ULTRA-LOW HUMIDITY STORAGE CABINETS 1, 3%RH

Features


Conforms to IEC-61340-5-1 (ESD) Standard for Handling
- Dehumidifies ICs to prevent micro-cracking and can be used as an alternative to baking
- DXU Model cabinets can maintain 1%RH
- Powerful moisture absorbent is utilized to eliminate the use of nitrogen
- No maintenance is required as moisture absorbent is automatically refreshed
- Cabinets are grounded to prevent static electricity
- Wide range of cabinet sizes available

Prevent your components from micro-cracking during reflow with proper Ultra-Low Humidity Storage.

Manufacturer: ERC Co., Ltd.

SEIKA SANGYO GMBH
Why do components require low humidity storage?

McDry™ Prevents Micro-Cracking of IC Packages During Reflow.

The high temperatures involved in vapor phase or reflow passes cause the absorbed moisture to expand rapidly. Micro-cracking occurs in nearly 100% of IC packages containing moisture during the reflow process. Occurring over an extended period of time, this can cause breakage of wiring and other problems. Micro-cracking can be prevented with storage and dehumidification of IC’s using McDry™ as well as resetting the floor life of components according to the IPC/JEDEC J-Std 033b.

AMBIENT STORAGE

The plastic packaging used to manufacture surface mount technology devices will absorb moisture from the environment.

REFLOW SOLDERING

Surface peeling between the die pad and the resin is caused by water vapor pressure during reflow.

The high temperatures involved in vapor phase or reflow soldering cause the absorbed moisture to expand rapidly, thus causing internal stress known as “Popcorning”.

Surface delamination is likely resulting in shear strain on bond wires and wire necking, micro-cracking extending to the outside of the package.

McDry Applications

1. Low humidity storage of IC packages (MSD) which have been removed from moisture barrier bags.
   (To stop the floor life clock of CSPs, BGAs, TQFPs, etc.)
   1) Low humidity storage of MSDs before and leftover after implementation.
   2) Low humidity storage of MSDs that have been removed from mounter.
   3) Low humidity storage of MSDs when writing ROMs.

2. Drying and storing multilayer PC boards before and after mounting.

3. Dry storage of pattern film and prepreg used in the manufacturing of PCBs.

4. Dry storage of semi-mounted PCBs. Effective low humidity storage of PCBs awaiting second-side reflow.

5. Clean, room temperature drying of liquid crystal glass boards after washing. Results in even drying and prevents contamination.

6. Dry storage of quartz crystals and electrode adhesives used in the manufacturing of quartz oscillators.

7. Drying and storing of fiber optics (Micro-lens for WDM) and CCD (Solid-state image sensor).

8. Low humidity storage of electronic components to slow down oxidation.
Absorption and Dehumidification Data of IC Packages

PBGA
Test Sample: PBGA
Pretreatment: Baked at 125 °C, 24 hrs.

Conditions
1. Package is stored in simulated room conditions (30°C, 85% RH, 24 hours).
   A controlled temperature, humidity chamber is used.
2. After Process 1 above has been completed, the package is stored in a low humidity storage case for 100 hrs at 5% RH.
3. After the baking process the package is stored in a low humidity storage case at 5% RH.

Low Humidity Storage of Thin Multi-Layer PCBs

Multi-layered PCBs absorb moisture at a faster rate as they become thinner. Layer break off and blistering will occur during reflow if the moisture content of the PCB exceeds 0.2% (weight).

Test Sample: 6 layer Glass Epoxy PCB
Size: 50 x 100 x 1t (mm)
Pre-Treatment: Baked for 24 hours @125°C
Humidification: Steamed for 2 hours
De-Humidification: Stored in McDryTM Cabinet @5%RH

Opening-Closing Data of DXU-1001

The door opening place and time
No. ①……4doors A>B>C>D……2 min. open all
No. ②……7doors A>B>C>D……1door/②……20 sec. open
No. ③……1door A………30 sec. open
No. ④……2doors A>B……30 sec. both open
No. ⑤……2doors A>B……2 min. both open
No. ⑥……2doors A>B……1 min. both open

Humidity Data of McDry Cabinets

Test Conditions: 25°C 60% RH

DXU-1001 (1% RH Model):
Internal RH

Test Conditions: 25°C 60% RH

MC-1001 (3% Model):
Internal RH
Dehumidifying Principle

McDry™ Electronic Drying Storage Cases provide low humidity storage without the use of nitrogen. Humidity is removed from the cabinets by use of a powerful zeolite desiccant. The desiccant is automatically recycled with a heating mechanism and does not require replacement. Moisture absorbed by the zeolite desiccant is vaporized and released outside of the cabinet. Memory shaped metal is utilized for fail proof ventilation. Forced air-flow convection system desiccates the entire cabinet without requiring the use of a fan for optimal dehumidification to take place.

Handling and Storage Guidelines of IC Packages

Storing in 5% RH and 10% RH storage cabinets in accordance with IPC/JEDEC J-STD 033B

In accordance with IPC/JEDEC J-STD-033B, IC packages that have been removed from MBBS must be kept under a condition of 5% or 10% relative humidity to prevent components from absorbing moisture. However, during the mounting process, opening and closing of dry cabinet storage doors may occur frequently in order to remove and replace moisture-sensitive devices. This will allow ambient air to flow into the cabinet and may raise the RH level. To limit this from occurring and to keep the relative humidity inside of the cabinet below 5% or 10% as specified, a consistent, ultra-low humidity storage level is recommended. Therefore, the storage guidelines utilizing the McDry™ cabinet corresponding to the repetition of opening and closing of doors are as follows:

<table>
<thead>
<tr>
<th>Model</th>
<th>RH level</th>
<th>Frequency of opening-closing of doors</th>
<th>Usage example</th>
</tr>
</thead>
</table>
| DXU models | 1% RH    | Once in approx. 20 – 40 mins.        | 1. Ultra-low humidity storage of IC’s for cabinets that are accessed frequently.  
2. Storage of IC packages that require ultra-low humidity storage such as components with high MSL classifications. |
| MCU models | 3% RH    | Once in approx. 1 hr – 2 hrs.        | 1. Ultra-low humidity storage of IC’s for cabinets that are not accessed frequently.  
2. Long-term storage of IC packages and electrical components.  
3. Storage of PCBs, etc. |
DXU Model 1%RH

Specifications: (Note: Specifications are subject to change due to product improvement.)

<table>
<thead>
<tr>
<th>Item/Model</th>
<th>DXU-1001</th>
<th>DXU-1002</th>
<th>DXU-501</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Dimensions (mm)</td>
<td>1200 W x 700 D x 1850 H</td>
<td>1150 W x 600 D x 1700 H</td>
<td>600 W x 700 D x 1850 H</td>
</tr>
<tr>
<td>Internal Dimensions (mm)</td>
<td>1200 W x 700 D x 1850 H</td>
<td>550 W x 600 D x 1700 H</td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>Approx 1200 L</td>
<td>US-5000 x 2</td>
<td>Approx 600 L</td>
</tr>
<tr>
<td>Dry Unit</td>
<td>US-5000 x 2</td>
<td>US-5000 x 1</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Bonderized steel with melamine coating</td>
<td>Bonderized steel with glass windows</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Silver</td>
<td>Silver</td>
<td>Silver</td>
</tr>
<tr>
<td>Door (Magnetic)</td>
<td>6 Doors with glass windows</td>
<td>4 Doors with glass windows</td>
<td>3 Doors with glass windows</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx 200 Kg</td>
<td>Approx 190 Kg</td>
<td>Approx 110 Kg</td>
</tr>
<tr>
<td>Electrical Requirement</td>
<td>230 V</td>
<td>94 W/h (Max 740 W)</td>
<td>230 V</td>
</tr>
<tr>
<td>Accessories Include</td>
<td>Casters, RH Meter, 5 Shelves</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Features
1. Can maintain an RH level of 1% RH
2. Equipped with a digital RH Meter
3. Locking Doors
4. Shelves are adjustable and can hold 220 lbs (100 kgs.)
5. Grounded to prevent static electricity
Features

1. Can maintain an RH level of 3%
2. Equipped with a digital RH Meter
3. Locking doors
4. Adjustable shelves
5. Loading capacity MCU-201, 301, 340, 580: 110lbs. (50kgs.)
6. Grounded to prevent static electricity

Specifications: (Note: Specifications are subject to change due to product improvement.)

<table>
<thead>
<tr>
<th>Item/Model</th>
<th>MCU-201</th>
<th>MCU-301</th>
<th>MCU-401</th>
<th>MCU-340</th>
<th>MCU-580</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Dimensions (mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width x Depth x Height</td>
<td>500 W x 530 D x 630 H</td>
<td>500 W x 630 D x 1200 H</td>
<td>500 W x 630 D x 1530 H</td>
<td>880 W x 460 D x 980 H</td>
<td>880 W x 800 D x 980 H</td>
</tr>
<tr>
<td>Internal Dimensions (mm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width x Depth x Height</td>
<td>480 W x 500 D x 540 H</td>
<td>480 W x 600 D x 1080 H</td>
<td>480 W x 600 D x 1410 H</td>
<td>860 W x 430 D x 840 H</td>
<td>860 W x 730 D x 840 H</td>
</tr>
<tr>
<td>Capacity</td>
<td>Approx 135 Liters</td>
<td>Approx 310 Liters</td>
<td>Approx 400 Liters</td>
<td>Approx 300 Liters</td>
<td>Approx 520 Liters</td>
</tr>
<tr>
<td>Material</td>
<td>Bonderized steel with melamine coating</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Ivory</td>
<td>Ivory</td>
<td>Ivory</td>
<td>Ivory</td>
<td>Silver</td>
</tr>
<tr>
<td>Door (Magnetic)</td>
<td>1 Door with glass window</td>
<td>2 Doors with glass windows</td>
<td>3 Doors with glass windows</td>
<td>2 Doors with glass windows</td>
<td>2 Doors with glass windows</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx 30 kgs.</td>
<td>Approx 60 kgs.</td>
<td>Approx 70 kgs.</td>
<td>Approx 58 kgs.</td>
<td>Approx 80 kgs.</td>
</tr>
<tr>
<td>Electrical Requirement</td>
<td>230 V 21 W/h (Max 140 W)</td>
<td>230 V 33 W/h (Max 250 W)</td>
<td>230 V 33 W/h (Max 250 W)</td>
<td>230 V 33 W/h (Max 250 W)</td>
<td>230 V 47 W/h (Max 370 W)</td>
</tr>
<tr>
<td>Accessories Include</td>
<td>RH Meter, 4 shelves</td>
<td>RH Meter, 8 shelves</td>
<td>RH Meter, 3 shelves</td>
<td>RH Meter, 8 shelves</td>
<td>RH Meter, 3 shelves</td>
</tr>
</tbody>
</table>

Humidity Data of McDry Cabinets

**MCU-301 (3% RH Model): Internal RH**

Test Conditions: 25°C 60% RH

**MCU-401 (3% RH Model): Internal RH**

Test Conditions: 25°C 60% RH
## Specifications

<table>
<thead>
<tr>
<th>Item/Model</th>
<th>DXU-580 SF</th>
<th>DXU-580 AF</th>
<th>DXU-1002-1000</th>
<th>DXU-4006</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Dimensions (mm)</td>
<td>880 W x 1200 D x 132 H</td>
<td>880 W x 1200 D x 1600 H</td>
<td>1200 W x 1045 D x 1850 H</td>
<td>1650 W x 1305 D x 2255 H</td>
</tr>
<tr>
<td>Internal Dimensions (mm)</td>
<td>830 W x 1100 D x 790 H</td>
<td>830 W x 1100 D x 955 H</td>
<td>1150 W x 1000 D x 1552 H</td>
<td>1490 W x 1210 D x 2150 H</td>
</tr>
<tr>
<td>Capacity</td>
<td>Approx 900 Liters</td>
<td>Approx 900 Liters</td>
<td>Approx 2200 Liters</td>
<td>Approx 3800 Liters</td>
</tr>
<tr>
<td>Dry Unit</td>
<td>US-5000 x 2</td>
<td>US-6000 x 2</td>
<td>US-5000 x 8</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Ivory</td>
<td>Silver</td>
<td>Ivory</td>
<td></td>
</tr>
<tr>
<td>Door (Magnetic)</td>
<td></td>
<td>2 Doors with glass windows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Requirement</td>
<td>230 V 94 W/h (Max 740 W)</td>
<td>230 V 96 W/h (Max 500 W)</td>
<td>230 V Max 530 W</td>
<td></td>
</tr>
<tr>
<td>Accessories Include</td>
<td>Casters, RH Meter, 1 shelves</td>
<td>Casters, RH Meter, 5 shelves</td>
<td>Casters, RH Meter, 1 slide shelves</td>
<td></td>
</tr>
</tbody>
</table>
**MC Model 3%RH**

**Features**
1. Can maintain an RH level of 3%
2. Equipped with a digital RH Meter
3. Locking Doors
4. Shelves are adjustable and can hold 220lbs. (100kgs.)
5. Grounded to prevent static electricity

**Specifications**

<table>
<thead>
<tr>
<th>Item/Model</th>
<th>MC-1001</th>
<th>MC-1002</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Dimensions (mm)</td>
<td>1200 W x 700 D x 1850 H</td>
<td>1200 W x 700 D x 1850 H</td>
</tr>
<tr>
<td>Internal Dimensions (mm)</td>
<td>1150 W x 600 D x 1700 H</td>
<td>1150 W x 600 D x 1700 H</td>
</tr>
<tr>
<td>Capacity</td>
<td>Approx 1200 Liters</td>
<td>Approx 1200 Liters</td>
</tr>
<tr>
<td>Dry Unit</td>
<td>US-5000 x 2</td>
<td>US-5000 x 2</td>
</tr>
<tr>
<td>Color</td>
<td>Silver</td>
<td>Silver</td>
</tr>
<tr>
<td>Door (Magnetic)</td>
<td>6 Doors with glass windows</td>
<td>4 Doors with glass windows</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx 190 kgs.</td>
<td>Approx 180 kgs.</td>
</tr>
<tr>
<td>Electrical Requirement</td>
<td>230 V 94 W/h (Max 370 W)</td>
<td>230 V 94 W/h (Max 370 W)</td>
</tr>
<tr>
<td>Accessories Include</td>
<td>Casters, RH Meter 1 shelves</td>
<td>Casters, RH Meter 1 shelves</td>
</tr>
</tbody>
</table>

**Option**

- **Humidity instrumentation with alarm**
  Caution advisory indicator lights in case of exceeding the limited time and the set value.

- **Casters**
  It is possible to be installed for MCU type (DXU type is standard equipment.)

- **Reel rack**
  Various tapes can be efficiently kept.

- **Slide shelves**
  It is easy to take out the commodity by sliding the shelves.

- **Data logger**
  Record of humidity data

- **N2 socket**
  Using nitrogen is possible.

- **Shelf board**
  The number of shelves can be increased. Stainless shelves are also available.

- **Adjuster**
  Tip resistant

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**Agent Europe:**

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