

Ferroli



Mach

Condensing heat generator with high power modulation, for outdoor use



MODULAR POWER

For new buildings and high-power redevelopments



Condensing heat generator with high power modulation for outdoor installations.

MACH has been designed as a cascade of thermal units managed by a single electronic control, capable of pushing the power modulation up to a maximum ratio of 1/40 and with one of the highest thermal efficiency that can be found in the market to date.

The electronic control of MACH, in combination with the THETA+ thermoregulation, allows to install multiple generators in cascade in order to ensure an increase in system efficiency and an ongoing service.

The casing, completely waterproof and resistant to atmospheric agents, allows the generator to be installed outdoors without any protection.

This feature, combined with its lightness and small dimensions, make the MACH generator particularly suitable for installations on the roof of buildings.

OUR RANGE

Our range consists of 8 **B23** certified generators, with forced air/flue gas circuit and suction on the place of installation.

Models	Pn min / max (50°C - 30°C)	Heating units	Modulation range
Mach 120	15.1 / 120.2 kW	2	1:8
Mach 150	15.1 / 148.4 kW	2	1:10
Mach 225	15.1 / 222.6 kW	3	1:15
Mach 300	15.1 / 296.8 kW	4	1:20
Mach 370	15.1 / 371.0 kW	5	1:25
Mach 450	15.1 / 445.2 kW	6	1:30
Mach 520	15.1 / 519.4 kW	7	1:30
Mach 600	15.1 / 593.6 kW	8	1:40



FEATURES

Plus of product

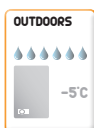
- > High-power condensing boiler, with **high modulation range up to 1/40**.
- > Designed for installations both in technical rooms and **outdoors without protection**.
- > Thermal group composed of a **cascade of aluminium-silicon alloy elements** designed for maximum efficiency and minimum pressure drops on the hydraulic circuit. Each unit is completed by the circulation group and the **pre-mix combustion group**.
- > Total pre-mixing group, for micro-flame combustion with very low polluting emissions (**class 6 in compliance with EN 15502-1**).
- > The metallic microfibre burner can run on **natural gas or LPG**.
- > Generator protection systems:
 - Double probe system (flow and return) to operate at constant ΔT
 - Flue gas safety sensor
 - Water pressure switch with a minimum limit of 0.8 bar
 - Hydraulic unit with 3-way shut-off valve for discharge into the atmosphere and non-return valve on flow
- > **Air/Flue gas circuit with suction on the installation site and flue gas non-return clapet valve** integrated on the suction group in order to size the flue gas manifold under pressure
- > Control panel protected by a door integrated into the casing
- > Four sturdy **floating wheels installed as standard** to facilitate unloading and mobility during installation. Adjustable feet for positioning.
- > Designed to be installed **both indoors and outdoors even without any protection** from atmospheric agents (up to a temperature of -5°C).
- > It can be connected to the system either on the right or on the left and it is delivered complete with blind flanges.
- > In combination with THETA+ thermoregulation, it is possible to install more MACH generators in series (**up to 8 units**) *
- > The MACH electronic control can manage a system with two direct zones and a DHW storage tank or more complex systems at different temperatures in combination with THETA+ thermoregulation.
- > **RANGE RATED** certified generator to adapt the power generated to the needs of the system, to increase the efficiency of the system while preserving the mechanics of the machine from continuous switching on and off.
- > The modules can be controlled and operated remotely:
 - Power or temperature regulation with 0 - 10V signal
 - Blocking alarm signal for safety and restoration of operation
 - ModBus communication protocols (in combination with THETA+ thermoregulation)

* Generator not certified by INAIL (Italian National Institute for Insurance against Accidents at Work). In case of series installation it is necessary to install a safety stub on each flow

THE PRODUCT IN A NUTSHELL



Appliance operating in **climatic regulation** at sliding system temperature (optional external temperature probe)



Equipment suitable for **outdoor** operation with a minimum temperature of **-5°C as standard**



Modulation ratio between **Pmax** and **Pmin**



"Range rated" certified device in compliance with UNI EN 483



Generator equipped with devices to **facilitate handling** during transport and installation



F.P.S. Flue gas Protection System. The flue gas check valve allows an **easy connection to collective pressurised flue systems** (e.g. in renovations), in compliance with the UNI 7129 standard



Appliance equipped with **low consumption modulating high-efficiency circulator** (Erp Ready - Class A)



Appliance especially designed to be **particularly simple** to install and maintain



Remote control of boiler parameters via remote control



MACH

The components



1 The outer shell is completely rainproof and resistant to atmospheric agents

2 The top panel was designed in a single piece to improve waterproofing and access to the main components from above

3 The control panel is protected by a sturdy panel

4 The generator is delivered with 4 sturdy floating wheels as standard. Each wheel is equipped with locking and fixing feet



5 Exchanger consisting of die-cast elements in aluminium and silicon alloy

6 Premix combustion unit



7 System return unit

8 System flow unit

9 Air bleed valve

10 Hydraulic circuit safety pressure switch



MACH

The components



COMBUSTION AND EXCHANGE UNIT

- 1** High-performance **heat exchanger** in aluminium-silicon alloy. Each single element can exchange a power of 75 kW
- 2** Total pre-mix **burner**, with modulating fan and micro-flame front burner, with low emissions (NOx class 6)
- 3** **Flue gas non-return valve supplied as standard on each single combustion group.** The device allows the combustion gases to be discharged under pressure and consequently to size the flue more easily, using pipes with a smaller diameter than traditional vacuum systems
- 4** Condensation collection collector
- 5** Ignition electrodes and flame sensor
- 6** System flow temperature sensor



MACH

può essere installato sia all'interno che all'esterno anche senza alcuna protezione dagli agenti atmosferici (fino a una temperatura di -5°C).

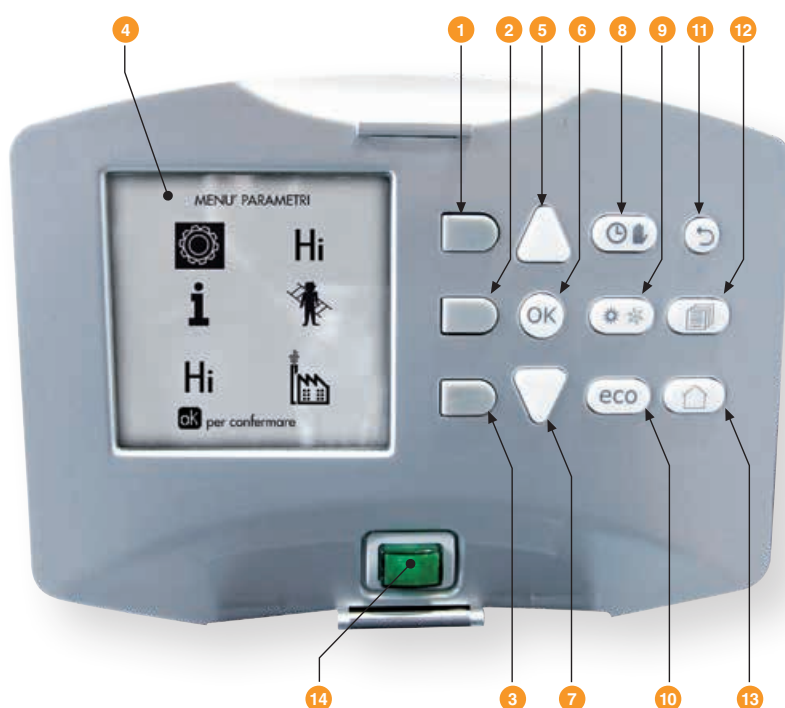


MACH

Control panel

Characterised by a large dot-matrix display as well as keys for setting the basic functions of the generator and for selecting the parametrisation menus.

The interface has been designed to facilitate the reading of the parameters and the navigation between the menus both for the USER for the adjustment and setting of the basic functions and for the TECHNICIAN for maintenance and advanced parametrisation.



LEGEND

- 1 Contextual key 1
- 2 Contextual key 2
- 3 Contextual key 3
- 4 Dot-matrix display (main screen example)
- 5 Menu navigation key
- 6 Menu confirm/entry key
- 7 Menu navigation key
- 8 Automatic/Manual heating/DHW operation key
- 9 Summer/Winter mode selection key
- 10 Economy/Comfort mode selection key
- 11 Menu exit key
- 12 Main menu key
- 13 Home key (return to main screen)
- 14 Main switch

CONTEXTUAL KEYS (part. 1, 2, 3) can be distinguished by their grey colour, the lack of screen printing and can take on a different meaning depending on the selected menu. It is essential to follow the indication provided by the display (icons and texts). for example, using contextual key 2 (part. 2) it is possible to access device information such as: sensor temperatures, operating powers, etc.

DIRECT KEYS (part. 8, 9, 10) always have the same function

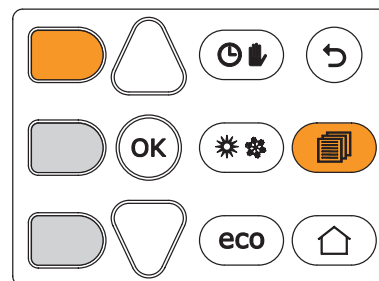
NAVIGATION/MENU KEYS

The navigation/menu keys (part. 5, 6, 7, 11, 12, 13) are used to navigate between the various menus implemented in the control panel

From the main menu of the control panel it is possible to access two distinct levels of parametrisation:

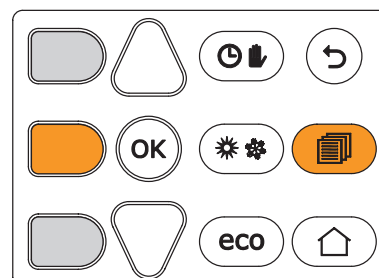
USER level

Not password protected, it allows the "system manager" to set the operating modes of the single generator or cascade, to best synchronise them with the type of system, according to user needs



TECHNICIAN level

Password protected, it allows the "authorised technician" to check and possibly modify the thresholds of the individual components, of the generator and of the boiler/system.





FEATURES

Control electronics

Ferroli uses a single electronic platform and the same interface panel for all its high-power condensing heat generators of the "PROFESSIONAL" series.

This platform can manage the correct operation and safety of the generator, the cascade installation (in combination with the THETA+ thermoregulation) and the main components of a heating system and for the production of domestic hot water.

INPUT



REMOTE COMMUNICATION PROTOCOLS

0 - 10 Vdc signal
Modbus
Opentherm

REMOTE RESET

TEMPERATURE PROBE CASCADE DELIVERY

1ST AREA HEAT REQUEST (T.A. or remote timer control)

2ND AREA HEAT REQUEST (T.A. or remote timer control)

DOMESTIC HOT WATER REQUEST (T.A. or remote timer control)

POTENTIAL FEATURES OF THE ELECTRONIC BOARD



OUTPUT



1ST DIRECT AREA SYSTEM CIRCULATOR

Power supply 230 Vac - 50 Hz

2ND DIRECT AREA SYSTEM CIRCULATOR/DHW 3-WAY CIRCULATOR OR VALVE

Power supply 230 Vac - 50 Hz

DHW RECIRCULATION CIRCULATOR

Power supply 230 Vac - 50 Hz

REMOTE SIGNAL ANOMALY

Power supply 230 Vac - 50 Hz

REMOTE BURNER ON / ANTI- LEGIONELLA ON SIGNAL

SUPPORT CONTACT

Power supply 230 Vac - 50 Hz

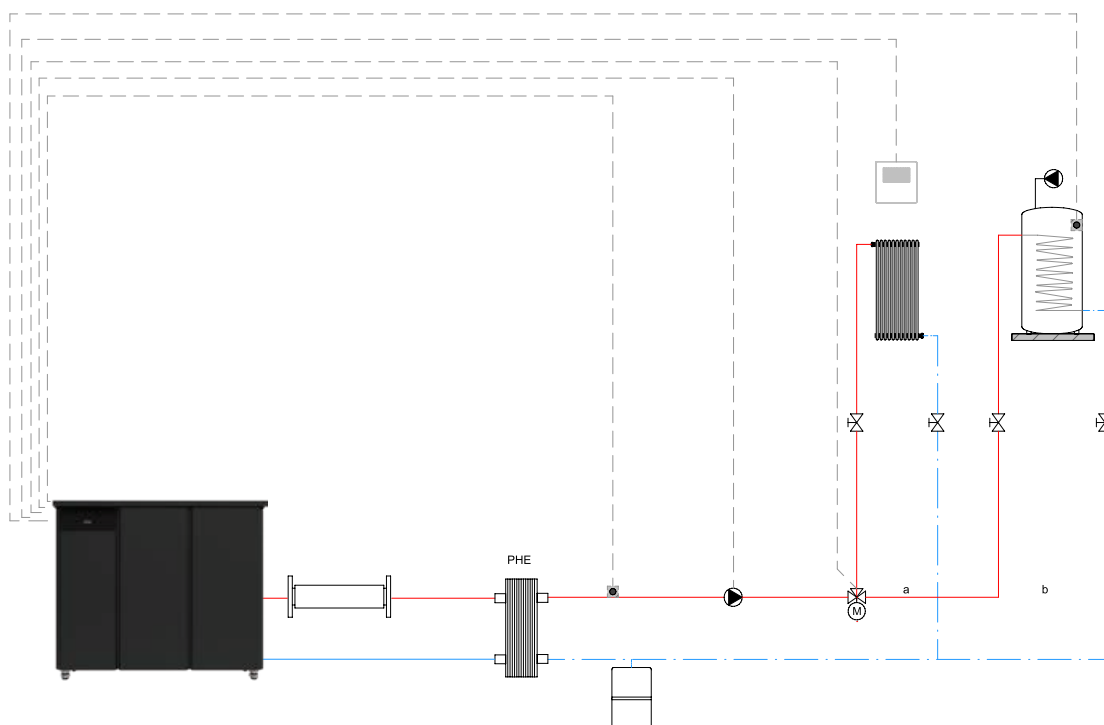


FEATURES

Control electronics

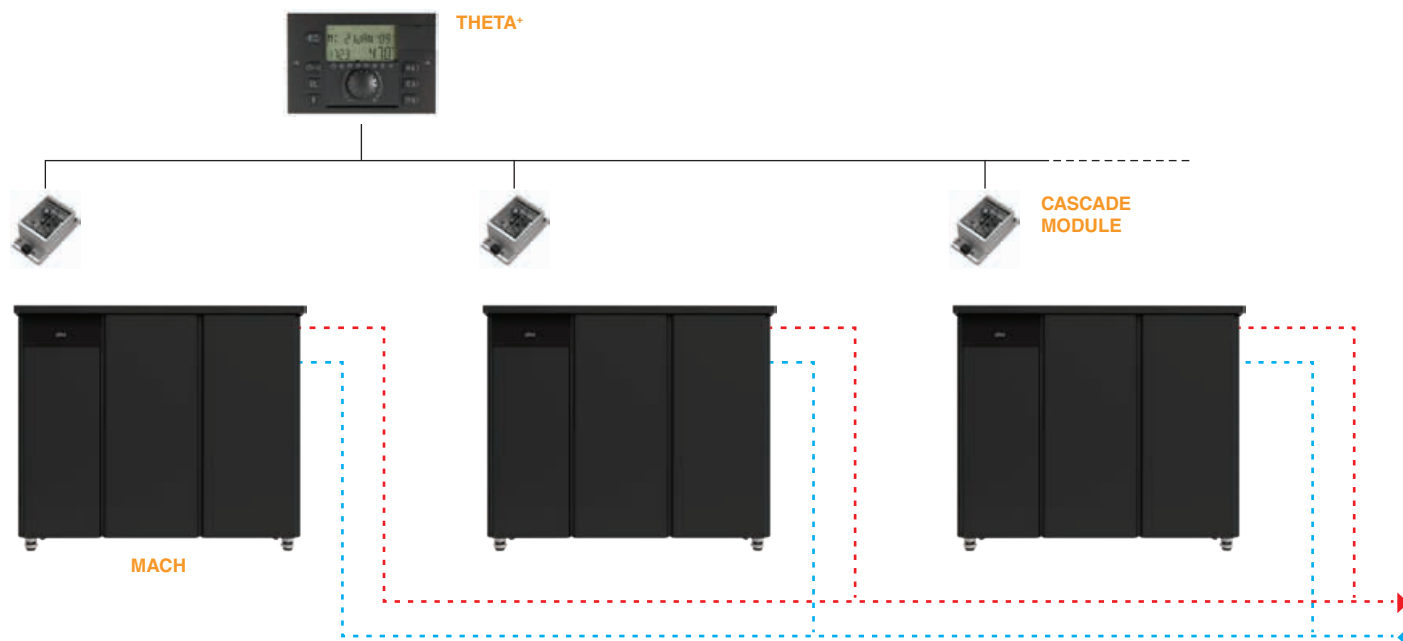
The electronics of the MACH generators can directly manage (without the aid of optional kits) two circulators (or a circulator and a diverter valve) for the management of two direct zones or a direct zone and the loading of the domestic hot water boiler.

In addition to the system circulators, it can manage the external probe for managing temperatures with climatic curves, the probe for the delivery to the secondary circuit downstream of a separator or plate exchanger, area control (TA or remote timer control) and water recirculation. For more complex systems, our THETA⁺ thermoregulation system and cascade manager is available.



INSTALLATION IN SERIES

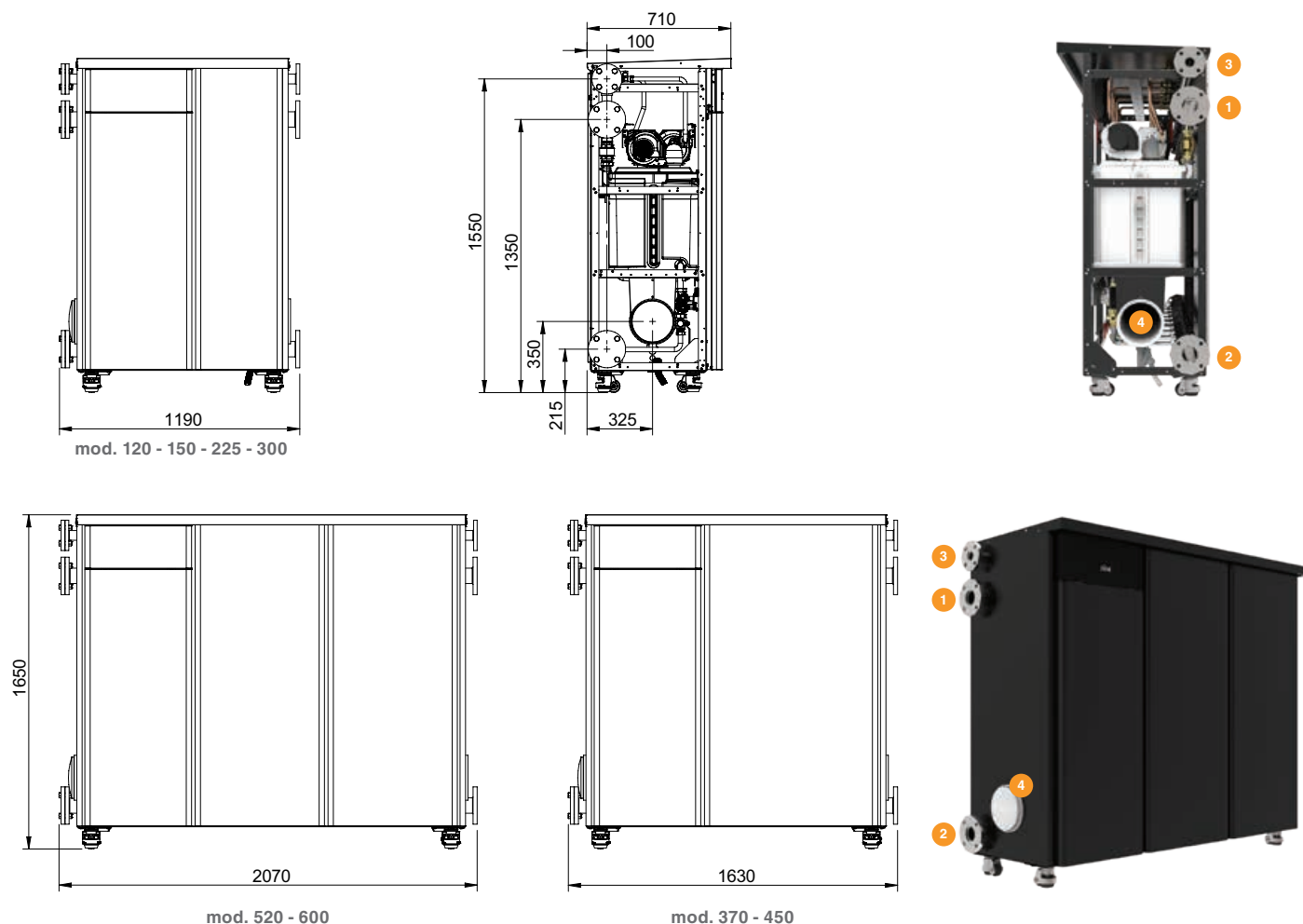
The generators of the MACH series can be installed in series of **up to eight units**. The cascade system is built with a single THETA⁺ series controller connected to the generators via the “Cascade module” communication accessory (one per generator). The system uses the Open Therm communication protocol.





TECHNICAL DATA

Dimensions



INSTALLATION IN SERIES

All MACH series generators can be connected to the system using either the right or left connections.

The generators are delivered complete with blind flanges already assembled.

- 1 DN 65 System flow
- 2 DN 65 System return
- 3 DN 40 Gas supply
- 4 Flue gas outlet - Ø 200 mm



HYDRAULIC SEPARATORS

Features / Accessories to complete the installation

The hydraulic separator guarantees independence between the primary circuit (generator) and the secondary one (system) without them disturbing or interfering with each other. The separator is provided complete with deaerator, dirt separator and is completely insulated.

FEATURES: Max operating pressure: 6 bar - Temperature range: 0 - 100°C - Connections: DN 40 / DN 65 / DN 100

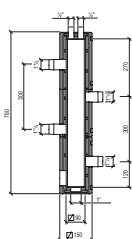
MODEL		DN 40	DN 65	DN 100
Flow rate	m ³ /h	6.5	18	30
Capacity	lt	4.8	21	46
Max temperature	°C	100		
Max pressure	bar	6		
Raw material	-	ST37.1 steel		
Isolation	-	EPP Black - 40 g/l		

HYDRAULIC SEPARATOR INSTALLATIONS UP TO 150 kW



Hydraulic separator DN 40.
Connection with the generator
is the responsibility of the
installer.

042086X0



HYDRAULIC SEPARATOR INSTALLATIONS FROM 151 TO 300 kW



Hydraulic separator DN 65
042078X0



DN 65 separator hydraulic
connection manifolds
042089X0



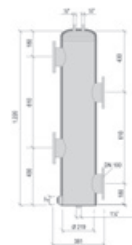
HYDRAULIC SEPARATOR INSTALLATIONS FROM 301 TO 600 kW



Hydraulic separator DN 100
042080X0



DN 100 separator hydraulic
connection manifolds
042088X0



EXTRA ACCESSORIES



Thermoregulations - Water treatment
Plates



External probe
013018X0



Neutralisers



Empty technical cabinet for outdoor use
046062X0



Kit for the management with thermostat (not
supplied) of a domestic hot water boiler (for
heating-only boilers)
013017X0



90°M/F bend in PPS - ø 200 mm
041060X0



Additional sensor for boiler and/or system
delivery for cascade configurations with and
without hydraulic separator
2m **1KWMA11W** cable - 5m **043005X0** cable



Smoke pipe M/F in PPS
length 1000 mm - ø 200
041062X0



NOTICE FOR SALES AGENTS:

With a view to constantly improve its production range and customer satisfaction levels, the Company hereby specifies that aesthetic and/or dimensional features, specifications and accessories may be subject to changes.

Please place the utmost care to ensure all technical and/or sales documents (lists, catalogues, brochures, etc.) provided to the final Customer are updated according to the latest edition.

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