

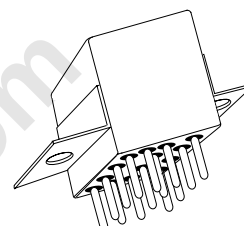
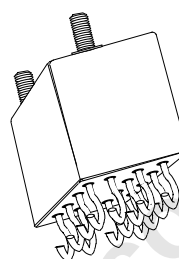
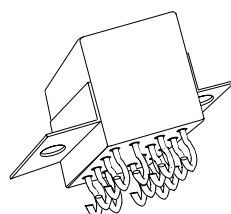


**SERIES**  
**FCA-410**

## Tyco Electronics Mid-Range Military/Aerospace Relays

**10 AMPERES, 4PDT**

- HERMETICALLY SEALED
- ALL WELDED CONSTRUCTION
- BALANCED FORCE
- PERMANENT MAGNET DRIVE
- 4PDT SWITCHING IN ONE INCH CUBE
- CONTACTS: SILVER CADMIUM  
OXIDE WITH GOLD PLATING
- COILS FOR DC AND AC 50-400 Hz OR 400 Hz
- WEIGHT 2.72 OUNCES MAX. ( 77 GRAMS MAX.)



The Series FCA-410 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 2-pole and 4-pole versions of this relay.

FCA-210: 10 AMP DPDT RELAY  
FCA-610: 10 AMP 6PDT RELAY

### AVAILABLE

FCA-415: 15 AMP 4PDT, HAS THE SAME SPECIFICATIONS AS THE FCA-410  
EXCEPT IS RATED AT 15 AMPS.

### CONTACT RATING-AMPERES

Ratings Are Continuous Duty

| TYPE OF LOAD                              | LIFE (MIN.)<br>CYCLES X 10 <sup>3</sup> | 28 VDC | 120VAC<br>400HZ | 120/200VAC<br>400Hz-3Ø | 120/200VAC<br>60Hz-3Ø * |
|-------------------------------------------|-----------------------------------------|--------|-----------------|------------------------|-------------------------|
| Resistive                                 | 100                                     | 10     | 10              | 10                     | 2.5                     |
| Inductive                                 | 20                                      | 8      | 8               | 8                      | 2.5                     |
| Motor                                     | 100                                     | 4      | 4               | 4                      | 2.0                     |
| Lamp                                      | 100                                     | 2      | 2               | 2                      | 1.0                     |
| * 60 Hz LOADS RATED FOR 10,000 OPERATIONS |                                         |        |                 |                        |                         |

OVERLOAD CURRENT 40 AMPS DC, 60 AMPS 400HZ  
RUPTURE CURRENT 50 AMPS DC, 80 AMPS 400HZ  
CONTACT MAKE BOUNCE 1 MILLISECOND AT NOMINAL VOLTAGE  
MAX. CONTACT DROP AT 10 AMPS: INITIAL 0.100 VOLTS.  
END OF LIFE 0.125 VOLTS

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# Tyco Electronics Mid-Range Military/Aerospace Relays

## 10 AMPERES, 4PDT

### COIL DATA

| COIL CODE | NOMINAL VOLTAGES | FREQ. HZ | DC RES. AC AMPS (B) | OVER TEMPERATURE RANGE |                        |                       |
|-----------|------------------|----------|---------------------|------------------------|------------------------|-----------------------|
|           |                  |          |                     | PICKUP OR BELOW VOLTS  | DROPOUT OR ABOVE VOLTS | MUST HOLD VOLTAGE (C) |
| 1         | 6                | DC       | 18 $\Omega$         | 4.5                    | 0.3                    | 2.5                   |
| 2         | 12               | DC       | 70 $\Omega$         | 9.0                    | 0.75                   | 4.5                   |
| 3         | 28               | DC       | 290 $\Omega$        | 18.0                   | 1.5                    | 7.0                   |
| 4 (A)     | 28               | DC       | 290 $\Omega$        | 18.0                   | 1.5                    | 7.0                   |
| 5         | 48               | DC       | 865 $\Omega$        | 32.0                   | 2.5                    | 14.0                  |
| 6         | 28               | 400HZ    | 225 mA              | 22.0                   | 1.25                   | 10.0                  |
| 7         | 28               | 50/400Hz | 120 mA              | 22.0                   | 1.25                   | 10.0                  |
| 8         | 115              | 400 Hz   | 40 mA               | 90.0                   | 5.0                    | 40.0                  |
| 9         | 115              | 50/400Hz | 40 mA               | 95.0                   | 5.0                    | 40.0                  |

- A. CODE 4 COILS HAVE BACK EMF SUPPRESSION TO 42 VOLTS MAX.  
 B. DC COIL RESISTANCE  $\pm 10\%$  AT 25°C;  
 AC COIL MAX. CURRENT AT NOMINAL VOLTAGE.  
 C. RELAY WILL STAY IN PICKED-UP STATE DOWN TO COIL VOLTAGES SHOWN.  
 D. MAX. OVERVOLTAGE: 6 & 12 VDC COILS 120% OF NOMINAL; ALL OTHERS 110% OF NOMINAL.  
 E. COILS AVAILABLE FOR OTHER VOLTAGES AND FOR AC 50/60HZ.  
 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 100G FOR 6 mS                                                    |
| VIBRATION, SINUSOIDAL:*             | Z & Y ENCLOSURES 0.12 DA 10 TO 70Hz<br>30G 70 TO 3000 Hz<br>W, X & M ENCLOSURES 0.12 DA 10 TO 57 Hz<br>20G 57 TO 3000 Hz |
| VIBRATION, RANDOM *                 | Z, & Y ENCLOSURES 0.4G <sup>2</sup> /Hz 50-2000Hz<br>W, X & M ENCLOSURES 0.2G <sup>2</sup> /Hz 50-2000Hz                 |
| DIELECTRIC STRENGTH AT SEA LEVEL:   | ALL CIRCUITS TO GROUND AND CIRCUIT TO CIRCUIT. 1250 V rms<br>COIL TO GROUND 1000 V rms                                   |
| DIELECTRIC STRENGTH AT 80,000 FEET: | 350 V rms                                                                                                                |
| INSULATION RESISTANCE:              | INITIAL (500 VDC) 100 M $\Omega$ MINIMUM<br>AFTER LIFE OR ENVIRONMENTAL TESTS 50 M $\Omega$ MINIMUM                      |
| OPERATE TIME AT NOMINAL VOLTAGE:    | DC RELAYS 15 mS OR LESS<br>AC RELAYS 20 mS OR LESS                                                                       |
| RELEASE TIME AT NOMINAL VOLTAGE:    | DC RELAYS 15 mS OR LESS<br>AC RELAYS 50 mS OR LESS                                                                       |

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



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# Tyco Electronics Mid-Range Military/Aerospace Relays

## 10 AMPERES, 4PDT

Below are shown the standard terminal types and the enclosures available. Note that the pin configuration for coil connections is determined by the coil supply voltage. Specify the assembly as indicated under How To Order. Dimensions are shown in inches  $\pm .010$  and (Millimeters  $\pm .25$ ) except as noted.

### TERMINALS

Terminals on 0.200 centers.

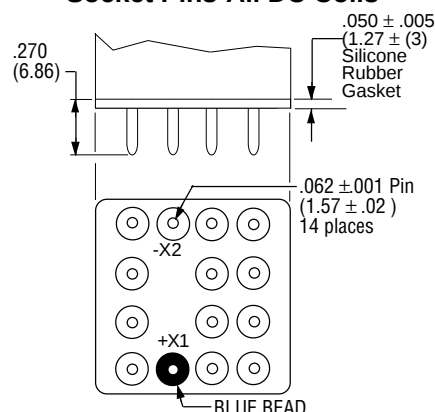
Coil terminals: X1-X2; See Page 26.

Socket Pins are Gold Plated.

Circuit Board Pins are Tin/Lead Plated.

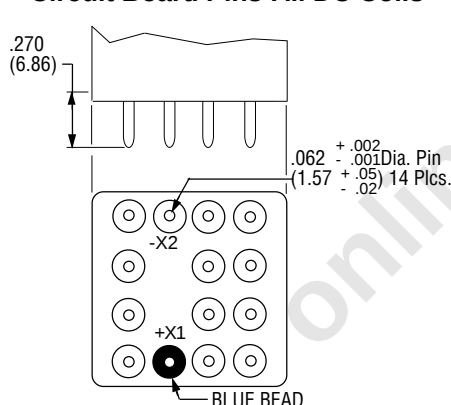
#### CODE "A"

##### Socket Pins-All DC Coils



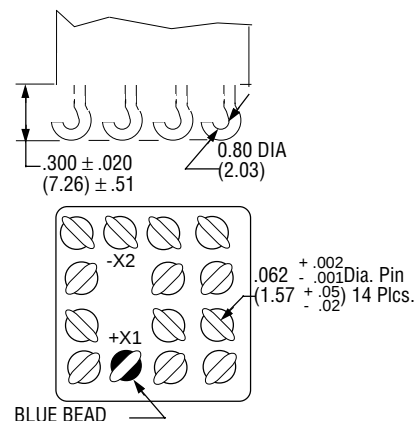
#### CODE "B"

##### Circuit Board Pins-All DC Coils



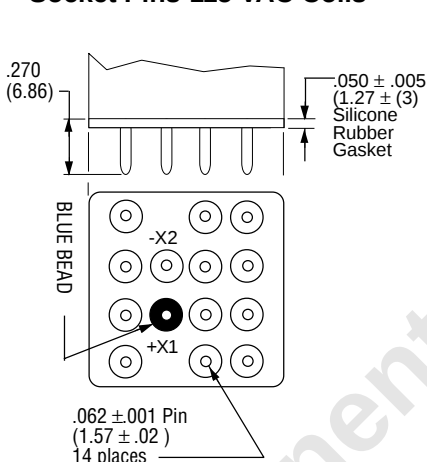
#### CODE "C"

##### Solder Hooks-AC or DC Coils



#### CODE "D"

##### Socket Pins-115 VAC Coils

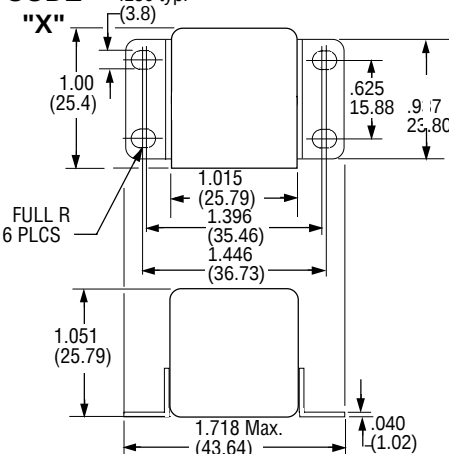


SEE NEXT PAGE

FOR MORE COIL

TERMINAL OPTIONS

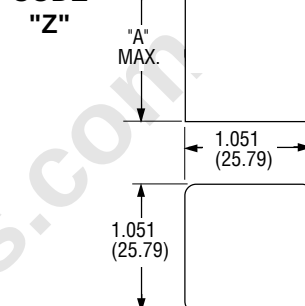
#### CODE "X"



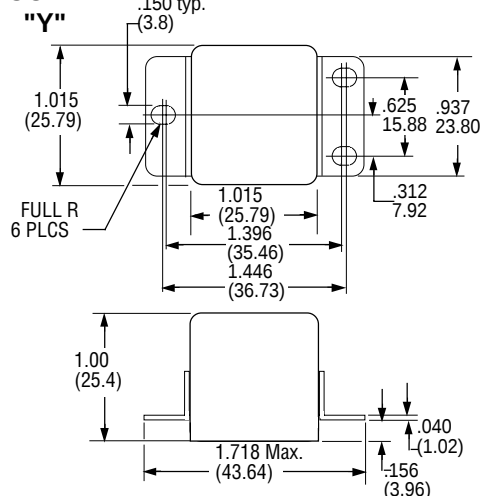
### ENCLOSURES

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

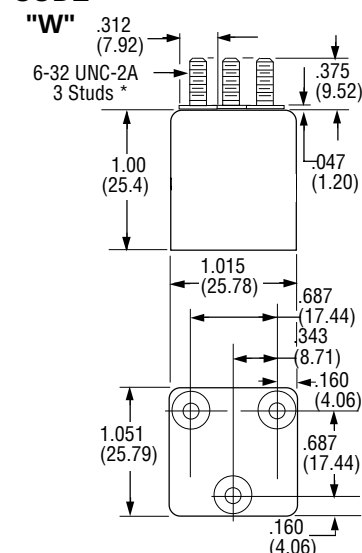
#### CODE "Z"



#### CODE "Y"



#### CODE "W"



\*Metric threads available. To specify use [M] in place of [W]

**SERIES**  
**FCA-410**

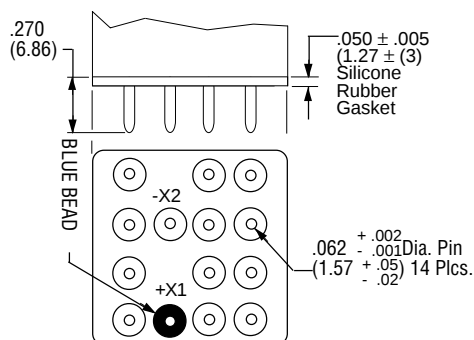


# Tyco Electronics Mid-Range Military/Aerospace Relays

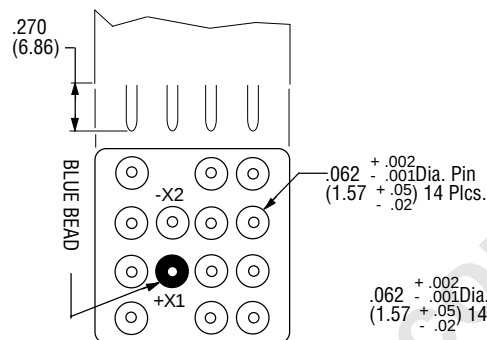
## 10 AMPERES, 4PDT

### TERMINALS CONTINUED

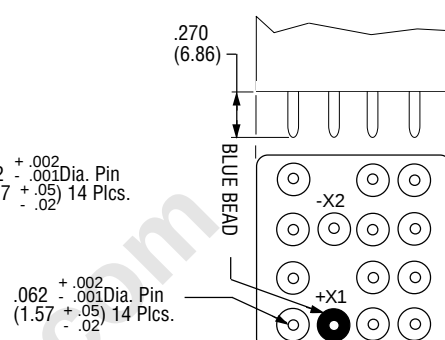
**CODE "E"**  
Socket Pins- 28 VAC Coils



**CODE "F"**  
Circuit Board Pins-115 VAC Coils

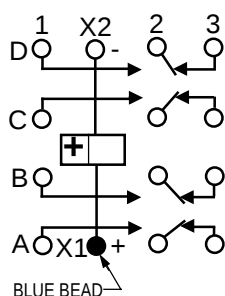


**CODE "G"**  
Circuit Board Pins- 28 VAC Coils

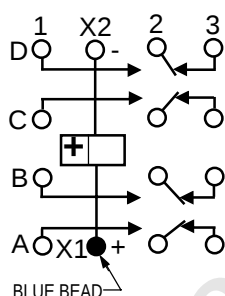


### TERMINAL WIRING

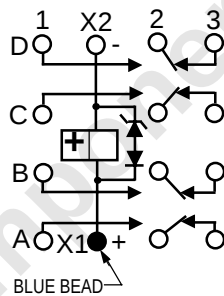
**A & B PIN TERMINAL**  
ALL DC COILS



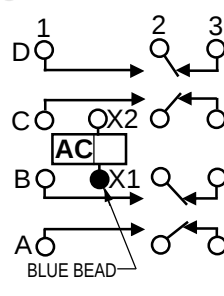
**C HOOK TERMINAL**  
ALL AC & DC COILS



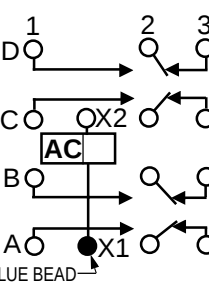
**TRANSIENT SUPPRESSION CIR.**



**D & F PIN TERMINAL**  
115 VAC COILS



**E & G PIN TERMINAL**  
28 VAC COILS

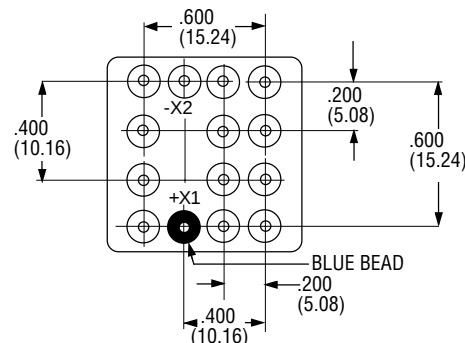


**NOTE:** Polarity must be observed with DC coil supply. Relay is polarized with a permanent magnet and will not operate or be damaged by reverse polarity.

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) \_\_\_\_\_

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

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

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

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

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