

## General characteristics

	<b>210/215</b>	<b>410/415</b>	<b>610/615</b>
No. of poles	2 Form C (2 DPDT)	4 Form C (4PDT)	6 Form C (6PDT)
Volume	3.3 cm <sup>3</sup> [.52 in <sup>3</sup> ]	3.3 cm <sup>3</sup> [1.03 in <sup>3</sup> ]	3.3 cm <sup>3</sup> [1.53 in <sup>3</sup> ]
Mass	46 grams [.10 lb. Max]	77 grams [.17 lb. Max]	118 grams [.26 lb. Max]

## Switching characteristics

Operate time @ 25°C with DC COIL with AC Coil	10 ms max. 20 ms max.	15 ms max. 20 ms max.	15 ms max. 20 ms max.
Release time @ 25°C with DC COIL with AC Coil	10 ms max. 50 ms max.	15 ms max. 50 ms max.	15 ms max. 50 ms max.
Bounce time	1 ms max.	1 ms max.	1 ms max.
Mechanical Life	400,000 cycles		

Contact rating	Type of load (High level)	Cycles x 10 <sup>3</sup>	28 Vdc	115 Vac	115 Vac*	115/200 Vac	115/200 Vac*	10 AMP * = 10,000 CYCLES
				400 Hz 1 phase	50/60 Hz 1 phase	400 Hz 3 phase	50/60 Hz 3 phase	
	Resistive	100	10 amps	10 amps	2.5 amps	10 amps	2.5 amps	
	Inductive	20	8 amps	8 amps	n/a	8 amps	n/a	
	Inductive	10	n/a	n/a	2.5 amps	n/a	2.5 amps	
	Motor	100	4 amps	4 amps	2 amp	4 amps	2 amps	
	Lamp	100	2 amps	2 amps	1 amps	n/a	n/a	
	Overload current	n/a	40 amps	60 amps	n/a	60 amps	n/a	
	Rupture current	n/a	50 amps	80 amps	n/a	80 amps	n/a	

Contact rating	Type of load (High level)	Cycles x 10 <sup>3</sup>	28 Vdc	115 Vac	115 Vac*	115/200 Vac	115/200 Vac*	15 AMP * = 10,000 CYCLES
				400 Hz 1 phase	50/60 Hz 1 phase	400 Hz 3 phase	50/60 Hz 3 phase	
	Resistive	100	15 amps	15 amps	3.75 amps	15 amps	3.75 amps	
	Inductive	20	10 amps	10 amps	n/a	10 amps	n/a	
	Inductive	10	n/a	n/a	3.75 amps	n/a	3.75 amps	
	Motor	100	6 amps	6 amps	3 amp	6 amps	3 amps	
	Lamp	100	3 amps	3 amps	1.5 amps	n/a	n/a	
	Overload current	n/a	40 amps	60 amps	n/a	60 amps	n/a	
	Rupture current	n/a	50 amps	80 amps	n/a	80 amps	n/a	

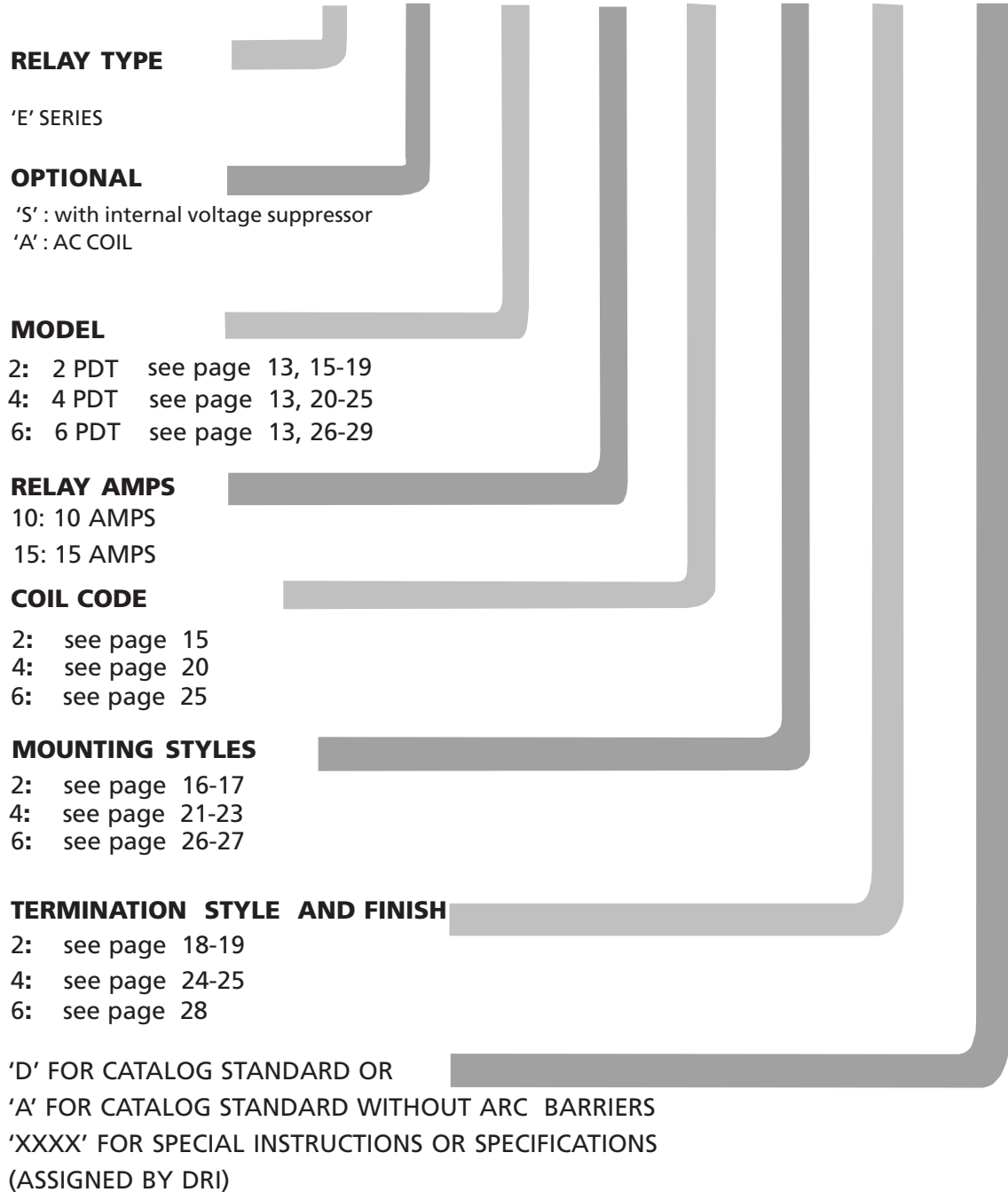
## Environmental characteristics

Temperature Range	-70°C to +125°C
Vibration, any axis (Sinusoidal) E210/E410 E410 Mounting Style 3 E610	30 g 10-3000 Hz 20 g 57-3000 Hz 20 g 10-2000 Hz
Shock, any axis E410 Mounting Style 3 E610	200 g 6 ms 100 g 6 ms 50 g 6-9 ms
Seal	Hermetic (1 x 10 <sup>-8</sup> atm cm <sup>3</sup> /s)

## Electrical characteristics

Contact voltage drop (@ Rated resistive load)	
- Initial	150 mV Max.
- After guaranteed life	175 mV Max.
Dielectric strength @ sea level	Coil to Case All other points
- Initial @ 60 Hz	1000 Vrms 1250 Vrms
- After guaranteed life	1000 Vrms 1000 Vrms
Insulation Resistance	
- Initial	100 Megohms min. @ 500 Vdc
- After life tests	50 Megohms min. @ 500 Vdc
Reference Military Specifications	MIL-PRF-83536

**E S 2 10 E 2 C D**

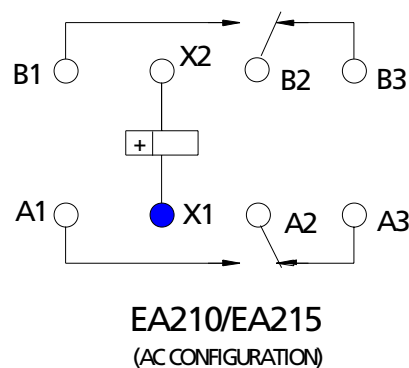
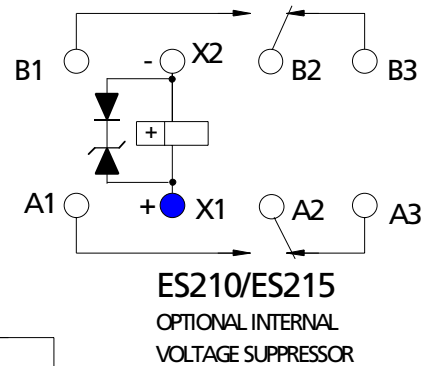
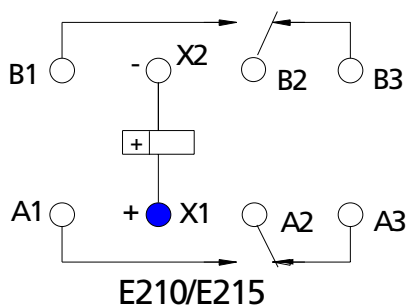


## Coil characteristics

COIL CODE	DC						AC		
	A	B	D	E	G	J	K	L	N
Nominal coil voltage	6	12	26.5	28	48	110	28-400 Hz	115-400 Hz	115-50/60/400 Hz
Maximum pick-up voltage at 25°C	3.2	6.5	13.5	14	24	55	16.2	73	73
Maximum pick-up voltage at 125°C	4.5	9.0	18	18.7	36	70	22.4	90	90
Maximum hold voltage at 125°C	2.3	4.5	7.0	7.0	14	30	9.0	30	40
Minimum drop-out voltage at -70°C	0.25	0.5	1.2	1.5	2	5	1.0	5	5
Coil resistance ( ohms ± 10% at 25° C )	20	80	320	320	955	5000	-	-	-
Maximum coil transient suppression	42	42	42	42	100	180	-	-	-

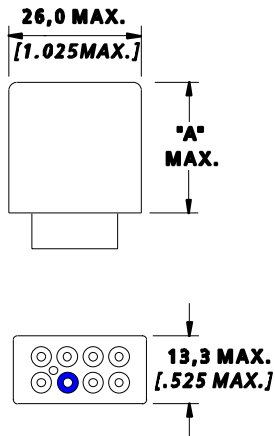
OTHER VOLTAGES AVAILABLE FROM FACTORY ON REQUEST

## Circuit diagram

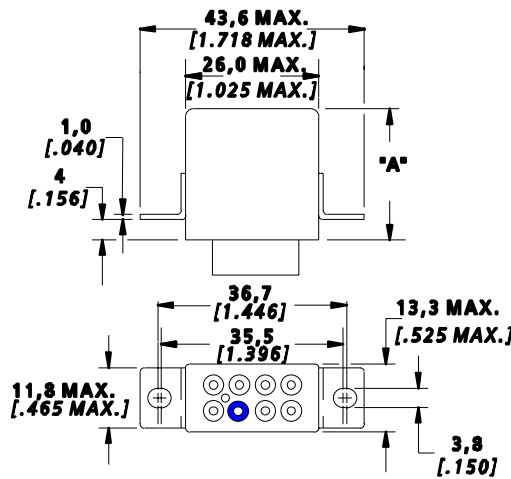


## Mounting styles

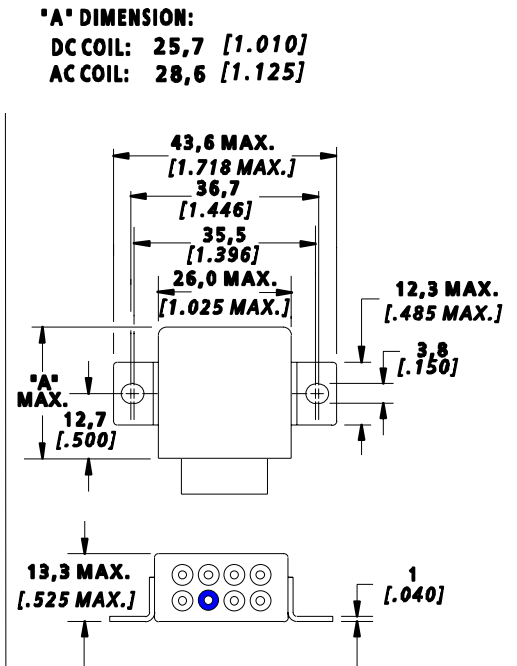
DIMENSIONS ARE IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]



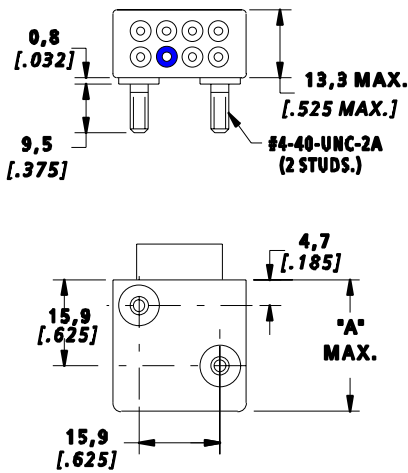
**STYLE 1:**  
NO MOUNT



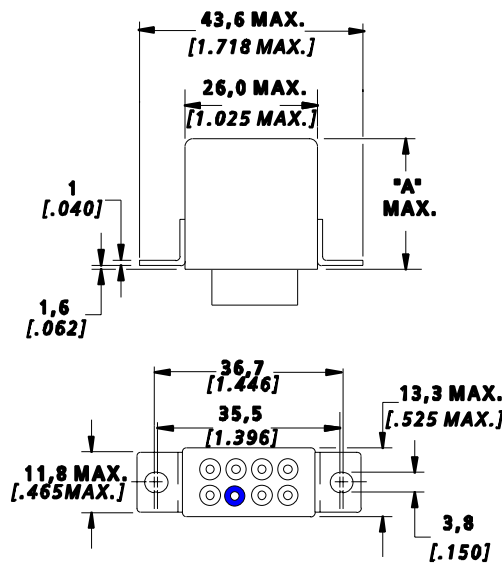
**STYLE 2:**  
RAISED VERTICAL  
FLANGE MOUNT



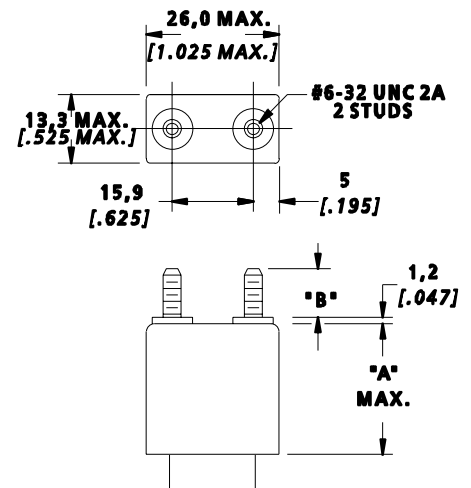
**STYLE 3:**  
HORIZONTAL  
FLANGE MOUNT



**STYLE D:**  
SIDE STUD



**STYLE N:**  
VERTICAL FLANGE

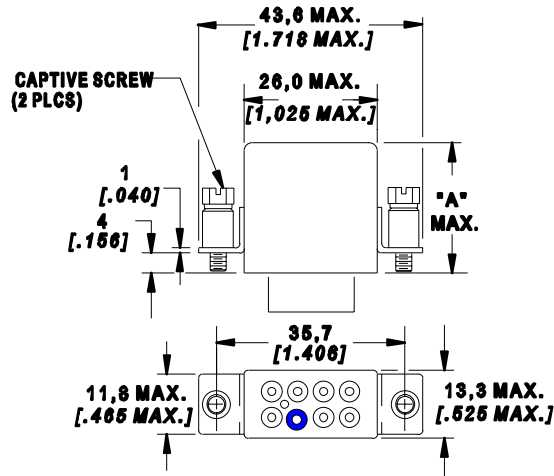


**TOP STUD MOUNT**

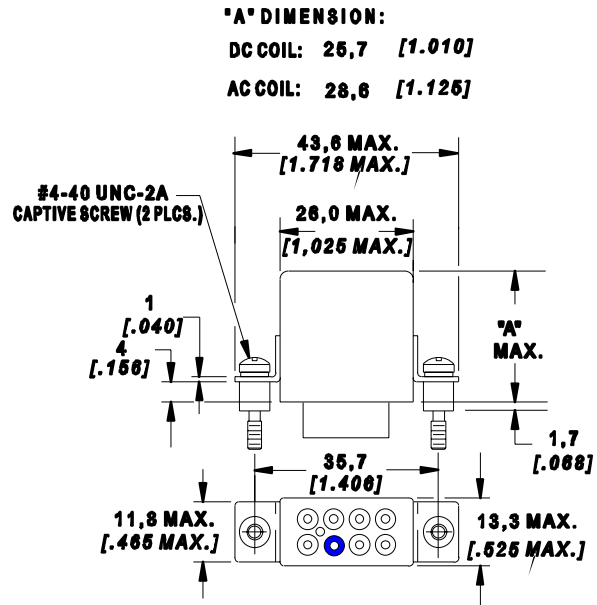
STYLE	DIM "B"
M	9,5 [.375]
R	6,35 [.250]

## ■ Mounting styles (cont.)

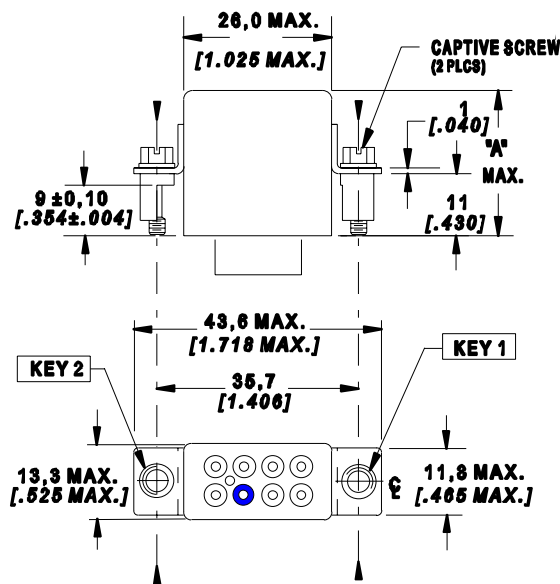
DIMENSIONS ARE IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]



**STYLE 8:** M3 CAPTIVE SCREWS  
**STYLE C:** #4-40 UNC CAPTIVE SCREWS  
RAISED VERTICAL FLANGE MOUNT  
WITH CAPTIVE HARDWARE



**STYLE G:**  
RAISED VERTICAL FLANGE MOUNT  
WITH CAPTIVE HARDWARE



KEYING SYSTEM  
WITH CAPTIVE HARDWARE

**STYLE A:** M3 CAPTIVE SCREWS  
**STYLE B:** #4-40 UNC CAPTIVE SCREWS

**"A" DIMENSION:**

**DC COIL:** 25,7 [1.010]

**AC COIL:** 28,6 [1.125]

### KEYING POSITIONS

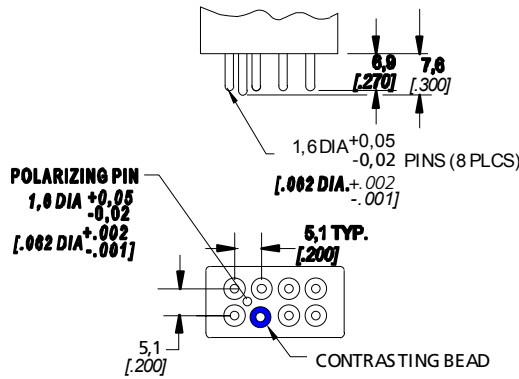
U	V	W	X	Y	Z
0°	60°	120°	180°	240°	300°

COIL	SUPPRESSED			
	KEY 1	KEY 2	KEY 1	KEY 2
6 VDC	V	V	V	X
12 VDC	X	V	X	X
26.5 VDC	X	Y	V	Z
28 VDC	X	Z	Y	Y
48 VDC	V	U	V	W
110 VDC	X	U	X	W
115 VAC	U	V		

KEYING CONFIGURATION SHOWN IN TABLE COMES STANDARD WITH SPECIFIED COIL VOLTAGE. FOR ORDERING OTHER KEYING POSITIONS USE 2 DIGIT (XX) 'SPECIAL INSTRUCTIONS' ON END OF P/N.  
EX: E210AACYY

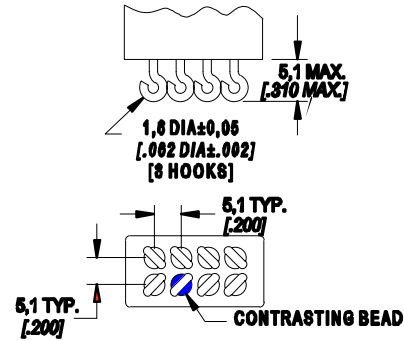
## Termination Styles

DIMENSIONS ARE IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]



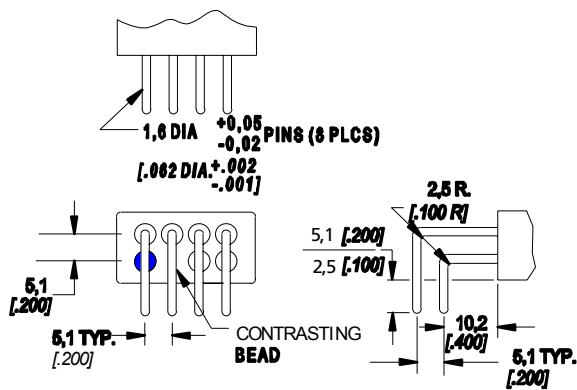
**SOLDER PIN**

STYLE A: TIN PLATED  
STYLE B: SOLDER DIPPED



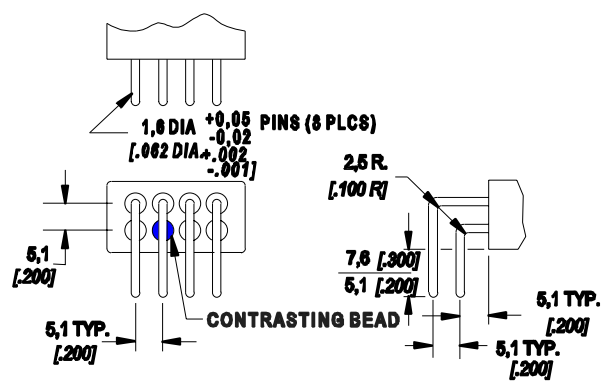
**SOLDER HOOK**

STYLE H: TIN PLATED  
STYLE J: SOLDER DIPPED



**90° SOLDER PIN**

STYLE D: TIN PLATED  
STYLE E: SOLDER DIPPED

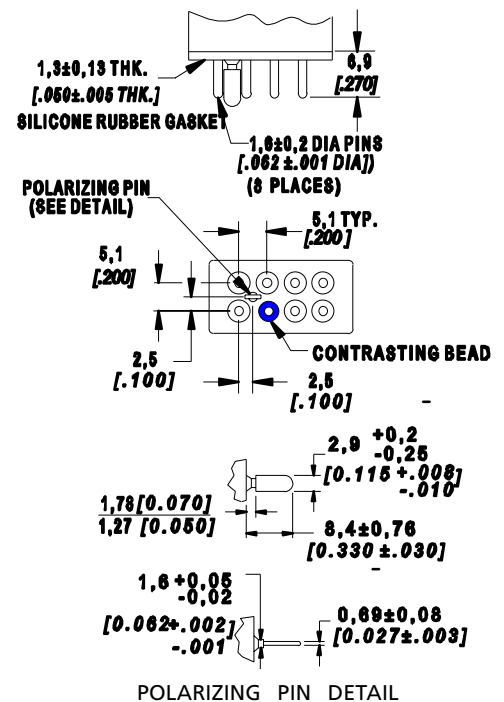
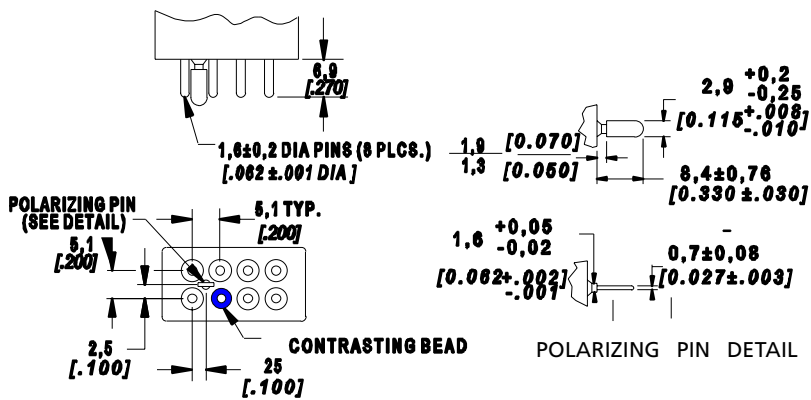
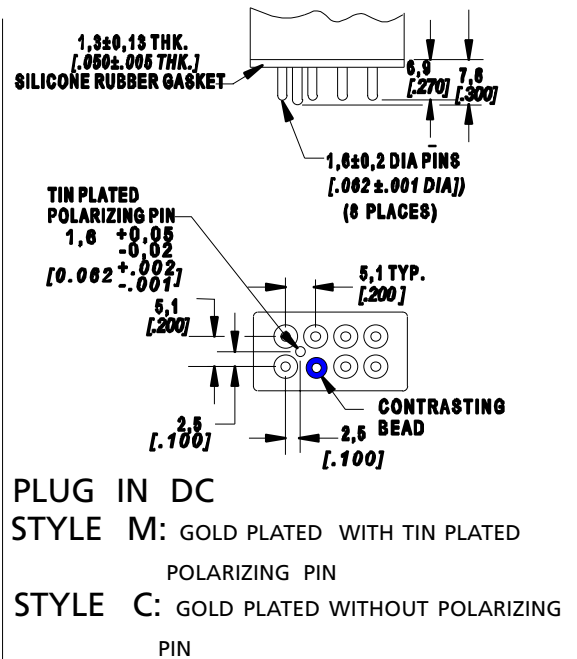
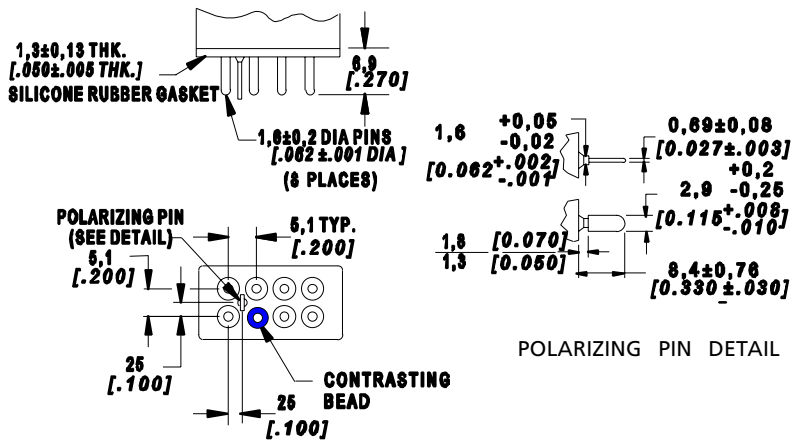


**90° SOLDER PIN**

STYLE Q: TIN PLATED  
STYLE R: SOLDER DIPPED

## Termination Styles

DIMENSIONS ARE IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]

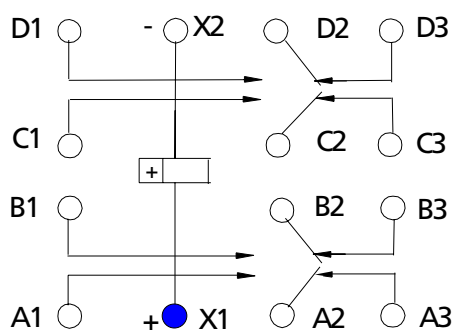


## Coil Characteristics

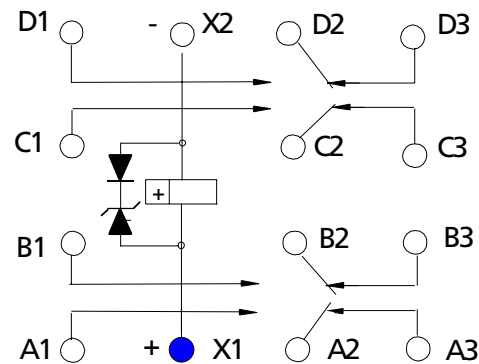
COIL CODE	DC						AC		
	A	B	D	E	G	J	K	L	N
Nominal coil voltage	6	12	26.5	28	48	110	28-400 Hz	115-400 Hz	115-50/60/400 Hz
Maximum pick-up voltage at 25°C	3.2	6.5	13.5	14	24	55	16.2	73	73
Maximum pick-up voltage at 125°C	4.5	9.0	18.7	19.5	36	70	22.4	90	90
Minimum drop-out voltage at -70° C	0.25	0.5	1.5	1.5	2	5	1.0	5	5
Maximum hold voltage at 125°C	2.3	4.5	7.0	7.0	14	30	9.0	30	40
Coil resistance ( ohms ± 10% at 25° C )	18	70	290	290	955	5000	-	-	-
Maximum coil transient suppression	42	42	42	42	100	180	-	-	-

OTHER VOLTAGES AVAILABLE FROM FACTORY ON REQUEST

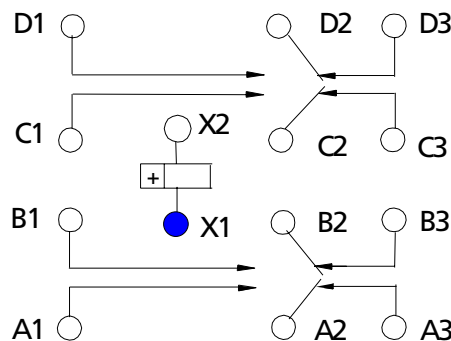
## Circuit Diagram



**E410/E415**



**ES410/ES415**  
OPTIONAL INTERNAL  
VOLTAGE SUPPRESSOR



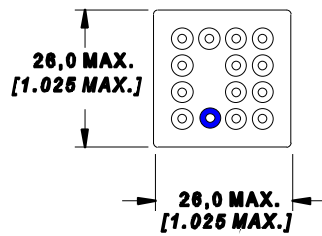
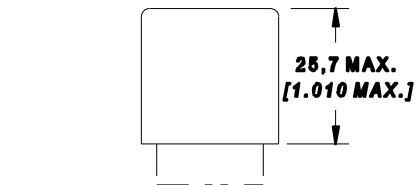
**EA410/EA415**  
(AC CONFIGURATION)



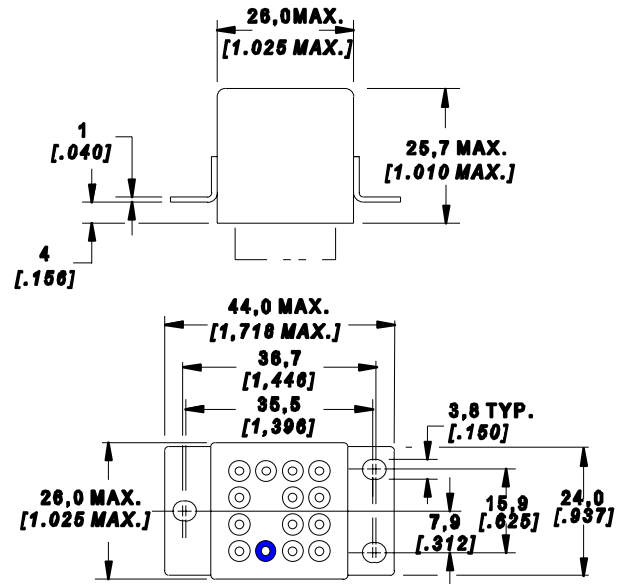
## ■ Mounting styles

DIMENSIONS ARE IN MM (IN.)

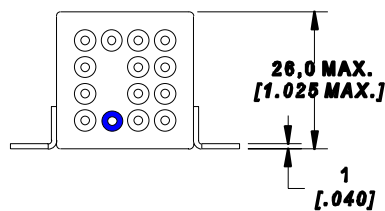
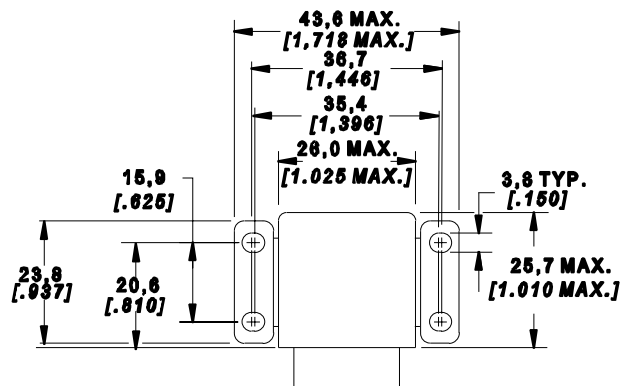
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]



**STYLE 1**  
NO MOUNT



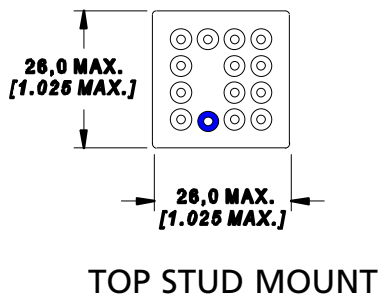
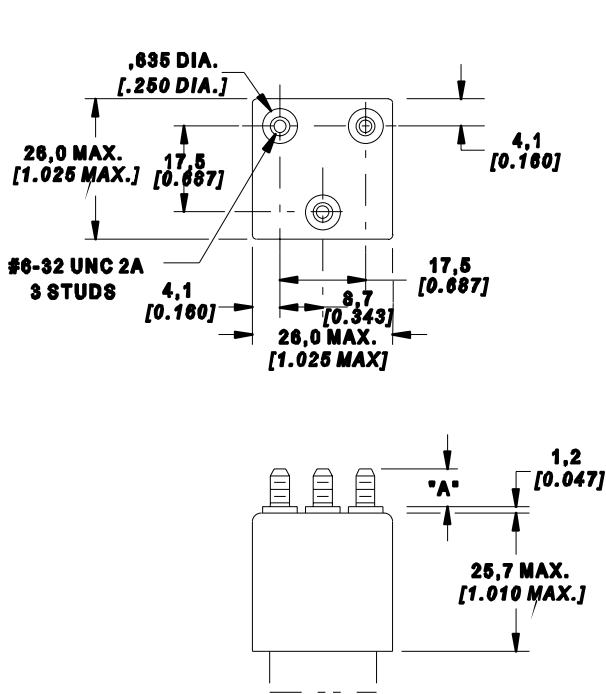
**STYLE 2**  
RAISED VERTICAL FLANGE MOUNT



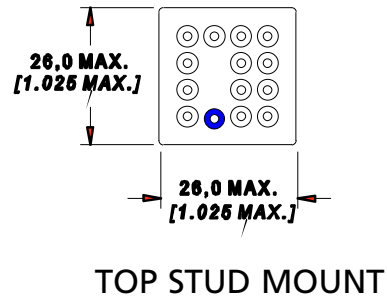
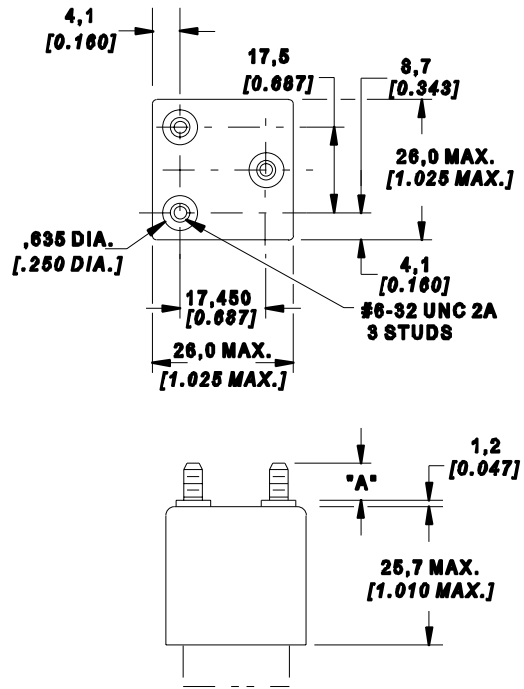
**STYLE 3**  
HORIZONTAL FLANGE MOUNT

## ■ Mounting styles [cont'd.]

DIMENSIONS IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]



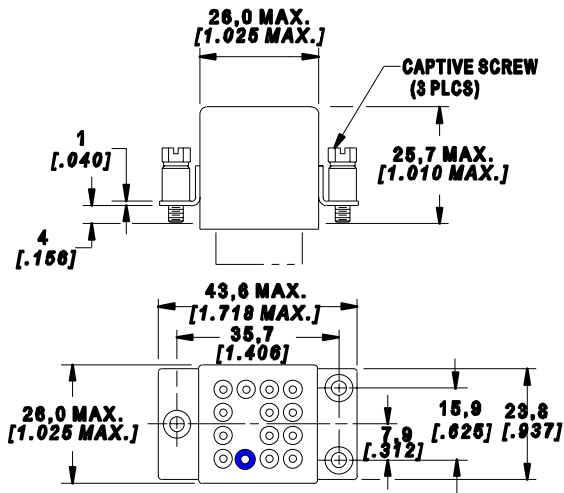
STYLE	DIM "A"
O	9,5 [.375]
R	6,35 [.250]



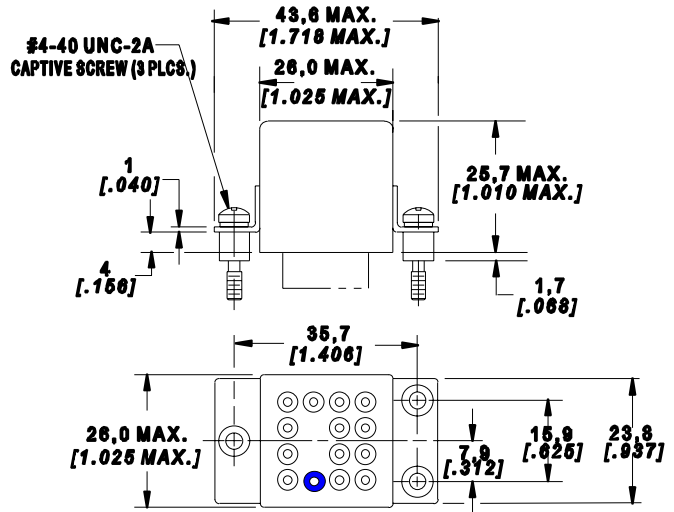
STYLE	DIM "A"
T	9,5 [.375]
U	6,35 [.250]

## ■ Mounting styles [cont.]

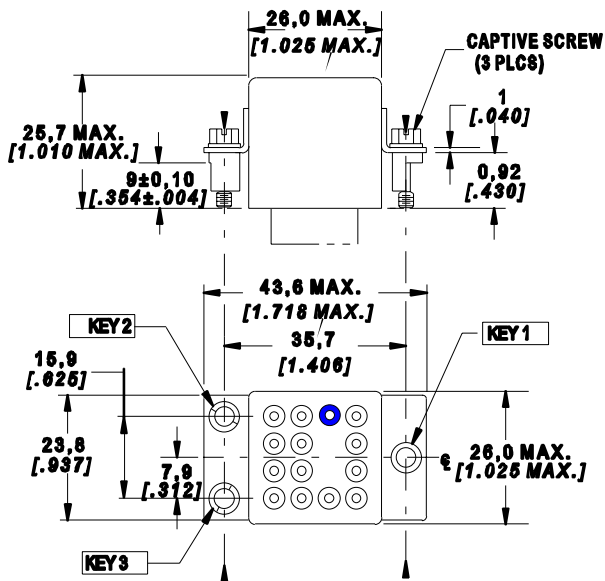
DIMENSIONS ARE IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS ±0,25 [.010]



**STYLE 8:** M3 CAPTIVE SCREWS  
**STYLE C:** #4-40 UNC CAPTIVE SCREWS  
RAISED VERTICAL FLANGE MOUNT  
WITH CAPTIVE HARDWARE



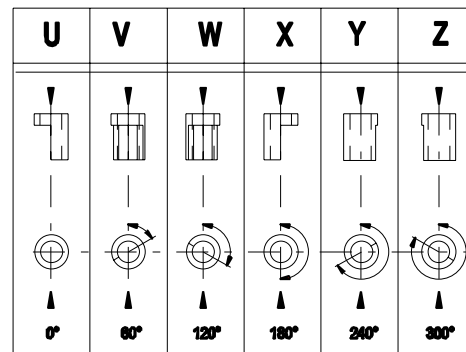
**STYLE G:**  
RAISED VERTICAL FLANGE MOUNT  
WITH CAPTIVE HARDWARE



KEYING SYSTEM  
WITH CAPTIVE HARDWARE

**STYLE A:** M3 CAPTIVE SCREWS  
**STYLE B:** #4-40 UNC CAPTIVE SCREWS

### KEYING POSITIONS

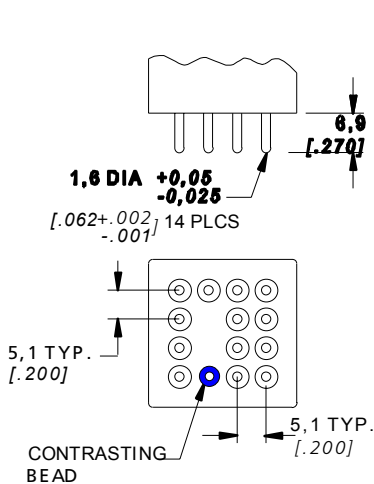


COIL	SUPPRESSED					
	KEY 1	KEY 2	KEY 3	KEY 1	KEY 2	KEY 3
6 VDC	V	Z	V	V	Z	X
12VDC	X	Z	V	X	Z	X
26.5 VDC	X	W	Z	X	W	U
28 VDC	X	W	V	X	W	X
48 VDC	V	Z	U	V	Z	W
110 VDC	X	Z	U	X	Z	W
115 VAC	U	Z	V			

KEYING CONFIGURATION SHOWN IN TABLE COMES STANDARD WITH SPECIFIED COIL VOLTAGE. FOR ORDERING OTHER KEYING POSITIONS USE 3 DIGIT (XXX) 'SPECIAL INSTRUCTIONS' ON END OF P/N.  
EX: E410AACXYZ

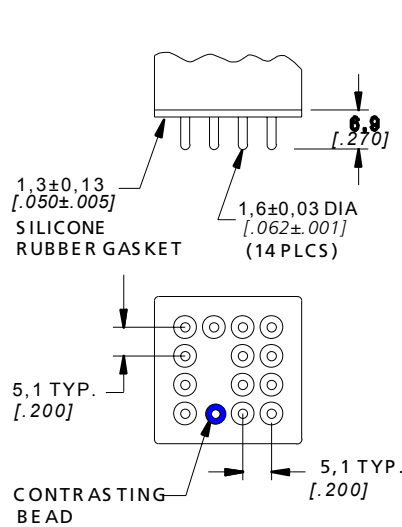
## Termination styles

DIMENSIONS ARE IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]



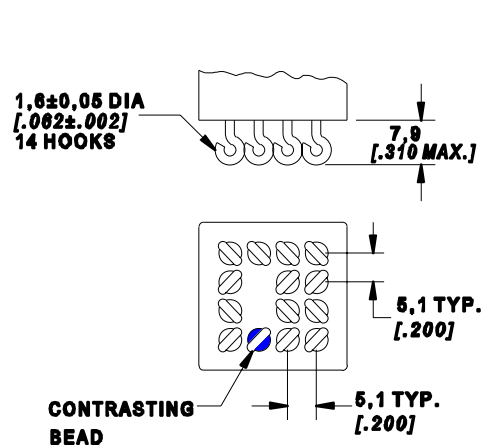
**SOLDER PIN**

STYLE A: TIN PLATED  
STYLE B: SOLDER DIPPED



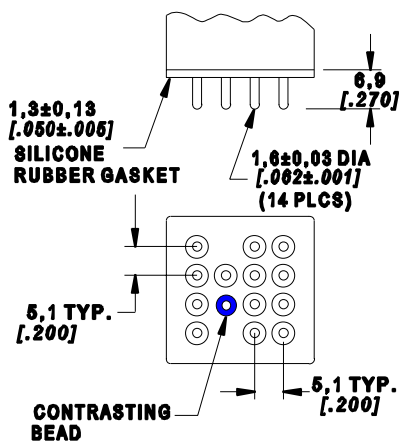
**PLUG IN ( DC )**

STYLE C: GOLD PLATED



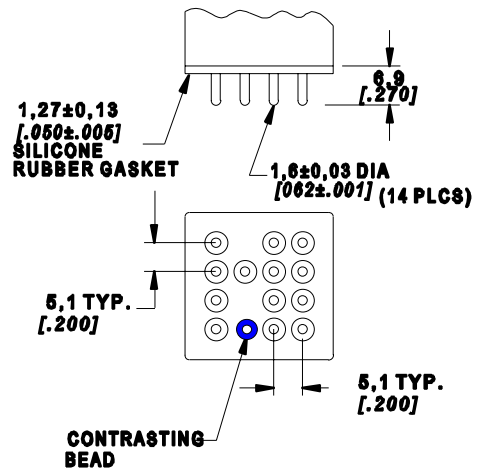
**SOLDER HOOK**

STYLE H: TIN PLATED  
STYLE J: SOLDER DIPPED



**PLUG IN (115 VAC)**

STYLE K: GOLD PLATED WITH GASKET  
STYLE L: TIN PLATED WITHOUT GASKET



**PLUG IN (28 VAC)**

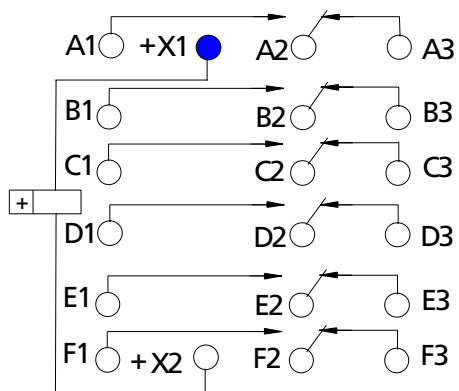
STYLE T: GOLD PLATED WITH GASKET  
STYLE U: TIN PLATED WITHOUT GASKET

## Coil characteristics

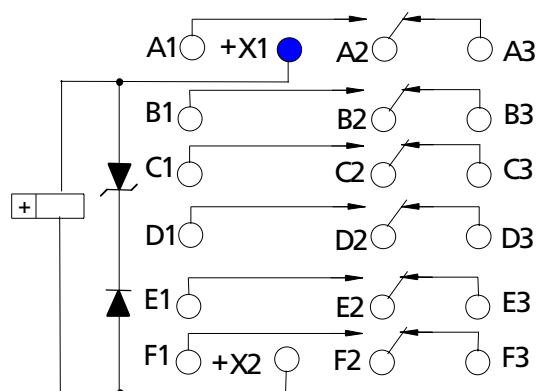
COIL CODE	DC						AC	
	A	B	D	E	G	J	L	N
Nominal coil voltage	6	12	26.5	28	48	110	115-400 Hz	115-50/60/400 Hz
Maximum pick-up voltage at 25°C	3.2	6.5	13.5	14	24	55	73	73
Maximum pick-up voltage at 125°C	4.5	9.0	18	18.7	36	70	90	90
Minimum drop-out voltage at -70° C	0.25	0.5	1.2	1.5	2	5	5	5
Maximum hold voltage at 125°C	2.3	4.5	7.0	7.0	14	30	30	40
Coil resistance ( ohms ± 10% at 25° C )	10	40	210	210	620	3200	-	-
Maximum coil transient suppression	42	42	42	42	100	180	-	-

OTHER VOLTAGES AVAILABLE FROM FACTORY ON REQUEST

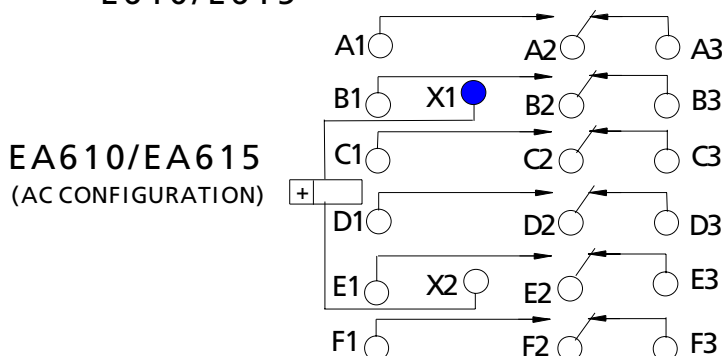
## Circuit diagram



E610/E615



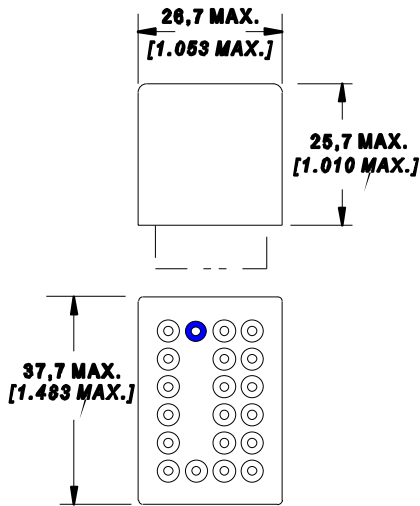
ES610/ES615  
OPTIONAL INTERNAL  
VOLTAGE SUPPRESSOR



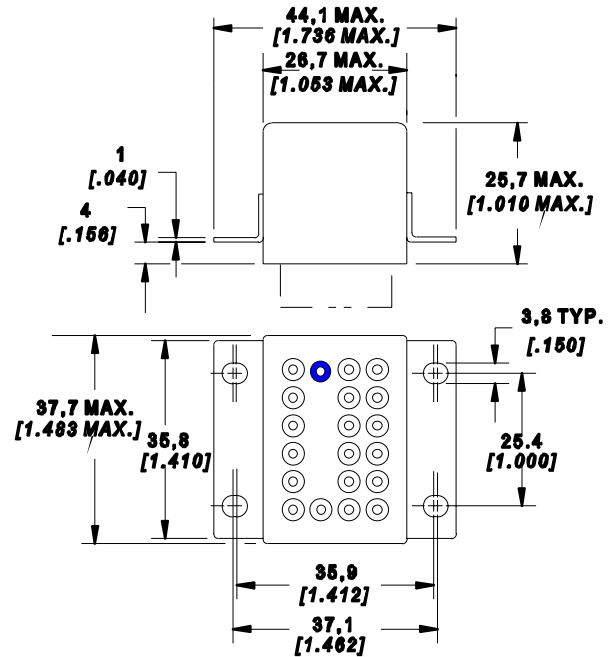
EA610/EA615  
(AC CONFIGURATION)

## Mounting Styles

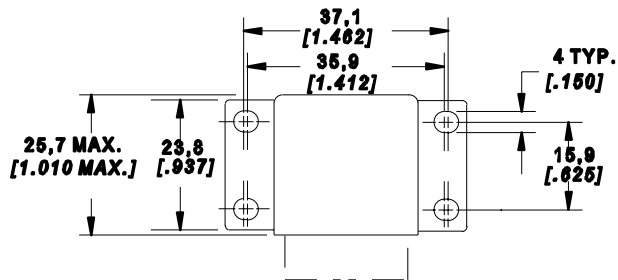
DIMENSIONS ARE IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]



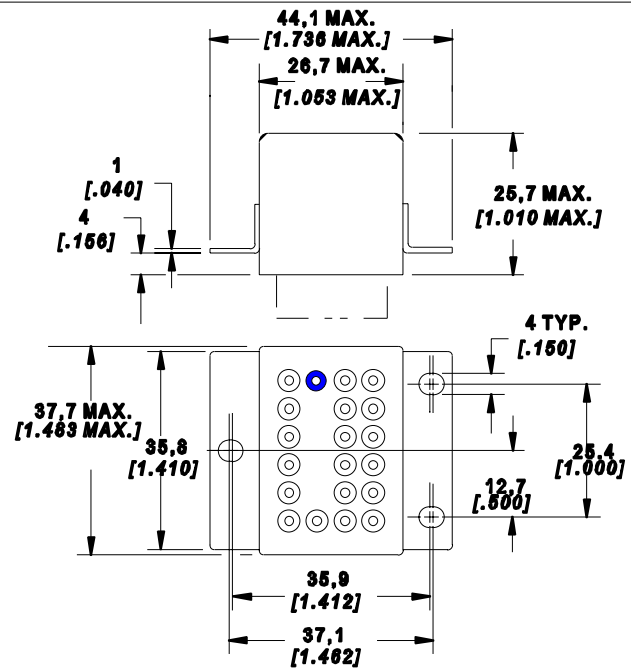
**STYLE 1**  
NO MOUNT



**STYLE 2**  
RAISED VERTICAL FLANGE MOUNT



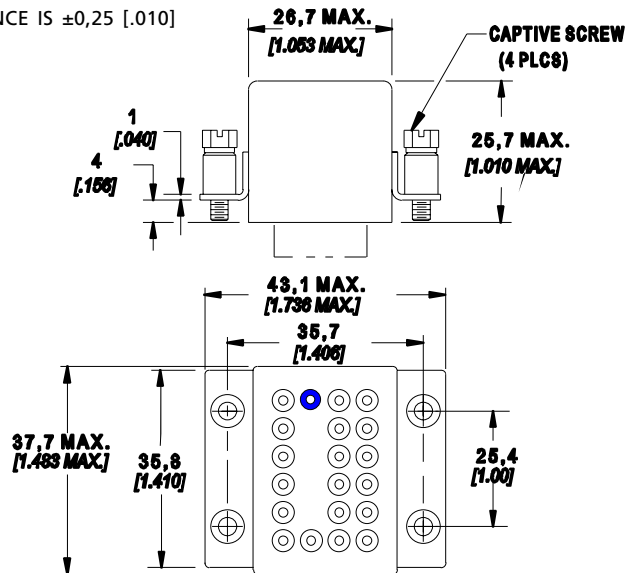
**STYLE 3**  
HORIZONTAL FLANGE MOUNT



**STYLE H**  
RAISED VERTICAL FLANGE MOUNT  
(3 MOUNTING HOLES)

## ■ Mounting styles

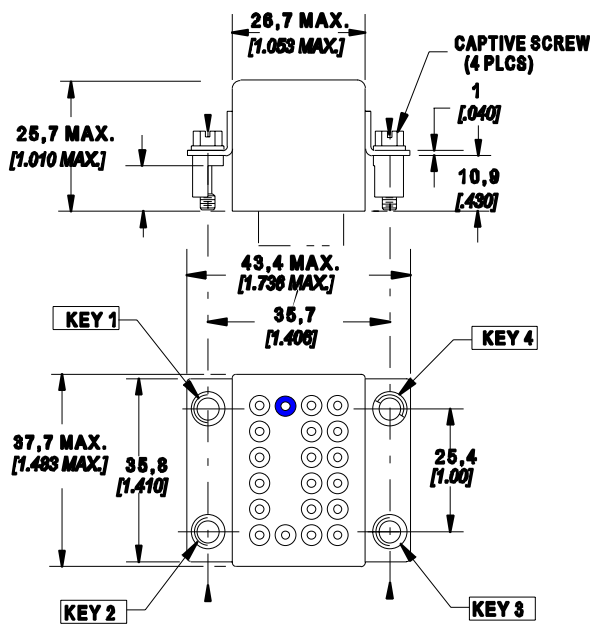
DIMENSIONS ARE IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]



STYLE 8: M3 CAPTIVE SCREWS

STYLE C: #4-40 UNC CAPTIVE SCREWS

RAISED VERTICAL FLANGE MOUNT  
WITH CAPTIVE HARDWARE

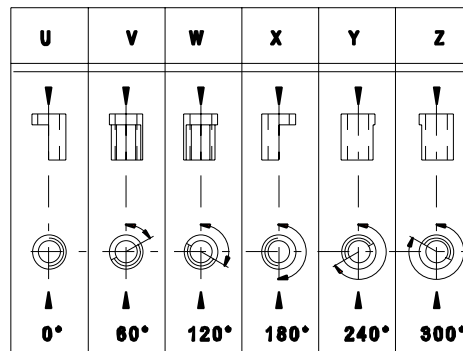


KEYING SYSTEM  
WITH CAPTIVE HARDWARE

STYLE N: M3 CAPTIVE SCREWS

STYLE P: #4-40 UNC CAPTIVE SCREWS

### KEYING POSITIONS

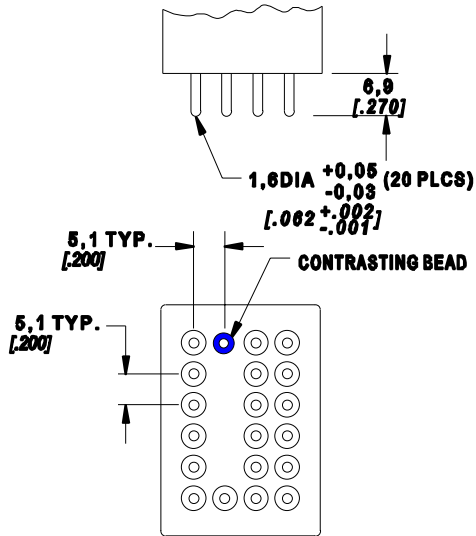


COIL	KEY 1	KEY 2	KEY 3	KEY 4	SUPPRESSED			
					KEY 1	KEY 2	KEY 3	KEY 4
6 VDC	V	Z	V	U	V	Z	X	U
12 VDC	X	Z	V	U	V	Z	X	U
26.5 VDC	U	X	V	Z	Y	X	W	Z
28 VDC	V	X	V	Z	Y	X	V	Z
48 VDC	V	Z	U	U	V	Z	W	U
110 VDC	X	Z	U	U	X	Z	W	U
115 VAC	U	Z	V	U				

KEYING CONFIGURATION SHOWN IN TABLE COMES STANDARD  
WITH SPECIFIED COIL VOLTAGE. FOR ORDERING OTHER  
KEYING POSITIONS USE 4 DIGIT (XXXX)  
"SPECIAL INSTRUCTIONS" ON END OF P/PN.  
EX: E610BACWVZX

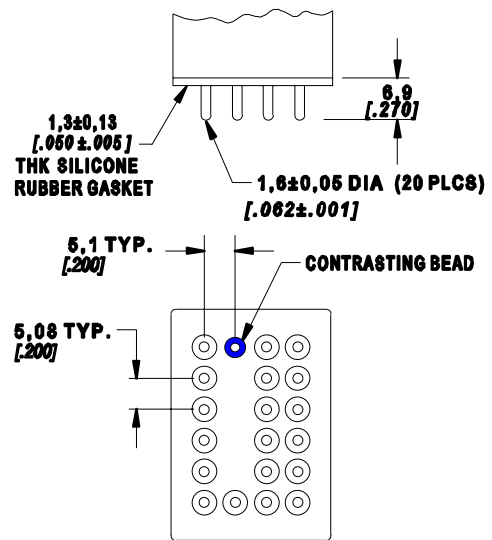
## Termination Styles

DIMENSIONS ARE IN MM (IN.)  
UNLESS OTHERWISE SPECIFIED, TOLERANCE IS  $\pm 0,25$  [.010]



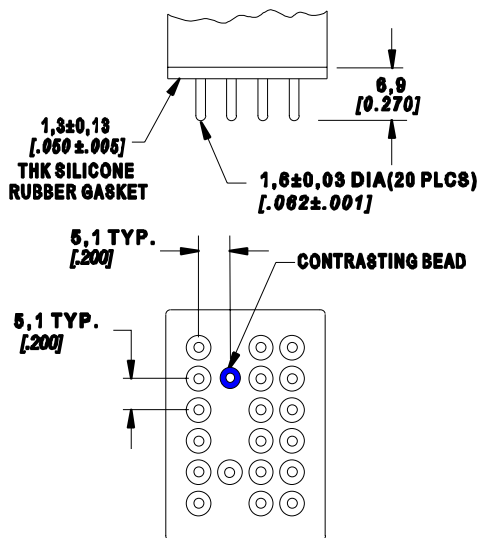
**SOLDER PIN**

STYLE A: TIN PLATED  
STYLE B: SOLDER DIPPED



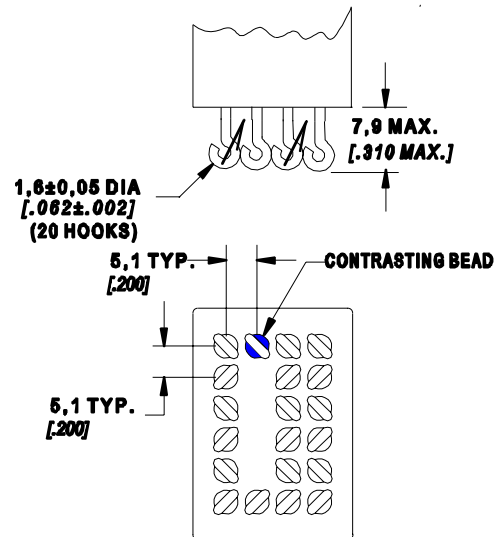
**PLUG IN (DC)**

STYLE C: GOLD PLATED



**PLUG IN (AC)**

STYLE K: GOLD PLATED WITH GASKET  
STYLE L: TIN PLATED WITHOUT GASKET



**SOLDER HOOK**

STYLE H: TIN PLATED  
STYLE J: SOLDER DIPPED