# PRECISION HUMIDITY AND TEMPERATURE GENERATOR
## MODEL : HCAL 1104U

*New improved Version 2.0*



## INTRODUCTION

The HCAL 1104U is a precision generator of controlled Humidity and Temperature environment inside the chamber. It has huge volume of chamber size to perform a rapid and easy calibration of multiple portable instruments, sensors, transmitter, data logger of different manufacturers. The HCAL 1104U is to generate range from 5°C to 60°C / 3% RH to 95% RH and Psychometric Calculated Dew point indication range from -30°C to 45°C. It has an advantage of external Humidifier for easy maintenance and refilling of water, Semi portable and onsite transportable.

The HCAL 1104U working in the principle of mixed flow method for generating the Humidity. A desiccant cell is used to De-Humidify the chamber for low Humidity and Humidifier generates high Humidity. A solid state peltier element is used for heating and cooling the chamber. The HCAL 1104U improved version has metrology level performance in terms of Control stability and uniformity gradients.

# FEATURES

- ✓ 7" True colour TFT display with Touch screen
- ✓ Control range from 5 to 60°C / 3 to 95 % RH*
- ✓ Dew point temperature range -30°C  to 45°C
- ✓ High Resolution 0.01°C / %RH
- ✓ Display Stability better than ± 0.03°C / 0.2 % RH
- ✓ Better uniformity ± 0.2°C / 0.5% RH
- ✓ Fast raising & quick settling
- ✓ Large chamber size
- ✓ Improved design to provide better thermal performance in term of control stability & uniformity gradients
- ✓ Inter changeable front door to suit different manufacturer's indicator, sensor, transmitters calibration.
- ✓ Semi portable and onsite transportable
- ✓ Economical in price.

# TECHNICAL  SPECIFICATIONS

| MODEL | HCAL 1104U |
|---|---|
| Display | 7" True colour TFT LCD Display with Touch screen |
| Control Range* | 5 to 60°C / 3 to 95 % RH* |
| Dew point Temperature range (psychometric calculated) | -30°C to 45°C |
| Psychometric calculated indication | Dew / Frost point   ( Dp / Fp )<br>Wet Bulb Temperature  ( Tw )<br>Vapour partial pressure   ( E )<br>Vapour Saturation pressure ( Ew )<br>Mixing ratio by weight  (dry)  ( g / kg )<br>Enthalpy  ( H ) ( KJ / kg )<br>Specific Humidity (moisture) ( g / kg )<br>Absolute Humidity  (moisture) ( g / m³ )<br>Volume mixing ratio (dry)  ( ppm ) |
| Calculation method | WMO method |
| Resolution | 0.01 °C / 0.01% RH |
| Display stability | Better than  ± 0.03 °C / ± 0.15% RH |
| Chamber  stability @25°C **<br>          Temperature:<br>          Humidity: | <br>± 0.1°C<br>± 0.3 % RH |
| Chamber Uniformity** @25°C<br>          Temperature:<br>          Humidity: | <br>± 0.2°C<br>± 0.5 % RH |
| Test sensor insert port | Inter changeable Acrylic door is provided on front side of the chamber with pg21 gland (cable or sensor size range from 13 to 18mm) x 3nos |
| External Humidifier Water tank capacity | 6 litres (approx.)<br>(NOTE : 3 liter filling is enough for our application) |
| Humidifier Liquid | Distilled water |
| Humidifying Time | 2 %RH / sec (50 to 90 % RH) |
| Dehumidifying Time | 6 %RH / sec (50 to 10 % RH) |

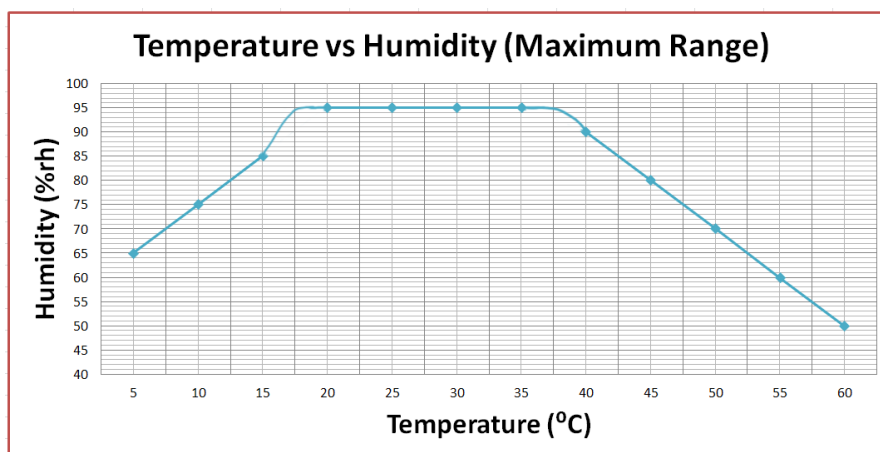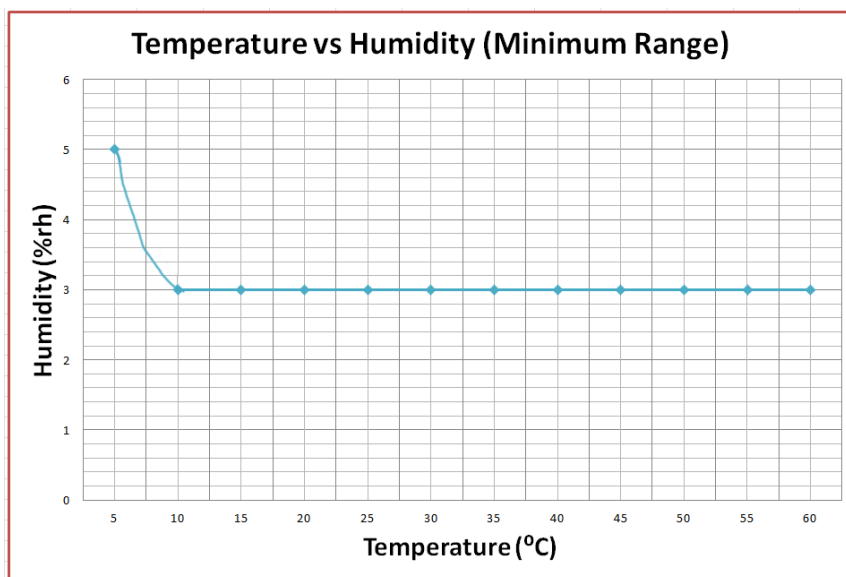| Test chamber area | 230mm DIA x 170mm D (Approx) |
|---|---|
| Power supply | 230V AC ± 10% / 50Hz (Optional 110V AC) |
| Power Consumption | 1000 VA |
| Construction | Inner chamber  SS 310 / outer MS powder coating |
| Overall Dimension | 436mm L x 676mm W x 368mm H (Approx.) |
| Weight | 44 kg (without Accessories) + 6 kg (standard accessories) (Approx.) |

**Note :**
* 1.  Temperature range applicable @ ambient Temperature of 25°C.
  2.  Refer the Humidity range chart on page no: 3. It may vary depends on ambient Temperature and water Temperature of the external Humidifier.
** Stability & Uniformity are evaluated @ ambient Temperature of 25°C.
 Due to continuous product improvements, Published specifications may change with out notice

# Temperature Vs Humidity Charts

### Temperature vs Humidity (Minimum Range)

Humidity (%rh) vs Temperature (°C)

### Temperature vs Humidity (Maximum Range)

Humidity (%rh) vs Temperature (°C)

# SANSELSOFT HCAL Calibration software (optional)

Fully automatic Documentation calibration software "SANSELSOFT" is provided with HCAL 1104U to calibrate different variety of UUC automatically from your PC or Laptop and generate the calibration report with exact results without your presence always near HCAL 1104U , will save your time to concentrate in various jobs. The SANSELSOFT calibration software having easy following steps makes your calibration easy , effective & time saver.

**Step 1**
- ❖ Create tag of Device / Unit under calibration (DUC/ UUC)
- ❖ Select tag of Device / Unit under calibration (DUC/ UUC) (if already tag created)

**Step 2**
- ❖ Create / Specify calibration procedure

**Step 3**
- ❖ Select mode of calibration

**Step 4**
- ❖ Initialize source Calibrators

**Step 5**
- ❖ Perform calibration

**Step 6**
- ❖ Specify Report number, Conclusion & Remarks

**Step 7**
- ❖ Print / Export Report

SANSELSOFT designed for perform calibration on field instruments with the use of standards and software communication. This software designed in the way, user can easily perform calibration. SANSELSOFT has powerful database support to maintain complete track records of each device calibration for long time. SANSELSOFT supports communication interface standards RS 232 and provides facility to add new standard/DUC instrument library. SANSELSOFT increases Standard's Life-time by eliminating key operations and saves maintenance cost.

## Standard Delivery

1. Basic Instrument
2. External Humidifier system
3. Desiccant cells – 2nos
4. Molecular sieve Desiccant
5. Interchangeable Acrylic door (plain)
6. Spare fuses
7. Instruction manual
8. Mains card
9. Traceable calibration certificate

## Optional

1. Master Hygrometer with sensor
2. Additional Molecular sieve Desiccant
3. Additional Interchangeable Acrylic door (custom special holes)
4. Carrying case
5. PC Interface software

**External Humidifier System**

**Carrying case (optional)**