ x 1¾64 x 1½	10 ozs.
	AC: to 240V 60 Hz	AC: 17.9VA	(Breakdown 1,000V rms)	AC: 10 to 25 MS	AC: 10 to 20 MS	AC: 24 (12/stack)		DC: 4 amps @ 28V			Max. 3⅜ x 1¾64 x 2½	
LS LSP	DC: to 220V	65MW/movable arm min. 5 watts max.	DC: 55,000 max.	DC: 5 to 70 MS	DC: 5 to 140 MS	DC: 24 (12/stack)	1/16" dia. twin palladium	4 amps @ 120V 60 Hz	100 million min.	Two 6-32 tapped holes on ⅜" centers. Also available with plug-in mounting for special socket.	Min. 2⅛ x 1 1/16 x 1 5/32	3¼ ozs.
	AC: to 240V 60 Hz	AC: 4.4VA	(Breakdown 1,000V rms)	AC: 3 to 15 MS	AC: 3 to 15 MS	AC: 12 (6/stack —4 mov.)		DC: 4 amps @ 28V			Max. 2⅛ x 1⅛ x 1 55/64	
LT	DC: to 220V	DC: 25MW/movable arm min. 8 watts max.	DC: 100,000 max.	DC: 10 to 100 MS	DC: 10 to 400 MS	DC: 24 (12/stack)	5/64" dia. palladium	3 amps @ 120V 60 Hz	50 million min.	Two 8-32 tapped holes on ¾" centers	Min. 4⅛ x 1 9/32 x 1 11/16	12 ozs.
			(Breakdown 1,000V rms)					DC: 3 amps @ 28V			Max. 4⅛ x 1½ x 2 7/16	
TS	DC: to 220V	DC: 100MW/movable arm min. 3 watts max.	DC: 22,000 max.	DC: 5 to 40 MS	DC: 5 to 50 MS	DC: 20 (10/stack)	5/64" dia. palladium.	3 amps @ 120V 60 Hz	100 million min.	Four 3-48 tapped holes on ⅜" x ⅜" centers	Min. 1 9/16 x 1 1/32 x 1 5/16	2¼ ozs.
	AC: to 240V 60 Hz	AC: 4.5VA	(Breakdown 1,000V rms)	AC: 10 to 25 MS	AC: 10 to 20 MS	AC: 12 (6/stack) (4 poles max.)		DC: 3 amps @ 28V			Max. 1 9/16 x 1 1/32 x 1 13/16	
GS	DC: to 220V	DC: 50MW/movable arm min. 6 watts max.	DC: 50,000 max.	DC: 5 to 50 MS	DC: 5 to 100 MS	DC: 20 (10/stack)	5/64" dia. palladium	3 amps @ 120V 60 Hz	50 million min.	Two 8-32 tapped holes on ¾" centers	Min. 2 17/32 x 1 9/32 x 1 23/32	10 ozs.
	AC: to 240V 60 Hz	AC: 12.7VA	(Breakdown 1,000V rms)	AC: 10 to 25 MS	AC: 10 to 20 MS	AC: 18 (9/stack)		DC: 3 amps @ 28V			Max. 2 17/32 x 1½ x 2 1/32	
MF	AC: to 240V 60 Hz	AC: 2.6 VA	(Breakdown 500V rms)	AC: 15 MS max.	AC: 20 MS max.	AC: 18 (9/stack)	1/8" dia. gold-flashed silver	5 amps @ 120V 60 Hz	10 million min.	Two 6-32 tapped holes on ¾" centers, or four 4-40 tapped holes on ⅜" x ⅜" centers	2 x 1 1/16 x 1⅛	3 ozs.
MG	DC: to 110V	DC: 100MW/movable arm min. 3.25 watts max.	DC: 13,500 ohms max.	DC: 5 to 25 MS	DC: 5 to 15 MS	DC: 12 (6/stack)	3/32" dia. gold-flashed silver	2 amps @ 120V 60 Hz	10 million min.	Four 3-48 tapped holes on ⅜" x ⅜" centers	Min. 1 1/16 x 1 1/16 x 1 1/32	1.2 ozs.
			(Breakdown 500V rms)					DC: 2 amps @ 28V			Max. 1 1/16 x 1 1/16 x 1¼	
MH	DC: to 110V	DC: 100MW/movable arm min. 4 watts max.	DC: 22,000 max.	DC: 5 to 35 MS	DC: 5 to 25 MS	DC: 18 (9/stack) max.	1/8" dia. gold-flashed silver	5 amps @ 120V 60 Hz	10 million min.	Four 3-48 tapped holes on ⅜" x ⅜" centers	Min. 1 21/32 x 2 5/32 x 1 5/32	2 ozs.
	AC: to 240V intermittent duty only	AC: 4.6VA	(Breakdown 500V rms)			AC: 3/stack (2 poles max.)					Max. 1 21/32 x 2 5/32 x 1 19/32	
ML	DC: to 110V	DC: 20 MW/movable arm. min. 3 watts max.	DC: 33,000 max.	DC: 30 to 80 MS	DC: 5 to 35 MS	DC: 18 (9/stack)	1/8" dia. gold-flashed silver	3 amps @ 120V 60 Hz	10 million min.	Four 3-48 tapped holes on ⅜" x ⅜" centers	Min. 1 31/32 x 2 5/32 x 1 3/16	2½ ozs.
			(Breakdown 500V rms)								Max. 1 31/32 x 2 5/32 x 1 9/16	

*Minimum power values given are those necessary at the "just operate" point. For reliable operation nominal power should be selected for at least two times minimum power.

*Standard dimensions. For dimensional tolerances consult the factory. For mounting information, see pages 18 and 19.

SPECIAL FEATURES

	BS	LS	LT	TS	GS	MF	MG	MH	ML
Quarter-inch-creepage insulation (1500 volts)	•	•	•	•	•	•		•	•
Fixed or adjustable residual	•	•	•	•	•		•	•	•
Humidity and anti-fungus treatment	•	•	•	•	•	•	•	•	•
Protective enclosures	•	•	•	•	•	•	•	•	•
Hermetically sealed	•	•	•	•	•	•	•	•	•
Centrifugally impregnated coil (open relays)	•	•	•	•	•	•	•	•	•
Impregnated pile-up (open relays)	•	•	•	•	•	•	•	•	•
Plug-in mounting (open relays)	•	•	•	•	•				
Time delay	•	•	•	•	•			•	•
Taper tabs	•	•	•	•	•	•		•	•
Printed circuit tabs		•		•		•	•	•	•
Other contact materials available	•	•	•	•	•	•	•	•	•
Bifurcated contact arms available	•	•		•		•		•	•
Special gold alloy contacts available	•	•	•	•	•	•	•	•	•
Other mountings available		•		•	•	•		•	•
Octal plugs, solder header or miniature plug-in	•	•	•	•	•	•	•	•	•
Sealed—available with separately sealed coils								•	
Sealed AC relays available w/built-in rectifier	•	•	•	•	•			•	•

NOTE: Standard stack insulation for all telephone relays consists of laminated phenolic spacers for temperatures up to +85° C. Special insulation for +125° C. operation is available.

NOTE: Standard coil insulation for temperatures up to +85° C. Special insulation material available for operation to +125° C.

MG SERIES This subminiature relay saves space (1.5 square inches, max., open) and weight (1.2 oz. open), and uses only 100MW of coil power per movable arm. It performs all the functions of a standard two-amp relay yet will fit easily into most miniaturization programs. Contact arrangements up to 4PDT for two-amp resistive loads.

MH SERIES A versatile, miniature relay used widely for many years in business machines and airborne computers where compact design and reliability are first considerations. Can be furnished to switch loads ranging from dry circuits to over 5 amps at 120 volts, 60 Hz resistive. Can be furnished in a hermetically sealed enclosure with a sealed coil for minimum contact contamination. For similar relays see MA MB and MC (pages 12 and 14).

ML SERIES This small telephone type relay has a sensitivity of 20 milliwatts per movable arm. Applicable for transistorized computers, telephone systems and battery powered portable communications equipment. Single or bifurcated contact arms can be furnished with up to 18 springs (9 per stack), up to 6 Form C.

ENCLOSURES

DUST COVERS

Type	Maximum Dimensions (Inches) Length	Width	Seated Ht.	Fits Relays
BS	4 15/32	1 15/64	2 13/64	BS
LT	4 5/16	2	2¼	LT
P	1 27/64	1 27/64	2 1/16	MH
MG	1 23/64	63/64	1 19/32	MG
LSP (16 pins)	1 23/32	1 25/64	2 17/32	LST
LSP (28 pins)	2 1/16	1 25/64	2 17/32	LST

SEALED OR DUST COVER

Type	Maximum Dimensions (Inches) Length	Width	Seated Ht.	Fits Relays
W	1 29/32	1½	2⅞	LS
D	1 15/16	1 11/32	2 11/16	TS, MH
D	2	1 11/32	2½	MF
D	1 15/16	1 11/32	2½	ML, MH
K	1⅝	1 13/32	2⅛	TS, MH
K	1 11/16	1 1/16	2 9/16	MF
K	1 21/32	1 1/16	2 9/16	ML, MH
K	1 21/32	1 1/16	2⅞	LS, TS, MH

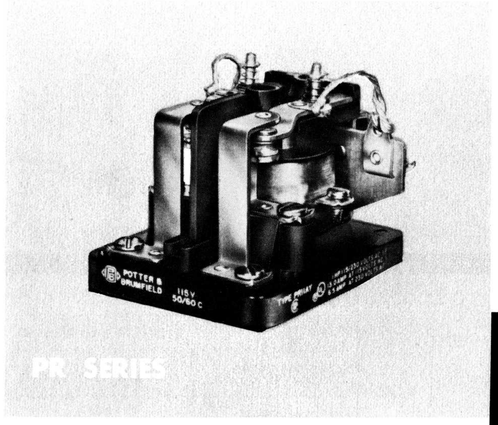
Type	Maximum Dimensions (Inches) Length	Width	Seated Ht.	Fits Relays
M	1 11/16	1 1/32	2 7/32	MH
M	1 23/32	1 1/32	2 13/32	MF
M	1 11/16	1 1/32	2 7/16	MH, ML

SEALED

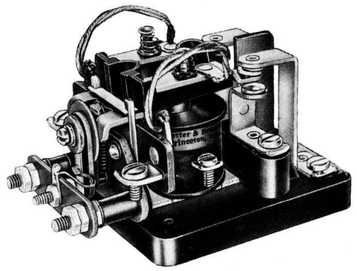
Type	Length	Width	Seated Ht.	Fits Relays
N	4.406	2.406	3.312	BS, LT
G	2 31/32	2 9/32	3 37/64	GS
R	1.421	.890	1 25/32	MH
T	1 47/64	13/16	2 7/64	MG

See back cover for ordering information.

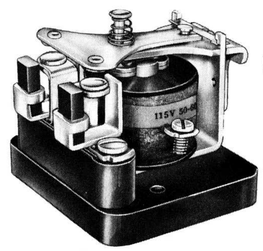
POTTER & BRUMFIELD POWER TYPE RELAYS



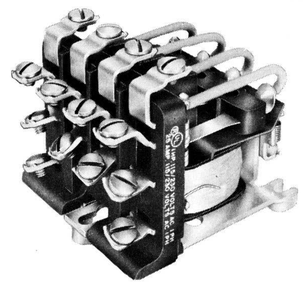
PR SERIES



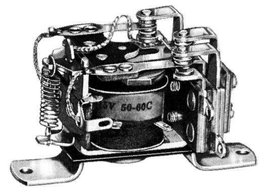
PR12AX-5 with auxiliary contacts



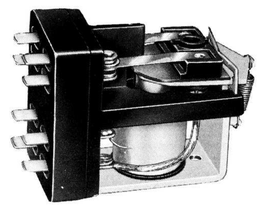
PR12M with magnetic blowouts



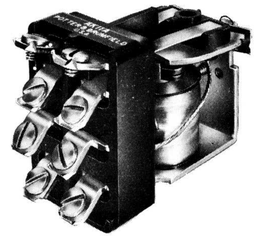
PM SERIES



MR SERIES



AB SERIES



AK SERIES

INDIVIDUAL DATA SHEETS FOR EACH RELAY AVAILABLE UPON REQUEST

PR SERIES Heavy duty power relay for industrial control applications requiring long life and fast action. Used extensively in elevator controls, motor starting and high current and voltage switching applications. A phenolic barrier between the contacts of multipole relays prevents cross contact arcing. A full floating contact carrier provides excellent contact pressures and an unusual amount of contact wipe or cleaning action. Heavy screw type terminals.

A wide range of PR relays are listed by Underwriters' Laboratories and Canadian Standards Association. (See chart on page 9.) U/L File No. E22575. CSA File No. 15734.

Auxiliary Contacts All PR relays can be furnished with auxiliary contacts in 1 Form A, B or C arrangements. These contacts are rated at 5 amps. Both main and auxiliary contacts are operated by a common armature action.

Magnetic Blow Outs Normally open PR relays such as the PR3 can be equipped with permanent magnets to "blow out" arcs which occur when contacts return to the normally open position. Blow outs prevent contact welding or material transfer which reduce contact life. For DC load only.

PR Dust Cover Sheet steel base has aluminum cover finished in gray baked enamel with four knockouts for ½" conduit. Mounts by three No. 10 holes on 1⅞" x 4⅛" centers. P&B No. 35D013.

PM SERIES A 4PDT compact power relay for polyphase and heavy duty applications. Occupies about the same space as a conventional 2-pole relay. Rated mechanical life is in excess of 10 million operations at two cycles per second with 50% dwell time. Load life is 100,000 operations at 14 cycles per minute with 50% dwell time. Available with heavy-duty molded dust cover or steel enclosure. Adapter plates for mounting PM on PR mounting holes can be furnished.

MR SERIES A medium duty power relay designed to meet the requirements of a wide variety of applications. Switches small motors, transmitters and many other power components. Features a wide range of fast action contact combinations and coil powers. MR relays can be built to meet U/L requirements. See MR/MS dust cover for enclosure.

MR/MS Dust Cover Built of heavy steel to provide maximum protection against accidental jars, dust, dirt and other foreign matter accumulations. Base has pre-drilled holes for mounting relays and enclosure. Two sealed knockout holes for standard conduit fittings provide neater installation and minimize broken leads. Snap-on cover can be easily removed for inspection and maintenance. Fits all MS, MR and SP relays. P&B No. 35D130.

AB SERIES An excellent medium-power relay for applications requiring rugged construction, long life and quiet operation. Available for either AC or DC operation. AB relays have a mechanical life in excess of three million operations. Listed by Underwriters' Laboratories Component Recognition File No. 29244 and Canadian Standards Association, File No. 15734.

SERIES	COIL			BREAKDOWN	AMBIENT TEMPERATURE RANGE IN °C.
	VOLTAGE	POWER @ +25°C	RESISTANCE (in Ohms)		
PR	AC: to 480V DC: to 110V	AC: 9.8VA DC: 2.0 watts nom.; 10 watts max. (note 3)	63,800 ohms max.	1,500V rms min. between all elements and ground	AC and DC: −55 min. AC: +45 max. DC: +85 max.
PM	AC: to 480V DC: to 110V	AC: 14VA DC: 4.4 watts nominal	37,000 ohms max.	2000V rms min. between all elements and ground	AC: −55 to +45. DC: −55 to +55, +75 available for DC
MR	AC: to 240V DC: to 110V	AC: 3.2VA DC: 1.6 watts nom.; 6 watts max. (note 3)	32,400 ohms max.	1,500V rms between all elements	AC: −45 min. +75 max. DC: −45 to +80
AB / ABC	AC: to 240V DC: to 110V	AC: 6.4VA DC: 2 watts nom.; 6 watts max. (note 3)	35,000 ohms max.	1,500V rms between all elements and ground	AC: −45 min. +45 max. DC: −45 +65
AK / AKC	AC: to 240V DC: to 110V	AC: 6.4VA DC: 2 watts nom. 6 watts max. (note 3)	35,000 ohms max	1,500V rms between all elements and ground	AC −45 to +45 DC −45 to +65

SERIES	CONTACTS			MECHANICAL LIFE (Cycles)	ENCLOSURES (see bottom page 8)	DIMENSIONS*		TERMINALS
	ARRANGEMENTS (See table, page 9)	MATERIAL (standard)	RATING			MOUNTING† (standard)	(approx. in inches)	
PR	Forms: 1, 2, 3, 4, 5, 7, 8, 11 Auxiliary SPDT contacts available	5/16" dia. silver Auxiliary: 3/16" dia. silver (note 1)	See U/L ratings at right Auxiliary SPDT contacts are rated at 5 amps, 120V AC.	SP One million DP Ten million	PR dust cover (35D013)	two 3/16" dia. holes on 1⅞" centers	Open: L. 2½ to 3⅜ ** H 2½ W. 2½ **with auxiliary contacts; 4⅜16	Heavy-duty screw type (note 2, 4) ¼" Quick connect available.
PM	4PDT or 4PST-NO	¼" silver-cadmium oxide	25 amps @ 120/240V, 50/60 Hz resistive. 1 HP per movable arm, 115/230V AC single phase.	Ten million	PM molded, with terminals accessible. (35C058) PM dust cover (steel) (35D227)	One front key-hole and two rear channel slots for No. 8-32 screws. Adapter plate for PR mounting holes (37B370) see below.	Open: L. 3 5/16 H. 2 25/32 W. 2 41/64	Heavy duty No. 8-32 BH screws ¼" Quick connect available.
MR	Forms: 1, 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14	7/32" dia. silver (note 1)	8 amps @ 120V 60 Hz resistive	One million	MS/MR dust cover (35D130)	two 5/32" dia. holes on 2⅜" centers (2¼" centers for DPST -NO or NC and DPDT relays)	Open 3PDT: L. 2 31/32 H. 1 11/16 − 2 W. 2 1/16	Pierced solder lugs
AB / ABC	Forms: 3, 4, 6, 7, 8, 11	¼" dia. silver (note 1)	See U/L ratings at right	Three million	See ABC for enclosed AB	AB: two 8-32 tapped holes on 1¼" centers ABC: one 8-32 threaded stud and locating tab	Open-AB: L. 3 H. 1 29/32 W. 1⅜	¼" Quick connect standard. Screw adaptors available.
AK / AKC	Forms 3, 4, 6, 7, 8, 11	¼" dia. silver (note 1)	10 amps @ 120V AC or 5 amps @ 240V AC non-inductive. ¾ HP 120/240V AC, 1PH.	Three million	See AKC for enclosed AK.	AK: Two 8-32 tapped holes on 1¼ centers. AKC: Two 8-32 tapped holes on 1 13/64" centers.	Open: L. 3⅛ H. 1 35/64 W. 1 13/32	Heavy-duty screw-type

*Standard dimensions. For dimensional tolerances consult the factory.
†For mounting information, see pages 18 and 19.

ABC SERIES Identical to the AB relay, the ABC has a heavy metal dust cover for protection against dust, dirt and accidental jars. All are equipped with ¼" quick connect terminals (standard) and can be supplied with screw terminal adaptors. Listed with U/L Component Recognition and CSA under same file numbers as AB series.

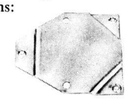
AK and AKC SERIES Long life, quiet operation, and a heavy-duty screw terminal assembly make the AK a highly desirable relay for appliance and industrial control applications. The molded terminal block and sturdy screw terminals withstand use of power screwdrivers for attaching leads. AC or DC operation. Listed by Underwriters' Laboratories Component Recognition File No. 22575.

NOTES:

1. Other contact material can be furnished for specific applications.
2. Can be adapted to printed circuitry or plug-in applications.
3. Pull-in for power relays: DC, 75% of nom. voltage; AC, 78% of nom. voltage @ 25°C.
4. Available for rear panel wiring.

PM ADAPTER PLATE

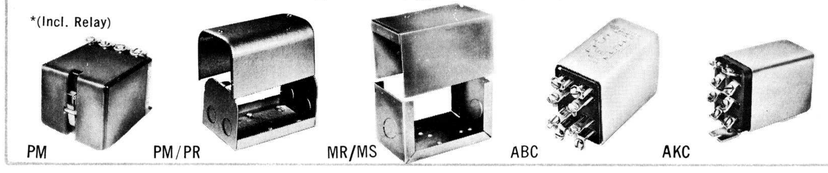
Adapter plate for mounting PM on PR mounting holes.
Dimensions:
L: 2⅞"
W: 2¾"
H: 1/32"



(37B370)

Type	Maximum Dimensions (in Inches) Length	Width	Height	Fits Relays
PM (Molded)*	2 15/32	2 41/64	2 23/32	PM
PM (Steel)	5 1/8	3 13/16	3 13/16	PM
PR	5 5/16	3 3/8	3 1/8	PR
MR/MS	3 5/8	2 19/32	2 3/8	MR/MS/SP
ABC	2 3/32	1 31/64	2 25/32	AB
AKC	3 1/4	1 27/64	2 11/64	AK

*(Incl. Relay)



U/L AND CSA LISTINGS AND U/L COMPONENT RECOGNITIONS

PM SERIES CARRY U/L LISTING

PM AC Types	Contact Arrangements
PM17AY	4PDT

For U/L and CSA coil voltages are: AC: 6V to 240V 50/60 Hz. Contact ratings: 25 amps up to 240V 50/60 Hz AC resistive, 1 HP per movable arm @ 120V or 240V AC single phase.

PR SERIES CARRY U/L LISTING

PR AC Types	PR DC Types	Contact Arrangements
PR1AY	PR1DY	SPST-NO
PR2AY	PR2DY	SPST-NC
PR3AY	PR3DY	SPST-NO-DB
PR4AY	PR4DY	SPST-NC-DB
PR5AY	PR5DY	SPDT
PR7AY	PR7DY	DPST-NO
PR8AY	PR8DY	DPST-NC
PR11AY	PR11DY	DPDT

For U/L and CSA coil voltages are: AC: 6V to 480V 50/60 Hz. DC: 6V to 110V. Contact ratings: 1 HP or 25 amps up to 240V AC 50/60 Hz single phase.

AB, ABC SERIES CARRY U/L COMPONENT RECOGNITION

AB AC Types	ABC AC Types	Contact Arrangements
AB7AY	ABC7AY	DPST-NO
AB8AY	ABC8AY	DPST-NC
AB11AY	ABC11AY	DPDT

For U/L and CSA coil voltages are: AC: 6V to 240V 50/60 Hz. Contact ratings: 10 amps @ 120V AC, or 5 amps @ 240V AC non-inductive.

AK, AKC SERIES (U/L ONLY) CARRY U/L COMPONENT RECOGNITION

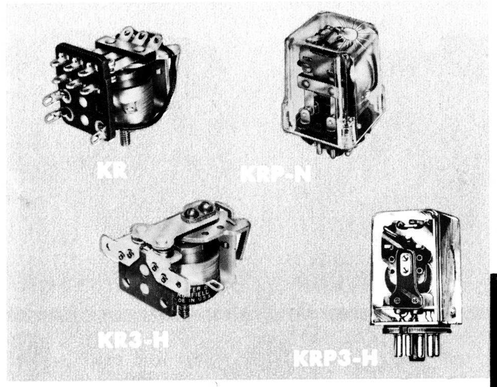
AK AC Types	AKC AC Types	Contact Arrangements
AK3AY	AKC3AY	SPST-NO-DB
AK4AY	AKC4AY	SPST-NC-DB
AK7AY	AKC7AY	DPST-NO
AK8AY	AKC8AY	DPST-NC
AK11AY	AKC11AY	DPDT
DC Types	**DC Types**	
AK3DY	AKC3DY	SPST-NO-DB
AK4DY	AKC4DY	SPST-NC-DB
AK7DY	AKC7DY	DPST-NO
AK8DY	AKC8DY	DPST-NC
AK11DY	AKC11DY	DPDT

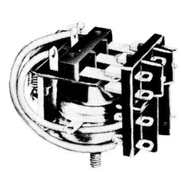
For U/L and CSA coil voltages are: AC: 6V to 240V 50/60 Hz. DC: 6V to 110V. Contact ratings: 10 amps @ 120V 50/50 Hz or 5 amps @ 240V AC non-inductive; ¾ HP 120/240V AC 1PH.

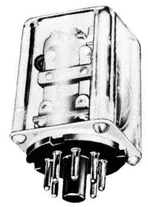
NOTE: U/L or CSA listings do not apply to relays deviating electrically or physically from the types listed above.

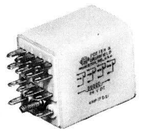
See back cover for ordering information.

POTTER & BRUMFIELD GENERAL PURPOSE RELAYS

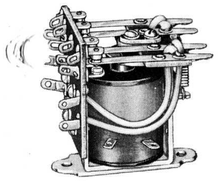


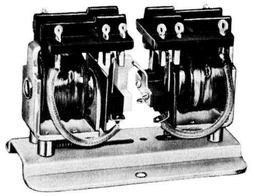

KA SERIES

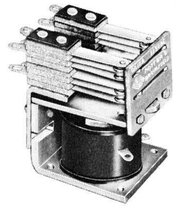

KC SERIES

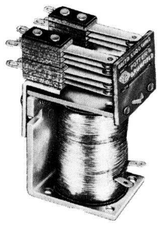

KHP SERIES

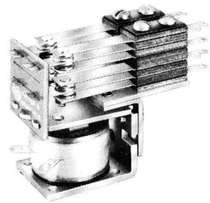

KM SERIES


KL SERIES


KB SERIES


GA SERIES


GB SERIES


GF SERIES

SERIES	COIL: VOLTAGE	COIL: POWER @ +25°C	COIL: RESISTANCE (in Ohms)	BREAKDOWN	AMBIENT TEMPERATURE RANGE IN °C.	CONTACTS: ARRANGEMENTS	CONTACTS: MATERIAL (standard)	CONTACTS: RATING	MECHANICAL LIFE (Cycles)	ENCLOSURES	DIMENSIONS*: MOUNTING† (standard)	DIMENSIONS*: (approx. in inches)	TERMINALS
KA **KAP**	AC: to 240V DC: to 110V (note 1)	AC: 2.0VA DC: 100 MW min., per pole 4 watts max.	16,500 ohms max.	1,500V rms 60 Hz between elements; 500V rms 60 Hz between contacts	AC and DC: —45 min. AC: +70 max. DC: +85 max.	AC and DC: to 3PDT	Silver, silver overlay and silver cad. oxide (note 3)	5 or 10 amps @ 120V AC, 60 Hz resistive (note 5)	10 million	Dust Cover or sealed: type D and special K cans	Stud: one 6-32 5/16" long with locating tab Tapped core: 6-32 with locating tab (note 6)	Open 3PDT: L. 1 27/32 W. 1 15/32 H. 1 11/16	Pierced solder lugs Coil: two 18 AWG wires Contacts: two 16 AWG wires
KR3-H **KRP3-H** **KR** **KRP**	AC: to 240V DC: to 110V (note 1)	AC: 2.0VA DC: 100 MW min., per pole 4 watts max.	16,500 ohms max.	500V rms 60 Hz between all elements	AC and DC: —45 min. AC: +70 max. DC: +85 max. Enclosed: AC: +55 max. DC: +70 max.	KR Series AC and DC: to 3PDT. KR3-H Series AC and DC: SPST (NO-DB)	1/8" dia. gold-flashed silver or 3/16" dia. silver cadmium oxide (note 3). KR3-H series: 1/4" silver-cadmium oxide.	KR Series 5 or 10 amps @ 120V AC, 60 Hz resistive. KR3-H Series 20 amps.	KR Series 10 million KR3-H 1 million	Sealed: type K or D can Dust Cover: clear "P" case, high impact	Stud: one 6-32 with locating tab Core: 6-32 tapped with locating tab (note 6). Also octal 1-type base.	Open 3PDT: L. 1 15/32 W. 1 5/8 H. 1 11/16	Pierced solder lugs (standard) Plug-in headers available Coil: two 18 AWG wires Contacts: two 20 AWG wires
KC **KCP**		Pull-In DC: SP—125 MW; DP—250 MW; 3P—375 MW; 4 watts max. open; 3 watts max. enclosed	16,500 ohms	500V rms 60 Hz between all elements	DC: —45 min. +85 max. Enclosed: +70 max.	DC: to 3PDT	1/8" dia. gold-flashed silver (note 3)	2 amps @ 120V AC, 60 Hz resistive	15 million	Sealed: type K can Dust Cover: clear "P" case	Stud: one 6-32 with locating tab. Core: 6-32 tapped with locating tab. (note 6)	Open 3PDT: L. 1 15/32 W. 1 1/4 H. 1 11/16	Dust Cover: plug-in (standard); octal tube socket. Open: Coil: two 18 AWG wires Contacts: two 20 AWG wires
KHP **KHS**	AC: to 120V DC: to 110V (note 1)	AC: 1.2VA DC: 0.5 watts min. 2.0 watts max.	KHP: 39,000 ohms max. KHS: 11,000 ohms max.	500V rms 60 Hz between contacts.	AC and DC: —45 min. +70 max.	AC and DC: to 4PDT (4 Form C) DPDT-DB (2 Form Z)	3/32" dia. silver (note 3)	3 amps @ 30V DC, 120VAC resistive	AC: 50 million DC: 100 million	KHP: Dust cover KHS: Hermetically sealed	Stud: one 3-48 5/16" long (KHP with locating front)	Encl: 4PDT KHP: L. 1 1/32, W. 55/64, H. 1 7/64 KHS: L. 1 1/32, W. 2 3/32, H. 1 5/32	Pierced solder lugs, taper tabs and printed circuit available. Also mounting socket with printed circuit or solder terminals.
KM	DC only: to 48V (note 1)	DC: .75 watts min. 2.0 watts max.	4,630 ohms max.	500V rms 60 Hz between all elements	DC: —45 min. +55 max.	DC: to 3PDT	3/32" dia. silver (note 3)	2 amps @ 28V DC or 120V AC resistive	10 million	none	One 2-56 tapped hole and locating half punch	Open 3PDT: L. 1 1/8 W. 27/32 H. 13/16	Pierced solder lugs Coil and Contacts: one 18 AWG wire
KL	AC: to 240V DC: to 110V (note 1)	AC: SP—3/4 VA; 2P and 3P—1VA; 4P—1 1/2 VA DC: 100 MW/movable arm	60,500 ohms max.	500V rms 60 Hz between all elements	AC and DC: —45 min. AC: +75 max. DC: +85 max.	AC and DC: to 4PDT	1/8" dia. gold-flashed silver (note 3)	5 amps @ 120V AC, 60 Hz resistive	10 million	Sealed or dust cover: type A can	Two 6-32 tapped holes on 1 7/16" centers	Open 4PDT: L. 2 1/32 W. 1 23/32 H. 1 15/16	Pierced solder lugs Coil and Contacts: two 20 AWG wires
KB	AC: to 240V DC: to 110V (notes 1, 2)	AC: 5.0VA to 4P; 7.8VA to 6P. DC: 2.5 watts min., 4 watts max.	16,500 ohms each coil	Open 1,500V rms. Enclosed 1,000V rms between elements; 500V rms between open contacts	AC and DC: —45 min. +85 max. (intermittent duty)	AC and DC: to 6PDT	1/8" dia. silver (note 3)	5 or 10 amps @ 120V AC, 60 Hz resistive (note 5)	2 million	Special dust covers or sealed: L. 2 19/32" W. 1 3/4" H. 3 11/32"	Two 5/32" dia. holes on 1 3/8" centers	Open 6PDT: L. 2 15/16 W. 1 25/32 H. 2 5/32	Same as KA series above.
GA	AC: to 240V DC: to 110V (note 1)	AC: 6VA DC: 2 watts nom.	DC: 32,400 ohms max.	1,000V rms 60 Hz between all elements	AC and DC: —45 min. AC: +45 max. DC: +75 max.	AC: to 4PDT DC: to 9PDT	3/16" dia. silver (note 3.4)	5 amps @ 120V AC, 60 Hz resistive	10 million	Sealed: type E can, up to 4PDT Dust Cover: plastic cover available	Core: 8-32 tapped, with locating half punch. Special: four 6-32 tapped holes on 3/4" x 7/8" centers	Open: 4PDT: L. 1 23/32, W. 1 1/16, H. 1 25/32 6PDT: L. 1 23/32, W. 1 1/16, H. 2 1/32	Pierced solder lugs Coil: two 18 AWG wires Contacts: two 16 AWG wires
GB		Pull-In DC: SP—115 MW; DP—125 MW; 3P—200 MW; 4P—275 MW, 6 watts max.	58,000 ohms max.	1,000V rms 60 Hz between all elements	DC: —45 min. +75 max.	DC: to 9PDT	3/16" dia. silver (note 3.4)	5 amps @ 120V AC, 60 Hz resistive	10 million	Special: 2" L. x 1 5/8" W. x 3 19/32" H. max. w/octal plug, multiple solder header or miniature plug-in	Same as GA series above	Open 4PDT: L. 1 23/32 W. 1 1/16 H. 2 1/32	Same as GA series above.
GF	AC: to 240V DC: to 110V	AC: 6VA DC: 2 watts	32,400 ohms max (DC relay)	1,000V rms 60 Hz between all elements	AC: —45 to +45 DC: —45 to +75	Up to 4PDT	1/4" dia. silver (note 3)	10 amps @ 120V AC, 60 Hz resistive	10 million	Special enclosure on request	8-32 tapped core with locating boss	Open 4PDT L. 2 1/32 W. 1 1/64 H. 2 5/32	Pierced solder lugs Coil: two 18 AWG wires Contacts: two 18 AWG wires

KR SERIES The KR open and KRP plastic enclosed series are offered in multi-contact arrangements rated at 5 or 10 amperes. The KRP is a plug-in relay with 8 or 11-pin octal-type terminals. The KRP-N (10-amp only) incorporates an indicator lamp. The KRP is identical to the KRP-N except that it has no lamp.

KR3-H SERIES The KR3-H open and KRP3-H enclosed series feature 1/4" dia. silver-cadmium-oxide contacts rated at 20 amperes nominal; 1 HP 120/240V 60 Hz. Contact arrangement is 1 Form X (SPST-NO-DB) only. The KRP3-H has an octal plug-in base. Both relay types are designed for heavy duty applications where limited space is a factor.

KA SERIES A small, low cost highly efficient general purpose relay for small motors, solenoids, other relays and general automation work. Listed by Underwriters' Laboratories, File No. E29244 and Canadian Standards Association (5 amp. version only) File No. 15734. The KAP is the KA model with a high impact plastic dust cover.

KC SERIES Low cost plate circuit relay with good sensitivity. Available open, hermetically sealed or enclosed in a clear cellulose plastic dust cover with a standard 8 or 11-pin octal type plug. Can be furnished with a special hold down spring for horizontal or inverted mounting applications.

KHP SERIES This miniature, rugged 4PDT relay was especially designed to meet the exacting requirements of data processing, computer, process control, and other applications calling for high performance. It is particularly suited to installation by modern production techniques. Mechanical life is 100 million operations minimum. Nylon dust cover. Available for either AC or DC operation.

KHS SERIES The KHS is a hermetically sealed model of the KHP described above.

KM SERIES This subminiature relay was designed specifically for applications requiring unusually small, 3PDT relays. The KM relay has found extensive use in small business machines, alarm systems, automatic toys and communication systems.

KL SERIES Multiple contact relay. Varied contact combinations and high dielectric phenolic insulation afford great versatility and utility. Widely used in such applications as industrial controls, elevator controls, communications equipment and electronic measuring devices.

KB SERIES Latching relay. One coil operates relay to set latch and the other coil releases it. Ideal for memory work and overload applications. Operates on momentary impulse to either coil. Listed by U/L and Canadian Standards Association under same file numbers as KA Series above.

GA SERIES Low cost, general purpose, multipole, voltage switching relay used for many industrial control applications. (See GB for similar current actuated relays.)

GB SERIES A medium cost, high quality current actuated relay similar to the GA series. Good sensitivity and dependability are features of the GB.

GF SERIES Medium-duty power relay with multiple switching capabilities at low initial cost. Used widely in industrial applications. Long contact arms carry 1/4" diameter silver contacts rated at 10 amps at 120V AC or 28V DC resistive. Wipe action of contacts makes them self-cleaning.

NOTES:

1. Pull-in for general purpose relays unless otherwise specified is: DC, 75% of nom. voltage; AC, 85% of nom. voltage.
2. Specify voltage for both latch and release coils.
3. Other contact materials can be furnished for specific applications.
4. Up to 4 Form C relays can be built to meet U/L spacing and creepage requirements.
5. Can be furnished to meet U/L requirements up to 150V.
6. Bracket mounting: two 6-32 holes on 1 7/16" centers.

U/L COMPONENT RECOGNITION AND CSA* LISTINGS

KA AC Types	KA DC Types	Contact Arrangements
KA5AY	KA5DY	SPDT
KA5AG		SPDT
KA11AY	KA11DY	DPDT
KA11AG		DPDT
KA14AY	KA14DY	3PDT
KA14AG		3PDT

For U/L listings coil voltages are AC: 6V to 240V 50/60 Hz. **DC:6V to 110V.**
Contact ratings: For KA-AY and KA-DY: 5 amps or 1/10 HP @ 120V AC single phase, or 1/6 HP @ 240V AC single phase. For KA-AG: 10 amps or 1/6 HP @ 120V AC, single phase, or 1/3 HP @ 240V AC single phase.

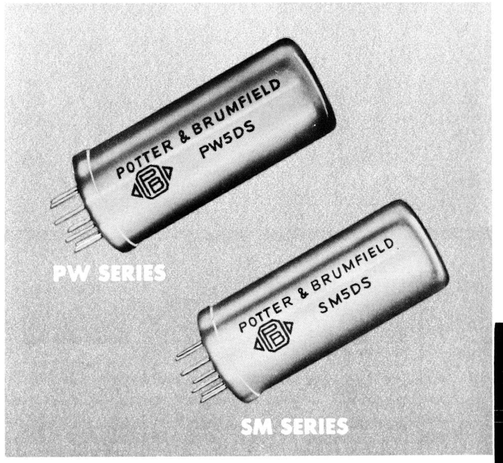
*Standard dimensions. For dimensional tolerances consult the factory.
†For mounting information, see pages 18 and 19.

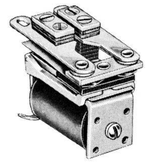
KB AC Types	Contact Arrangements
KB17AY	4PDT
KB23AY	6PDT

For U/L listings coil voltages are AC: 6V to 240V 50/60 Hz.
Contact ratings: 5 amps @ 120V 60 Hz single phase.
Note: U/L or CSA listings do not apply to relays deviating electrically or physically from the types listed above.
*Listings by Canadian Standards Association for KA and KB relays are 5 amps 120V AC 60 Hz resistive.

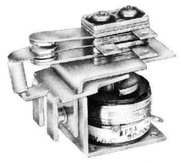
See back cover for ordering information.

POTTER & BRUMFIELD GENERAL & SPECIAL PURPOSE RELAYS




MB SERIES


MS SERIES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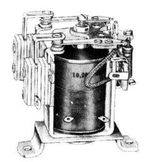
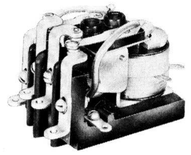
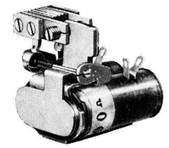

LM SERIES


SP SERIES


LB SERIES


BU SERIES


SS SERIES

SERIES	COILS: VOLTAGE	COILS: POWER @ +25°C.	COILS: RESISTANCE (in Ohms)	BREAKDOWN @ 60 Hz (between all elements)	AMBIENT TEMPERATURE RANGE IN °C	CONTACTS: ARRANGEMENTS	CONTACTS: MATERIAL (standard)	CONTACTS: RATING	ENCLOSURES	DIMENSIONS*: MOUNTING† (standard)	DIMENSIONS*: (approx. in inches)	TERMINALS
PW	to 60V	DC: 25 MW min.; 1.75 watts max.	18,500 ohms max.	500V rms min.	−65 min. +85 max. (special to +125)	SPDT (only)	3/32" dia. gold-flashed silver	1 amp @ 28V DC or 120V 60 Hz resistive	Sealed or dust cover	Plug into 7 pin miniature tube socket. Others available.	Dia.: .765" L.: 1 11/16"	Sealed: 7-pin miniature plug-in, hook-end or pierced solder lugs
SM	to 70W	DC: 75 MW min.; 1.8 watts max.	10,000 ohms max.	500V rms min.	−65 min. +85 max.	SPDT (only)	Stationary, gold-flashed silver. Movable, rhodium	0.5 amps @ 28V DC or 0.25 amps @ 120V 60 Hz, resistive	Sealed or dust cover	Sealed: plugs into 7-pin miniature. Dust cover: 2 .104" dia. holes	Sealed: Dia.: .765" L.: 1 11/16"	Sealed: 7-pin miniature plug-in. Dust cover: 3" solder leads for coil, pierced solder lugs for contacts
MB	DC: to 110V	DC: 1.5 watts min.; 4 watts max.	22,000 ohms max.	500V rms min.	−55 min. +65 max. (special to +85)	SPST-NO-DM SPST-NC-DB SPDT-DB	1/4" wide silver bar against 1/4" dia. silver	60 amps @ 28V DC resistive (Form X only)	Sealed: type D and K	Four 3-48 tapped holes on 3/4" x 3/4" centers. Others available.	Open: L.: 1 21/32" W.: 1 7/8" H.: 1 13/32"	Coil: two 20 AWG wires Contacts: two 13 AWG wires
MS	AC: to 240V	AC: 5.9 VA	2,100 ohms max.	1,500V rms min.	−55 min. +45 max.	SPST-NC SPST-NC-DB	3/32" dia. silver for 3/4 hp; silver cadmium oxide for 3 hp	3/4 hp with SPST-NC, 3 hp with SPST-NC-DB	Dust cover: type MS/MR (page 9)	Two 5/32" dia. holes on 1 5/16" centers	Dust Cover: L.: 3 5/8" W.: 2 1 9/32" H.: 2 3/8"	Screw type
MP	DC: to 110V AC: to 240V	DC: 1.5 watts min.; 6 watts max. AC: 6.0 VA	DC: 34,500 ohms max.	1,000V rms min.	−55 min. +45 max.	DC: to SPDT AC: to SPDT	3/8" dia. silver	25 amps @ 120V AC, 60 Hz, resistive	Special: 2 5 9/64" L. x 2 1/4" W. x 2 3/32" H.	Four 6-32 tapped holes on 3/4" x 7/8" centers	Open: L.: 2 5/16" W.: 1 1/2" H.: 1 7/8"	Coil: two 18 AWG wires Contacts: one 10 AWG wire
LM	Not Applicable	DC: SP-30 MW min., DP-100 MW min., 8 watts max.	58,000 ohms max.	500V rms min.	−55 min. +85 max.	DC: to DPDT	7/32" dia. gold-flashed silver	5 amps @ 120V AC, 60 Hz, resistive	Sealed or dust cover: type A	Two 6-32 tapped holes on 1 13/16" centers	Open: L.: 2 1/4" W.: 2 3/16" H.: 2 1/16"	Coil: two 20 AWG wires Contacts: two 18 AWG wires
SP	DC: to 110V AC: to 240V	DC: 1.5 watts min., 6 watts max. AC: 3.7 VA	34,500 ohms max.	1,500V rms min.	−45 min. +45 max.	SPST-NC-DB SPDT-DB DPDT SPST-NO-DB DPST-NO DPST-NC	3/16" dia. silver	8 amps @ 120V AC, 60 Hz resistive load	Dust cover: Special	Two 6-32 tapped holes on 1 3/16" centers	Open: L.: 2 7/16" W.: 1 5/8" H.: 1 23/32"	Solder type
LB	Not Applicable	DC: 200 MW min., 6 watts max.	34,500 ohms max.	500V rms min.	−45 min. +85 max.	DC: to SPDT	1/4" dia. silver	5 amps @ 120V AC, 60 Hz, resistive		Two 3/16" dia. holes on 2 5/32" centers. Special: one 6-32 tapped hole and locating half punch	Open: L.: 2 5/8" W.: 1 1/4" H.: 1 3/8"	Coil: two 18 AWG wires Contacts: one 12 AWG wire
BU	AC: to 240V 50/60 Hz	4.6 VA	4,600 ohms max.	500V rms min.	−45 min. +55 max.	Not applicable	Not applicable	Not applicable		6-32 NC2B tapped core	Open: L.: 1 3/4" W.: 1 1 21/32" H.: 1 1/32"	Two pierced solder terminals for two 18 AWG wires each
SS	DC: to 110V	DC: 2.5 MW min. (10 MW std.); 4.75 watts max.	60,000 ohms max.	500V rms min.	−55 min. +85 max.	DC: to SPDT	1/8" dia. gold-flashed silver	2 amps @ 120V AC, 60 Hz, resistive load	Sealed or dust cover: type B	Two 6-32 tapped holes on 23/32" centers	Open: L.: 1 3/4" W.: 1 3/8" H.: 1 1/16"	Coil: two 20 AWG wires Contacts: one 18 AWG wire

*Standard dimensions. For dimensional tolerances consult the factory. †For mounting information, see pages 18 and 19.

PW SERIES This miniature relay has a highly permeable magnetic circuit which affords unusual sensitivities and contact pressures. The balanced armature makes it possible to operate in any position and still withstand shocks of 20g with less than 100 micro-seconds contact opening @ 100 MW pull-in, and vibrations of 10g from 55 to 500 Hz, .065" maximum displacement from 10 to 55 Hz with no contact openings. Operate speed is 15 MS maximum @ nominal pick-up voltage @ 25°C. Hermetically sealed in a deep drawn brass enclosure. PW relays meet the applicable requirements of MIL-R-5757D.

SM SERIES Small, fast-acting, sensitive, the SM has a light weight reed-type armature which provides shock resistance of 5g with less than 100 micro-seconds contact opening, and vibration resistance of 10g from 55 to 500 Hz, .065" maximum displacement from 10 to 55 Hz with no contact opening. Operate speed is 5 MS maximum @ 150% of pick-up voltage @ 25°C. Can be furnished with a polyethylene dust cover or hermetically sealed in a deep drawn steel enclosure. Designed for low level switching in computers, aircraft instruments and others.

MB SERIES Miniature DC Contactor designed for very high current applications. Rugged construction insures long life. Handles 150 ampere surges for 0.3 sec.

MS SERIES Motor starting relays for capacitor, induction-run motors. Operates on back EMF of start winding. Armature gap can be altered to change pull-in. Meets U/L spacing requirements.

MP SERIES Motor starting relay with snap action. Small size, heavy duty, low cost SPDT relay used with capacitor-start, induction-run motors up to 1½ HP. Can be built with a magnet if whole snap action is desired.

LM SERIES Plate circuit relays at medium cost with high quality construction and good sensitivity. LM operates on minimum current. Pull-in adjusting screw permits quick changes for various sensitivity requirements within the operating range. Large number of contact arrangements available.

SP SERIES Balanced armature construction permits mounting in any position. Combination base and contact support of heavy molded phenolic provides good dielectric characteristics. Pinhinged armature assures fast, trouble free operations.

LB SERIES Low cost, sensitive relays designed for top performance and long life at an unusually low cost. LB is factory adjusted to operate on minimum current requirements.

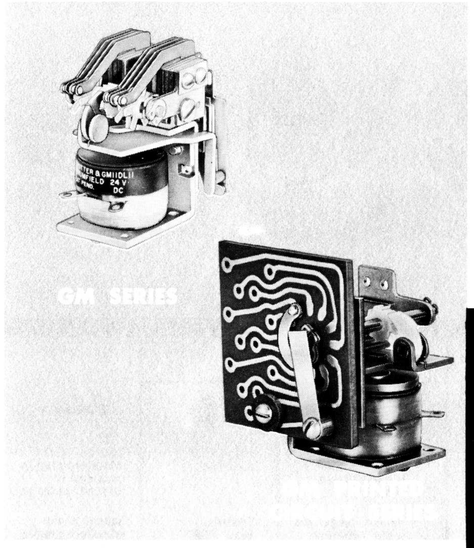
BU BUZZER AC operated coil with a spring steel armature which buzzes when coil is energized. Used extensively in test equipment, laboratories and a host of other applications.

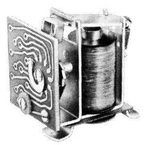
SS SERIES Super sensitive (10 mw standard) precision relay. Dual series-connected coils with balanced armature on needle-point bearings for all low energy circuits such as instruments and bridge balancing. May also be used as a differential relay by connecting the two coils in separate circuits.

See back cover for ordering information.

POTTER & BRUMFIELD GENERAL & SPECIAL PURPOSE RELAYS

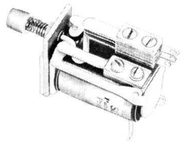
INDIVIDUAL DATA SHEETS FOR EACH RELAY AVAILABLE UPON REQUEST




SA SERIES


PA SERIES


PC SERIES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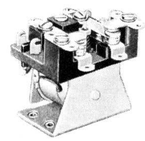
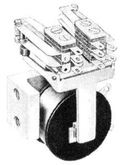

PS SERIES


AF SERIES


KT SERIES


MC SERIES

SERIES	COILS: VOLTAGE	COILS: POWER @ +25°C.	COILS: RESISTANCE (in Ohms)	COILS: BREAKDOWN @ 60 Hz (between all elements)	AMBIENT TEMPERATURE RANGE IN °C	CONTACTS: ARRANGEMENTS	CONTACTS: MATERIAL (standard)	CONTACTS: RATING	ENCLOSURES	DIMENSIONS*: MOUNTING† (standard)	DIMENSIONS*: (approx. in inches)	TERMINALS
GM	AC: to 240V DC: to 110V	AC: 9 VA DC: 2.5 W min., 4W max.	3,300 ohms max.	500V rms min.	AC: —45 min. +45 max. (interm. duty) DC: —45 min. +75 max.	DPDT DPDT/DPDT 10 or 12 pos. printed circuit switch	Silver (other available)	to 3 amps 120V AC 60 Hz (non-induct.). Printed circuit: to 250 MA	Plastic dust cover on special order	Open: 8-32 tapped core with locating boss	Impulse/ sequence. L.: 2 5/64″ W.: 1 7/16″ H.: 2 1/32″	Pierced solder lugs. Quick-connect terminals available
SA	DC: to 110V AC: to 240V	DC: 1.5 watts min., 5.5 watts max. AC: 20 VA intermittent duty	58,000 ohms max.	500V rms min.	AC: —55 min. +85 max. (interm. duty) DC: —55 min. +65 max. (continuous)	SP-12 positions 12 non-shorting steps	Movable: silver against rhodium	.25 amps @ 120V AC, 60 Hz, resistive	Dust cover: type A	Two 6-32 tapped holes on 1 13/16″ centers	Open: L.: 2 17/32″ W.: 1 3/4″ H.: 2 15/32″	Coil: two 18 AWG wires Contacts: one 20 AWG wire
PA	DC: to 110V AC: to 240V	DC: 9 watts AC: 18.4 VA, both at nom. voltage; intermittent duty	34,500 ohms max.	500V rms min.	—55 min. +85 max.	DC: 4 Form C AC: 3 Form C	1/8″ dia. gold-flashed silver cadmium oxide	7.5 amps @ 120V AC 60 Hz, resistive	Dust cover: type A	No. 8-32 tapped hole with locating tab	Open: L.: 2 3/32″ W.: 2″ H.: 1 3/4″	Coil: two 18 AWG wires Contacts: two 18 AWG wires
PC	DC: to 110V AC: to 240V	DC: 9 watts, AC: 18.4 VA, both at nom. voltage; intermittent duty	34,500 ohms max.	500V rms min.	—55 min. +85 max.	DC: to 4PDT AC: to 4PDT	1/8″ dia. gold-flashed silver cadmium oxide	7.5 amps @ 120V AC, 60 Hz, resistive	Sealed or dust cover: type A	Two 5/32″ dia. holes on 2 5/8″ centers	Open: L.: 2 21/32″ W.: 2 1/16″ H.: 2 5/64″	Coil: two 18 AWG wires Contacts: two 18 AWG wires
MA	DC: to 110V	DC: 200 MW/ movable arm min., 4 watts max.	22,000 ohms max.	500V rms min.	—45 min. +85 max. (special —65 to +125)	DC: to 4PDT	1/8″ dia. gold-flashed silver Avail. w/single or bifurcated contact arms	5 amps @ 120V AC, 60 Hz, resistive	Dust cover only: type M	Two 4-40 tapped holes on 3/8″ x 3/8″ diagonal centers	Open: L.: 2 15/32″ W.: 25/32″ H.: 1 3/8″	Coil: two 20 AWG wires Contacts: two 20 AWG wires
PS	DC: to 110V AC: to 240V	DC: 2.5 watts min., 6 watts max. AC: 6.0 VA	33,600 ohms max.	1,000V rms min.	—45 min. +55 max.	SPST-NO-DB SPST-NC-DB DPST-NO DPST-NC DPDT	1/4″ dia. silver	10 amps @ 120V AC, 60 Hz, resistive	Dust cover: type PS	Four 6-32 NC2 tapped holes on 1/2″ x 3/16″centers. Others available	Open: L.: 1 41/64″ W.: 1 3/16″ H.: 1 7/8″	Coil: two 18 AWG wires Contacts: two 18 AWG wires
AF	AC: to 240V 400 Hz	11.5 VA	400 ohms max.	500V rms min.	—45 min. +35 max.	to DPDT	1/8″ dia. gold-flashed silver	5 amps @ 120V AC, 60 Hz, resistive load	Sealed: type D	Two 6-32 tapped holes on 7/16″ centers	Open: L.: 1 3/4″ W.: 1 9/16″ H.: 2″	Coil: two 20 AWG wires Contacts: two 20 AWG wires
KT	DC: to 110V AC: to 240V	DC: 1.2 watts min., 4 watts max. AC: 2.0 VA	16,500 ohms max.	500V rms min.	—45 min. AC: +70 max. DC: +85 max.	DC: to 3PDT AC: to 3PDT	1/8″ dia. gold-flashed silver	5 amps @ 120V AC, 60 Hz, resistive		One 6-32 threaded stud 3/16″ long with 1/4″ locating tab	Open: L.: 1 15/32″ W.: 1 1/4″ H.: 1 1/16″	Coil: two 20 AWG wires Contacts: two 20 AWG wires
MC	DC: to 110V AC: to 240V	DC: 150 MW/ movable arm min., 4 watts max. AC: 4.6 VA (SP max.)	22,000 ohms max.	500V rms min.	—55 min. +85 max.	DC: to 3PST AC: to DPDT	3/32″ palladium. Gold alloy available for low voltage, low current	1 amp @ 120V AC, 60 Hz, resistive	Sealed: types D, K & M (DC relays only)	Four 3-48 tapped holes on 3/4″ x 3/4″ centers. Others available.	Open: L.: 1 15/32″ W.: 3/4″ H.: 1 25/32″	Coil: two 20 AWG wires Contacts: two 20 AWG wires

*Standard dimensions. For dimensional tolerances consult the factory.
†For mounting information, see pages 18 and 19.

GM SERIES Particularly flexible for applications where automatic sequencing by single coil latching is indicated, the GM series is available in two standard and two special designs. A ratchet and pawl design alternately switches a 2 Form C (DPDT) contact arrangement by indirect cam action during drop-out of the armature. In the second standard version, a set of 2 Form C auxiliary contacts operated directly by the armature is added. Special versions are custom designs which utilize 10- or 12-position uni-directional printed circuit stepping switch to switch up to 250 MA. These special versions use the basic motor structure of the GM and are arranged, with certain modifications, to operate the printed circuit switches by an extension of the ratchet shaft. The AC coil duty cycle of the GM series is 50%—5 minutes maximum on, 5 minutes minimum off. DC: Continuous @ 4 watts @ 25°C.

SA SERIES Stepping relay utilizing a printed circuit board to provide twelve consecutive step positions. Armature pawl drives a ratchet wheel to step movable contact arm. For step selection in low current applications.

PA SERIES Impulse latching relay for on-off and current reversal switching on alternate pulses. Employs re-centering spring-loaded pusher rod.

PC SERIES Impulse latching relay similar to PA, but utilizes a re-centering guided pusher rod, and has different contact arrangement. 60 milli-second pulses to coil @ nom. voltage.

MA SERIES Latching relay for applications where electrical latch-in and manual reset control is required. A good performing miniature latching relay that operates on 4 watt coil loads at +25°C. (See MH series for additional MA features, pages 6 and 7.)

AF SERIES 400 Cycle relay has laminated core construction to minimize power losses at high frequencies. The small, yet ruggedly constructed AF relays are used extensively in aircraft, industrial control systems and laboratories employing 400 cycle power.

KT SERIES Antenna switching relays with glass base insulation for minimum RF loss to switch 300 ohm line. Rugged in construction, small in size.

PS SERIES General purpose power relay with a coil mounted on a core staked to a box frame. Coil mounting provides added efficiency in the magnetic circuit. All contacts are mounted on a special phenolic molding.

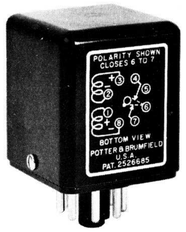
MC SERIES RF switching telephone type relay built with ceramic contact spacers to minimize losses at high frequencies. Intercontact capacitance. 1.5 pf. max. open; 6 pf. enclosed AC relays for intermittent duty only.

See back cover for ordering information.

NEW Polarized sensitive

MDP SERIES

high-speed multi-coil relays



MDP SERIES These extremely sensitive, small-size polarized relays provide high-speed switching and bounce-free contact performance. They have a wide range of application in telegraphy, pulse code circuits, differential controls, instrumentation, and others. Their operation depends on both the magnitude and direction of the coil current. A permanent magnet in the relay provides the polarizing magnetic flux which is affected by a small amount of coil power and causes the armature to align itself with the stronger of the two flux paths.

CONTACT ARRANGEMENTS

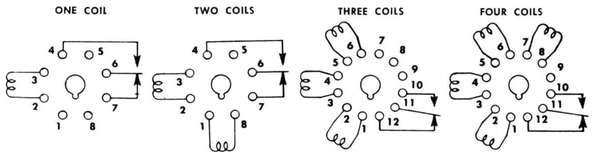
Bi-Stable: Armature remains in its last energized position, or transfers to opposite side when coil is energized with proper polarity, or remains in its position when energized with opposite polarity.

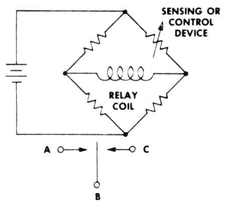
Single-Side-Stable: Armature always closes same pair of contacts when coils are de-energized. Armature transfer depends on coil signal polarity.

Center-Stable: Armature remains in center-off (neutral) position with contacts open when coils are de-energized, and transfers to one side or other depending on coil signal polarity.

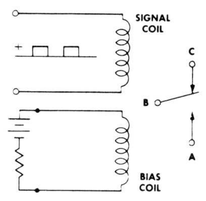
COIL DATA

Relays are available with one, two, three or four coils. Standard coil resistance values range up to 4,000 ohms per coil. Other coils can be supplied on special order.





Sensing or control application.

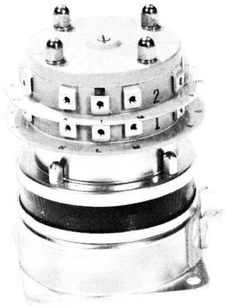


Pulse code application.

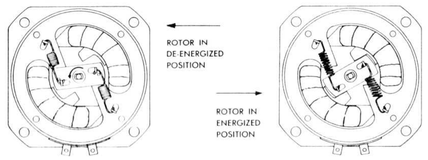
NEW Rotary shockproof

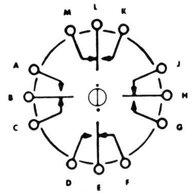
MDR SERIES

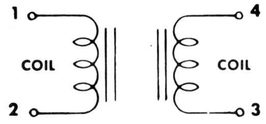
non-latching and latching relays



MDR SERIES The reliability of MDR relays to meet or exceed the most rigorous requirements of military specifications has been proven in control circuits of nuclear reactors, missile systems and gun fire apparatus. MDR relays meet MIL-R-19523, including MIL-STD-167 for vibration and MIL-S-901 for shock. Contact chatter is absent even at impact shock blows of 2000 ft-lbs. Two versions are available, non-latching and latching. In the non-latching version, two coils in series actuate the rotor and contact mechanisms. In the latching version, two sets of coils provide a latching two-position operation.







LATCHING MDR

When coil 1-2 is energized, contacts A-B, D-E, G-H and K-L close. The line on the rotor shaft and the two dots are not in alignment.

When coil 1-2 has been de-energized and coil 3-4 is energized, contacts B-C, E-F, H-J and L-M close. The line and dots are aligned. The armature is held by positive spring action in its last energized position when both coils are de-energized.

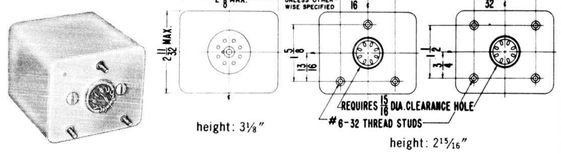
AVAILABLE IN SMALL AND MEDIUM SIZES

The small, non-latching MDR is furnished with AC coils to 12PDT; with DC coils to 8PDT. The small latching MDR with AC or DC coils is equipped with 4PDT contacts.

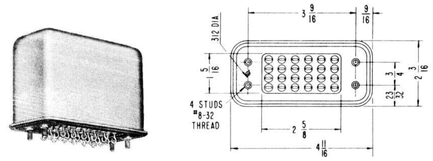
The medium-size, non-latching MDR is provided with AC or DC coils to 24PDT; the latching with AC coils with contacts to 16PDT. All contact arrangements are Form C (break-before-make).

POTTER & BRUMFIELD ENCLOSURES (DIMENSIONS FOR REFERENCE ONLY)

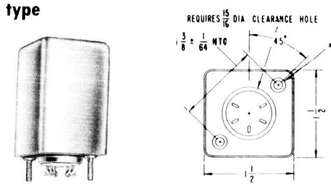
A type — octal plug; solder header — for use with relays: KL, LM, PC



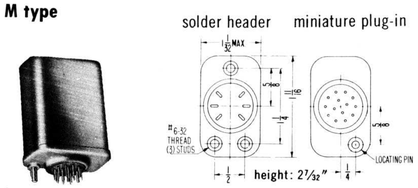
L type — height: 3 5/32"; solder header — for use with relays: BS, LT, 6MH



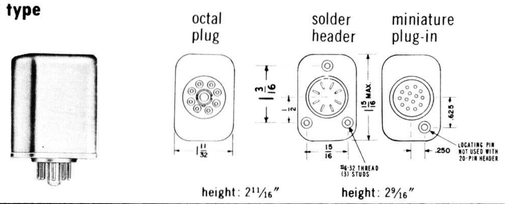
B type — solder header or miniature plug-in — SS



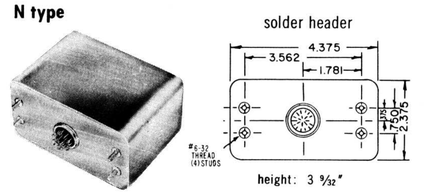
M type — solder header; miniature plug-in — KE, MC, MH



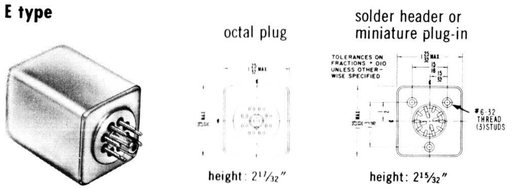
D type — octal plug; solder header; miniature plug-in — AF, MB, MC, MH, TS



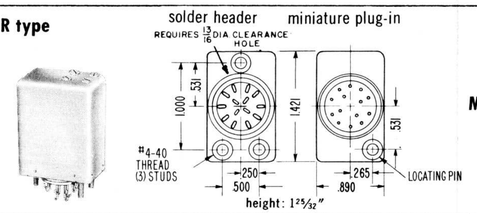
N type — solder header — BS, LT, 6MH



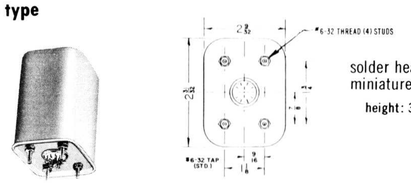
E type — octal plug; solder header or miniature plug-in — GA, MB, MC, MH



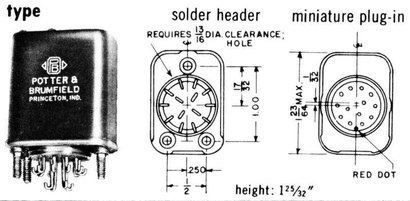
R type — solder header; miniature plug-in — MH



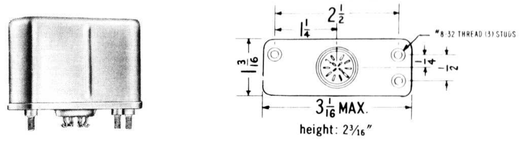
G type — solder header or miniature plug-in — GS



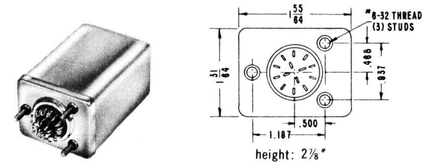
T type — solder header; miniature plug-in — MG



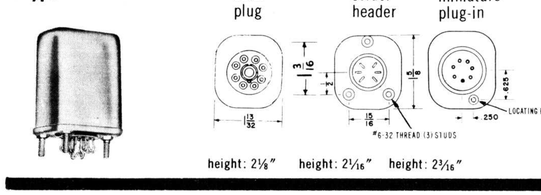
H type — solder header or miniature plug-in — LK, 2MC, 2MH, 2KR



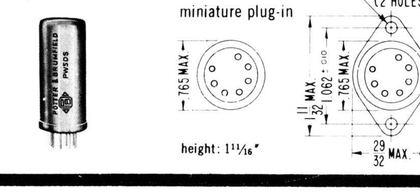
W type — octal plug, solder header or miniature plug-in — LS



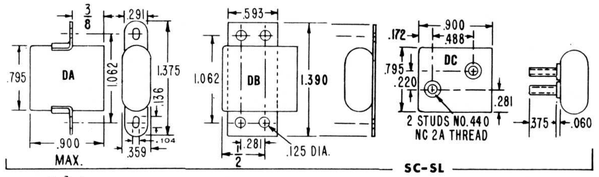
K type — octal plug; solder header; miniature plug-in — KA, KC, KR, MB, MC, MH, TS

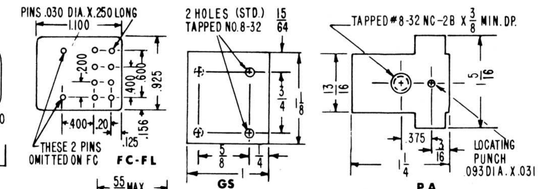


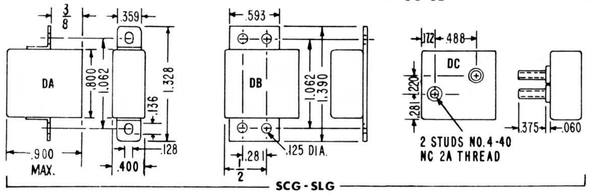
PW, SM type — miniature plug-in — PW & SM only

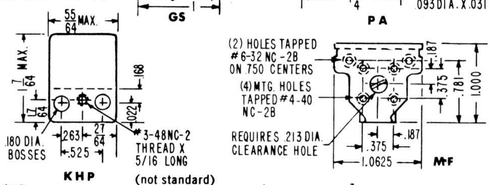


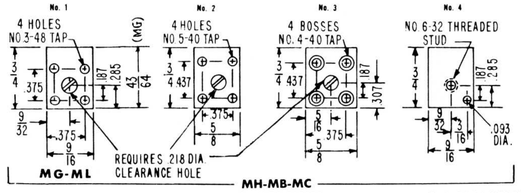
(DIMENSIONS FOR REFERENCE ONLY)

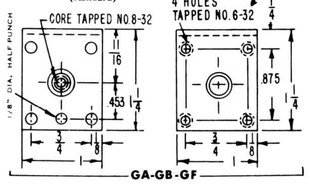


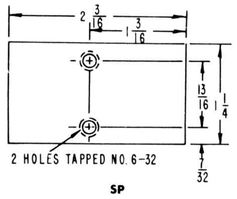


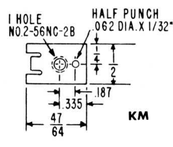


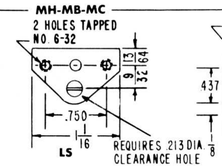


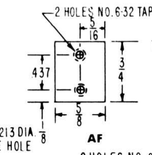


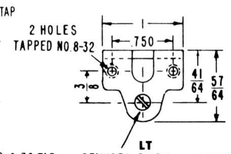


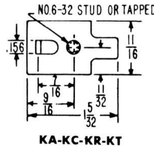


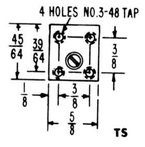


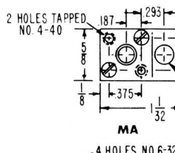


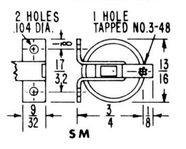


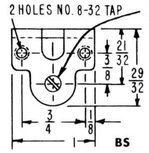


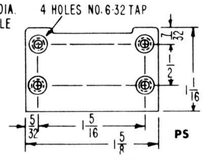


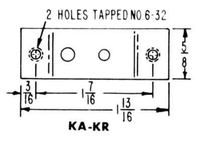


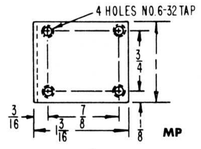


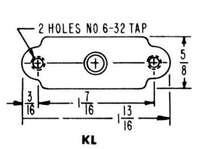


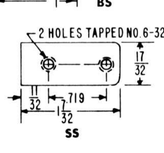


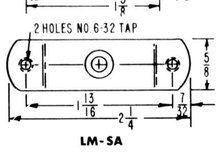


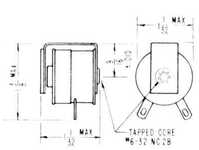


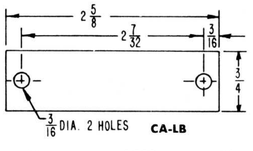


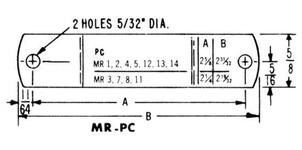


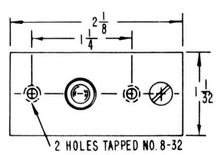


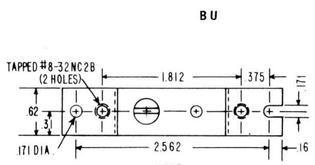


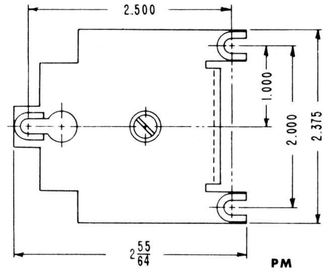


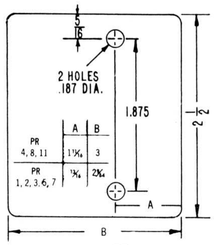


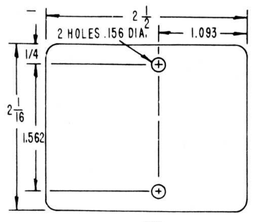


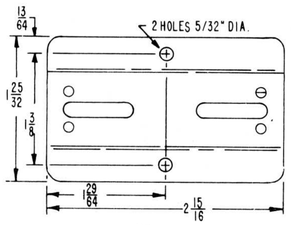






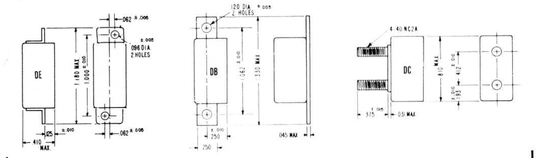


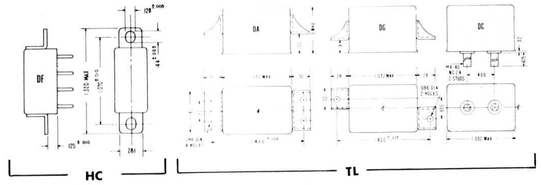


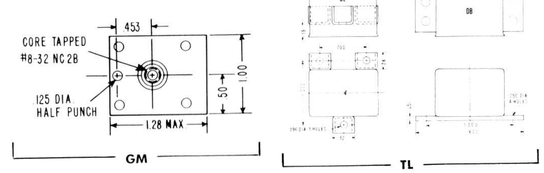


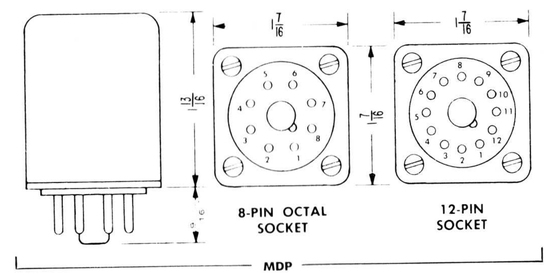
See back cover for ordering information.

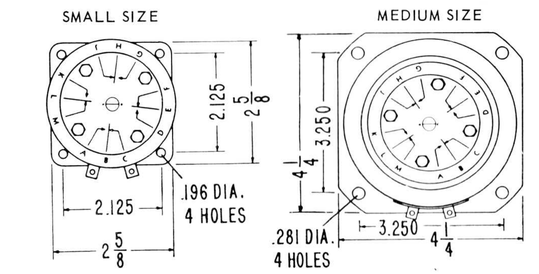
(DIMENSIONS FOR REFERENCE ONLY)

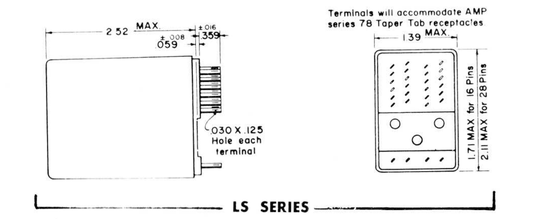












KU SERIES