

MERCURY CONTACTORS & RELAYS



Southeast Thermal Systems

Industrial Automation
Process Heating Solutions
Heating Elements, Systems, Controls & Sensors

PHONE: 704-399-4248

FAX: 704-399-4167

WWW.SETHERMAL.COM

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GLOSSARY OF TERMS & EXPRESSIONS

AMBIENT: The temperature of air or liquid surrounding any electrical part or device.

CONSTANT DUTY: If the contactor will remain "on" in normal use for indefinite periods of time, in excess of 100 hours.

CONTACTOR: 1.) A device for the purpose of repeatedly establishing or interrupting an electric power circuit; 2.) A heavy duty relay used to control electrical circuits. Relays rated at 15 to 30 amps and up are generally referred to as contactors.

CONTACT: 1.) One of the current-carrying parts of a relay, switch or connector that is engaged or disengaged to open or close the associated electrical circuits. 2.) To join two conductors or conducting objects in order to provide a complete path for current flow. 3.) The juncture point to provide the complete path.

CONTACTS: Mercury to Metal: The contacts of a standard mercury displacement relay or contactor. The upper contact is metal and stationary. The lower contact is a pool of mercury that gets displaced by the plunger assembly, thereby coming in contact with the metal electrode during operation. (See page 4.)

Mercury to Mercury: The contacts of a standard mercury timer relay. This contact arrangement utilizes a cup, which has the electrode in it, and is filled with mercury. When the mercury at the bottom of the unit is displaced, it floods over the sides of the cup, completing the circuit. This provides a clean make and break with no chatter and little erosion. (See page 11.)

CONTINUITY: A continuous path for the flow of current in an electric circuit.

DERATE: To reduce the voltage, current, or power rating of a device to improve its reliability or to permit operation at high ambient temperatures.

DIELECTRIC: The insulating material between the metallic elements of an electronic component.

DROP-OUT: The current, voltage, or power value that will cause an energized relays contacts to return to their normal deenergized condition.

GAUSS: The centimeter-gram-second electromagnetic unit of magnetic induction. One gauss represents one maxwell per square centimeter.

HEAT RISE: In a mercury displacement relay; The heat developed from the coil and contacts as a unit.

HERMETIC SEAL: A mechanical or physical closure that is impervious to moisture or gas, including air.

HERTZ: Cycles per second.

INRUSH CURRENT: In a solenoid or coil, the steady-state current drawn from the line with the armature, or plunger, in its maximum open position.

LOAD, CONTACT: The electrical power encountered by a contact set in any particular application.

MAXWELL: The cgs electromagnetic unit of magnetic flux, equal to one gauss per square centimeter, or one magnetic line of force.

OPERATE TIME: In a mercury displacement relay; the amount of time that passes when power is applied to the coil, to when the contacts close in a normally open set of contacts, or when the contacts open in a normally closed set of contacts.

Quick Operate is when the operate time is less than the stated release

time. Slow operate is when the operate time is no longer than the stated release time.

PLUNGER: In a mercury displacement relay; The device used to displace mercury. The plunger is lighter than mercury so it floats on the mercury. The plunger also contains a magnetic shell or sleeve, so it can be pulled down into the mercury with a magnetic field. The plunger does the same job in a mercury displacement relay as an armature in a mechanical relay.

POLE: 1.) Output terminals on a switch. 2.) A single set of contacts; (i.e., three sets of contacts equal three poles)

POWER FACTOR: Ratio of the actual power of an alternating or pulsating current to the apparent power.

PULL-IN: (Pick-up): The minimum current, voltage, power or other value which will trip a relay or cause it to operate.

RELAY: An electromechanical or electronic device in which continuity is established or interrupted in one circuit by a control circuit. Typically used to switch large currents by supplying relatively small currents to the control circuit. Also see Contactor.

RELEASE TIME: In a mercury displacement relay; The amount of time that passes when power is removed from the coil, until the contacts of a normally open unit reopen, or when contacts of a normally closed unit recloses.

Quick Release is when the release time is less than the stated operate time. Slow release is when the release time is longer than the stated operate time.

STEADY-STATE: A condition in which circuit values remain essentially constant, occurring after all initial transients or fluctuating conditions have settled down.

TRANSIENT (Transient Phenomena): Rapidly changing action occurring in a circuit during the interval between closing of a switch and settling to steady-state conditions, or any other temporary actions occurring after some change in a circuit or its constants.

VOLT-AMPERE: A unit of apparent power in an AC circuit containing reactance. It is equal to the potential in volts multiplied by the current, in amperes, without taking phase into consideration.

VOLTAGE SPIKES: An abrupt transient which comprises part of a pulse but exceeds its average amplitude considerably.

VOLTAGE WITHSTAND: The amount of electromotive force (volts) that can be applied to two points before a current will flow (leakage or breakdown.)

WATT: A unit of electrical power. One watt is expended when one ampere of direct current flows through a resistance of one ohm. In an AC circuit, the true power in watts is effective volt-amperes multiplied by the circuit power factor. There are 746 watts in one horsepower.

ABBREVIATIONS

A.C.	Alternating Current	Hg	Mercury
D.C.	Direct Current	Hz	Hertz
M.D.R.	Mercury Displacement Relay	N.C.	Normally Closed
D.P.S.T.	Double Pole Single Throw	N.O.	Normally Open
S.P.S.T.	Single Pole Single Throw	Q	Quick
T.P.S.T.	Triple Pole Single Throw	S	Slow

AND RELAYS



TRAFFIC CONTROL (CONSTANT DUTY)

35 AMPS @ 600 VAC

60 AMPS @ 480 VAC

*A return spring replaces the buffer spring for this application

EXAMPLE #1

CONTACTS: “NO” = Normally Open, “NC” = Normally Closed

OPTIONS

SEE NOTE #1

335NO-120ATHN-18

BRACKET, OTHER THEN STANDARD: "A, B, N, P or U" on 35 & 60-AMP units.
(Blank if Standard bracket is used)
See Page 12

"H": Is for loads other than AC Resistive & Tungsten on Normally Open Units Only

“T”: For Top Termination, **“TS”** For Top Screw Termination on 35-AMP Units.
(Blank if Standard Termination).
See Pages 8 & 12.

A.C. RESISTIVE LOAD RATING: (30, 35, 60, or 100-AMP).

NOTES: 1) Other designations are **-1 thru -99**. These are suffix numbers, and are reserved for units with dead special detail, construction and/or features. **-11** MOV on coil (see page 20), **-13** MOV & metal strap, **-17** DIN rail mount, **-20** DIN rail & metal strap (see page 12), **-18** metal strap (see page 9). (See example #2).

100NO-120AH-6A

The **-6A** stands for HIGH VOLTAGE contactor.

Used in ultraviolet curing ovens and other high voltage applications.

See page 11 for ratings.

30-AMP NORMALLY OPEN CONTACTORS



SINGLE POLE



**TWO POLE
STANDARD MOUNT**



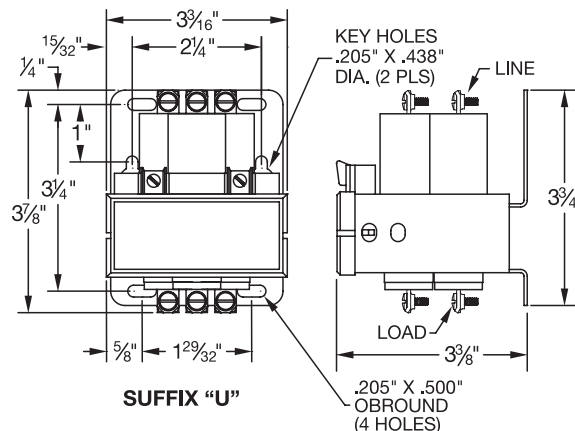
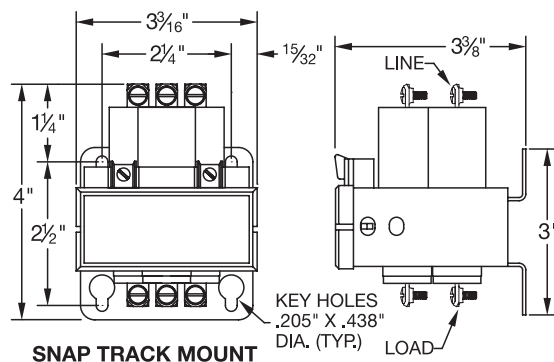
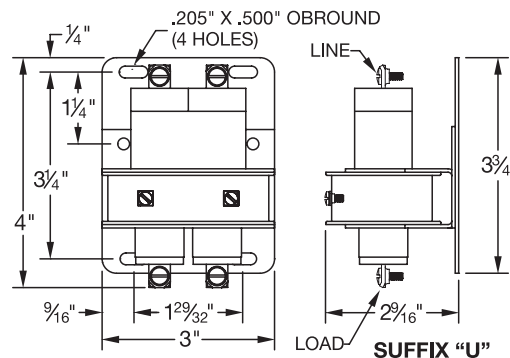
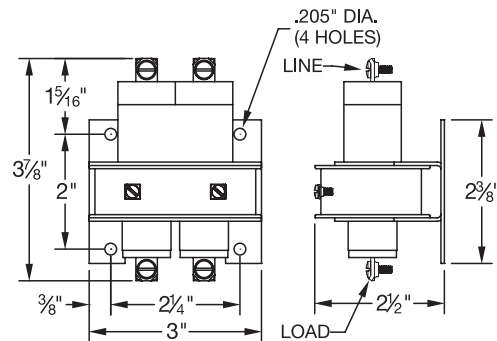
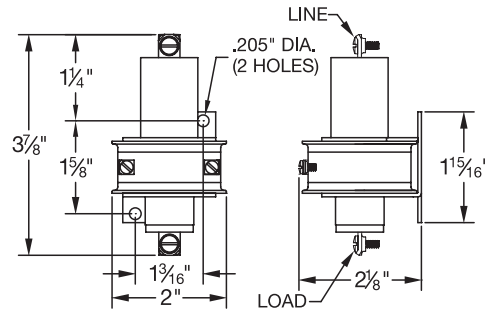
**TWO POLE
UNIVERSAL MOUNT**



**THREE POLE
STANDARD MOUNT**



**THREE POLE
UNIVERSAL MOUNT**



GENERAL INFORMATION

The 30 Amp model is designed to save space and simplify mounting methods. The standard mounting bracket on the three pole model allows the unit to be mounted in standard 3" snap track channel. If you do not use snap track mounting, the standard three pole bracket has key hole slots for easy mounting in any panel arrangement. The universal three pole mounting bracket has various mounting holes and key hole slots to meet a variety of mounting centers.

The 30 Amp series is a more compact line with a well proven switch which is the heart of mercury relays. It is the same switch design that is in our 35 and 60 Amp encapsulated MDR's, which have withstood the test of time and millions of cycles in many different applications.

TYPICAL SPECIFICATIONS

-ON NORMALLY OPEN UNITS:

OPERATE TIME: 50 milliseconds

RELEASE TIME: 80 milliseconds

-CONTACT RESISTANCE:

30-AMP=.003 ohm*

-DIELECTRIC WITHSTAND:

2500 VAC RMS

- LONGEVITY:

MILLIONS OF CYCLES

- TEMPERATURE RANGE:

-35°C to 85°C

- COIL TERMINALS:

#6 BINDING HEAD SCREWS

- LOAD TERMINALS:

#8 BINDING HEAD SCREWS

- UL LISTING: FILE #E62767

- C.S.A.: FILE #LR41198

- TO ORDER SEE PAGE 4

***AFTER CYCLING UNDER LOAD.**



FILE #E-62767



FILE #LR 41198



Catalog No.	Resistance	Current	V.A.	Watts
30NO-24D	180 Ω	133 mA	3.2	3.2
230NO-24D	131 Ω	188 mA	4.5	4.5
330NO-24D	73 Ω	329 mA	7.9	7.9
30NO-24A	28 Ω	316 mA	7.6	2.8
230NO-24A	12.5 Ω	610 mA	14.6	4.7
330NO-24A	7.6 Ω	815 mA	19.6	5.0
30NO-120A	725 Ω	65 mA	7.8	3.1
230NO-120A	317 Ω	118 mA	14.2	4.4
330NO-120A	210 Ω	163 mA	19.6	5.6
30NO-220A	3,150 Ω	27 mA	6.0	2.2
230NO-220A	1,300 Ω	56 mA	12.3	4.1
330NO-220A	728 Ω	86 mA	18.9	5.5

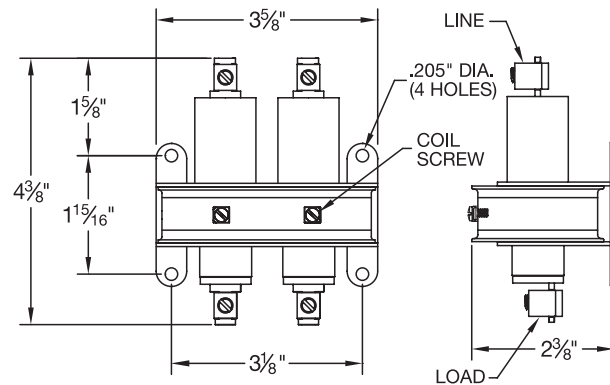
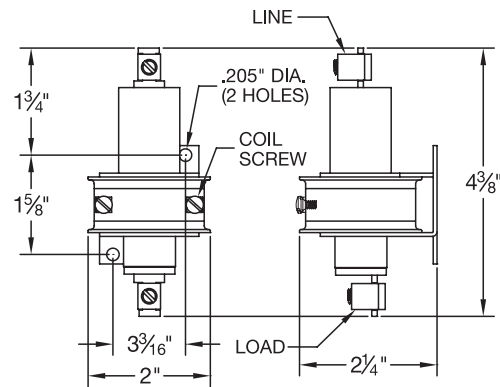
L35/L60-AMP NORMALLY OPEN CONTACTORS



**SINGLE POLE
NORMALLY OPEN**



**TWO POLE
NORMALLY OPEN**



TYPICAL SPECIFICATIONS

- **ON NORMALLY OPEN UNITS:**
OPERATE TIME: 50 milliseconds
RELEASE TIME: 80 milliseconds
- **CONTACT RESISTANCE:**
35-AMP = .003 ohm*
60-AMP = .002 ohm*
- **DIELECTRIC WITHSTAND:**
2500 VAC RMS
- **LONGEVITY:**
MILLIONS OF CYCLES
- **TEMPERATURE RANGE:**
-35°C TO 85°C
- **COIL TERMINALS:**
#6 BINDING HEAD SCREWS
- **LOAD TERMINALS:**
PRESSURE CONNECTORS FOR
A.W.G. #4-#14 ON 35-AMP AND
A.W.G. #2-#8 ON 60-AMP UNITS
- **UL LISTING:**
FILE #E62767 FOR L35 AND
L60-AMP N.O. UNITS 1-2 POLES
- **C.S.A.:**
FILE #LR41198 FOR L35 AND
L60-AMP N.O. UNITS 1-2 POLES



The "L" version of the 35 and 60 amp normally open contactors are designed and manufactured to the same high quality specifications as the standard 35 and 60 amp models. The contactor switch is the same well proven design that has been manufactured since 1975. The mounting centers and physical size are identical to the standard single and two pole 35 and 60 amp molded versions.

The new design provides a cleaner appearance, and is a more economical design. It is available in the single and two pole models only, with top and bottom load terminals or with lead wires. Noted are the typical specifications and UL and CSA file numbers.

COIL DATA L35 AND L60 SERIES.

Catalog No.		Resistance	Current	V.A.	Watts
L35NO-24D	L60NO-24D	188 Ω	135 mA	3.3	3.3
L235NO-24D	L260NO-24D	92 Ω	260 mA	6.2	6.2
L35NO-24A	L60NO-24A	28 Ω	325 mA	7.8	3.0
L235NO-24A	L260NO-24A	10.3 Ω	660 mA	15.8	4.5
L35NO-120A	L60NO-120A	725 Ω	75 mA	9.0	4.0
L235NO-120A	L260NO-120A	350 Ω	115 mA	13.8	4.6
L35NO-220A	L60NO-220A	3,150 Ω	27 mA	5.9	2.2
L235NO-220A	L260NO-220A	1,000 Ω	69 mA	15.2	4.8

***AFTER CYCLING UNDER LOAD**

35/60-AMP NORMALLY OPEN CONTACTORS

HAZARDOUS LOCATION & TRAFFIC CONTROL



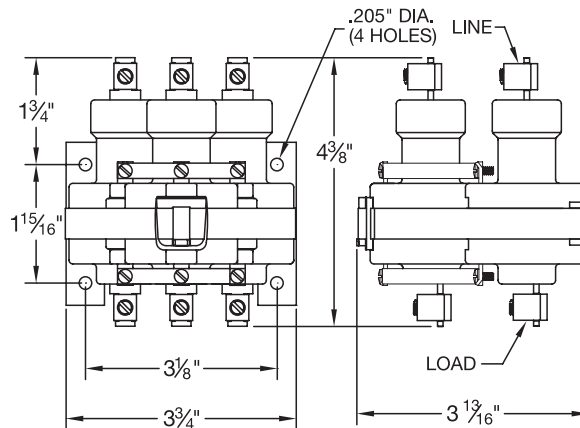
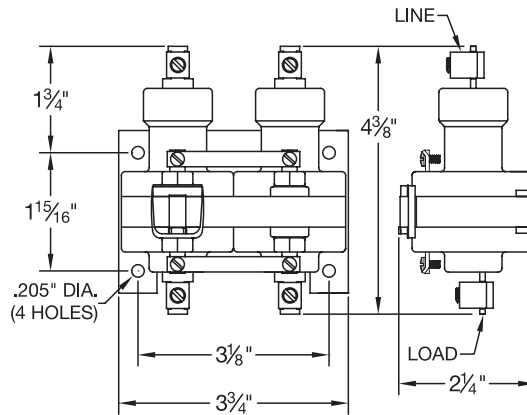
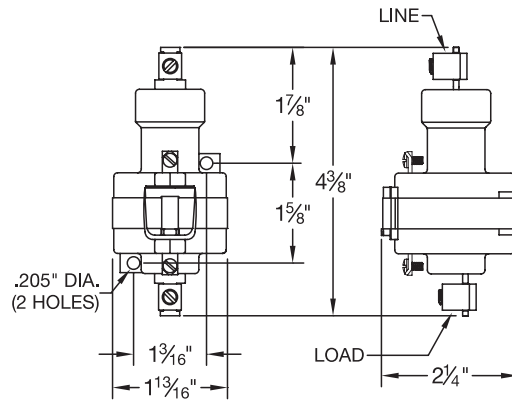
SINGLE POLE—NORMALLY OPEN



TWO POLE—NORMALLY OPEN



THREE POLE—NORMALLY OPEN



TYPICAL SPECIFICATIONS

- NORMALLY OPEN UNITS:
OPERATE TIME: 50 milliseconds
RELEASE TIME: 80 milliseconds
- NORMALLY CLOSED UNITS:
OPERATE TIME: 30 milliseconds
RELEASE TIME: 35 milliseconds
- CONTACT RESISTANCE:
35 AMP = .003 ohm*
60 AMP = .002 ohm*
- TEMPERATURE RANGE:
-35°C to 85°C
- COIL TERMINALS:
#6 WIRE BINDING SCREWS
- LOAD TERMINALS:
PRESSURE CONNECTORS
4 TO 14 AWG ON 35 AMP
2 TO 8 AWG ON 60 AMP
- RATINGS:
SEE PAGE 13 FOR COIL DATA
SEE PAGE 14 FOR CONTACTS
- UL LISTING: FILE #E-62767 FOR
- C.S.A.: FILE # LR 41198 FOR
- TO ORDER SEE PAGE 4



HAZARDOUS LOCATIONS

SUFFIX "X"

Available in 1, 2 & 3 Pole Units
UL File E-71867

Auxiliary devices for use in hazardous locations
For CLASS 1, GROUPS A, B, C, & D – Division 2 only.

TRAFFIC CONTROL (CONSTANT DUTY)

SP-1132- VOLTAGE- (A or D)

35 AMPS @ 600 VAC

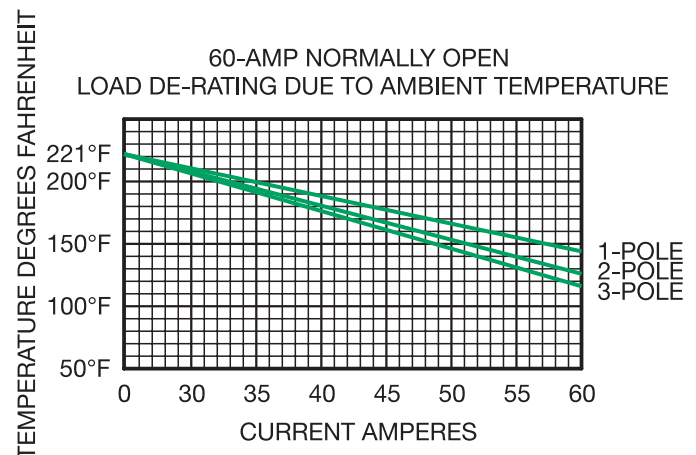
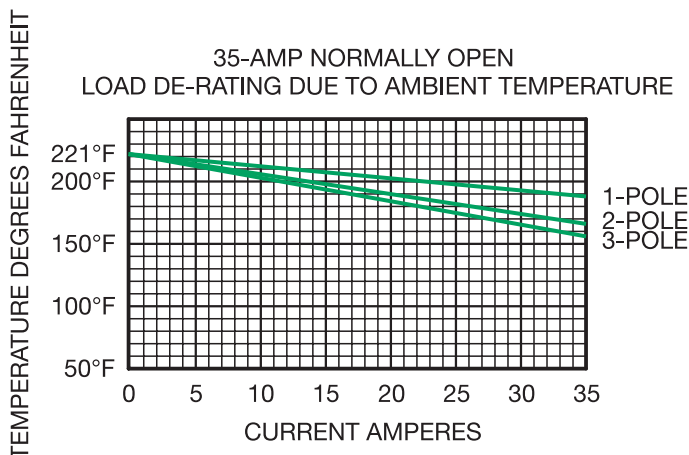
SP-1130- VOLTAGE- (A or D)

60 AMPS @ 480 VAC

A return spring replaces the buffer spring for this application

* AFTER CYCLING UNDER LOAD

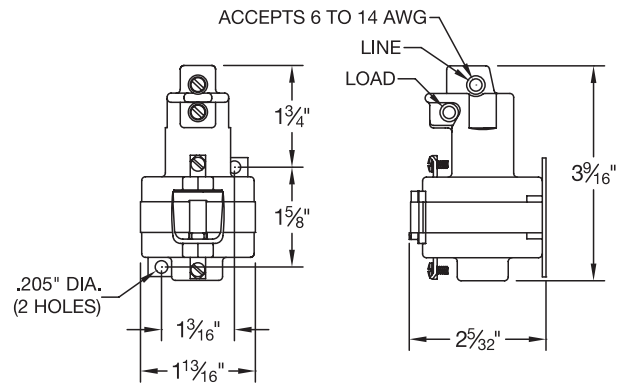
STANDARD MOUNTING SHOWN - SEE PAGE 12 FOR OPTIONS



35 AMP T-TOP CONTACTORS



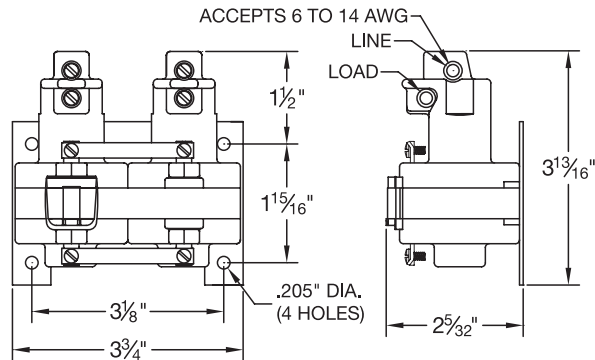
SINGLE POLE—NORMALLY OPEN



FILE #E-62767



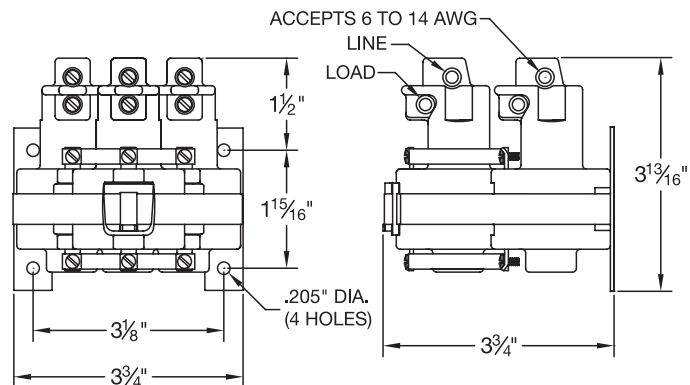
TWO POLE—NORMALLY OPEN



FILE #LR 41198

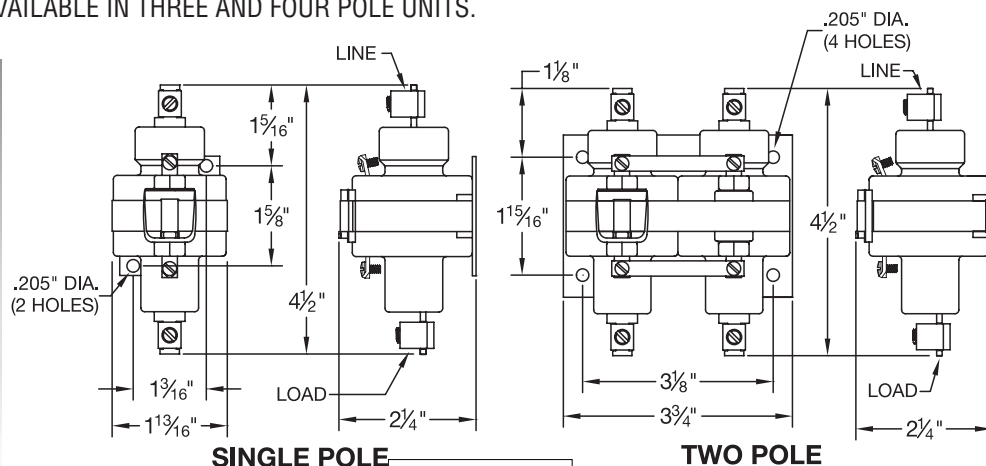


THREE POLE—NORMALLY OPEN



35/60 AMP NORMALLY CLOSED CONTACTORS

SIMILAR CONSTRUCTION AS THE NORMALLY OPEN UNITS BUT WITH THE COIL POSITIONED CLOSER TO THE TOP OF THE CONTACTOR AND A NORMALLY CLOSED CONTACTOR IN PLACE OF A NORMALLY OPEN CONTACTOR. ALSO AVAILABLE IN THREE AND FOUR POLE UNITS.



FILE #E-62767



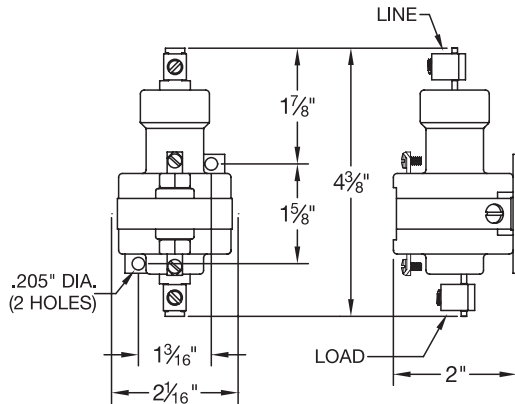
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35/60 AMP METAL STRAPPED CONTACTORS

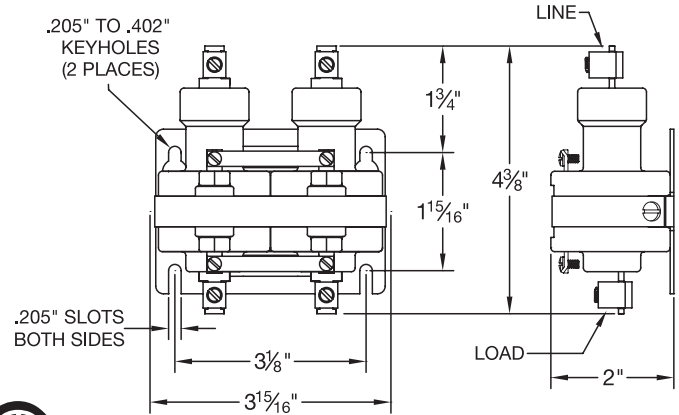
Add suffix -18 to catalog number for metal strap, i.e. 335NO-120A-18



SINGLE POLE—NORMALLY OPEN



TWO POLE—NORMALLY OPEN



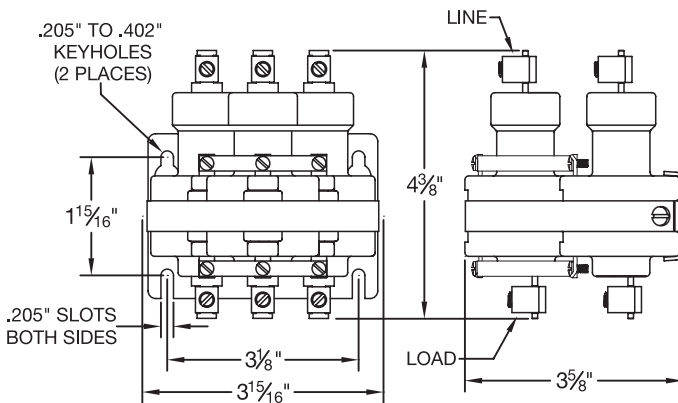
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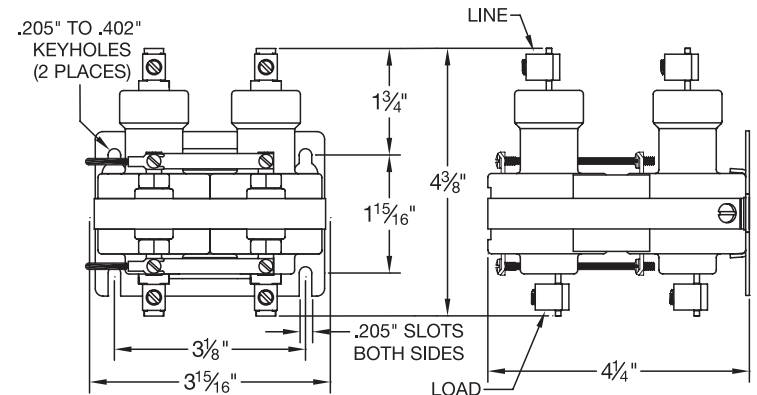
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THREE POLE—NORMALLY OPEN



FOUR POLE—NORMALLY OPEN



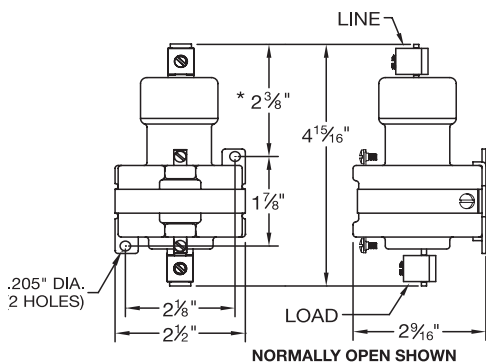
100-AMP CONTACTORS



**NORMALLY OPEN
UNIT**



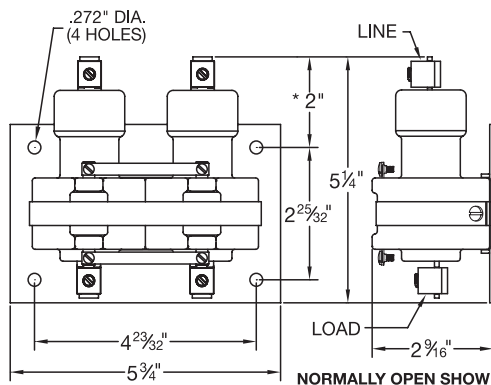
**NORMALLY CLOSED
UNIT**



* THIS DIMENSION IS 1 3/8" FOR NORMALLY
CLOSED SINGLE POLE UNITS



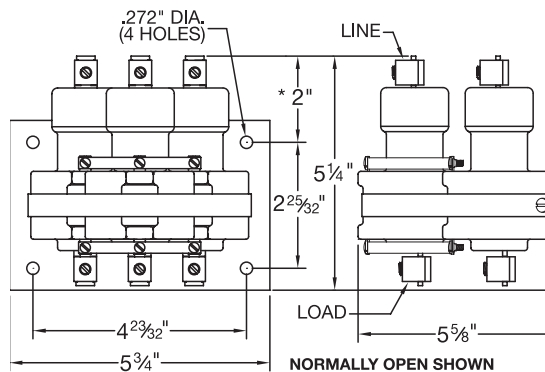
TWO POLE—NORMALLY OPEN



* THIS DIMENSION IS 1 5/16" FOR NORMALLY
CLOSED TWO POLE UNITS



THREE POLE—NORMALLY OPEN



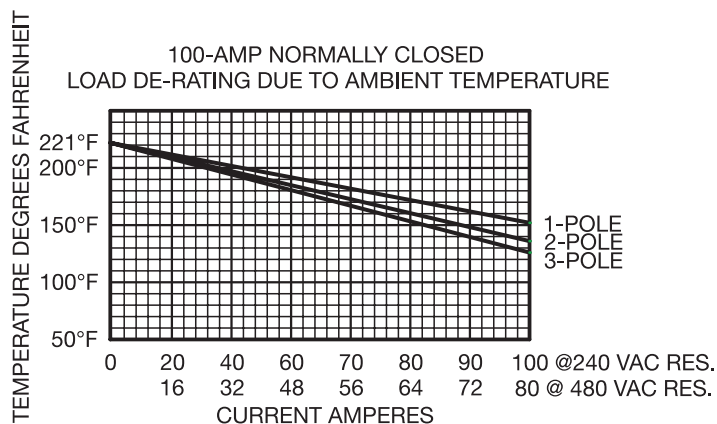
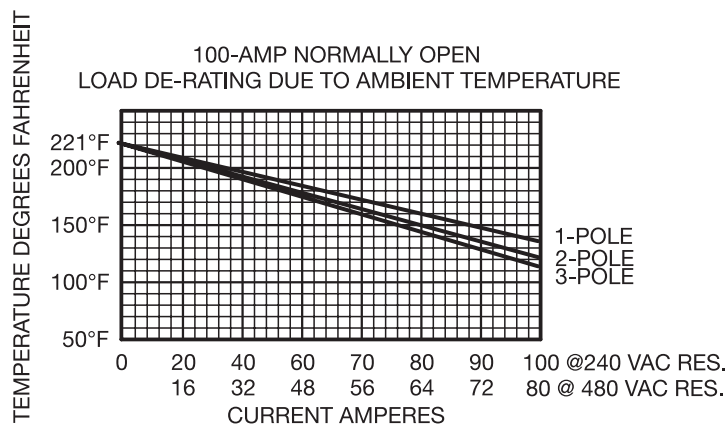
* THIS DIMENSION IS 1 5/16" FOR NORMALLY
CLOSED THREE POLE UNITS

TYPICAL SPECIFICATIONS

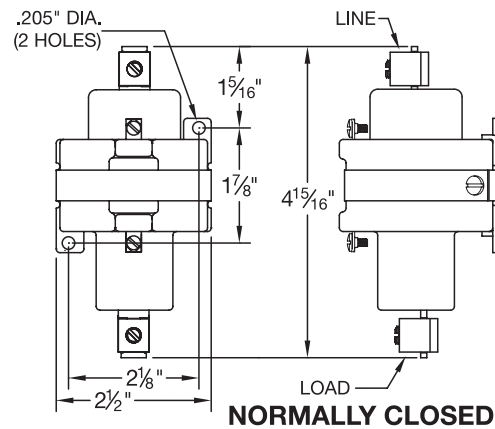
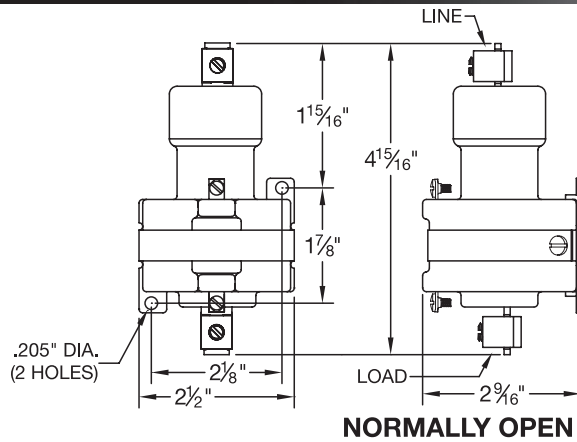
- ON NORMALLY OPEN UNITS:
OPERATE TIME: 50 milliseconds
RELEASE TIME: 80 milliseconds
- ON NORMALLY CLOSED UNITS:
OPERATE TIME: 45 milliseconds
RELEASE TIME: 60 milliseconds
- CONTACT RESISTANCE:
.001 ohm*
- DIELECTRIC WITHSTAND:
2500VAC RMS
- LONGEVITY:
MILLIONS OF CYCLES
- TEMPERATURE RANGE:
-35°C TO 85°C
- COIL TERMINALS:
#6 BINDING HEAD SCREWS
- LOAD TERMINALS:
PRESSURE CONNECTORS.
STANDARD ACCEPTS A.W.G.
#2 to #8.
FOR A.W.G. #1 to #8,
ADD SUFFIX -5 to CATALOG
NUMBER (i.e. 100NO-120A-5)
- RATINGS:
Derate over 240VAC Res.
See Page 13 for Coil Data.
See Page 14 for Contacts.
- TO ORDER SEE PAGE 4.

S100NO - SERIES

AVAILABLE IN 1, 2 & 3 POLES
RATINGS: 100 AMPS @ 480 VAC
SEE PAGE 14 FOR RATINGS



HIGH VOLTAGE CONTACTORS



For UV Curing, and Various High Voltage applications. Available in Single Pole, Normally Open, and Normally Closed Units. The coils utilize 6-32 Wire Binding Screws, and the Contacts use Compression type terminals for #2 thru #8 AWG wire.

RATINGS ARE:

10 AMPS @ 3500 VAC

15 AMPS @ 2500 VAC

AC INDUCTIVE Power Factor .7 or Greater.

COIL DATA

Catalog Number	Coil Voltage	Resistance	Current Draw	Wattage	V.A.
100NC-24D-6A	24 VDC	121 Ω	198 mA	4.8	4.8
100NC-120A-6A	120 VAC	380 Ω	125 mA	5.9	15.0
100NC-220A-6A	220 VAC	1,400 Ω	76 mA	8.1	16.7
100NO-12DH-6A	12 VDC	16 Ω	750 mA	9.0	9.0
100NO-24AH-6A	24 VAC	16 Ω	760 mA	9.2	18.2
100NO-24DH-6A	24 VDC	65 Ω	370 mA	8.9	8.9
100NO-120AH-6A	120 VAC	380 Ω	158 mA	9.5	19.0
100NO-220AH-6A	220 VAC	1,400 Ω	90 mA	11.3	19.8

TIME DELAY RELAYS

MDI's Time Delay CONTACT ACTION is designated as follows:

DOO: Delay on operate, normally open

DORO: Delay on operate and release, normally open

DRO: Delay on release, normally open

DORC: Delay on operate and release, normally closed

DRC: Delay on release, normally closed

HOW TO ORDER

Specify as shown below

A = ALTERNATING CURRENT

D = DIRECT CURRENT

DOO-120AP-5 ← TIME DELAY IN SECONDS

↑ MOUNTING

A = "A" BRACKET

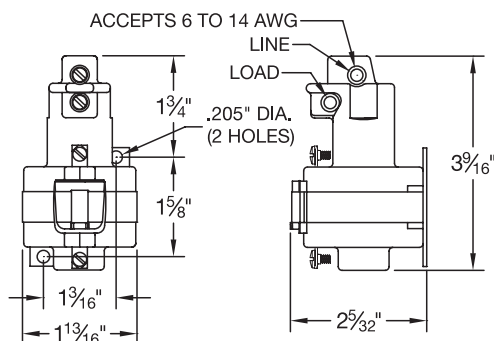
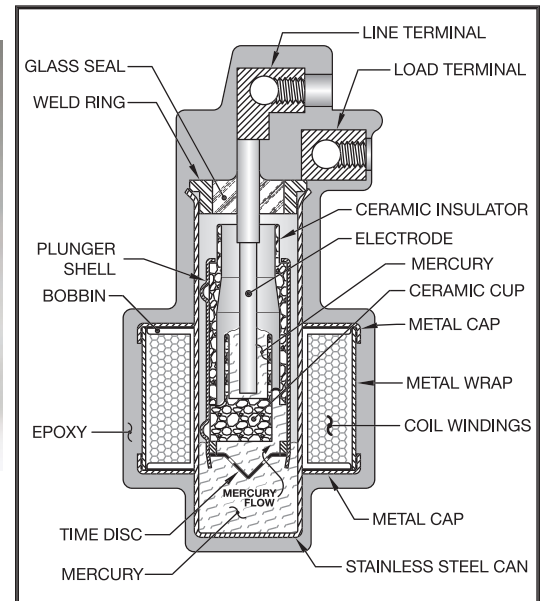
U = UNIVERSAL BRACKET

P = PANEL MOUNT

This space is blank for standard mounting bracket

↑ CONTACT ACTION

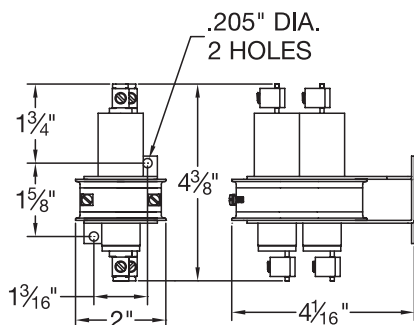
↑ COIL VOLTAGE



TIME DELAY RELAYS Are available with delays of up to 15 seconds on normally open units, and 4 seconds on normally closed units. The timing limitation depends on the contact action required. A time delay function is accomplished in this unit by sizing a hole in the time disc that will control the rate of the mercury flow. This controls the time it will take from the instant the coil is powered until the mercury pools make contact with each other, closing the circuit between the load terminals. Typical contact ratings 10 AMP @ 120 VAC. Pilot duty rating 720 VA. Common coil voltages are available. Standard load terminals are compression type. Coil terminals use #6 binding head screws.

OPTIONAL TERMINATIONS AND MOUNTING PLATES

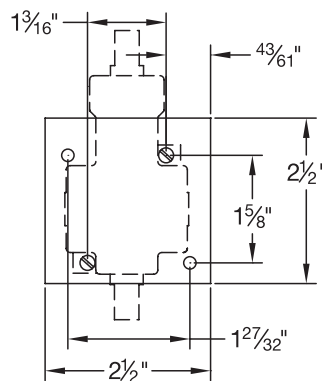
OPTIONAL 35 & 60 AMP CONTACTORS & TIMER MOUNTING PLATES



SP-1214

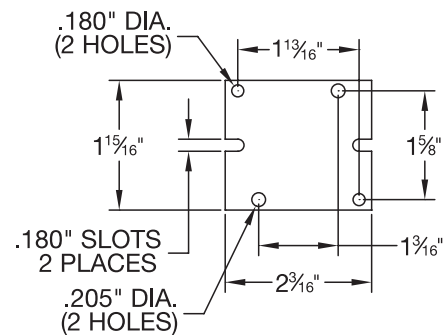
2" wide, narrow mount two pole 30 amp. catalog number SP-1214 followed by the coil voltage, then "D" for DC.

Example: SP-1214-120A



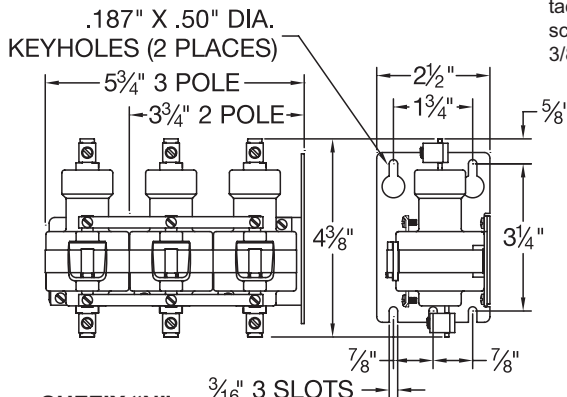
"P" PANEL MOUNT

For 35, 60-amp or standard timer; with standard mounting bracket. The standard mounting bracket attaches to the panel with two 6-32 screws. Material: 3/8" thick phenolic.



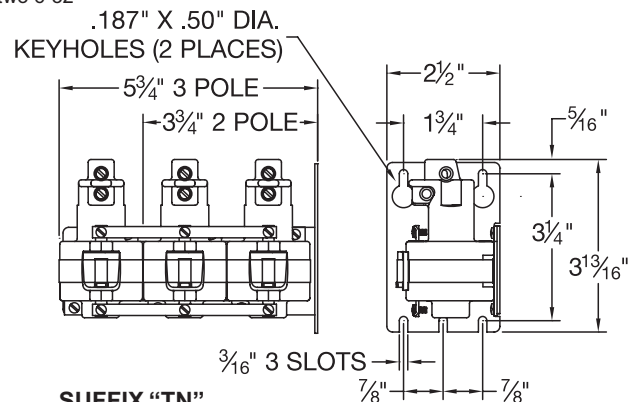
"U" UNIVERSAL BRACKET

For single pole, 35 and 60-amp units, and for timers. This is the standard bracket for hybrid timers. Material: 16-ga. plated steel.



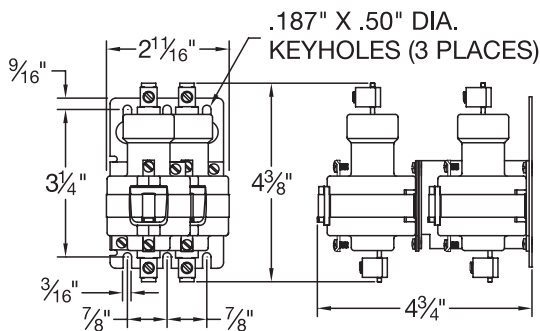
SUFFIX "N"

Narrow two or three pole 35 or 60 amp units only



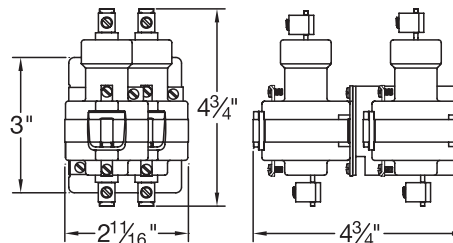
SUFFIX "TN"

Two or Three Pole 35 AMP Only. Load terminals on top for shorter overall height.



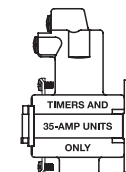
SUFFIX-19

Two pole 35 or 60 amp narrow mounted, front facing, off set, for panel mounting.



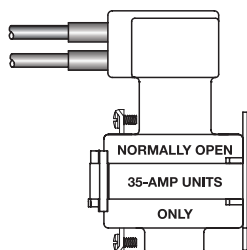
SUFFIX-"NB"

Two pole 35 or 60 amp narrow mounted, front facing, off set, for snap track mounted



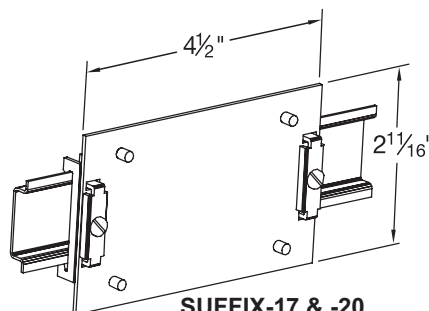
TS (Top Screws)

Designated by the letters "TS" in the catalog number suffix. For timers and 35-amp units. (Dimensions same as T-Top see page 8).



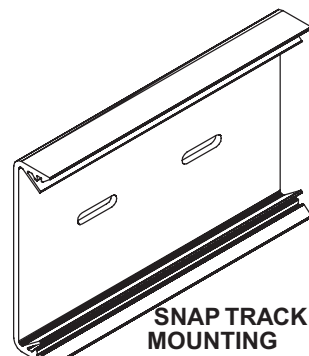
L-1 (Leaded)

Designated by the letters "L-1" in the catalog number suffix. For normally open 35-amp units. Height 3-3/16" other dimensions same as standard (page 8).



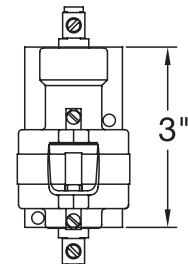
SUFFIX-17 & -20

Din rail mount 35mm symmetrical for 35 and 60 AMP units.



SNAP TRACK™ MOUNTING

Specify suffix "B" for SNAP TRACK mount on single, two and three pole 35 and 60 amp series and single and two pole 30 amp series. SNAP TRACK mount is standard on three pole 30 amp without suffix.



"B" BRACKET

For single pole 35 and 60-amp units, and for timers. Mounts into standard 3" snap-track. Material is 16-ga. plated steel.

COIL DATA PER POLE RATINGS ON STANDARD COILS

CATALOG NUMBER	VOLTAGE	RESISTANCE (D.C. OHMS)	CURRENT (MILLIAMPERES)	VOLT AMPERES (V/A)	POWER (WATTS)
30 AMP SERIES (SEE PAGE 5)	SEE PAGE 5	SEE PAGE 5	SEE PAGE 5	SEE PAGE 5	SEE PAGE 5
35NO-24A	24 VAC	50 Ω	242 mA	5.8 V/A	2.9 W
35NO-120A	120 VAC	1,250 Ω	53 mA	6.4 V/A	3.5 W
35NO-208A	208 VAC	3,400 Ω	30 mA	6.2 V/A	3.1 W
35NO-220A	220 VAC	4,800 Ω	28 mA	6.2 V/A	3.8 W
35NO-277A	277 VAC	7,900 Ω	20 mA	5.5 V/A	3.2 W
35NO-480A	480 VAC	20,000 Ω	12 mA	5.9 V/A	3.0 W
35NO-6D	6 VDC	13 Ω	462 mA	2.8 V/A	2.8 W
35NO-12D	12 VDC	36 Ω	333 mA	4.0 V/A	4.0 W
35NO-24D	24 VDC	176 Ω	136 mA	3.3 V/A	3.3 W
35NO-48D	48 VDC	636 Ω	75 mA	3.6 V/A	3.6 W
35NO-125D	125 VDC	3,400 Ω	37 mA	4.6 V/A	4.6 W
35NO-250D	250 VDC	14,800 Ω	17 mA	4.2 V/A	4.2 W
35NC-24A	24 VAC	36 Ω	310 mA	7.4 V/A	3.5 W
35NC-120A	120 VAC	860 Ω	65 mA	7.8 V/A	3.6 W
35NC-220A	220 VAC	3,400 Ω	31 mA	6.8 V/A	3.3 W
35NC-12D	12 VDC	36 Ω	333 mA	4.0 V/A	4.0 W
35NC-24D	24 VDC	176 Ω	136 mA	3.3 V/A	3.3 W
35NC-48D	48 VDC	560 Ω	86 mA	4.1 V/A	4.1 W
35NC-125D	125 VDC	3,400 Ω	37 mA	4.6 V/A	4.6 W
60NO-24A	24 VAC	50 Ω	259 mA	6.2 V/A	3.4 W
60NO-120A	120 VAC	1,250 Ω	48 mA	5.8 V/A	2.9 W
60NO-208A	208 VAC	3,400 Ω	30 mA	6.2 V/A	3.1 W
60NO-220A	220 VAC	4,800 Ω	27 mA	5.9 V/A	3.5 W
60NO-277A	277 VAC	7,900 Ω	19 mA	5.3 V/A	2.9 W
60NO-480A	480 VAC	20,000 Ω	12 mA	5.8 V/A	2.9 W
60NO-12D	12 VDC	36 Ω	333 mA	4.0 V/A	4.0 W
60NO-24D	24 VDC	176 Ω	136 mA	3.3 V/A	3.3 W
60NO-48D	48 VDC	636 Ω	75 mA	3.6 V/A	3.6 W
60NO-125D	125 VDC	3,400 Ω	37 mA	4.6 V/A	4.6 W
60NO-250D	250 VDC	14,800 Ω	17 mA	4.3 V/A	4.3 W
60NC-24A	24 VAC	36 Ω	325 mA	7.8 V/A	5.3 W
60NC-120A	120 VAC	860 Ω	69 mA	8.3 V/A	4.1 W
60NC-220A	220 VAC	3,400 Ω	34 mA	7.5 V/A	3.9 W
60NC-277A	277 VAC	7,900 Ω	26 mA	7.3 V/A	5.5 W
60NC-12D	12 VDC	36 Ω	333 mA	4.0 V/A	4.0 W
60NC-24D	24 VDC	140 Ω	171 mA	4.1 V/A	3.3 W
60NC-48D	48 VDC	560 Ω	86 mA	4.1 V/A	4.1 W
60NC-125D	125 VDC	3,400 Ω	37 mA	4.6 V/A	4.6 W
100NO-24A	24 VAC	16 Ω	646 mA	15.5 V/A	6.7 W
100NO-120A	120 VAC	380 Ω	137 mA	16.4 V/A	7.1 W
100NO-220A	220 VAC	1,400 Ω	73 mA	16.1 V/A	7.5 W
100NO-277A	277 VAC	2,400 Ω	55 mA	15.2 V/A	7.3 W
100NO-480A	480 VAC	6,300 Ω	35 mA	16.8 V/A	7.7 W
100NO-24D	24 VDC	65 Ω	369 mA	8.9 V/A	8.9 W
100NO-48D	48 VDC	350 Ω	137 mA	6.6 V/A	6.6 W
100NO-125D	125 VDC	2,400 Ω	52 mA	6.5 V/A	6.5 W
100NC-24A	24 VAC	16 Ω	515 mA	12.4 V/A	4.2 W
100NC-120A	120 VAC	380 Ω	110 mA	13.2 V/A	4.6 W
100NC-208A	220 VAC	1,400 Ω	55 mA	11.4 V/A	4.2 W
100NC-240A	240 VAC	1,685 Ω	49 mA	11.8 V/A	4.0 W
100NC-480A	480 VAC	6,300 Ω	27 mA	13.0 V/A	4.6 W
100NC-12D	12 VDC	28 Ω	433 mA	5.2 V/A	5.2 W
100NC-24D	24 VDC	121 Ω	198 mA	4.8 V/A	4.8 W
100NC-48D	48 VDC	380 Ω	126 mA	6.1 V/A	6.1 W
100NC-125D	125 VDC	2,400 Ω	52 mA	6.5 V/A	6.5 W

- NOTES: 1. Inrush current = 1.5 times the steady state current. (No inrush on DC coils).
2. Minimum operation voltage is 90% of nominal voltage.
3. All AC voltages are 50/60 Hz.
4. For other coils voltages contact the factory
5. Ratings shown are per pole. (Coils are in parallel).

MERCURY CONTACTOR RATINGS

		RATINGS ARE IN AMPS UNLESS OTHERWISE SPECIFIED											
		30 NO	35 NO	35 NO (H)	35 NC	60 NO	60 NO (H)	60 NC	100 NO	100 NO	100 NO (H)	100 NC	100 NO (H)
A.C. RESISTIVE	240 V	30	35	35	35	60	60	60	100	100	100	100	100
	480 V	30	35	35	35	60	60	60	80	100	80		100
	600 V	30	35	-	-	48	-	-	70	80	70		80
A.C. INDUCTIVE P.F. .4 OR GREATER	120 V	-	-	25	25	-	30	30	-		100		
	240 V	-	-	15	15	-	20	20	-		100		
GENERAL PURPOSE P.F. .7 OR GREATER	240 V	-	-	35	35	-	60	60	-		100	80	100
	480 V	-	-			-			-		80		100
D.C. RESISTIVE HEATING	48 V	-	-	35	35	-	60	60	-		100		
	125 V	-	-	16	16	-	40	40	-		50		
	250 V	-	-	12	12	-	20	20	-		30		
TUNGSTEN LAMP		30	35	35		60	60		100		100		
MOTOR LOADS	SINGLE PHASE	120 V	1 H.P.	2 H.P.		3 H.P.			7.5 H.P.				
		240 V	1 H.P.	3 H.P.		5 H.P.			10 H.P.				
	THREE PHASE	240 V		5 H.P.		7.5 H.P.			15 H.P.				
		480 V		7.5 H.P.		10 H.P.			20 H.P.				

KEY:  SHADED AREA FOR UL LISTING AND/OR COMPONENT RECOGNITION.
 - NOT RECOMMENDED FOR THIS TYPE OF LOAD.

Southeast Thermal Systems LLC
 Ph: 704-399-4248
 Fax: 704-399-4167
www.sethermal.com

GENERAL INFORMATION FEATURES AND SELECTION FACTORS

GENERAL INFORMATION

Mercury Displacement Relays are all designed and built to meet the most exacting demands of the industry. They have won their high place in the electrical field by doing the tough and tricky jobs that ordinary equipment could at best do in an uncertain manner. They have proven their ability to stand up to the most adverse conditions of temperature, dust and moisture, in all types of applications. All the care required for the manufacture of high-grade instruments is used in the manufacture of the switches. All switch parts are specially cleaned, and contamination is avoided by use of tweezers, gloves, etc., when making assemblies.

Contactors are hermetically sealed with high quality glass to metal seals.

The stainless steel tube is totally encapsulated in high grade epoxy

to prevent moisture damage and voltage breakdown through the protective coating.

The coils are wound on compact nylon bobbins and molded on to the metal tube to provide minimum power loss. This allows for low coil power required to actuate the contactor. This also enables the units to handle high loads with minimum derating due to higher ambient temperatures.

Internal gasses prevent excessive arcing between the mercury and the electrodes which enables the unit to function for millions of cycles with very low contact resistance, and minimum deterioration of the internal parts.

Available in all standard coil voltages, in single, two, three and four pole arrangements. Other coil voltages available upon request.

FEATURES

1) ADVANTAGE OVER ELECTROMECHANICAL AND SOLID STATE RELAYS

- A) Superior Performance and Reliability
 - (a) Long Life
 - (b) Durable
- B) Compact Size
- C) Low, Predictable Contact Resistance
- D) Reduced RFI for Improved Interface Capability
- E) Handles a Variety of Loads
 - (a) Increases design flexibility
- F) Rapid On-Off Cycling Capability
 - (a) Mercury quickly dissipates contact heat
- G) Low Coil Power Requirements
- H) Minimal Derating Due to Higher Ambient Temperatures
- I) Quiet Action

2) DESIGN & CONSTRUCTION

- A) Contacts are within a hermetically sealed steel body
 - (a) Impervious to adverse condition
 - (b) No external arcing
- B) Arcing is in a gaseous atmosphere
 - (a) Quenches the arc
 - (b) Extends relay life

- C) Only one moving part (the plunger)
 - (a) No buttons to pit, weld or burn out
- D) One coil for each set of contacts
 - (a) Assures consistent switching
 - (b) Minimizes pull-in variation between contacts
- E) Epoxy encapsulated
 - (a) Moisture resistant
 - (b) High dielectric strength
 - (c) Permanently fixes contacts to coil; eliminating possible misalignment
 - (d) Helps dissipate heat and noise
 - (e) Rugged (impact resistant)

3) BENEFITS

- A) Reduction of Operational and Maintenance costs
- B) Increases Utilization and Productivity of equipment
 - (a) By reducing down-time
- C) Installation and service is a routine operation
 - (a) Simple to install
 - (b) No sophisticated equipment is required
 - (c) Easy to trouble-shoot

SELECTION FACTORS

In order to get the right relay for your job -- the relay that will give you the best performance -- it is essential that certain information, concerning the conditions under which the relay must perform, be carefully considered. We therefore recommend that answers to the following questions be forwarded to us with your inquiry or order.

1) APPLICATION

- a. What kind of job is relay to do?
- b. Is application special in any way?
- c. Will mounting be stationary?

2) TYPE OF LOAD

- a. What is the voltage in the load circuit?
- b. What is the amperage in the load circuit?
- c. Is it A.C. or D.C.? If A.C., what is the frequency?
- d. What is the nature of the load?
 - Heater load?
 - Lamp load?
 - Motor load?
 - Current inrush and running current?
 - Other types of inductive load?

3) CONTACT ARRANGEMENT

- a. Do you require a relay which has a normally open or normally closed contact?

4) DUTY

- a. How often is relay to be operated?
- b. How long is relay to be energized in each operation?

5) TIME DELAY CHARACTERISTICS

- a. What operating time do you want to achieve, maximum and minimum seconds?
- b. Is timing to be on closing or opening of the contacts?

6) COIL RATING

- a. What is your maximum and minimum coil operating voltage or current?
- b. Is coil to be operated from and A.C. or a D.C. circuit? If A.C., what frequency?

7) MOUNTING SPACE

- a. Are there any limitations on space for applying relay?