High Low Temperature Test Chamber

(Humidity Control + Explosion-Proof)

MGDW-150-20HB

Technical Agreement

Neware Technology Limited

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Product Name:

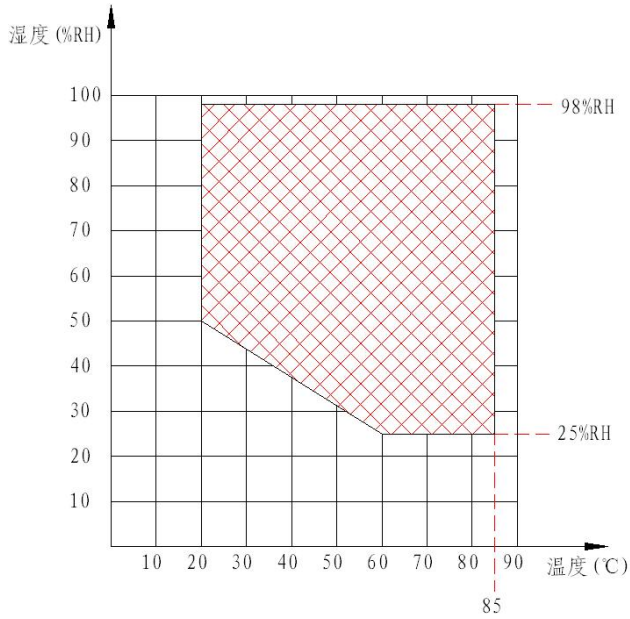
High Low Temperature Test Chamber

(Humidity Control + Explosion-Proof)

P. S.:

1. The explosion-proof function only refers to preventing the explosion within the test chamber, outer part of the equipment does not share this function.
2. Image is for reference purpose only.

Model Code	**MGDW-150-20HB**
Application	Adaptability test of materials/products when stored, transported and used in a high-temp. or low-temp environments.
Prohibitions	Testing or storage of : - flammable, explosive and volatile material samples; - corrosive substances; - strong electromagnetic emission source; - radioactive material samples; - highly toxic substances; - samples that may produce the above substances or objects during testing or storage.
Dimensions	
Nominal Volume	150L
Inner Dimension	W500 mm×D500 mm×H600 mm
Outer Dimension	W750 mm×D1350 mm×H1600 mm
Net Weight	Around 280 kg
Performance	
Testing Environment	Room Temperature above 25℃ Relative humidity≤85%
Testing Method	GB/T 5170.2-2017 Temperature test equipment GB/T 5170.5-2016 Damp heat test equipment
Temperate Range	-20℃ ~ 150℃
Fluctuation	≤1℃ (No load, or during stable temperature)
Deviation	±2.0℃ (No load, or during stable temperature)
Heating Time	+20℃ →+150℃ ≤60 min (No load, average non-linearity)
Cooling Time	+20℃ →-20℃ ≤45 min (No load, average non-linearity)

Humidity Control Space	
Relative Humidity Deviation	±3.0%RH (when humidity＞75%RH) ±5.0%RH (when humidity≤75%RH)
Achievable Test Method	GB/T 2423.1-2008 Low temperature test method Ab GB/T 2423.2-2008 High temperature test method Bb GJB 150.3A-2009 High temperature test GJB 150.4A-2009 Low temperature test GB/T 2423.3-2006 Constant damp heat test method Cab GB/T 2423.4-2008 Alternating damp heat test method Db GJB 150.9A-2009 Damp heat test GB/T 10586-2006 Technical conditions of damp heat test chamber GB/T 10592-2008 Technical conditions of high low temperature test chamber (*The load should be less than 35kg/m3 of steel's heat capacity.) (*Avoid testing objects with active moisture emission or heat load within the chamber.)

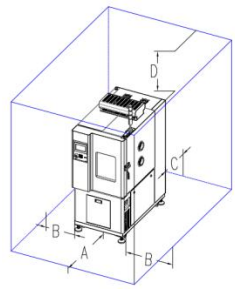
Structure	
Insulation Envelope	- Outer wall material: High quality cold rolled steel plate with surface spray paints. - Inner wall material: Stainless Steel SUS304 - Chamber Insulation material: Rigid polyurethane foam + glass wool (thickness: 100mm) - Door Insulation material: glass wool
Air-conditioning Channel	- Centrifugal fan (explosion-proof) - Heater - Evaporator and dehumidifier
Standard Configuration	- Door: single hinged door with 2 explosion-proof chains. - 2 Lead holes (with soft rubber stopper, 1 each side): ϕ100mm; - 4 casters; - Cell Trays: electrically insulated (load bearing: 10kg/tray); - Observation window: multi-layer insulating glass; - Visible Range: W230mm×H270 mm; - 1 illuminating light.
Control Panel	Controller display, over-temperature protection setter, etc.
Refrigeration Unit Room	- Refrigeration unit - Water tray - Drainage hole - Condensing fan - Lift pump - Water tank
Power Distribution Control Cabinet	- Main power leakage circuit breaker - Power distribution board - Exhaust fan - Ethernet interface - Temperature and humidity controllers - AC contactor - Circuit breaker - Thermal relay - Temperature limit protector - Solid state relay & transformer
Heater	Finned heating tube (explosion-proof)
Heater Control Mode	Contact-less equal period pulse width modulation, SSR
Humidifier	Stainless steel armored humidifier
Humidifier Control Mode	Contact-less equal period pulse width modulation, SSR Water level control device Heater Drying Protection

Power Cord and drainage hole	Located at the back of the chamber
Pressure Relief Port	Located at the left side of the chamber, automatically released when test pressure exceeds the set limitation.
Refrigeration System	
Working method	Mechanical compression cascade refrigeration
Compressor	French imported “Taikang” Hermetic Compressor or Emerson Copeland compressor
Main refrigeration components	- Expansion valve - Pressure controller - Filter drier - Refrigeration solenoid valve - Liquid receiver - Oil separator
Evaporator	Finned tube heat exchange (also used as dehumidifier)
Condenser	Air-cooled type: finned tube heat exchange
Throttling device	Expansion valve/capillary
Control Method	Operating conditions of the refrigeration unit are adjusted automatically according to the testing conditions. Returned air from compressor cools the circuit.
Refrigerants	R404A (ozone depletion index is 0)
Welding	Nitrogen protection welding
Electrical Control System	
Controller Model	Temperature and humidity controller
Monitor	HD color LCD touch screen
Operation Mode	Procedural, fixed value method
Interaction	Touch screen (color)
Control Method	Anti-windup PID BTC balance temperature control method
Measurement	Class A armor PT100 sensor
Display Accuracy	Temperature: 0.01℃; Time: 1min

Water Supply System	
Water Supply Method	Pump lift
Unit Location	Tank at the front Water filling through drawer
Water Quality Requirements	Resistivity≥500Ω • m
Health and Safety Protection	
Refrigeration	- Compressor overheating - Compressor overloading - Compressor over-pressure - Condensing fan overheating
Humidification	- Dry burn protection - Abnormal water supply - Abnormal drainage
Over-Temperature	Independent over-temperature protector. When the working temperature exceeds the set temperature, the device will shut down automatically and send an alarm signal.
Test Chamber	Adjustable over-temperature / abnormal protection of circulating fan within the chamber
Smoke Alarm	Equipped with a smoke alarm. It will automatically go off when there is smoke.
Smoke Extraction Device	When the smoke alarm detects that the smoke concentration exceeds the standard, the extraction fan will be activated.
Others	- Total power phase sequence & phase loss protection - Leakage protection - Overload & short circuit protection - Power failure recovery protection
Other Configuration	
Power Cable	5 cores (three-phase four-wire + protective ground wire)
Leakage Circuit Breaker	Three-phase four-wire + protective ground wire

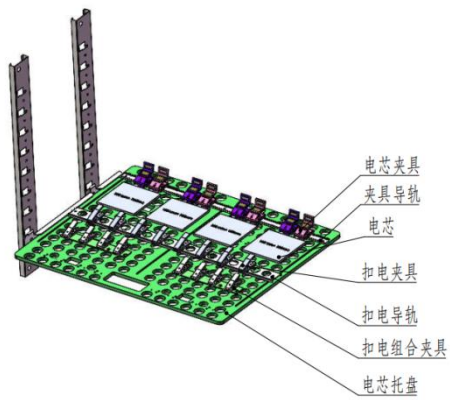
Conditions of Use

Installation Site	- Level ground, comply with GB50209-2002Specification. - Flatness≤5mm/2m - Good ventilation - No strong vibration around the device - No strong electromagnetic fields around the device - No flammable/explosive/corrosive substances & dust around the device. - Appropriate space for use and maintenance should be reserved around the equipment: A: not less than 100cm B: not less than 60cm C: not less than 70cm D: not less than 50cm There should be enough room for the door to be opened and closed normally, and there should be no other objects directly in front of the door of the equipment.
Environmental Conditions	Temperature: 5℃～35℃ Relative humidity: ≤85%; Atmospheric pressure: 86kPa～106kPa
Power Supply Condition	Input: AC(380±38)V (50±0.5)Hz three-phase five-wire system.The grounding resistance of the protective ground wire is less than 4Ω. The user is required to configure an independent air or power switch of the corresponding capacity for the equipment at the installation site.
Distribution Power	5.5kW
Maximum Current	11A
Precautions	Opening the door while testing will cause temperature fluctuations. During the test, if the door is opened many times or the door is left open for a long time or the test sample emits moisture, it may cause the heat exchanger of the refrigeration system to frost or freeze and cannot work properly.



Interconnection with Cell Testing Equipment

Hardware Connection	The upper computer, battery testers, and thermal chamber are connected with cables to enable data communication in between.

Battery Specifications and Placement	
Battery Specifications	Pouch: within L100 mm×W100 mm×H10 mm
Battery Placement	2 or 3 levels (8 pcs on each level)
Battery Trays (customization available)	 

Simulation Diagram (reference only)	
No-Load Operation