RESOTECH®

PLOT NO. 1131 HARI ENCLAVE KIRARI SLEMAN NAGAR NEW DELHI-110086
2ND PLANT H-936 RIICO CHOPANKI INDUSTRIAL AREA ALWAR RAJSTHAN-301707

# RESOTECH – STABILITY CHAMBER

*Professional Manufacturer of Test Equipment*


**MAKE : RESOTECH**
**MODEL NO. : RESOTECH ST-2607**

RAM

RESONANCE AUTOMATION & MACHINE

# MANUFACTURERS SUPPLERS

SPECIAL PURPOSE MACHINE, MATERIAL TESTING MACHINE, LEAKAGE TESTING MACHINE, PACKIGING TESTING MACHINE, ENVIRONMENTAL TEST CHAMBER, ASSY. LINE EQUIPMENT, SOLUTION FOR ELECTRONIC AUTOMATION AND PRODUCT DEVELOPMENT, COMPUTERIZED CONTROL MACHINE , PLC HMI SCADA VISUAL BASIC SOFTWARE DEVELOPMENT SOLUTION AND OTHER SERVICES.

# Characteristics

## Superior temperature and humidity distribution, fully supports demanding criteria

### ±1°C/±3%rh guaranteed

Supports severe storage conditions of
±1°C/±3%rh

### Viewing window

The viewing window on the door comes with a heat element, to preventit from fogging.

### Area Temperature and Humidity Control System

An area temperature and humidity control system allows positioning of temperature sensors as desired. Control is performed tocorrect for deviation from the setting temperature due to the test area size and ambient temperature, which means highly accurate temperature and humidity controlwithin the test area.

### Door Lock

A door lock protects against loss of specimens and ensures security.

## Full-view inner glass door

Full-view inner glass door is equipped as standard.It lets you easily check on samples without temperature and humidity fluctuation that caused by opening and closing the outer door.



## Vacuum Insulation

HG model stability test chamber is the firstin the environment test chamber industry to adopt vacuum insulation, which reduces the effect of ambient

## Temperature and humidity recording and monitoring

A temperature and humidity detection terminal is equipped as standard.
A connector that provides simple connection and disconnection is equipped as an accessory.

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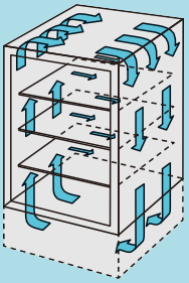
## Variety of volumes

## Virtual Air Jacket System

A new developed Virtual Air Jacket system makes it possible to maintain uniform temperature and humidity distribution within the chamber.
Air blown from below circulates along the chamber walls for stable airflow that is not affected by specimen volume, etc.
Storage conditions stipulated by ICH guidelines are maintained, regardless of the position in which specimens are located(within effective dimensions).

**Air flow (Virtual Air Jacket)**



## Smooth specimen access

Sliding shelves are used to allow easy access to specimens. Shelves can be pulled out to one-half of their depth. When heavy specimens such as liquids are placed on the shelves, a fall-prevention mechanismkeeps them from being pulled out when slid forward.
(Equally distributed load per shelf is 30 kg)

Due to low exhaust heat design, it is not required space between the back of the chamber and the wall. The electric circuits and refrigeration circuit are consolidatedin the front of the door and the bottom ofthe chamber to minimize the chamber's width.

## Easy maintenance

Maintenance work such as cleaning the condenser fins and filling the water tank can be easily operated.

## ±1°C/±3%rh guaranteed

All models fulfill the stability requirements of the Long Term Storage Testing and Intermediate Testing. The conforms to more demanding Accelerated Testing stability requirements.

## Reliable temperature andhumidity sensor

A high-accuracy resistance temperature detector (Pt100) is used for the temperature sensor, and a capacitive thin-film polymer sensor is used for the humidity sensor. You are free from wet-bulb wick replacement in dry-bulb systems and the effects of microorganisms that have become attached to the wick.

## Saving energy

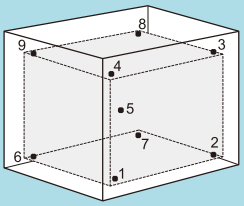
The 132, a newly developed large capacity type, can be used with the same power consumption as the 122, whichis expected to hold down running costs during long-term usage. The maximum load current has been reduced 36% compared to previous model.

## Frost-free, continuous operation

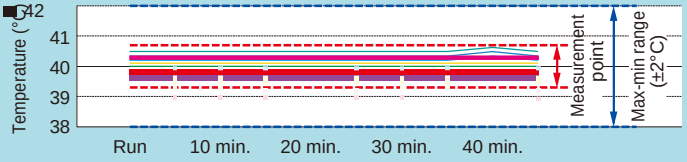
Evaporator frosting is prevented to allow continuous operation without interruptingtest.

### Temperature and humidity distribution measurement dat

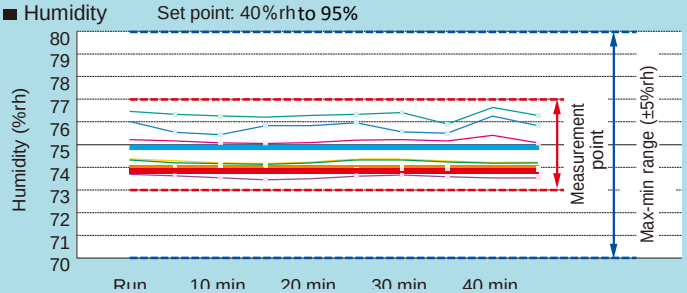
Nine points in the effective space of the test area are measured.
(Performance shown above conforms to IEC)




■ Temperature Set point: 10°C to 60°C

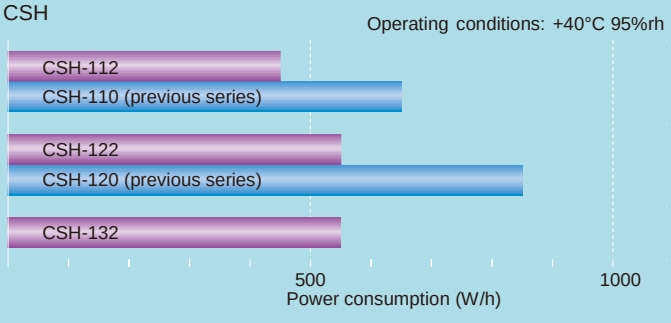



■ Humidity Set point: 40%rh to 95%




### Power consumption comparison

- CSH



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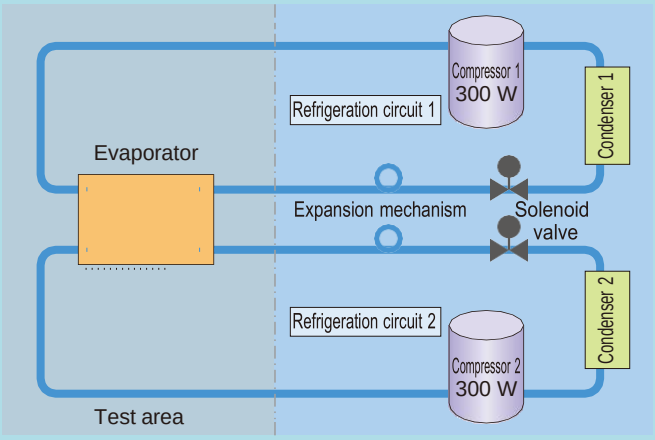
## ±1°C/±3%rh guaranteed

### Double refrigerator circuit (CWH)



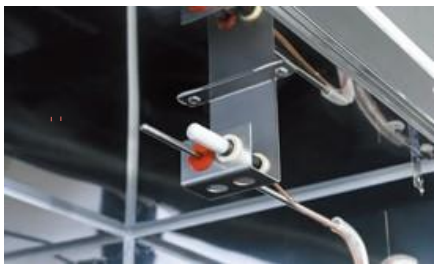

Accelerated testing at a more severe storage condition than ICH guideline, 10°C to 60°C
±1°C/95%rh ±3%rh is possible.

## Double refrigerator circuit for reliable design

Two independent refrigerator circuits are provided to ensure that operation continues even should one circuit experience problems. Those can be used alternately, which contributes to longer overall refrigerator circuit service life. The result is a system with built-in risk management.

## Area Temperature and Humidity Control System

An area temperature and humidity control system allows positioning of temperature sensors as desired. Controlis performed to correct for deviation from the setting temperature due to the test area size and ambient temperature, which means highly accurate temperature and humidity control within the test area.The growth of bacteria is suppressed with a structure that maintains a high humidifying water temperature. The humidifier is also easier to clean.

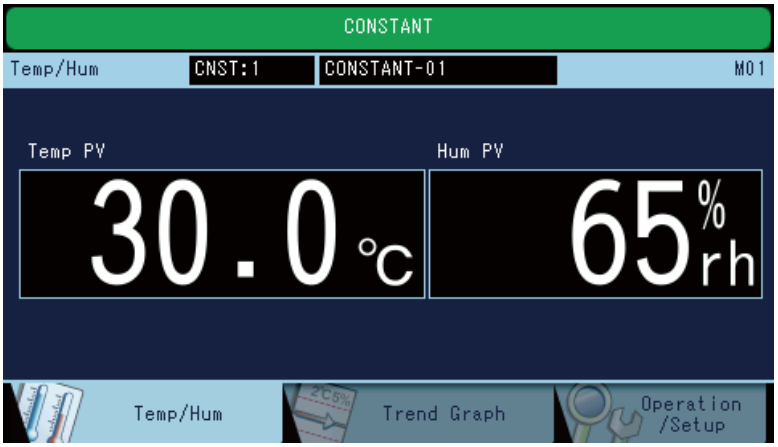



Temperature and humidity sensor

# N-Instrumentation

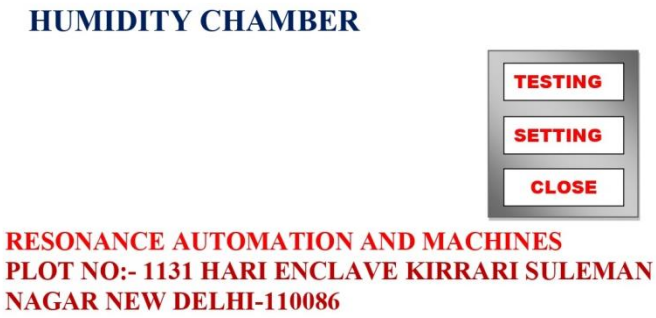
## Easy-to-use instrumentation

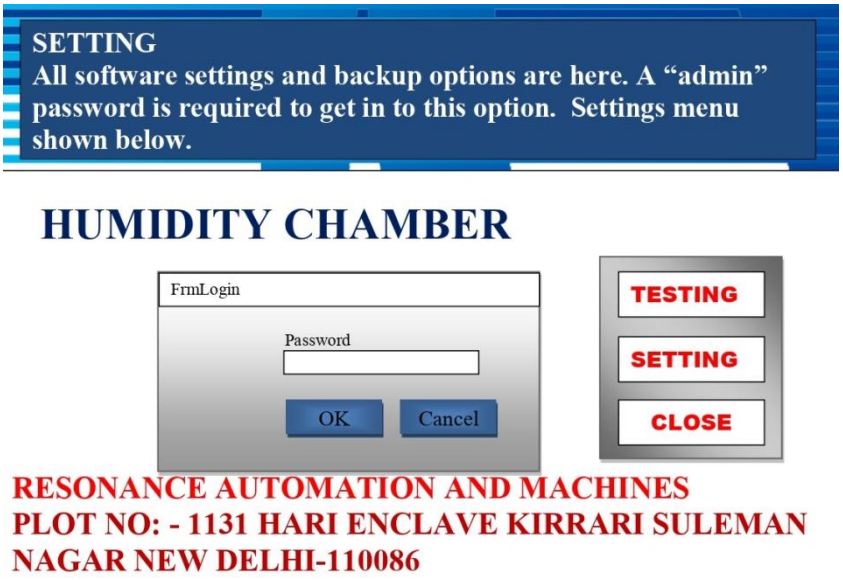
Unlike the smartphones, the controller comes with resistive touchscreen, which allows you to operate without taking off your gloves.
Various items, including operation settings and chamber setup, can be selected with the tabs at the bottom of the screen.

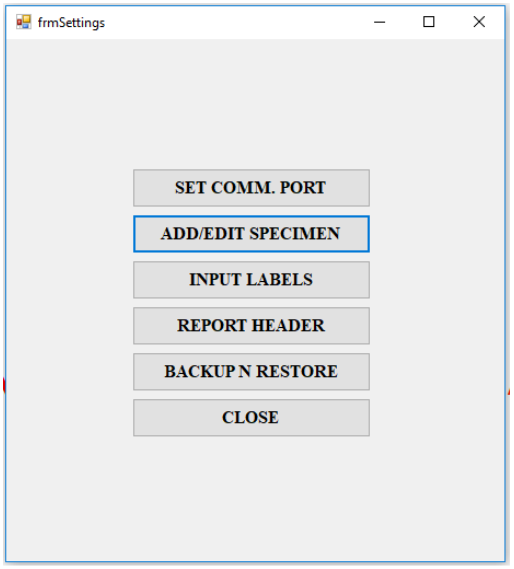



## Absolute temperature/ humidity limit alarm

This chamber is equipped with a standard function to transmit an alarm when aprocess value has deviated from the temperature/humidity set points. The temperature/humidity allowable range and temperature/humidity stability time can also be registered as desired. Registering the stability testing guideline standards of ±1°C/±3%rh allows a rapid response when problems occur.



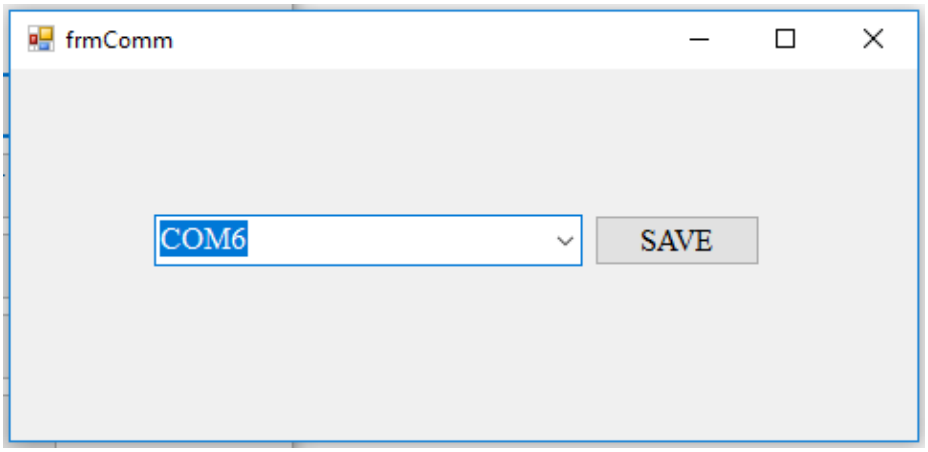



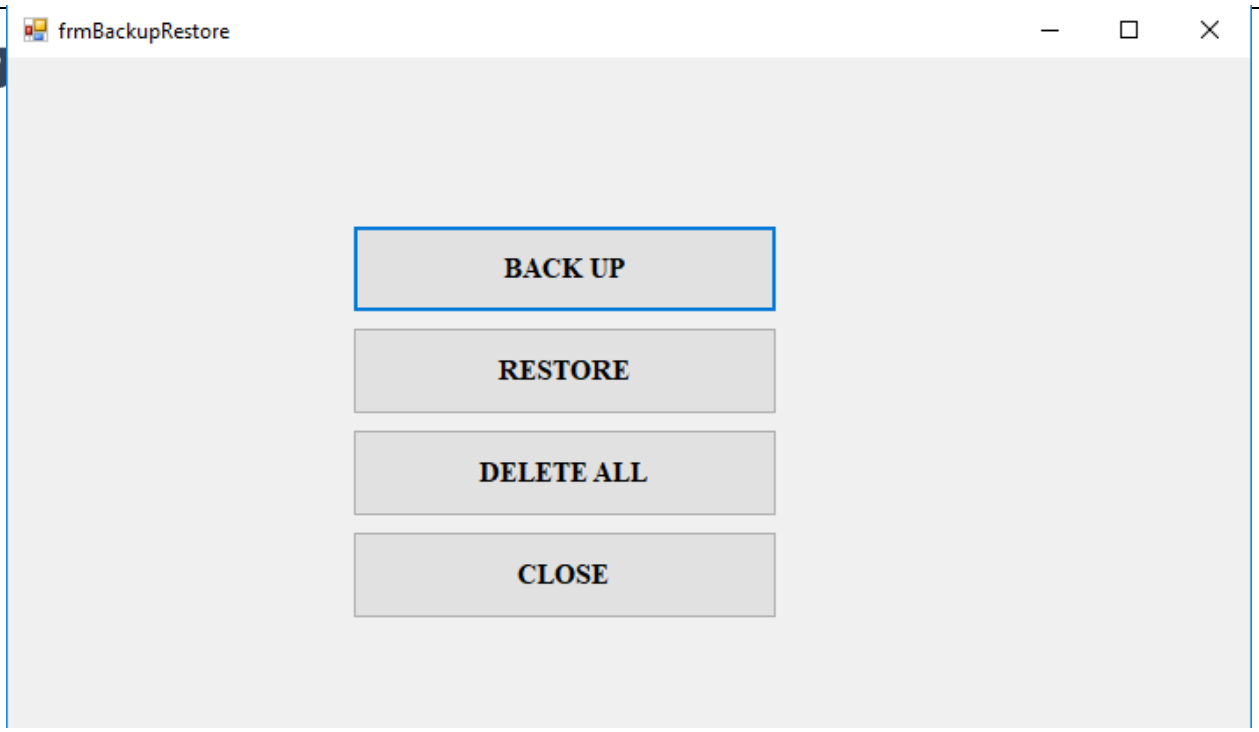



take backup of all test and settings here. It is advised to take back in regular intervals.

Restore

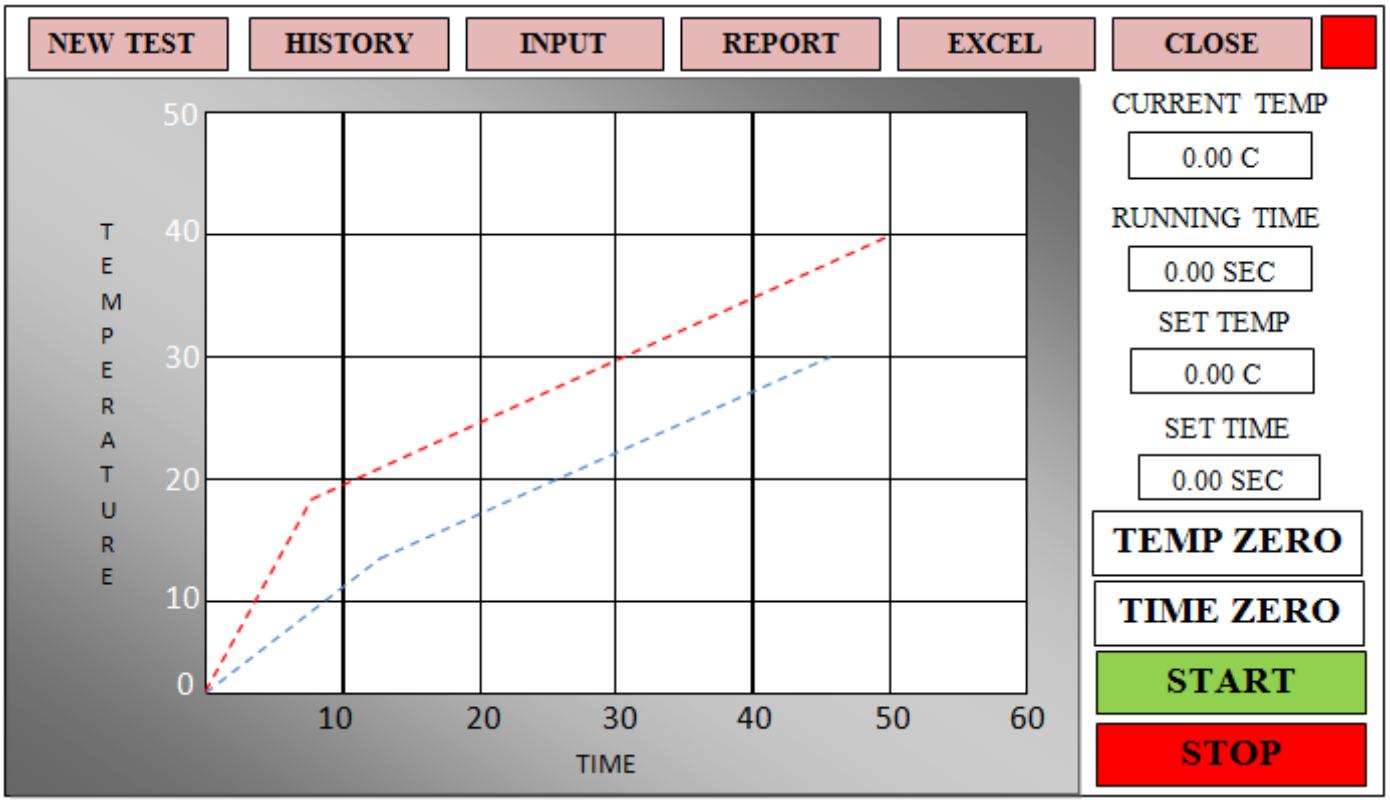
Any time if your software get corrupted or loss of data, administrator can restore back data back to system using this option. Care should be taken while restoring the data, by clicking delete all data administrator has to clear all current then use restore.( Note : only the data till backup date will be restored).






**TESTING**

New Test – Old Test data and graph get cleared and ready for new test.
User has to select the group in which he want to do testing. When user select a group all settings get loaded.
Click Start to start test. Input details given below.



# HISTORY

Here user can see all previous test and take print out from here.

GROUP: TMT bar | TEST DATE FROM: 13-Nov-17 | TEST DATE TO: 14-Nov-17 | SELECT RANGE CLICK | Load Vs Elongation

| Sl. No. | Test No | Operator | Test Date | Peak Force | Force at Break | Elong. at Peak | Elong. at Break | Test Time | Proof Load | Peak Stress | Peak Strain | % Elo |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 57 | | 13-Nov-17 6:45:14 PM | 24.721 | 24.056 | 18 | 17.5 | 7.1 | 0 | 258.75 | 0.18 | 18 |
| 2 | 56 | | 13-Nov-17 6:39:48 PM | 80 | 80 | 90 | 91.5 | 37.1 | 76.5 | 837.34 | 0.92 | 92 |
| 3 | 55 | | 13-Nov-17 6:06:48 PM | 80 | 80 | 90 | 162.5 | 66.1 | 76.5 | | | 162 |
| 4 | 54 | | 13-Nov-17 5:58:41 PM | 79.562 | 79.486 | 84 | 83.5 | 33.8 | 76.5 | | | 84 |
| 5 | 53 | | 13-Nov-17 5:51:25 PM | 80 | 80 | 90 | 110 | 44.7 | 76.5 | | | 110 |
| 6 | 52 | | 13-Nov-17 5:46:20 PM | 80 | 80 | 90 | 96 | 38.9 | 0 | | | 96 |
| 7 | 51 | | 13-Nov-17 5:13:27 PM | 65.129 | 64.721 | 54.5 | 54 | 0 | 0 | | | 54 |
| 8 | 50 | | 13-Nov-17 4:42:27 PM | 80 | 80 | 90 | 126.5 | 51.3 | 0 | | | 126 |
| 9 | 49 | | 13-Nov-17 4:38:39 PM | 80 | 80 | 90 | 159 | 138.1 | 0 | | | 159 |
| 10 | 48 | | 13-Nov-17 4:29:50 PM | 80 | 80 | 90 | 120.5 | 48.9 | 0 | | | 120 |
| 11 | 47 | | 13-Nov-17 3:30:50 PM | 80 | 80 | 90 | 195 | 0 | 0 | | | 195 |
| 12 | 46 | | 13-Nov-17 2:52:45 PM | 80 | 80 | 90 | 100.5 | 0 | 0 | | | 100 |
| 13 | 45 | | 13-Nov-17 2:49:15 PM | 80 | 80 | 90 | 99 | 0 | 0 | | | 99 |
| 14 | 44 | | 13-Nov-17 2:46:06 PM | 80 | 80 | 90 | 98 | 0 | 0 | | | 98 |
| 15 | 43 | | 13-Nov-17 1:27:22 PM | 11.212 | 8.09 | 7.6 | 8.2 | 0 | 0 | | | 8 |
| 16 | 42 | | 13-Nov-17 1:17:35 PM | 11.421 | 5.041 | 8.7 | 9.3 | 0 | 0 | | | 9 |
| 17 | 41 | | 13-Nov-17 1:07:40 PM | 9.929 | 9.114 | 5.8 | 5.9 | 0 | 0 | | | 6 |
| 18 | 40 | | 13-Nov-17 12:57:01 PM | 6.578 | 3.248 | 6 | 6.4 | 0 | 0 | | | 6 |

PRINT | EXIT

REPOR

**REPORT**

**After each testing the report will be auto generated and saved into specified folder.**

**User can generate a report directly from testing window and from history.**

**range settings also here.**

**.**

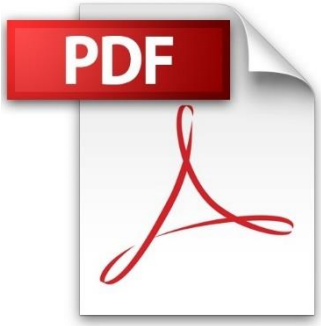
# EXCEL

**EXCEL**

**User save raw test data into excel file using this option.**

## TEST REPORT FORMAT

EXCEL




PDF

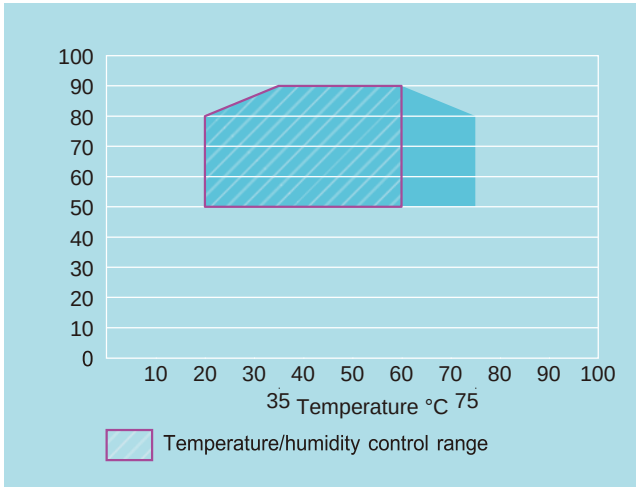

WORD

# RESOTECH

| Model | | RESOTECH ST-2607 | RESOTECH ST-2607 | |
|---|---|---|---|---|
| System | | Balanced temperature and humidity control system | | |
| Performance | Temp./humid. range *1 | +10°C to +60°C/ | | |
| | Display | LCD | | |
| | Temp./humid. max-minrange *2 | ±1˚C/±3%rh | | |
| Accessories | | Inner door (reinforced glass), Power cable (about 2m), Drain hose (x2), Temperature detect terminal (Pt100), Humidity sensor terminal, External alarm terminal, Ethernet port (LAN port), Through-hole for sensor (ø25 mm, right side), Quick joint for water circuit drain, Leveling feet casters (x4), Dew tray | | |
| Humidity range | | 40% to 95% rh | | |
| Internal volume | | 800/1000 lit. | | |
| Number of trays | | 6 or more | | |
| Variation alarm | | Audio visual alarm | | |
| Connectivity | | 1. Provision for mobile alert system<br>2. Door access system<br>3. Data transfer facility with Ethernet.<br>4. IAN connectivity & Web based online monitoring | | |
| Other features | | 1. Inside full length observation glass door with secure gasket | | |
| | | 2. Handle and hinges for positive sealing with lock and key arrangement | | |
| | | 3. Heavy duty door hinges and latches to maintain a secure and uniform seal | | |
| | | 4.Racks & trays | | |
| | | 5. Humidity system with evaporation tray and reservoir tank with water level arrangement | | |
| | | 6. Lighting- interior illumination for working area. | | |
| Insulation | | Thick PUF insulation | | |
| Software | | 21 CFR part II Window based communication software for data management | | |
| Stand by humidity system & stand by refrigeration system | | Completely ready for use system in case the regular system fails.<br><br>Ready for use refrigeration system in case the regular for use refrigeration system in case the regular system fails. Complete with compressor condenser. Evaporator and other accessories with gas charging. | | |

*1 The performance values are based on IEC 60068-3-6:2001.
Performance figures are given for a 45˚C ambient temperature, relative humidity 90%rh, rated power supply and no specimens inside the test area.
*2 Temperature and humidity maximum and minimum range means maximum difference after stabilization, at any moment in time in the working space against the setting values; ambient temperature of 45°C, no load, no specimen.
*3 Excluding protrusions.

## TEMPERATURE/HUMIDITY CONTROL RANGE




## ACCESSORIES

- Key (for door) ····· 2
- Shelf/bracket (stainless) ····· 3
- Cartridge fuse (7 A) ····· 1
- Temperature-detecting terminal connector ····· 1
- Humidity-detecting terminal connector ····· 1
- Filter for water ····· 1
- Water tank (about 10 L) ····· 1
- Hose with quick joint ····· 1
- Level gauge ····· 1
- Silicon rubber plug ····· 1
- Operation manual (CD, Installation manual) ····· 1 set

# OPTIONS

### Power supply voltage

- 220 V AC 1ø 2 W 50/60 Hz
- 230 V AC 1ø 2 W 50 Hz

### Direct water coupling to tap water

A water circuit to supply pure watercontinuously to the chamber.
- Pure water coupling with pressure-reducing valve
- Pure water coupling without pressure-reducing valve

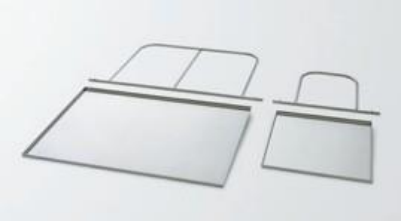
### Water purifier (reverse osmosis)

Use to continuously supply pure water.
- WS-1
  Produced water capacity: 12 L/h
  Size: W480 × H400 × D280 mm

*To prevent damage in the event of water leakage when installing the following optional products, a dew tray (sold separatery) and other preventive measures can be prepared.
- Continuous water supply
- Water purifier

### Shelf/shelf bracket

Equivalent to standard accessory.



### Paperless recorder

A temperature & humidity recorder that utilizes a liquid-crystal display fitted witha touch-panel.
Display: 5.7inch color touch panelScan interval: 5 sec.
(default) Internal recording media:
Flash memory 8MB
Memory slot: Compact flash ×1, USB ×1Inputs: Temperature ×1, Humidity ×1

### Reports & certificates

- Testing and inspection report
- Test data
- Temperature (& humidity) uniformity measurement
- Calibration results
- Calibration certificate
- Traceability certificate
- Traceability system chart
- Validation service*

* Please ask detail to ESPEC.

* External dimensions change when attaching the recorder at thel eft or right side.
(Please refer to the recorder location.)

### Temperature (humidity) recorder

< Temperature & humidity type
> Temperature range: −50 to +100˚CHumidity range: 0 to 100%rh Location: Left, right or lower left
(facing the chamber)

* External dimensions change when attaching the recorder at thel eft or right side.
(Please refer to the recorder location.)

Number of inputs : Temperature 5, Humidity 1

### Recorder backup

In case of power failure, power is supplied to the temperature/humidity recorder and humidity sensor, and test area temperature/humidity is recorded.
Recharge time: 12 h
Backup time: 40 min.

### Thermocouple

Attached to specimen to measure itstemperature.
Thermocouple with a brass ball tip
Thermocouple type T (Copper/Copper-Nickel)
- 2 m
- 4 m
- 6 m

### Anchoring fixtures

Used to fix the chamber to the floor.

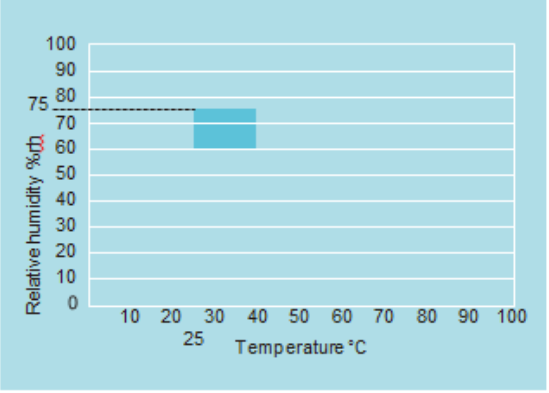
### Chamber dew tray

Prevents water leaks from the chamber onto the floor.

### Operation manual

- CD
- Booklet

## TEMPERATURE/HUMIDITY CONTROL RANGE




## ACCESSORIES

- Key (for door) ····· 2
- Rubber plug (for 50ø cable port) ····· 1
- Cartridge fuse (3 A) ····· 2
- Temperature-detecting terminal connector ····· 1
- Humidity-detecting terminal connector ····· 1
- Operation manual (CD, Installation manual) ····· 1 set

# OPTIONS

### Stainless steel shelf

Shelf: 4
Dimensions: W910×H1587×D460 mmWeight: 22 kg
Shelf load capacity: 250 kg (per shelf)

### Time signal terminal

Equipment Terminal boards: 2

### Paperless recorder

A temperature & humidity recorder that utilizes a liquid-crystal display fitted witha touch-panel.
Display: 5.7inch color touch panelScan interval: 5 sec.
(default) Internal recording media:
Flash memory 8MB
Memory slot: Compact flash ×1, USB ×1Inputs: Temperature ×1, Humidity ×1


### Temperature (humidity) recorder

< Temperature & humidity type > Temperature range: −50 to +100˚C Humidity range: 0 to 100%rh
Number of inputs: Temperature 5, Humidity 1

### Recorder backup

In case of power failure, power is supplied to the temperature/ humidity recorder and humidity sensor, and test area temperature/humidity is recorded.
Recharge time: 12 h
Backup time: 40 min.

### Thermocouple

Attached to specimen to measure specimentemperature.
Thermocouple with a brass ball tip
Thermocouple type T (Copper/Copper-Nickel)
- 2 m
- 4 m
- 6 m

### Overcool protector

If the temperature inside the chamber decreases excessively, the chamber stops operating to prevent the specimens from being damaged.

### Operator safety switch

A mushroom type button installed to protect operators. When pressed, chamberoperation stops with alarm buzzer.

### Emergency stop pushbutton

Stops the chamber immediately

## Validation

We supply service for highly reliable installation qualification (IQ) validation, including system inspection, calibration, and operational qualification (OQ) validation (option).

### Operation manual

- CD
- Booklet

### Reports & certificates

- Testing and inspection report
- Calibration results
- Calibration certificate
- Traceability certificate
- Traceability system chart
- Validation service*

## SAFETY DEVICES Stability Test Chamber

- Leakage breaker for power supply
- Short circuit protection fuse for control circuit
- Electrical compartment door switch
- Chamber thermal fuse
- Humidifier boil-dry protector
- Temperature switch for air circulator
- Refrigerator overcurrent protection
- Overheat protector
- Temperature burn-out circuit (with built-in temperature/humidity controller)
- Humidity burn-out circuit (with built-in temperature/humidity controller)
- Absolute upper/lower temperature limit alarm (with built-in temperature/humidity controller)
- Absolute upper/lower temperature/humidity limit alarm (with built-in temperature/humidity controller)
- System error
- System error (Alarm)
- Humidifier water level detection
- Water tank drought switch
- Area temperature burn-out circuit (with built-in temperature/humidity controller)
- Water tank low-level switch
- External device error detection
- Temperature upper limit deviation alarm (with built-in temperature/humidity controller)
- Absolute upper/lower humidity limit alarm (with built-in temperature/humidity controller)

# OUR VALUED CUSTOMERS















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