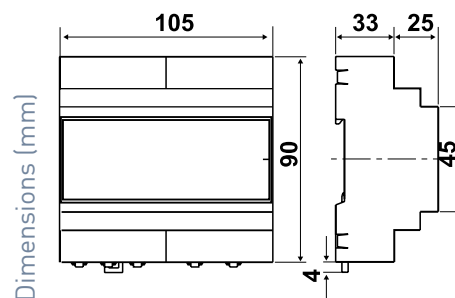


EV84A

Regulation control unit for floor heating and cooling systems

The electronic controller allows the automatically water delivery temperature adjusting, according to outside temperature variations, controlling the mixing valve and the relative circulation pump if is present in the system to be controlled.



	Power supply	Contacts rating	Operating ambient temperature	Consumption	Protection degree
EV84A	230V 50Hz	5(3)A - 250Vac	0 ÷ 50 °C	5 VA	IP40 (back panel)

ELECTRICAL FEATURES

Power supply: 230V 50Hz.

Consumption; 4VA.

3 output relays:

- 1 relay to control the circulation pump;
- 1 relay to control valve opening;
- 1 relay to control valve closing.

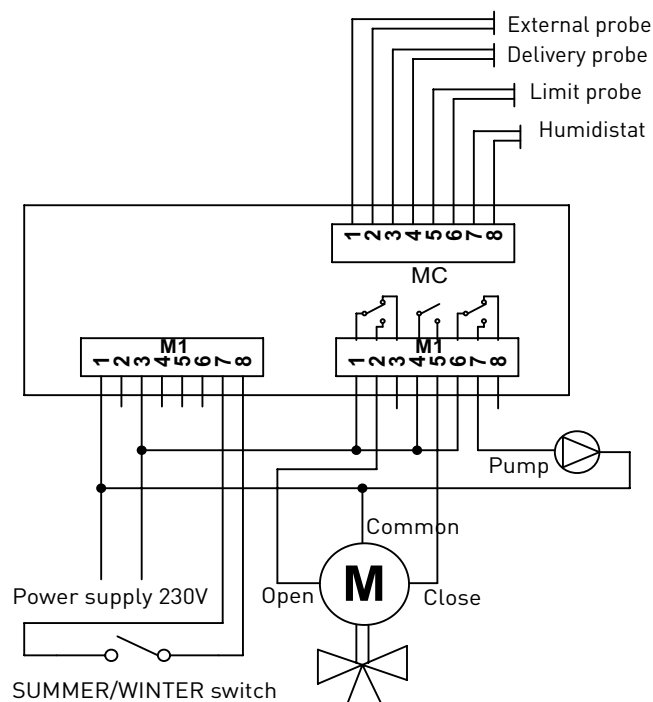
3 analog inputs to control:

- the external temperature;
- the limit temperature;
- the delivery temperature.

1 humidistat input

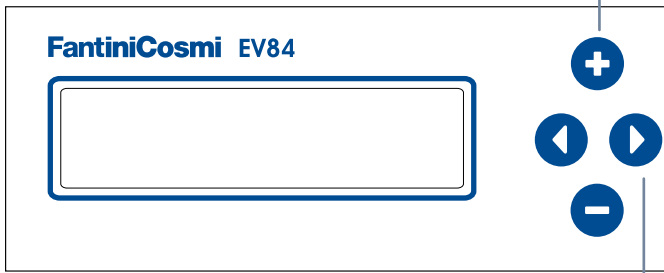
1 digital input for SUMMER/WINTER switch.

ELECTRICAL WIRING DIAGRAM OF EV84A FOR VALVES 230Vac



OPERATION

Using the 2 keys (+ and -) can be scrolled various menus and can be modified the parameters.



The 2 keys (< and >) are used to enter in the menu and to pass from one page to another.

EV84A purpose is to maintain constant water delivery temperature as a function of the outside temperature. At the moment when the program has been selected the device calculates the delivery temperature to be adjusted; this is going to be calculated through interpolation using the set values of delivery temperature for four outside temperature values:

- WINTER: TEXTMIN, 0° , 10° , TEXTMAX
- SUMMER: TEXTMIN, 27° , 30° , TEXTMAX

REGULATION CURVE

The controller has a summer curve and a winter curve used to calculate the delivery temperature which has to be adjusted in the system. Curve selection is done through the manual command SUMMER/WINTER, consisting of a clean contact on terminals 7 and 8 of the junction box "A". Summer and winter curves represent the delivery temperature values as a function of the outside temperature. Curve calibration is done by setting four relative values of the delivery temperature to four outside temperature values.

PROGRAMMING SCHEDULE

It is possible to have a weekly programming schedule with an ON and OFF schedule for all days of the week. A backup battery allows you to have a charge reserve of more than five years.

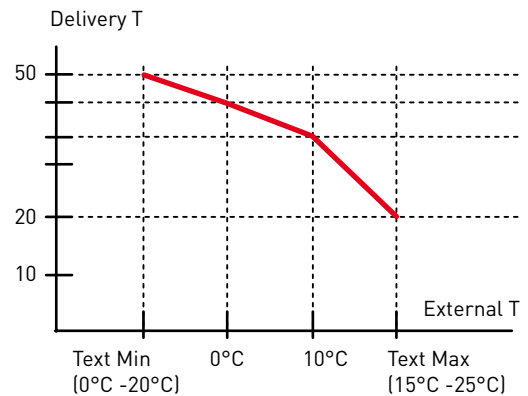
OPERATION PROGRAMS

The controller is able to operate with different programs selected by the user:

- VALVE OPENS - activation of the circulation pump triggers the manual opening of the mixing valve.
- VALVE CLOSES - stops the operation of the circulation pump and triggers the manual closing of the valve.
- ALWAYS DAY - the delivery temperature which has to be adjusted is going to be calculated by the controller through the adjustment curve.
- ALWAYS NIGHT (WINTER CURVE), the delivery temperature which has to be adjusted is that of the program always day - 3°C. The required delivery temperature is limited to 20°C.
- ALWAYS DAY (SUMMER CURVE), the delivery temperature which has to be adjusted is that of the program always day + 3°C. The required delivery temperature is limited to 25°C.
- AUTOMATIC, if the current time/schedule is located between the ON schedule and OFF schedule is executed as above mentioned the ALWAYS DAY program otherwise will be realized as mentioned ALWAYS NIGHT program.
- FIXED POINT, the delivery temperature which has to be adjusted is set through CONFIGURATION menu as Fixed

WINTER CURVE - Regulation broken curve

The two ends of the broken curve (TextMin TextMax), can be personalized for possible optimizations of the system operation.



Preset limit values of the delivery temperature:

Delivery T.: Max. 50°C

Delivery T.: Min. 20°C

	Curve point 1		Curve point 2		Curve point 3		Curve point 4	
External T. Limits	15	25	10	10	0	-20		
Preset External T.	20		10		10		-15	
Delivery T. Limits	20	45	20	45	20	45	20	45
Preset Delivery T.	22		27		34		42	

Point Temperature. This value, which by default is 25°C can be varied from a minimum of 10°C to a maximum of 45°C. This program can be used as antifreeze function.

OPERATING MODES

Operating modes are automatically picked by the control unit based on the selected program and determine pump and mixing valve operation. They are indicated with:

- DAY, it is obtained by selecting ALWAYS DAY program or when the chosen program is AUTOMATIC and the operating period is within the ON-OFF time slot.
- NIGHT, it is obtained by selecting ALWAYS NIGHT program or when the chosen program is AUTOMATIC and the operating period is out of the ON-OFF time slot.
- FIXED POINT, it is obtained by setting FIXED POINT program.
- FORCED MODE indicates that the controller has decided to turn on the system before the preset time according to data optimization. This mode ends at ON time.
- PROBES FAILURE, this mode occurs when a probe is damaged and the reading that follows is wrong.
- LIMIT THRESHOLD, this mode occurs when it is exceeded the limit threshold as described.
- HIGH HUMIDITY, if it is set the summer operation and humidistat input is closed in d.c. for at least 5 consecutive minutes, you enter in this mode: the valve is closed and the pump turns off until the humidistat input does not change the state. If the humidistat is not connected, this mode will never come.

CIRCULATION PUMP (if present)

It is controlled to permit water circulation in the heating system and is turned off only in the following cases:

- if the delivery and / or external probe has been damaged;
- if the selected program is "manual valve closes" ;
- if the delivery temperature decreases below a preset value of the winter operation;
- if the delivery temperature increases above a preset value of the summer operation.

PROBES INPUTS

- 1 input for external temperature probe with thermoplastic enclosure with NTC1K type sensor.
- 1 input for contact or immersion delivery probe with NTC10K type sensor.
- 1 input for limit probe (see delivery probe).
- 1 input for humidistat.
- 1 input for well delivery probe.

LIMIT PROBE

- Winter operation:

When the temperature measured by the limit probe exceeds the winter limit threshold, preset in the menu "Limit Probe", the controller commands valve closing and turns off the circulation pump.

Winter limit threshold values: 15°C ÷ 60°C Preset values - ----° Excludes the functioning

- Summer operation:

When the temperature measured by the limit probe drops below the summer limit threshold, preset in the menu "Limit Probe", the controller commands valve closing and turns off the circulation pump.

Summer limit threshold values: 5°C ÷ 30°C Preset values - ----° Excludes the functioning

To prevent any potential transitional adjustment is possible to insert a delay time, between 0 and 5 min. between the threshold exceeding and the limit function intervention.

The controller resumes normal operation only when the temperature reaches the value equal to:

Resumption Val. = Threshold Val. – Resumption Diff. (winter)

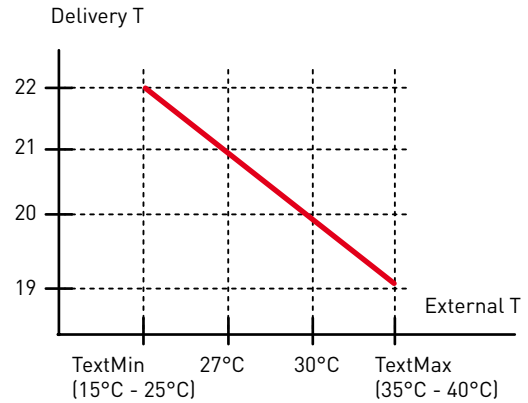
Resumption Val. = Threshold Val. + Resumption Diff. (summer)

Resumption differential is set between 1°C and 10°C.

Threshold exceeding is indicated on the display by the inscription LIMIT THRESHOLD EXCEEDING.

SUMMER CURVE - Regulation broken curve

The two ends of the broken curve (TextMin TextMax), can be personalized for possible optimizations of the system operation.



Preset limit values of the delivery temperature:

Delivery T.: Max. 25°C

Delivery T.: Min. 15°C

	Curve point 1		Curve point 2		Curve point 3		Curve point 4	
External T. Limits	40	35	30	27	25	20		
Preset External T.	35		30	27	23			
Delivery T. Limits	15	25	15	25	15	25	15	25
Preset Delivery T.	17		18	18	20			

PROBES FAILURE

During normal operation, the controller is able to detect possible malfunctions of the connected probes and to control in the appropriate mode the valve and the pump:

- DELIVERY PROBE FAILURE, the pump is turned off and the mixing valve is going to close. On the display will appear DELIVERY PROBE FAILURE.
- EXTERNAL PROBE FAILURE, the pump is turned off and the mixing valve is going to close. On the display will appear EXTERNAL PROBE FAILURE.
- LIMIT PROBE FAILURE (only if it set the threshold), the controller continues to function properly, but on display will appear the inscription LIMIT PROBE FAILURE.

SUMMER-WINTER SWITCH

The transition from heating to cooling and vice versa is obtained manually by inserting a switch between the contacts 7 and 8 of the joint box "A". Particularly, if the contact is open the controller will execute WINTER adjusting, while if the contact is closed the controller will fulfill SUMMER adjusting. During winter period, the mixing valve is going to be open when the delivery temperature is below the required temperature; vice versa, during summer period, the valve is commanded to open when the delivery temperature exceeds the required temperature.

STANDARDS AND HOMOLOGATIONS

Complies with the law 373, law n.10 dated 9 of January 1991 and D.P.R.412 dated 26 of August 1993.

In conformity with EN 60730-2-9, EN 60730-2-7 standards



INSTALLATION

DIN-rail mounting (6 modules).

The removable terminals simplify the wiring and a possible replacement.

FEATURES

Alphanumeric display and 4 functional keys for parameters easy setting.

Digital clock with charge reserve over 5 years.

Switch-on times optimization.

ACCESSORIES



EC10
Ambient probe



EC16
Immersion delivery probe with protection casing and conic thread connection G 1/2.



EC14
External probe



EC17
Well probe



EC15
Contact delivery probe with clamp for fixing on the pipe.

SYSTEM EXAMPLE

