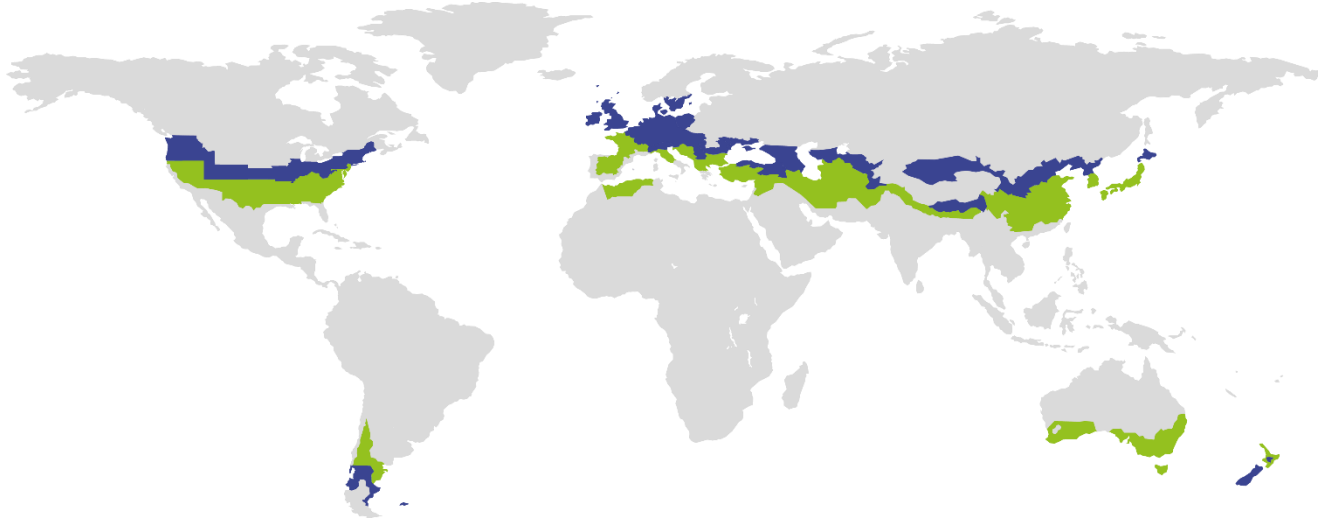


# CERTIFICATE

Certified Passive House Component

Component-ID 0949s03 valid until 31st December 2020

Passive House Institute  
Dr. Wolfgang Feist  
64283 Darmstadt  
Germany



Category: **Air handling unit with heat recovery**  
Manufacturer: **Glen Dimplex Deutschland GmbH**  
**Germany**  
Product name: **DL 50 WH2**  
Specification: Single room ventilation system with optional second room connection  
Heat exchanger: Recuperative

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

Heat recovery rate  $\eta_{HR} \geq 75 \%$   
Specific electric power  $P_{el,spec} \leq 0.45 \text{ Wh/m}^3$   
Leakage  $< 3 \%$   
Comfort Supply air temperature  $\geq 16.5 \text{ }^\circ\text{C}$  at outdoor air temperature of  $-10 \text{ }^\circ\text{C}$

## Airflow range

15-20 m<sup>3</sup>/h

(continuous operation)

15-45 m<sup>3</sup>/h

(on-demand operation for elimination of increased loads)

## Heat recovery rate

$\eta_{HR} = 83 \%$

## Specific electric power

$P_{el,spec} = 0.31 \text{ Wh/m}^3$

cool, temperate climate



**CERTIFIED  
COMPONENT**

Passive House Institute

### Passive House comfort criterion

A minimum supply air temperature of 16.5 °C is maintained at an outdoor air temperature of -15 °C. Therefore, it is assumed that a supply air temperature of more than 16.5 °C is maintained also at -10 °C outdoor air temperature.

### Efficiency criterion (heat recovery rate)

The effective heat recovery rate is measured at a test facility using balanced mass flows of the outdoor and exhaust air. The boundary conditions for the measurement are documented in the testing procedure.

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

With

- $\eta_{HR}$  Heat recovery rate in %
- $\theta_{ETA}$  Extract air temperature in °C
- $\theta_{EHA}$  Exhaust air temperature in °C
- $\theta_{ODA}$  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)

Heat recovery rate

$\eta_{HR} = 83 \%$

### Efficiency criterion (electric power)

The unit was examined with the following conditions, which correspond to the standard installation situation of the unit: Outdoor air and exhaust air free air intake and discharge, extract air and supply air free air intake and discharge.

Specific electric power

$P_{el,spec} = 0.31 \text{ Wh/m}^3$

## Efficiency ratio

The efficiency ratio provides information about the overall energy performance of the respective ventilation unit. It specifies the achieved reduction in ventilation heat losses by using a ventilation unit with heat recovery rather than without.

Efficiency ratio
$\varepsilon_L = 0.63$

## Leakage

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

Internal leakage	External leakage
3.00 %	2.93 %

## Settings and airflow balance

It must be possible to adjust the balance between the exhaust airflow rate and the outdoor airflow rate for all units.

- This unit is certified for airflow rates of 15-20 m<sup>3</sup>/h (continuous operation) resp. 15-45 m<sup>3</sup>/h (on-demand operation for elimination of increased loads).
- Balancing of the airflow rates of the unit is possible.
- The standby power consumption of this device makes 1.5 W. The target value of 1 W was 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

Since it can be assumed that the unit will be installed in a functional or secondary room, the sound pressure level in installation room should be restricted to 30 dB(A). The following sound levels for the unit without second room connection have been determined depending on the airflow rate:

Airflow rate	Sound power level $L_W$
10 m <sup>3</sup> /h	23.7 dB(A)
14 m <sup>3</sup> /h	25.7 dB(A)
20 m <sup>3</sup> /h	31.8 dB(A)
28 m <sup>3</sup> /h	40.3 dB(A)
35 m <sup>3</sup> /h	44.8 dB(A)

- The criteria for the sound pressure level (30 dB(A)) in the specific installation room with an equivalent room absorption area of 10 m<sup>2</sup> are met for the unit without second room connection up to an airflow rate of 20 m<sup>3</sup>/h (continuous operation).
- In practice, different (also lower) sound levels may occur depending on e.g. furnishings and room surfaces.

### Indoor air quality

This unit is to be equipped with following filter qualities:

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

On the outdoor air side, the filter efficiency of ISO ePM1 50% (F7 according to EN 779) or better is recommended. For the extract air side, a filter efficiency of at least ISO Coarse 60% (G4 according to EN 779) is recommended. If not in standard configuration, the recommended filter is available as an accessory part.

### Frosts protection

Appropriate measures should be taken to prevent the heat exchanger and optional downstream hydraulic heater coil from getting damaged by frost during extreme winter temperatures (−15 °C). It must be ensured that the unit's ventilation performance is not affected during frost protection cycles.

- Frosts protection of the heat exchanger:
  - ✓ The frost protection strategy for the heat exchanger is regulated by means of a permanently installed electrical preheater depending at the outside air temperature. During the measurement, the preheating coil was activated for the first time at +2.3 °C. The volume flow balance of the supply / exhaust air is maintained. The frost protection circuit is suitable to protect the heat exchanger from permanent icing.