

Electric Dehumidifier

# ROSAHL

## Instruction Manual

### MDL-3 / MDL-5 / MDL-7

#### NOTICE









1. Please read this manual before you use ROSAHL and use it correctly.
2. Please keep this manual to the person who operates, manages and maintains ROSAHL.



**RYOSAI TECHNICA CO., LTD.**

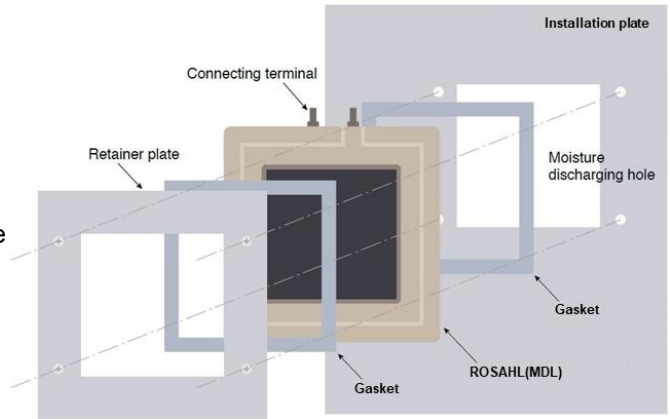
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## For Proper Usage

<p>● Supply 3V DC to ROSAHL. <b><u>DO NOT reverse the polarity.</u></b> Dehumidification changes to Humidification when you get a wrong polarity, which may result in an adverse effect on several things in the container. Furthermore, it causes a chemical reaction in a porous electrode of cathode side and it causes the trouble of ROSAHL.</p>	 Prohibited
<p>● Confirm the dehumidifying / humidifying surface of a membrane not to get a wrong direction before installation. Attaching ROSAHL by mistake will adversely several things in the container.</p>	 Prohibited
<p>● DO NOT expose the membrane directly to the winds and rain. Please cover the membrane with a cover or moisture-permeable sheet to prevent it from getting wet when using outdoors.</p>	 Prohibited
<p>● Keep the moisture discharging side of membrane well ventilated.</p>	 Prohibited
<p>● DO NOT put pin or wire etc into the membrane. It may cause an electric shock and the membrane may be damaged or deteriorate.</p>	 Prohibited
<p>● <b><u>DO NOT use a silicon-based sealing materials</u></b> to improve airtightness of a container. Silicon-based sealing materials generate oxime gas and siloxane gas. As a result, the performance of ROSAHL reduce in a short term.</p>	 Prohibited
<p>● <b><u>DO NOT use ROSAHL with vapor phase corrosion inhibitor</u></b> or insect repellent. Do not use ROSAHL in a place having high density of organic gas. The performance of ROSAHL reduce in a short term.</p>	 Prohibited
<p>● DO NOT attempt to disassemble, repair or modify ROSAHL. It may cause an electric shock and the performance deterioration, as this may damage it.</p>	 Prohibited

# Installation

- As shown in the right figure, fit gasket to both sides of ROSAHL, 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 ROSAHL and the panel surface, attach ROSAHL to an installation plate or such other plate and then install to the panel surface.
- Gaskets used should be made from EPT(ethylene propylene series) and have hardness of approximately 8.
- When installing in an outdoor panel, avoid interference with the attaching screws of the rainproof cover.



**Table 1. Gasket processed dimensions (mm)**

Model name	MDL-3	MDL-5	MDL-7
Dim. a	45	70	90
Dim. b	70	70	90
Dim. c	30	55	75
Dim. d	55	55	75
Reference	Figure 1		

**Table 2. Retainer plate processed dimensions (mm)**

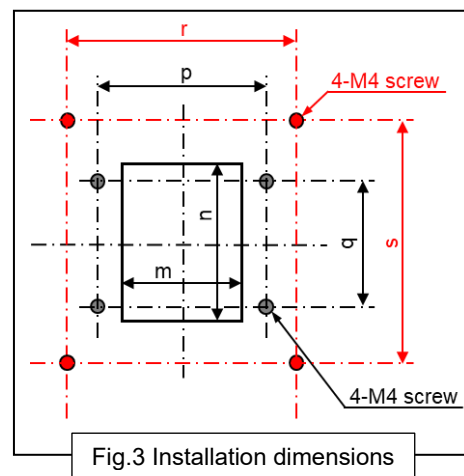
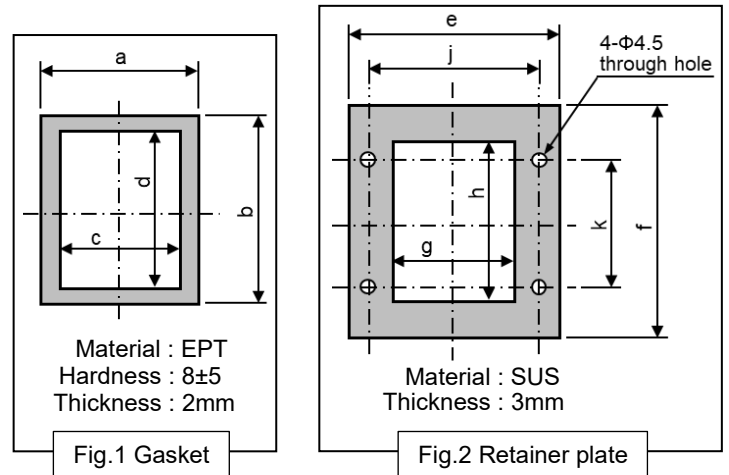
Model name	MDL-3	MDL-5	MDL-7
Dim. e	80	105	125
Dim. f	75	75	95
Dim. g	30	55	75
Dim. h	55	55	75
Dim. j	70	95	115
Dim. k	40	40	60
Reference	Figure 2		

**Table 3. Installation dimensions (mm)**

Model name	MDL-3	MDL-5	MDL-7
Dim. m	30	55	75
Dim. n	55	55	75
Dim. p	70	95	115
Dim. q	40	40	60
Reference	Figure 3		

**Table 4. Rainproof cover installation dimensions (mm)**

Model name	MDL-3	MDL-5	MDL-7
Dim. r	135	135	175
Dim. s	125	125	150
Rainproof cover Model name	For RDH-5J1		For RDH-7J1
Reference	Figure 3		



## Precautions for Use of ROSAHL

- Attach a protective cover as needed not to touch the dehumidifying / humidifying surface of a membrane with a hand and an object.
- Confirm the dehumidifying / humidifying surface of a membrane not to get a wrong direction before installation. Attaching ROSAHL by mistake will adversely affect several things in the container.
- Keep strictly the following about power supply to ROSAHL
  - Do not reverse the polarity. Confirm a polarity indication of ROSAHL. Dehumidification changes to humidification when you get a wrong polarity, which may result in an adverse effect on several things in the container. Furthermore, it causes a chemical reaction in a porous electrode of cathode side and it causes the trouble of ROSAHL.
  - ROSAHL usually has a big rush current when the power is turned on. Therefore, we recommend the following power supply.
  - Use a dedicated power supply for each membrane. When multiple membrane are connected in series or parallel, the trouble of one membrane may cause all other membranes to be disabled.
  - The water vapor go through a membrane of ROSAHL. If you switch off a power supply, outside water vapor is returned into a container and the humidity is restored.

Table 1. Recommended Power Supply Specifications

Item	Model	MDL-3	MDL-5	MDL-7
Rated output voltage		3V DC		
Rated output current		2A	3A	5A
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 regarding overcurrent protection function. You cannot use the power supply with the Hiccup mode current limiting type, because the voltage more than 2V DC is necessary for ROSAHL when an overcurrent protection function worked. Also ROSAHL may not work correctly depending on a characteristic of fold-back current limiting.

- 4) 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.
- 5) Attach ROSAHL in the center of the inner side surface of a container with a gasket.  
(Do not attach it on a top or bottom surface.)
- 6) If you use ROSAHL with a gasket that contains an antioxidant, crystal materials may be generated on the surface of a membrane. When you choose a gasket, evaluate it enough.
- 7) Do not use silicon-based sealing materials to improve airtightness of a container.  
(Silicon-based sealing materials generate oxime gas and siloxane gas.  
As a result, the performance of ROSAHL reduce in a short term.)  
Additionally, when using any other sealing materials, ROSAHL must be attached after sealing materials are completely cured. Volatile substances generated during curing affect the performance of ROSAHL.  
[Recommended products] : modified silicon caulk (Konishi Co., Ltd.)
- 8) Do not expose a moisture discharging side of a membrane to water. When using outdoors, be sure to attach a cover or vent filter to protect a membrane from water or insects.
- 9) Attach a moisture-permeable sheet to a membrane to protect ROSAHL from much dust or oil mists.  
[Recommended products] : Vent Filter TEMISH S-NTF2131A-S06 (Nitto Denko Corporation)
- 10) Keep the moisture discharging side of a membrane well ventilated.
- 11) Do not use ROSAHL with vapor phase corrosion inhibitor or insect repellent.  
Do not use ROSAHL in a place having high density of organic gas.
- 12) Do not do remodeling. ROSAHL may break down.
- 13) When you use a silicon gasket for attachment, you need to vulcanize it (200 deg C / 6 hours) not to quickly degrade the performance of ROSAHL.

## Confirmation Items before Using

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

1. Is the power supply 3V DC?
2. Is the polarity of ROSAHL correct?
3. Does not a membrane get wet?

## Usage

1. Please supply 3V DC to ROSAHL.
2. Please adjust a supply voltage in the range of 2.9 ~ 3.3V DC between each terminals after 15-20 minutes turning on the power at the first time of installation.  
(ROSAHL naturally causes a relatively big rush current when the power is turned on.  
But this is not abnormal.)

## Specifications

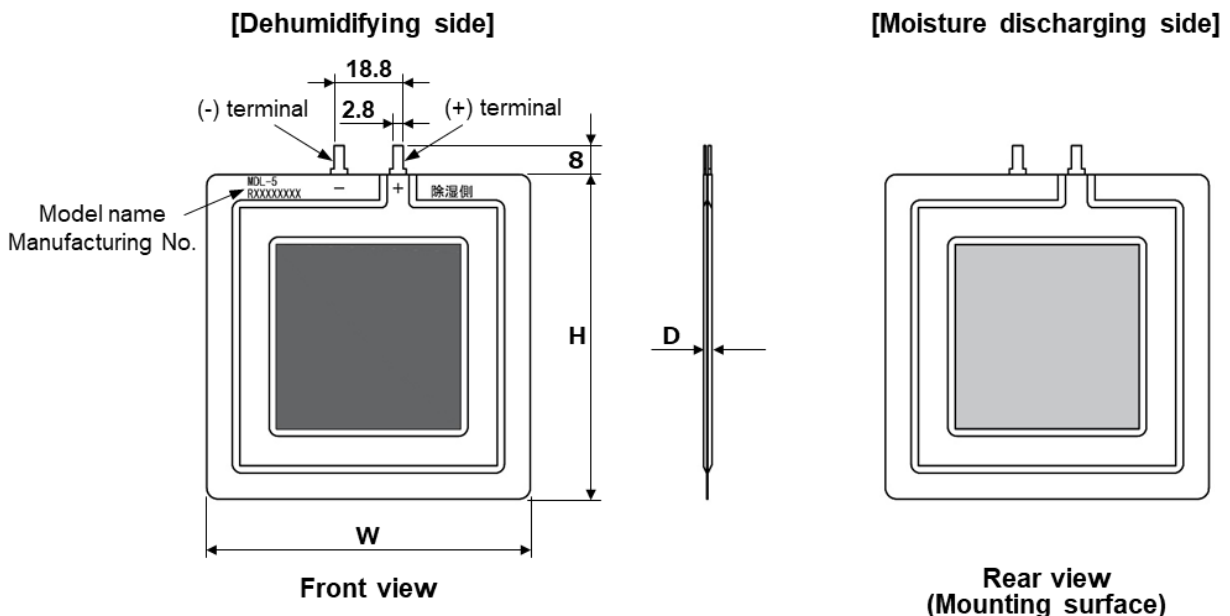
Table 2 MDL-3 / MDL-5 / MDL-7 Specifications

Items	Model Name	MDL-3	MDL-5	MDL-7
Dehumidifying Performance	(g/day) *1	4	8	16
Applicable Volume	(m <sup>3</sup> ) *2	~ 0.5	~ 1	~ 2
Element Terminal Voltage	(V)	3 DC		
Power Consumption	(W) *3	2	3	6
Dimensions	(mm) *4	88×63×2.3	88×88×2.3	108×108×2.3
Weight	(g)	20	25	50
Operating Temperature	(deg C)	-10 to 50		
Connecting Terminal Type		(+side: STO-41T-110N (J.S.T.MFG.CO.,LTD.)orequivalent (-)side: STO-41T-110N-8(J.S.T.MFG.CO.,LTD.)orequivalent		

### Notes

- \*1 The initial value at the temperature of 30 deg C and humidity 60%RH.  
(The dehumidifying performance will reduce 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.
- \*4 Dimensions show the values of H × W × D in the figure below.

## Outline



## Prohibited Substances and Recommended Materials for ROSAHL

### 1. Prohibited substances

The substances which adversely affect ROSAHL and harm in response to ROSAHL are as follows.

The anode side is affected mainly. Even the additives of materials may be affected.

Please evaluate enough when a new substance is adopted or a maker is changed.

Classification	Substance Name	State	Notes
Inorganic Matter	hydrochloric acid gas	gas	
	nitric acid gas	gas	
	other corrosion gases	gas	
	SOx gas	gas	
	NOx gas	gas	
	chlorine gas	gas	
	sulfurous acid gas	gas	
	other pollution gases	gas	
	concentrated hydrochloric acid	liquid	
	concentrated nitric acid	liquid	
	substance which produces other corrosion gas	liquid	
	divalent metal ion	liquid	
Organic Matter	siloxane gas	gas	
	oxime gas	gas	
	lamp black	gas	
	diethylamine	gas	
	other amine-based gas	gas	
	amide-based low molecular weight compound	gas, liquid	
	methylene chloride	liquid	
	perchloroethylene	liquid	
	trichloroethylene	liquid	
	perchloroethylene	liquid	
	tetrachloroethylene	liquid	
	other chlorinated solvent	liquid	
	oil mist	liquid	
	dimethyl sulfoxide	liquid	
	other sulfur based organic solvent	liquid	
	silicone sealant	solid	These substances produce siloxane gas. Heat treatment (bake) is necessary to remove low molecule siloxane of non-reaction.
	silicone grease	solid	
	silicone rubber	solid	
	silicone-based sealing compound	solid	
	other siloxane chemical compound	solid	
	pran-ace	solid	
	camphor	solid	
	other insect repellent	solid	
	paradichlorobenzene	gas, liquid	
	other chlorine-based insect repellent	gas, liquid	
	vapor phase inhibitor	liquid, solid	
	corrosion inhibitor which is added in materials	liquid, solid	
	cigaret tar constituent	gas, liquid	
	2,6-Di-tert-butyl-4-methylphenol (BHT)	liquid	The antioxidant which was added in packing

## 2. Recommended Materials

The recommended materials in a range understanding in us are as follows.

Classification	Material Name	Notes
Frame	Glass , Metal , Acrylic , Plastic	The acrylic and plastic resin has moisture permeability. Please thicken the board thickness when using them.
Sealing Compound	the material which does not include "Silicon group"  [Recommended products] modified silicon caulk (Konishi Co., Ltd.)	Do not use silicon-based sealing compounds. In addition, about the recommendation product, please operate ROSAHL after completely cured.  (Please avoid operating ROSAHL before curing.)
Adhesive	the material which does not include "Silicon group"  [Recommended products] Silex, SL220W, SL220LB (Konishi Co., Ltd.)	Do not use silicon-based adhesives.
Gasket	Silicon rubber (secondary vulcanization finished) EPT rubber [Ethylene-propylene] (single bubble) PTFE rubber [Polytetrafluoroethylene]	About the silicon rubber, please perform secondary vulcanization by all means. (ex. 200 deg C / 6 hours) In addition, we don't evaluate all silicon rubber, EPT rubber, PTFE rubber. Please evaluate enough when using them.

The above are just as of April 1, 2021 but not all of them. Please verify in advance and evaluate enough when using our electric dehumidifier "ROSAHL". We don't take any responsibility or liability for any damage or loss caused through the unknown phenomenon and the wrong usage.

### Precautions in the Use for the Storage Cabinet

1. When you use ROSAHL to dehumidify into the storage cabinet, do not store volatile rust preventive or things that organic gas volatilizes. The volatile gas which is released from goods reacted at a membrane's anode and new harmful gas is produced.  
As a result, not only it causes decrease in performance of ROSAHL, but also it might adversely affect on goods in the storage cabinet. We cannot guarantee even if harm occurs to the stored valuables under the influence of new produced gas. Please evaluate enough when you use ROSAHL for the storage cabinet.
2. The maker who produces and sells storage cabinet equipped with ROSAHL should explain that enough for end users using the storage cabinet.