

# ROSAHL

## Instruction Manual

ELECTROLYTIC DEHUMIDIFYING ELEMENT

### M-3M1R

#### NOTICE

1. Please read this manual before you use a dehumidifying element and use it correctly.
2. The person who operates, manages and maintains the dehumidifying element must keep this manual.



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#### For Proper Usage

- |  |                |
|--|----------------|
| <ul style="list-style-type: none"> <li>● Supply DC (direct current) 3V to a dehumidifying element. <b><u>DO NOT reverse the polarity.</u></b> Inverting the polarity will reverse dehumidification and humidification, which will cause leading to damage of the dehumidifying element.</li> </ul> | <br>Prohibited |
| <ul style="list-style-type: none"> <li>● Check the direction carefully before installation. Installing in the opposite direction will reverses dehumidification and humidification, which result in an adverse effect on the contents in the container.</li> </ul>                                 | <br>Prohibited |
| <ul style="list-style-type: none"> <li>● DO NOT expose the element directly to the weather. Please cover the element with a cover or moisture-permeable sheet to prevent it from getting wet when using outdoors.</li> </ul>   | <br>Prohibited |
| <ul style="list-style-type: none"> <li>● DO NOT put pin or wire etc. into a dehumidifying element. It may cause an electric shock and the element may be damaged or deteriorate.</li> </ul>  | <br>Prohibited |
| <ul style="list-style-type: none"> <li>● <b><u>DO NOT use a silicon-based sealing materials</u></b> to make a container airtight. They quickly degrades the performance of the dehumidifying element.</li> </ul>   | <br>Prohibited |
| <ul style="list-style-type: none"> <li>● <b><u>DO NOT use with vapor phase corrosion inhibitor</u></b> or insect repellent. DO NOT use in an environment with a lot of organic gas. They may degrade the performance of the dehumidifying element.</li> </ul>                                      | <br>Prohibited |
| <ul style="list-style-type: none"> <li>● DO NOT attempt to disassemble, repair or modify the dehumidifying element. It may cause an electric shock and the performance deterioration, as this may damage it.</li> </ul>  | <br>Prohibited |

## Installation

Make a moisture discharging hole and installation hole of the following dimensions on the container, insert the included packing and attach the dehumidifying element with four M3 screws.

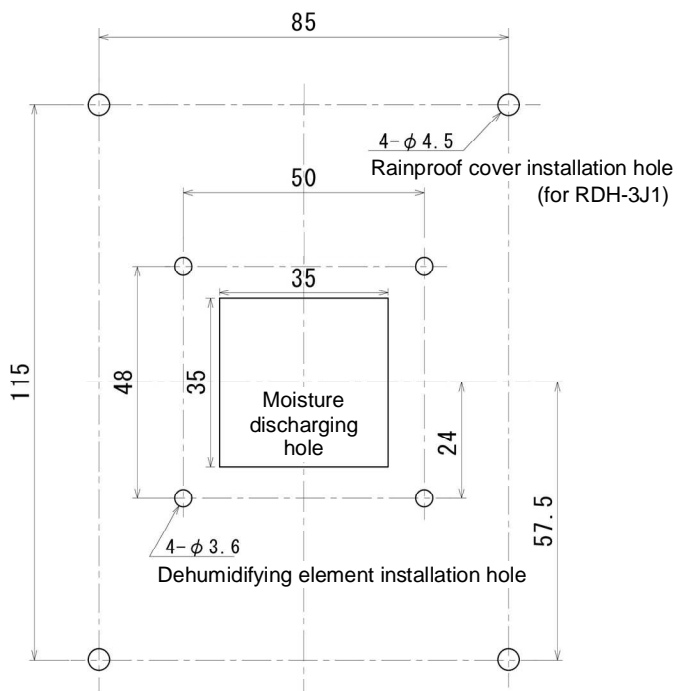


Fig.1 Installation dimensions

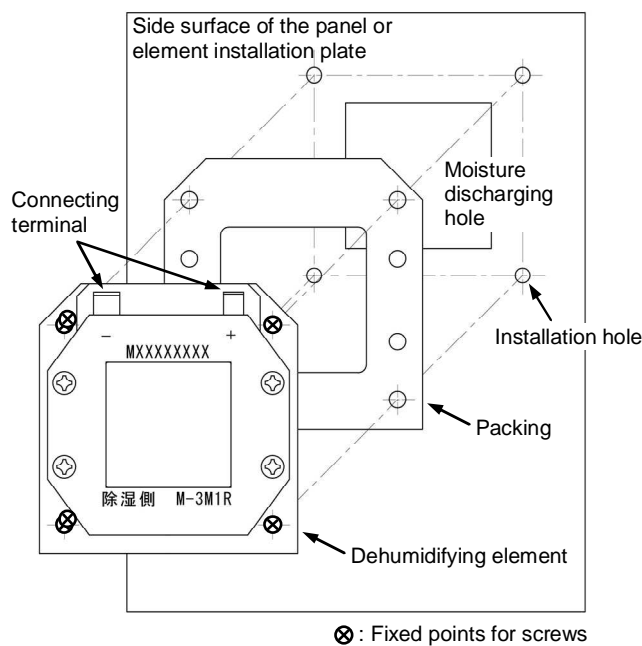


Fig.2 Installation method

## Precautions for Use of Dehumidifying Element

- 1) Attach a protective cover as needed not to touch the dehumidifying / humidifying surface (the inside part which was surrounded in the frame around the element) of an element with a hand and an object.
- 2) Confirm the dehumidifying / humidifying surface of an element not to get a wrong surface before installation. Attaching an element by mistake will adversely affect the things in the container.
- 3) Keep strictly the following about power supply to an element.
  - (1) Do not reverse the polarity. Confirm a polarity indication of an element.  
Getting a wrong polarity will reverse dehumidification and humidification, which may result in an adverse effect on the things in the container. It causes a chemical reaction in a porous electrode of cathode side and it causes the trouble of an element. (Attach a polarity indication LED on the outside if necessary.)
  - (2) A dehumidifying element usually has a big rush current when the power is turned on. Therefore, we recommend the following power supply.
  - (3) Use a dedicated power supply for each dehumidifying element. When multiple dehumidifying elements are connected in series or parallel, the trouble of one element may cause all other elements to be disabled.

### Recommended power supply specifications

Rated output voltage	3V DC
Rated output current	2A
Overcurrent protection function * Note	Required
Overvoltage protection function	Required
Output voltage variation	0.1V or less
Ripple noise	0.2V or less
Others	In accordance with the specifications of commercially available power supply

Note : Use a constant or fold-back current limiting about overcurrent protection function. You cannot use the power supply of the Hiccup mode because the voltage more than 2V is necessary for an element when an overcurrent protection function worked. Also an element may not work correctly depending on a characteristic of fold-back current limiting.

- 4) Attach an element in the center of the inner side surface of a container with a packing while keeping the airtightness of a container. (Do not attach it on a top or bottom surface.)
- 5) A container must be an airtightness container. If a container has low airtightness and moisture-permeable material, the results may not be what you expected.
- 6) Do not use silicon-based sealing materials to improve the airtightness of the container. (Silicon-based sealing materials generate oxime gas and siloxane gas during hardening. As a result, performance of the dehumidifying element decreases in a short term.)  
[Recommended products] : modified silicon caulk (Konishi) or acrylic caulk (Konishi)  
\* Modified silicon caulk is mainly composed of polyurethane.
- 7) Do not expose the moisture discharging hole to water. When using outdoors, attach a rainproof cover with anti-insect net (perforated metal) to protect an element from water or insects.
- 8) Keep a moisture discharging hole a good state of the ventilation.
- 9) Do not use an element with vapor phase corrosion inhibitor or insect repellent. Do not use an element in a place having high density of organic gas.
- 10) If you use an element with a rubber packing or a similar material that contains an antioxidant, crystal materials may occur on the surface of an element. When you choose a packing, evaluate it enough.
- 11) Attach a moisture-permeable sheet to an element to protect it in the place with much dust or oil mists.  
[Recommended products] : Vent Filter TEMISH S-NTF2131A-S06 (Nitto)
- 12) Do not do remodeling. An element may break down.
- 13) When you prepare a packing, we recommend a sponge packing having closed-cell structure (hardness : lower than 10) of the EPT rubber (ethylene propylene rubber). When you use a high hardness packing, there may be a gap between an element installation plate and packing. If there is a gap, the ability of this dehumidifying element may not be shown enough. Please evaluate it carefully. In addition, If you use a silicon rubber, you need to treat a packing with heat (150 deg C / 11 hours) not to quickly degrade the performance of the dehumidifying element.  
Note : The silicon packing using for this element (parts of the element module) is treated with heat. (conditions : 150 deg C / 11 hours)

## Confirmation Items before Using

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**Please confirm the following items surely before turning on the power.**

- 1) Is the power supply DC3V?
- 2) Is the polarity of an element correct?
- 3) Does not a dehumidifying element get wet?

## Usage

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- 1) Please supply DC3V to a dehumidifying element.
- 2) Please adjust a supply voltage in the range of DC2.95 - 3.05V between each terminals after 15-20 minutes turning on the power at the first time of installation. (The dehumidifying element usually causes a relatively large rush current when the power is turned on. but this is not abnormal.)
- 3) When it is used electric wires with connecting terminal, please connect a black electric wire to (-) of the dehumidification element connecting terminal, a red electric wire to (+) of the dehumidification element connecting terminal.

# Specifications

Item	Model Name	M-3M1R
Dehumidifying capacity (g/day) <sup>*1</sup>		2.9
Applicable volume (m <sup>3</sup> ) <sup>*2</sup>		Up to 0.35
Element terminal voltage (V)		DC 3V
Power consumption (W) <sup>*3</sup>		1.8
Dimensions (HxWxD) (mm) <sup>*4</sup>		65x62x12.3 (65x62x16.5)
Weight (g)		Approx. 90
Dimensions of moisture discharging hole (mm) <sup>*5</sup>		35x35
Operating temperature (deg C)		-10 to 50
Element connecting terminal type		(+) side : TMEDN-480509-FA (NICHIFU) or equivalent (-) side : TMEDN-630809-FA (NICHIFU) or equivalent

## Notes

- \*1 The initial value at the temperature of 30 deg C and humidity 60%RH.  
(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.)
- \*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 condition in Japan. (20deg C , 60%RH)
- \*4 See Outline of Dehumidifying Element.
- \*5 Fit a packing to mounting surface of the dehumidifying element, fasten at four points around the edge with M3 screws.

# Outline of Dehumidifying Element

