This leaflet shows the product specifications and dimensions as of Aug., 2014. It is subject to change without prior notice.

Prepared in Sep., 2014

Intellectual property right
The basic patent of dehumidifier using this system is reserved by Mitsubishi Electric Corp. Our company acquires its patent license, and is also applying for the relevant patents in cooperation with Mitsubishi Electric Corp.

CAUTION
• Prior to use, carefully read the instruction manual attached to the product.
• The specifications described in this brochure, such as the rating, dimensions and appearance, may be subject to changes without prior notice; it is, therefore, necessary to purchase our product after it has been checked satisfactorily at your end.

Available worldwide from:
Westside International Ltd.
Farbeld House, Station Road.
Grove. OX12 7PE
United Kingdom
+44 (0)203 286 8189
www.micro-dehumidifier.com
enquiries@westside-int.com

Prepared in Sep., 2014
Completely new approach to dehumidification

This product uses a solid polymer electrolyte membrane, a completely different principle from conventional dehumidification methods. It directly electrolyzes and removes moisture from the air, and provides many advantages (see below).

(The name “ROSAHL” comes from a pun on a Japanese phrase meaning “removing dew”.)

1. Energy saving
2. No droplet
3. Capable of dehumidifying even below 0°C or less
4. Noiseless
5. Compact and lightweight
6. Works also as a humidifier

World's first electrolytic method

This new type of dehumidifier electrolytically decomposes and removes moisture in a container using a solid polymer electrolyte membrane.

- When a direct current is applied to the porous electrode attached to the special solid polymer electrolyte membrane, moisture at the anode side (dehumidifying side) is separated into hydrogen ions ($H^+$) and oxygen. The hydrogen ions pass through the solid polymer electrolyte membrane to the cathode side (moisture discharging side).
- The hydrogen ions react with oxygen in the air on the cathode side to form water molecules (gas) and are then discharged.

**Features**

- Porous electrode
- Solid polymer electrolyte membrane

**Principle**

**Dehumidifying side**

**Moisture discharging side**

Reaction:

- Anode (Dehumidifying side): $H_2O \rightarrow 2H^+ + \frac{1}{2}O_2 + 2e^-$
- Cathode (Moisture discharging side): $2H^+ + \frac{1}{2}O_2 + 2e^- \rightarrow H_2O$
**Small Dehumidifying Element**

Installation is simple in small size!

**Specifications**

<table>
<thead>
<tr>
<th>Model name</th>
<th>PD2</th>
<th>PD3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dehumidifying capacity</td>
<td>Up to 600</td>
<td>1.2</td>
</tr>
<tr>
<td>Applicable volume</td>
<td>Up to 2000</td>
<td>-</td>
</tr>
<tr>
<td>Elements terminal voltage</td>
<td>3 VDC</td>
<td>3 VDC</td>
</tr>
<tr>
<td>Power consumption</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Dimensions (width x depth)</td>
<td>12 x 12.5</td>
<td>12 x 12.5</td>
</tr>
<tr>
<td>Weight</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Element terminal type</td>
<td>Soldered type or insertion type</td>
<td>Soldered type or insertion type</td>
</tr>
</tbody>
</table>

Notes:
1. The initial value at the temperature of 30°C and humidity of 60%.
2. The applicable volume is for a sealed, moisture-impermeable container, and may vary depending on the material of the container, state of sealing and required humidity.
3. The annual average power consumption in average conditions in Japan.
4. See installation instructions on page 10.
5. For an insertion type terminal for PD3, use a STO-01T-110N (JST) flat connecting terminal or equivalent.
7. The element connecting terminal type terminals may touch each other, as the element bodies are small.

Read the precautions for use on page 14.

**Small Dehumidifying Element**

Compact body as small as your thumb!

**Compact body as small as your thumb!**

**Specifications**

<table>
<thead>
<tr>
<th>Model name</th>
<th>RD3</th>
<th>RD4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dehumidifying capacity</td>
<td>Up to 2000</td>
<td>-</td>
</tr>
<tr>
<td>Applicable volume</td>
<td>Up to 2000</td>
<td>-</td>
</tr>
<tr>
<td>Dimensions (width x depth)</td>
<td>12 x 12.5</td>
<td>12 x 12.5</td>
</tr>
<tr>
<td>Weight</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Element terminal type</td>
<td>Insertion type</td>
<td>Insertion type</td>
</tr>
</tbody>
</table>

Notes:
1. The initial value at the temperature of 30°C and humidity of 60%.
2. The applicable volume is for a sealed, moisture-impermeable container, and may vary depending on the material of the container, state of sealing and required humidity.
3. See installation instructions on page 11.
4. For an insertion type terminal, use a STO-01T-110N (JST) flat connecting terminal or equivalent.
5. When dehumidifying the inside of a container, attach RD3 from the outside or RD4 from the inside.

Read the precautions for use on page 14.

**Thin Dehumidifying Element**

Only 2.3 mm thick!

**Thin Dehumidifying Element**

**Specifications**

<table>
<thead>
<tr>
<th>Model name</th>
<th>MDL-3</th>
<th>MDL-5</th>
<th>MDL-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dehumidifying capacity</td>
<td>Up to 600</td>
<td>Up to 1</td>
<td>Up to 2</td>
</tr>
<tr>
<td>Applicable volume</td>
<td>Up to 2000</td>
<td>Up to 1</td>
<td>Up to 2</td>
</tr>
<tr>
<td>Dimensions (width x depth)</td>
<td>55 x 30</td>
<td>55 x 55</td>
<td>75 x 75</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 25</td>
<td>Approx. 50</td>
<td>Approx. 80</td>
</tr>
<tr>
<td>Element terminal type</td>
<td>(+) side: STO-41T-110N (JST) or equivalent</td>
<td>(-) side: STO-41T-110N-8 (JST) or equivalent</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. The initial value at the temperature of 30°C and humidity of 60%.
2. The applicable volume is for a sealed, moisture-impermeable container, and may vary depending on the material of the container, state of sealing and required humidity.
3. See installation instructions on page 11.
4. See installation instructions on page 11.
5. See installation instructions on page 11.

Read the precautions for use on page 14.
**Lightweight body!**

**Molded Type Dehumidifier**

**Can be used for 100 or 200 VAC!**

**Separate Type Dehumidifier**

**Humidity controller unit**

**Element unit**

**Energy saving by setting your desired humidity!**

**General Dehumidifier**

**Humidity Controller Embedded Dehumidifier**

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**Specifications**

<table>
<thead>
<tr>
<th>Model name</th>
<th>RDHC-7P1</th>
<th>RDHC-5P1</th>
<th>RDHC-3P1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dehumidifying capacity (g/day)</td>
<td>7P</td>
<td>5P</td>
<td>3P</td>
</tr>
<tr>
<td>Applicable volume (%RH)</td>
<td>70 to 90</td>
<td>70 to 90</td>
<td>70 to 90</td>
</tr>
<tr>
<td>Power consumption (kW)</td>
<td>1.0</td>
<td>0.85</td>
<td>0.7</td>
</tr>
<tr>
<td>Dimensions (mm)</td>
<td>175 x 245 x 70</td>
<td>195 x 370 x 70</td>
<td>145 x 200 x 65</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>1.3</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Operating temperature (°C)</td>
<td>10 to 50</td>
<td>10 to 50</td>
<td>10 to 50</td>
</tr>
</tbody>
</table>

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**Notes**

1. Initial value at the temperature of 30°C and humidity of 60%.
2. The dehumidifying capacity will degrade during use. How much it degrades depends on the operating environment and conditions. If any signs of abnormality are seen, early replacement is recommended.
3. The annual average power consumption in average conditions in Japan.
4. The dimensions of A x B x C in the figure. (The height of the knob on the RDHC type is 15 mm.)
5. RDH-3P1 does not include a humidity controller.
6. The power consumption when the rated load is applied.
7. See the power supply unit.
8. The value in | | is the rated output current. (See the power supply unit.)
To select a model, use the applicable volume and required humidity graphs below as a guide.

Reference: 1) The graph shows the relationship at an outside air humidity of 90%.
2) A sealed moisture-impermeable container is used.

**Small dehumidifying element (PD2, PD3, RD3, RD4)**

- Characteristics of the graphs may vary depending on the material of the container and the degree of airtightness.
- If the container contains resin material such as resin, dehumidifying the inside of the container includes release of moisture from the material, which will result in slow dehumidification of the inside of the container.
- The dehumidifying capacity of the element varies according to the absolute water amount inside the container.

**Thin dehumidifying element (MDL-3, MDL-5, MDL-7)**

- Dehumidification characteristics (container: 50 L)
- Dehumidification characteristics (35°C 85%RH)
- Optional parts: This product provides round moisture discharging holes and prevents rain drops and insects from entering the moisture discharging hole when the dehumidifier is used in an outdoor panel.
- Rainproof cover: This product prevents rain drops and insects from entering the moisture discharging hole when the dehumidifier is used in an outdoor panel. A special vent cover is included.

### Test data

**Test data of humidity controller embedded type (RDHC-10J1)**

**Field test data**

- Dehumidification results at high temperature and high humidity in summer
- Dehumidification results at low temperature and high humidity in winter

### Options

- **Rainproof cover**
  - RDH-3J1
  - RDH-5J1
  - RDH-10J1

- **Adapter set**
  - For RDH-3J1
  - For RDH-5J1
  - For RDH-10J1

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**Model Selection Guide**

**Dehumidification characteristics (35°C 85%RH)**

- **Applicable volume (m³)**
  - 1000cc
  - 2000cc
  - 500cc

- **Dehumidification results at high temperature and high humidity**
  - For RD3, RD4
  - For RDH-7J1
  - For RDHC-7J1
  - For RDHC-10J1
  - For RDHB-7J1
  - For RDHB-10J1

- **Dehumidification results at low temperature and high humidity**
  - For RDH-3P1
  - For RDH-5P1
  - For RDHC-5J1
  - For RDHB-5J1
  - For RDH-10J2
  - For RDH-10J1
Follow these instructions to ensure airtightness when installing a dehumidifying element.

**How to install small dehumidifying element**

**[PD2, PD3]**

Make a square hole 12.5 mm x 12.5 mm on the container, insert the included packing and attach the dehumidifying element with four M2 screws. (Specified torque: Max. 0.18 N-m)

The packing is not included.

Installation dimensions (Unit: mm)

- a: 70 70 90
- b: 30 55 75
- c: 55 55 75
- d: 80 105 125
- e: 75 75 95
- f: 30 55 75
- g: 55 55 75
- h: 70 95 115
- i: 40 40 60
- j: 135 135 175
- k: 30 55 75
- l: 55 55 75
- m: 70 95 115
- n: 40 40 60

**How to install small dehumidifying element**

**[RD3, RD4]**

Make a screw hole for an M12 (P0.5) mm screw on the container on which you will install the dehumidifying element. Insert a packing into the hole and slowly screw in the screw. (Specified torque: 0.25 to 0.39 N-m)

The packing is not included.

Installation dimensions (Unit: mm)

- a: 20 25 30
- b: 40 45 50
- c: 60 65 70
- d: 80 85 90
- e: 100 105 110
- f: 120 125 130
- g: 140 145 150
- h: 160 165 170
- i: 180 185 190
- j: 200 205 210
- k: 220 225 230
- l: 240 245 250
- m: 260 265 270
- n: 280 285 290
- o: 300 305 310
- p: 320 325 330
- q: 340 345 350
- r: 360 365 370
- s: 380 385 390

**How to install thin dehumidifying element**

**[MDL-3, MDL-5, MDL-7]**

- As shown in the right figure, fit packing to both sides of the dehumidifying element, attach the retainer plate on the top and fasten at around four points around the edge with M4 screws. If the necessary distance is not secured between the connecting terminal of dehumidifying element and the panel surface, attach the dehumidifying element to an element installation plate or such other plate and then install to the panel surface.
- The packings used should be made from PTFE (polytetrafluoroethylene) series and have hardness of approximately 50.
- When installing in an outdoor panel, avoid interference with the attaching screws of the rainproof cover.

For RDH-5J1

For RDH-7J1

For RDH-9J1

For the rainproof cover and adapter set, see page 9.
Install directly or using an adapter. See the figures and table below before making holes.

<table>
<thead>
<tr>
<th>Installation method</th>
<th>Direct installation method</th>
<th>Adapter installation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make a square moisture discharging hole on the side of the panel and directly install the dehumidifier. Always use an optional rainproof cover for outdoor panels.</td>
<td>Make a square moisture discharging hole on the side of the panel and directly install the dehumidifier.</td>
<td>Use an optional adapter set for installation. This method is usually used when it is not possible to make a square moisture discharging hole on the surface itself, for example when installing to an existing panel.</td>
</tr>
</tbody>
</table>

### Panel boring dimensions

#### (1) humidity controller embedded type and general type

- Figure 1
- Figure 2
- Figure 3
- Figure 4

#### (2) Molded type

- Figure 1

#### (3) Separate type

- Figure 1
- Figure 2
- Figure 3
- Figure 4

### Main body and rainproof cover

<table>
<thead>
<tr>
<th>Installation method</th>
<th>Model name</th>
<th>Main body installation dimensions</th>
<th>Rainproof cover installation dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct installation method</td>
<td>RDH-5J1</td>
<td>50 x 30 x 86 (25)</td>
<td>25 x 55 x 5 x 85</td>
</tr>
<tr>
<td>RDH-7J1</td>
<td>66 x 50 x 185</td>
<td>95 x 95 x 6 x 87.5</td>
<td>85 x 65</td>
</tr>
<tr>
<td>RDH-10J1</td>
<td>80 x 62.5 x 225</td>
<td>125 x 125 x 6 x 113.5</td>
<td>100.5 x 79.5</td>
</tr>
<tr>
<td>RDH-10J2</td>
<td>90 x 135 x 360</td>
<td>175 x 125 x 6 x 135</td>
<td>163.5 x 142.5 x 10</td>
</tr>
<tr>
<td>Adapter installation method</td>
<td>RDH-6J2</td>
<td>40 x 100 x 18</td>
<td>M4 screw</td>
</tr>
<tr>
<td>RDH-7J2</td>
<td>50 x 48 x 115</td>
<td>25 x 7.5</td>
<td>Figure 4</td>
</tr>
<tr>
<td>RDH-10J2</td>
<td>90 x 45 x 280</td>
<td>30 x 7.5</td>
<td>Figure 4</td>
</tr>
</tbody>
</table>

### Remarks

- For the rainproof cover and adapter set, see page 9.

### Table

<table>
<thead>
<tr>
<th>Model name</th>
<th>RDH-5J1</th>
<th>RDH-7J1</th>
<th>RDH-10J1</th>
<th>RDH-10J2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation dimensions</td>
<td>50 x 30 x 86 (25)</td>
<td>66 x 50 x 185</td>
<td>80 x 62.5 x 225</td>
<td>90 x 135 x 360</td>
</tr>
<tr>
<td>Rainproof cover installation dimensions</td>
<td>25 x 55 x 5 x 85</td>
<td>95 x 95 x 6 x 87.5</td>
<td>125 x 125 x 6 x 113.5</td>
<td>175 x 125 x 6 x 135</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Additional Information

- Select a suitable rainproof cover for the element unit. Example: S-5J1 -> For RDH-5J1
- RDHC-7J1, RDHC-5P1, RDHC-7P1

For the rainproof cover and adapter set, see page 9.
1. Attach a protective cover when necessary to prevent hands or objects from coming into contact with the dehumidifying/humidifying surface of the element.

2. Check the installation direction carefully before installation. Installing in the opposite direction will reverse dehumidification and humidification, which may result in an adverse effect on the contents in the container.

3. Strictly follow the following instructions about power supply to the element.
   - Do NOT reverse the polarity. Please check the indication of polarity for the product. (Attach a polarity indication LED on the outside if necessary.)
   - Inverting the polarity will reverse dehumidification and humidification, which may result in an adverse effect on the contents in the container and also will cause chemical reaction consuming the porous electrode at the cathode side and leading to damage of the element.
   - The dehumidifying element naturally causes a relatively large starting current when the power is turned on. Therefore, the specifications below are recommended for the power source.
   - Use a dedicated power source for each dehumidifying element.
   - (When multiple dehumidifying elements are connected in series or parallel, the breakage of one element may cause all other elements to be disabled.)

<table>
<thead>
<tr>
<th>Recommended power source specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>MLD-3</td>
</tr>
<tr>
<td>Rated output voltage</td>
</tr>
<tr>
<td>Rated output current</td>
</tr>
<tr>
<td>Overcurrent protection function</td>
</tr>
<tr>
<td>(constant or fold-back current limiting)</td>
</tr>
<tr>
<td>Overvoltage protection function</td>
</tr>
<tr>
<td>(note: When fold-back current limiting is employed, the dehumidifying element may not function correctly)</td>
</tr>
<tr>
<td>Output voltage variation</td>
</tr>
<tr>
<td>Ripple noise</td>
</tr>
<tr>
<td>Others</td>
</tr>
<tr>
<td>In accordance with the specifications of commercially available power sources</td>
</tr>
</tbody>
</table>

4. The container must have a sealed structure. If the container is made of moisture-permeable material, the results may not be satisfactory.

5. It is preferable that the element is installed in the center of the inner side surface of the container with packing to ensure airtightness of the container.
   - (Do not install on the top or bottom surface)

6. If there is rubber packing or a similar material that contains an antioxidant, crystalline substances may form on the element.

7. Sealing agents should not be silicon-based.
   - (Silicon-based sealing agents generate oxime gas and siloxane gas during hardening, which quickly degrades the performance of the dehumidifying element.)
   - Careful evaluation of material is necessary when selecting a packing.
   - Modified silicon caulk (Konishi) or acrylic caulk (Konishi)
   - Modified silicon caulk is mainly composed of polyurethane.

Consult us if any questions.

8. When using outdoors:
   - Be sure to attach a rainproof cover with anti-insect net (perforated metal) (optional) to protect from water or insects.
   - Cover the element with a cover or moisture-permeable sheet to prevent it from getting wet.

9. Keep the moisture discharging side unsealed and well ventilated.

10. Do not use with vapor phase corrosion inhibitor or insect repellent. Do not use in an environment with a lot of organic gas.

Consult us if there is dust or oil mist in the environment where the product will be used.

11. Do not attempt to disassemble, repair or modify the product, as this may damage it.