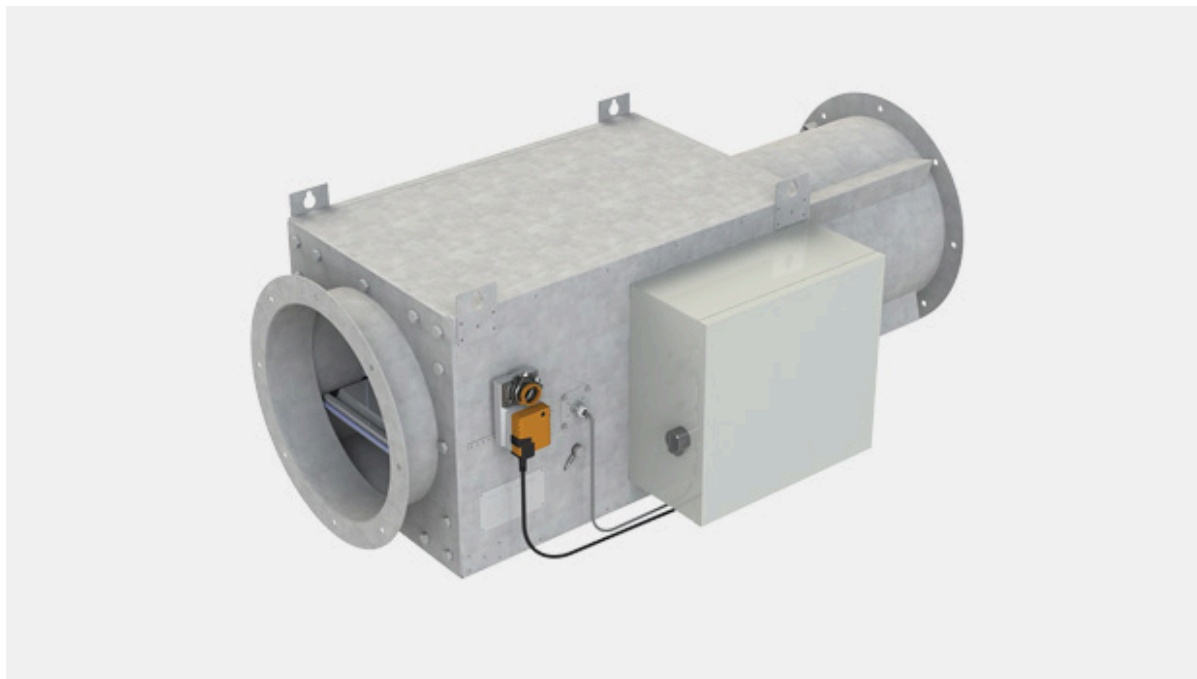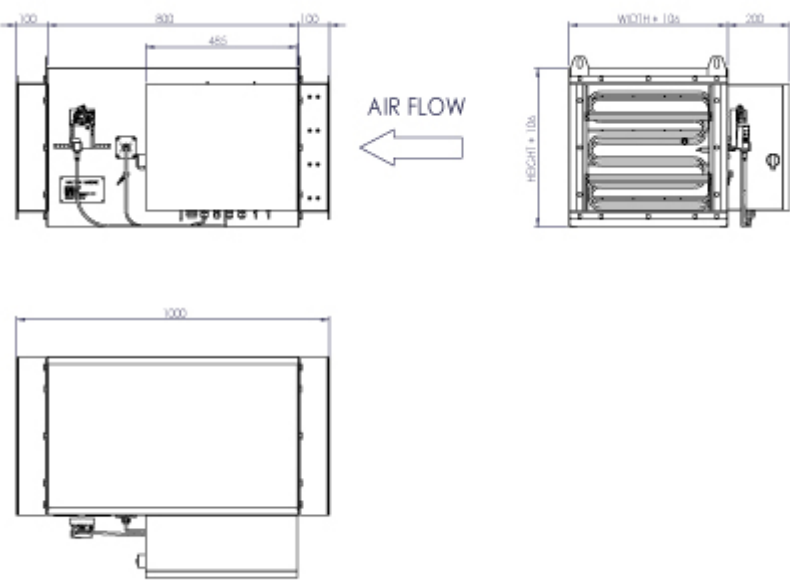# HML – Airflow unit for large volumes

Overview

- Pressure range from 100 Pa...1000 Pa
- Air velocity: min. 2.1 m/s, max. 12 m/s
- 230 VAC, 1Ph or 400 VAC, 3 Ph, 50/60 Hz
- Inbuilt airflow measurement
- Triac controlled reheating coil(s), adjustable heating power (PWM) 0...100%
- Master/slave functionality: several cabin units can be controlled by one control panel
- Internal fuses included
- All parameters can be set onsite during commissioning by external device or preset at the factory
- All cable connections with cable glands
- Easily tailored for different types of installations
- 90 °C manual reset safety switch with state detection indication to control panel
- Minimum flow alarm and inbox temperature measurement with overheat limit to cut-off reheater power
- HML airflow unit is supplied with control panel and interconnection cable
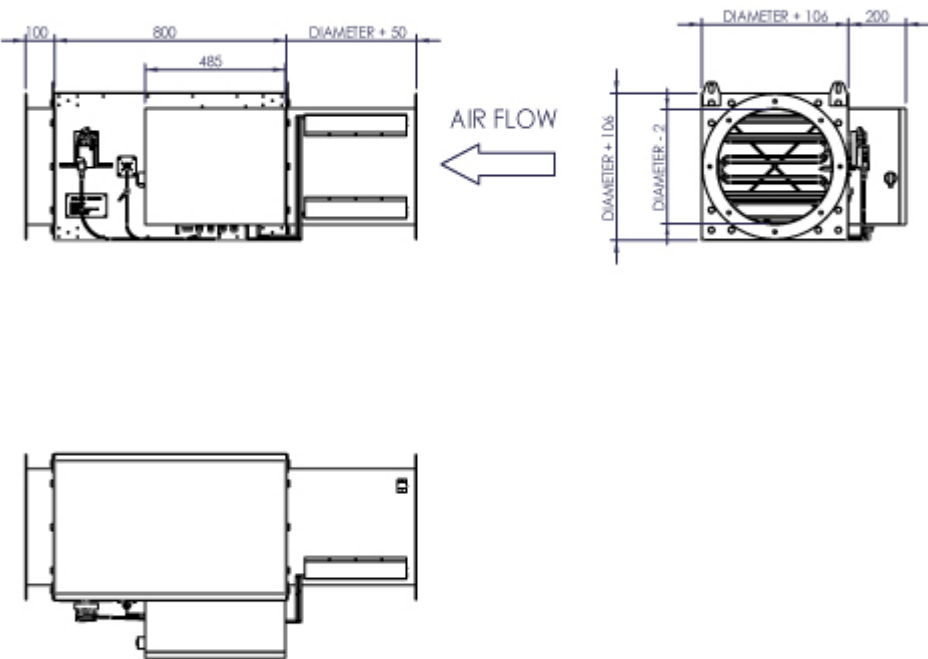
Specification

Halton HML is an airflow unit for large air volumes with centralized airflow heating. The unit can be controlled with one control panel. HML VAV/CAV unit offers several regulation options from independent operation system to network applications. This pressure independent product can be equipped with reheater(s) from 900 W up to 30 KW.

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Dimensions

Note: HML units are manufactured for rectangular ducts (width B 200-1000 mm and height H 200 – 1000 mm). Circular connection pieces are available. Non-standard dimensions and flange drilling available on request.

HML with circular connection pieces

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Material

PART	MATERIAL
Casing	Hot galvanized steel or EN 1.4404 (AISI316L) as an option
Insulation	Mineral wool, s = 50 mm, MED approved
I/O unit	Aluminium/plastic/electronics
Reheat coil	Incoloy 800
Cables	Halogen-free
Measurement wings	Aluminium/polyurethane

Product Models

Product options

- VAV/CAV
- Inputs for external switches such as balcony door and key card switches available as an option
- Network compatible with adapter for advanced energy efficiency and supervision system available as an option
- Energy efficiency functions to reduce unnecessary cooling / heating costs available as an option

Reheater Package Enclosure

- IP44
- Painted carbon steel

Function

Function of control panel

Control panel includes also a number of special features such as diagnostics function, room brightness measurement and re-programmability. The power supply and data transfer between cabin unit and control panel is carried out via interconnection cable.Temperature range is software adjustable between 10 and 30°C.
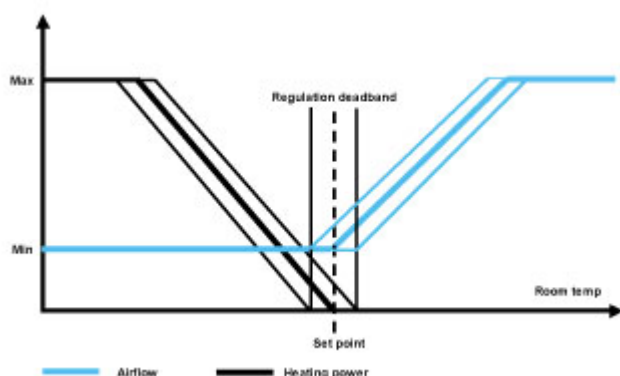
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Function of VAV unit

When passenger demands lower temperature by using control panel unit, the damper opens in order to increase the flow of cold air towards the maximum value. When the required temperature in the cabin is achieved, the damper reference is held until the temperature demand changes. In heating mode, the damper restricts the airflow towards its minimum rate, and if the required temperature in the cabin is not thus achieved, the controller activates the electric reheater inside the unit in a stepless manner.
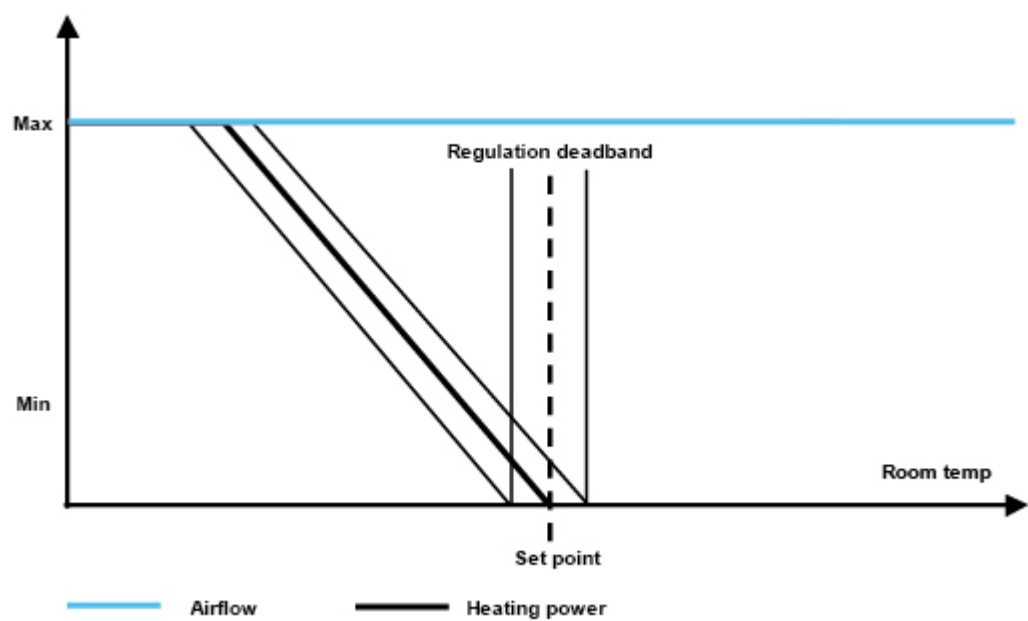
Function of CAV unit

Airflow is kept in pre-set level in any condition. When passenger demands for a higher temperature by using control panel, the electric reheater inside the cabin unit will be activated in a stepless manner towards to maximum heating capacity or until desired temperature is achieved. When passenger demands for a lower temperature by using control panel, the electric reheater inside the unit will be deactivated in a stepless manner towards to zero heating capacity or until desired temperature is achieved.

Regulation diagram, VAV

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Regulation diagram, CAV

Airflow Measurement Accuracy

Accuracy*	±15%
* Ductwork pressure 100-1000 Pa (optional)	

Note: When comparing airflow measurements between airflow unit and other device, unit's airflow regulation dead-band has to be taken into account (± 10%).

Cabin Ventilation Configuration Table

	UNIT	HMM	HMM	HME	HME	HMF	HMF	HMF	HFR/M	HFR/M	HFR/M	HMR	HMR	HML
	CONTROL PACKAGE	K01	D03	K01	D03	M00	M01	M02	M00	M01	M02	D21	H21	B00
	Damper	manual	manual	manual	manual	electric	electric	electric	electric	electric	electric	electric	electric	electric
TERMINAL UNIT WITH JUNCTION BOX	Airflow measurement and control (VAV, CAV)	no	no	no	no	yes	no	yes	yes	no	yes	yes	yes	yes
	In-box temperature measurement	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no	yes
	Reheater safety switch, manual reset	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no	yes
	Safety switch state detection	no	yes	no	yes	yes	yes	yes	yes	yes	yes	no	no	yes
	Spare inputs (balcony door etc.)	no	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	yes
	Parameter setting by service tool	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
CONTROL PANEL	Cabin temperature measurement	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
	Controller with push buttons, 18 led bar	no	yes	no	yes	yes	no	no	yes	no	no	yes	no	yes
	Controller with knob	yes	no	yes	no	no	yes	yes	no	yes	yes	no	yes	no
	LCD room thermostat	no	optional	no	optional	optional	no	no	optional	no	no	optional	no	optional
	LED intensity control and auto dimming	no	yes	no	yes	yes	no	no	yes	no	no	yes	no	yes
	Self diagnose functionality	no	yes	no	yes	yes	no	no	yes	no	no	yes	no	yes
	Network compatible with adapter	no	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	no	yes
	CO2 sensor available as an option	no	yes	no	yes	yes	no	no	yes	no	no	yes	no	yes
CABLES	Interconnection cable	IC4-X	IC6-X	IC4-X	IC6-X	IC6-X	IC6-X	IC6-X	IC6-X	IC6-X	IC6-X	IC6-X	IC6-X	IC6-X
	Master-Slave cable	MS4-X	MS2-X	MS4-X	MS2-X	MS2-X (MS5-X)	MS3-X	MS3-X	MS2-X (MS5-X)	MS3-X	MS3-X	MS2-X	MS3-X	MS2-X

Manually controlled airflows

Single duct units; HMM, HME

Pressure dependent units

Single duct units: HMF, HFR/M

Pressure independent units

Single duct units; HMF, HFR/M, HML
Dual duct units; HMR

Accessories

Control panel features

Halton Marine HML units are available with three different control panel models; with rotating knob, push buttons with LED bar graph (available as option: IP54) and push buttons with LCD-display (available as option: IP54).

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Common features

- Cabin temperature measurement
- Connector for bluetooth / communication adapter to set cabin parameters
- Software for parameter setting and trouble shooting
- Different colour options and custom labeling available as an option
- Delivered with IC-Cable (interconnection cable)
    - For control panel – cabin unit connection
    - Prefabricated with plugs on both ends
    - Cable plug on panel side is designed to be pulled through standard installation pipe
    - Halogen free and flame-retardant
    - Standard length 7 meters. Other lengths available.

Control panel with rotating knob

- Temperature adjustment by rotating knob

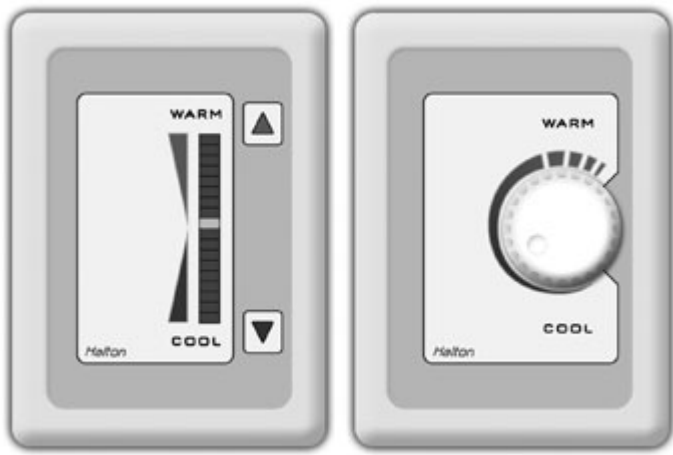**Control panel with push buttons and LED bar graph**

- Temperature adjustment by push buttons
- Self diagnose function
- LCD intensity control and auto dimming

Control panel with push buttons and LED bar graph

- Temperature adjustment by push buttons
- Self diagnose function
- LED intensity control and auto dimming

Control panel with push buttons and LCD display

- Temperature adjustment by buttons
- Self diagnose function
- LCD intensity control and auto dimming
- Display for actual and set point temperatures available as an option
- Time display available as an option
- A customized background picture available as an option
- Several frame options available

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Control panel models; push button and rotating knob.

LCD control panel

MS-Cable (master-slave cable)

- For master cabin unit – slave cabin unit/units connection
- Prefabricated with plugs on both ends
- Halogen free and flame-retardant
- Standard length is 7 meters. Other lengths available as an option.

Communication adapter

- Bluetooth communication to external device
- For wireless connection to set unit parameters and trouble shooting

Network adapters

- Network adapter (also available as WiFi) expands a stand-alone unit to network compatible unit (LON or Ethernet network)
- Enables supervision and advanced energy efficiency functions
- For more information, see Halton Networks for cabin ventilation -brochure or contact Halton Marine Sales office.

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