

HFRM 多接口布风器

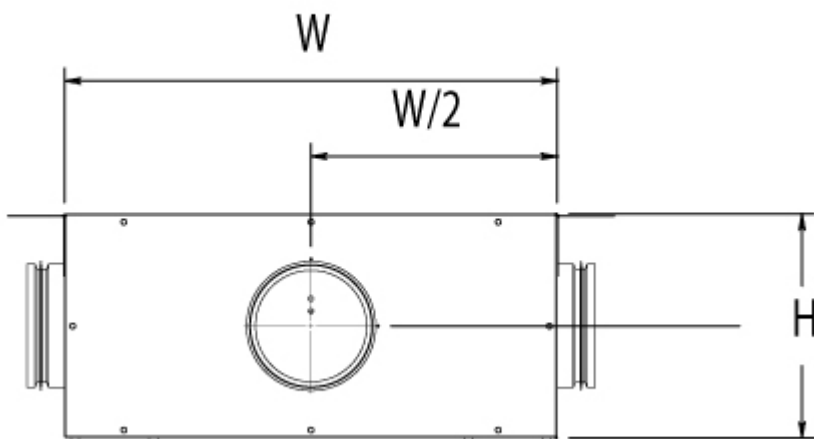
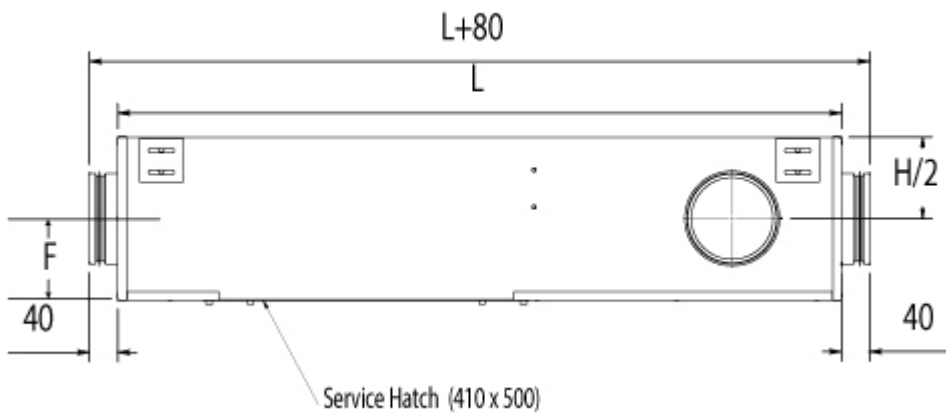
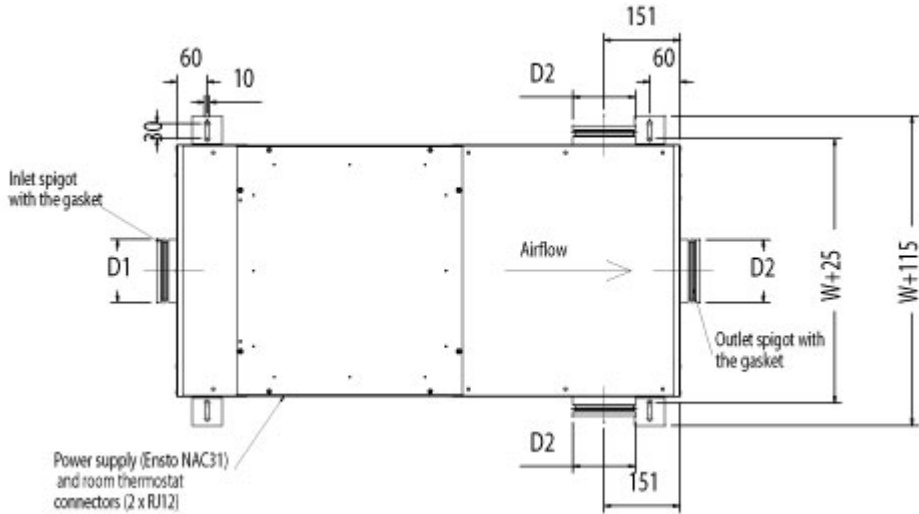


概述

- 压力范围 200 Pa 到 1000 Pa
- 气流范围：175 m³/h 到 1000 m³/h
- 230 VAC +10%，最大 10A，50/60 Hz
- 内置流量测量（自动型号）
- 最小/最大的阀位设定值（半自动）
- 双向可控硅控制加热线圈，可调节加热功率(PWM) 0...100%
- 主/辅功能：多个辅助布风器可以连接到一个主布风器上
- 内部熔断丝 8A 或 10A 和 63 mA
- 可选配外部开关（如阳台门开关和钥匙卡开关）的输入端
- 网络可与高级能效和监管系统的适配器兼容
- 可选配能效功能，以减少不必要的冷却/加热成本
- 所有参数可在工厂预设或在调试时通过 PDA 现场设定
- 所有电缆连接均带快速接头
- 适合不同安装需要
- 带有控制板状态检测指示功能的 90°C 手动复位安全开关
- 最小流量警报（自动模式）和带有加热器截止功率过热限制功能的箱内温度测量
- HFR/M 布风器可配备控制板和互连电缆

Dimensions

HMF/M general drawings



HFR/M DIMENSIONS					
	D1/D2 (DN)	L	W	H	F
HFR/M-125	125	1000	500	225	99
HFR/M-160	160	1000	500	250	121
HFR/M-200	200	1000	500	300	136

Material and Finishing

PART	MATERIAL
Casing	Hot galvanized steel or EN 1.4404 (AISI316L) as an option
Spigots	Hot galvanized steel and EPDM rubber or EN 1.4404 (AISI316L) as an option
Insulation	Mineral wool, s = 25 mm, MED approved
Input/output unit	Aluminium/plastic/electronics
Reheat coil	EN 1.4301 (AISI304)
Cables	Halogen free
Airflow measurement probes and tubes	Aluminium/polyurethane

Product Models and Accessories

HFR/M product options

- Pressure independent model (VAV/CAV)
- Pressure dependent model (VAV)
- 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

Control panel features

Halton Marine HMF cabin 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).

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

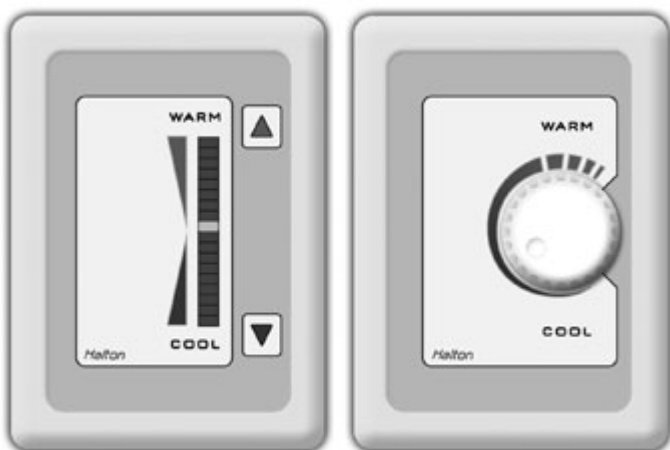
- Temperature adjustment by rotating knob

Control panel with push buttons and LED bar graph

- Temperature adjustment by push buttons
- Self diagnose function
- 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



Control panel models; push buttons and rotating knob



LCD control panel

Cabin ventilation configuration table

	UNIT	HMM	HMM	HME	HME	HMF	HMF	HMF	HFR/M	HFR/M	HFR/M	HMR	HMR	HML
TERMINAL UNIT WITH JUNCTION BOX	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
	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
CABLES	CO2 sensor available as an option	no	yes	no	yes	yes	no	no	yes	no	no	yes	no	yes
	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

Please note: HMM and HME units are also available without a control package.

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 for HMF cabin units

MS-Cable (master-slave cable)

- For master cabin unit – slave cabin unit/units connection
- Prefabricated with plugs on both sides
- 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 cabin 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.

Reheaters available

- Standard reheaters: 400W, 800W, 400+800W, 1200W, 1500W, 1800W
- Offshore reheaters: 400W, 800W, 1200W, 1600W (surface temperature below 90°C on operating airflow)

Practical power level may be software adjusted cabin by cabin. Cable and power supply design has to be done according to maximum available heating power.

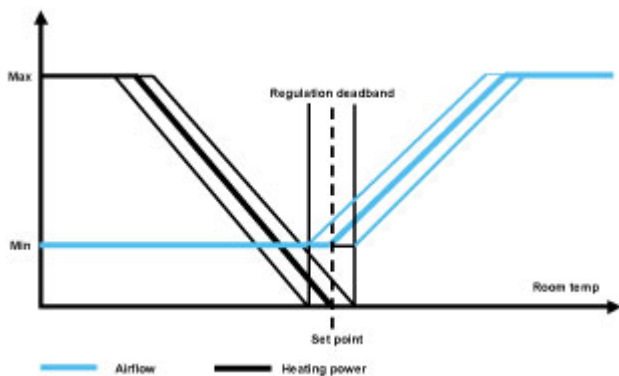
Function

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.

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.

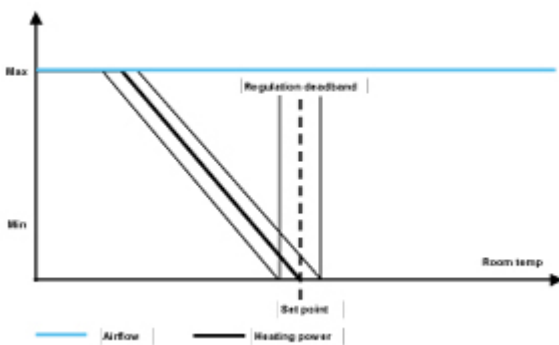
Regulation diagram, VAV



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, CAV



OPERATING RANGE FOR HFR/M		
HMF/M-125	HFR/M-160	HFR/M-200
175 m ³ /h – 500 m ³ /h	250 m ³ /h – 800 m ³ /h	350 m ³ /h – 1000 m ³ /h

Cabin unit's airflow measurement accuracy

	AIRFLOW (m3/h)		
	175-300	300-600	600-1000
Accuracy*	±15%	±10%	±8%

Note: When comparing airflow measurements between cabin unit and other device, cabin unit's airflow regulation dead-band has to be taken into account ($\pm 10 \text{ m}^3/\text{h}$).