

Humidity controlled STA

STAvesta/HUM



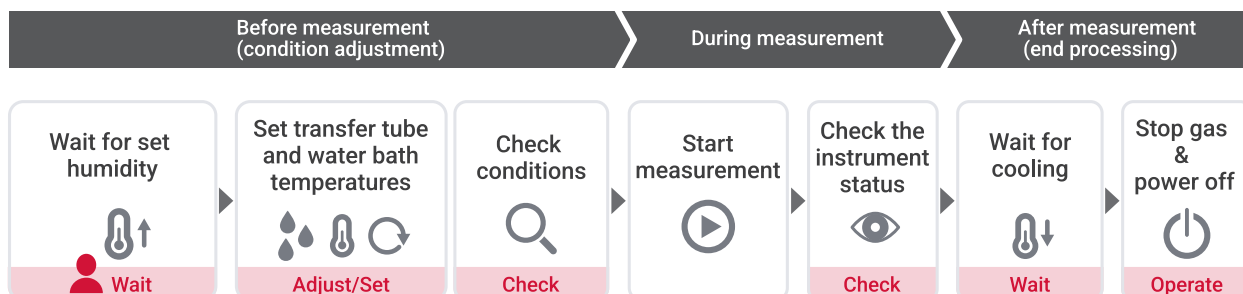
STAvesta/HUM-1+ASC



STAvesta/HUM-Auto

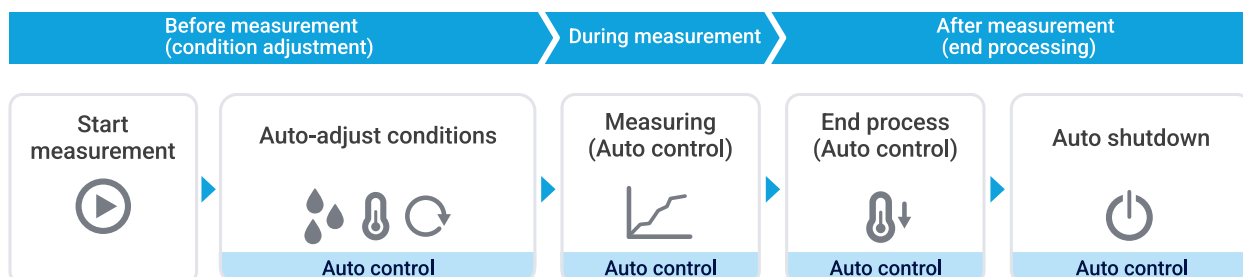
HUM-1

Manual condition adjustment, checks, and shutdown



HUM-Auto

Fully automated after measurement starts. Only the start operation is required.



The operator simply presses the Start button

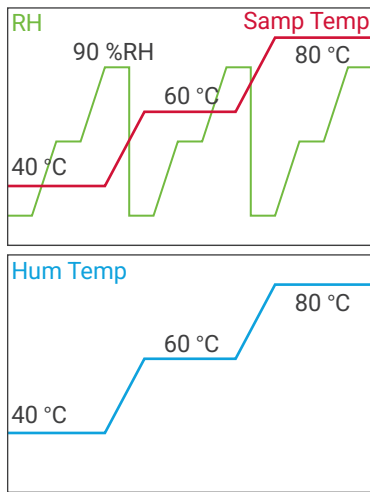


Rigaku's humidity-controlled STA measurement

Typical Measurement Patterns

1. Synchronized sample & humidity temperatures

HUM-Auto



Samp Temp: Change
Hum Temp: Change
RH: Change

Before measurement
Samp Temp: 25 °C
Hum Temp: 25 °C
RH: 25 °C, 25 %RH

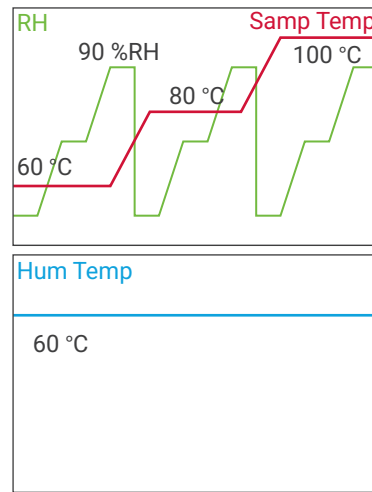
Start measurement
Samp Temp: 40 °C
Hum Temp: 40 °C
RH: 40 °C, 30 %RH

After measurement
Samp Temp: Decreases through heat dissipation
Hum Temp: Returns to 25 °C
RH: Reaches 25 °C, 25 %RH

2. Constant humidity at different sample temperatures

HUM-Auto

HUM-1



Samp Temp: Change
Hum Temp: Constant
RH: Change

Before measurement
Samp Temp: 25 °C
Hum Temp: 25 °C
RH: 25 °C, 25 %RH

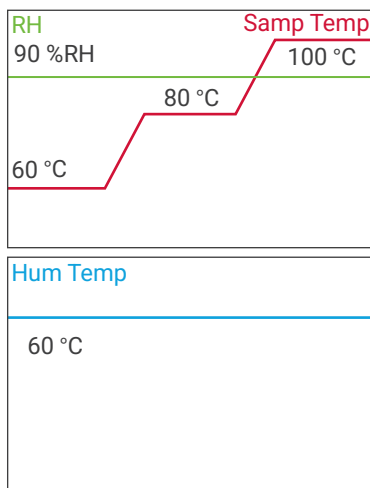
Start measurement
Samp Temp: 60 °C
Hum Temp: 60 °C
RH: 60 °C, 30 %RH

After measurement
Samp Temp: Decreases through heat dissipation
Hum Temp: Returns to 25 °C
RH: Reaches 25 °C, 25 %RH

3. Sample temperature change at constant humidity

HUM-Auto

HUM-1



Samp Temp: Change
Hum Temp: Constant
RH: Constant

Before measurement
Samp Temp: 25 °C
Hum Temp: 25 °C
RH: 25 °C, 25 %RH

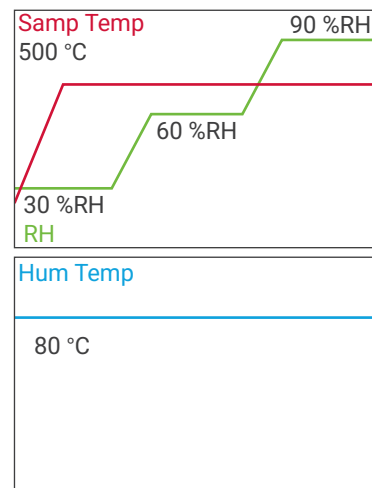
Start measurement
Samp Temp: 60 °C
Hum Temp: 60 °C
RH: 60 °C, 90 %RH

After measurement
Samp Temp: Decreases through heat dissipation
Hum Temp: Returns to 25 °C
RH: Reaches 25 °C, 25 %RH

4. Humidity change at constant sample temperature

HUM-Auto

HUM-1



Samp Temp: Constant
Hum Temp: Constant
RH: Change

Before measurement
Samp Temp: 25 °C
Hum Temp: 25 °C
RH: 25 °C, 25 %RH

Start measurement
Samp Temp: 80 °C
Hum Temp: 80 °C
RH: 80 °C, 30 %RH

After measurement
Samp Temp: Decreases through heat dissipation
Hum Temp: Returns to 25 °C
RH: Reaches 25 °C, 25 %RH

5. Constant sample temperature and humidity

HUM-Auto

HUM-1

Samp Temp
500 °C

RH 90 %RH

Hum Temp

80 °C

Samp Temp: Constant
Hum Temp: Constant
RH: Constant

Before measurement
Samp Temp: 25 °C
Hum Temp: 25 °C
RH: 25 °C, 25 %RH

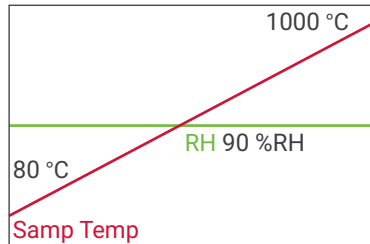
Start measurement
Samp Temp: 80 °C
Hum Temp: 80 °C
RH: 80 °C, 90 %RH

After measurement
Samp Temp: Decreases through heat dissipation
Hum Temp: Returns to 25 °C
RH: Reaches 25 °C, 25 %RH

6. Sample temperature ramp at constant humidity

HUM-Auto

HUM-1



Hum Temp

80 °C

Samp Temp: Change
Hum Temp: Constant
RH: Constant

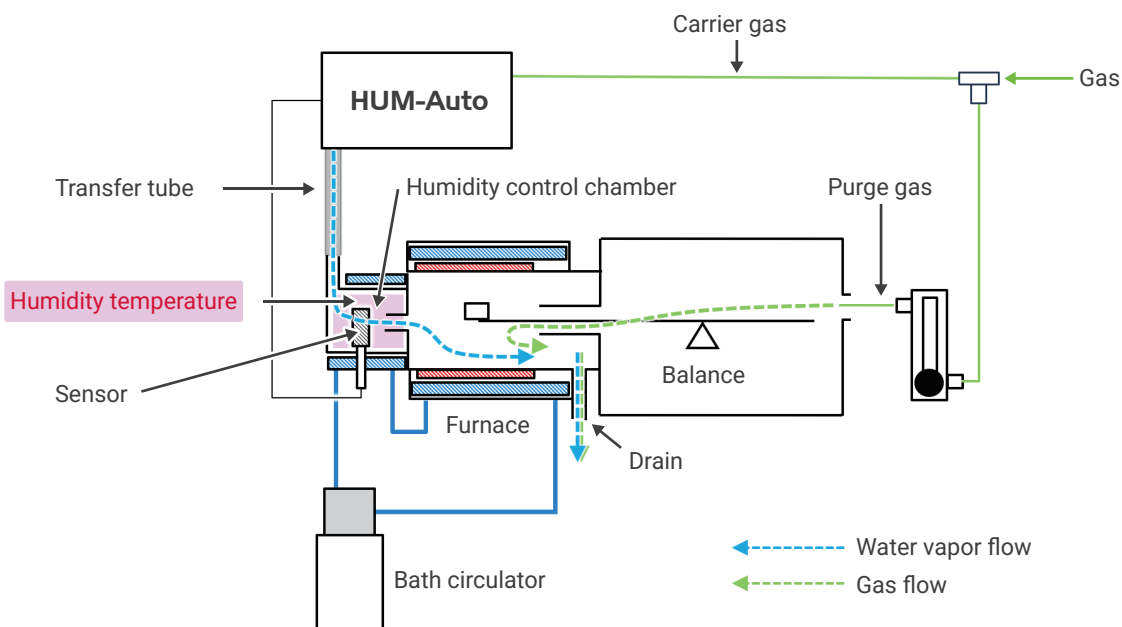
Before measurement
Samp Temp: 25 °C
Hum Temp: 25 °C
RH: 25 °C, 25 %RH

Start measurement
Samp Temp: 80 °C
Hum Temp: 80 °C
RH: 80 °C, 90 %RH

After measurement
Samp Temp: Decreases through heat dissipation
Hum Temp: Returns to 25 °C
RH: Reaches 25 °C, 25 %RH

Samp Temp: Sample temperature Hum Temp: Humidity temperature RH: Relative humidity

Schematic diagram (STAvesta/HUM-Auto)



- **Humidity temperature**
Temperature inside the humidity control chamber, measured by the temperature and humidity sensor connected to HUM.
- **Relative humidity (%RH)**
Water vapor concentration as a percentage of the maximum amount of the gas can hold at that temperature without condensation. In HUM-Auto, it is measured by the connected temperature and humidity sensor.
- **Dew point (°CDP)**
The temperature at which water vapor in the gas begins to condense when cooled. In HUM-Auto, it is calculated from the temperature and relative humidity measured by the connected temperature and humidity sensor.

Relative humidity–dew point conversion table

Samp. Temp. (°C)	RH (% RH)																			
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
10	-28.0	-20.3	-15.5	-11.9	-9.1	-6.8	-4.8	-3.0	-1.4	0.1	1.4	2.6	3.7	4.8	5.8	6.7	7.6	8.4	9.2	10.0
15	-24.4	-16.4	-11.4	-7.8	-4.9	-2.4	-0.3	1.5	3.2	4.7	6.0	7.3	8.5	9.6	10.6	11.6	12.5	13.4	14.2	15.0
20	-20.8	-12.5	-7.4	-3.6	-0.6	1.9	4.1	6.0	7.7	9.3	10.7	12.0	13.2	14.4	15.4	16.4	17.4	18.3	19.2	20.0
25	-17.3	-8.7	-3.4	0.5	3.6	6.2	8.5	10.5	12.3	13.9	15.3	16.7	18.0	19.2	20.3	21.3	22.3	23.2	24.1	25.0
30	-13.7	-4.9	0.6	4.6	7.8	10.5	12.9	14.9	16.8	18.4	20.0	21.4	22.7	23.9	25.1	26.2	27.2	28.2	29.1	30.0
35	-10.2	-1.1	4.5	8.7	12.0	14.8	17.3	19.4	21.3	23.0	24.6	26.1	27.4	28.7	29.9	31.0	32.1	33.1	34.1	35.0
40	-6.8	2.6	8.5	12.8	16.2	19.1	21.6	23.8	25.8	27.6	29.2	30.7	32.2	33.5	34.7	35.9	37.0	38.0	39.0	40.0
45	-3.3	6.4	12.4	16.8	20.4	23.4	26.0	28.2	30.3	32.1	33.8	35.4	36.9	38.2	39.5	40.7	41.9	43.0	44.0	45.0
50	0.1	10.1	16.3	20.9	24.6	27.6	30.3	32.7	34.8	36.7	38.4	40.1	41.6	43.0	44.3	45.6	46.8	47.9	49.0	50.0
55	3.6	13.8	20.2	24.9	28.7	31.9	34.6	37.1	39.2	41.2	43.0	44.7	46.3	47.7	49.1	50.4	51.6	52.8	53.9	55.0
60	6.9	17.5	24.0	28.9	32.8	36.1	38.9	41.5	43.7	45.8	47.6	49.4	51.0	52.5	53.9	55.3	56.5	57.7	58.9	60.0
65	10.3	21.1	27.9	32.9	36.9	40.3	43.3	45.8	48.2	50.3	52.2	54.0	55.7	57.2	58.7	60.1	61.4	62.7	63.9	65.0
70	13.6	24.7	31.7	36.9	41.0	44.5	47.5	50.2	52.6	54.8	56.8	58.6	60.4	62.0	63.5	64.9	66.3	67.6	68.8	70.0
75	16.9	28.3	35.5	40.8	45.1	48.7	51.8	54.6	57.0	59.3	61.4	63.3	65.0	66.7	68.3	69.8	71.2	72.5	73.8	75.0
80	20.2	31.9	39.3	44.8	49.2	52.9	56.1	58.9	61.5	63.8	65.9	67.9	69.7	71.4	73.1	74.6	76.0	77.4	78.7	80.0
85	23.5	35.5	43.1	48.7	53.2	57.0	60.3	63.3	65.9	68.3	70.5	72.5	74.4	76.2	77.8	79.4	80.9	82.3	83.7	85.0
90	26.7	39.0	46.8	52.6	57.3	61.2	64.6	67.6	70.3	72.7	75.0	77.1	79.0	80.9	82.6	84.2	85.8	87.2	88.7	90.0
95	29.9	42.6	50.5	56.5	61.3	65.3	68.8	71.9	74.7	77.2	79.5	81.7	83.7	85.6	87.4	89.0	90.6	92.2	93.6	95.0

 Blue frame: Settable range

* Specifications and appearance are subject to change without notice as part of our ongoing product improvement efforts.

Rigaku Locations

Rigaku Corporation (Tokyo)

3-9-12, Matsubara-cho
Akishima-shi, Tokyo
196-8666 Japan
E-mail address
info-gsm@rigaku.co.jp
Phone number
+81 42-545-8111

Rigaku Americas

9009 New Trails Drive
The Woodlands, TX
77381 United States
E-mail address
info@rigaku.com
Phone number
+1-281-362-2300

Rigaku Europe SE

Hugenottenallee 167
Neu-Isenburg
63263 Germany
E-mail address
rese@rigaku.com
Phone number
+49 6102 77999 51

Rigaku Beijing Corporation

2601A, Tengda Plaza, No. 168,
Xizhimenwai Ave.
Haidian District, Beijing
100044 China
E-mail address
info@rigaku.com.cn
Phone number
+86 010-88575768

Rigaku Asia Pacific PTE LTD

10 Anson Road, #22-04,
International Plaza
079903 Singapore
E-mail address
rapp@rigaku.com
Phone number
+65 6222 0968



<https://rigaku.com/products/thermal-analysis>