

# AZ420

## MINIATURE GENERAL PURPOSE RELAY

### FEATURES

- Rugged construction for high reliability
- Life expectancy greater than 100 million operations
- DC coils to 115 V
- Power consumption as low as 25 mW per pole available
- Current sensitive and voltage sensitive coils available
- Round core and large coil volume provide greater pull force
- Up to 6 poles in less than one cubic inch
- Dry circuit to 7.5 Amp contacts
- Printed circuit or solder/plug-in terminals
- Balanced spring-held armature allows dependable operation in any position
- Sealed version available (2 and 4 pole)
- UL, CUR file E43203; VDE 0110 Gr. A

### CONTACTS

<b>Arrangement</b>	DPDT (2 Form C) 4PDT (4 Form C) 6PDT (6 Form C)
<b>Ratings</b>	See contact data table under relay ordering data <b>UL Rating:</b> See table for UL approved contact ratings
<b>Material</b>	See contact data table under relay ordering data
<b>Resistance</b>	< 50 milliohms initially

### COIL

<b>Power At Pickup Voltage (typical)</b>	Standard: 450 mW, 2 or 4 pole Sensitive: 80 mW, 2 pole 180 mW, 4 pole (25 mW per pole available)
<b>Max. Continuous Dissipation</b>	2.6 W at 20°C (68°F) ambient 2.0 W at 40°C (105°F) ambient
<b>Temperature Rise Standard</b>	23°C (41°F) at nominal coil voltage, 2 or 4 pole 40°C (72°F) at nominal coil voltage, 6 pole
<b>Sensitive</b>	5°C (9°F) at nominal coil voltage, 2 pole 10°C (18°F) at nominal coil voltage, 4 pole
<b>Temperature</b>	Max. 105°C (221°F)

### NOTES

1. Other coil resistances and sensitivities are available upon request.
2. All values at 20°C (68°F).
3. Bifurcated crossbar, fine silver/gold plated contacts are recommended for dry circuit switching.
4. Epoxy sealed versions for automatic wave soldering and cleaning are available.
5. Specifications subject to change without notice.



### GENERAL DATA

<b>Life Expectancy</b> <b>Mechanical</b> <b>Electrical</b>	Minimum operations 500 million See typical contact life expectancy table
<b>Operate Time</b>	See typical operate and release time diagram
<b>Release Time</b>	See typical operate and release time diagram
<b>Capacitance (typical)</b>	Contact to contact: 2 pF Contact to coil: 2 pF Contact to frame: 30 pF
<b>Bounce (typical)</b>	At 10 mA contact current 3 ms at nominal coil voltage
<b>Dielectric Strength (at sea level)</b>	1500 Vrms contact to coil 1000 Vrms all other points
<b>Insulation Resistance</b>	1000 megohms min. at 25°C 500 VDC 50% RH
<b>Dropout</b>	Greater than 5% of nominal coil voltage
<b>Ambient Temperature</b> <b>Operating</b> <b>Standard</b>	At nominal coil voltage 2 and 4 pole type: -55°C (-67°F) to 80°C (176°F) 6 pole type: -55°C (-67°F) to 65°C (149°F)
<b>Sensitive</b> <b>Storage</b>	-55°C (-67°F) to 95°C (203°F) -55°C (-67°F) to 105°C (220°F)
<b>Vibration</b>	0.062" DA at 5–55 Hz
<b>Shock</b>	20 g
<b>Enclosure</b>	Polycarbonate
<b>Terminals</b>	Plug-in: gold or tin plated copper alloy PC: tin plated copper alloy
<b>Max. Solder Temp.</b>	270°C (518°F)
<b>Max. Solder Time</b>	5 seconds
<b>Max. Solvent Temp.</b>	80°C (176°F)
<b>Max. Immersion Time</b>	30 Seconds
<b>Weight</b>	23 to 35 grams



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5/2/02W

# AZ420

## RELAY ORDERING DATA — TWO POLE

STANDARD DC VOLTAGE VERSION						
COIL SPECIFICATIONS				ORDER NUMBER		
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance $\pm 10\%$	Must Operate VDC	Unsealed		Sealed
				Plug-in/Solder Terminals	PC Terminals	PC Terminals
3	5	14	2.25	AZ420-21-*	AZ428-21-*	AZ2428-21-*
6	10	52	4.5	AZ420-15-*	AZ428-15-*	AZ2428-15-*
12	19	185	9.0	AZ420-1011-*	AZ428-1011-*	AZ2428-1011-*
18	29	430	13.0	AZ420-80-*	AZ428-80-*	AZ2428-80-*
20	34	600	16.0	AZ420-08-*	AZ428-08-*	AZ2428-08-*
24	37	700	18.0	AZ420-70-*	AZ428-70-*	AZ2428-70-*
26	44	1,000	21.0	AZ420-07-*	AZ428-07-*	AZ2428-07-*
48	70	2,500	36.0	AZ420-56-*	AZ428-56-*	AZ2428-56-*
72	105	5,800	54.0	AZ420-40-*	AZ428-40-*	AZ2428-40-*
115	170	15,000	86.0	AZ420-035-*	AZ428-035-*	AZ2428-035-*

B. SENSITIVE DC VOLTAGE VERSION (Pickup 100 mW)						
COIL SPECIFICATIONS				ORDER NUMBER		
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance $\pm 10\%$	Must Operate VDC	Unsealed		Sealed
				Plug-in/Solder Terminals	PC Terminals	PC Terminals
3	10	50	2.25	AZ420-V15-*	AZ428-V15-*	AZ2428-V15-*
6	20	200	4.5	AZ420-V10-*	AZ428-V10-*	AZ2428-V10-*
12	41	800	9.0	AZ420-V70-*	AZ428-V70-*	AZ2428-V70-*
24	81	3,200	18.0	AZ420-V50-*	AZ428-V50-*	AZ2428-V50-*
48	104	13,000	36.0	AZ420-V04-*	AZ428-V04-*	AZ2428-V04-*

C. SENSITIVE DC CURRENT VERSION (Pickup 85 mW)						
COIL SPECIFICATIONS				ORDER NUMBER		
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance $\pm 10\%$	Must Operate (mA)	Unsealed		Sealed
				Plug-in/Solder Terminals	PC Terminals	PC Terminals
12	44	1,000	8.5	AZ420-C07-*	AZ428-C07-*	AZ2428-C07-*
18	70	2,500	5.4	AZ420-C56-*	AZ428-C56-*	AZ2428-C56-*
29	102	5,000	4.1	AZ420-C045-*	AZ428-C045-*	AZ2428-C045-*
44	144	10,000	3.1	AZ420-C408-*	AZ428-C408-*	AZ2428-C408-*
51	170	15,000	2.4	AZ420-C035-*	AZ428-C035-*	AZ2428-C035-*

### \*ORDERING PROCEDURE:

To specify an AZ 420 series relay, combine the basic part number found in the Order Number section with a contact code found in the Contact Data Table.

#### EXAMPLE:

#### AZ420-21-40LUS:

A. Basic number: **AZ420-21-** indicates two pole, plug-in/solder terminals, standard coil, 3 VDC, 14 ohms.

B. Contact code: **40LUS** indicates bifurcated crossbar fine silver/gold plated contacts, Form C, UL and CUR approved.

## CONTACT DATA TABLE

Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)	Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)	Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)
<b>40LUS</b>			<b>4WLUS</b>			<b>4WHUS</b>		
Bifurcated crossbar contact	Max. Power: 56 W or 230 VA		Single crossbar contact	Max. power 100 W or 350 VA		Single crossbar contact	Max. power 225 W or 870 VA	
Fine silver/gold plated	Max. current: 2 Amps  Max. voltage: 150† VDC or 300 VAC	Dry circuit to 2 Amps	Moveable: fine silver/gold plated	Max. current 3 Amps  Max. voltage 150† VDC or 300 VAC	10 mA to 3 Amps	Moveable: silver cadmium oxide/gold plated	Max. current: 7.5 Amps  Max. voltage: 150† VDC or 300 VAC	100 mA to 7.5 Amps

† If switching voltage is greater than 30 VDC, special precautions must be taken. Contact the factory.



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# AZ420

## RELAY ORDERING DATA — FOUR POLE

A. STANDARD DC VOLTAGE VERSION						
COIL SPECIFICATIONS				ORDER NUMBER		
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance $\pm 10\%$	Must Operate VDC	Unsealed		Sealed
				Plug-in/Solder Terminals	PC Terminals	PC Terminals
3	5	14	2.25	AZ421-21-*—	AZ429-21-*—	AZ2429-21-*—
6	10	52	4.5	AZ421-15-*—	AZ429-15-*—	AZ2429-15-*—
12	19	185	9.0	AZ421-1011-*—	AZ429-1011-*—	AZ2429-1011-*—
18	29	430	13.0	AZ421-80-*—	AZ429-80-*—	AZ2429-80-*—
20	34	600	16.0	AZ421-08-*—	AZ429-08-*—	AZ2429-08-*—
24	37	700	18.0	AZ421-70-*—	AZ429-70-*—	AZ2429-70-*—
26	44	1,000	21.0	AZ421-07-*—	AZ429-07-*—	AZ2429-07-*—
48	70	2,500	36.0	AZ421-56-*—	AZ429-56-*—	AZ2429-56-*—
72	105	5,800	54.0	AZ421-40-*—	AZ429-40-*—	AZ2429-40-*—
115	170	15,000	86.0	AZ421-035-*—	AZ429-035-*—	AZ2429-035-*—

### \*ORDERING PROCEDURE:

To specify an AZ 421 series relay, combine the basic part number found in the Order Number section with a contact code found in the Contact Data Table.

#### EXAMPLE:

**AZ421-21-10LUS:**

A. Basic number: **AZ421-21-** indicates four pole, plugin/solder terminals, standard coil, 3 VDC, 14 ohms.

B. Contact code: **10LUS** indicates bifurcated crossbar fine silver/gold plated contacts, Form C, UL and CUR approved.

B. SENSITIVE DC VOLTAGE VERSION (Pickup 180 mW)						
COIL SPECIFICATIONS				ORDER NUMBER		
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance $\pm 10\%$	Must Operate VDC	Unsealed		Sealed
				Plug-in/Solder Terminals	PC Terminals	PC Terminals
3	8	30	2.25	AZ421-V18-*—	AZ429-V18-*—	AZ2429-V18-*—
6	15	110	4.5	AZ421-V12-*—	AZ429-V12-*—	AZ2429-V12-*—
12	30	450	9.0	AZ421-V80-*—	AZ429-V80-*—	AZ2429-V80-*—
24	61	1,800	18.0	AZ421-V05-*—	AZ429-V05-*—	AZ2429-V05-*—
48	124	7,500	36.0	AZ421-V04-*—	AZ429-V04-*—	AZ2429-V04-*—

C. SENSITIVE DC CURRENT VERSION (Pickup 85 mW)						
COIL SPECIFICATIONS				ORDER NUMBER		
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance $\pm 10\%$	Must Operate (mA)	Unsealed		Sealed
				Plug-in/Solder Terminals	PC Terminals	PC Terminals
19	44	1,000	13.0	AZ421-C07-*—	AZ429-C07-*—	AZ2429-C07-*—
30	70	2,500	8.3	AZ421-C56-*—	AZ429-C56-*—	AZ2429-C56-*—
44	102	5,000	6.2	AZ421-C045-*—	AZ429-C045-*—	AZ2429-C045-*—
64	144	10,000	4.5	AZ421-C408-*—	AZ429-C408-*—	AZ2429-C408-*—
75	170	15,000	3.5	AZ421-C035-*—	AZ429-C035-*—	AZ2429-C035-*—

## CONTACT DATA TABLE

Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)	Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)	Contact Material	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC (Typical)
<b>10LUS</b>			<b>1WLUS</b>			<b>1WHUS</b>		
Bifurcated crossbar contact	Max. Power: 56 W or 230 VA		Single crossbar contact	Max. power 100 W or 350 VA		Single crossbar contact	Max. power 225 W or 870 VA	
Fine silver/gold plated	Max. current: 2 Amps	Dry circuit to 2 Amps	Moveable: fine silver/gold plated	Max. current 3 Amps	10 mA to 3 Amps	Moveable: silver cadmium oxide/gold plated	Max. current: 7.5 Amps	100 mA to 7.5 Amps
	Max. voltage: 150† VDC or 300 VAC			Max. voltage 150† VDC or 300 VAC			Max. voltage: 150† VDC or 300 VAC	

† If switching voltage is greater than 30 VDC, special precautions must be taken. Contact the factory.



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# AZ420

## RELAY ORDERING DATA — SIX POLE

A. STANDARD DC COIL VOLTAGE VERSION					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance $\pm 10\%$	Must Operate VDC	Plug-in/ Solder Terminals	PC Terminals
3	4.5	11	2.25	AZ431-22-*—	AZ439-22-*—
6	7	25	4.5	AZ431-18-*—	AZ439-18-*—
12	14	90	9.0	AZ431-13-*—	AZ439-13-*—
18	22	230	13.0	AZ431-10-*—	AZ439-10-*—
20	26	360	16.0	AZ431-09-*—	AZ439-09-*—
24	29	430	18.0	AZ431-80-*—	AZ439-80-*—
26	34	600	21.0	AZ431-08-*—	AZ439-08-*—
48	59	1,800	36.0	AZ431-06-*—	AZ439-06-*—
72	83	3,600	54.0	AZ431-05-*—	AZ439-05-*—
115	130	9,000	86.0	AZ431-04-*—	AZ439-04-*—

B. SENSITIVE DC VOLTAGE VERSION (Pickup 250 mW)					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance $\pm 10\%$	Must Operate VDC	Plug-in/ Solder Terminals	PC Terminals
3	6	20	2.25	AZ431-V19-*—	AZ439-V19-*—
6	13	80	4.5	AZ431-V13-*—	AZ439-V13-*—
12	26	320	9.0	AZ431-V09-*—	AZ439-V09-*—
24	50	1,200	18.0	AZ431-V60-*—	AZ439-V60-*—
48	68	5,200	36.0	AZ431-V045-*—	AZ439-V045-*—

C. SENSITIVE DC CURRENT VERSION (Pickup 250 mW)					
COIL SPECIFICATIONS				ORDER NUMBER	
Nominal Coil VDC	Max. Continuous VDC	Coil Resistance $\pm 10\%$	Must Operate (mA)	Plug-in/ Solder Terminals	PC Terminals
23	44	1,000	16.0	AZ431-C07-*—	AZ439-C07-*—
36	70	2,500	10.0	AZ431-C56-*—	AZ439-C56-*—
51	102	5,000	7.2	AZ431-C045-*—	AZ439-C045-*—
71	144	10,000	5.0	AZ431-C408-*—	AZ439-C408-*—
90	170	15,000	4.2	AZ431-C035-*—	AZ439-C035-*—

### \*ORDERING PROCEDURE:

To specify an AZ 431 series relay, combine the basic part number found in the Order Number section with a contact code found in the Contact Data Table.

#### EXAMPLE: AZ431-22-10LUS:

A. Basic number: **AZ431-22-** indicates six pole, plug-in/ solder terminals, standard coil, 3 VDC, 11 ohms.

B. Contact code: **10LUS** indicates bifurcated crossbar fine silver/gold plated contacts, Form C, UL and CUR approved.

## CONTACT DATA TABLE

Contact Material (Typical)	Maximum Switched Load	Switching Range at 28 VDC or 115 VAC
<b>10LUS</b>		
Bifurcated crossbar contact Fine silver/ gold plated	Max. Power: 56 W or 230 VA Max. current: 2 Amps Max. voltage: 150† VDC or 300 VAC	Dry circuit to 2 Amps
<b>1WLUS *</b>		
Single crossbar contact Moveable: fine silver/ gold plated	Max. power: 100 W or 350 VA Max. current: 3 Amps Max. voltage: 150† VDC or 300 VAC	10 mA to 3 Amps
<b>1LUS **</b>		
Single contact button Fine silver/ gold plated	Max. power: 56 W or 230 VA Max. current: 2 Amps Max. voltage: 150† VDC or 300 VAC	Low level to 2 Amps
<b>1WHUS *</b>		
Single crossbar contact Moveable: silver cadmium oxide/gold plated	Max. power: 225 W or 870 VA Max. current: 7.5 Amps Max. voltage: 150† VDC or 300 VAC	100 mA to 7.5 Amps
<b>1HUS **</b>		
Single contact button Silver cadmium oxide	Max. power: 140 W or 575 VA Max. current: 5 Amps Max. voltage: 150† VDC or 300 VAC	100 mA to 5 Amps

\* Contact for Standard DC Voltage version only (Table A).

\*\* Contact code for Sensitive DC Voltage version only (Table B) and sensitive DC current version.

† If switching voltage is greater than 30 VDC, special precautions must be taken. Contact the factory.



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## TYPICAL CONTACT LIFE EXPECTANCY WHILE SWITCHING RESISTIVE LOADS

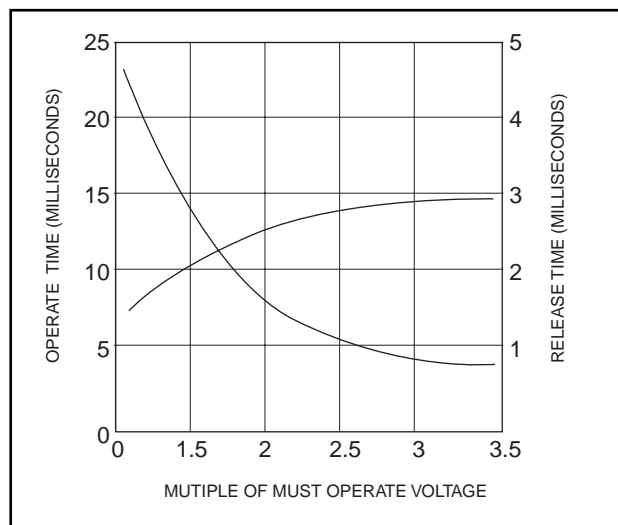
CONTACT CODE	CURRENT	VOLTAGE	NUMBER OF OPERATIONS	
			STANDARD COIL ADJUSTMENT	SENSITIVE COIL ADJUSTMENT
—LUS	1 MA	.1 VDC	1 X 10 <sup>8</sup>	1 X 10 <sup>8</sup>
	10 MA	6 VDC	1 X 10 <sup>8</sup>	1 X 10 <sup>8</sup>
	2 A	28 VDC	6 X 10 <sup>5</sup>	5 X 10 <sup>5</sup>
	2 A	115 VAC	6 X 10 <sup>5</sup>	5 X 10 <sup>5</sup>
—WLUS	10 MA	28 VDC	2 X 10 <sup>8</sup>	2 X 10 <sup>8</sup>
	100 MA	28 VDC	2 X 10 <sup>8</sup>	2 X 10 <sup>8</sup>
	2 A	28 VDC	1.5 X 10 <sup>6</sup>	6 X 10 <sup>5</sup>
	2 A	115 VAC	1.5 X 10 <sup>6</sup>	6 X 10 <sup>5</sup>
	3 A	28 VDC	3 X 10 <sup>5</sup>	2 X 10 <sup>5</sup>
	3A	115 VAC	3 X 10 <sup>5</sup>	2 X 10 <sup>5</sup>
—WHUS	7.5 A	28 VDC	1 X 10 <sup>5</sup>	1 X 10 <sup>4</sup>
	7.5 A	115 VDC	1 X 10 <sup>5</sup>	1 X 10 <sup>4</sup>

NOTE: Relays operate at nominal coil voltage or 1.33 x must operate value for sensitive versions.

## UL APPROVED CONTACT RATINGS

CONTACT CODE	UL RATINGS
40LUS, 10LUS	2 Amps at 26 VDC and 115 VAC
4WLUS, 1WLUS	3 Amps at 28 VDC and 115 VAC
4WHUS, 1WHUS	7.5 Amps at 28 VDC and 115 VAC

## TYPICAL OPERATE AND RELEASE TIME (STANDARD DC VOLTAGE VERSION)



- NOTES:
1. Coils not diode suppressed
  2. Switched battery voltage source



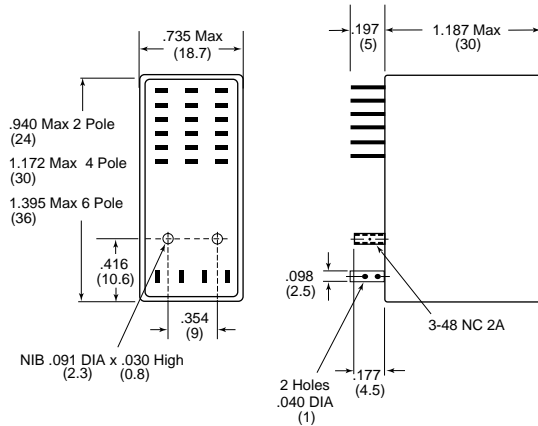
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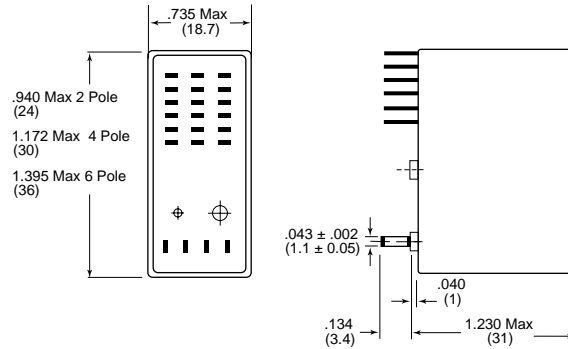
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## MECHANICAL DATA

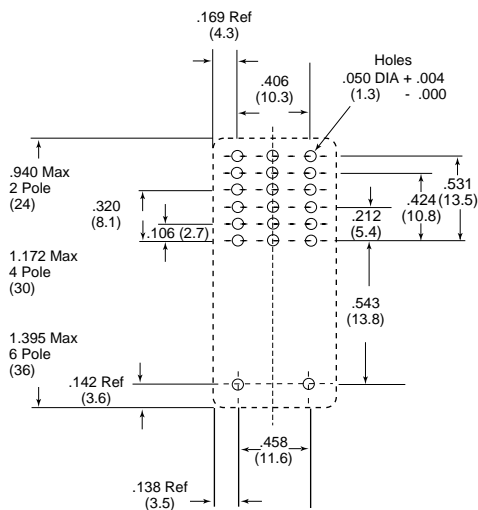
### SOLDER/PLUG IN TERMINALS



### PC BOARD TERMINALS

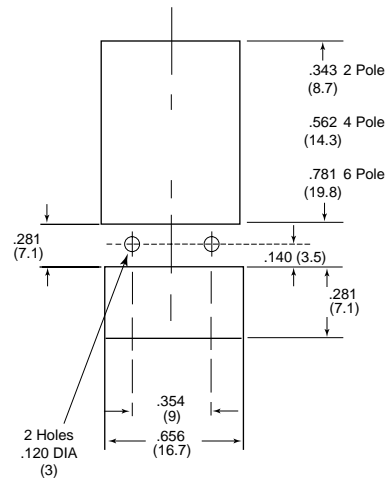


### PC BOARD LAYOUT



Viewed toward terminals

### SUGGESTED PANEL LAYOUT



Dimensions in inches with metric equivalents in parentheses. Tolerance:  $\pm .010$ "



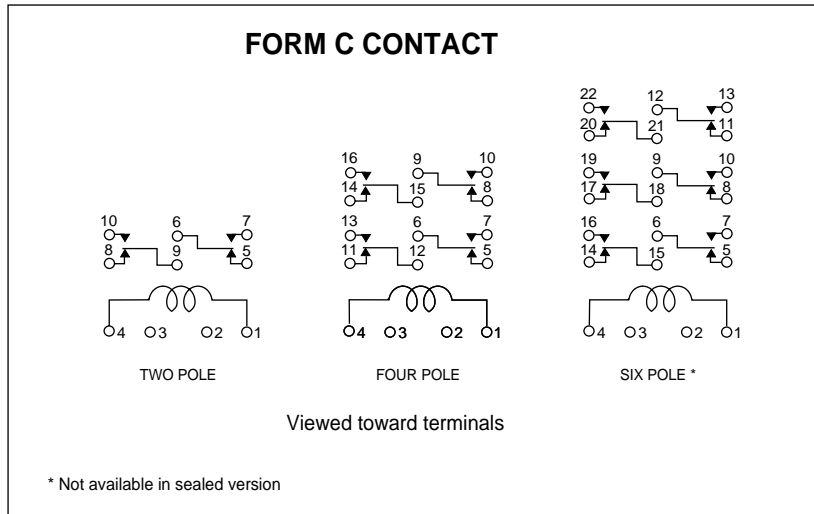
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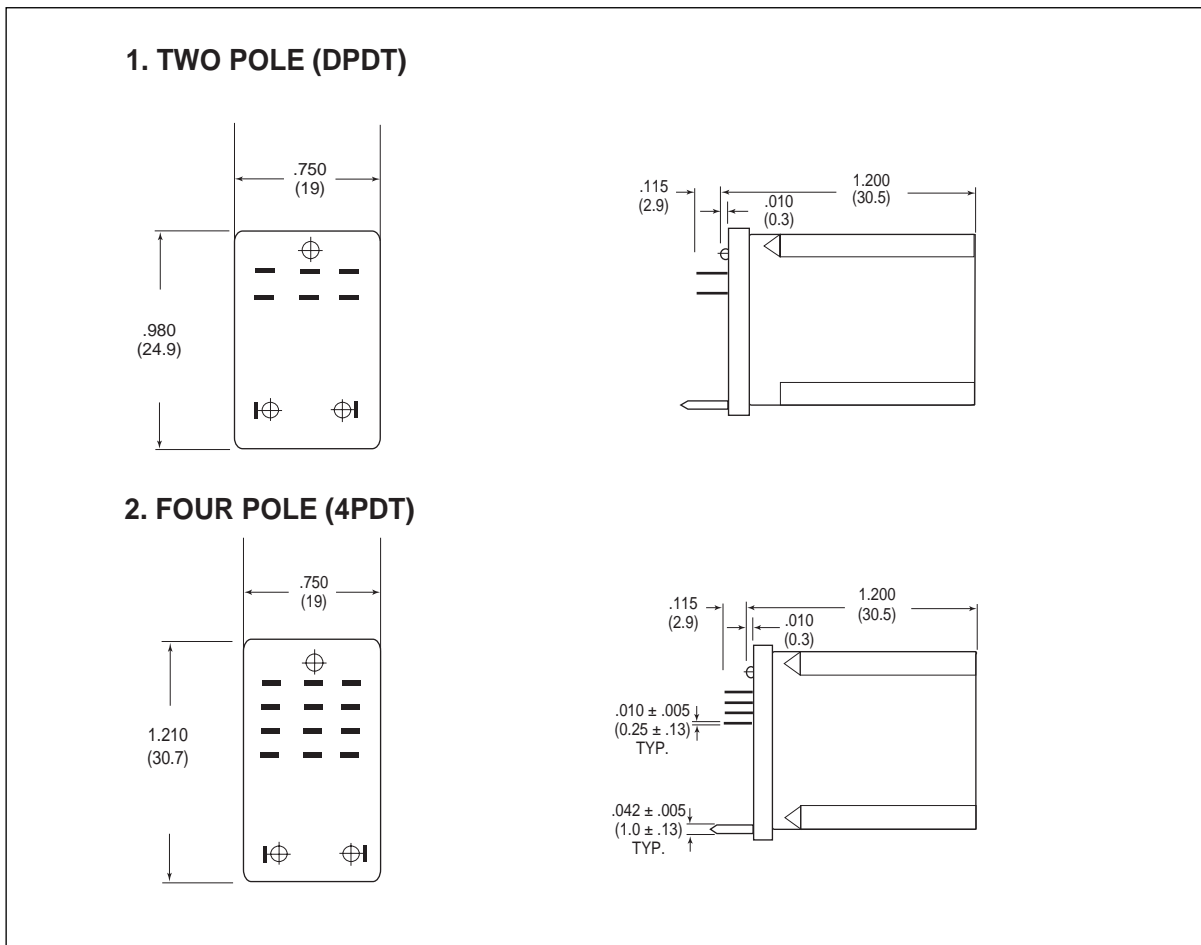
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## WIRING DIAGRAM



## MECHANICAL DATA AZ2428; 2429 Versions



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# AZ420

## Sockets & Hardware for AZ420 Series



### FEATURES

- International standard spacing — accommodates most cradle-type relays
- Unique knife-edge connector assures positive contact
- Unbreakable fiberglass filled polyester base material
- Spacing riser prevents flux contamination
- PC terminal spacing for 0.1 or 0.2 inch grids
- UL CUR file E171533

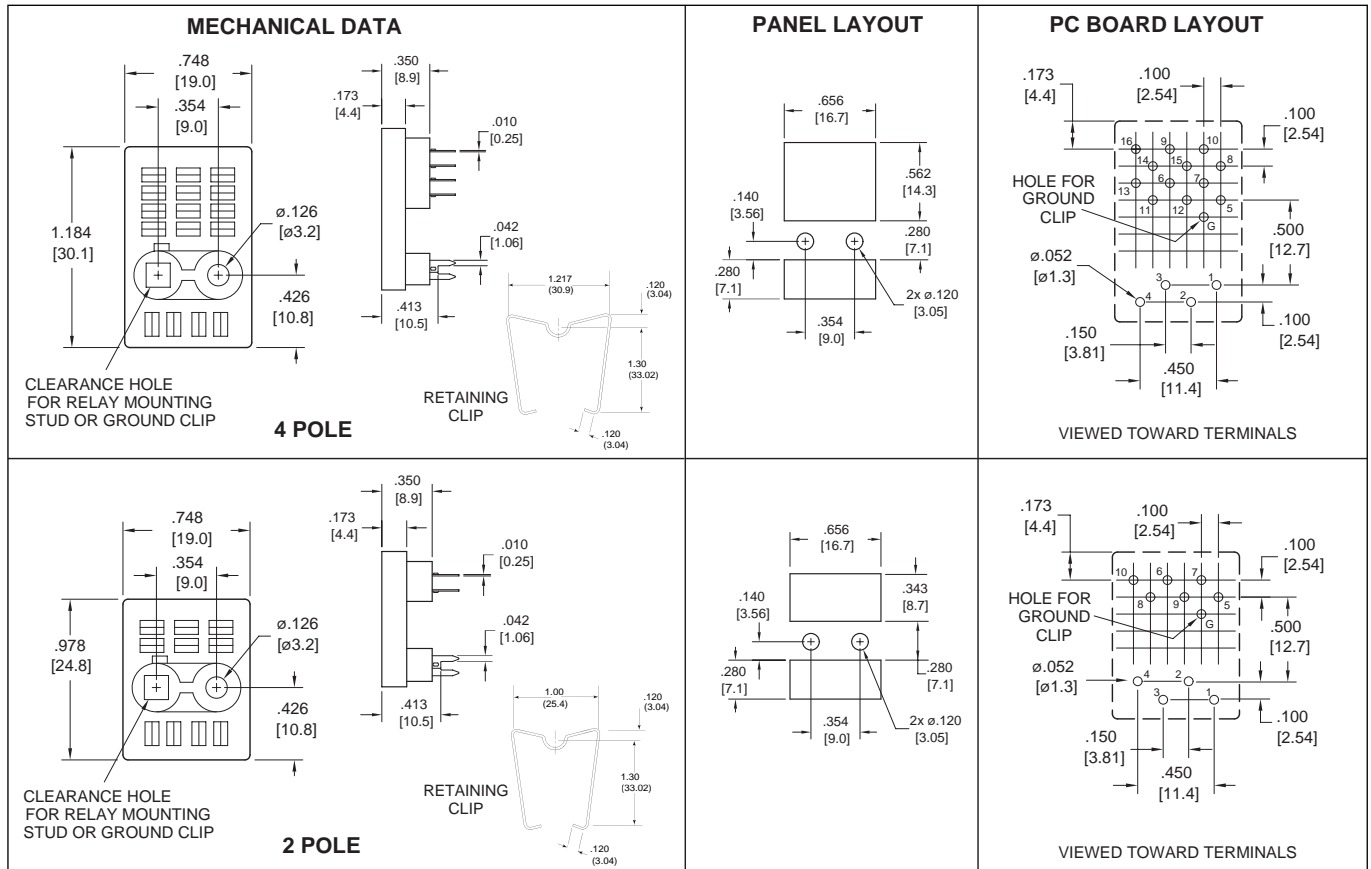
### ORDERING DATA

# OF POLES	SOCKET	RETAINING CLIPS
2	ST140-A1	ST140-1
4	ST141-A1	ST141-1

### GENERAL DATA

<b>Dielectric Strength (at sea level)</b>	1500 Vrms between all elements
<b>Insulation Resistance</b>	10 <sup>12</sup> ohms minimum at 25°C, 100 VDC
<b>Current Rating</b>	5 Amps maximum, continuous
<b>Ambient Temperature</b>	-55°C (-67°F) to 105°C (220°F)
<b>Maximum Temperature</b>	Machine soldering: 240°C (460°F)
<b>Vibration</b>	10 g at 5–55 Hz (socket soldered into PC board with relay inserted and held in place with retainer)
<b>Shock</b>	50 g any position (socket soldered into PC board with relay inserted and held in place with retainer)
<b>Terminals</b>	Combination type facilitates hand wiring or PC board mounting
<b>Contact Material</b>	Tin bronze silver plated

### MECHANICAL SPECIFICATIONS



Dimensions in inches with metric equivalents in parentheses. Tolerance:  $\pm .010$ "



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