

## VMF

Variable Multi Flow system  
Range of components for the management of air conditioning,  
heating and domestic hot water systems

### Variable Multi Flow

#### Zone interface

VMF-E4D



VMF-E4



\*As awarded by Chicago Athenaeum:  
Museum of the Architecture and Design

#### VMF systems central interface



VMF-E5B / VMF-E5N

#### Accessory module



VMF-VOC VMF-CRP

#### Zone interface



VMF-E2/E2H

#### Thermostat with serial communication



VMF-E0

VMF-E1 / VMF-E18



VMF-SW / VMF-SW1

#### Domestic water panel



VMF-ACS

\* Winner for the International design Award "Good Design 2010" for the "Electronics"

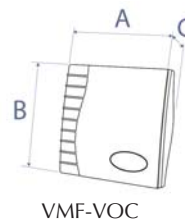
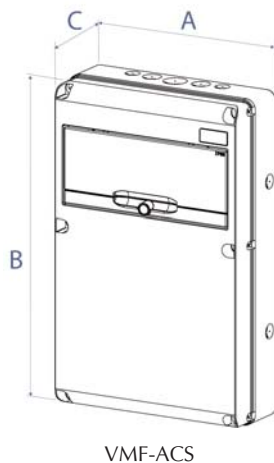
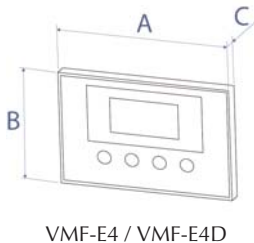
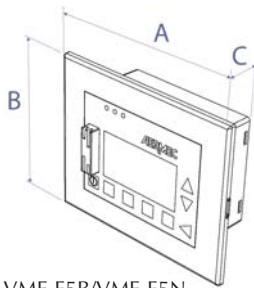
### Features

- VMF: Variable Multi Flow system.  
Management and control system of hydronic systems for the conditioning, heating and production of domestic hot water.  
The VMF system allows complete control of every component of a hydronic system both locally and centrally and, communicating between the various components of the system, manages the performance without ever neglecting the end user's request of comfort, but reaching it as efficiently as possible with energy saving.  
If you add the advantages deriving from such an innovative control to the flexibility of a hydronic system, you get a more efficient and effective alternative to the variable refrigerant flow systems (VRF).  
The VMF system is extremely flexible, enough to allow various control and manage steps, expandable at different moments:
  - 1) Control of a single fancoil.
  - 2) Control of a microzone (one MASTER fancoil and a maximum of 5 SLAVE fancoils).
  - 3) Control of multi independent zones system (one MASTER fancoil and a maximum of 5 SLAVE fancoils for each zone).
  - 4) Control of a fancoil system, plus management of the heat pump (if compatible with the VMF system).
  - 5) Control of a fancoil system, heat pump and management of the domestic hot water system (VMF-ACS).
  - 6) Control of a fancoil system, heat pump, domestic hot water production and additional circulators (up to a maximum of 12 using three additional VMF-CRP modules).
  - 7) Control of a fancoil system, heat pump, domestic hot water production, additional circulators and management of heat recovery units, maximum 3, (with the ability to handle up to 3 VMF-VOC sensors) or a boiler.
  - The VMF system can operate and manage, through a VMF-E5N / VMF-E5B panel, a maximum of 64 zones consisting of a MASTER fancoil and a maximum of 5 SLAVE fancoils connected to each MASTER, for a total of 384 fancoils.
  - Besides the central control supplied by the VMF-E5N / VMF-E5B panel, the MASTER fancoils must be provided with a local control interface; this interface can be mounted on the fancoil (VMF-E2 / VMF-E2H) or be mounted into a wall panel (VMF-E4).
  - Different functions can be controlled through the VMF-E5N / VMF-E5B panel, including:
    - Identify the different zones setting a name for each one.
    - Check and set the ON-OFF function and the set temperature of each zone.
    - Set and manage the set temperature of the heat pump.
    - Scheduling time slots.
  - Simple installation of the fancoil system through the SELF-MONITORING function of the MASTER fancoils.

## System components

- **VMF-E0:** thermostat accessory to fix on the side of the fancoil, equipped with air and water sensors as standard, controls 2 pipes, 4 pipes, 2 pipes + Plasmacluster, 2 pipes + UV lamps, 2 pipes + Electric heater systems. Equipped with external contact to be used as low voltage remote ON-OFF. This thermostat can create a single fancoil zone through 2-wire serial communication (1 master + 5 slaves maximum). The thermostat is fuse protected.
- **VMF-E1:** like VMF-E0 with extra:
  - Economy contact/presence sensor.
  - Auxiliary water sensor for general control in 4-tube systems (with VMF-SW1 accessory).
  - Serial RS485, protocol ModBus RTU, for centralised control.
  - Possibility to insert expansion cards for future development. The VMF-E1 accessory must therefore be used in the Masters in the presence of multiple zones, or for communication with the chiller/heat pump.
- **VMF-E18:** the same as the VMF-E1, but for fancoils with inverter motors.
- **VMF-E2:** this is the user interface on the machine to match to the VMF-E0, VMF-E1 and E18 accessories for the series UL-S-FCX-AS, FCX-U (sizes 62-64-82-84-102) FCX180U FHX-U (sizes 62-82). Equipped with 2 selector switches, one for temperature and one for speed control.
- **VMF-E2H:** this is the User Interface (as above) on the machine, to match to the VMF-E0, E1, accessories dedicated to the HL series
- **VMF-E4:** this is the wall mounted user interface, to match to the VMF-E0, VMF-E1 and VMF-E18 accessories for the UL, HL, and FCX series without on-board control. Innovative design, extremely slim and inexpensive, allows control of functions via a capacitive touch keypad with LCD display. The environment can be adjusted with the sensor on the panel (standard), or the sensor of the fancoil which it is connected to, or by their arithmetic mean. It also allows the activation of the air purifier accessory (Plasmacluster / UV Lamp) and the electrical heating element.
- **VMF-E4D:** is the variant of the previous code, but with frontal gray Pantone 425C (METAL)
- **VMF-E5B:** white recessed panel, with backlit graphic LCD and capacitive keyboard allows the centralised command/control of a complete hydronic system consisting of Fancoils: up to 64 fancoil zones consisting of a master + 5 slaves. Chiller/heat pump equipped with Modu\_Control, GR3 and pCO<sub>2</sub>/PCO<sub>3</sub> controls (accessory required for RS 485 interface with MODU-485A, AER485, AER485P2 / AER485P1); circulators: up to 12 configurable zone circulators; boiler: boiler consensus management for hot water production; heat recovery units: consents up to 3 per programmable recovery units based on the timing and/or by measuring the air quality obtained with the VMF-VOC accessory; domestic water module: complete management of the domestic hot water production through the control of: diverting/circulator valve, integrated resistor, accumulation temperature sensor, anti-legionella circuit.
- **VMF-E5N:** this is the variant of the previous code, but with black plastic.
- **VMF-VOC :** accessories for measuring air quality (see related point in the description of the VMF-E5B).
- **VMF-CRP:** accessory module for the control of the boilers, pumps and heat recovery units.
- **VMF-SW:** water sensor may be used in place of the standard supplied with VMF-E0, VMF-E1 and VMF-E18 thermostats for the installation upstream of the valve.
- **VMF-SW1:** additional water sensor may be used for 4-pipe systems with VMF-E1 and E18 thermostats for the maximum control in the cold range.
- **VMF-ACS3KM:** electrical panel for the complete command/control for hot water storage (3-way control valve, integrated single phase 3kW resistor command, Anti-legionella and temperature sensor).
- **VMF-ACS3KTN:** electrical panel for the complete command/control for hot water storage (3-way control valve, integrated three-phase 3kW resistor command, Anti-legionella and temperature sensor).
- **VMF-ACS6KTN:** electrical panel for the complete command/control for hot water storage (3-way control valve, integrated three phase 6kW resistor command, Anti-legionella and temperature sensor).
- **VMF-ACS8KTN:** electrical panel for the complete command/control for hot water storage (3-way control valve, integrated three phase 8kW resistor command, Anti-legionella and temperature sensor).
- **GLL\_N:** FCL\_N grid units, equipped with thermostat card for serial communication with the accessory functions equivalent and VMF-E1 (this grid is a mandatory accessory for the units FCL N);
- **GLLI\_N:** FCLI\_N grid units, equipped with thermostat card for serial communication with the accessory functions equivalent and VMF-E18, (this grid is a mandatory accessory for the units FCLI N);

## Dimensions (mm)



	A (mm)	B (mm)	C (mm)
VMF-E5B/ VMF-E5N	138	110	45
VMF-E4 / VMF-E4D	125	80	11
VMF-ACS	354	544	135
VMF-VOC	79	81	26

## Selection 1 • Compatibility of thermostats for serial communication and control interface for MASTER units

Models	Versions	Notes	VMF-E0	VMF-E1	VMF-E18	VMF-E2	VMF-E2H	VMF-E4 /VMF-E4D	GLL N	GLLI N
FCX	AS - UA - B		✓	✓	-	✓	-	✓	-	-
	U	(7)	✓	✓	-	✓	-	✓	-	-
	P - PPC - PO - PV		✓	✓	-	-	-	✓	-	-
FCXI	AS		-	-	✓	✓	-	✓	-	-
	U	(7)	-	-	✓	✓	-	✓	-	-
	P	(2)	-	-	✓	-	-	✓	-	-
HL	S - SM		✓	✓	-	-	✓	✓	-	-
	N	(1)	-	-	-	-	-	-	-	-
UL	S		✓	✓	-	-	-	✓	-	-
	P		✓	✓	-	-	-	✓	-	-
FHX	UV	(7)	✓	✓	-	✓	-	✓	-	-
	UVP - UVPO		✓	✓	-	-	-	✓	-	-
VEC			✓	✓	-	-	-	✓	-	-
FCL		(8)	-	-	-	-	-	✓	✓	-
FCLI		(8)	-	-	-	-	-	✓	-	✓
VED			✓	✓	-	-	-	✓	-	-

## Selection 2 • Compatibility of VMF-E5 7 VMF-E5B centralised control

Models	Versions	Notes	VMF-E5
FCX	AS - U - UA - B	(2)	✓
	P - PPC - PO - PV	(2)	✓
FCXI	AS - U - P	(2)	✓
	S - SM	(2)	✓
HL	N	(1)	-
	S	(2)	✓
UL	P	(2)	✓
	UV - UVP - UVPO	(2)	✓
VEC		(2)	✓
FCL		(2)	✓
FCLI		(2)	✓
VED		(2)	✓

## Selection 3 • Compatibility of heat pumps with electrical panel for domestic hot water management

Models	Versions	Notes	VMF-ACS3KM	VMF-ACS3KT	VMF-ACS6KT	VMF-ACS8KT
ANL	H	(3) (4)	✓	✓	✓	✓
ANLI	All	(4)	✓	✓	✓	✓
ANK	All	(4)	✓	✓	✓	✓
ANR	H	(3) (4)	✓	✓	✓	✓
ANF	H	(3) (4)	✓	✓	✓	✓
SRA	All	(4)	✓	✓	✓	✓
SRP-V1	All	(4)	✓	✓	✓	✓
NRL	H	(3) (4)	✓	✓	✓	✓
NRC	H	(3) (4)	✓	✓	✓	✓
WSH	All	(4)	✓	✓	✓	✓

## Selection 4 • Compatibility of modules and additional sensors

Models	Versions	Notes	VMF-CRP	VMF-VOC
VMF-E5 / VMF-E5D	All	(5) (6)	✓	✓ (6)
VED	All	(9)		✓

### Notes:

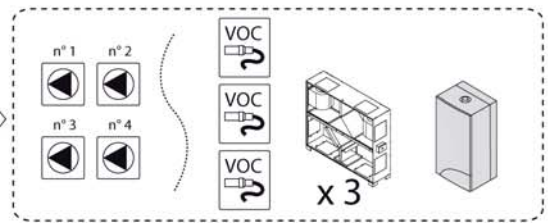
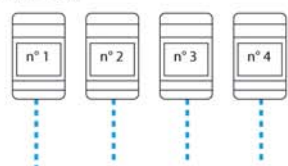
The versions with the accessories hanging MA or MP, can be treated equally to their respective versions FCX AS U FCX, FCX AU;

- (1) This version includes the thermostat E0-VMF and VMF-E2H command interface already installed, these features make these models suitable for operation as a single unit or function of the MASTER microzone plants (plants consist of a single zone, without centralized control VMF-E5N / VMF-E5B);
- (2) To be compatible with the centralized control of VMF-E5N / VMF-E5B, a fan must be set as MASTER of the area, therefore this must be equipped with the thermostat for serial communications, or VMF VMF-E1-E18 and combined with a user interface ( VMF-E2, or VMF VMF-E2H-E4), or units FCL / FCLI equipped with a thermostat on the grid GLL\_N / GLLI\_N, combined with a command interface VMF-E4 / VMF-E4D ;
- (3) The heat pumps with integrated storage are not suitable for production of hot water;
- (4) To know the maximum temperature of hot water production (plant and / or health) refer to the limits on the operating unit technical manual;
- (5) All types of systems that provide centralized control of VMF-E5N / VMF-E5B, are compatible with the accessory modules (maximum 4) VMF-CRP, and each module can function as a pump controller (4 for each accessory module) or boiler control and recovery (with ON / OFF control and management of 3 recovery boiler in addition to 3 accessories VMF-VOC);
- (6) The compatibility of the probe VMF-VOC is only related to the presence of the accessory module in the system with VMF-CRP control function recovery;
- (7) VMF-E2: Only for size FCX62U-64U-82U -84U-102U, FCXI80U, FHX62UV-82UV.
- (8) units must be included in boxes FCLI GLLI\_N mandatory accessory grid, this grid is equipped with a card thermostat same rights as VMF-E18 models. FCL cassette units must provide the mandatory accessory GLL\_N grid, this grid is equipped with a card equivalent and thermostat models VMF-E1. To use one of these drives as MASTER is necessary to provide the command interface VMF-E4;
- (9) Accessory units required for the combination of VED with thermostats or VMF VMF-E0-E1. Using a VMF-SIT3 for each unit;

## Example of system components

- A maximum number of 4 VMF-CRP modules can be installed and each one can perform several tasks based on the type of setting:
  - Control 4 pumps
  - Control 3 heat recovery units and 3 VOC sensors (in this case the correct number of VMF-VOC accessories must be purchased)
  - Control a boiler
- The only requirement to install VMF-CRP modules is the presence of a VMF-E5 centralised control

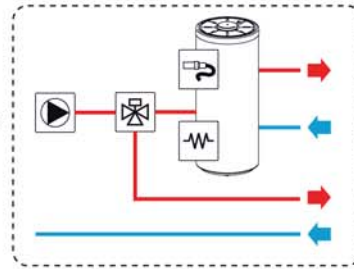
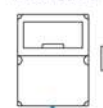
### VMF-CRP



Selection 4:

- The VMF-ACS accessory allows to control the different components needed to produce domestic hot water; for detailed information on the types of systems manageable by VMF-ACS, refer to technical documentation of the accessory

### VMF-ACS



Selection 3:

### VMF-E5



### Chiller



MODbus RS485  
(MAX 1000m)

Selection 2:

### VMF-E4



Fancoil 1  
(MASTER)

Modbus TTL

Fancoil 1 (Slave)

Fancoil 2 (Slave)

Fancoil 3 (Slave)

Fancoil 4 (Slave)

Fancoil 5 (max) (Slave)

MAX 30m (ModBus TTL)

### VMF-E4



Fancoil 64 (max)  
(MASTER)

Fancoil 1 (Slave)

Fancoil 2 (Slave)

Fancoil 3 (Slave)

Fancoil 4 (Slave)

Fancoil 5 (max) (Slave)

Selection 1:

**A**

Thermostat for serial connection VMF-E0 / VMF-E1 / VMF-E18

**B**

Commands interface for MASTER unit VMF-E2 / VMF-E2H / VMF-E4