



#### Bringing clean air to life

AMERICAN AIR FILTER MANUFACTURING SDN BHD (137508-X)

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# **ASTROCUBE PERFORMANCE TESTING**

Product : AstroCube

Report No. : RD/2020/12/001

Test Performed :Heat Exchanger Efficiency

Testing Purpose: To measure heat exchanger efficiency of AstroCube.

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Note: The test results in this report relate only to the device in the condition stated herein. The performance results cannot by themselves be quantitatively applied to predict the performance in all "REAL LIFE" environments.



### **Test Instruments**

# **Extech Digital Psychrometer (RH390)**

 4
 -30.0 to -20.0°C
 : ±1.5°C

 4
 -19.9 to 70.0°C
 : ±1°C

 4
 70.1 to 100.0°C
 : ±1.5°C

# Digital Air Flow Anemometer (GM8902)

### Wind flow range

**♣** CMM : 0-999900 m₃/min

**♣** Resolution : 0.001 – 100 m₃/min

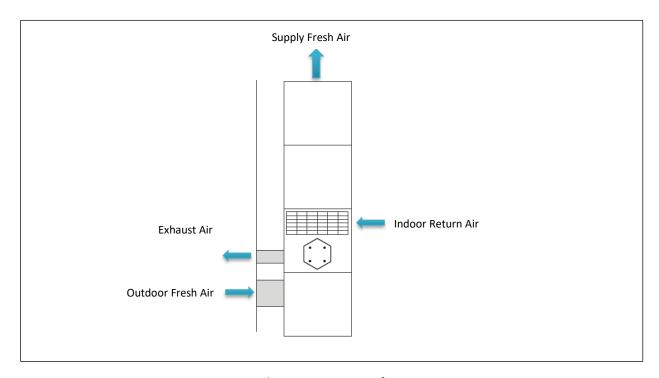


Figure 1: Schematic Diagram of Testing Setup



Figure 2: Testing Setup



### AstroCube Heat Recovery Efficiency Testing

Testing Purpose : Verify the heat recovery efficiency of installed unit.

Test Location : AAF Meeting Room

Test Model : AstroCube 1900x500x350mm

	T <sub>OFA</sub>	T <sub>RA</sub>				T <sub>SA</sub>				T <sub>EA</sub>			
	Ave	1	2	3	Ave	1	2	3	Ave	1	2	3	Ave
Fan Speed 1	31.20	18.80	18.60	18.70	18.70	22.60	22.70	22.80	22.70	25.40	25.50	25.40	25.43
Fan Speed 2	31.20	18.80	18.70	18.90	18.80	22.90	22.80	23.00	22.90	25.20	25.10	25.30	25.20
Fan Speed 3	31.20	19.00	18.90	18.90	18.93	23.20	23.10	23.20	23.17	24.90	24.90	24.80	24.87

where,

T<sub>OFA</sub> = Outdoor Fresh Air Temperature

 $T_{RA}$  = Return Air Temperature

T<sub>SA</sub> = Supply Fresh Air Temperature

T<sub>EA</sub> = Exhaust Air Temperature

	Heat Recovery Efficiency (%)
Fan Speed 1	68.00
Fan Speed 2	66.94
Fan Speed 3	65.49

### **Sample Calculation**

$$\eta = \frac{T_{OFA} - T_{SA}}{T_{OFA} - T_{RA}}$$
$$= \frac{31.2 - 22.70}{31.2 - 18.70}$$
$$= 68.00\%$$