

# ROSAHL

## Instruction Manual

ELECTROLYTIC DEHUMIDIFYING ELEMENT

「MDL-3, MDL-5, MDL-7」

### 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

<p>● Supply DC (direct current) 3V to a dehumidifying element. <b><u>DO NOT reverse the polarity.</u></b> Getting a wrong polarity will reverse dehumidification and humidification, which will cause trouble of a dehumidifying element.</p>	 Prohibited
<p>● 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.</p>	 Prohibited
<p>● DO NOT expose a surface of an element directly to rain when using outdoors. Use a rainproof cover with anti-insect net(perforated metal) or moisture-permeable sheet to protect an element.</p>	 Prohibited
<p>● DO NOT put a pin or a wire etc. into a dehumidifying element. It may cause an electric shock and an element may break down.</p>	 Prohibited
<p>● <b><u>DO NOT use a silicon-based sealing materials</u></b> to improve the airtightness of a container. As a results, the performance of the dehumidifying element decreases quickly.</p>	 Prohibited
<p>● <b><u>DO NOT use with vapor phase corrosion inhibitor</u></b> or insect repellent. DO NOT use an element in a place having high density of organic gas. As a results, the performance of the dehumidifying element decreases quickly.</p>	 Prohibited
<p>● DO NOT do remodeling. A dehumidifying element may break down. It may cause an electric shock and the performance deterioration.</p>	 Prohibited

## Installation

1. Prepare for two Parkings, a Retainer plate and Rainproof cover as needed.

1). Packing (Refer to Figure 1)

Material : ethylene propylene rubber Thickness : 2mm Hardness : 7

Note :

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 vulcanize a packing (150°C 11hours) not to quickly degrade the performance of the dehumidifying element.

※ The silicon packing using for this element (parts of the element module) is vulcanized (150°C 11hours) .

2). Retainer plate (Refer to Figure 2)

Material : stainless Thickness : 3mm

3). Rainproof cover with an anti-insect net (perforated metal) (Refer to Figure 3)

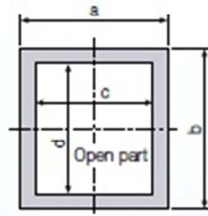


Figure 1

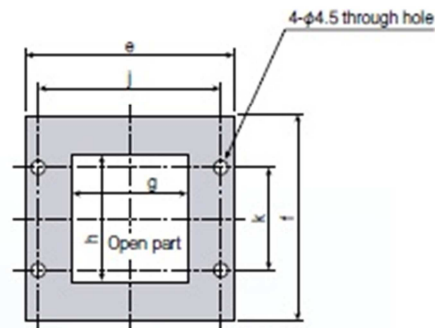
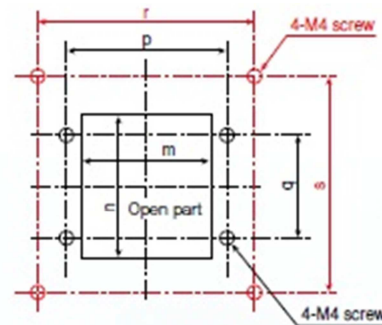
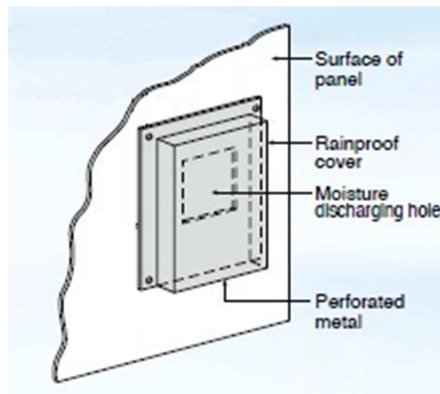


Figure 2



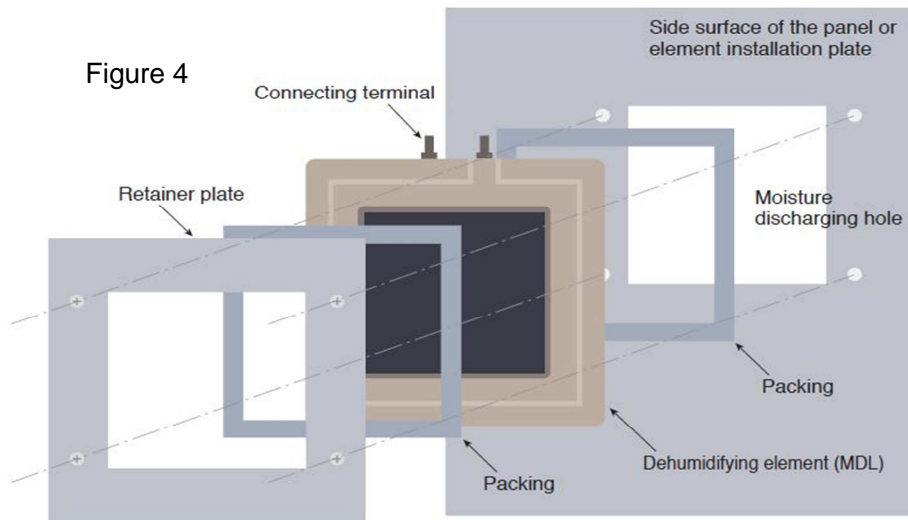
Black: Dimensions of thin element installation hole  
Red: Dimensions of rainproof cover installation hole

Figure 3

(unit:mm)

Model name	Packing (Figure 1)				Retainer plate (Figure 2)						Main body installation dimensions (Figure 3)				Rainproof cover installation dimensions (Figure 3)		
	a	b	c	d	e	f	g	h	j	k	m	n	p	q	r	s	Rainproof cover Model No.
MDL-3	45	70	30	55	80	75	30	55	70	40	30	55	70	40	135	125	For RDH-5J1
MDL-5	70	70	55	55	105	75	55	55	95	40	55	55	95	40	135	125	For RDH-5J1
MDL-7	90	90	75	75	125	95	75	75	115	60	75	75	115	60	175	150	For RDH-7J1

2. Make a moisture discharging hole and Installation holes(4-M4screw) in the center of the inner side surface of a container. (Refer to Figure 3)
3. Put packings on both sides of the dehumidifying element and attach a retainer plate and fix the element with four M4 screws. (Refer to Figure 4)
4. Attach a rainproof cover with an anti-insect net (perforated metal) to protect the element from water or insects when you use it outdoors.



## Precautions for Use

1. Attach a protective cover as needed not to touch the dehumidifying / humidifying surface (the inside part which was surrounded in the white 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.  
(Attach a polarity indication LED on the outside if necessary.)  
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.
  - (2) A dehumidifying element naturally 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.)
  - (4) The size of electric wires range more than AWG20.

Recommended power supply specifications

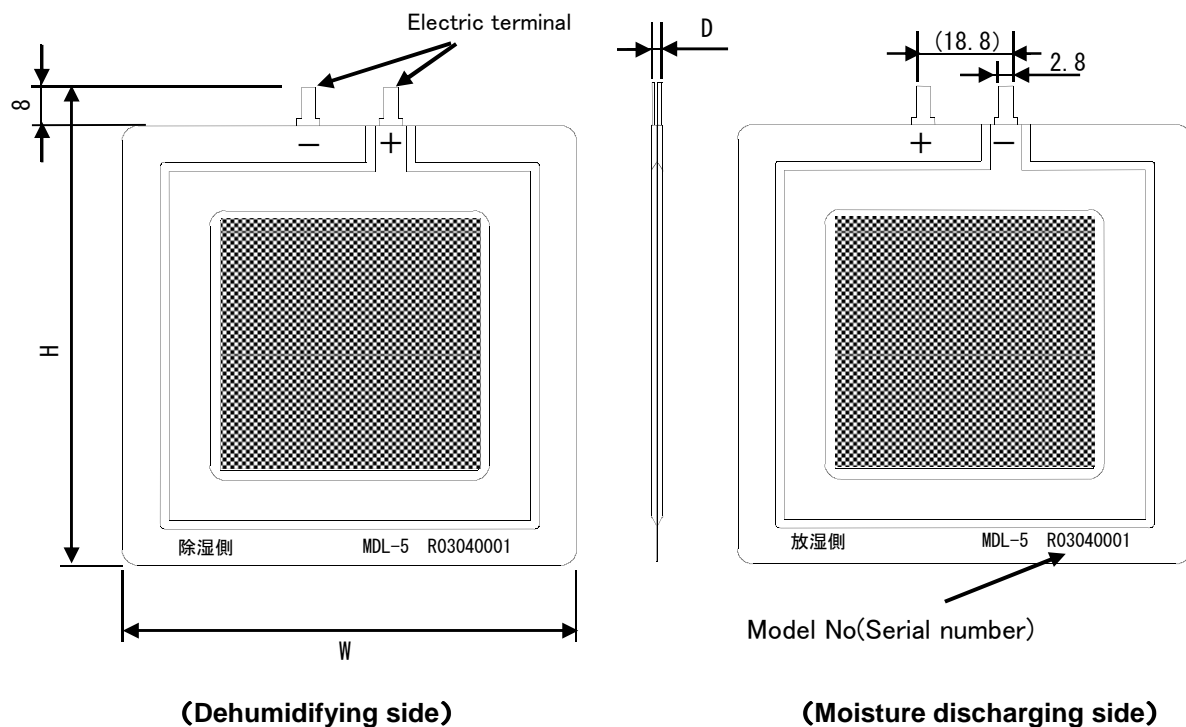
Item	Model No	MDL-3	MDL-5	MDL-7
Rated output voltage		3V DC		
Rated output current		2A	3A	5A
Overcurrent protection function		Required	Required	Required
Overvoltage protection function		Required	Required	Required
Output Voltage Regulation		0.1V or less		
Ripple Noise		0.2V or less		
Others		In accordance 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 elements 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 a 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.  
Consult us if you have any questions.
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.

## Outline of Dehumidifying Element

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## 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

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.  
(A dehumidifying element naturally has a big rush current when the power is turned on. but this is not abnormal.)
3. When you connect electric wires to connecting terminal, confirm the following.  
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 No	MDL-3	MDL-5	MDL-7
Dehumidifying capacity (g/day) *1	4	8	16
Applicable volume (m <sup>3</sup> ) *2	Up to 0.5	Up to 1	Up to 2
Element terminal voltage (V)	3VDC		
Power consumption (W) *3	2	3	4
Dimensions(height × width × depth) (mm) *4	88 × 63 × 2.3	88 × 88 × 2.3	108 × 108 × 2.3
Weight (g)	Approx. 20	Approx. 25	Approx. 50
Dimensions of moisture discharging hole (mm)*5	55 × 30	55 × 55	75 × 75
Operating temperature (°C)	-10~50		
Element connecting terminal type	(+) <del>side</del> :STO-41T-110N (NICHIFU) or equivalent (-) <del>side</del> :STO-41T-110N-8 (NICHIFU) or equivalent		

### Notes

- \*1 The initial value at the temperature of 30°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 it may depend on the material of the container, state of sealing and required humidity.
- \*3 The annual average power consumption in average condition in Japan. ( 20°C ,60%RH)
- \*4 See Outline of Dehumidifying Element
- \*5 See Figure 3