Inverter Controlled Water Chiller AKW××9

Features

- **Enhancement of highly accurate temperature control**
  - The oil temperature is controlled within ±0.1°C under a wider operation range than the previous model as an optional function.

- **Extension of cooling capacity control range**
  - Control with loads from 0 % (no load) to 100 % achieved

- **Environment friendly unit, countering global warming**
  - Adopts a Daikin original IPM motor which is a super-energy-efficient technology
  - Achieves 30% energy savings compared to the AKW 8 series (measured by Daikin)

- **Low noise level for a better working environment**
  - Achieves a lower noise level than the AKW 8 series

Nomenclature

<table>
<thead>
<tr>
<th>AKW</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>××</td>
<td>9</td>
<td>-×××</td>
<td></td>
</tr>
</tbody>
</table>

1. **Standard type**
   - AKW: High-accuracy inverter controlled oil cooling unit
     - [Circulating type, for clean fresh water (tap water)]

2. **Cooling capacity (kW)**
   - 14: 1.4 kW
   - 18: 1.8 kW
   - 32: 3.2 kW
   - 35: 3.5 kW
   - 43: 4.3 kW
   - 45: 4.5 kW

3. **Symbol of series**
   - (Symbol to represent model change)
   - 9: “9” series

4. **Symbol of option type (C/H)/Non-standard number**
   - Options and their combinations

Applications

- Semiconductor production equipment, Laser cutting machines/Laser oscillators,
  - Electrical discharge machines/Beam welding machines, Various analyzing apparatus/
  - Medical equipment, etc.
## Specifications

![Image](L-31)

<table>
<thead>
<tr>
<th>With pump/tank</th>
<th>Without pump/tank</th>
<th>With pump/tank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model name</strong></td>
<td>AKW149</td>
<td>AKW329</td>
</tr>
<tr>
<td><strong>Cooling capacity (50/60 Hz) kW</strong></td>
<td>1.4/1.4</td>
<td>3.2/3.2</td>
</tr>
<tr>
<td><strong>Power voltage</strong></td>
<td>200 V 50 Hz</td>
<td>200 V 60 Hz</td>
</tr>
<tr>
<td><strong>Max. power consumption kW</strong></td>
<td>1.20 kW/4.5 A</td>
<td>1.17 kW/6.4 A</td>
</tr>
<tr>
<td><strong>Compressor (Hermetic DC swing type)</strong></td>
<td>Equivalent to 0.4 kW</td>
<td>Equivalent to 0.75 kW</td>
</tr>
<tr>
<td><strong>Water pump</strong></td>
<td>Immersion type multistage pump</td>
<td>-</td>
</tr>
<tr>
<td><strong>Head (50/60 Hz) m</strong></td>
<td>25/37 m at 10 L/min</td>
<td>24/36 m at 15 L/min</td>
</tr>
<tr>
<td><strong>Motor capacity (50/60 Hz kW)</strong></td>
<td>0.33/0.52</td>
<td>-</td>
</tr>
<tr>
<td><strong>Temperature control (Selectable)</strong></td>
<td>Room temperature or machine temperature °C</td>
<td>Outlet water temperature °C</td>
</tr>
<tr>
<td><strong>Range °C</strong></td>
<td>10 to 40</td>
<td>5 to 45</td>
</tr>
<tr>
<td><strong>Refrigerant control</strong></td>
<td>Rotation speed control of compressor by inverter + Opening rate control of electric expansion valve</td>
<td></td>
</tr>
<tr>
<td><strong>Refrigerant (R410A) Changed volume kg</strong></td>
<td>0.49</td>
<td>0.72</td>
</tr>
<tr>
<td><strong>Protection devices</strong></td>
<td>A set of overcurrent relay (for a pump motor, only for models with a pump), reverse-phase protection device, restart prevention timer, low room temperature protection thermostat, high fluid temperature protection thermostat, low fluid temperature protection thermostat, discharge pipe temperature thermostat, condenser temperature thermostat, refrigerant leakage detector, inverter protection device, high pressure switch (-C type only), compressor thermal protector (-C type only), intake pipe temperature thermostat (antifreeze), and circuit breaker (-B type only)</td>
<td></td>
</tr>
<tr>
<td><strong>Operation range</strong></td>
<td>Room temperature °C</td>
<td>Water temperature in the tank °C</td>
</tr>
<tr>
<td><strong>Acceptable fluid kg</strong></td>
<td>Fresh water (tap water)</td>
<td></td>
</tr>
<tr>
<td><strong>External pressure loss (50/60 Hz) MPa</strong></td>
<td>0.24/0.36</td>
<td>0.21/0.34</td>
</tr>
<tr>
<td><strong>Connecting pipe size MPa</strong></td>
<td>Refer to the outline drawing.</td>
<td></td>
</tr>
<tr>
<td><strong>Tank capacity L</strong></td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>
| **Note:** | * The cooling capacity indicates the value at the standard point. This unit has about ±5% of product tolerance. * Use a commercial power supply for the power source. The use of an inverter power supply may cause burn damage to the machine. * This unit has about ±7% of product tolerance. * The machine temperature synchronization timer is available as an option and is required for this function. * A unit that can be used at a room temperature of 5 to 40°C or a tank outlet water temperature of 5 to 40°C is available as an option. Please consult us for details. * Use the unit with a circulating water volume within the permissible range. * Use fluid that satisfies the water quality standard for clean fresh water (tap water) level indicated on Page 32. (Taken from Guideline of Water Quality for Refrigeration and Air Conditioning Equipment (JRA-GL-02-1994).)
### Operation range

Note: 1. The mark □ shows the standard point.  
2. Be sure to use the unit within the range of use specified in □.  
(Use outside this range may cause unit failure.)

### Water quality standard

* Use water that satisfies the following standard for tap water level.

<table>
<thead>
<tr>
<th>Item</th>
<th>Chemical formula</th>
<th>Water quality standard</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>–</td>
<td>6.5 to 8.2</td>
<td>pH (25°C)</td>
</tr>
<tr>
<td>Electrical conductivity</td>
<td>–</td>
<td>0.2 to 30</td>
<td>ms/m (25°C)</td>
</tr>
<tr>
<td>Chloride ion</td>
<td>Cl⁻</td>
<td>50 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Sulfate ion</td>
<td>SO₄²⁻</td>
<td>50 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Acid consumption (pH4.8)</td>
<td>CaCO₃</td>
<td>50 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Total hardness</td>
<td>–</td>
<td>70 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Calcium hardness</td>
<td>CaCO₃</td>
<td>50 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Ionic silica</td>
<td>SiO₃²⁻</td>
<td>30 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Iron</td>
<td>Fe</td>
<td>0.3 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Copper</td>
<td>Cu</td>
<td>0.1 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Sulfide ion</td>
<td>S²⁻</td>
<td>Not to be detected</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Ammonium ion</td>
<td>NH₄⁺</td>
<td>0.1 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Residual chlorine</td>
<td>Cl</td>
<td>0.3 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Free carbon dioxide</td>
<td>CO₂</td>
<td>4.0 maximum</td>
<td>mg/L (ppm)</td>
</tr>
<tr>
<td>Stability index</td>
<td>–</td>
<td>6.0 to 7.0</td>
<td>–</td>
</tr>
</tbody>
</table>

### External dimension diagram

**AKW149**

*With pump/tank*
External dimension diagram

AKW329

- With pump/tank

AKW439

- With pump/tank

Refer to the individual product catalog for the external dimensions of the models without pump/motor covers or a pump/tank.

Contact Details
Before using the product, please check the guide pages at the front of this catalog.

http://www.daikinpmc.com/en/
For latest information, PDF catalogs and operation manuals

OIL COOLING EQUIPMENT

L-33
Contact Details
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http://www.daikinpmc.com/en/
For latest information, PDF catalogs and operation manuals

External dimension diagram

**AKW569**

With pump/tank

**AKW909**

With pump/tank

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**Part No. Name Description**

1. Water inlet Rc 3/4
2. Water outlet Rc 3/4
3. Tank drain Rc 3/4
4. Drain port M6 plugged
5. Control panel
6. Instruction panel
7. Power cable inlet (Right/Left)
8. Signal line inlet (Right/Left)
9. Eye plate φ 25 hole
10. Air filter
11. Room temperature thermistor
12. Unit nameplate
13. Design nameplate
14. Instruction nameplate
15. Design nameplate
16. Electric schematic diagram nameplate
17. Battery charge mark nameplate
18. Cutting injury caution nameplate
19. High temperature caution nameplate
20. Model nameplate
21. Fluid level gauge KLA-100
22. Pressure gauge
23. Valve

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**Part No. Name Description**

1. Water inlet Rc 3/4
2. Water outlet Rc 3/4
3. Oil pan drain M6 plugged
4. Water drain Rc 3/4
5. Control panel
6. Instruction panel
7. Power cable inlet (Right/Left)
8. Signal line inlet (Right/Left)
9. Eye plate φ 22 hole
10. Air filter
11. Room temperature thermistor
12. Unit nameplate
13. Design nameplate
14. Instruction nameplate
15. Design nameplate
16. Electric schematic diagram nameplate
17. Battery charge mark nameplate
18. Cutting injury caution nameplate
19. High temperature caution nameplate
20. Model nameplate
21. Fluid level gauge KLA-100
22. Pressure gauge
23. Valve
The mark ‘○’ shows the standard point. (Room temperature: 25°C, water temperature: 25°C)
Pump flow rate characteristics

The following diagrams show the flow characteristics of the pumps with the internal pressure loss taken into account. Select the diameters and lengths of pipe by referring to the following diagrams to keep the circulating water volume maintained within the permissible range.

**AKW149**

![Diagram AKW149](image)

**AKW329**

![Diagram AKW329](image)

**AKW439**

![Diagram AKW439](image)

**AKW569**

![Diagram AKW569](image)

**AKW909**

![Diagram AKW909](image)