

# POTTER & BRUMFIELD KHA SERIES PANEL PLUG-IN RELAY

GENERAL PURPOSE  
INDUSTRIAL RELAYS

## FEATURES

- Compact package
- Two and four pole form C contact arrangements
- Polycarbonate or nylon dust cover
- Various mounting configurations
- Indicator lamp and push-to-reset options available
- Various contact materials available for specific load requirements



## APPLICATIONS

- Industrial sewing/stitching machines
- Fitness
- Elevators
- Pumps
- Robotics
- Solar panels

## APPROVALS

- UL E22575
- CSA LR15734



Technical data of approved types on request

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## GENERAL PURPOSE INDUSTRIAL RELAYS

### CONTACT DATA

|                                           |                                                       |
|-------------------------------------------|-------------------------------------------------------|
| Contact arrangement                       | 2 form C (2CO),<br>4 form C (4CO)                     |
| Rated voltage                             | 240VAC                                                |
| Rated current                             | 1-5A                                                  |
| Contact material                          | Ag, AgCdO, Au-Ag-Ni,<br>Au overlay Ag, Au diffused Ag |
| Contact Style                             | Single contact or<br>bifurcated crossbar              |
| Min. recommended contact load             |                                                       |
| Ag (single contact)                       | 100mA, 12VDC                                          |
| AgCdO (single contact)                    | 300mA, 12VDC                                          |
| Au-AgNi (single contact)                  | 10mA, 12VDC                                           |
| Au overlay Ag<br>(bifurcated crossbar)    | Dry circuit                                           |
| Au diffused Ag (single<br>contact)        | 50mA, 12VDC                                           |
| Initial contact resistance                |                                                       |
| Ag, AdCdO                                 | 100mΩ                                                 |
| Au-AgNi, Au overlay Ag, Au<br>diffused Ag | 200mΩ                                                 |
| Frequency of operation                    | 360 ops./hour                                         |
| Operate/release time max.                 | 13/6ms                                                |

### CONTACT RATINGS

| Type                 | Load                                                                                                                                       | Cycles                  |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| UL 508               |                                                                                                                                            |                         |
| Ag                   | 5A, 120VAC, general purpose<br>2.5A, 240VAC, general purpose<br>1/10HP, 120/240VAC<br>180VA, 250VAC, pilot duty<br>42VA, 28VDC, pilot duty | -                       |
| AgCdO                | 5A, 240VAC, general purpose<br>5A, 28VDC, resistive<br>1/10HP, 120/240VAC<br>180VA, 250VAC, pilot duty<br>42VA, 28VDC, pilot duty          | -                       |
| Au-AgNi              | 2A, 120VAC, resistive                                                                                                                      | -                       |
| Au overlay Ag        | 1A, 120VAC<br>1A, 30VDC                                                                                                                    | -                       |
| Au diffused Ag       | 5A, 120VAC, general purpose<br>2.5A, 240VAC, general purpose<br>1/10HP, 120/240VAC<br>180VA, 250VAC, pilot duty<br>42VA, 28VDC, pilot duty | -                       |
| Mechanical endurance |                                                                                                                                            | 10x10 <sup>6</sup> ops. |

**Note:** The relay should only carry ≤15A continuously (all poles combined).

### COIL DATA

|                                     |                            |
|-------------------------------------|----------------------------|
| Coil voltage range                  | 5 to 240VDC<br>6 to 240VAC |
| Coil insulation system according UL | Class B                    |

### COIL VERSIONS, DC COIL

| Coil code | Rated voltage VDC | Operate voltage VDC                                        | Release coil resistance Ω±10% | Rated coil power mW |
|-----------|-------------------|------------------------------------------------------------|-------------------------------|---------------------|
| 5         | 5                 | 3.75                                                       | 32                            | 800                 |
| 6         | 6                 | 4.5                                                        | 40                            | 900                 |
| 12        | 12                | 9.0                                                        | 160                           | 900                 |
| 24        | 24                | 18.0                                                       | 650                           | 850                 |
| 48        | 48                | 36.0                                                       | 2600                          | 900                 |
| 110       | 110               | 82.5                                                       | 11000                         | 1100                |
|           | 220/240           | Use 110V relay with series dropping<br>5W resistor of 11KΩ |                               |                     |

All figures are given for coil without preenergization, at ambient temperature +23°C.

### COIL VERSIONS, AC COIL

| Coil code | Rated voltage VDC | Operate voltage VDC | Release coil resistance Ω±15% | Rated coil power VA |
|-----------|-------------------|---------------------|-------------------------------|---------------------|
| 6         | 6                 | 5.1                 | 10.5                          | 1.2                 |
| 12        | 12                | 10.2                | 43                            | 1.2                 |
| 24        | 24                | 20.4                | 160                           | 1.25                |
| 48        | 48                | 40.8                | 668                           | 1.2                 |
| 120       | 120               | 102.0               | 3900                          | 1.35                |
| 240       | 240               | 204.0               | 12000                         | 1.5                 |

All figures are given for coil without preenergization, at ambient temperature +23°C.

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## GENERAL PURPOSE INDUSTRIAL RELAYS

### INSULATION DATA

|                               |                       |
|-------------------------------|-----------------------|
| Initial dielectric strength   |                       |
| between open contacts         | 1000 V <sub>rms</sub> |
| between contact and coil      | 1500 V <sub>rms</sub> |
| between adjacent contacts     | 1500 V <sub>rms</sub> |
| between coil and frame        | 1500 V <sub>rms</sub> |
| Initial insulation resistance |                       |
| between insulated elements    | 100MΩ at 500VDC       |

### ACCESSORIES

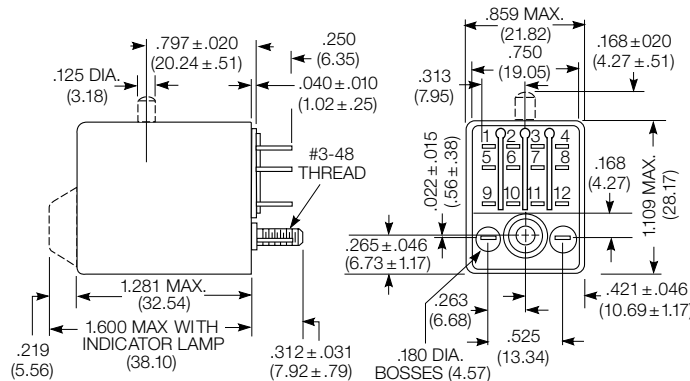
|                           |                                                     |
|---------------------------|-----------------------------------------------------|
| For details see datasheet | <a href="#">Sockets and Accessories, KHA Relays</a> |
|---------------------------|-----------------------------------------------------|

| Product code           | Description                                |
|------------------------|--------------------------------------------|
| <a href="#">27E894</a> | DIN socket (use 20C426 clip)               |
| <a href="#">27E166</a> | Panel/track mount socket (use 20C297 clip) |
| <a href="#">27E006</a> | Solder/grounding socket (use 20C217 clip)  |
| <a href="#">27E007</a> | PCB/grounding socket (use 20C217 clip)     |

**Note:** Relays with contact current <50mA are not recommended for use in sockets.

### DIMENSIONS (Unit:mm)

#### KHAU and KHAX types

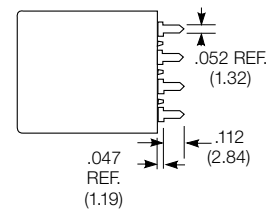


### OTHER DATA

|                                      |                                                                                                                                                                                                                    |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Material compliance                  | EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at <a href="http://www.te.com/customer-support/rohssupportcenter">www.te.com/customer-support/rohssupportcenter</a> |
| Ambient temperature range            | -45°C to 70°C                                                                                                                                                                                                      |
| Category of environmental protection |                                                                                                                                                                                                                    |
| IEC 61810                            | RTI - dust protected                                                                                                                                                                                               |
| Terminal type                        | Solder/plug-in .105" (2.67mm), pcb-tht .112" (2.84mm)                                                                                                                                                              |
| Weight                               | 45g                                                                                                                                                                                                                |
| Packaging/unit                       | tray/50 pcs., box/250pcs.                                                                                                                                                                                          |

### PCB TERMINALS

#### KHAE and KHAF types

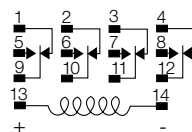
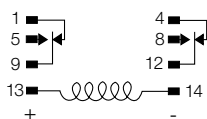


Printed circuit terminal thickness .022 (.558)

### TERMINAL ASSIGNMENT

2 form C

4 form C

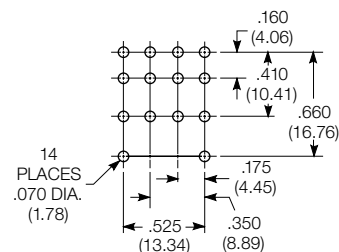


Polarity shown for LED indicator

### PCB LAYOUT

Bottom view on solder pins

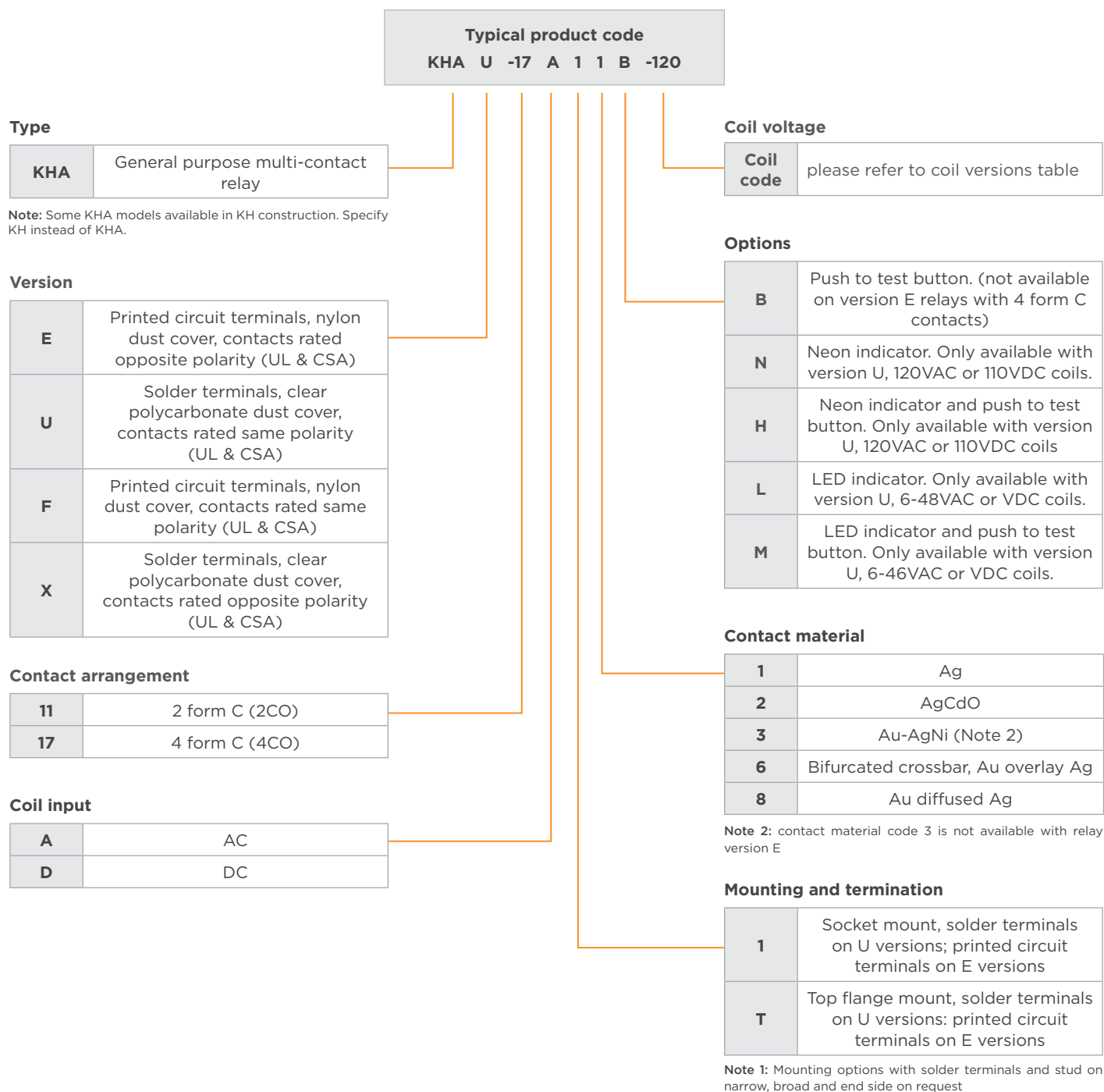
4 pole version



# POTTER & BRUMFIELD KHA SERIES PANEL PLUG-IN RELAY

## GENERAL PURPOSE INDUSTRIAL RELAYS

### PRODUCT CODE STRUCTURE



## PRODUCT INFORMATION

| Product code    | Arrangement       | Contact material             | Coil                        | Terminals      | Options                     | Part Number                 |
|-----------------|-------------------|------------------------------|-----------------------------|----------------|-----------------------------|-----------------------------|
| KHAU-11A11-120  | 2 form C,<br>2 CO | Ag                           | 120VAC                      | Solder/Plug-in | None                        | <a href="#">1-1393122-0</a> |
| KHAU-11D11-24   |                   |                              | 24VDC                       |                |                             | <a href="#">1-1393122-5</a> |
| KHAE-17D12-24   | 4 form C,<br>4 CO | AgCdO                        |                             | PCB            |                             | <a href="#">1393122-1</a>   |
| KHAU-17A11-12   |                   | Ag                           | 12VAC                       | Solder/Plug-in |                             | <a href="#">1-1393122-9</a> |
| KHAU-17A11-24   |                   |                              | 24VAC                       |                |                             | <a href="#">2-1393122-1</a> |
| KHAU-17A11-120  |                   |                              |                             |                |                             | <a href="#">2-1393122-0</a> |
| KHAU-17A11N-120 |                   | AgCdO                        | 120VAC                      | Solder         | Indicator                   | <a href="#">2-1393122-6</a> |
| KHAU-17A12-120  |                   |                              |                             |                | None                        | <a href="#">2-1393122-8</a> |
| KHAU-17A13-120  |                   | Au-Ag-Ni                     | <a href="#">3-1393122-6</a> |                |                             |                             |
| KHAU-17A16-24   |                   | Bifurcated,<br>Au overlay Ag | 24VAC                       |                |                             | <a href="#">3-1393122-8</a> |
| KHAU-17A16-120  |                   |                              | 120VAC                      |                |                             | <a href="#">3-1393122-7</a> |
| KHAU-17A18-120  |                   | Au diffused Ag               | <a href="#">3-1393122-9</a> |                |                             |                             |
| KHAU-17D11-6    |                   | Ag                           | 6VDC                        |                |                             | <a href="#">4-1393122-7</a> |
| KHAU-17D11-12   |                   |                              | 12VDC                       |                |                             | <a href="#">4-1393122-3</a> |
| KHAU-17D11-24   |                   |                              | 24VDC                       |                |                             | <a href="#">4-1393122-4</a> |
| KHAU-17D11-48   |                   |                              | 48VDC                       |                |                             | <a href="#">4-1393122-5</a> |
| KHAU-17D11-110  |                   |                              | 110VDC                      |                |                             | <a href="#">4-1393122-2</a> |
| KHAU-17D12-12   |                   | AgCdO                        | 12VDC                       |                |                             | <a href="#">5-1393122-5</a> |
| KHAU-17D12-24   |                   |                              | 24VDC                       |                |                             | <a href="#">5-1393122-7</a> |
| KHAU-17D12-48   |                   |                              | 48VDC                       |                |                             | <a href="#">5-1393122-8</a> |
| KHAU-17D12-110  |                   |                              | 110VDC                      |                |                             | <a href="#">5-1393122-4</a> |
| KHAU-17D16-12   |                   | Bifurcated, Au<br>overlay Ag | 12VDC                       |                |                             | <a href="#">7-1393122-0</a> |
| KHAU-17D16-24   |                   |                              | 24VDC                       |                |                             | <a href="#">7-1393122-1</a> |
| KHU-17A11N-120  |                   | Ag                           | 120VAC                      |                | Indicator, Old<br>Const.    | <a href="#">2-1393123-8</a> |
| KHU-17D11-12    |                   |                              | 12VDC                       |                |                             | Old<br>Construction         |
| KHU-17D12-24    |                   | AgCdO                        | 24VDC                       |                | <a href="#">4-1393123-8</a> |                             |

### Notes:

- Datasheets and product specification according to IEC 61810-1 and to be used only together with the 'Definitions' section.
- Datasheets and product data is subject to the terms of the disclaimer and all chapters of the 'Definitions' section, available at <http://relays.te.com/definitions>.
- Datasheets, product data, 'Definitions' section, application notes and all specifications are subject to change.

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