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EV02F

ELECTRONIC CONTROL UNIT WITH QUARTZ CLOCK
for the thermoregulation of heating systems by proportional integral control of mixing valves or by ON-OFF control of burners, daily programming.

EV02F ELECTRONIC CONTROL UNIT
GENERAL FEATURES

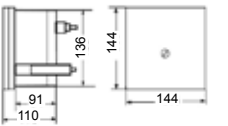
- Electronic control unit for the thermoregulation of heating systems.
- The devices regulates the delivery water temperature of the system as a function of the outside temperature and of the required ambient temperature. Regulation is performed by direct control of the burner or by proportional-time control of a 3- or 4-way motor-operated mixing valve.
- The outside and delivery temperatures are detected by special probes provided for the purpose. Temperature values are sent to the control unit which according to the set programming determines the delivery water temperature value to be sent to the system to keep the set ambient temperature constant.
- The control unit is fitted with: quartz clock for daily programming of ON/OFF times and manual/automatic mode switching. Potentiometer to select system heating curve with slope adjustable from 0.25 to 4.5. Potentiometer to regulate daytime ambient tempera-

ture (comfort) with parallel translation of the heating curve. Potentiometer to regulate nighttime ambient temperature (economy). Six-way selector to select the operating program, switch to select burner ON/OFF control or mixing valve proportional control. Potentiometer to regulate the delay in circulation pump shutdown. Pilot lamps, quick connection to the base by means of FASTONS, casing and base in insulating material with transparent cover. Protection: IP40; installation: wall, flush or rear panel mounting.

TECHNICAL DATA

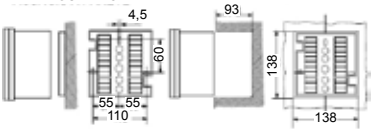
- Control unit consumption: 5VA.
- Supply voltage: 230V ± 10% - 50Hz.
- Compliance with CEI EN 60730-1 Standards
- Daily programming through quartz clock with 100 hours charge.
- Mixing valve control by 2 relays
- Contact rating: 5A 230V~ (ohmic charge), voltage free.
- Max ambient temperature: T50.
- Protection degree IP40.
- Pollution degree 2.
- Impulse voltage 4000V.

OVERALL DIMENSIONS

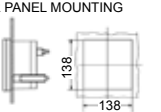


WALL MOUNTING

FLUSH MOUNTING



REAR PANEL MOUNTING



BASE REMOVAL

TEMPERATURE PROBES
GENERAL FEATURES
- EC-- series temperature probes are the sensors used by the control unit to get the information required for its operation.
- The sensing element is made up of linearised NTC thermistors.

TECHNICAL DATA
- Cable clamp: G 1/4.
- Operating temperature: - 40 to 150°C.
- Connection between probes and control units by means of double-wire cable, 1 mm2 min. section and 1000 metres max. length (for higher lengths increase the cable section to keep resistance constant).

NOTE: the control unit also works with probes EC01 (outside probe), EC02 (contact probe) and EC03 (immersion probe); resistance values are similar to those tabulated below.

Resistance values as a function of temperature:

EC11 OUTSIDE PROBE		DELIVERY PROBES EC12 EC13	
TEMPERATURE °C	RESISTANCE Ω	TEMPERATURE °C	RESISTANCE Ω
- 40	8629	+ 20	550
- 35	7853	+ 30	517
- 30	7118	+ 40	483
- 25	6433	+ 50	448
- 20	5720	+ 60	416
- 15	5230	+ 70	386
- 10	4770	+ 80	360
- 5	4370	+ 90	338
0	4010	+100	320
+ 5	3700		
+10	3440		
+15	3210		
+20	3020		

CONNECTIONS AND TESTS

ELECTRIC CONNECTIONS
Fit a small switch with 1A fuse valves on control unit supply line for protecting the servo control and turning off the power when removing the control unit from the base.
Electric connections between probes and control unit shall be performed by two-wire cables with 1 mm2 section and max. 1000 metres length; if higher cable lengths are required, increase the cable section in order to keep cable total resistance constant.

Avoid to make probe connections close to distribution cables with high current loads.
Connect the different devices according to shown diagrams.
Make sure that coupling connections are clean and not oxidised.
Connect the control unit Fastons to the proper couplings on the terminal base, pressing them down to full bedding.
Then tighten the fastening bolt.

OPERATION TYPE SELECT SWITCH
Switch Ⓖ (pg 6) shall be used for immediate selection between proportional-time control of motor-operated mixing valves (wiring diagrams 1 and 2) and burner ON/OFF control (wiring diagram 3).

CIRCULATION PUMP CONTROL
EV02F control unit is preset for automatic circulation pump control.

If connections are carried out according to shown diagrams, the circulation pump will be working during the following operating modes: AUTOMATIC 1, always ON, always economy; and it will be off when in OFF mode. It will also be off (with the exception of the antifreeze protection) in the antifreeze operating mode and at night in the AUTOMATIC 2 operating mode.

To make the most of the remaining heat accumulated during the daytime mode, the pump will shutdown (with 60-minute adjustable delay) after turning the system off.

SERVO CONTROL OPERATION TEST
Turn control unit selector Ⓗ (pg 6) to ON and OFF positions, check for proper valve movement and compare it with plate data.

When the selector is at OFF, the valve control lever pointer shall move to COLD; when the selector is at ON, the lever pointer shall move to HOT.

Otherwise exchange servo control connections 2 - 3 or connections 6 - 8 on the control unit base.

IN THE EVENT OF SYSTEM UNSUCCESSFUL OPERATION CHECK THE FOLLOWING:
Supply voltage, that shall be: 230V 50Hz.
Probe circuit, by means of the tester provided for measuring the resistance value.

Connections and settings of burner thermostats, safety thermostats, etc.

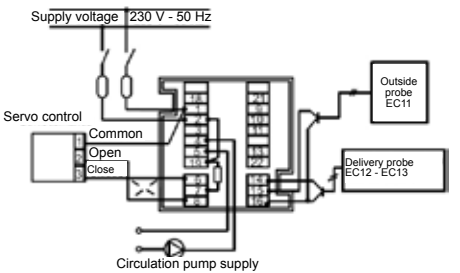
Turn the daytime ambient temperature regulation knob fully clockwise and counterclockwise for several consecutive times: if the two pilot lamps turn on and

off the control unit is working regularly, check then the servo control and the mixing valve.

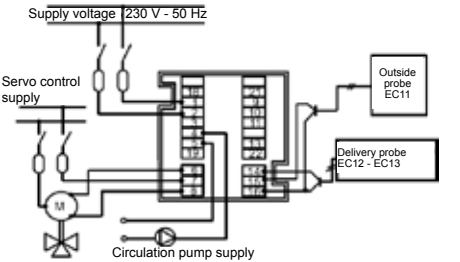
Check for regular operation of couplers between servomotor and mixing valve control stem, and for absence of sliding caused by loosening of setscrews.

EXAMPLES OF ELECTRIC CONNECTIONS FOR MIXING VALVE WITH SERVO CONTROL AND FOR BURNERS

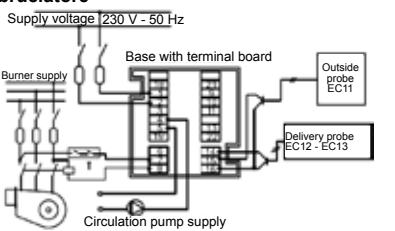
1 - Wiring diagram for motor-operated mixing valves with servo controls powered with 230 V 50 Hz



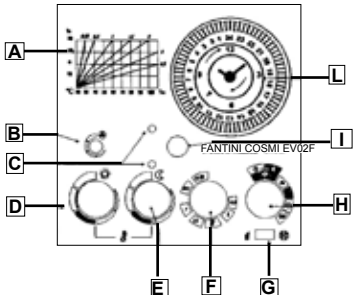
2 - Wiring diagram for motor-operated mixing valves with servo controls powered with voltages other than 230V 50 Hz



3 - Schema elettrico per il comando ON-OFF del bruciatore



FRONT CONTROL PANEL



A Indicative diagrams of delivery water temperature (20 ÷ 110 °C x-axis) as a function of outside temperature (20 ÷ -40 °C y-axis).

B Circulation pump shutdown control, with delay up to 60 minutes.

C LEDs showing valve movement (valve open or valve closed); with LEDs off the valve is off.

D Daytime ambient temperature regulation knob:
MIN = approx. 13 °C ambient temperature
MAX = approx. 27 °C ambient temperature

E Nighttime ambient temperature regulation knob (economy mode):
MIN = approx. 10 °C ambient temperature (economy mode)
MAX = night ambient temperature same as day ambient temperature.

F Knob for selecting heating straight lines shown in diagram A (see section "SETTINGS AND ADJUSTMENTS")

G Switch for choosing between burner or power-operated mixing valve control

H Six-way selector to select the following:
- OFF
- always antifreeze: at this position the delivery water temperature is always kept at + 5 °C at least, with whatever position of the other controls (with burner ON)
- always economy
- ON
- Automatic 1 : nightime economy /daytime comfort
- Automatic 2 : nightime antifreeze/ daytime comfort.

I Screw for mechanical connection between electronic panel and terminal base.

L Quartz clock for daily programming.

INSTALLATION

EV02F CONTROL UNIT INSTALLATION

Fully loosen the fastening bolt to release the base of the control unit. Lever on the slots with a screwdriver to remove the base.

Secure the control unit terminal base to the wall (or according to the mounting systems described in the previous page) in a dry room, free from dripping.

EC11 OUTSIDE PROBE INSTALLATION

Install the outside probe in a vertical position on the north or north-west wall of the building at about 2.5 metres at least from the ground. Install the probe far from heat sources (windows, aerators, flues, etc.) and protruding parts.

EC12 (contact probe) AND EC13 (immersion probe) DELIVERY PROBE INSTALLATION

Install the contact probe EC12 onto the water pipe with the clamp provided for the purpose and with heat conducting paste interposed in order to guarantee proper heat conduction.

The immersion probe EC13 must be fitted in the piping with the sheath filled with mineral oil or silicone grease.

NOTE The delivery probes must be mounted downstream the mixing valve at least 1.5 metres from the valve, preferably after an elbow.

If the circulation pump is placed on the delivery side, install the probe downstream the pump.

3- OR 4-WAY MIXING VALVE INSTALLATION

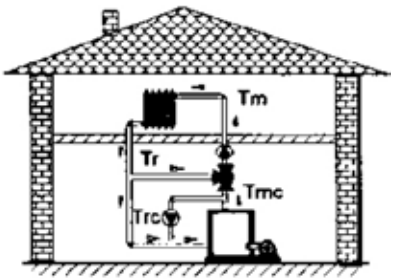
Install the mixing valve at boiler top edge level, in handy position.

Check for no seizing between shutter and valve body by operating the mixing valve manually; restore mechanical connection between servo control and valve body.

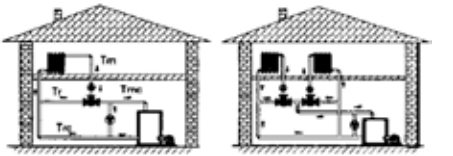
When at closed position the mixing valves do not guarantee perfect seal, it is therefore necessary to install suitable gate valves or check valves on radiator circuits in order to enable valve removal without having to drain the circuit.

EXAMPLES OF HYDRAULIC CONNECTIONS FOR MIXING VALVES

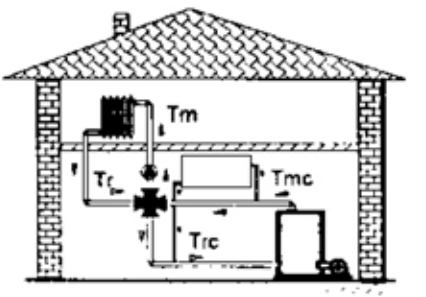
3-WAY SECTOR POWER-OPERATED MIXING VALVE



3-WAY ROTOR POWER-OPERATED MIXING VALVE



4-WAY ROTOR POWER-OPERATED MIXING VALVE



SETTINGS AND ADJUSTMENTS

1) INITIAL CONTROLS POSITIONS
(see paragraph “front control panel”, page 6)

(D) at central area (comfort zone).

(E) fully rightwards at “MAX” position (same temperatures for night and day).

(H) at Automatic 1 (nighttime economy/daytime comfort).

(F) at position 2 for radiator heating, or at position 0,5 for panel heating.

(B) at central position (pump shutdown delay of about 30 minutes).

2) Set the boiler thermostat so to keep water temperature at approx. 80 - 90°C, then turn the system on.

3) After 24 hours the ambient temperature of a standard room shall be equal to 20°C. If temperature is lower turn slightly knob F counterclockwise, if it is higher turn knob (F) clockwise.

Check again temperature after 24 hours. If required keep on adjusting knob (F) position like indicated in the table below until obtaining 20°C in the room, with whatever outside temperature (it is recommended to check temperature in the afternoon and early in the morning since outside temperature changes for sure).

NOTE knob (F) shall be used to select the required straight line in diagram A, i.e. the pointer indicates the straight line slope on the diagram.

4) Under these conditions the control unit is set on the system and knob (F) shall no longer be operated. To obtain the required operating modes according to the plate data, just use knobs (D), (E), (G).

5) Then set the clock as described in paragraph “QUARTZ CLOCK DAILY PROGRAMMING”

HOW TO CORRECT KNOB (F) POSITION ACCORDING TO OUTSIDE TEMPERATURE:

If ambient temperature	...rises ...rises ...lowers ...lowers	When outside temperature	...rises ...lowers ...rises ...lowers	Turn knob **F**	...clockwise ...clockwise ...counterclockwise ...counterclockwise

QUARTZ CLOCK DAILY PROGRAMMING

FANTINI COSMI EV02F

1 set current time moving the dial clockwise
2 program ON and OF times using the indicators on the 24-hour dial:
- indicators inwards: ON
- indicators outwards: OFF

OPERATIONAL INSTRUCTIONS

WINTER MODE DUTY
- Open the circulation pump gate valves
- Start the pump
- If the system is equipped with mixing valve: operate the valve manually to remove any sediment deposited inside the valve and check for absence of seizure between shutter and valve body, then restore the mechanical connection between servomotor and valve.
- Turn knob (H) to automatic 1 position (nighttime economy/ daytime comfort).
- Check the timer and set current time.

If the heating system settings have not been changed with respect to the last winter mode duty, the control unit is set yet. Otherwise repeat the operations described in paragraph “SETTINGS AND ADJUSTMENTS”.

SUMMER MODE DUTY

(for systems with mixing valve).

When the boiler is used for sanitary water and you have to exclude the heating system, perform the following operations:

a) turn control unit selector (H) to OFF position and wait for about 10 minutes to allow the mixing valve to close completely, then turn the system off.

b) stop water circulation pump.

c) close circulation pump gate valves to prevent hot water infiltration into radiator circuits during the summer, since mixing valves do not ensure perfect seal.

If the boiler is not fitted with hot water system, the previous operations are not necessary - the burner shall however be turned off.

Fantini Cosmi S.p.A. reserves the right to make whatever technical and manufacturing modification without prior notice.

ErP Klassifikation: ErP Klasse II; 2% (EU Verord. 811/2013 - 813/2013)

DISPOSAL OF PRODUCTS

The crossed out wheeled dust bin symbol indicates that products must be collected and disposed of separately from household waste. Integrated batteries and accumulators can be disposed of with the product. They will be separated at the recycling centres. The black bar indicates that the product was placed on the market after August 13, 2005. By participating in separate collection of products and batteries, you will help to assure the proper disposal of products and batteries and thus help to prevent potential negative consequences for the environment and human health. For more detailed information about the collection and recycling programmes available in your country, please contact your local city office or the shop where you purchased the product.

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