

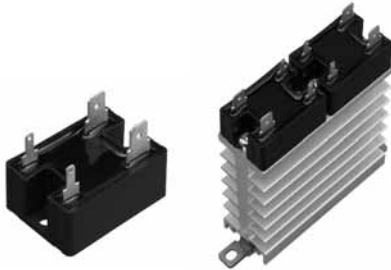


UL (60950-1) reinforced insulation compliant  

**Load current 10 to 25 A  
Small Tab Terminal SSR**

# AQ-J RELAYS



Slim heat sink combined type

**RoHS compliant**

### FEATURES

- 1. Compact Size**  
W 28 × L 38 × H 30 mm  
W 1.102 × L 1.496 × H 1.181 inch
- 2. Built-in varistor**
- 3. Reverse input connection prevention function**
- 4. Labor Saving (tab terminal)**
- 5. Heat sink combined types ready to mount on DIN rail added (Radiating grease and screws assembly process not needed)**
- 6. Output arrangement 1 Form A and 1 Form A × 2 available in the heat sink combined type**

Note: \* International standards are acquired for AQ-J SSR stand-alone, not applied to heat sink combined type.

### TYPICAL APPLICATIONS

- 1. Kitchen appliances**
- 2. Vending machine**
- 3. Injection molding machine**
- 4. Packing machine**
- 5. Amusement machine**

## ORDERING INFORMATION

AQJ

Output type  
1: 10 A, 75 to 264 Vrms  
2: 15 A, 75 to 264 Vrms  
4: 25 A, 75 to 264 Vrms

Terminal, Type  
1: Tab terminal, Zero-cross  
2: Tab terminal, Random\*

Control voltage  
2: 4 to 6 V DC  
6: 18 to 28 V DC  
9: 10 to 18 V DC

Functions  
V: Built-in varistor

Slim heat sink combined type  
None: Without a heat sink  
Y: 1 Form A type  
W: 1 Form A × 2 type

Note: \* Random type is available by custom order.

## TYPES

### 1. AQ-J Solid State Relays

| Type        | Load current | Load voltage   | Control voltage | Part No. |
|-------------|--------------|----------------|-----------------|----------|
| Zero-cross* | 10 A         | 75 to 264 Vrms | 4 to 6V DC      | AQJ112V  |
|             |              |                | 10 to 18V DC    | AQJ119V  |
|             |              |                | 18 to 28V DC    | AQJ116V  |
|             | 15 A         |                | 4 to 6V DC      | AQJ212V  |
|             |              |                | 10 to 18V DC    | AQJ219V  |
|             |              |                | 18 to 28V DC    | AQJ216V  |
|             | 25 A         |                | 4 to 6V DC      | AQJ412V  |
|             |              |                | 10 to 18V DC    | AQJ419V  |
|             |              |                | 18 to 28V DC    | AQJ416V  |

Standard Packing: carton: 10 pcs., case: 200 pcs.

Note: Random type also available. Please contact our sales office.

**2. AQ-J Slim Heat Sink Combined Type**

| Output configuration | Type        | Load current           | Load voltage   | Control voltage | Part No.      |          |
|----------------------|-------------|------------------------|----------------|-----------------|---------------|----------|
| 1 Form A             | Zero-cross* | 10 A                   | 75 to 264 Vrms | 4 to 6 V DC     | AQJ112VY      |          |
|                      |             |                        |                | 10 to 18 V DC   | AQJ119VY      |          |
|                      |             |                        |                | 18 to 28 V DC   | AQJ116VY      |          |
|                      |             | 20 A                   |                | 4 to 6 V DC     | AQJ412VY      |          |
|                      |             |                        |                | 10 to 18 V DC   | AQJ419VY      |          |
|                      |             |                        |                | 18 to 28 V DC   | AQJ416VY      |          |
| 1 Form A × 2         |             | 10 A<br>(per 1 Form A) |                |                 | 4 to 6 V DC   | AQJ112VW |
|                      |             |                        |                |                 | 10 to 18 V DC | AQJ119VW |
|                      |             |                        |                |                 | 18 to 28 V DC | AQJ116VW |
|                      |             | 15 A<br>(per 1 Form A) |                |                 | 4 to 6 V DC   | AQJ412VW |
|                      |             |                        |                |                 | 10 to 18 V DC | AQJ419VW |
|                      |             |                        |                |                 | 18 to 28 V DC | AQJ416VW |

Standard Packing; no carton, case: 10 pcs.

Note: \* Random type also available. Please contact our sales office.

**3. Accessories**

| Type  | Part No.     | Packaged quantity            |
|---|--------------|------------------------------|
| Slim heat sink (28 mm wide) (Mountable on a DIN rail) | AQP-HS-SJ10A | No carton, 10 in a case      |
| Slim heat sink (45 mm wide) (Mountable on a DIN rail) | AQP-HS-SJ20A | No carton, 8 in a case       |
| Standard heat sink (10 A and 15 A)                    | AQP-HS-J10A  | 5 in a carton, 20 in a case  |
| Standard heat sink (25 A only)                        | AQP-HS-J25A  | No carton, 5 in a case       |
| DIN rail mounting plate                               | AQP-DPJ      | No carton, 50 in a case      |
| Mounting rail   | AT8-DLA1     | 1 in a carton, 100 in a case |
| Fastening plate                                       | AT8-DLE      | 1 in a carton, 200 in a case |

**RATING**

**1. Ratings (Test sample: AQ-J stand-alone, Measurement condition: at 20°C 68°F, input ripple: 1% or less)**

| Item        | Part No.                     | AQJ112V<br>AQJ212V<br>AQJ412V | AQJ119V<br>AQJ219V<br>AQJ419V | AQJ116V<br>AQJ216V<br>AQJ416V | Remarks               |
|-------------|------------------------------|-------------------------------|-------------------------------|-------------------------------|-----------------------|
| Input side  | Rated voltage                | 5 V DC                        | 12 V DC                       | 24 V DC                       | *1                    |
|             | Control voltage              | 4 to 6 V DC                   | 10 to 18 V DC                 | 18 to 28 V DC                 |                       |
|             | Input impedance              | Approx. 0.26 kΩ               | Approx. 0.8 kΩ                | Approx. 1.6 kΩ                |                       |
|             | Drop-out voltage             | Min. 1 V DC                   |                               |                               |                       |
| Output side | Max. load current            | 10 A*2                        | 15 A*2                        | 25 A*2                        |                       |
|             | Load voltage                 | 75 to 264 Vrms                |                               |                               |                       |
|             | Frequency                    | 45 to 65 Hz                   |                               |                               |                       |
|             | Non-repetitive surge current | 100 A*3                       | 150 A*3                       | 250 A*3                       | In one cycle at 60 Hz |
|             | "OFF-state" leakage current  | Max. 5 mA                     |                               |                               |                       |
|             | "ON-state" voltage drop      | Max. 1.6 V                    |                               |                               |                       |
|             | Min. load current*4          | 50 mA                         |                               |                               |                       |

Notes: \*1. Refer to REFERENCE DATA "3. Input current vs. input voltage characteristics".

\*2. Refer to REFERENCE DATA "1. Load current vs. ambient temperature".

\*3. Refer to REFERENCE DATA "2. Non-repetitive surge current vs. carrying time".

\*4. When the load current is less than the rated minimum load current, please refer to "Cautions for Use of Solid State Relays".

**2. Ratings (AQ-J slim heat sink combined type, Measurement condition: at 20°C 68°F, input ripple: 1 % or less)**

| Item                | Part No.                     | AQJ112V(Y-W)<br>AQJ412V(Y-W) | AQJ119V(Y-W)<br>AQJ419V(Y-W) | AQJ116V(Y-W)<br>AQJ416V(Y-W) | AQJ412VW<br>AQJ419VW<br>AQJ416VW | Remarks               |
|---------------------|------------------------------|------------------------------|------------------------------|------------------------------|----------------------------------|-----------------------|
| Input side          | Rated voltage                | 5 V DC                       | 12 V DC                      | 24 V DC                      |                                  | *1                    |
|                     | Control voltage              | 4 to 6 V DC                  | 10 to 18 V DC                | 18 to 28 V DC                |                                  |                       |
|                     | Input impedance              | Approx. 0.26 kΩ              | Approx. 0.8 kΩ               | Approx. 1.6 kΩ               |                                  |                       |
|                     | Drop-out voltage             | Min. 1 V DC                  |                              |                              |                                  |                       |
| Output side         | Output arrangement           | 1 Form A                     |                              | 1 Form A × 2                 |                                  |                       |
|                     | Max. load current            | 10 A*2                       | 20 A*2                       | 10 A*2                       | 15 A*2                           |                       |
|                     | Load voltage                 | 75 to 264 Vrms               |                              |                              |                                  |                       |
|                     | Frequency                    | 45 to 65 Hz                  |                              |                              |                                  |                       |
|                     | Non-repetitive surge current | 100 A*3                      | 250 A*3                      | 100 A*3                      | 250 A*3                          | In one cycle at 60 Hz |
|                     | "OFF-state" leakage current  | Max. 5 mA                    |                              |                              |                                  |                       |
|                     | "ON-state" voltage drop      | Max. 1.6 V                   |                              |                              |                                  |                       |
| Min. load current*4 | 50 mA                        |                              |                              |                              |                                  |                       |

Notes: \*1. Refer to REFERENCE DATA "3. Input current vs. input voltage characteristics".

\*2. Refer to REFERENCE DATA "1. Load current vs. ambient temperature".

\*3. Refer to REFERENCE DATA "2. Non-repetitive surge current vs. carrying time".

\*4. When the load current is less than the rated minimum load current, please refer to "Cautions for Use of Solid State Relays".

**3. Characteristics (Measurement condition: at 20°C 68°F, input ripple: 1% or less)**

| Item                  | Characteristics  | Remarks                            |
|-----------------------|--|------------------------------------|
| Operate time          | Max. 1/2 cycle of voltage sine wave + 1 ms   |                                    |
| Release time          | Max. 1/2 cycle of voltage sine wave + 1 ms   |                                    |
| Insulation resistance | Min. 100 MΩ between input, output and case   | at 500 V DC                        |
| Breakdown voltage     | 3,000 Vrms between input and output<br>2,500 Vrms between input, output and case   | for 1 minute                       |
| Vibration resistance  | SSR stand-alone: 10 to 55 Hz, double amplitude of 1.5 mm<br>Slim heat sink combined type: 10 to 55 Hz, double amplitude of 0.75 mm | X, Y, Z axes                       |
| Shock resistance      | SSR stand-alone: Min. 980 m/s <sup>2</sup><br>Slim heat sink combined type: Min. 197 m/s <sup>2</sup>                              | X, Y, Z axes                       |
| Ambient temperature   | -30 to +80°C -22 to +176°F   | Non-condensing at low temperatures |
| Storage temperature   | -30 to +100°C -22 to +212°F  | Non-condensing at low temperatures |
| Operational method    | Zero-cross (Turn ON and Turn OFF)  |                                    |

**REFERENCE DATA**

**(1) AQ-J Solid State Relays**

**1. Load current vs. ambient temperature**

Tested condition:

- If attached to a heat sink, use a heat conductive compound (Ex. Momentive Performance Materials Inc. YG6111 or TSK5303) of similar coating to improve cooling
- Without external heat sink  
If the mounting surface is not metallic and a heat sink is not used, expose the bottom surface and plate surface to improve heat dissipation.

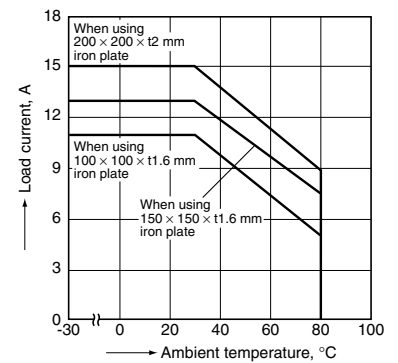
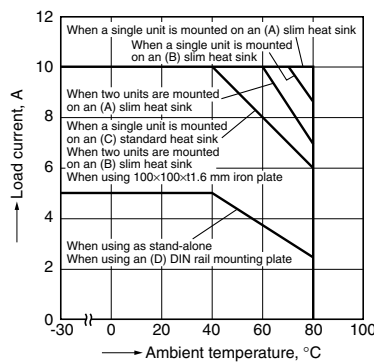
3) The current value is per 1a.

|                             |              |
|-----------------------------|--------------|
| (A) slim heat sink          | AQP-HS-SJ20A |
| (B) slim heat sink          | AQP-HS-SJ10A |
| (C) standard heat sink      | AQP-HS-J10A  |
| (D) DIN rail mounting plate | AQP-DPJ      |
| (E) standard heat sink      | AQP-HS-J25A  |

Use load current within range specified in the figure below

(1) 10 A type (when using heat sink or iron plate)

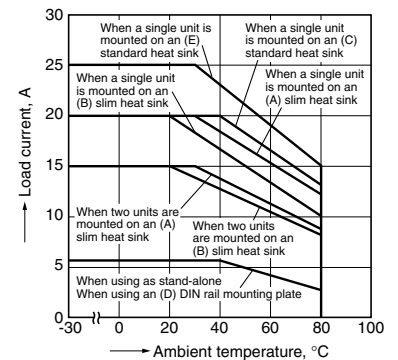
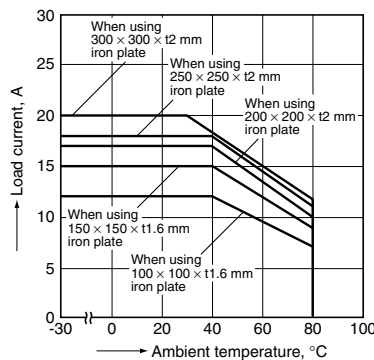
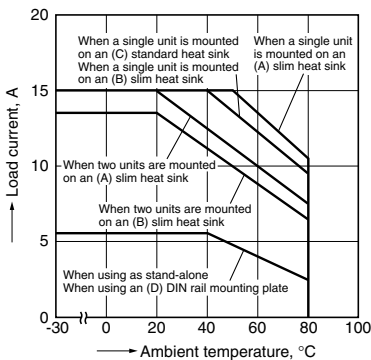
(2)-1. 15 A type (when using iron plate)



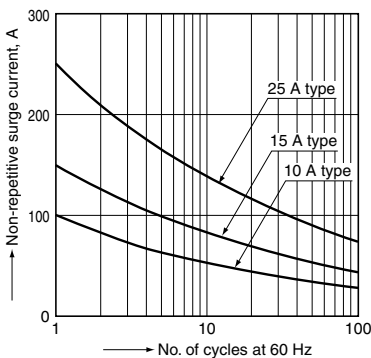
(2)-2. 15 A type (when using a heat sink)

(3)-1. 25 A type (when using iron plate)

(3)-2. 25 A type (when using a heat sink)

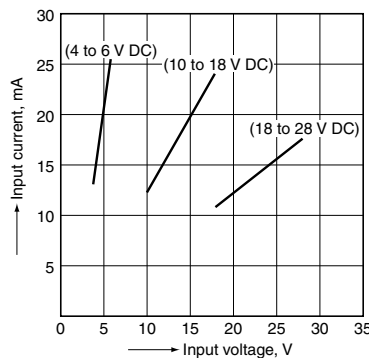


**2. Non-repetitive surge current vs. carrying time\***



**3. Input current vs. input voltage characteristics**

(10 A, 15 A and 25 A common)

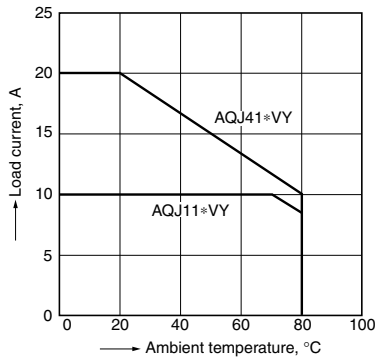


Note: \* The above chart shows non-repetitive maximum rating. If a surge current is applied repeatedly, please keep it approximately 50% or less than the values shown in the above graph.

**(2) AQ-J Slim Heat Sink Combined Type**

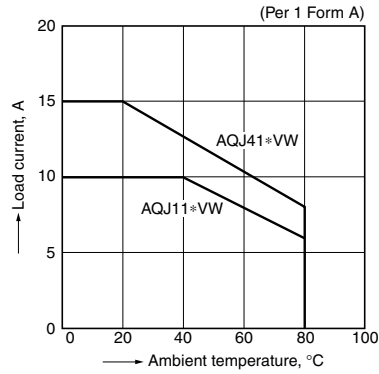
**1. Load current vs. ambient temperature characteristics**

(1) Output arrangement: 1 Form A



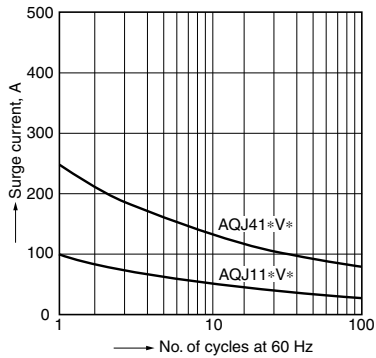
Use load current within range specified in the figure below

(2) Output arrangement: 1 Form A × 2

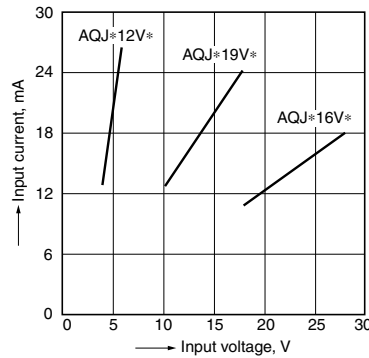


Note:  
When two contacts are operated simultaneously.  
In the case of a single-contact operation, the rating of  
(1) AQJ11\*VY, AQJ41\*VY applies.

**2. Surge current vs. carrying time characteristics\***



**3. Input current vs. input voltage characteristics**



Note: \* The above chart shows non-repetitive maximum rating. If a surge current is applied repeatedly, please keep it approximately 50% or less than the values shown in the above graph.

# DIMENSIONS (mm inch)

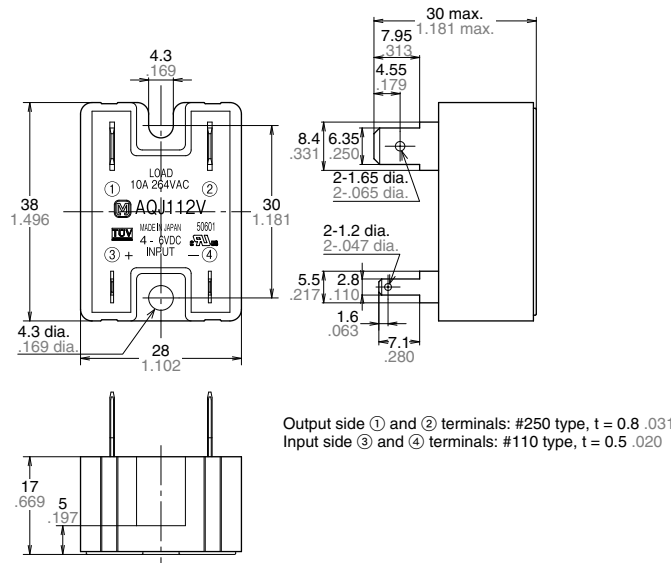
The CAD data of the products with a **CAD** mark can be downloaded from: <https://industrial.panasonic.com/ac/e/>

## 1. AQ-J Stand Alone

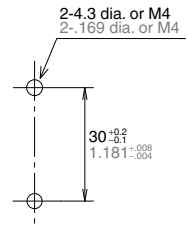
**CAD**



### External dimensions



### Mounting dimensions



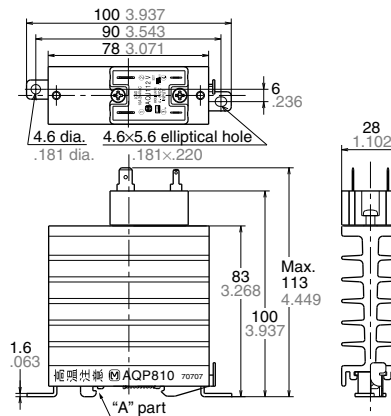
General tolerance:  $\pm 1.0 \pm .039$

## 2.-(1) AQ-J Slim Heat Sink Combined Type Output Arrangement: 1 Form A

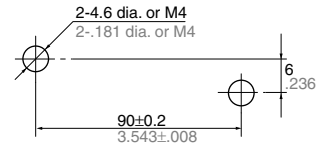
**CAD**



### External dimensions



### Mounting dimensions (Top view)



Note: When using on a DIN rail, please install so that the "A" part is on top.

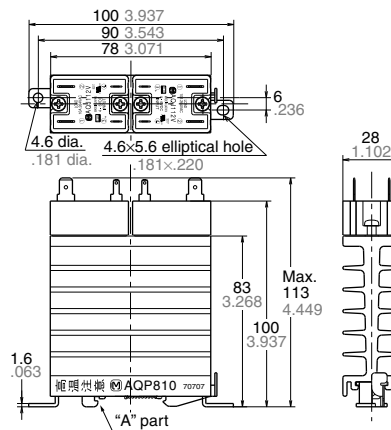
General tolerance:  $\pm 1.0 \pm .039$

## 2.-(2) AQ-J Slim Heat Sink Combined Type Output Arrangement: 1 Form A × 2

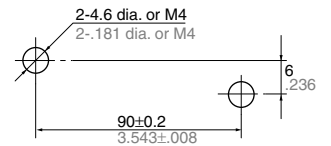
**CAD**



### External dimensions



### Mounting dimensions (Top view)



Note: When using on a DIN rail, please install so that the "A" part is on top.

General tolerance:  $\pm 1.0 \pm .039$

**ACCESSORIES** (mm inch)

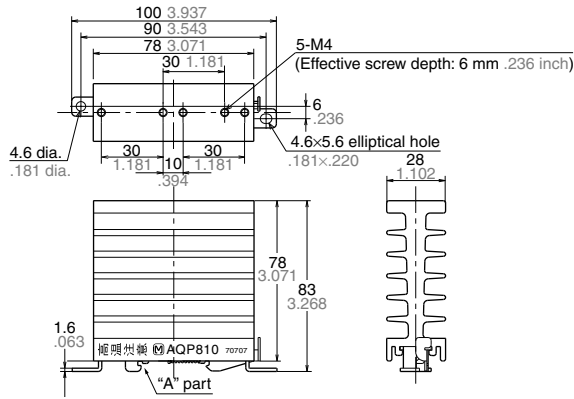
**AQP-HS-SJ10A Slim Heat Sink**

**CAD**

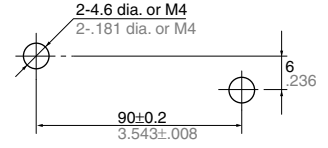


Note: When using on a DIN rail, please install so that the "A" part is on top.

External dimensions



Mounting dimensions (Top view)



General tolerance:  $\pm 1.0 \pm .039$

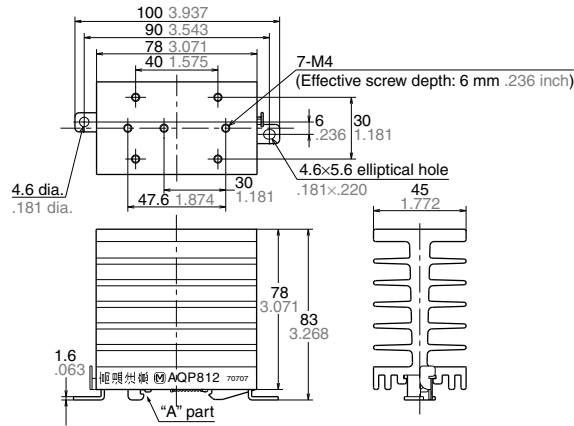
**AQP-HS-SJ20A Slim Heat Sink**

**CAD**

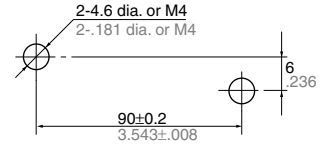


Note: When using on a DIN rail, please install so that the "A" part is on top.

External dimensions



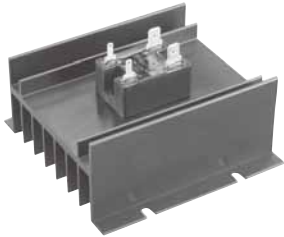
Mounting dimensions (Top view)



General tolerance:  $\pm 1.0 \pm .039$

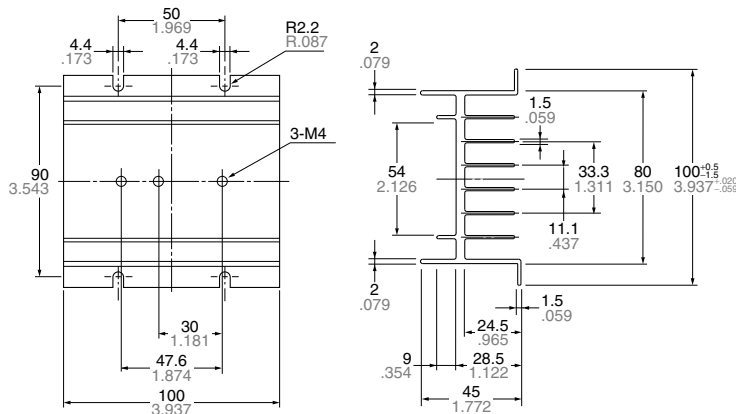
**AQP-HS-J10A Standard Heat Sink (for 10 A and 15 A types)**

**CAD**

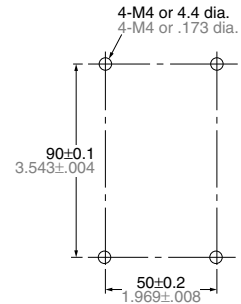


Note: When using on a DIN rail, please install so that the "A" part is on top.

External dimensions



Mounting dimensions



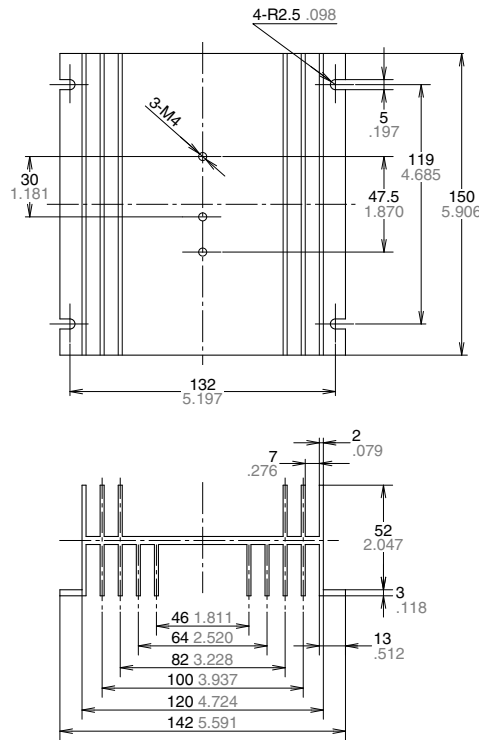
General tolerance:  $\pm 1.0 \pm .039$

**AQP-HS-J25A Standard Heat Sink  
(for 25 A type)**

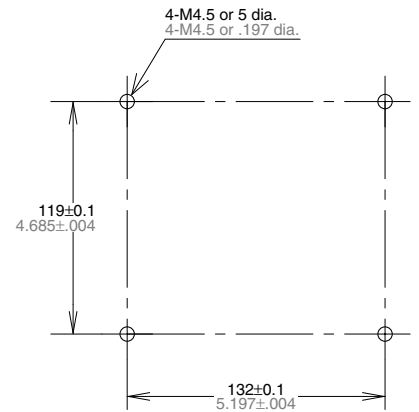
**CAD**



External dimensions



Mounting dimensions



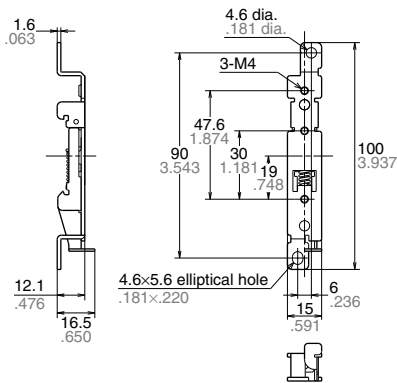
General tolerance:  $\pm 1.0 \pm .039$

**AQP-DPJ DIN Rail Mounting Plate**

**CAD**



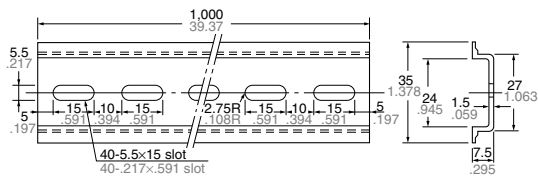
External dimensions



General tolerance:  $\pm 1.0 \pm .039$

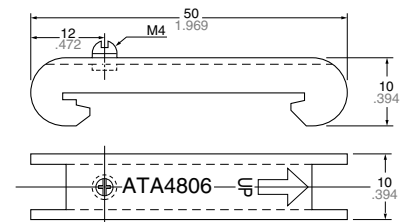
**AT8-DLA1 Mounting rail**

**CAD**

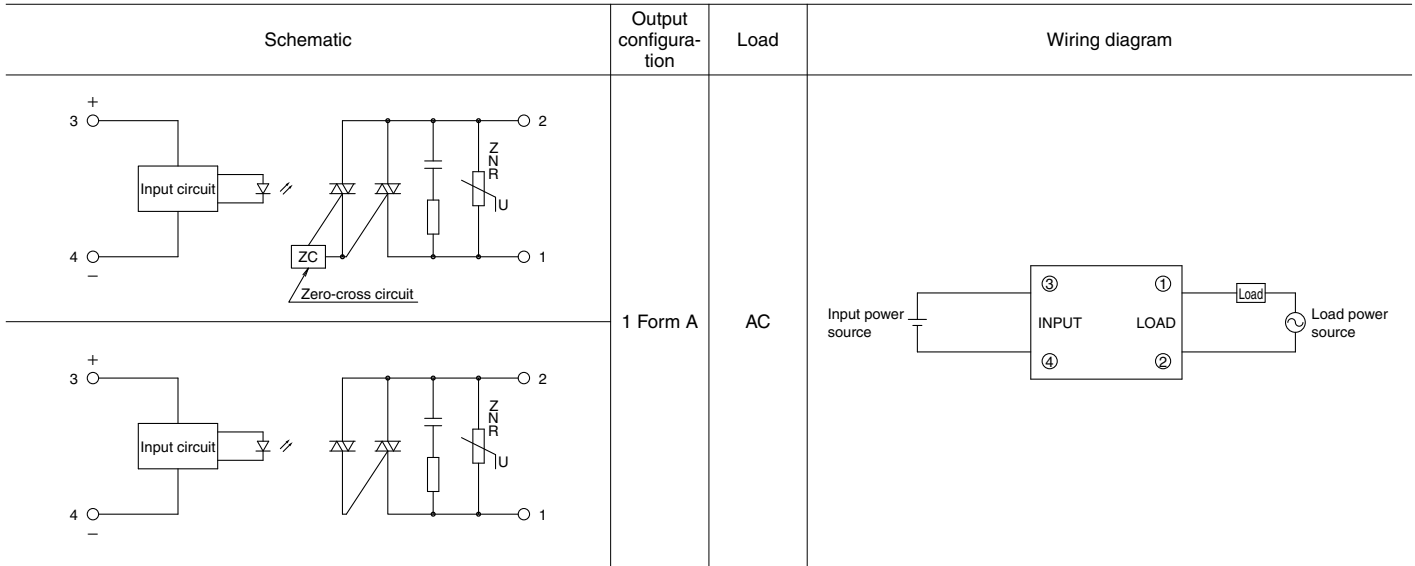


**AT8-DLE Fastening plate**

**CAD**



# SCHEMATIC AND WIRING DIAGRAMS



## NOTES

### 1. Part number indication

The AQ-J slim heat sink combined type is a product combining the AQ-J SSR and AQ-J SSR heat sinks. The part numbers are indicated on each AQ-J SSR and heat sink.

Ex) In the case of AQJ112VY

Part number of AQ-J SSR: AQJ112V

Part number of the heat sink: AQP810\*

When using these parts, please refer to REFERENCE DATA, "1. Load current vs. ambient temperature".

Note: \* The Japanese part number is printed on the following accessories in stead of Global part number. Please refer to the below chart for interpretation from Japanese to Global part number.

| Products                                    | Japanese Part No. | Global Part No. | Compatible models |
|---|-------------------|-----------------|-------------------|
| Slim heat sink (28 mm)                      | AQP810            | AQP-HS-SJ10A    | AQ-J              |
| Slim heat sink (45 mm)                      | AQP812            | AQP-HS-SJ20A    | AQ-A, AQ-J        |
| Standard heat sink (10 A and 15 A)          | AQP811            | AQP-HS-J10A     | AQ-A, AQ-J        |
| Standard heat sink (25 A and 40 A)          | AQP808            | AQP-HS-J25A     | AQ-A, AQ-J        |
| Standard heat sink (AQ-A 25 A)              | AQP804            | AQP-HS-30/40A   | AQ-A              |
| DIN Rail Mounting Plate (for AQ-A and AQ-J) | AQP809            | AQP-DPJ         | AQ-A, AQ-J        |
| Mounting Rail                               | ATA48011          | AT8-DLA1        | AQ-A, AQ-J        |
| Terminal Cover (for AQ-A)                   | AQA801            | AQA801          | AQ-A              |

## Recommended Temperature Controllers



### <KT4H Temperature Controller>

Our temperature controller is recommended for use with our Solid State Relays.

#### Features

- Space saving requiring only a depth of 65 mm
- Data collection possible through a PLC using RS485 communication
- Tool port is standard for easy data setting
- Inverted LCD + backlight for good legibility with large characters
- Excellent operability and rich optional control functions

#### Substitute part numbers

| Power supply    | Control output             | Part No.    |
|-----------------|----------------------------|-------------|
| 100 to 240 Vrms | Non-contact voltage output | AKT4H112100 |

\* For detailed product information about temperature controllers, please refer to our website: <https://industrial.panasonic.com/ac/e/>



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Please contact .....

**Panasonic Corporation**

Electromechanical Control Business Division

■ 1006, Oaza Kadoma, Kadoma-shi, Osaka 571-8506, Japan  
[industrial.panasonic.com/ac/e/](http://industrial.panasonic.com/ac/e/)

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# Mouser Electronics

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## Panasonic:

[AQJ212V](#) [AQJ216V](#) [AQJ219V](#) [AQJ412V](#) [AQJ416V](#) [AQJ419V](#) [AQJ112V](#) [AQJ116V](#) [AQJ119V](#) [AQJ422V](#)  
[AQJ119VY](#)

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- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)