CERTIFICATE

Certified Passive House Component

Component-ID 1874vs05 valid until 31st December 2025

Passive House Institute
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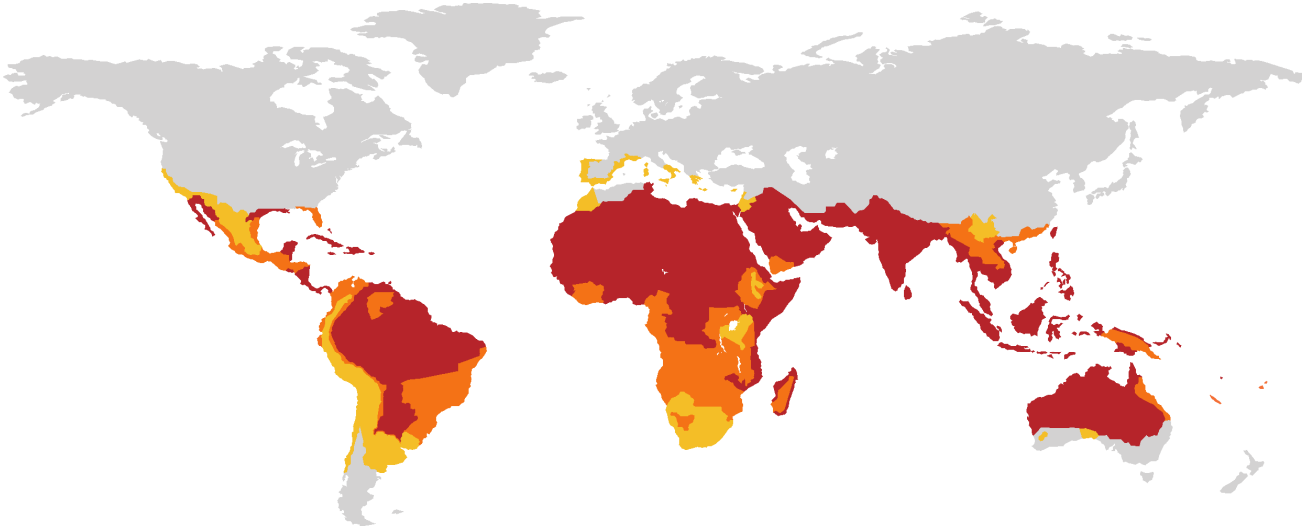

Category:	**Air handling unit with heat recovery**
Manufacturer:	**Qingdao Hisense Hitachi Air-conditioning Systems Co., Ltd. China**
Product name:	**Hitachi KPI-1521Q6/F#DZ**
Specification:	Airflow rate < 600 m³/h
Heat exchanger:	Recuperative with humidity recovery

This certificate was awarded based on the product meeting the following main criteria

Cooling recovery	η_{HR}	≥	70 %
Specific electric power	$P_{el,spec}$	≤	0.45 Wh/m³
Leakage		<	3 %

Airflow range
69-116 m³/h
Cooling recovery
$\eta_{HR,C}$ = 74 %
Specific electric power
$P_{el,spec}$ = 0.44 Wh/m³
Humidity recovery
η_x= 61%

The unit is equipped with recovery core bypass function controlled on enthalpy.

very hot climate

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Humidity recovery

In warm and humid climates, moisture recovery can significantly reduce the energy demand for active dehumidification and active cooling. In warm and humid or hot and humid climates therefore a humidity recovery of at least 60% is recommended together with active dehumidification. As an orientation, PHPP refers to moisture recovery if required.

Humidity recovery
η_x = 61%

Efficiency criterion (cooling recovery)

The cooling recovery rate is determined on the basis of laboratory measurements of the entire ventilation device with balanced mass flows on the outdoor air and exhaust air side according to following formula:

$$\eta_{HR,C} = \frac{(\theta_{ETA} - \theta_{EHA}) + \frac{P_{el}}{\dot{m} \cdot c_p}}{(\theta_{ETA} - \theta_{ODA})}$$

With

$\eta_{HR,C}$	Cooling recovery in %
θ_{ETA}	Extract air temperature in °C
θ_{EHA}	Exhaust air temperature in °C
θ_{ODA}	Outdoor air temperature in °C
P_{el}	Electric power in W
$\dot{m}$	Mass flow in kg/h
c_p	Specific heat capacity in Wh/(kg.K)

Cooling recovery
η_{HR} = 74 %

Efficiency criterion (electric power)

The overall electric power consumption of the device is measured at the test facility at an external pressure of 100 Pa (50 Pa, respectively, for the intake and outlet). This includes the general electric power consumption for operation and control.

Specific electric power
$P_{el,spec}$ = 0.44 Wh/m³

Leakage

The leakage airflow must not exceed 3% of the average airflow of the unit's operating range.

Internal leakage	External leakage
1.78 %	1.23 %

Settings and airflow balance

It must be possible to adjust the balance of airflows at the unit itself (either between the exhaust and the outdoor airflows or between the supply and the extract airflows, if the unit is respectively placed inside or outside of the insulated thermal envelope of the building). Balancing of the airflow rates of the unit is possilbe.

- This unit is certified for airflow rates of 69-116 m³/h.
- Balancing the air flow rates of the unit is possible.
  - ✓ The airflow volumes can be held steady automatically.
- The user should have at least following setting options:
  - ✓ Switching the system on and off.
  - ✓ Synchronized adjustment of the supply and extract airflows to basic ventilation (70-80%), standard ventilation (100%) and increased ventilation (130%) with a clear indication of the current setting.
- The device has a standby power consumption 6 W. The target value of 1 W was slightly exceeded. The device should be equipped with an additional external switch so that it can be disconnected from the mains, if required.
- After a power failure, the device will automatically resume operation.

Acoustical testing

The required limit for the sound power level of the device is 35 dB(A) in order to limit the sound pressure level in the installation room. The sound level target value of less than 25 dB(A) in living spaces and less than 30 dB(A) in functional spaces must be ensured by installing commercial silencers.The following sound power levels are met at an airflow rate of 116 m³/h.

Casing	Duct			
	Outdoor	Supply	Extract	Exhaust
32.6 dB(A)	53.3 dB(A)	61.7 dB(A)	61.9 dB(A)	53.6 dB(A)

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Indoor air quality

The device must be eqipped with following filter qualities:

Outdoor air filter	Extract air filter
ISO ePM1 50%	ISO Coarse 60%

On the outdoor air / supply air side, a fine filter of efficiency ISO ePM1 50% (F7 according to EN 779) or better is recommended. For the exhaust air side, a filter with at least ISO Coarse 60% efficiency (G4 according to EN 779) is recommended. If no standard configuration, a filter with recommended efficiency is offered as optional equipment or accessories by the manufacturer.

Condensate drain

Under certain circumstances condensate may occur on the supply air side. A condensate drain on the supply air side is therefore recommended, especially if exhaust air temperatures < 25°C are to be expected during the cooling period. If no condensate occurs, the condensate drain must be tightly closed.

The tested unit does not provide a condensate drain connection.

Bypass of the heat recovery

The unit is equipped with enthalpy recovery bypass function (controled based on both- temperature and humidity).