

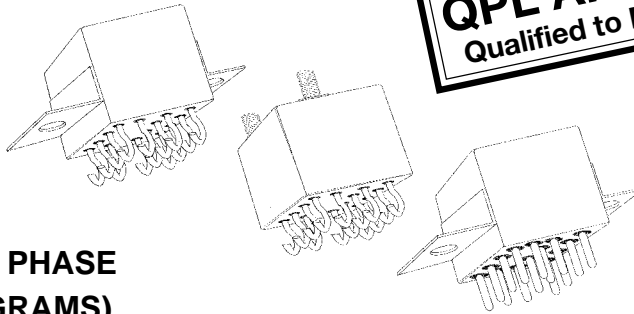


# Tyco Electronics Mid-Range Military/Aerospace Relays

## 5 AMPERES, 4PDT



- HERMETICALLY SEALED
- ALL WELDED CONSTRUCTION
- BALANCED FORCE
- PERMANENT MAGNET DRIVE
- CONTACTS RATED LOW LEVEL TO 5 AMPS
- 28 VDC AND 115/200 VAC 400 Hz 3 PHASE
- WEIGHT .93 OUNCES MAX. ( 26.4 GRAMS)



The Series FCB-405 relay is a polarized single-side stable design, where the flux from a permanent magnet provides the armature holding force in the deactivated state, and its flux path is switched and combined with the coil flux in the operated state. This results in appreciably increased contact pressure in both states over that of a spring return nonpolar design. We also manufacture other versions of this relay:

- FCB-205:** 5 AMP DPDT RELAY
- FCB-310:** 10 AMP 3PDT RELAY

### CONTACT RATING-AMPERES

Ratings Are Continuous Duty

| TYPE OF LOAD | LIFE (MIN.) CYCLES X 10 <sup>3</sup> | 28 VDC | 115VAC 400HZ | 115/200VAC 400Hz-3Ø |
|--------------|--------------------------------------|--------|--------------|---------------------|
| Resistive    | 100                                  | 5      | 5            | 5                   |
| Inductive    | 20                                   | 3      | 5            | 5                   |
| Motor        | 100                                  | 2      | 3            | 3                   |
| Lamp         | 100                                  | 1      | 1            | 1                   |

Low Level Switching Capability: With contacts operating a load of 10 to 50 microamperes at 10 to 50 millivolts, the contact resistance miss detection level shall be 100 ohms max. Cycling rate is 1 to 12 per second, for 100,000 operations.

**OVERLOAD CURRENT 20 AMPS DC, 30 AMPS 400HZ**  
**RUPTURE CURRENT 25 AMPS DC, 40 AMPS 400HZ**  
**CONTACT MAKE BOUNCE 1.0 MILLISECOND AT NOMINAL VOLTAGE**  
**MAX. CONTACT DROP AT 5 AMPS: INITIAL 0.100 VOLTS.**  
**END OF LIFE 0.125 VOLTS**



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### COIL DATA

| COIL CODE | NOMINAL VOLTAGES | FREQ. HZ | DC RES. (B) | OVER TEMPERATURE RANGE |                        |                       |
|-----------|------------------|----------|-------------|------------------------|------------------------|-----------------------|
|           |                  |          |             | PICKUP OR BELOW VOLTS  | DROPOUT OR ABOVE VOLTS | MUST HOLD VOLTAGE (C) |
| 1         | 6                | DC       | 25 Ω        | 4.5                    | 0.3                    | 2.5                   |
| 2         | 12               | DC       | 100 Ω       | 9.0                    | 0.75                   | 4.5                   |
| 3         | 28               | DC       | 400 Ω       | 18.0                   | 1.5                    | 7.0                   |
| 4 (A)     | 28               | DC       | 400 Ω       | 18.0                   | 1.5                    | 7.0                   |
| 5         | 48               | DC       | 1275 Ω      | 36.0                   | 2.5                    | 14.0                  |

- A. CODE 4 COILS HAVE BACK EMF SUPPRESSION TO 42 VOLTS MAX.      D. MAX. OVER-VOLTAGE: 6 & 12 VDC COILS 120% OF NOMINAL; ALL OTHERS 110% OF NOMINAL.
- B. DC COIL RESISTANCE ± 10% AT 25°C;
- C. RELAY WILL STAY IN PICKED-UP STATE DOWN TO MUST HOLD VOLTAGES SHOWN.      NOTE: Only DC Coil Models are QPL Approved.

### GENERAL SPECIFICATIONS

|                                     |   |
|-------------------------------------|---|
| TEMPERATURE RATING:                 | -70°C TO + 125°C  |
| ALTITUDE:                           | 300,000 FEET  |
| SHOCK:*                             | Z, & Y ENCLOSURES 200 g FOR 6 mS<br>W, X & M ENCLOSURES 100 g FOR 6 mS<br>T ENCLOSURE (IN TRACK) 50 g FOR 11 mS   |
| VIBRATION, SINUSOIDAL:*             | Z, & Y ENCLOSURES 30 g 70-3000Hz<br>W, X & M ENCLOSURES 20 g 70-3000Hz<br>T ENCLOSURE (IN TRACK) 20 g 500-3000 Hz |
| VIBRATION, RANDOM: *                | Z, & Y ENCLOSURES 0.4 g <sup>2</sup> /Hz 50-2000Hz<br>T, W, X & M ENCLOSURES 0.2 g <sup>2</sup> /Hz 50-2000Hz     |
| DIELECTRIC STRENGTH AT SEA LEVEL:   | ALL CIRCUITS TO GROUND AND CIRCUIT TO CIRCUIT. 1000 V rms<br>COIL TO GROUND 1000 V rms                            |
| DIELECTRIC STRENGTH AT 80,000 FEET: | 250 V rms   |
| INSULATION RESISTANCE:              | INITIAL (500 VDC) 100 MΩ MINIMUM<br>AFTER LIFE OR ENVIRONMENTAL TESTS 50 MΩ MINIMUM                               |
| OPERATE TIME AT NOMINAL VOLTAGE:    | 6 ms OR LESS  |
| RELEASE TIME AT NOMINAL VOLTAGE:    | 6 ms OR LESS  |

\* Max. contact opening under vibration or shock 10 microseconds



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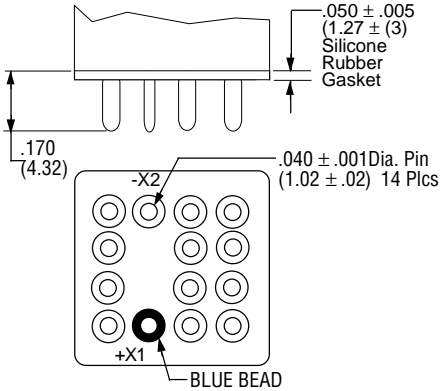
Below are shown the standard terminal types and the enclosures available. Specify the assembly as indicated under How To Order. Dimensions are shown in inches  $\pm .010$  and (Millimeters  $\pm .25$ ).

### TERMINALS

#### CODE "A"

##### Socket Pins - All DC Coils

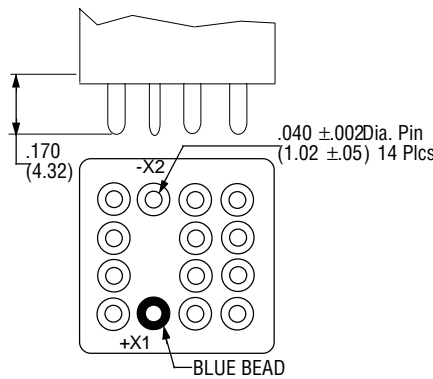
PIN TERMINALS ARE GOLD PLATED



#### CODE "B"

##### Solder Pin Terminals

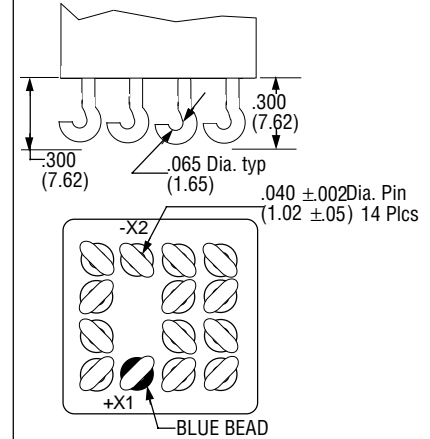
PIN TERMINALS TIN/LEAD PLATED



#### CODE "C"

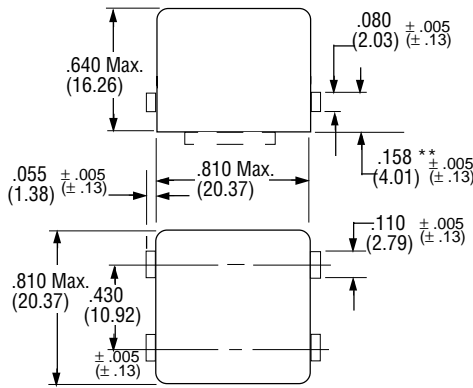
##### Solder Hook Terminals

HOOK TERMINALS TIN/LEAD PLATED



#### CODE "T"

M83536/6-025  
(REFERENCE ONLY)



\*\* Measured from surface of header

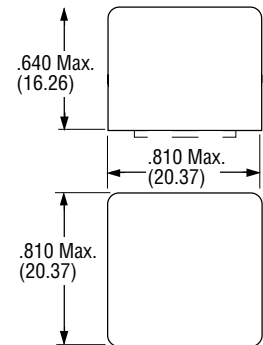
### ENCLOSURES

All Enclosures have cupro-Nickel cans bright acid tin/lead plated after assembly to terminal headers.

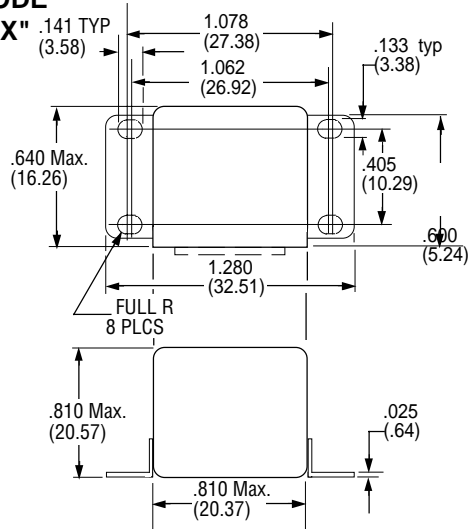
Dimensions: Inches  $\pm .010$  (mm  $\pm .25$ )

Code "T" used only with track-mounted Sockets. Requires code "A" pin terminals. Gasket is included in the socket assembly.

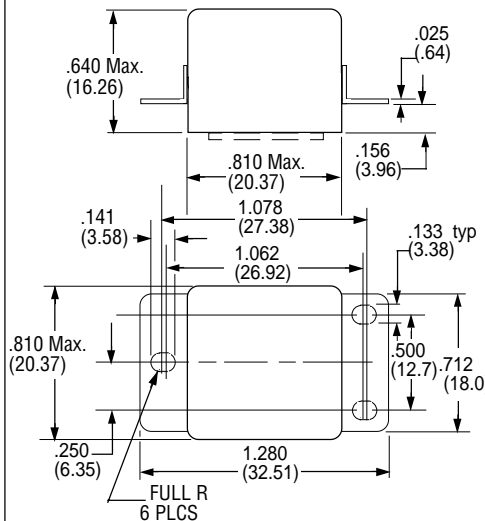
#### CODE "Z"



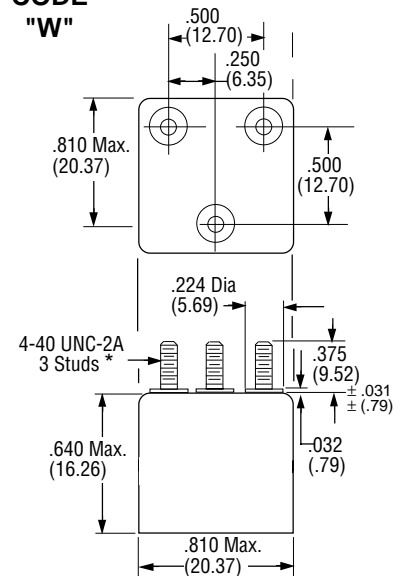
#### CODE "X"



#### CODE "Y"



#### CODE "W"



\*Metric threads available, To specify use  $\text{M}$  in place of  $\text{W}$

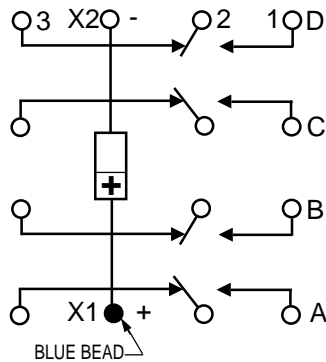


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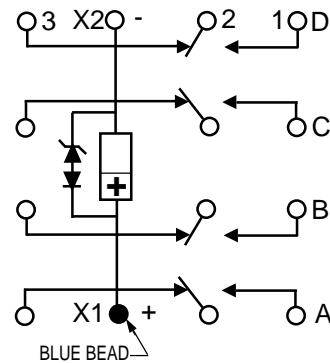
## 5 AMPERES, 4PDT

### TERMINAL WIRING

DC COILS



DC COILS WITH  
TRANSIENT SUPPRESSION

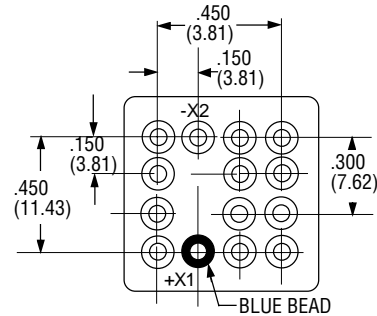


**NOTE:** Polarity must be observed with DC coil supply. Relay is polarized with a permanent magnet and will not operate or be damaged by reverse polarity.

Diodes used in transient suppression and in AC rectifier circuits have peak inverse voltage rating of 600 VDC minimum. Zener diodes have a minimum rating of 1 watt.

Terminal designations are for reference only and do not appear on the header.

### TERMINAL LAYOUT



### HOW TO ORDER

(EXAMPLE) \_\_\_\_\_ **FCB-405-A Y 4**

RELAY TYPE \_\_\_\_\_

TERMINALS (Socket Pins) \_\_\_\_\_

ENCLOSURE (With Flanges) \_\_\_\_\_

COIL (28 VDC With Transient Suppression). \_\_\_\_\_

**NOTE: Only DC coil models are QPL Approved**