# Halton Windis DWI, air curtain - Technical description

# Contents

# 1 Introduction

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## 1.2 About this document

This technical description is intended for anyone needing detailed technical information about the product. It also provides general design-related information, such as design examples. More detailed designs can be carried out using the Halton eHIT selection tool, available at ***www.ehit.halton.com***.

## 1.3 Summary of changes

| Release | Date | Description |
|---|---|---|
| 1.1 | 08-OCT-2025 | Minor corrections and Finnish translations |
| 1.0 | 03-OCT-2024 | First approved version |

# 2 Product description

## 2.1 Overview


Halton Windis DWIis an air curtain that generates an invisible and uniformly controlled air stream directed downwards in an open doorway. It is a water-heated air curtain designed for integrated installation. It is compact and compatible with various entrance types, and installation is up to a maximum height of 3.5 m. With its integrated energy measurement, energy consumption remains under control. The unit employs EC motors and features with adjustable impulse force for an efficient air barrier function.

### Application area

- Excellent for retail spaces, shops, offices, schools, and daycares.
- Interior or exterior doorways.
- Designed for horizontal installation directly above door openings with a maximum height of 3.5 m.

### Key features

- Fast and easy to install, it requires no opening of the product for connection.
- Suspended mounting and water-heated.
- Connectivity to automation is simple via a QR code.
- Built-in thermal energy measurement.
- Intelligent Controller - with web server and ready-to-use Modbus and BACnet interfaces.
- Adjustable
- Integrated water valves.

## 2.2 Operating principle

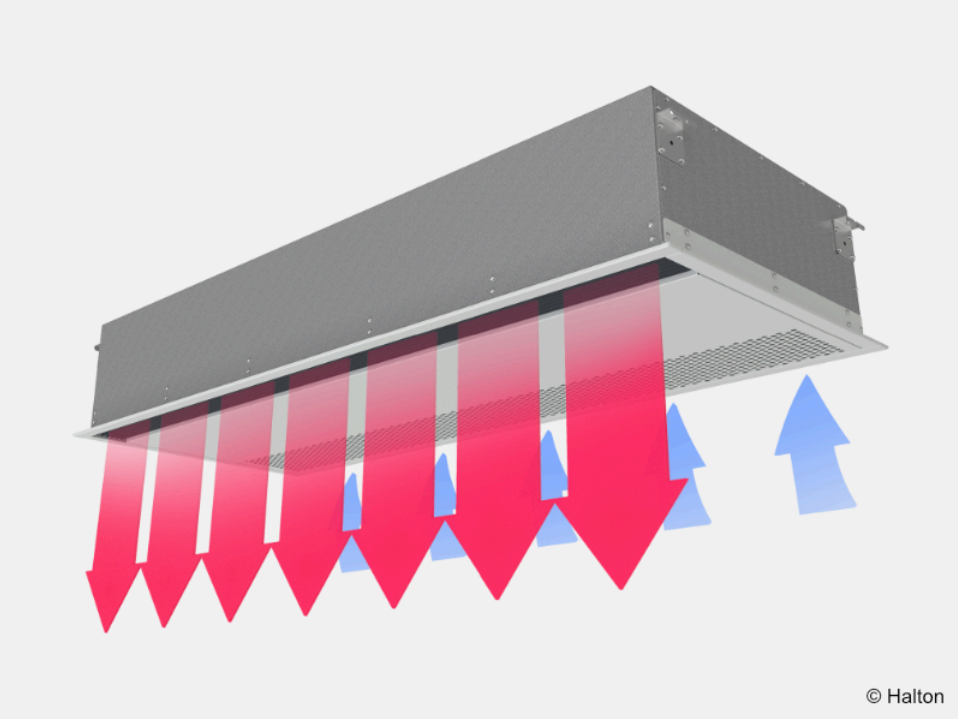


*Fig. 1. Halton Windis DWI, air curtain - Operating principle*

Air curtains, distinguished by their unique aerodynamic design, offer a highly efficient solution for separating two temperature zones or two environments. This unique design not only provides effective separation but also contributes significantly to energy conservation, making it a cost-effective choice.

When faced with challenges of natural heat exchange through open doors, air curtains step in as a practical solution. These curtains effectively separate two areas or environments, halting the natural transfer of heat and thereby playing a crucial role in energy conservation.

In principle, an air curtain is a device equipped with a fan and a heat exchanger (water or electrical). It operates by pushing air to the floor in a smooth, laminar flow, creating a 90% air seal. This seal, akin to an invisible waterfall, effectively stops heat transfer, dust, and flying insects, thereby maintaining a controlled indoor environment.

## 2.3 Key technical data

| Feature | Description |
|---|---|
| Airflow rate | 73-1404 l/s or 1750-3900 $m^3$/h |
| Sound pressure level | 30-77 dBa |
| Dimensions | Height [H] = 600 mm |
| | Width [W] = 1017, 1517, 2017, 2517 mm |
| Weight | 46 - 95 kg |
| Adjustability / Positions | 3 |
| Mounting height | 3.5 m (max) |

## 2.4 Features and options

| Feature | Description |
|---|---|
| Color | **Frame**: RAL 7035 **Grille**: RAL 7024 |
| Casing | Galvanised steel |
| Fans | EC - motor, Ball bearings |
| Heat exchanger | Copper (3/8"), aluminium, G1" thread, max 6 bar/100°C |
| Electrical connections | Power supply 2 m, safety grounded plug |
| Other connections | M12 connector, Ethernet, USB |
| Standard delivery | 2-way heating valve, Heating energy meter, Filter G4, Room sensor NTC10 |
| Internal temperature sensors | ▪ Water in and water out<br>▪ Air in and air out |
| Cables | 10 m cable - BMS - RS-485 connection (M12 connector) |
| | 10 m cable - Room sensor (M12 connector) |
| | 10 m cable - Door switch (M12 connector) |
| | 10 m cable - Slave device (M12 connector) |

## 2.5 Structure and materials

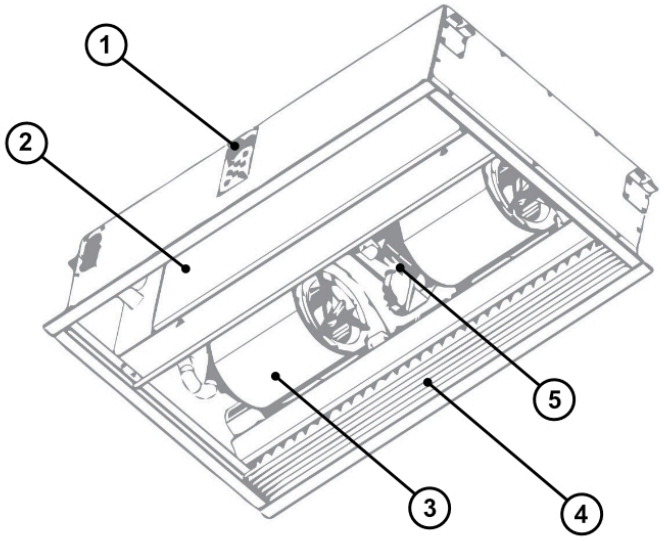


*Fig. 2. Halton Windis DWI, structure.*

| No. | Part | Description | Note |
|---|---|---|---|
| 1 | Connector panel | Plastic, steel | PVC cable |
| 2 | Filter | Aluminium | - |
| 3 | EC-fan | Metal | - |
| 4 | Outlet grille | Aluminium / Steel | - |
| 5 | Intelligent controller | - | - |

## 2.6 Dimensions and weight

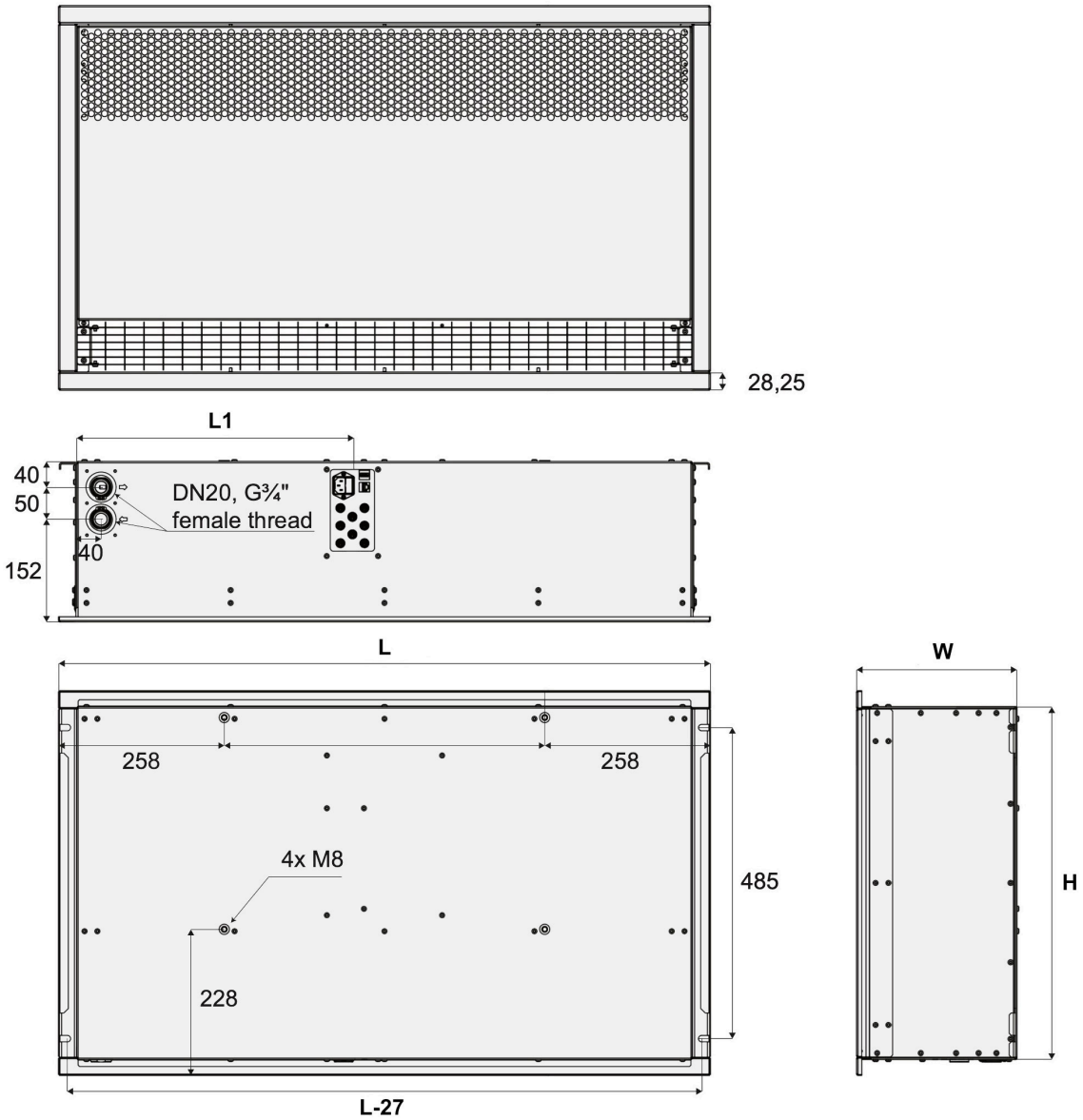


*Fig. 3. Halton Windis DWI - Dimensions*

| DWI | L [mm] | W [mm] | H [mm] | L1 [mm] | Weight [kg] |
|---|---|---|---|---|---|
| 1000 | 1017 | 250 | 550 | 432 | 46 |

| DWI | L [mm] | W [mm] | H [mm] | L1 [mm] | Weight [kg] |
|---|---|---|---|---|---|
| 1500 | 1517 | 250 | 550 | 432 | 60 |
| 2000 | 2017 | 250 | 550 | 432 | 79 |
| 2500 | 2517 | 250 | 550 | 432 | 95 |

## 2.7 Specification

The Halton Windis DWI is an air curtain designed for integrated installation. The system features integrated thermal energy measurement using precise ultrasound technology, a smart controller with a built-in web server and ready Modbus and BACnet interfaces, as well as an adjustable blowing impulse to tailor to specific needs.

### Function

- Four product models equipped with integrated controls eliminate the need for additional controls on the walls, allowing for a clean, streamlined design.
- Adjustable blowing speeds and an in-built schedule function for efficient management.
- Includes programmatic freeze protection and a Master-Slave function for synchronised operation.
- Integrated control valves and actuators, along with energy measurement, air bubble detection, and pressure measurement of the heating network.
- Featuring a counter for door openings enhances overall functionality.
- Supporting ECM engines allows optimized operation for each building.
- Ready-to-implement graphic images simplify design processes.
- Functional changes to easily adapt to specific needs.

### Structure

- Available in four different widths: 1000 mm, 1500 mm, 2000 mm, and 2500 mm.

### Material

- The frame is painted in light grey RAL 7035, and the grill is painted in graphite grey RAL 7024. The colours are customizable RAL xxxx.
- The heating radiator system features 3/8" copper pipes with aluminium strips for enhanced heat dissipation and a G1" internal thread for secure connections. Designed to operate at a maximum pressure of 6 bar and a temperature of up to 100°C.
- The electrical connections include a 2 m power supply with safety grounding, a spark plug, and additional interfaces like an M12 connector, Ethernet, and USB.
- The fan is equipped with centrifugal blades and ball bearings for efficient and reliable operation.
- The system includes a 2-way heating valve, a heat energy meter, a G4 filter, an adjustable blow impulse, and supports Modbus TCP, BacNet TCP, Modbus RTU, BacNet MSTP, and an I/O interface for connectivity.

### Integrated controller

- The automation system of the door curtain unit provides significant advantages by ensuring all components are pre-tested and the control system operates as intended.
- The pre-tested control system quickly adapts to changing conditions, optimising performance and energy efficiency in real-time.
- This advanced controller integrates seamlessly with building automation systems via Modbus or BACnet

interfaces. Network topology options include TCP/IP or RS-485, ensuring flexible and robust communication.

- It contains various integrated sensors for measuring air temperature, water-side energy meter, water pressure and freeze protection. Additionally, external sensors can be connected., external sensors can be connected.
- The controller can be integrated into the BMS, allowing all control signals to be managed directly through the BMS, except for bypassing the freeze protection function.

## 2.8 Order code

DWI-M-L; VC-CO-ZT

| Main options | |
|---|---|
| M = Model | |
| S | Small |
| L = Length [mm] | 1000, 1500, 2000, 2500 |

| Other options and accessories | |
|---|---|
| VC = Impulse force | |
| 1 | Position 1 |
| 2 | Position 2 |
| 3 | Position 3 |
| CO = Colour | |
| TG | Grey |
| x | Special colour (RAL xxxx) |
| ZT = Tailored product | |
| N | No |
| Y | Yes (ETO) |

| Order code example |
|---|
| DWI-S-1500; VC=2, CO=TG, ZT=N |

# 3 Design information

## 3.1 Design considerations

### 3.1.1 Installation

Installation instructions, covering installation options, space requirements, wiring, and other installation requirements, are available in a separate document.

See **Halton Windis DWI Installation, commissioning, operations and maintenance guide**. Preparation is in progress, and will enable the link as soon as it becomes available.

### 3.1.2 Commissioning

The commissioning of both the central unit and the Controller is available in a separate document.

See **Halton Windis DWI Installation, commissioning, operations and maintenance guide**. Preparation is in progress, and will enable the link as soon as it becomes available.

### 3.1.3 Maintenance

The maintenance instructions are available in a separate document.

See **Halton Windis DWI Installation, commissioning, operations and maintenance guide**. Preparation is in progress, and will enable the link as soon as it becomes available.

## 3.2 Product selection

Technical data (Air, volume and sound)

**Halton Windis DWI, 1000**

| Regulation | Air volume | | HVC | Sound pressure level | Power consumption |
|---|---|---|---|---|---|
| 1 | [l/s] | [$m^3$/h] | Position | [dB(A)] 10 $m^2$sab | [W] |
| 10 | 531 | 1913 | 1 | 74 | 333 |
| 8 | 421 | 1516 | 1 | 69 | 175 |
| 6 | 290 | 1043 | 1 | 60 | 68 |
| 4 | 153 | 552 | 1 | 47 | 20 |
| 2 | 80 | 288 | 1 | 30 | 8 |
| 10 | 524 | 1885 | 2 | 74 | 333 |
| 8 | 402 | 1446 | 2 | 69 | 176 |
| 6 | 290 | 1043 | 2 | 61 | 68 |
| 4 | 152 | 546 | 2 | 47 | 20 |

| Regulation | Air volume | | HVC | Sound pressure level | Power consumption |
|---|---|---|---|---|---|
| 1 | [l/s] | [$m^3$/h] | Position | [dB(A)] 10 $m^2$sab | [W] |
| 2 | 74 | 266 | 2 | 30 | 8 |
| 10 | 524 | 1885 | 3 | 75 | 333 |
| 8 | 402 | 1446 | 3 | 69 | 175 |
| 6 | 287 | 1033 | 3 | 61 | 68 |
| 4 | 148 | 533 | 3 | 48 | 20 |
| 2 | 73 | 262 | 3 | 31 | 8 |

Halton Windis DWI, 1500

| Regulation | Air volume | | HVC | Sound pressure level | Power consumption |
|---|---|---|---|---|---|
| 1 | [l/s] | [$m^3$/h] | Position | [dB(A)] 10 $m^2$sab | [W] |
| 10 | 766 | 2757 | 1 | 76 | 502 |
| 8 | 620 | 2232 | 1 | 71 | 268 |
| 6 | 444 | 1597 | 1 | 63 | 104 |
| 4 | 257 | 926 | 1 | 50 | 31 |
| 2 | 116 | 416 | 1 | 32 | 12 |
| 10 | 759 | 2733 | 2 | 77 | 503 |
| 8 | 595 | 2142 | 2 | 71 | 268 |
| 6 | 415 | 1496 | 2 | 63 | 104 |
| 4 | 241 | 867 | 2 | 49 | 31 |
| 2 | 113 | 408 | 2 | 32 | 12 |
| 10 | 725 | 2611 | 3 | 77 | 503 |
| 8 | 560 | 2016 | 3 | 71 | 268 |
| 6 | 398 | 1431 | 3 | 63 | 104 |
| 4 | 268 | 964 | 3 | 49 | 31 |
| 2 | 106 | 381 | 3 | 32 | 12 |

Halton Windis DWI, 2000

| Regulation | Air volume | | HVC | Sound pressure level | Power consumption |
|---|---|---|---|---|---|
| 1 | [l/s] | [$m^3$/h] | Position | [dB(A)] 10 $m^2$sab | [W] |
| 10 | 1016 | 3656 | 1 | 77 | 666 |
| 8 | 871 | 3135 | 1 | 73 | 384 |
| 6 | 585 | 2105 | 1 | 64 | 149 |
| 4 | 336 | 1210 | 1 | 51 | 44 |
| 2 | 142 | 513 | 1 | 34 | 17 |
| 10 | 1016 | 3656 | 2 | 77 | 667 |
| 8 | 871 | 3135 | 2 | 73 | 383 |
| 6 | 565 | 2034 | 2 | 64 | 149 |
| 4 | 331 | 1192 | 2 | 51 | 44 |
| 2 | 135 | 485 | 2 | 34 | 17 |
| 10 | 1016 | 3656 | 3 | 78 | 667 |
| 8 | 841 | 3029 | 3 | 73 | 384 |
| 6 | 554 | 1993 | 3 | 65 | 149 |
| 4 | 324 | 1166 | 3 | 51 | 44 |
| 2 | 133 | 478 | 3 | 35 | 17 |

Halton Windis DWI, 2500

| Regulation | Air volume | | HVC | Sound pressure level | Power consumption |
|---|---|---|---|---|---|
| 1 | [l/s] | [$m^3$/h] | Position | [dB(A)] 10 $m^2$sab | [W] |
| 10 | 1404 | 5055 | 1 | 77 | 665 |
| 8 | 1142 | 4112 | 1 | 72 | 355 |
| 6 | 811 | 2919 | 1 | 64 | 137 |
| 4 | 415 | 1496 | 1 | 51 | 41.9 |
| 2 | 231 | 831 | 1 | 34 | 17 |
| 10 | 1349 | 4857 | 2 | 78 | 665 |
| 8 | 1102 | 3966 | 2 | 73 | 355 |

| Regulation | Air volume | | HVC | Sound pressure level | Power consumption |
|---|---|---|---|---|---|
| 1 | [l/s] | [$m^3$/h] | Position | [dB(A)] 10 $m^2$sab | [W] |
| 6 | 772 | 2781 | 2 | 64 | 138 |
| 4 | 406 | 1460 | 2 | 51 | 41.9 |
| 2 | 220 | 792 | 2 | 35 | 17 |
| 10 | 1244 | 4478 | 3 | 78 | 665 |
| 8 | 990 | 3565 | 3 | 73 | 355 |
| 6 | 718 | 2585 | 3 | 64 | 138 |
| 4 | 381 | 1372 | 3 | 51 | 41.9 |
| 2 | 220 | 792 | 3 | 36 | 17 |

# 4 Technical reference data

## 4.1 Connection diagram

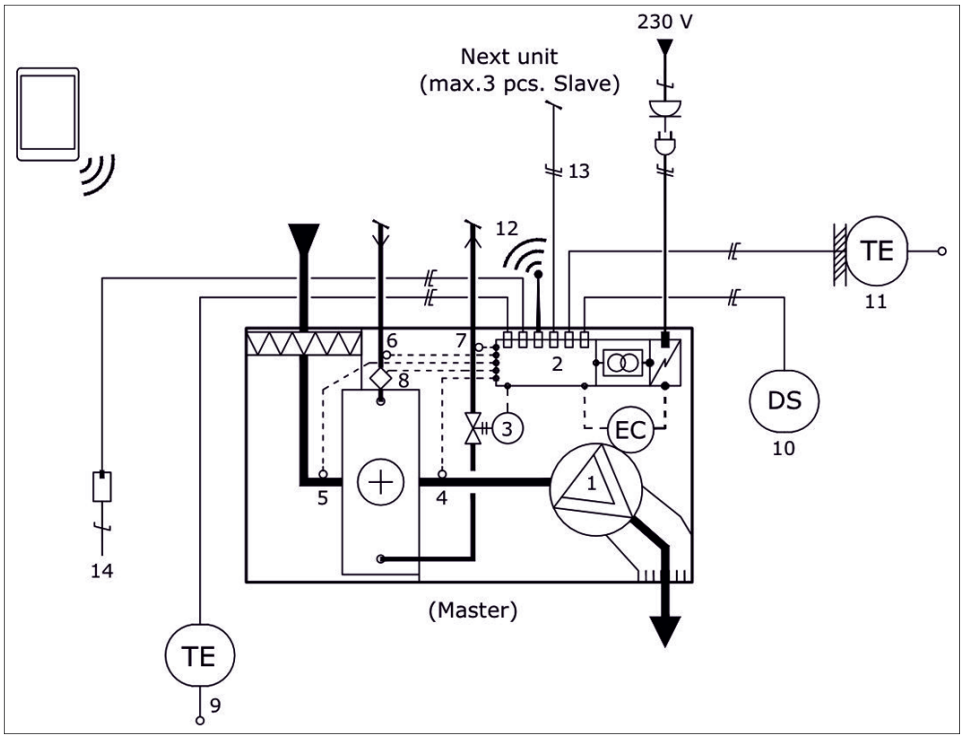


*Fig. 4. Halton Windis DWI - connection diagram.*

| No. | Materials | Function | Description |
|---|---|---|---|
| 1 | Fan | With EC motor | 2-10 V, 0 V stop |
| 2 | Controller | Factory programmed | Modbus/Bacnet TCP or RTU / MSTP |
| 3 | Valve and actuator | Heating | Belimo C215Q-J and CQD24A-SZ |

| No. | Materials | Function | Description |
|---|---|---|---|
| 4 | Temperature sensor | Supply air | Sensor element |
| 5 | Temperature sensor | Intake air | Sensor element |
| 6 | Temperature sensor | Supply water | Sensor element |
| 7 | Temperature sensor | Return water | Sensor element |
| 8 | Energy meter | Supply water | Incl. pressure measurement |
| 9 | Temperature sensor | Room sensor | M12 connector, 10 m device cable |
| 10 | Door contact | Magnetic contact | M12 connector, 10 m device cable |
| 11 | Temperature sensor | Outdoor sensor | M12 connector, 10 m device cable |
| 12 | WLAN adaptor | Commissioning tool | - |
| 13 | Connection cable | Master-slave | M12 connector, 10 m device cable |
| 14 | General cabling box | CATaJ-45 | 1-part RJ-45 connector with dust cover |

## 4.2 Performance data

### 4.2.1 Airflow performance data

| DWI | Power [W] | Airflow [$m^3$/h] | Sound pressure level [dBa] | Current [A] | Width [mm] | Weight [kg] |
|---|---|---|---|---|---|---|
| 100 | 336 | 800/1750 | 42/60 | 2,5 | 980 | 46 |
| 150 | 504 | 1200/2700 | 45/62 | 3,75 | 1480 | 60 |
| 200 | 672 | 1600/3800 | 45/63 | 5 | 2016 | 79 |
| 250 | 672 | 1650/3900 | 45/63 | 5 | 2516 | 95 |

### 4.2.2 Water flow performance data

| DWI | Power [W] | Water flow [l/s] | Pressure loss [kPa] | Power [kW] | Water flow [l/s] | Pressure loss [kPa] |
|---|---|---|---|---|---|---|
| 100 | 11 | 0,137 | 4 | 7 | 0,056 | 1 |
| 150 | 18 | 0,231 | 12,5 | 14 | 0,11 | 3,5 |
| 200 | 22 | 0,274 | 8 | 14 | 0,12 | 2 |
| 250 | 27 | 0,33 | 12 | 20 | 0,15 | 3 |