

Solid polymer Electrolytic Dehumidifying Element

ROSAHL

Product Specification

Model : MDL - 5

RYOSAI TECHNICA CO., LTD.

RB-PS12003A

## 1. Application

This specification document is applied to model MDL-5 of Solid polymer Electrolytic Dehumidifying Element "ROSAHL".

## 2. Outline

Drawing No : RB-R50X0028 (Refer to page 6)

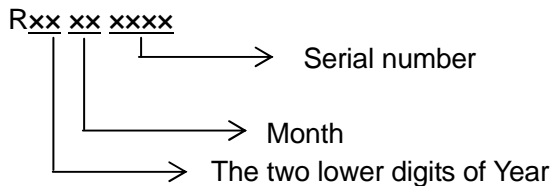
## 3. Specification

- 1). Operating temperature :  $-10\sim 50^{\circ}\text{C}$  (ambient environment)
- 2). Operating humidity :  $\sim 95\%RH$  (ambient environment)
- 3). Transportation temperature :  $-20\sim 60^{\circ}\text{C}$
- 4). Weight : Approx. 25g
- 5). Applicable volume :  $\sim 1.0\text{m}^3$   
(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.)
- 6). Element terminal voltage : 3V DC  $\pm 0.1V$
- 7). Dehumidifying capacity before shipment : 8.0g/day (at  $30^{\circ}\text{C}$ , 60%RH)
- 8). Stationary current :  $\sim 1.4A$  (at  $30^{\circ}\text{C}$ , 60%RH)
- 9). Peak current : 12A (at  $30^{\circ}\text{C}$ , 60%RH) (for reference)
- 10). Annual average power consumption : 3W (at  $20^{\circ}\text{C}$ , 60%RH)
- 11). Element connecting terminal type : (+)side:STO-41T-110N(NICHIFU) or equivalent  
(-)side:STO-41T-110N-8(NICHIFU) or equivalent  
(Refer to the drawing)
- 12). RoHS compliant product

## 4. Indication

Indicated the following items. (Refer to the drawing)

- 1). Model Name
- 2). Manufacturing Number



- 3). + , - (Polarity indicator)
- 4). 除湿側 (Dehumidifying side)  
放湿側 (Moisture discharging side)

## 5. Delivery Inspection

Tested the following inspection items.

- 1). Appearance
- 2). Dehumidifying capacity

## 6. Packaging

The products are packed individually and fill the box with them to avoid breakage failure while transport.

## 7. Accessory

- 1). Instruction manual 1 piece
- 2). Electric wire with connecting terminal 1 piece

8. Option

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)

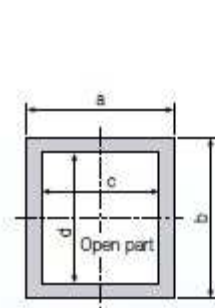


Figure 1

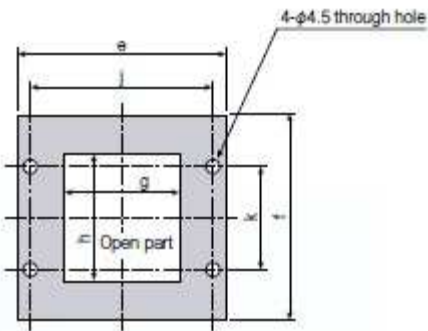
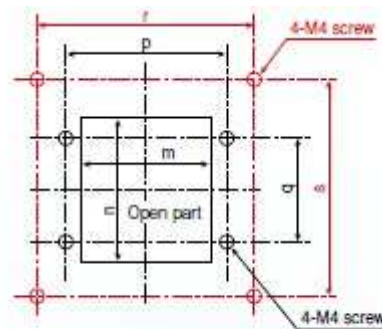
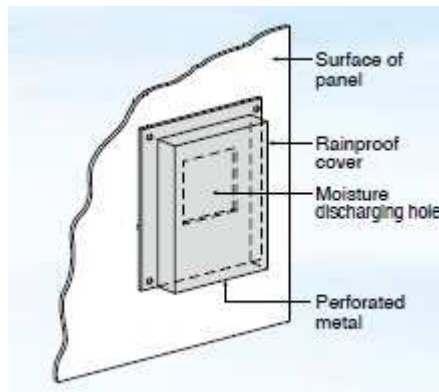


Figure 2



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

Figure 3

(unit:mm)

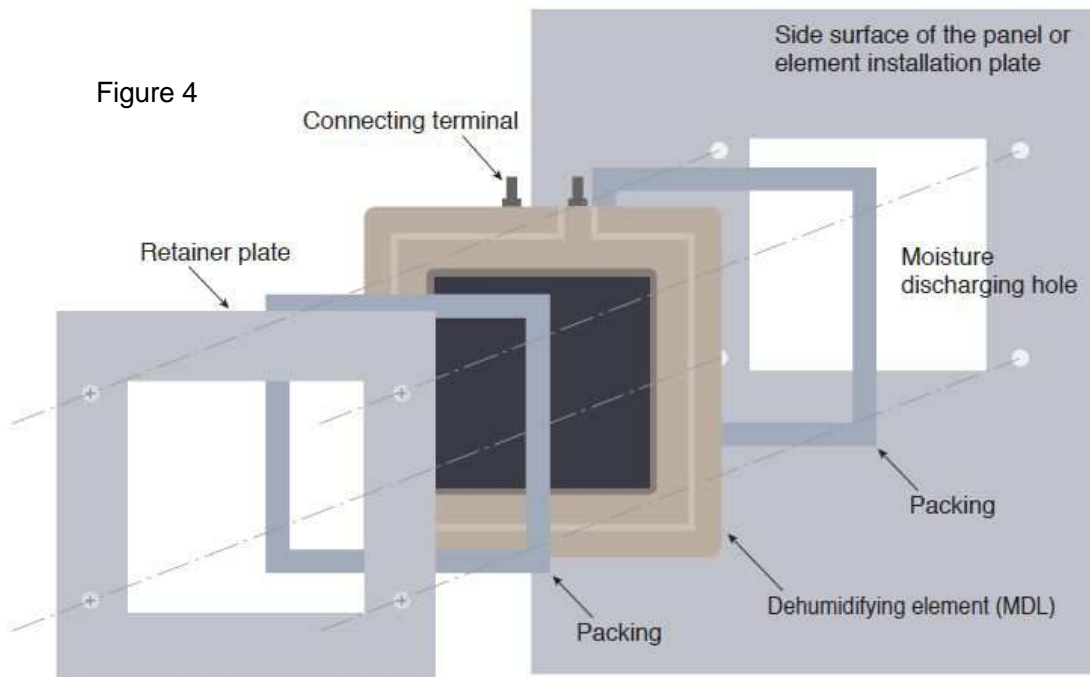
Packing (Figure 1)				Retainer plate (Figure 2)						Main body installation dimensions (Figure 3)				Rainproof cover installation dimensions (Figure 3)		
a	b	c	d	e	f	g	h	j	k	m	n	p	q	r	s	Rainproof cover Model No.
70	70	55	55	105	75	55	55	95	40	55	55	95	40	135	125	For RDH-5J1

9. Installation (Refer to Figure 4)

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)

Put packings on both sides of the dehumidifying element and attach a retainer plate and fix the element with four M4 screws.

Attach a rainproof cover with an anti-insect net (perforated metal) to protect the element from water or insects when you use it outdoors.



10. 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 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.)

Recommended power supply specifications

	MDL-5
Rated output voltage	3V DC
Rated output current	3A
Overcurrent protection function	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

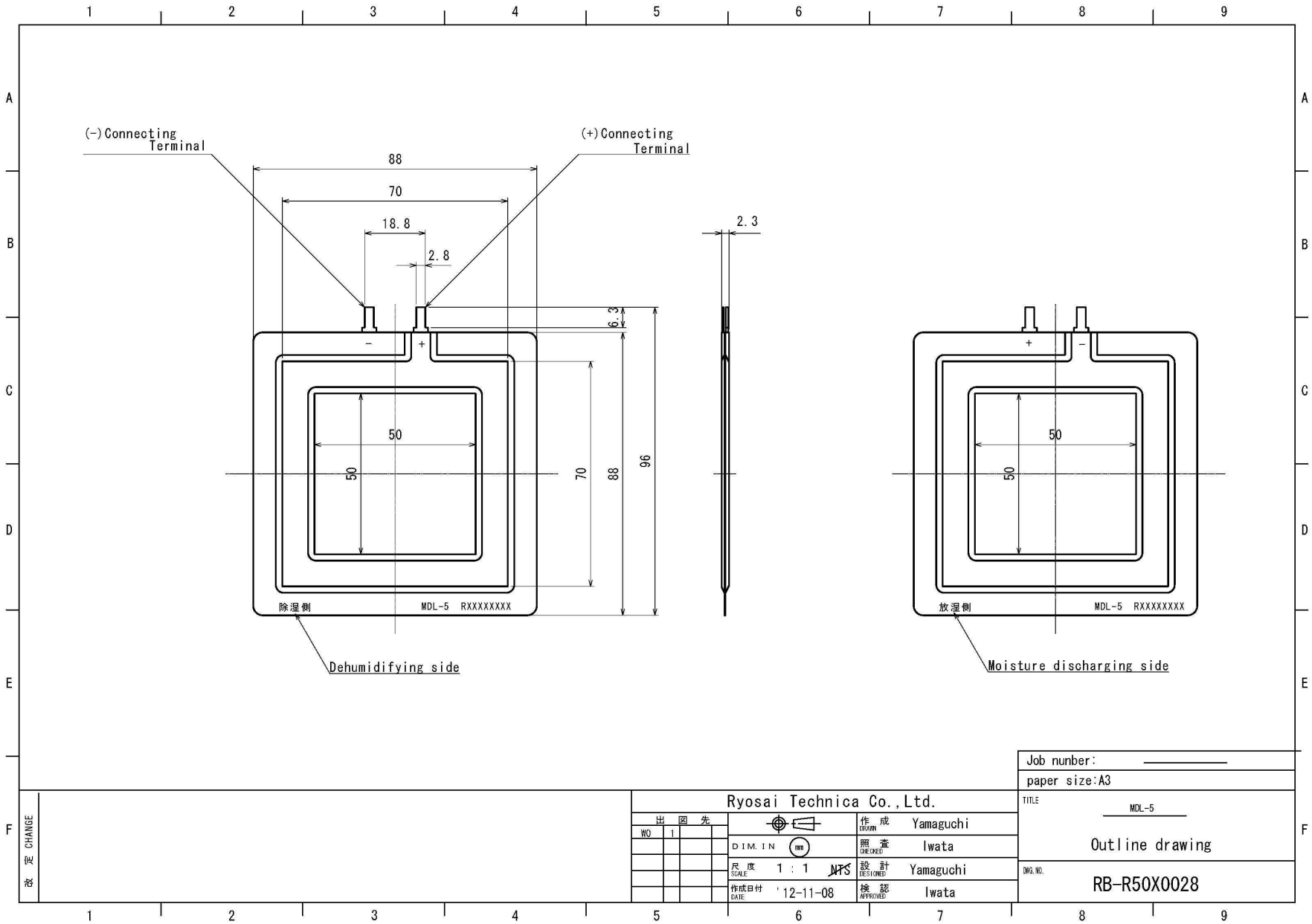
Note: Use a constant or fold-back current limiting about overcurrent protection function.

You cannot use the power supply of the Hiccup mode because the voltage more than 2V is necessary for an 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.

(9/9)



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