

**SPECIFICATIONS**

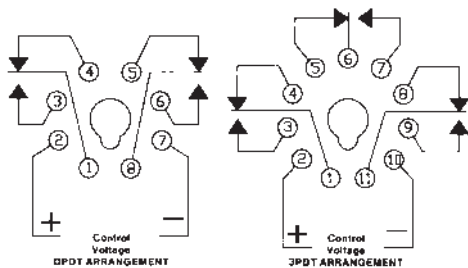
|                         |                                  |                  |
|-------------------------|----------------------------------|------------------|
| CONTROL VOLTAGE         | 12 to 240 VAC                    |                  |
|                         | 12 to 110 VDC, See Table 1       |                  |
| PICK UP VOLTAGE         | AC Coils                         | 80% of Nominal   |
|                         | DC Coils                         | 80% of Nominal   |
| DROP OUT VOLTAGE        | AC Coils                         | 30% of Nominal   |
|                         | DC Coils                         | 10% of Nominal   |
| MAXIMUM VOLTAGE         | 110% of Nominal                  |                  |
| RESPONSE TIMES          | Pick-up                          | 30 mSEC, maximum |
|                         | Drop-out                         | 20 mSEC, maximum |
| TEMPERATURE RATING      | Operate                          | -10°C to +40°C   |
|                         | Storage                          | -45°C to +85°C   |
| POWER (NOMINAL VOLTAGE) | AC Coils                         | 2.1 VA           |
|                         | DC Coils                         | 1.2 Watts        |
| DUTY CYCLE              | Continuous                       |                  |
| INSULATION RESISTANCE   | 100 Meg ohms, minimum            |                  |
| DIELECTRIC STRENGTH     | 1500 VAC, 50/60 Hz. for 1 minute |                  |
| CONTACT MATERIAL        | Silver cadmium oxide             |                  |
| CONTACT ARRANGEMENTS    | DPDT                             | 8-Pin plug in    |
|                         | 3PDT                             | 11-Pin plug in   |
| OUTPUT RATINGS          | See Table 2                      |                  |
| AGENCY APPROVALS        | Consult factory                  |                  |
| WEIGHT                  | 3 oz.                            |                  |



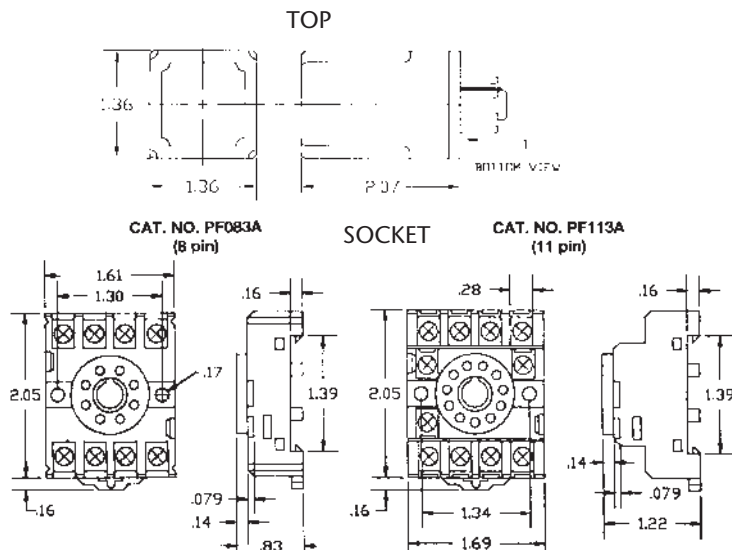
**Medium Power Plug-In Relays**

- Low Cost
- Rugged Design
- 10 Amp Output
- High Reliability
- 8 pin or 11 pin Track Mountable Plug-in base
- DPDT & 3PDT Arrangements
- 12, 24, 120, & 240 volts operation

**WIRING**



**DIMENSIONS (INCHES)**



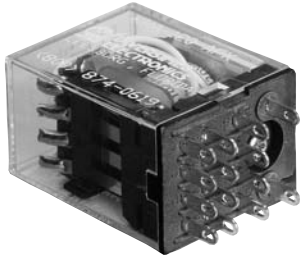
**COIL RATINGS (TABLE 1)**

| Nominal Voltage | Rated current (mA) |       | Coil resistance (ohms) |
|-----------------|--------------------|-------|------------------------|
|                 | 50 Hz              | 60 Hz |                        |
| AC              | 12                 | 199   | 168                    |
|                 | 24                 | 99    | 84                     |
|                 | 120                | 20.5  | 17.5                   |
|                 | 240                | 10.2  | 8.8                    |
| DC              | 12                 | 100   | 120                    |
|                 | 24                 | 51    | 472                    |
|                 | 110                | 11.5  | 10,000                 |

**OUTPUT CONTACT RATINGS (TABLE 2)**

| Specifications           | Resistive load (p.f. = 1) | Inductive load (p.f. = 0.4; L/R = 7msec) |
|--------------------------|---------------------------|--|
| Rated load               | 230 VAC 10A<br>28 VDC 10A | 230 VAC 6A<br>28 VDC 7.5A                |
| Carry current            | 10A                       |  |
| Max. operating voltage   | 250 VAC 250 VDC           |  |
| Max. operating current   | 10A                       |  |
| Max. switching capacity  | 2300VA<br>280W            | 1400VA<br>210W                           |
| Minimum permissible load | 5 VDC 100mA               |  |

| MODEL NUMBER >>>>>         | CAA                 |     |  | X |
|----------------------------|---------------------|-----|--|---|
| <b>Coil Voltage</b>        |                     |     |  |   |
|                            | 12 Volts            | 12  |  |   |
|                            | 24 Volts            | 24  |  |   |
|                            | 110 Volts           | 110 |  |   |
|                            | 120 Volts           | 120 |  |   |
|                            | 240 Volts (AC only) | 240 |  |   |
| <b>Type of Voltage</b>     |                     |     |  |   |
|                            | AC                  | A   |  |   |
|                            | DC                  | D   |  |   |
| <b>Contact Arrangement</b> |                     |     |  |   |
|                            | DPDT                | D   |  |   |
|                            | 3PDT                | T   |  |   |
| Example: KAA-120-ADX       |                     |     |  |   |

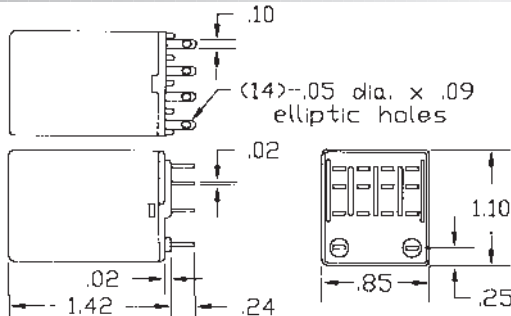


## Medium Power Multi-Contact Relays

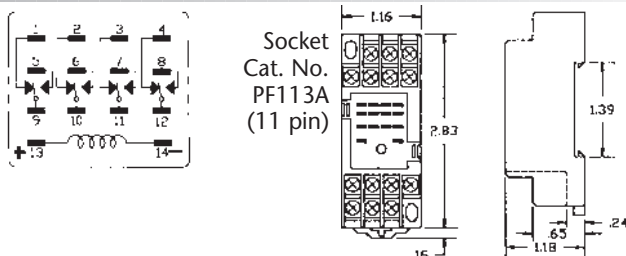
- Low Cost
- Small Size
- High Reliability
- Ultra High Sensitivity
- Quick Response
- 4PDT Arrangement (others available)
- 12, 24, 120, & 240 Volts Operations

| MODEL NUMBER >>>>>   | KHA                 | F   | X |
|----------------------|---------------------|-----|---|
| Control Voltage      |                     |     |   |
|                      | 12 Volts            | 12  |   |
|                      | 24 Volts            | 24  |   |
|                      | 110 Volts           | 110 |   |
|                      | 120 Volts           | 120 |   |
|                      | 240 Volts (AC only) | 240 |   |
| Type of Voltage      |                     |     |   |
|                      | AC                  | A   |   |
|                      | DC                  | D   |   |
| Example: KHA-120-AFX |                     |     |   |

### DIMENSIONS (INCHES)



### WIRING



### SPECIFICATIONS

|                         |  |                              |
|-------------------------|--|------------------------------|
| CONTROL VOLTAGE         | 12 to 240 VAC                          |                              |
|                         | 12 to 110 VDC, See Table 5             |                              |
| PICK UP VOLTAGE         | AC Coils                               | 75% of Nominal               |
|                         | DC Coils                               | 75% of Nominal               |
| DROP OUT VOLTAGE        | AC Coils                               | 30% of Nominal               |
|                         | DC Coils                               | 10% of Nominal               |
| MAXIMUM VOLTAGE         | 110% of Nominal                        |                              |
| RESPONSE TIMES          | Pick-up                                | 20 mSEC                      |
|                         | Drop-out                               | 20 mSEC                      |
| TEMPERATURE RATINGS     | Operate                                | -45°C to +70°C               |
|                         | Storage                                | -45°C to +85°C               |
| POWER (NOMINAL VOLTAGE) | AC Coils                               | 0.9 to 1.2 VA, approximately |
|                         | DC Coils                               | 0.9 Watts, approximately     |
| DUTY CYCLE              | Continuous                             |                              |
| INSULATION RESISTANCE   | 100 Meg ohms, minimum                  |                              |
| DIELECTRIC STRENGTH     | 2,000 VAC, 50/60 Hz. for 1 minute      |                              |
| CONTACT MATERIAL        | Silver cadmium oxide                   |                              |
| CONTACT ARRANGEMENTS    | 4PDT; others available-consult factory |                              |
| OUTPUT RATINGS          | See Table 6                            |                              |
| AGENCY APPROVALS        | Consult factory                        |                              |
| WEIGHT                  | 2 oz.                                  |                              |

### OUTPUT CONTACT RATINGS (TABLE 6)

| Specifications                             | Resistive load (p.f. = 1) | Inductive load (p.f. = 0.4; L/R = 7msec) |
|--|---------------------------|--|
| Rated load                                 | 220 VAC 3A<br>24 VDC 3A   | 230 VAC 0.8A<br>24 VDC 1.5A              |
| Carry current                              | 3A                        |  |
| Max. operating voltage                     | 250 VAC 125 VDC           |  |
| Max. operating current                     | 3A                        |  |
| Max. switching capacity                    | 660VA<br>72W              | 176VA<br>36W                             |
| Minimum permissible load (reference value) | 1 VDC 1mA                 |  |

### COIL RATINGS (TABLE 5)

|    | Nominal Voltage | Rated current (mA) |       | Coil resistance (ohms) |
|----|-----------------|--------------------|-------|------------------------|
|    |                 | 50 Hz              | 60 Hz |                        |
| AC | 12              | 106.5              | 91    | 46                     |
|    | 24              | 53.8               | 46    | 180                    |
|    | 120             | 10.8               | 9.2   | 4,430                  |
|    | 240             | 5.4                | 4.6   | 18,790                 |
| DC | 12              | 75                 |       | 160                    |
|    | 24              | 36.9               |       | 650                    |
|    | 110             | 10                 |       | 11,000                 |

### SPECIFICATIONS

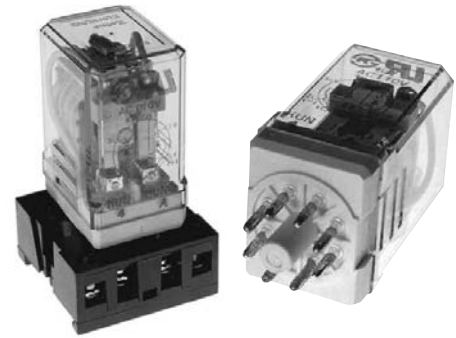
|                                    |                    |                          |
|------------------------------------|--------------------|--------------------------|
| MAX COIL OPERATING VOLTAGE         | 110%               |                          |
| MAX PICK-UP VOLTAGE                | 80%                |                          |
| MIN COIL DROP-OUT VOLTAGE          | AC                 | 30%                      |
|                                    | DC                 | 15%                      |
| CONTACT RATING (RESISTIVE)         | AC                 | 110V, 10A; 220V, 7.5A    |
|                                    | DC                 | 24V, 10A                 |
| CONTACT RATING (INDUCTIVE)         | AC                 | 110V, 7.5A; 220V, 5A     |
|                                    | DC                 | 24V, 7.5A                |
| CONTACT CARRY CURRENT              | 10A                |                          |
| MAX SWITCHING CAPACITY (RESISTIVE) | AC                 | 1650VA                   |
|                                    | DC                 | 240W                     |
| MAX SWITCHING CAPACITY (INDUCTIVE) | AC                 | 1100VA                   |
|                                    | DC                 | 225W                     |
| MAX SWITCHING CURRENT              | 10A                |                          |
| CONTACT RESISTANCE                 | .03 ohms           |                          |
| OPERATE TIME                       | 25mS               |                          |
| RELEASE TIME                       | 25mS               |                          |
| POWER CONSUMPTION                  | AC                 | 50 Hz, 3VA; 60 Hz, 2.5VA |
|                                    | DC                 | 1.5W                     |
| INSULATION RESISTANCE              | 100 M $\Omega$     |                          |
| DIELECTRIC STRENGTH                | 1500VAC, 50/60 Hz. |                          |
| OPERATING FREQUENCY                | 1800 Per Hour      |                          |
| TEMPERATURE RISE                   | Coil               | 85°C                     |
|                                    | Contact            | 65°C                     |
| VIBRATION RESISTANCE               | 6G                 |                          |
| SHOCK RESISTANCE                   | 10G                |                          |
| MECHANICAL LIFE                    | 5,000,000 Minimum  |                          |
| ELECTRICAL LIFE                    | 500,000 Minimum    |                          |
| WEIGHT                             | 3 oz.              |                          |

### COIL RATINGS

| RATED VOLTAGE (V) | RATED CURRENT (mA) $\pm 15\%$ AT 20°C |       | COIL RESISTANCE ( $\Omega$ ) $\pm 10\%$ AT 20°C |       |
|-------------------|---------------------------------------|-------|---|-------|
|                   | 50 Hz                                 | 60 Hz |   |       |
| AC                | 110                                   | 27    | 23  | 1,640 |
|                   | 220                                   | 13.3  | 11.5  | 6,800 |
| DC                | 12                                    | 120   |   | 100   |
|                   | 24                                    | 60    |   | 400   |

### ORDERING INFORMATION

| MODEL NUMBER    | UL RECOGNIZED | COIL VOLTAGE | CIRCUIT | TERMINATION | LED | SOCKET     |
|-----------------|---------------|--------------|---------|-------------|-----|------------|
| KH-102-2C-110   | yes           | 110Vac       | 2PDT    | 8-PIN       | No  | 600-3-0013 |
| KH-102-2CL-110  | no            | 110Vac       | 2PDT    | 8-PIN       | Yes | 600-3-0013 |
| KH-102-2C-220AC | yes           | 220Vac       | 2PDT    | 8-PIN       | No  | 600-3-0013 |
| KH-102-2C-12DC  | yes           | 12Vdc        | 2PDT    | 8-PIN       | No  | 600-3-0013 |
| KH-102-2CL-12DC | no            | 12Vdc        | 2PDT    | 8-PIN       | Yes | 600-3-0013 |
| KH-102-2C-24DC  | yes           | 24Vdc        | 2PDT    | 8-PIN       | No  | 600-3-0013 |
| KH-102-2CL-24DC | no            | 24Vdc        | 2PDT    | 8-PIN       | Yes | 600-3-0013 |
| KH-102-2C-24AC  | yes           | 24Vac        | 2PDT    | 8-PIN       | No  | 600-3-0013 |
| KH-102-2CL-24AC | no            | 24Vac        | 2PDT    | 8-PIN       | Yes | 600-3-0013 |

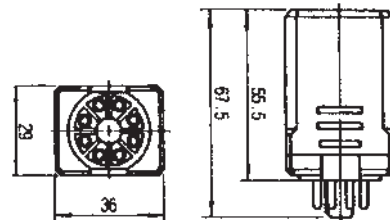


UL<sup>®</sup> US

Plug-In 10 AMP Relay

- 2PDT
- Low Power Consumption
- Wide Range of Operating Voltages
- Pin Termination
- LED Indicator Available

### DIMENSIONS (MILLIMETERS)





## 30 Amp. Heavy Duty Relay

- Molded Dust Cover Standard
- Power Switching
  - 110 VAC — 30A
  - 220 VAC — 25A
  - 440 VAC — 15A
- Rugged Industrial Construction
- Ideal for Motor Controls, Heater Loads, etc.
- Heavy Duty Screw Terminals
- Base Mounting

### COIL RATINGS

| RATED VOLTAGE (V) | RATED CURRENT (mA) ±15% AT 20°C |       | COIL RESISTANCE (Ω) ±10% AT 20°C |       |
|-------------------|---------------------------------|-------|----------------------------------|-------|
|                   | 50 Hz                           | 60 Hz |                                  |       |
| AC                | 12                              | 1000  | 820                              | 3     |
|                   | 24                              | 500   | 410                              | 11    |
|                   | 110                             | 116   | 96                               | 163   |
|                   | 220                             | 58    | 48                               | 670   |
| DC                | 12                              | 210   |                                  | 53    |
|                   | 24                              | 105   |                                  | 212   |
|                   | 48                              | 50    |                                  | 898   |
|                   | 110                             | 26.5  |                                  | 3,910 |

### ORDERING INFORMATION

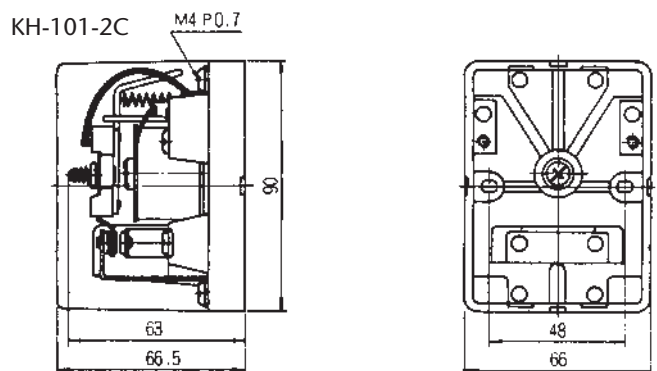
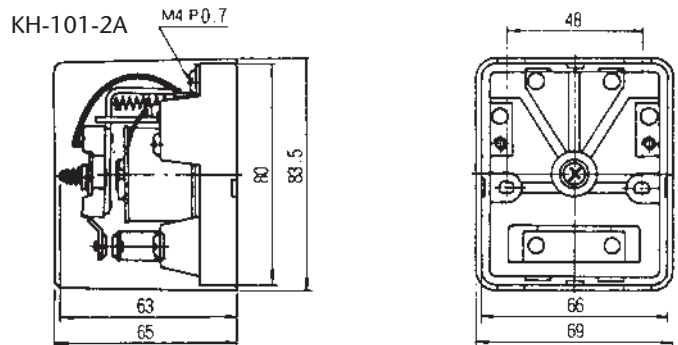
| MODEL NUMBER    | OPERATING VOLTAGE | CIRCUIT |
|-----------------|-------------------|---------|
| KH-101-2C-12 DC | 12 Vdc            | 2PDT    |
| KH-101-2A-24 AC | 24 Vac            | 2PST    |
| KH-101-2C-24 AC | 24 Vac            | 2PDT    |
| KH-101-2A-110   | 110 VDC           | 2PST    |
| KH-101-2C-110   | 110 Vac           | 2PDT    |
| KH-101-2A-220   | 220 Vac           | 2PST    |
| KH-101-2C-220   | 220 Vac           | 2PDT    |

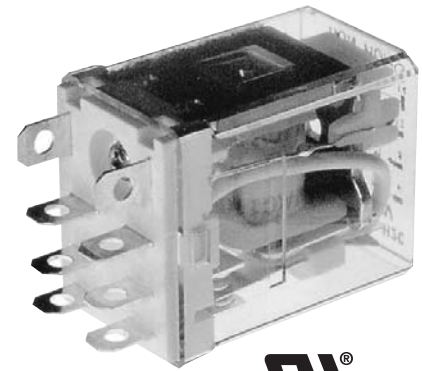
\*Other Operating Voltages Available, Consult Factory.

### SPECIFICATIONS

|                            |                   |                      |
|----------------------------|-------------------|----------------------|
| MAX COIL OPERATING VOLTAGE | 110%              |                      |
| MAX PICK-UP VOLTAGE        | 80%               |                      |
| MIN COIL DROP-OUT VOLTAGE  | AC                | 60Hz, 30%; 50Hz, 25% |
|                            | DC                | 10%                  |
| CONTACT RATING (RESISTIVE) | AC                | 110V, 30A            |
|                            | DC                | 24V, 15A             |
| CONTACT RATING (INDUCTIVE) | AC                | 110V, 20A            |
|                            | DC                | 24V, 7.5A            |
| CONTACT CARRY CURRENT      | 30A               |                      |
| MAX SWITCHING VOLTAGE      | AC                | 500V                 |
|                            | DC                | 250V                 |
| MAX SWITCHING CURRENT      | 30A               |                      |
| CONTACT RESISTANCE         | 50Ω               |                      |
| OPERATE TIME               | 50ms              |                      |
| RELEASE TIME               | 50ms              |                      |
| POWER CONSUMPTION          | Start-Up          | 14VA                 |
|                            | AC                | 9.6VA (60Hz)         |
|                            | DC                | 2.5VA                |
| INSULATION RESISTANCE      | 100 M             |                      |
| DIELECTRIC STRENGTH        | 2000Vac, 50/60 Hz |                      |
| OPERATING FREQUENCY        | 1800 Per Hour     |                      |
| OPERATING TEMPERATURE      | -5°C to 40°C      |                      |
| VIBRATION RESISTANCE       | 10G               |                      |
| SHOCK RESISTANCE           | 80G               |                      |
| MECHANICAL LIFE            | 5,000,000 Minimum |                      |
| ELECTRICAL LIFE            | 200,000 Minimum   |                      |
| WEIGHT                     | 12 oz.            |                      |

### DIMENSIONS (MILLIMETERS)





CALUS

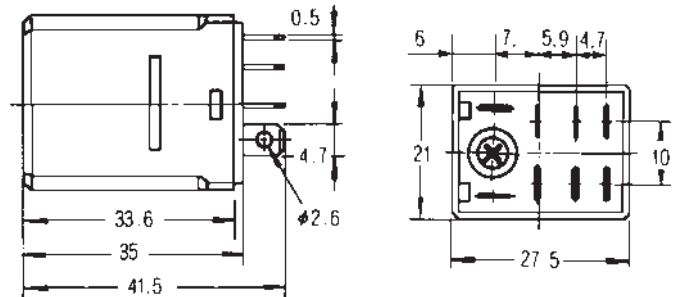
10A Miniature Power Relay

### SPECIFICATIONS

|                                    |                    |                           |
|------------------------------------|--------------------|---------------------------|
| MAX COIL OPERATING VOLTAGE         | 110%               |                           |
| MAX PICK-UP VOLTAGE                | 80%                |                           |
| MIN COIL DROP-OUT VOLTAGE          | AC                 | 30%                       |
|                                    | DC                 | 15%                       |
| CONTACT RATING (RESISTIVE)         | 5A: 2P, 3A: 4P     |                           |
| CONTACT RATING (INDUCTIVE)         | 2A                 |                           |
| CONTACT CARRY CURRENT              | 5A: 2P, 3A: 4P     |                           |
| MAX SWITCHING CAPACITY (RESISTIVE) | AC                 | 1100VA-2P, 660VA-2P       |
|                                    | DC                 | 120W-2P, 72W-4P           |
| MAX SWITCHING CAPACITY (INDUCTIVE) | AC                 | 440VA-2P, 176VA-4P        |
|                                    | DC                 | 48W - 2P, 24W - 4P        |
| MAX SWITCHING CURRENT              | 5A - 2P, 3A - 4P   |                           |
| CONTACT RESISTANCE                 | .03 Ω-2P, .05 Ω-4P |                           |
| OPERATE TIME                       | 20mS               |                           |
| RELEASE TIME                       | 20mS               |                           |
| POWER CONSUMPTION                  | AC                 | 50Hz, 1.4VA; 60 Hz, 1.2VA |
|                                    | DC                 | 0.9W                      |
| INSULATION RESISTANCE              | 100 M Ω            |                           |
| DIELECTRIC STRENGTH                | 1000 VAC 50/60 Hz. |                           |
| OPERATING FREQUENCY                | 1800 Per Hour      |                           |
| TEMPERATURE RISE                   | Coil               | 85°C                      |
|                                    | Contact            | 65°C                      |
| VIBRATION RESISTANCE               | 6G                 |                           |
| SHOCK RESISTANCE                   | 20G                |                           |
| MECHANICAL LIFE                    | 5,000,000 Minimum  |                           |
| ELECTRICAL LIFE                    | 500,000 Minimum    |                           |
| WEIGHT                             | 1 oz.              |                           |

- Plug-In or Solder Termination
- LED Indicator Available
- Heavy Duty 10A Contacts
- Wide Range of Operating Voltage
- Low Power Consumption

### DIMENSIONS (MILLIMETERS)



### COIL RATINGS

| RATED VOLTAGE (V) | RATED CURRENT (mA) ±15% AT 20°C |       | COIL RESISTANCE (Ω) ±10% AT 20°C |        |
|-------------------|---------------------------------|-------|----------------------------------|--------|
|                   | 50 Hz                           | 60 Hz |                                  |        |
| AC                | 24                              | 59.7  | 50                               | 156.7  |
|                   | 110                             | 14.2  | 12                               | 3,390  |
|                   | 220                             | 7.1   | 6                                | 13,920 |
| DC                | 12                              | 75    |                                  | 160    |
|                   | 24                              | 36.9  |                                  | 650    |

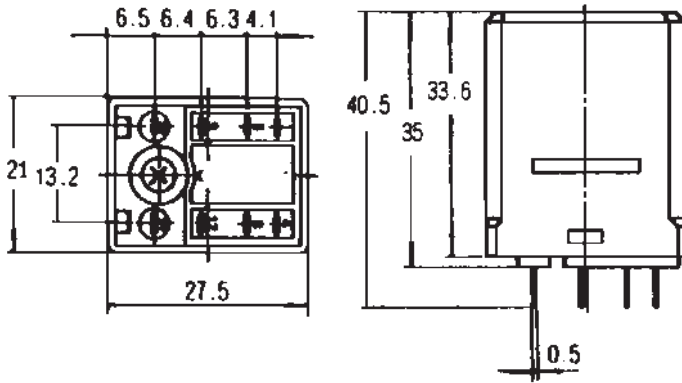
### ORDERING INFORMATION

| MODEL NUMBER     | UL RECOGNIZED | COIL VOLTAGE | TERMINATION    | LED | SOCKET     |
|------------------|---------------|--------------|----------------|-----|------------|
| KH-103-H2CL-24AC | Yes           | 24 VAC       | Plug-In/Solder | Yes | 600-3-0019 |
| KH-103-H2C-110   | No            | 110 VAC      | Plug-in/Solder | No  | 600-3-0019 |
| KH-103-H2CL-110  | Yes           | 110 VAC      | Plug-in/Solder | Yes | 600-3-0019 |
| KH-103-H2C-220AC | No            | 220 VAC      | Plug-in/Solder | No  | 600-3-0019 |
| KH-103-H2C-12DC  | No            | 12 VDC       | Plug-in/Solder | No  | 600-3-0019 |
| KH-103-H2CL12DC  | Yes           | 12 VDC       | Plug-in/Solder | Yes | 600-3-0019 |
| KH-103-H2C-24DC  | No            | 24 VDC       | Plug-in/Solder | No  | 600-3-0019 |
| KH-103-H2CL24DC  | Yes           | 24 VDC       | Plug-in/Solder | Yes | 600-3-0019 |



2PDT-5A Rated, 4PDT-3A Rated Miniature Relays

DIMENSIONS (MILLIMETERS)



SPECIFICATIONS

|                                    |                    |                             |
|------------------------------------|--------------------|-----------------------------|
| MAX COIL OPERATING VOLTAGE         | 110%               |                             |
| MAX PICK-UP VOLTAGE                | 80%                |                             |
| MIN COIL DROP-OUT VOLTAGE          | AC                 | 30%                         |
|                                    | DC                 | 15%                         |
| CONTACT RATING (RESISTIVE)         | 5A: 2P, 3A: 4P     |                             |
| CONTACT RATING (INDUCTIVE)         | 2A                 |                             |
| CONTACT CARRY CURRENT              | 5A: 2P, 3A: 4P     |                             |
| MAX SWITCHING CAPACITY (RESISTIVE) | AC                 | 1100VA-2P, 660VA-2P         |
|                                    | DC                 | 120W-2P, 72W-4P             |
| MAX SWITCHING CAPACITY (INDUCTIVE) | AC                 | 440VA-2P, 176VA-4P          |
|                                    | DC                 | 48W - 2P, 24W - 4P          |
| MAX SWITCHING CURRENT              | 5A - 2P, 3A - 4P   |                             |
| CONTACT RESISTANCE                 | .03 Ω-2P, .05 Ω-4P |                             |
| OPERATE TIME                       | 20mS               |                             |
| RELEASE TIME                       | 20mS               |                             |
| POWER CONSUMPTION                  | AC                 | 50 Hz, 1.4VA; 60 Hz, 1.2 VA |
|                                    | DC                 | 0.9 W                       |
| INSULATION RESISTANCE              | 100 M Ω            |                             |
| DIELECTRIC STRENGTH                | 1000 VAC 50/60 Hz. |                             |
| OPERATING FREQUENCY                | 1800 Per Hour      |                             |
| TEMPERATURE RISE                   | Coil               | 85°C                        |
|                                    | Contact            | 65°C                        |
| VIBRATION RESISTANCE               | 6G                 |                             |
| SHOCK RESISTANCE                   | 20G                |                             |
| MECHANICAL LIFE                    | 5,000,000 Minimum  |                             |
| ELECTRICAL LIFE                    | 500,000 Minimum    |                             |
| WEIGHT                             | 1 oz.              |                             |

COIL RATINGS

| RATED VOLTAGE (V) | RATED CURRENT (mA) ±15% AT 20°C |       | COIL RESISTANCE (Ω) ±10% AT 20°C |        |
|-------------------|---------------------------------|-------|----------------------------------|--------|
|                   | 50 Hz                           | 60 Hz |                                  |        |
| AC                | 24                              | 59.7  | 50                               | 156.7  |
|                   | 110                             | 14.2  | 12                               | 3,390  |
|                   | 220                             | 7.1   | 6                                | 13,920 |
| DC                | 12                              | 75    | 160                              | -      |
|                   | 24                              | 36.9  | 650                              | -      |

ORDERING INFORMATION

| MODEL NUMBER    | UL RECOGNIZED | CIRCUIT | COIL VOLTAGE | TERMINATION    | LED | SOCKET     |
|-----------------|---------------|---------|--------------|----------------|-----|------------|
| KH-103-2C-110   | Yes           | 2PDT    | 110 VAC      | Plug-in/Solder | No  | 600-3-0017 |
| KH-103-2CL-110  | No            | 2PDT    | 110 VAC      | Plug-in/Solder | Yes | 600-3-0017 |
| KH-103-2CP-110  | No            | 2PDT    | 110 VAC      | PIN (For PCB)  | No  | NA         |
| KH-103-2CPL-110 | No            | 2PDT    | 110 VAC      | PIN (For PCB)  | Yes | NA         |
| KH-103-2C-12DC  | Yes           | 2PDT    | 12 VDC       | Plug-in/Solder | No  | 600-3-0017 |
| KH-103-2CL-12DC | No            | 2PDT    | 12 VDC       | Plug-in/Solder | Yes | 600-3-0017 |
| KH-103-2CP-12DC | No            | 2PDT    | 12 VDC       | PIN (For PCB)  | No  | NA         |
| KH-103-2CPL12DC | No            | 2PDT    | 12 VDC       | PIN (For PCB)  | Yes | NA         |
| KH-103-4C-110   | Yes           | 4PDT    | 110 VAC      | Plug-in/Solder | No  | 600-3-0018 |
| KH-103-4CL-110  | No            | 4PDT    | 110 VAC      | Plug-in/Solder | Yes | 600-3-0018 |
| KH-103-4CP-110  | No            | 4PDT    | 110 VAC      | PIN (For PCB)  | No  | NA         |
| KH-103-4CPL-110 | No            | 4PDT    | 110 VAC      | PIN (For PCB)  | No  | NA         |
| KH-103-4C-12DC  | Yes           | 4PDT    | 12 VDC       | Plug-in/Solder | No  | 600-3-0018 |
| KH-103-4CL-12DC | No            | 4PDT    | 12 VDC       | Plug-in/Solder | Yes | 600-3-0018 |
| KH-103-4CP-12DC | No            | 4PDT    | 12 VDC       | PIN (For PCB)  | No  | NA         |
| KH-103-4CPL12DC | No            | 4PDT    | 12 VDC       | PIN (For PCB)  | Yes | NA         |

Miniature Relays // KH-102-2C/4C Series

**SPECIFICATIONS**

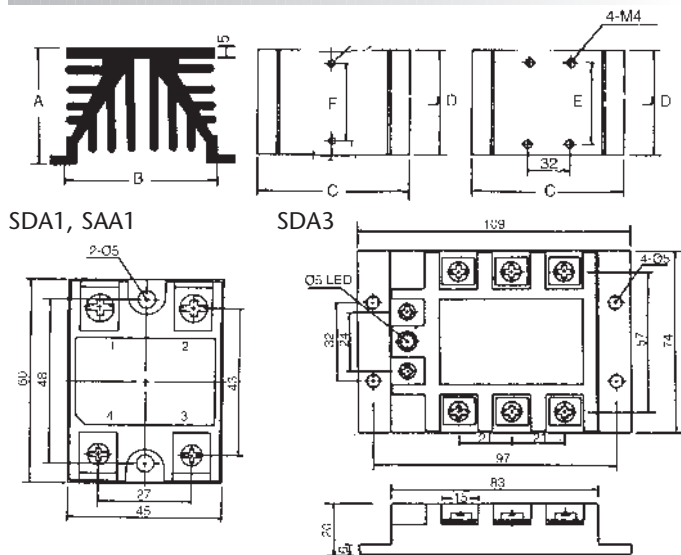
|                                |  |
|--------------------------------|--|
| INPUT VOLTAGE                  | DC Models (SDA) 4—32 VDC<br>AC Models (SAA) 85—240 VAC   |
| PICK UP VOLTAGE                | SDA Models, 4V Max<br>SAA Models, 85V Max.               |
| DROP OUT VOLTAGE               | SDA Models, 1V Min.<br>SAA Models, 40V Min.              |
| PEAK REPETITIVE OUTPUT VOLTAGE | 600 Vrms Max.  |
| OFF STATE LEAKAGE CURRENT      | 10mArms Max.   |
| ON STATE VOLTAGE DROP          | 1,5 Vrms Max.  |
| DIELECTRIC STRENGTH            | 2500 Vrms, 1 Min. (Input-Output-Case)                    |
| ISOLATION RESISTANCE           | 100 MΩ/DC 500 V (Input-Output-Case)                      |
| RESPONSE TIME                  | 1/2 Cycle + 1 mS Max.                                    |
| TEMPERATURE RATINGS            | Operate -20° to +80°C<br>Storage -30° to +100°C          |
| AGENCY APPROVALS               | SDA1 Models Only: Underwriters Lab's UR File No. E165828 |
| WEIGHT                         | 2 oz.  |



DC and AC Inputs — Solid-State Relay



**DIMENSIONS (MILLIMETERS)**



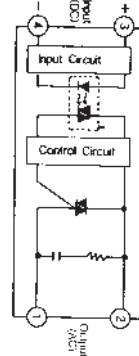
| Model        | A  | B  | C   | D   | E   | F   |
|--------------|----|----|-----|-----|-----|-----|
| NO118(1)-60  | 60 | 90 | 100 | 60  | N/A | 48  |
| NO118(2)-200 | 60 | 90 | 100 | 200 | 97  | N/A |

- 15, 25, 40A @ 50-240 VAC Outputs
- 4 to 32 VDC and 85 to 240 VAC Input
- LED Operation Indicator (SD Only)
- Compatible Heat Sinks

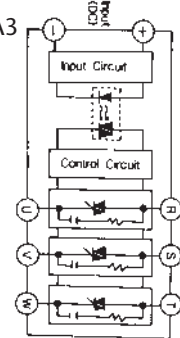
*HEAT SINK INFORMATION: To achieve the rated output current loads for all ATC solid-state relays, they must be mounted to a heat sink.*

**WIRING**

SDA1, SAA1



SDA3



**ORDERING INFORMATION**

| MODEL NUMBER  | UL RECOGNIZED | INPUT VOLTAGE                      | OUTPUT VOLTAGE | OUTPUT AMPS | PHASE  |
|---|---------------|------------------------------------|----------------|-------------|--------|
| SDA1-215Z   | Yes           | 4-32 VDC                           | 50-240 VAC     | 15          | Single |
| SDA1-225Z   | Yes           | 4-32 VDC                           | 50-240 VAC     | 25          | Single |
| SDA1-240Z   | Yes           | 4-32 VDC                           | 50-240 VAC     | 40          | Single |
| SAA1-215Z   | Yes           | 85-240 VAC                         | 50-240 VAC     | 15          | Single |
| SAA1-225Z   | No            | 85-240 VAC                         | 50-240 VAC     | 25          | Single |
| SAA1-240Z   | No            | 85-240 VAC                         | 50-240 VAC     | 40          | Single |
| SDA3-240Z   | No            | 4-15 VDC                           | 50-240 VAC     | 40          | Three  |
| SDA3-440Z   | No            | 4-15 VDC                           | 50-460 VAC     | 40          | Three  |
| NO118 (1)-60  | No            | Heat Sink for SDA1 and SAA1 Models |                |             |        |
| NO118 (2)-200   | Yes           | Heat Sink for SDA3 Models          |                |             |        |
| Other Relays and Heat Sinks Available, Consult Factory. |               |                                    |                |             |        |