



## AQ-K SOLID STATE RELAY

# AQ-K RELAYS



### FEATURES

1. Combined with heat sink for slim profile  
Helps to save space on control panel
2. Dielectric voltage of 2,500V or 4,000V
3. Both screw-on installation or one-touch DIN-rail installation available
4. Includes operation LED (red)
5. Built-in varistor

### APPLICATIONS

1. Molding machine (heater control)
2. Temperature controlled bath (heater control)
3. Printing machine (heater control)
4. Machine tool (motor control)

### TYPES

Type	Load current	Load voltage	Breakdown voltage	Part No.
Zero-cross	15 A	75 to 250V AC	2,500V AC	AQK1211
			4,000V AC	AQK1231
	25 A	75 to 250V AC	2,500V AC	AQK2211
			4,000V AC	AQK2231

### ORDERING INFORMATION

Ex. AQK			
Load current	Load voltage	Type	Input voltage
1: 15 A 2: 25 A	2: 75 to 250 V DC	1: Zero-cross type (2,500 V) 3: Zero-cross type (4,000 V)	1: 4.5 to 30 V DC

Note: Standard packing: Carton 10 pcs., Case: 60 pcs.

### SPECIFICATIONS

#### 1. Ratings (at 20°C 68°F, Input ripple: 1% or less)

##### 1) 10 A type

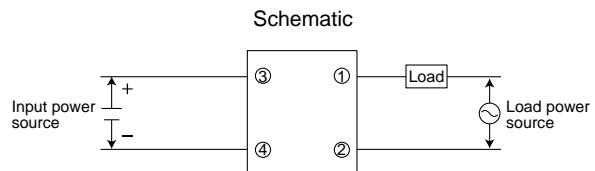
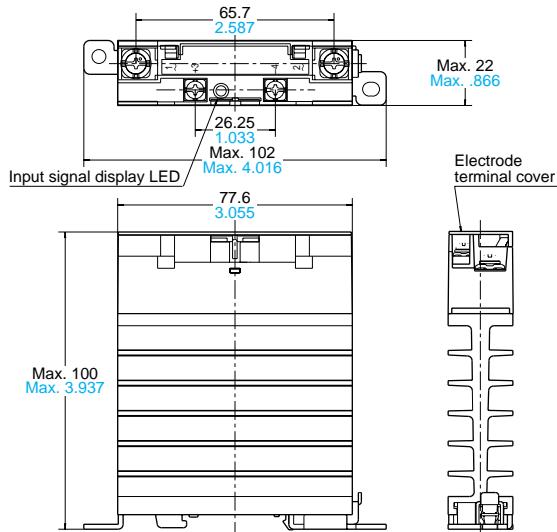
Items	Type	AQK1211	AQK1231	AQK2211	AQK2231	Remarks		
Input side	Input voltage	4.5 to 30V DC						
	Input current, max.	10 mA						
	Drop-out voltage, min.	1 V						
Load side	Max. load current	15 A		25 A	See "REFERENCE DATA 1"			
	Load voltage	75 to 250 V AC						
	Frequency	45 to 65 Hz						
	Non-repetitive surge current	150 A		250 A	In one cycle at 60 Hz			
	Max. "OFF-state" leakage current	9 mA (when 200 V applied)		at 60 Hz				
	Max. "ON-state" voltage drop	1.6 V		at max. carrying current				
	Min. load current	100 mA						

# AQ-K

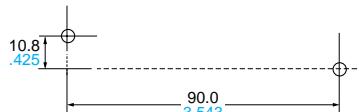
## 2. Characteristics (at 20°C 68°F, Input ripple: 1% or less)

Part No.	AQK1211	AQK1231	AQK2211	AQK2231	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			
Breakdown voltage	2,500 V AC	4,000 V AC	2,500 V AC	4,000 V AC	
Ambient temperature		-30°C to +80°C -22°F to +176°F			Non-condensing at low temperatures
Insulation resistance, min., Initial		100 M Ω between input, output and case			by 500V DC megger
Vibration resistance		10 to 55 Hz at double amplitude of 0.75 mm			For 1 min.
Shock resistance		Min. 294 m/s <sup>2</sup>			
Storage temperature		-35°C to +100°C -31°F to +212°F			
Operational method		Zero-cross (Turn-ON and Turn-OFF)			

## DIMENSIONS

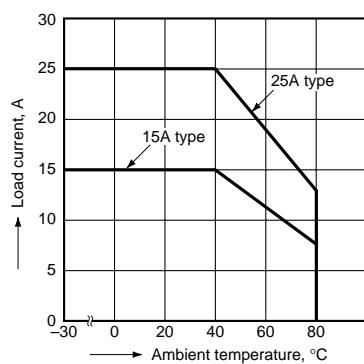


Mounting dimensions (Bottom view)  
35-mm DIN rail installation, or 2-4.6/M4 dia. Screws

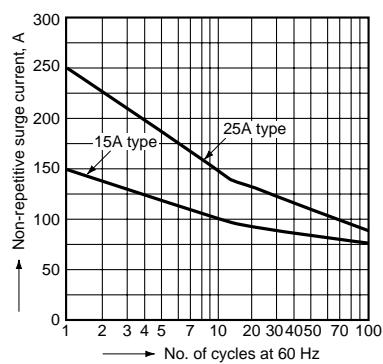


## REFERENCE DATA

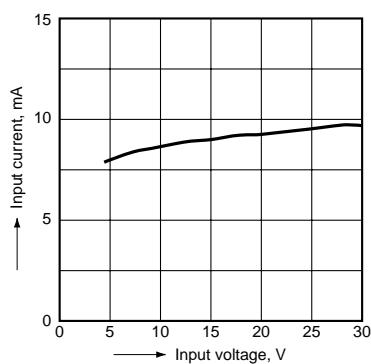
### 1. Load current vs. ambient temperature characteristics



### 2. Non-repetitive surge current vs. carrying time (15 A, 25 A type)



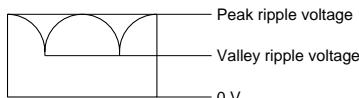
### 3. Input voltage vs. input current characteristics



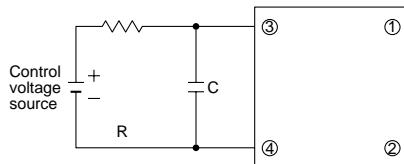
## CAUTIONS FOR USE

### 1. Input side

1) If there are ripples in the input voltage, set the peak to 30 V or less, and the valley to 4.5 V or greater.

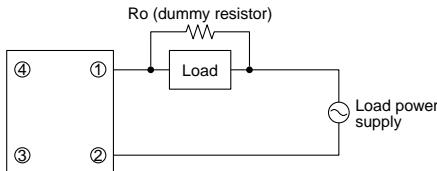


2) A high noise surge voltage applied to the SSR input circuit can cause malfunction or permanent damage to the device. If such a high surge is anticipated, use C or R noise absorber in the input circuit.



### 2. Output side

A high noise surge voltage applied to the SSR load circuit can cause malfunction or permanent damage to the device. If such a high surge is anticipated, use a varistor across the SSR output.



Load specification: Load current min. 100 mA

### 3. When the input terminals are connected with reverse polarity

Reversing the polarity may cause permanent damage to the device. Take special care to avoid polarity reversal or use a protection diode in the input circuit.

### 4. Cleaning solvents compatibility

Dip cleaning with an organic solvent is recommended for removal of solder flux, dust, etc. Select a cleaning solvent from the following table. If ultrasonic cleaning must be used, the severity of factors such as frequency, output power and cleaning solvent selected may cause loose wires and other defects. Make sure these conditions are correct before use. For details, please consult us.

Cleaning solvent	Compatibility (○: Yes X: No)
Chlorine-base	• Trichlene • Chloroethylene
Adueous	• Indusco • Hollis • Lonco Terg
Alcohol-base	• IPA • Ethanol
Others	• Thinner • Gasoline

### 5. Others

- 1) Make sure that the terminals are wired properly.
- 2) Be sure to take SSR layout and ventilation into account. Installing a heat source near another solid-state relay could raise the ambient temperature.

3) Handle the exterior and interior boxes with care. Excessive vibration during transport could warp the terminals or damage the unit.

4) Storing the unit under extremely adverse conditions could damage the product's appearance or impact performance.

We recommend that the unit be stored in a location meeting the following requirements:

Temperature: 5 to 30°C 41 to 86°F

Humidity: Max. 60% RH

Atmosphere: Should be free of sulfuric acid and other toxic gasses, and relatively free from dust.

## Thermal Design

SSRs used in high-reliability equipment require careful thermal design. In particular, junction temperature control has a significant effect on device function and life time. The rated load current for board-mounting SSRs is defined as the maximum current allowable at an ambient temperature of 40°C 104°F (30°C 86°F) and under natural cooling.