

# Halton Windis DWI, air curtain - Technical description

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# 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](http://www.ehit.halton.com).

## 1.3 Summary of changes

Release	Date	Description
1.0	03-OCT-2024	First approved version

# 2 Product description

## 2.1 Overview



Halton Windis DWI is 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 3.5m. 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

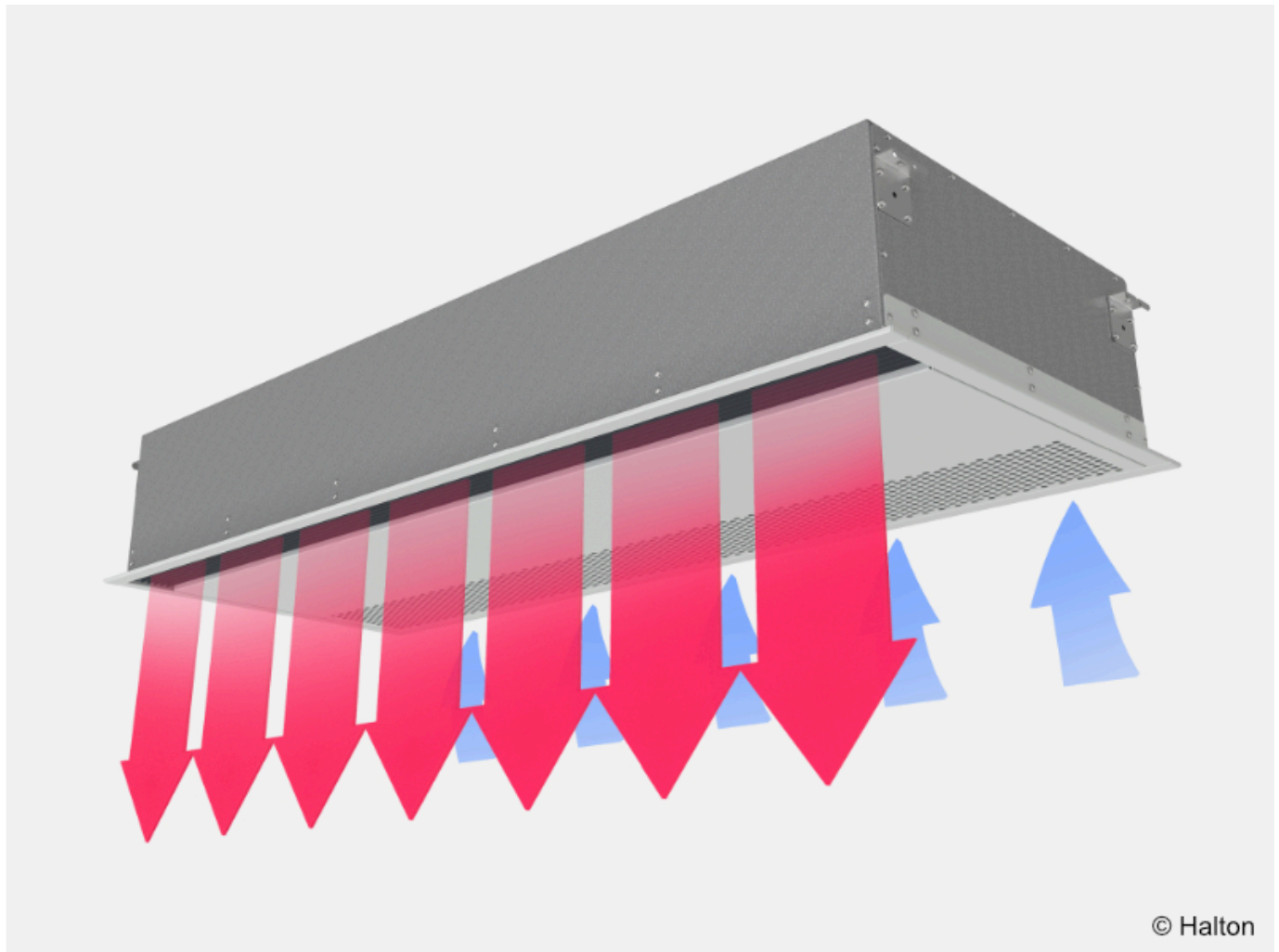
- Excellent for retail spaces, shops, offices, schools, and daycares.
- Interior or exterior doorways.
- Designed for horizontal installation directly above door openings with a maximum height of 3,5 m.

### Key features

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

- Integrated water valves.

## 2.2 Operating principle



*Fig. 1. Operating principle of Halton Windis DWI air curtain*

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 heat transport 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 <sup>3</sup> /h	
Sound pressure level	30-77 dBa	
Dimensions	Height	600 mm
	Width	1017, 1517, 2017, 2517 mm
Weight	46 - 95 kg	
Adjustability / Positions	3	
Mounting height	3,5 m (maximum)	

## 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 2m, 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			Air in and air out
Cables	10m cable - BMS - RS-485 connection (M12 connector)			
	10m cable - Room sensor (M12 connector)			
	10m cable - Door switch (M12 connector)			
	0m cable - Slave device (M12 connector)			

2.5 Structure and materials

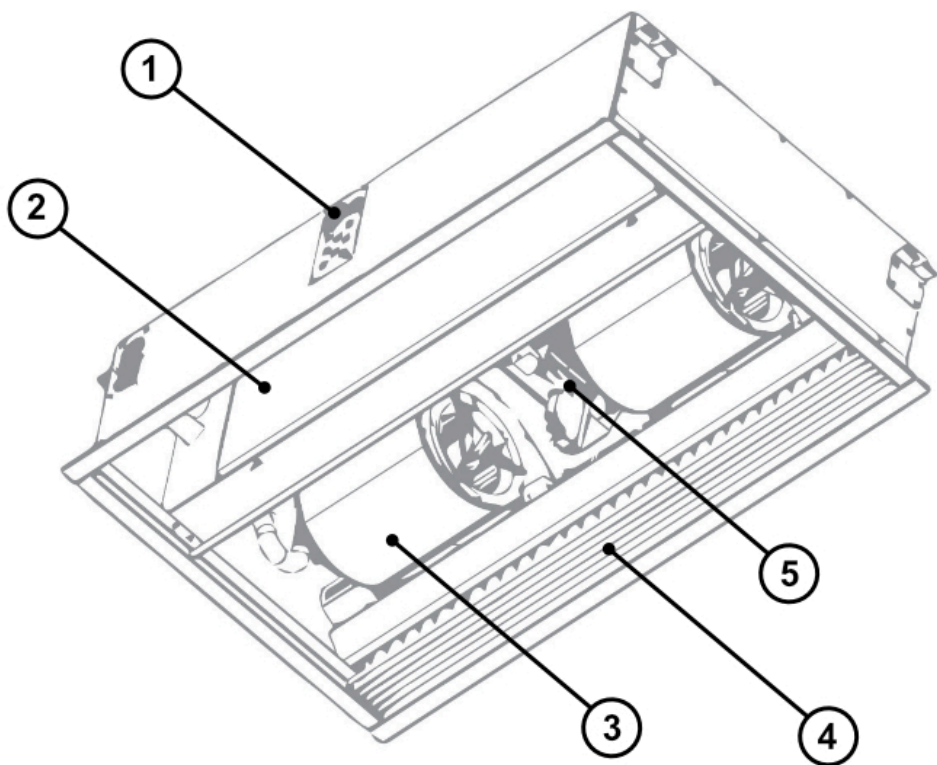


Fig. 2. Halton Windis DWI structure

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

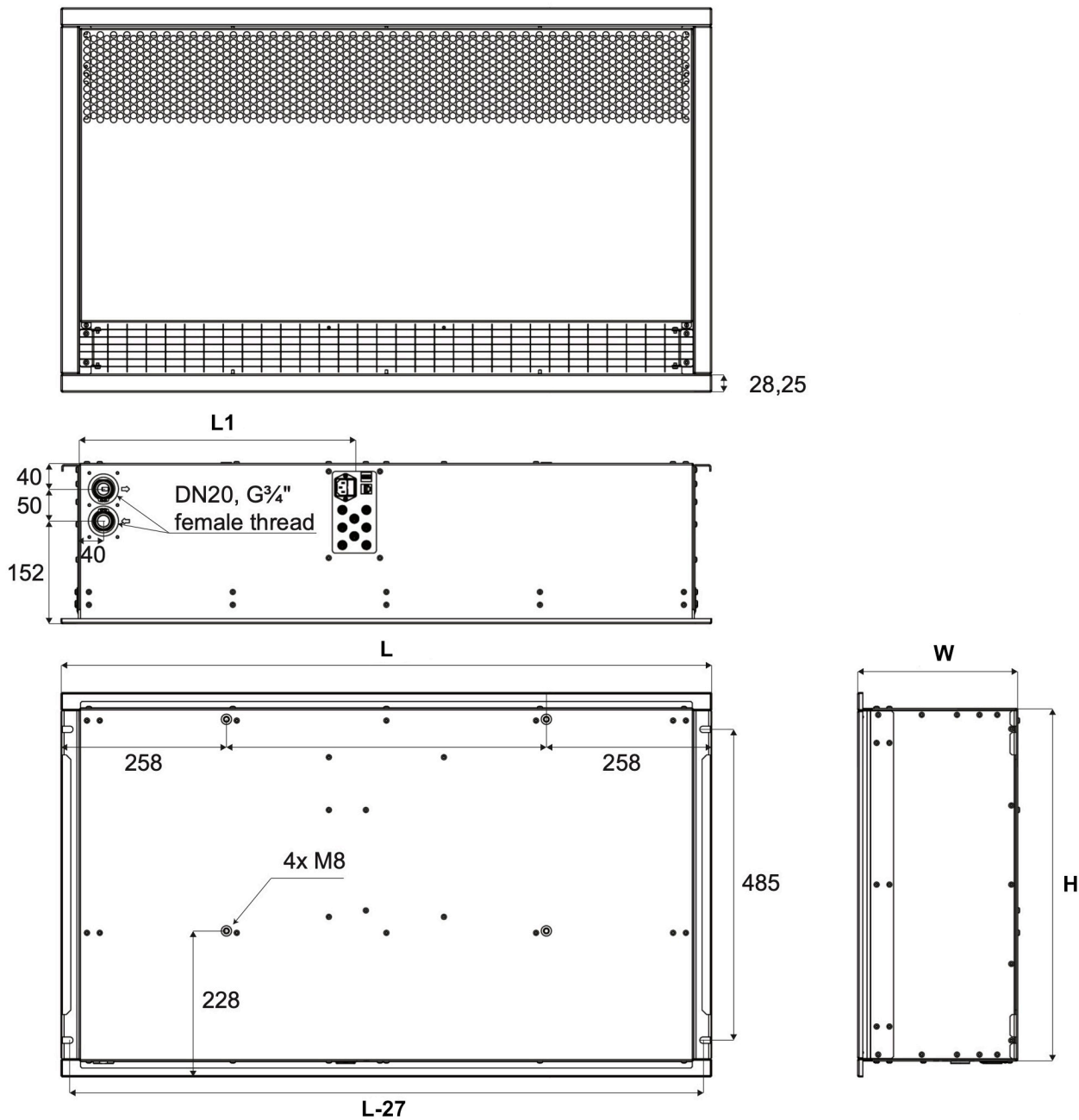


Fig. 3. Dimensions of Halton Windis DWI

DWI	L [mm]	W [mm]	H [mm]	L1 [mm]	Weight [kg]
1000	1017	250	550	432	46
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, and an adjustable blowing impulse to tailor specific needs.

### Function

- Four product models equipped with integrated controls eliminate the need for additional controls on the walls and allow for a clean, streamlined design.
- Adjustable blowing speeds and an inbuilt schedule function for efficient management.
- Includes programmatic freeze protection and a Master-Slave function for synchronized 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, enhancing overall functionality.
- Supporting ECM engines and 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 with light grey RAL 7035 and the grill with 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-meter 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, 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 adapts quickly to changing conditions, optimizing 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. Apart from these, 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 the freeze protection function, which cannot be bypassed.

## 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 and commissioning guide](#). (preparation is in-progress and the link will be enabled when it is 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 and commissioning guide](#). (preparation is in-progress and the link will be enabled when it is available)

#### 3.1.3 Maintenance

Maintenance instructions are available in the [Halton Windis DWI Quick Guide](#). (preparation is in-progress and the link will be enabled when it is 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 <sup>3</sup> /h]	Position	[dB(A)] 10 m <sup>2</sup> 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
2	74	266	2	30	8

Regulation	Air volume		HVC	Sound pressure level	Power consumption
1	[l/s]	[m <sup>3</sup> /h]	Position	[dB(A)] 10 m <sup>2</sup> sab	[W]
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 <sup>3</sup> /h]	Position	[dB(A)] 10 m <sup>2</sup> 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 <sup>3</sup> /h]	Position	[dB(A)] 10 m <sup>2</sup> 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 <sup>3</sup> /h]	Position	[dB(A)] 10 m <sup>2</sup> 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 <sup>3</sup> /h]	Position	[dB(A)] 10 m <sup>2</sup> 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

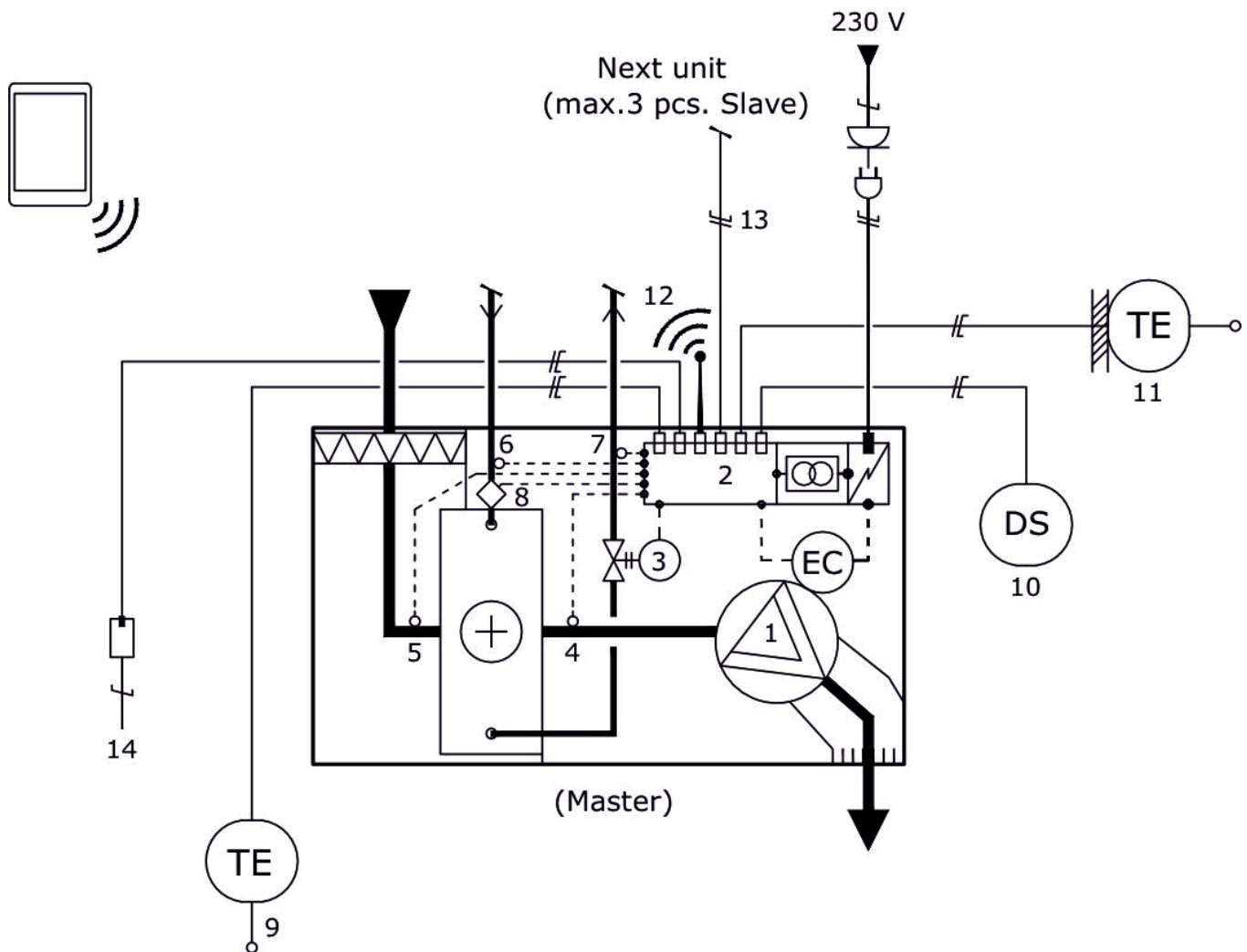


Fig. 4. Halton Windis DWI connection diagram

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
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	-

No.	Materials	Function	Description
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 <sup>3</sup> /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