



# Model RCD™-1 Passive Dehydrator

Part Number 17958

October 1997

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P/N 17697

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## Operation

### General

Although containing no moving parts, the RCD-1 Passive Dehydrator keeps small volume waveguide and coax systems dry. It provides emergency backup dehydration in larger systems, eliminating the need to operate pressurization equipment from emergency power. The RCD-1 contains desiccant sealed in a pressure-tight container. It provides a male 1/8" NPT pressure fitting. Gas diffusion insures that the desiccant is exposed to any water vapor present in the system. Unlike mechanical pressurization, the RCD-1 works best when the waveguide or coax system is tightly sealed.

The RCD-1 employs a blend of silica gel and activated alumina desiccants. This combination provides cost effective drying while indicating when desiccant regeneration is required. The desiccant can either be replaced or regenerated by heating in a convection oven. Depending upon the system volume and tightness along with environmental conditions at the site, the desiccant lasts 12 to 18 months, or more, before requiring attention.

A broken feed window at the antenna can expose waveguide or coax to rain or melted snow. Under these conditions, the negligible solubility of the desiccant blend used in the RCD-1 will neither contribute to the problems caused by water immersion nor leave a corrosive residue. After immersion, RCD-1 performance can be completely restored by replacing the desiccant.

A copy of the Material Safety Data Sheet for the desiccant blend is available from Customer Service.

### Applications

RCD-1 applications include both primary and secondary dehydration. Primary applications include waveguide/coax drying where the RCD-1 is the only dehydrator. These include systems with volumes smaller than one cubic foot. This limit can be increased to an extent by using multiple RCD-1s.

The RCD-1 does not require electric power. Thus, it is ideally suited to applications with limited power budgets such as solar powered stations.

Secondary applications include backing up mechanical pressurization systems. For example, an RCD-1 could eliminate the need to operate the pressurization system from expensive and limited emergency power (i.e., UPS). It would also insure dry waveguide or coax in the event of pressurization equipment failure. At unattended sites, backup could convert an emergency into a routine service call.

Use the RCD-1 for backing up pressurization equipment operating at pressures up to 8 psig. Safety requires limiting the absolute maximum pressure to 20 psig.

During shipping and storage prior to installation, microwave equipment can be exposed to moisture condensation. Installing one, or more, RCD-1 effectively prevents this problem.

## **Maintenance**

### **When to Replace or Regenerate the Desiccant**

The RCD-1 uses a granular desiccant blend consisting of white activated alumina and blue silica gel. The silica gel granules turn light pink when spent to indicate the need to replace or regenerate the desiccant.

Normally, the desiccant requires replacement or regeneration every 12 to 18 months. The exact interval depends upon system tightness and environmental conditions. A leaky system in a damp climate will shorten the replacement interval. Monthly visual inspection is recommended.

A feed window failure can fill the waveguide system with water thus immersing the desiccant. If this happens, replace the desiccant since immersion reduces its efficiency.

### **How to Replace or Regenerate the Desiccant**

Detach the tubing from the cap-end of the RCD-1. Avoid disturbing the adapter fitting attached to the cap. Next, remove the RCD-1 by releasing the cable tie or separating it from its Velcro® mounting pad.

Remove the cap from the top of the RCD-1 bottle. This may require substantial force. Use slip-joint pliers if necessary.

If you wish to replace rather than regenerate, dispose of the bottle containing the spent desiccant. The pre-measured desiccant is supplied in a replacement bottle. Included with the bottle containing the replacement desiccant are new Velcro® mounting pads. Replace the mounting pads as necessary.

To regenerate the desiccant, use needle nose pliers to remove the gray filter from the inside top of the bottle. If necessary, dry the filter. Save the filter for reinstallation. Empty the RCD-1 into a clean baking dish. Heat the desiccant in a convection oven at 350° F for at least 1 hour or until the silica gel granules

turn dark blue. Cool to room temperature. Immediately thereafter, pour the desiccant into the RCD-1. Reinstall the gray filter in the top of the RCD-1 bottle.

Reinstall the original cap while taking care not to disturb the adapter fitting. Use slip-joint pliers to securely tighten the cap since leakage will reduce the desiccant service life. Reinstall the RCD-1. Reconnect the tubing between the RCD-1 to the waveguide or coax system.

## Replaceable Parts

### Replaceable Parts List

Part Number	Description
17986	RCD -1 Replacement Desiccant Kit

## Installation

### Materials Supplied

Before disposing of the packing materials, verify the inclusion of the items show below in the Packing Lists. Immediately notify Customer Service of any discrepancy or shipping damage.

### RCD-1 Packing List

Quantity	Part Number	Description
1	17956	RCD-1 Passive Dehydrator
1	17957	Accessory Kit
1	17962	Instruction Manual

### Accessory Kit Packing List

Quantity	Part Number	Description
1	17967	Velcro® strip (loop)
1	17968	Velcro® strip (hoop)
1	17984	Velcro® cable clamp
1	14508	Cable clamp mount

### General

The RCD-1 can be located indoors or outdoors. If used outdoors, choose a location protected from exposure to rain, snow, etc. Mount the RCD-1 upright or horizontally. Choose an accessible location since the desiccant requires periodic replacement or regeneration.

The Accessory Kit contains components for mounting the RCD-1 in two different ways. Use the convenient Velcro® strips in fixed installations where vibration and shock are not present. See Figure 1. Alternatively, use the cable clamp to secure the RCD-1 in mobile installations or when extra mechanical security is desired. See Figure 2.

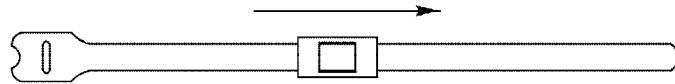
Connecting the RCD-1 to the waveguide requires customer supplied components. These include fittings for connecting tubing between a 1/8" male NPT pipe fitting and the waveguide or coax pressurization flange, the tubing and the waveguide pressurization flange and Teflon® tape for sealing all pipe threads. Remove the red protective cap from the RCD-1 to expose the threaded portion of the pressure fitting. The protective cap prevents the desiccant from absorbing moisture during storage.

Getting the best performance and longest desiccant life requires airtight waveguide. Take extra care to make certain that the waveguide is leak free or at least as tight as is practical.

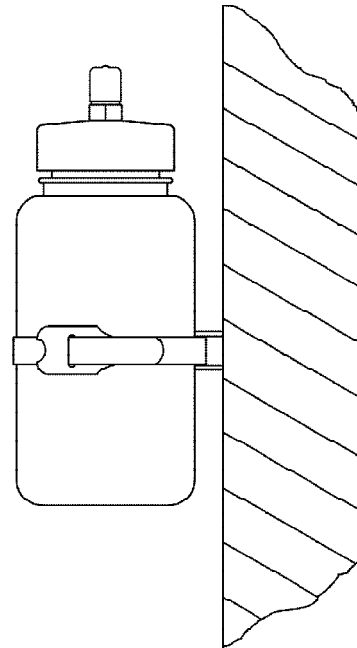
1. Attach connector to bulkhead. #10 screw (customer supplied)



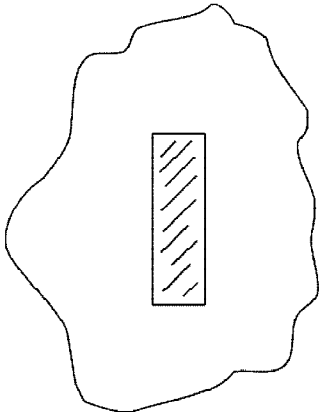
2. Slide Velcro® tie through connector.



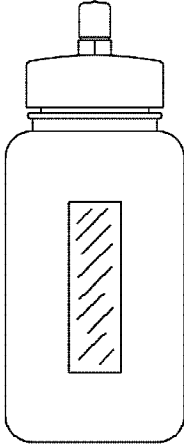
3. Position bottle as shown and tighten Velcro® tie around bottle.



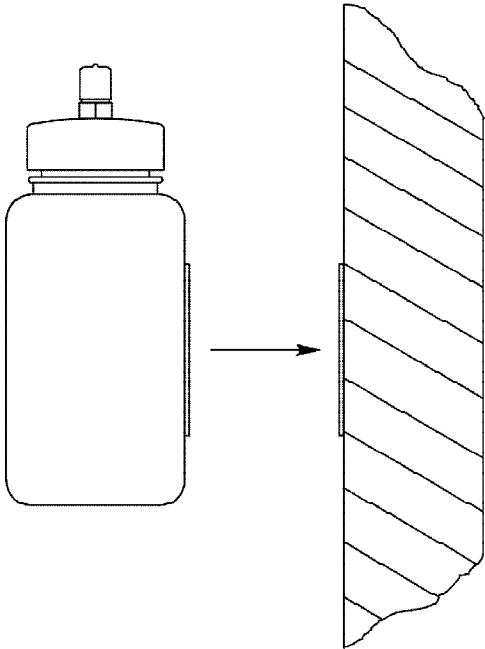
1. Remove plastic backing from first Velcro® strip. Position velcro as shown and stick to bulkhead.



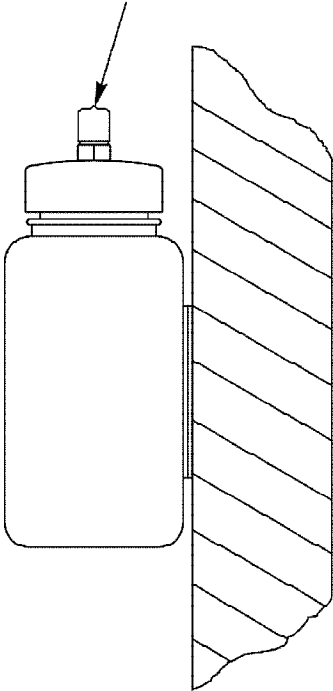
2. Stick second Velcro® strip to bottle as shown.



3. Line up Velcro® strips and press together firmly.



4. Remove red cap and connect adapter.





## **Contacting Customer Service**

### **Office Hours**

8:00 AM to 5:00 PM EST (UTC minus 5 hours)

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