

# ULTRA-LOW HUMIDITY

## STORAGE CABINETS

# McDry

PRODUCT BROCHURE



ERC Co., Ltd.

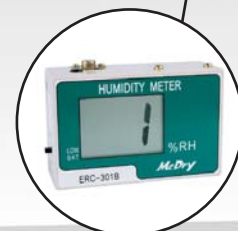
**SEIKA**



CE



ULTRA-LOW  
HUMIDITY STORAGE  
CABINETS 1%RH



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



Micro-cracking  
(Popcorn Crack)



**Conforms to IPC/JEDEC J-STD-033D  
and IPC-1601 Guidelines.**

- ESD safe design adheres to IEC-61340-5-1 (ESD) Standard.
- Dehumidifies ICs to prevent micro-cracking and can be used as an alternative to baking.
- All models maintain 1% RH.
- Powerful moisture absorbent is utilized to eliminate the use of nitrogen.
- Wide range of cabinets.

<http://www.mcdry.eu>

## MSL (IC Package, Chip LEDs) Device Management with McDry

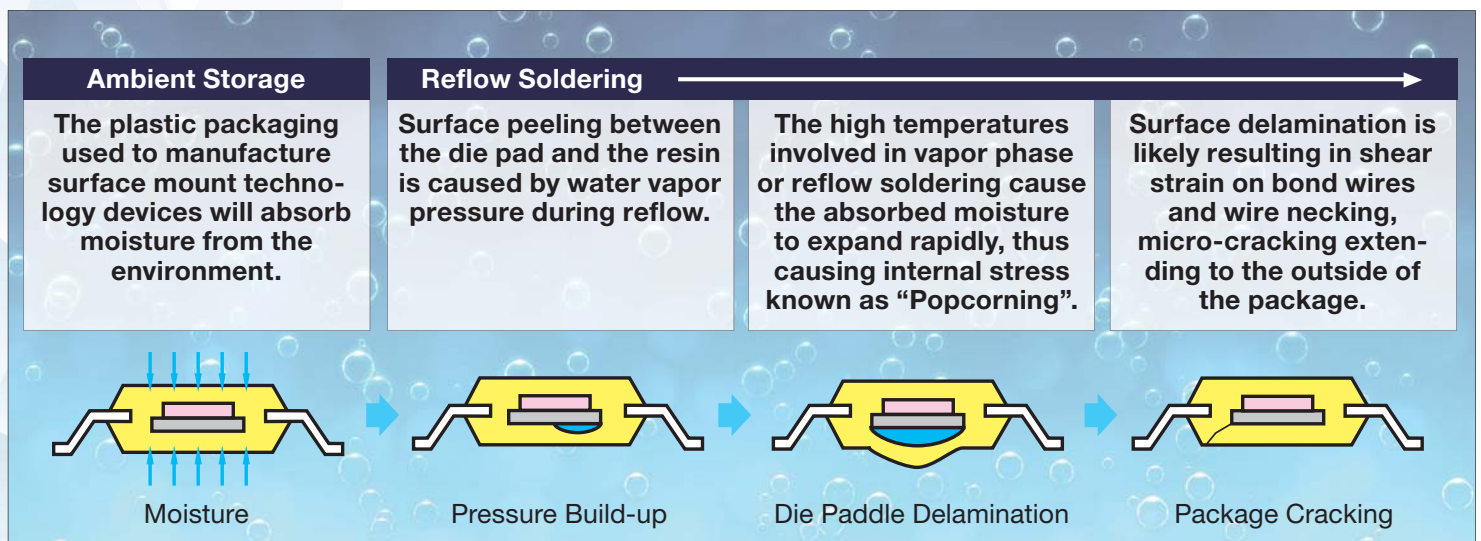
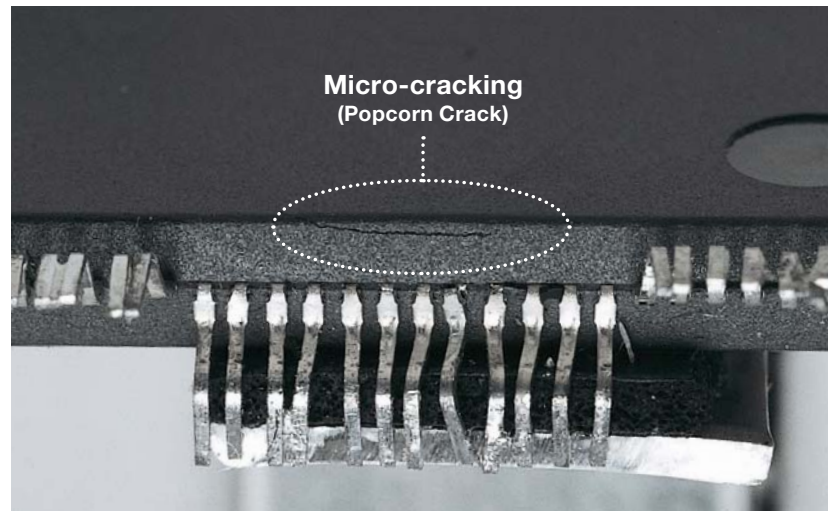
### Why do components require low humidity storage?

**McDry Prevents Micro-Cracking of IC Packages and chip LEDs 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 and chip LEDs 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 and chip LEDs using McDry as well as resetting the floor life of components according to the IPC/JEDEC J-STD-033D.



## Protect Components with Dry Storage in McDry

**When moisture-sensitive components are stored in a dry environment capable of maintaining 5% RH or less, the floor life will be indefinite according to the IPC/JEDEC J-STD 033D.**

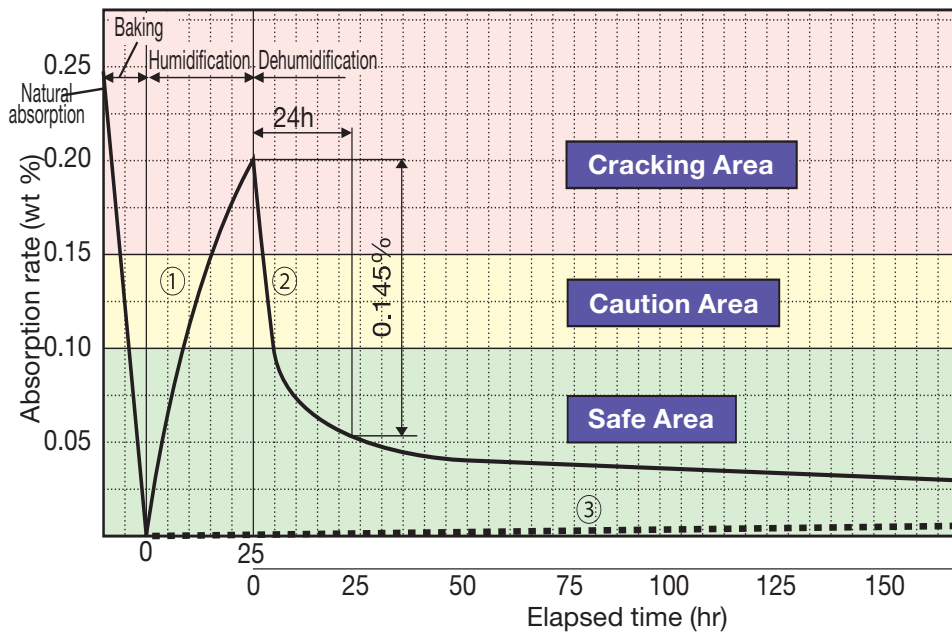
McDry Dry Storage Cabinets maintain ultra-low humidity levels under the recommended indefinite safe floor life guideline of dry storage at 5% RH or less.

For storing moisture-sensitive components and materials in the McDry cabinet, the floor life of the parts during the SMT assembly process. Simply place the MSL parts in McDry to maintain safe dry storage and remove them as required.

Moisture Sensitivity Level	Floor Life(out of bag) at factory ambient < 30°C and / 60% RH or as stated
1	Unlimited at < 30°C / < 85%RH
2	1 year
2a	4 weeks
3	168 hours
4	72 hours
5	48 hours
5a	24 hours
6	Mandatory bake before use. After bake, must be reflowed within the time limit specified on the label.



## Absorption and Dehumidification Data of IC Packages



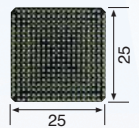
### PBGA

Test Sample: PBGA

Pretreatment:

Baked at 125°C, 24hrs.

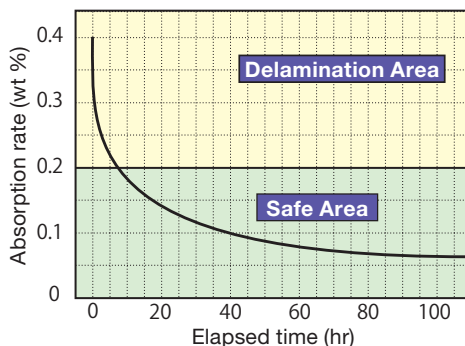
Thickness 1.8 mm



### 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

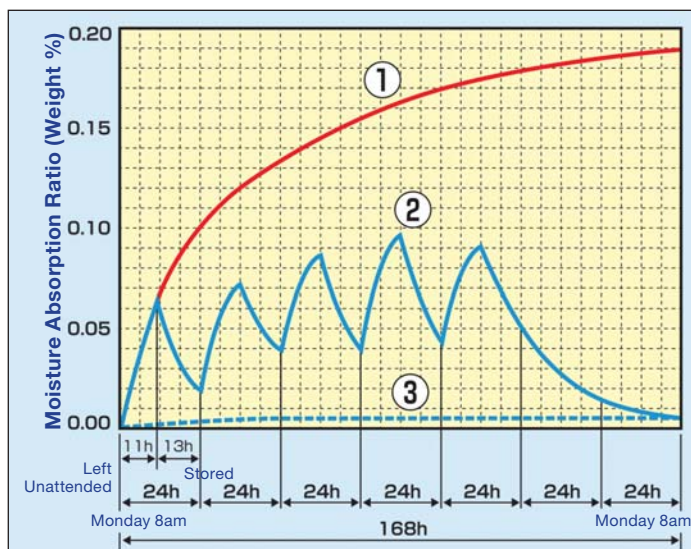
Size: 50 x 100 x 1t (mm)

Pre-Treatment: Baked for 24 hours @125°C

Humidification: Steamed for 2 hours

De-Humidification: Stored in McDry Cabinet @5%RH

## Data on Moisture Absorption and Dehumidification of Chip LEDs



### Experiment

#### Data on moisture absorption and dehumidification of chip LEDs

Example: LED3025 (3.0 mm x 2.5 mm x t1.3 mm)

floor life 168 h

Pretreatment: 48 hour-Baking Process at +60C

(LED makers' baking guideline)

- ① Chip LED stored in ambient environment (30°C, 60% RH) for 168 hours.
- ② After 11 hours of storage in this environment, it was left for 13 hours in a dry box at < 3% RH. This process was repeated 5 times from Monday to Friday and left for 61 hours in a dry box at 3% RH.
- ③ After baking, the LED chip was stored in a dry cabinet capable of maintain 3% RH.  
(This is a similar condition with an LED chip that is stored in an dry cabinet right after opening a moisture barrier bag.)

## Manufactured for High Performance

**McDRY**



Locking doors that seal tightly.

Solid steel construction with ESD safe design.

Adjustable shelves (stainless steel available).

Digital RH meter

Drying unit

ESD safe casters Standard for 501A,1001A,1002A type cabinets.

Cabinet is grounded to prevent component damage due to static electricity.



### Range

Humidity: 1~70%RH

Accuracy:  $\pm 3\%$  RH



### Features

1. Powerful zeolite desiccant eliminates the need for nitrogen.
2. Desiccant is automatically recycled and does not require replacement.

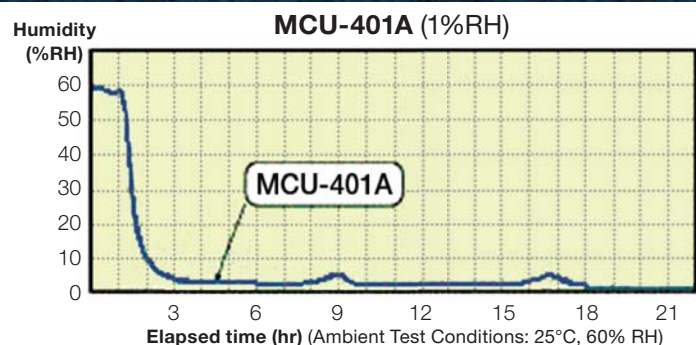
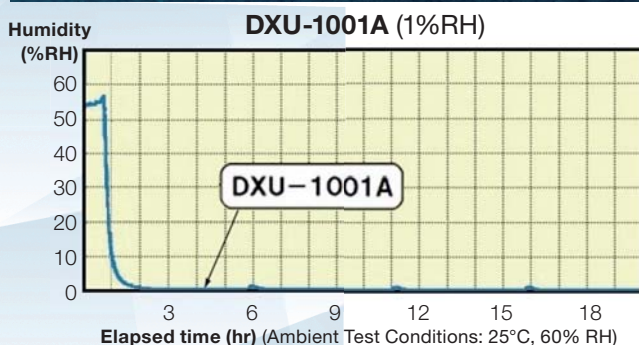
## Handling and Storage Guidelines of IC Packages

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

In accordance with IPC/JEDEC J-STD-033D, 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:

Model	RH level	Frequency of opening-closing of doors	Usage example
DXU models	1% RH	Once in approx. 10 – 20 mins.	<ol style="list-style-type: none"> <li>1. Ultra-low humidity storage of IC's for cabinets that are accessed frequently.</li> <li>2. Storage of IC packages that require ultra-low humidity storage such as components with high MSL classifications.</li> </ol>
MC models MCU models	1% RH	Once in approx. 0.5 – 2 hrs	<ol style="list-style-type: none"> <li>1. Ultra-low humidity storage of IC's for cabinets that are not accessed frequently.</li> <li>2. Long-term storage of IC packages and electrical components.</li> <li>3. Storage of PCBs, etc.</li> </ol>

## Humidity Data of McDry Cabinets



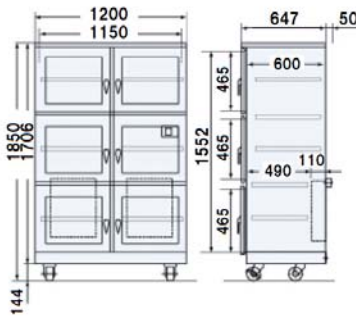


## DXU Mode / 1%RH Quick Dehumidification Model

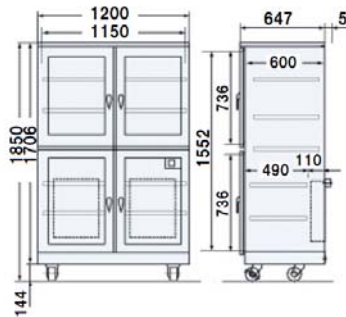
Door Opening / Closing: Once every 20 – 40 min.



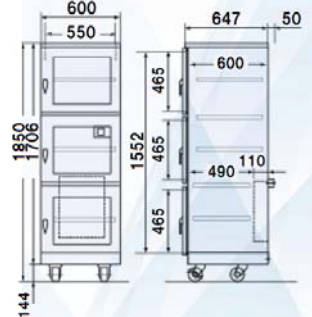
**DXU-1001A**  
1200ℓ (6-door)



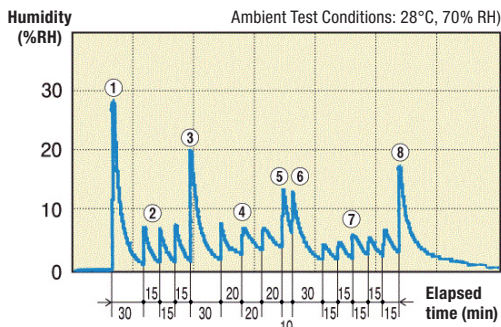
**DXU-1002A**  
1200ℓ (4-door)



**DXU-501A**  
600ℓ (3-door)



### Opening-Closing Data of DXU-1001A



#### Location and time of door opening/closing

- No. (1) ..... 2 doors (C), (D) ..... 2 min. open both  
 No. (2) ..... 1 door of (A), (B), (C) ..... 15 sec. open  
 No. (3) ..... 2 doors (A), (B) ..... 1 min. open both  
 No. (4) ..... 1 door of (B), (E), (F) ..... 15 sec. open  
 No. (5) ..... 2 doors (E), (F) ..... 1 min. open both  
 No. (6) ..... 2 doors (E), (F) ..... 30 sec. open both  
 No. (7) ..... 1 door of (A), (B), (C), (E), (F) ..... 15 sec. open  
 No. (8) ..... 2 doors (C), (D) ..... 30 sec. open both

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

ITEM	MODEL	DXU-1001A	DXU-1002A	DXU-501A
External Dimensions (mm)		W1200×D700×H1850	W1200×D700×H1850	W600×D700×H1850
Internal Dimensions (mm)		W1170×D586×H1593	W1170×D586×H1593	W570×D586×H1607
Capacity (ℓ)		Approx. 1200	Approx. 1200	Approx. 600
Drying Unit		US-5000F×2		US-5000F
Material		High-grade steel construction with ESD-safe and Anti corrosion coating		
Color		Silver		
Doors (Magnetic)		6 doors with glass windows	4 doors with glass windows	3 doors with glass windows
Weight		Approx. 200 kgs.	Approx. 190 kgs.	Approx. 110 kgs.
Electrical Requirement		AC230V 50/60Hz 64W/h ( MAX700W )		AC230V 50/60Hz 31W/h ( MAX 350W )
Accessories		5 Shelves, Locks, RH meter, Caster, Ground terminal		

### Features

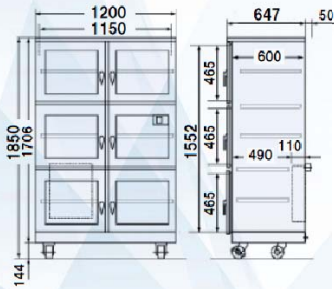
1. Can maintain an RH level of 1%.
2. Equipped with a digital RH Meter.
3. Locking Doors.
4. Adjustable shelves.
5. Loading capacity 100 Kgs
6. Grounded to prevent static electricity.

## MC, MCU Model / 1% RH

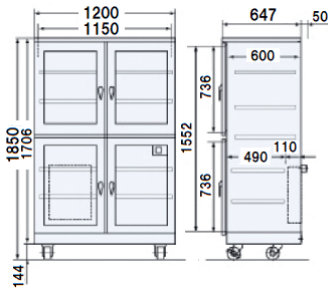
Door Opening / Closing: Once every 0.5 – 2 hrs.



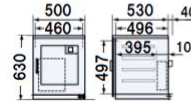
**MC-1001A**  
1200ℓ (6-door)



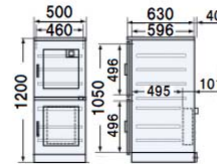
**MC-1002A**  
1200ℓ (4-door)



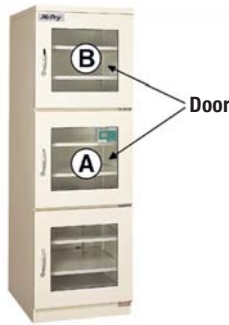
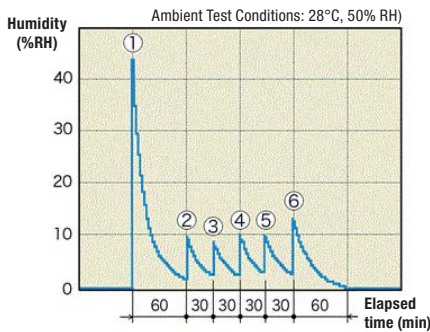
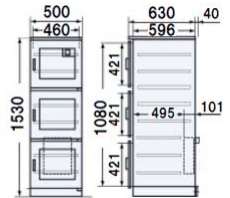
**MCU-201A**  
135ℓ  
(1-door type)



**MCU-301A**  
300ℓ  
(2-door Type)



**MCU-401A**  
400ℓ  
(3-door type)



### Location and time of door opening/closing

- No. (1) ..... 2 doors (A), (B) .... 2 min. open both  
No. (2) (3) (4) (5) ..... 1 door (A) ....20 sec. open  
No. (6) ..... 1 door (A)..... 1 min. open

### Features

1. Can maintain an RH level of 1%.
2. Equipped with a digital RH Meter.
3. Locking Doors.
4. Loading capacity  
MCU-201A, 301A, 401A: 50 kgs  
MC-1001A, MC-1002A: 100 kgs
5. Grounded to prevent static electricity.

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

ITEM	MODEL	MC-1001A	MC-1002A	MCU-201A	MCU-301A	MCU-401A
External Dimensions (mm)		W1200×D700×H1850	W1200×D700×H1850	W500×D570×H630	W500×D670×H1200	W500×D670×H1530
Internal Dimensions (mm)		W1170×D586×H1593	W1170×D586×H1593	W482×D496×H546	W482×D596×H1099	W482×D596×H1399
Capacity (ℓ)		Approx. 1200	Approx. 1200	Approx. 135	Approx. 310	Approx. 400
Drying Unit		US-5000F		USF-3200	USF-4000	USF-4000
Material		High-grade steel construction with ESD-safe and Anti corrosion coating				
Color		Silver		Ivory		
Doors (Magnetic)		6 doors with glass windows	4 doors with glass windows	1 doors with glass window	2 doors with glass windows	3 doors with glass windows
Weight		Approx. 190 kgs.	Approx. 180 kgs.	Approx. 30 kg	Approx. 60 kgs.	Approx. 70 kgs.
Electrical Requirement		AC230V 50/60Hz 31W/h (MAX 350W)		AC230V 50/60Hz 20W/h (MAX 155W)	AC230V 50/60Hz 25W/h (MAX 240W)	
Accessories		5 Shelves, Locks, RH meter, Caster, Ground terminal		4 Shelves, Locks, RH meter, Ground terminal	8 Shelves, Locks, RH meter, Ground terminal	



## Feeder Bank & Large Depth Cabinet / 1 % RH



**DXU-580SF**  
(1% RH)  
Electric Tape Feeder Storage



**DXU-580AF**  
(1% RH)  
Mechanical Tape Feeder Storage



**DXU-1002-1000A**  
2000ℓ  
(2-door type)



**DXU-1002LA**  
1600ℓ  
(4-door type)

**Tape feeder**

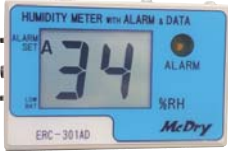

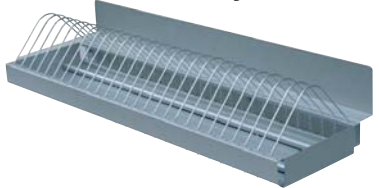









Tape feeder with the tape reels can be stored in these cabinets.

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

ITEM \ MODEL	DXU-580SF	DXU-580AF	DXU-1002-1000A	DXU-1002LA
External Dimensions (mm)	W880×D1200×H1324	W880×D1200×H1600	W1200×D1045×H1850	W1200×D1000×H1850
Internal Dimensions (mm)	W830×D1100×H790	W830×D1100×H955	W1150×1000×H1552	W1150×D900×H1552
Capacity (ℓ)	Approx. 900	Approx. 932	Approx. 2000	Approx. 1600
Drying Unit	US-5000F×2			
Material	High-grade steel construction with ESD-safe and Anti corrosion coating			
Doors (Magnetic)	2 doors with glass windows	2 doors with glass windows	2 doors with glass windows	4 doors with glass windows
Weight	Approx. 200 kgs.	Approx. 200 kgs.	Approx. 350 kgs.	Approx. 250 kgs.
Electrical Requirement	AC230V 50/60Hz MAX 700W			
Accessories	Locks, RH meter, Caster, Ground terminal		5 shelves, Locks, RH meter, Caster, Ground terminal	

## Optional Parts for McDry

<b>Hygrometer with alarm</b>  Alarm lamp is triggered when the humidity exceeds the set parameters.  	<b>Data logger</b>  Humidity data is recorded at all times.  	<b>Reel rack</b>  A variety of tape reels can be stored efficiently.  
<b>N2 socket</b>  Nitrogen purge is available.  	<b>Flow meter</b>  This flow meter can measure and control N2 flow  	<b>Shelves (Steel Stainless)</b>  Additional shelves can be purchased for all models. Stainless steel shelves are also available.  
<b>ESD Caster Wheels</b>  ESD-safe casters are available for the MCU type as an option. (DXU type equipped with this caster as standard)  	<b>Adjustor</b>  Adjusts the height of the cabinet.  	<b>Sliding shelf</b>  With the sliding shelf, picking up the stored items become easily.  
<b>Tower Light</b>  The tower light flashes when humidity goes over the level set using the hygrometer with alarm.  		



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