EV87
EXPANDABLE MULTIFUNCTION
CLIMATIC CONTROL UNIT

Employment

The EV87 climatic controller is suitable for the thermoregulation with remote management of all types of heating systems and floor-type air-conditioning systems. For the thermoregulation of particularly complex systems, the EV87 controller acts as central controller (MASTER) and can be connected to other EV-series controllers (called SLAVE) via a communication bus called FANBUS.

Description

The EV87 controller can be set as climatic controller for heating system through mixer valve, or for air-conditioning system still through mixer valve or it can be set as fixed point / sliding point / controller for boilers.

Mixer valve

• 3-way mixer valve control open/close/stop
• Circulation pump control with delayed switch-off
• Auxiliary relay control for a domestic water storage tank or for a 1-stage boiler
• Delivery temperature regulation according to the min./max. limit (to be set)
• Delivery temperature regulation according to the ambient temperature read (to be set)

Boilers

Boiler management modes are the following:
• Management of one boiler with 2 or 4-stage burner
• Management of two boilers in cascade
• Management of three boilers in cascade
• Management of four boilers in cascade
• Management of two boilers in cascade with 2-stage burner

The boiler management provides to set the days of rotation of the main boiler.

Climatic regulation

The controller calculates the delivery temperature value at all times as a function of the ambient temperature set, the external temperature read and the broken regulation curve set. The calculated delivery temperature can be further regulated through the limit probe and the ambient probe described in the following pages.

Fixed point regulation

It is used to control the boiler. It regulates the delivery temperature according to a fixed temperature value to be set.

Sliding point regulation

It is used to control the boiler. The EV87 controller, via FANBUS, acquires the delivery temperature required by each connected SLAVE module. The max. temperature value required is added to the temperature value set thereby obtaining a variable boiler temperature control according to the system requirements.

The EV87 controller features two digital inputs to be used as alarms. Furthermore a serial line can be connected to a modem, thus enabling the control unit to transmit any system fault to a remote station (e.g.: mobile phone or PC), and to be remotely managed using SMS messages or DATA transmission.

Front panel with configuration keys and indications

4-line alphanumeric display

```
12.20    19/04/2006
TM= 23.5c  TE=10.0c
TL=25.0c   TX=13.5c
4..20mA= 300c
```

FORWARD/ BACK keys

MORE/LESS keys

UP/DOWN keys

Indicator LEDs associated to relays 1 2 3 4
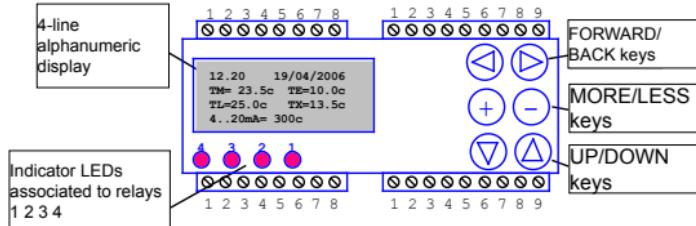
Broken regulation curves

The EV87 controller has a winter curve and a summer curve to be used to calculate the delivery temperature. The curve is selected through the heating period and the cooling period set. Both curves represent the delivery temperature as a function of the external temperature to obtain 20 °C ambient temperature, and are used for climatic regulation.

To obtain different ambient temperature values, the broken regulation curve moves along the line +Ta..-Ta. The relation that establishes the delivery temperature value as a function of the external temperature depends on the thermal properties of the building and, for optimum comfort, must be found by experimenting.

Winter broken regulation curve
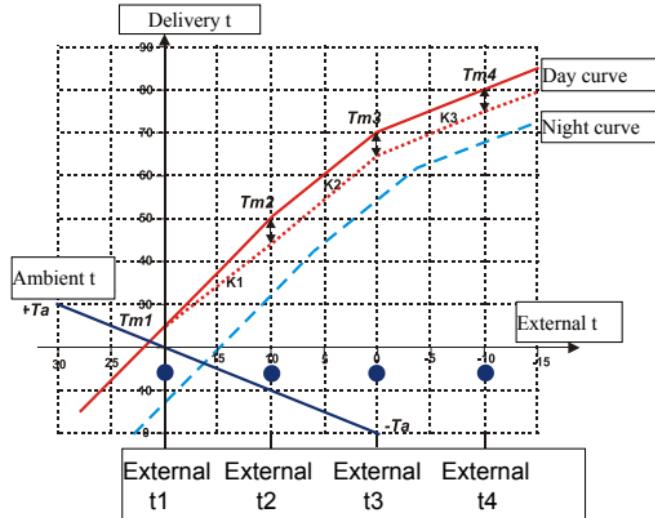
N.B. In systems with panels, limit the delivery temperature values to max. 45°C.

Preset values for the WINTER broken regulation curve

	External t1	External t2	External t3	External t4
T ext (°C)	20	10	0	-10
	TM1	TM2	TM3	TM4
T M. (°C)	20	40	60	80

Preset values

In the winter broken regulation curve you can set for the four points, both the external temperature values and the delivery temperature values in order to adapt the EV87 controller to whatever condition.

N.B. Modify the external temperature values only in the event of special external temperature conditions.

External temperature values (External t1..... External t4) can be set from **-30°C** min to **30°C** max. External temperature value is always included between its two limit values set.

30°C>= External t1 > External t2 > External t3 > External t4>=-30°C

Delivery temperature values (TM1......TM4) can be set from **5°C** min to **99°C** max. External temperature value is always included between its two limit values set.
5°C <= TM1 < TM2 < TM3 < TM4 <= 99°C

Summer broken regulation curve

4
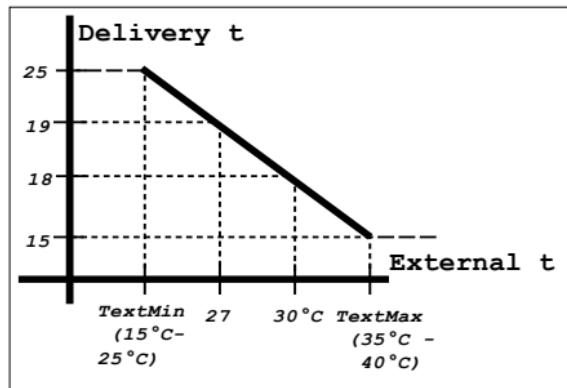
The two limit values of the broken regulation curve (TextMin - TextMax), can be customized for system optimizations, if required.

Preset values for SUMMER broken regulation curve

|	r1	r2	r1	r2	r1	r2	r1	r2
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		19		20	

Summer curve **Text_Max** can range between **35°C min** and **40°C max**.
Summer curve **Text_Min** can range between **20°C min** and **25°C max**.
The delivery temperature relevant to an external temperature is always included between the two limit values set for the delivery temperature.

Switch-on time optimization (winter only)
Like for the delivery temperature, the advance switch-on time is calculated automatically by interpolation, using the advance switch-on time values set for four external temperature values. Advance switch-on times are set in the same menu used for setting the four delivery temperature values.
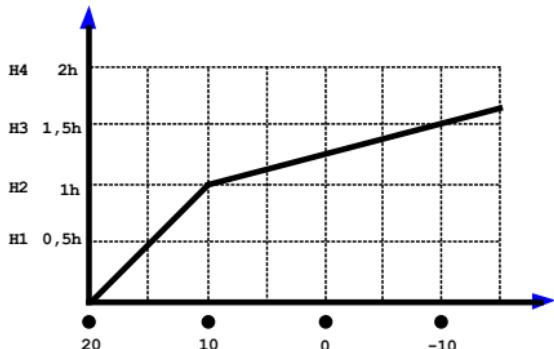

The max value that can be set is 10.00 hours. Optimization is excluded by setting advance times to zero (00.00 h). Also in this case, the value relevant to an advance time is always included between its set limit values:
0h <= H1 < H2 < H3 < H4 <= 10h

The controller calculates, as a function of the external temperature, how much earlier the system is to be activated with respect to the first ON time of the present day. During the whole advance switch-on time, the delivery temperature value regulated is the value set in the "Configuration" menu as delivery temperature value in forced operating mode.

Temperature probes

The temperature probes are the detecting devices though which the control unit receives the temperature values fundamental for its operation. The sensitive element is composed of NTC thermistors.

EC10

```
70
70   33   57   47
```

EC14   **EC15**   **EC16**

```
66   54        60        164
106        106        106
```
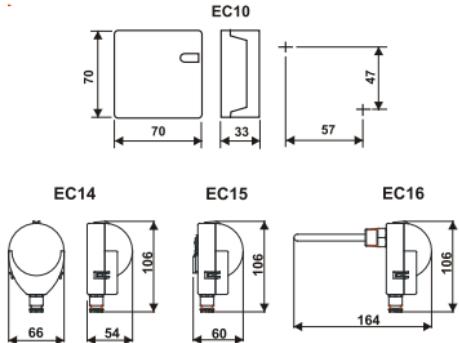
EC10: Ambient probe /Correction
EC14: External probe
EC15: Delivery probe / limit probe / auxiliary contact probe
EC16: Delivery probe / limit probe / auxiliary immersion probe

Technical data

• Thermoplastic waterproof enclosure protected to IP55 (*)
• Cable gland G $1/_4$ (*)
• Operating temperature from -40°C to +80°C (*)
• Connection between probes and control unit via two-wire cable with minimum section 1 mm^2 and maximum length 1000 metres
• Do not place the probe connections in close proximity to distribution cables to avoid induced disturbances.

(*) For ambient probe EC10, refer to the corresponding instruction sheet

N.B. The control unit also works with probes: EC81 (external probe) EC82 (contact probe) and EC83 (immersion probe).

Installing the external probe EC14

Install the external probe on the north or north-west wall of the building, or in any case at least 2.5 metres from the ground and in a vertical position. Fit the probe far from sources of heat and protruding parts. If it cannot be fitted on the north side, fit it on the wall considered the coldest and, where possible, in a position protected from sun rays.

Installing the delivery-limit-auxiliary probe EC15-EC16

The contact probe EC15 must be fixed to the water pipe with the specific strap, with heat conducting paste interposed to guarantee correct heat conduction.

The immersion probe EC16 must be fitted in an elbow provided in the piping.

Installing the ambient probe EC10

Install the ambient probe on an interior wall at a height of 1.5 m, away from heat sources, windows and doors. The probe wiring depends on the mode of use:

- Ambient probe
- Changing of the set-point of the Day Temperature (remote control mode).

For wiring, refer to the corresponding EC10 probe instruction sheet.

N.B. The ambient probe EC10 is connected to the inputs used for the auxiliary probe, the use of one probe therefore excludes the other.

Operation periods

The EV87 controller regulates the delivery temperature using the winter broken regulation curve or the summer one, according to the heating or air-conditioning period set. If the current period is not included in these two set periods, the controller will set in STAND-BY and will close the valve and shut down the pump. If due to a setting fault, the two periods overlap, the heating period will prevail.

Heating period

By setting the heating start and stop date you establish the operating period of heating. Out of this period no set programme is considered and a STAND-BY operating mode is actuated.

Air-conditioning period

By setting the air-conditioning start and stop date you establish the operating period of air-conditioning. Out of this period no set programme is considered. The air-conditioning period can be excluded by setting the dashes (----).

Operation programmes

The EV87 controller works with different programmes selectable by the user.

• **Valve Opens (*)**

The circulation pump is started and the mixer valve is opened manually.

• **Valve Closes (*)**

The circulation pump is shut down and the mixer valve is closed manually

• **Antifreeze**

The ANTIFREEZE temperature set for calculating the delivery temperature is used only when within the heating/air-conditioning period.

• **Night**

The NIGHT temperature set for calculating the delivery temperature is used only when within the heating/air-conditioning period.

• **Day**

The DAY temperature set for calculating the delivery temperature is used only when within the heating/air-conditioning period.

• **Auto Weekly 1/ Weekly 2/ Daily**

The ambient temperature to be used for calculating the delivery temperature is selected according to the chosen programme (**Weekly 1 / Weekly 2 / Daily**) and the performed programming.

The automatic programme provides the selection between two weekly programmes and one daily programme. Both weekly programmes provide for each day of the week 3 on and off time bands whereas the daily programme provides 3 on and off time bands to be used for the whole week.

(*) Programme that can be selected only if the controller is configured as **VALVE**.

During controller operation the user is informed on the current selected operating mode through display, SMS messages or modem data communication. Operating modes are the following:

a. **Day operating mode**: when climatic regulation is performed by regulating the Day ambient temperature.

b. **Night operating mode**: when climatic regulation is performed by regulating the Night ambient temperature.

c. **Reduced operating mode**: when climatic regulation is performed by regulating the Reduced ambient temperature.

d. **Antifreeze operating mode**: when climatic regulation is performed by regulating the Antifreeze ambient temperature.

e. **Off operating mode**: when regulation is performed on an ambient temperature excluded (dashes are set)

f. **Stand-by operating mode**: when the Automatic programme has been selected and the heating/air-conditioning period is ended.

g. **Forced operating mode**: when performing optimization (advance switch-on time) used in automatic programme.

h. **Operating mode -------**: when regulating boilers (fixed point/sliding point).

i. **Temporary operating mode**: when the temporary heating period is set.

Limit probe

The limit probe can be used to limit the value of the delivery temperature. When the temperature measured by the probe drops below a certain value (**minimum limit used as anti-condensation**) or rises above a set value (**maximum limit used, for example, in panel systems**) the controller reduces the delivery temperature value proportionally.

N.B. The function is excluded when the set point is excluded by dashes (**----**). If a set point is set by mistake and the probe is not connected, an alarm is triggered.

Auxiliary regulation

The auxiliary probe can be used in three different ways:

1. Auxiliary probe
2. Ambient probe
3. Set correction

Auxiliary probe

The measurement probe (**EC15 EC16**) can be used, associated with the control relay 4 - described in the next pages - as a part of an auxiliary controller.

According to its configuration the following operation options can be selected:

1. **FIXED** point temperature, to control a boiler or the pump of a domestic water storage tank at a constant temperature,

2. **SLIDING** point temperature, in this case the set point value represents the amount of degrees the boiler (connected to the auxiliary relay) must be regulated above the temperature value required by the EV87 controller and the SLAVEs (EV19A EV19B).

Ambient probe

The measurement probe (**EC10**) is used to measure the ambient temperature.

The measured value is compared with the desired ambient temperature value (Day t - Night t - Reduced t - Antifreeze t) and on the basis of the difference read the delivery temperature required by the climatic controller is corrected proportionally. The correction factor for the delivery temperature is selected by setting the parameter **K**, called ambient temperature authority

$$TMC = TMC \text{ (broken regulation curve)} +$$

$$(2K * (Ambient\ t\ set - Ambient\ t))$$

where TMC is the delivery temperature calculated and Ambient t set is the desired ambient temperature.
Example:
Ambient t set = 20°C   **Ambient t read** = 18°C
K = 1.0
TMC = 40°C
TMC = 40°C (TMC broken regulation curve) + (2*1.0 * (20 - 18)) = 44°C

Set correction
The measurement probe (**EC10**) is used as remote control for correcting the **"DAY"** temperature set point
N.B. For ambient probe/set correction wiring refer to the corresponding EC10 probe instruction sheet.

Probe 4..20mA
Input 4..20mA can be used to control whatever physical unit (e.g. temperature, humidity, pressure, etc...). Associating it to the control relay 4 - described in the next pages - will obtain a set min or max ON-OFF control.
Input is customized by entering the values corresponding to 4mA and 20mA, the associated unit of measurement and the operation set point. The function is automatically excluded if the probe is not connected.

Output 0..10V
The controller is fitted with 0..10V proportional output, used to control a servo valve for example, in order to keep the calculated delivery temperature constant.
By setting the proportional range (**2.0°C min - 20°C max**), the proportional output shall be 0V when the delivery temperature coincides with the calculated temperature value and it shall be 10V when the delivery temperature is equal to the calculated temperature value less the proportional range.

TM = Delivery temperature
TMC = Calculated delivery temperature
BP = Proportional range
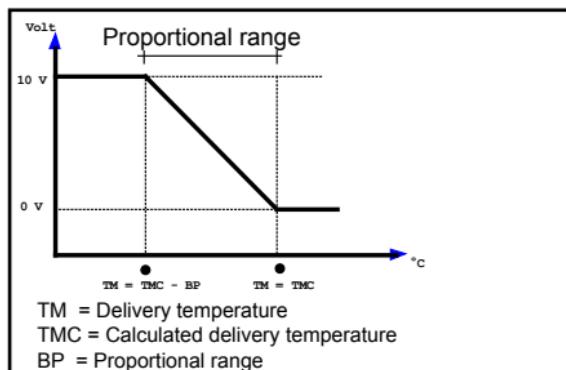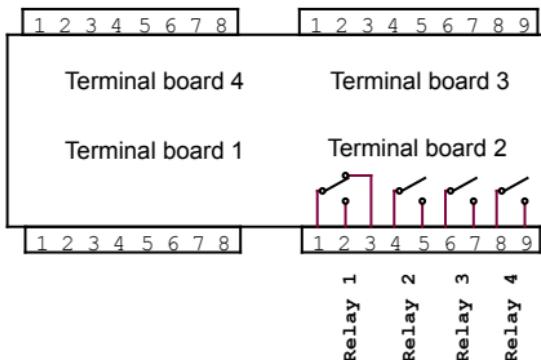
Relay

Relay 1 terminal board 2 contacts 1 - 2
Relay 2 terminal board 2 contacts 4 - 5
Relay 3 terminal board 2 contacts 6 - 7
Relay 4 terminal board 2 contacts 8 - 9

Mixer valve operation
• Relay no. 1 = Valve opens
• Relay no. 2 = Valve closes
• Relay no. 3 = Pump control

Burner/boiler operation
• Relay no. 1 = "Burner stage 1" or "Boiler 1" or "Boiler 1 Stage 1"
• Relay no. 2 = "Burner stage 2" or "Boiler 2" or "Boiler 1 Stage 2"
• Relay no. 3 = "Burner stage 3" or "Boiler 3" or "Boiler 2 Stage 1"
• Relay no. 4 = "Burner stage 4" or "Boiler 4" or "Boiler 2 Stage 2"

When setting the operating mode: 4-Stage Burner or 4 Boilers or two 2-stage burners, **relay no. 4** cannot be used for other functions.
In all the other cases, **relay no. 4** can work in different operating modes according to its setting in the "Configuration" menu. e.g.:
1. **AUTOMATIC**: the relay is closed during the operating modes: Day Reduced and Forced, is open in all the other cases
2. **PROBE 4..20mA**: the relay is closed when the value measured is below (max limit) or above (min limit) the preset set point
3. **AUX. PROBE**: the relay is closed when the measured temperature is lower than the preset set point
4. **DIGIT INPUT 1**: the relay is closed when the digit input 1 closes
5. **DIGIT INPUT 2**: the relay is closed when the digit input 2 closes

6. **DIGIT INPUT 1 2**: the relay is closed when the digit input 1 or 2 closes

Circulation pump control

The circulation pump is controlled automatically. The pump is automatically shut down when in the winter period the delivery temperature calculated drops below the preset TM min limit value or when in the summer it rises above the preset TM max limit value. The limit values TM min and TM max are set in the "Configuration" menu. To exploit residual heat accumulated during the day to a maximum, the pump shuts down after a certain delay which can be set in the "Configuration" menu.

Domestic water priority

When the auxiliary regulation is set as auxiliary probe (**see para. Auxiliary regulation**), in the "Configuration" menu the domestic water priority function can be enabled. When the temperature measured by the auxiliary probe drops below the set value, the mixer valve is closed. Regular operation will restart as soon as the temperature rises above the set value.

N.B. Priority function is active even if relay no. 4 is not associated to auxiliary regulation.

FANBUS

Via the communication bus called "FANBUS", the EV87 controller which acts as MASTER control unit can be connected to up to **20 SLAVE expansion modules** of the EV_ series.

The FANBUS connection between MASTER and SLAVE is performed with a simple low voltage non-polarized twin cable.
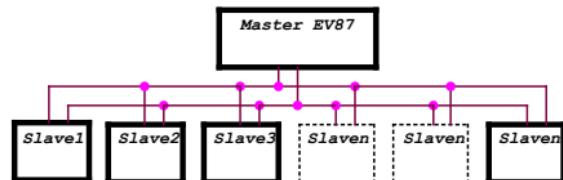
Control unit address

Each control unit is identified by two digits that determine its address. The first digit represents the model and cannot be modified. The second one may be set through jumpers on each SLAVE terminal board. Example:

EV91A   first digit: 1
EV91C   first digit: 2
EV92   first digit: 3

Should several control units of the same type (max. 8) be connected to the bus, set an address for each

control unit in order that every control unit will have an address that identifies it unambiguously.

N.B. The MASTER control unit EV87, like SLAVE modules, has a fixed address: "00".

List of connectable SLAVE modules

|	
EV91A	Climatic regulation module
EV91B	Module for domestic water temperature regulation
EV91C	Module for regulating two 1-stage boilers in cascade
EV91D	4 generic outputs module
EV92	8 digital inputs module

Searching SLAVE modules on the BUS

Each time a new or several slave modules are connected to the BUS, you have to run the recognition procedure in the menu "Search SLAVE". This procedure enables to memorise the addresses of the new modules connected, that will be periodically queried and provided with the information necessary for their regular operation (Time - External temperature - etc...)

SYSTEM EXAMPLES
Heating of 1 area with one 1-stage boiler

1 Comando Caldaia relay Ausiliario
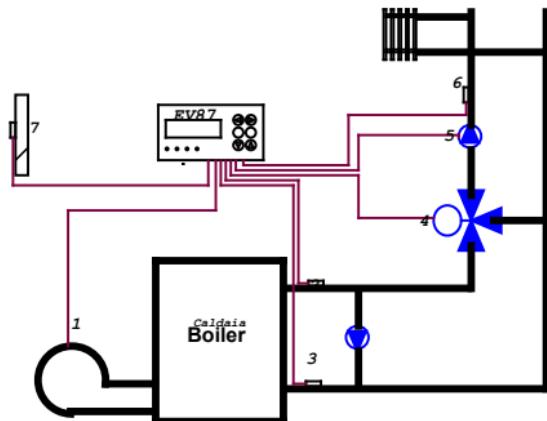

1 Auxiliary relay boiler control
2 Auxiliary boiler probe
3 Optional limit probe
4 Relay 1 and 2 valve control
5 Pump control
6 Delivery probe
7 External probe

Heating of 1 area with domestic water storage tank
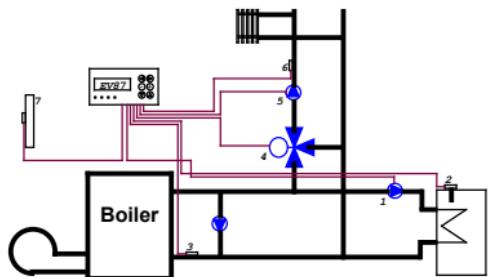
1 Auxiliary domestic water pump control
2 Domestic water temperature probe
3 Optional limit probe
4 Relay 1 and 2 valve control
5 Pump control
6 Delivery probe
7 External probe

### Heating of 2 areas with one 1-stage boiler and 1 domestic water storage tank
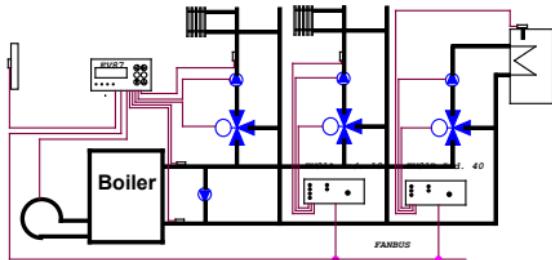
### Heating of 3 areas with one 1-stage boiler (1 EV87 + 2EV91A)
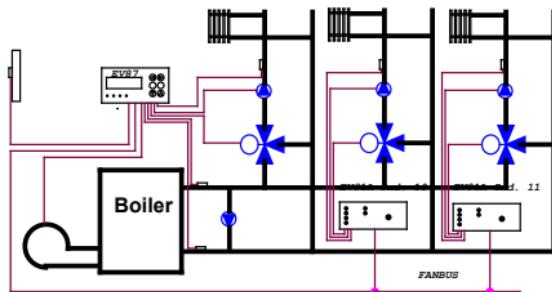
Heating of 2 areas with two 2-stage boilers in cascade (1 EV87 2 EV91A)

Heating/Air-conditioning for panel systems

Heating of 2 areas with four 1-stage boilers in cascade (1 EV87 2 EV91A)
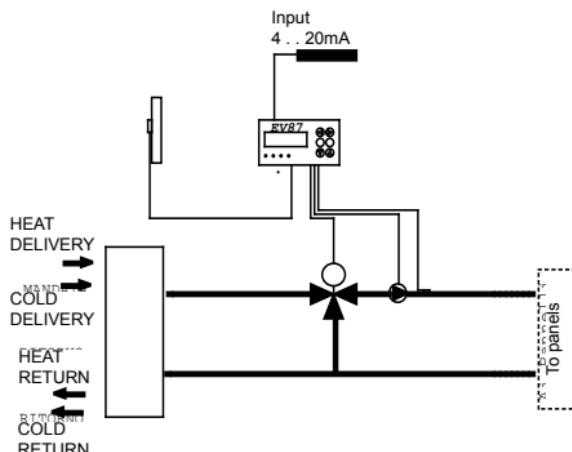
Wiring diagrams

Terminal board wiring diagram
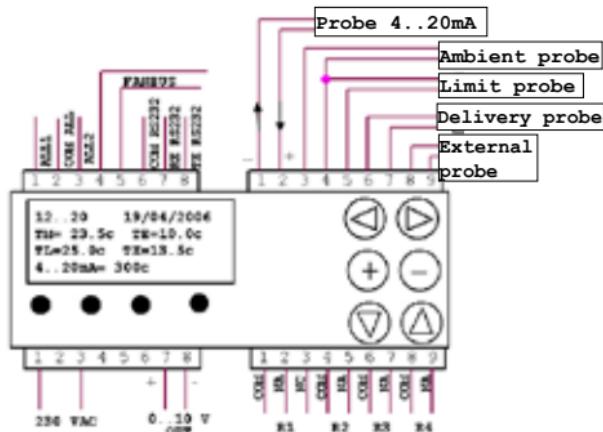
Wiring diagram for control of mixer valves with servo control supplied at 230VAC

Probe 4..20mA
Ambient probe
Limit probe
Delivery probe
External probe
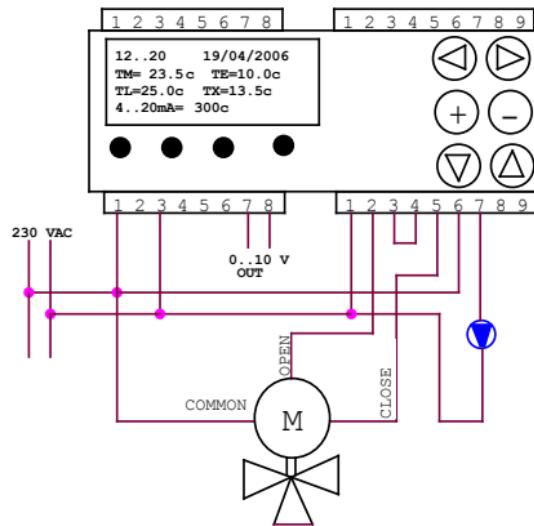
Wiring diagram for control of mixer valves with servo control supplied with voltages other than 230VAC


```
1 2 3 4 5 6 7 8        1 2 3 4 5 6 7 8 9
12..20    19/04/2006
TM= 23.5c  TE=10.0c
TL=25.0c  TX=13.5c
4..20mA= 300c
```

230 VAC

0...10 V OUT

Servomotor supply

OPEN
CLOSE
COMMON
M
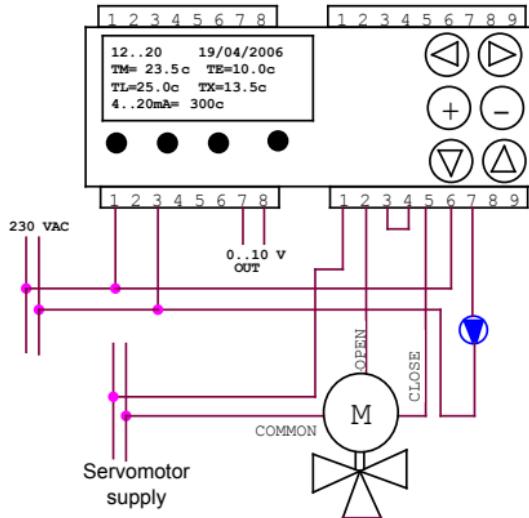
Wiring diagram for ON-OFF control of four 1-stage boilers


```
1 2 3 4 5 6 7 8        1 2 3 4 5 6 7 8 9
12..20    19/04/2006
TM= 23.5c  TE=10.0c
TL=25.0c  TX=13.5c
4..20mA= 300c
```

230 VAC

0...10 V OUT

Burner Boiler 1   Burner Boiler 2   Burner Boiler 3   Burner Boiler 4
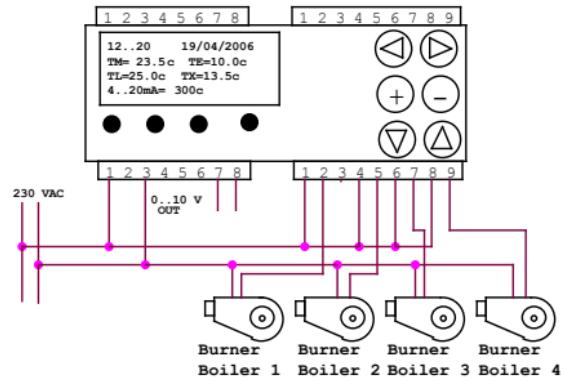
Wiring diagram for ON-OFF control of two 2-stage boilers
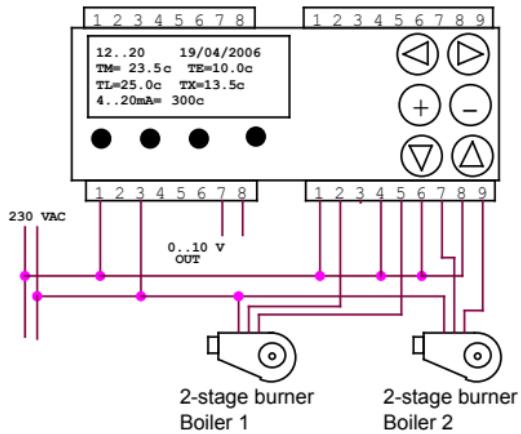
Wiring diagram for ON-OFF control of a 4-stage burner boiler

1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8 9
12..20 19/04/2006	
TM= 23.5c TE=10.0c	
TL=25.0c TX=13.5c	
4..20mA= 300c	

230 VAC

0...10 V OUT

2-stage burner Boiler 1

2-stage burner Boiler 2

4-stage burner boiler

18
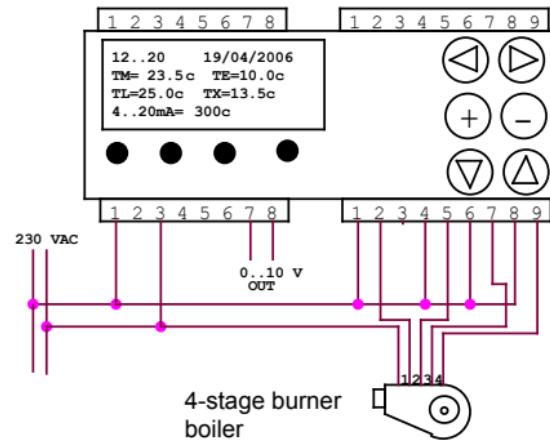
Operation with 2/4-stage boilers or boilers in cascade

The controller compares the delivery temperature value calculated, with the value measured by the temperature probe and if this differential value drops below the set one, the first stage or the first boiler are switched on. In case the differential value between the two temperatures (calculated and measured) is equal to or more than the double set differential, also the second stage or the second boiler will be switched on and so forth for stages/boilers 3 and 4.

In the operation with boilers in cascade, to obtain even boiler consumption you can set **an automatic rotation time for the main boiler** that can be regulated from 0 to 20 days max.
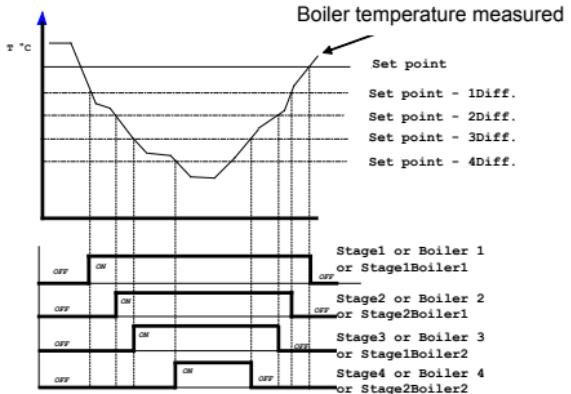
Control sequence for 2/4-stage boiler or 2/4 boilers in cascade or two 2-stage boilers

Alarms and Failures

The EV87 controller manages the following alarms:

1. **Digital inputs alarms**: two voltage free digital inputs that can be used for example to detect gas leaks and boiler cut-off. The status of both digital inputs is displayed in the *"Remote Management"* menu. Connect contacts as shown in the figure on next page:
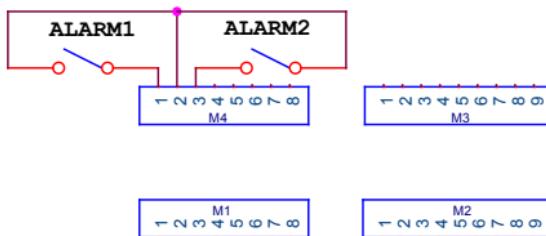
2. **External probe and delivery probe alarms**: these alarms are triggered when these probes are disconnected or short circuited. Should the external probe be faulty, the controller will use the last external temperature value measured. In the event of failure to the delivery probe in valve operation, the valve is stopped and the pump is kept in the current conditions whereas in the burner/boiler operation everything will be shut down.

3. **Limit probe and auxiliary probe alarms**: these alarms are triggered when these probes are disconnected or short circuited. These alarms however are only active if the set-point has been set in the *"Limit probe"* menu or in the *"Auxiliary Regulation"* menu.

4. **Limit threshold exceeded and 4..20mA threshold exceeded**: through the *"Remote Management"* menu you can enable the function Send message for limit threshold and 4..20mA threshold exceeded (see paragraph "Remote Management")

5. **Delivery temperature not reached in mixer valve operation**: through the *"Remote Management"* menu you can enable the function Send message for delivery temperature not reached after a period of time ranging between 2 and 9 hours (see paragraph "Remote Management"). This alarm can be used to signal a malfunctioning of the mixer valve. This function will be automatically deactivated at the end of the alarm cycle.

Settings and Adjustments

Factory settings
The EV87 control unit leaves the factory with all parameters set for standard operation. These parameters can be customized according to the system type. **Should it be necessary to reset factory parameters** (default data), proceed as follows: turn off the power supply, then turn it on again while pressing the "+" key. All data entered will be lost, while factory parameters will be reset as well as the password.

Adjustments
Use keys "▲" and "▼" to scroll the main menu and to move the cursor over a submenu.

Use keys "◄" and "►" to open the selected menu and to scroll the submenu pages
Use keys "+" and "-" to change the parameters highlighted by the blinking cursor

Password

The control unit is provided with a password to prevent unauthorized parameters modifications. Time setting and parameters displaying in the "Information" menu are enabled although the password is not entered.
The password consists of four alphanumeric characters and its default value is:

"1000"

The password can be changed.

N.B. The password is not automatically deactivated, it is therefore essential to deactivate it manually at the end of the setting procedures, to disable all menus.

CONTROL UNIT CONFIGURATION MENU
Main menu
The menu without the password is the following:
- MENU -->
- ....
- >Information
- >Set Current Time
- >Enter PASSWORD
- ....

The menu with the password is the following:
- MENU -- >
- ....
- >Information
- >Set Current Time
- >PASSWORD Set
- >LANGUAGE Set
- >Heating time
- >Cooling time
- >Program
- >Temp. setting
- >Time setting
- >Winter curve
- >Summer curve
- >Configuration
- >Limit Sensor
- >4..20mA Sensor
- >Aux Regulation
- >Remote Manage
- >Recording
- >SLAVE Menu
- ....

Information

```
MENU' -->
..................
>Information
>Curr. Time Set
```

```
14 /APR/2006
SUNDAY 09.55
Outside T: 10.5c
Flow T: 22.0c
```
Submenu 1

```
Limit T:15.5c
Aux. T :60.5c
4..20mA:330b
```
Submenu 2

```
Operating
Mode: COMFORT
Program:
AUTO WEEK. 1
```
Submenu 3

```
Calculated value
Ambient T: 20.0c
Flow Temp: 50.0c
Remote T.: 35.0c
```
Submenu 4

```
Optimization
Setting: 07.00
Delay on:02.00
On:05.00
```
Submenu 5

```
Fantini Cosmi
Via dell'Osio,6
Regolatore EV87
Revisione: 00
```

Submenu 1: Displays the current time and date, the external temperature and the delivery temperature measured at that moment

Submenu 2: Displays the limit temperature, the auxiliary temperature and the value translated by the probe 4..20mA at that moment

Submenu 3: Displays the operating period (SUMMER/WINTER/----) according to the heating/air-conditioning periods set, the set programme and the current operating mode

Submenu 4: Displays the ambient temperature to be obtained, the delivery temperature calculated by the controller and the max. delivery temperature required by the SLAVES (Remote T.)

Submenu 5: Displays the first ON time, the calculated advance switch-on time and the real switch-on time

Set Current Time

```
.................
>Information
>Curr. Time Set
>PASSWORD Set
```

```
Set timing
day: Monday
Hour: 10.16
Date: 14/APR./2006
```
Submenu 1

```
Day light time
actual: LEGALE
start: 26/MAR
End: 29/OTT
```
Submenu 2

Submenu 1: Move the cursor and press the keys "+" and "-" to set: Day, Time, Date, Month and Year

Submenu 2: Move the cursor and press the keys "+" and "-" to set the daylight saving start and stop Day and Month. The controller will calculate automatically when changing the time.

Enter Password

```
>Information
>Curr. Time Set
>PASSWORD Set
>LANGUAGE Sel.
```

```
Set
Password code
Password: 1000
```
Submenu 1

```
Modify
Password code
Password: 20A0
Confirm: 20A0
```
Submenu 2

Submenu 1: Move cursors to the password digits to set and use keys "+" and "-". Submenu 2 will be only enabled if the password entered is correct

Submenu 2: Enter the new code in the Password line and repeat it for confirmation in the next line to change the password code enabling the set-up menus

To enter the new password, the 4 characters must be entered both in the "Password" and in the "Confirmation" fields. To confirm it is essential that the cursor is blinking on the last "Confirmation" character and to press the key ">" (forward).

When in this position, pressing the forward key will automatically confirm the new PASSWORD and go back to submenu 1 "Enter password code"

Password:	1	A	2	1
Confirmation:	1	A	2	1

Choose LANGUAGE

```
>Curr. Time Set
>PASSWORD Set
>LANGUAGE Sel.
>Heating Time
```

```
Language
Selection
 ENGLISH
```
Submenu 1

Submenu 1: Use keys "+" and "-" to select the required language: Italiano - English - Français

Heating period

```
>PASSWORD Set
>LANGUAGE Sel.
>Heating Time
>Cooling Time
```

```
Heating
period
On: 01/GEN
Off: 31/DIC
```
Submenu 1

```
Temporary progr.
Ambient T.: 20.0c
days no.: 01
Hrs no.: 23
```
Submenu 2

Submenu 1: It is used to set the heating period start and stop day and month for all programmes.

Submenu 2: It is used to set a temporary programme to keep a certain ambient temperature for a maximum period of 99 days and 23 hours.

N.B. The temporary programme prevails on the automatic programme selected, for the whole set period of time

Cooling period

```
>LANGUAGE Sel.
>Heating Time
>Cooling Time
>Program
```

```
Cooling
period
Start: --/--
Stop: --/--
```
Submenu 1

```
Cooling Flow
Temp. Limits
Max: 25.0c
Min: 15.0c
```
Submenu 2

Submenu 1: It is used to set the air-conditioning start and stop day and month. Dashes exclude air-conditioning

Submenu 2: It is used to set the calculated min and max delivery temperature, from a minimum of 10°C to a maximum of 35°C

Programme

```
>Heating Time
>Cooling Time
>Program
>Temp. Setting
```

```
Operating programme:
 AUTO WEEK. 1
```
Submenu 1

Submenu 1: Use keys "+" and "-" to select the required programme
N.B. If in the "Configuration" menu the controller has been configured for boiler control, the programme VALVE OPENS and CLOSES cannot be selected.

Set Temperature

```
>Cooling Time
>Program
>Temp. Setting
>Time Setting
```

```
Comfort T: 20.0c
Economy T: 17.0c
Night T: 15.0c
AntiFr.: 05.0c
```
Submenu 1

Submenu 1: Set the required ambient temperatures. If heating is to be excluded, for example at night, set a value below zero; "---.-" will automatically appear. Day temperature is used during the day, the reduced temperature is used during the day between an OFF interval and the next ON one (if set). Night temperature is used during the night after the last OFF time and first ON time of the next day.

Example:
• Set time: **ON1: 07.00 - OFF1: 22.00**
            ON2: --.-- - OFF2: --.--
            ON3: --.-- - OFF3: --.--
Between 07.00 and 22.00 Day T. is used; after 22.00 Night T. is used up to the first ON of the next day.

• Set time: **ON1: 07.00 - OFF1: 12.00**
            ON2: --.-- - OFF2: --.--
            ON3: 17.00 - OFF3: 22.00

Between 07.00 and 12.00 Day T. is used; between 12.00 and 17.00 Reduced T. is used; between 17.00 and 22.00

Day T. is used and after 22.00 Night T. is used up to the first ON of the next day.

Antifreeze temperature is used when the Antifreeze programme is selected.

Prog. Times

```
>Program
>Temp. Setting
>Time Setting
>Winter Curve
```

```
Time program
Change                    Submenu 1
AUTO WEEK. 1
```

```
MON. on-off Copy
        07.00 22.00       Submenu 2
        --.-- --.--
        --.-- --.--
```

```
.... on-off .....
        07.00 22.00       Submenu 2
        --.-- --.--
        --.-- --.--
```

Submenu 1: It is used to select the time programme to be changed (Weekly 1 - Weekly 2 or Daily)

CHANGE WEEKLY 1 - 2 PROGRAMME
Submenu 2: Select the Day to be set, and modify the three time bands. To repeat the same time programme for the other days of the week, move cursor to **Copy** and press key "+". The day will automatically be increased and the three time bands copied.

CHANGE DAILY PROGRAMME
Submenu 2: If in submenu 1 the daily programme is selected, the three time bands to be used for every day of the week can be modified if in the **"Programme"** menu the daily programme is selected.

Winter curve

```
>Temp. Setting
>Time Setting
>Winter Curve
>Summer Curve
```

```
Heating curve
Outside T: 20.0c          Submenu 1
Flow Temp:20.0c
Delay on:00.15hh
```

```
Heating curve
Outside T: 10.0c          Submenu 2
Flow Temp:40.0c
Delay on:00.30h
```

```
Heating curve
Outside T: 00.0c          Submenu 3
Flow Temp:60.0c
Delay on:01.15h
```

```
Heating curve
Outside T: -10.0c         Submenu 4
Flow Temp:80.0c
Delay on:02.15h
```

Submenu 1: First point of the broken regulation curve where you can modify the external temperature value of the first point, the delivery temperature and the required advance time for that Ext. T. value.

Submenu 2: Second point of the broken regulation curve where you can modify the external temperature value of the first point, the delivery temperature and the required advance time for that Ext. T. value.

Submenu 3: Third point of the broken regulation curve where you can modify the external temperature value of the first point, the delivery temperature and the required advance time for that Ext. T. value.

Submenu 4: Fourth point of the broken regulation curve where you can modify the external temperature value of the first point, the delivery temperature and the required advance time for that Ext. T. value.

Summer curve

```
>Time Setting
>Winter curve
>Summer curve
>Configuration
```

```
Cooling curve
Outside T.: 35.0c      Submenu 1
Flow T.: 17.0c
```

```
Cooling curve
Outside T.: 30.0c      Submenu 2
Flow T.: 18.0c
```

```
Cooling curve
Outside T.: 27.0c      Submenu 3
Flow T.: 19.0c
```

```
Cooling curve
Outside T.: 23.0c      Submenu 4
Flow T.: 20.0c
```

Submenu 1: First point of the broken regulation curve where you can modify the external temperature value of the first point and the delivery temperature.

Submenu 2: Second point of the broken regulation curve where you can modify the delivery temperature value.

Submenu 3: Third point of the broken regulation curve where you can modify the delivery temperature value.

Submenu 4: Fourth point of the broken regulation curve where you can modify the external temperature value of the fourth point and the delivery temperature.

Configuration

Controller operating mode is selected in submenu 1:
1. **VALVE**
2. **2-ST. BURN. / 3-ST. BURN. / 4-ST. BURN. / 2BOIL.CASC. / 2BOIL.CASC. / 4BOIL.CASC. / 2 2-ST.BOIL.**

The other submenus vary according to the operating mode selected.

N.B. If the programme selected is **VALVE OPENS** or **VALVE CLOSES**, the boiler operating mode cannot be selected.

```
>Winter Curve
>Summer Curve
>Configuration
>Limit Sensor
```

```
Output control              Output control
for: VALVE          or      for: 2ST. BURNER
Opening time                Differenziale
Min.: 10.00                 Gradi: 05.0c
```

VALVE operating mode

```
Output control
for: VALVE
Opening time
Min.: 10.00
```
Submenu 1

```
Delay-off
time
of the pump
Min. : 10
```
Submenu 2

```
Flow minimun
temperature
to switch-off
Pump: 10.0c
```
Submenu 3

```
F.temperature
differ.: 02.0c
Forced flow
temp : 90.0c
```
Submenu 4

```
Proportional
band
Output
0..10V: +/- 15.0c
```
Submenu 5

```
Relay No 4
operation mode
setting:
AUTOMATIC
```
Submenu 6

```
Sanitary
Water
Priority
Enabled: NO
```
Submenu 7

Submenu 1: In VALVE operating mode it is necessary to set the mixer valve opening time

Submenu 2: To set the delay in pump shut-down. Set 0 minutes to exclude delay

Submenu 3: The pump is automatically shut down when in the winter period the delivery temperature calculated by the controller drops below the preset minimum limit value or when in the summer it rises above the preset maximum limit value

Submenu 4: **The regulation differential (min. 0.5°C max 4.0°C)**, is the dead zone in which the valve is kept stopped.
The forced delivery temperature (min 20.0°C max 99.0°C) is the temperature value regulated during the advance switch-on time. Move the cursor to select the parameter to be modified.

Submenu 5: Use keys "+" and "-" to set output 0..10V proportional band

Submenu 6: Use keys "+" and "-" to set relay no. 4 operating mode.

Submenu 7: Use keys "+" and "-" to set domestic water priority function ON/OFF

BOILERS operating mode

```
Output control
for: 2ST BURNER     Submenu 1
Differential
Deg. : 05,0c
```

```
Burners or           Submenu 2
boilers control
setting :
SLIDING
```

```
Flow temp.           Submenu 3
MIN/MAX limits
MIN. : 01.0c
MAX. : 99.0c
```

```
Temp.Set..: 50.0c    Submenu 4
Remote T: 00.0c
Boilers sequence
Days: 03g
```

```
Proportional         Submenu 5
band
Output
0..10V: +/- 15.0c
```

```
Realy No 4           Submenu 6
operation mode
setting :
AUTOMATIC
```

```
Sanitary             Submenu 7
Water
Priority
Enabled: NO
```

Submenu 1: In BOILERS operating mode it is necessary to set the differential used for switching on in sequence boilers / burner stages

Submenu 2: To set boiler regulation type: FIXED POINT/SLIDING/CLIMATIC

Submenu 3: The boiler temperature calculated is always included between the preset min and max limit values

Submenu 4: **T**he set-point temperature is the temperature value used in the fixed point operating mode. The remote temperature represents the max delivery temperature value required by SLAVE modules and is used in the SLIDING operating mode. Boiler rotation expressed in days, is used to select boiler rotation time.

Submenu 5: Use keys "+" and "-" to set output 0..10V proportional band

Submenu 6: Use keys "+" and "-" to set relay no. 4 operating mode.

Submenu 7: Use keys "+" and "-" to set domestic water priority function ON/OFF.

N.B. **When setting the boilers operating mode, make sure the SUMMER period is excluded.**

Limit Probe

```
>Summer Curve
>Configuration
>Limit Sensor
>4..20mA Sensor
```

```
Limit sensor
Temperature
Set : 50.0c
Measured: 15.0c
```
Submenu 1

```
Limit sensor
value: MAXIMUM
```
Submenu 2

Submenu 1: Set the desired limit. Set dashes (------) to exclude this function.
N.B. If the limit probe is not connected and a set point value is entered, a limit probe failure will be triggered.

Submenu 2: Use keys "+" and "-" to set the desired MINIMUM or MAXIMUM limit.

Probe 4..20mA

```
>Configuration
>Limit Sensor
>4..20mA Sensor
>Aux. Regulation
```

```
>Configuration
>Limit Sensor
>4..20mA Sensor
>Aux. Regulation
```
Submenu 1

```
>Configuration
>Limit Sensor
>4..20mA Sensor
>Aux. Regulation
```
Submenu 2

```
>Configuration
>Limit Sensor
>4..20mA Sensor
>Aux. Regulation
```
Submenu 3

Submenu 1: Set the MINIMUM and MAXIMUM limit and the unit of measurement to be associated to the physical value read by the probe (E.g.: "c" for temperature, "b" for pressure etc..)
Submenu 2: Set the values relevant to the two measurement thresholds 4 and 20 mAmpere. **Minimum value: 000 and maximum value: 800**
Submenu 3: Set the limit set-point to be used. Set dashes (------) to exclude this function.

Auxiliary Reg.

```
>Limit Sensor
>4..20mA Sensor
>Aux. Regulation
>Remote Manage
        Connection to
        Aux.Channel with
        AUSILIARY SENS
```

or

```
Connection to
Aux.Channel with
SETPOINT ADJUS.
ADJUS . : 0.3.0c
```

or

```
Connection to
Aux.Channel with
AMBIENT SENSOR
AMBI.T. : 15.5c
```
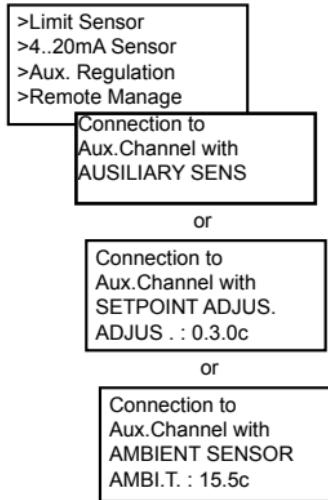
Submenu 1: Probe operating mode is selected in submenu: AUXILIARY PROBE/SET CORRECTION/AMBIENT PROBE. When selecting **"Set Correction"** the correction value set on the EC10 by knob is displayed. When selecting **"Ambient Probe"** the temperature value read by the EC10 at that moment is displayed. Selecting "Auxiliary Probe" and "Ambient Probe" will enable a second submenu:

AUXILIARY PROBE

```
Connection to
Aux.Channel with
AUSILIARY SENS
```

```
Connection to              Connection to
Aux.Channel with    or     Aux.Channel with
AUSILIARY SENS             AUSILIARY SENS
```
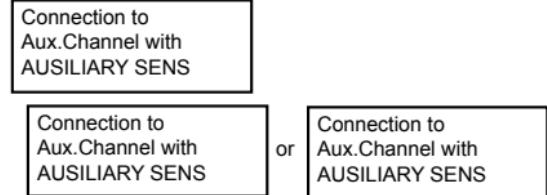
Submenu 2: To select whether to use the FIXED or SLIDING temperature regulation
FIXED: Set temperature will be regulated
SLIDING: Set value will be added to the max delivery temperature value required between EV87 and the SLAVE modules connected

AMBIENT PROBE

```
Connection to
Aux. channel with
AMBIENT PROBE
```

```
Ambient temperature
authority:
02.0
```
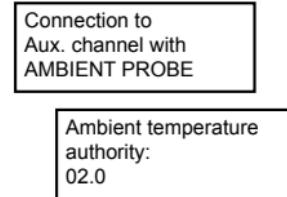
Submenu 2: It is used to set the K authority in the thermoregulation algorithm. See paragraph **"Auxiliary Regulation"**

Remote Management

```
>4..20mA Sensor
>Aux. Regulation
>Remote Manage
>Recording
```

```
Send message          Submenu 1
Auxiliary
Treshold
Overtaking: NO
```

```
Send message          Submenu 2
4..20 mAmp
Treshold
Overtaking: NO
```

```
Send message          Submenu 3
Flow temp.non
Reached : NO
After Hr: 2
```

```
Digital inputs        Submenu 4
And sensors
Failure status.:
1 2 3 4 5 6
```

```
Serial                Submenu 5
Connection by
DATA MODE
```

```
Mobile teleph.        Submenu 6
Number 1
345645555665454
```

```
EV87 description      Submenu 7
Installation :
REGOLATORE EV87
```

Submenu 1: Select **"YES"** if you want to send a message in remote management when the auxiliary threshold is exceeded

Submenu 2: Select **"YES"** if you want to send a message in remote management when the 4..20mA threshold is exceeded

Submenu 3: Select **"YES"** if you want to send a message in remote management when the desired delivery temperature value is not reached after a certain time (2 to 9 hours), to be set

Submenu 4: Describes the status of the probes and of the 2 digital inputs: 1 = External probe failure 2 = Delivery probe failure 3 = Limit probe failure 4 = Auxiliary probe failure 5 = Digital input 1 6 = Digital input 2

Submenu 5: To set the modem communication mode: **DATA MODE** or **SMS MODE**

Submenu 6: You can enter up to three phone numbers to send SMS messages. If DATA mode is selected the first phone number is used. To enter phone numbers, select mobile phone no. and then enter the relevant digits. Blank identifies the end of the phone number. If the first character entered is blank, the phone number cannot be recognized.

Submenu 7: You can customise the name of the master control unit (up to 16 characters) used when sending messages in SMS mode or DATA mode.

Set the **SMS MODE** to communicate with the control unit and to monitor and set the main functions via SMS text messages by mobile phones.

Set the **DATA MODE** to communicate with the control unit via PC using the remote management programme called **FANVISOR**.

In both operating modes, **a triggered alarm or a ceased alarm** will start an alarm sequence to the PC or the mobile phone via SMS. If after 15 minutes no communication is received indicating that the signalling has been received, the control unit will repeat the cycle; the same is done after further 15 minutes. A new cycle will be started at any change in the alarm situation. In SMS MODE at the first alarm call the text message is sent to mobile phone No. 1, at the second call to mobile phones No. 1 and 2 and at the third call to mobile phones No. 1 2 and 3.

Datalogger

```
>Aux. Regulation
>Remote Manage
>Recording
>SLAVES Menu
```

```
Rec. Number :
Regime: NIGHT          Submenu 1
All: - - - -
00.00 MON.
```

```
Tm: 33.5c Tmc: 65,5c
Tl: 30.5c Te: 15.5c    Submenu 2
4..20mA: 350c
Tx: 25.5c
```

```
Rec. Number : 28
Regime: DAY            Submenu 55
All: - - - 4 - -
10.15 SUN.
```

```
Tm: 33.5c Tmc: 65,5c
Tl: 30.5c Te: 15.5c    Submenu 56
4..20mA: 350c
Tx: 25.5c
```

35

Submenu 1: To display data relevant to the last recording made with: recording number, operating mode, alarms, time and day

Submenu 2: To display data relevant to the last recording made with: delivery temperature measured, delivery temperature calculated, temperature measured by the limit probe, external temperature, physical value read by probe 4..20mA and temperature measured by the auxiliary probe.

Submenu 55: To display data relevant to the oldest recording

Submenu 56: To display data relevant to the oldest recording

Recording usually takes place every 2 hours. Each time there is a change in operating modes, recording is repeated for eight times every 15 minutes to verify for example how delivery temperature and ambient temperature change after a change in operating modes.

Memorise SLAVE

```
>Remote Manage
>Recording
>SLAVES Menu
.....................
```

```
Press '+' to
search SLAVE          Submenu 1
Press '>' to
Visualize SLAVE
```

```
MENU SLAVE -->
EV91A 10              Submenu 2
EV92 30
```

Submenu 1-2: Press key "+" to start searching all the connected SLAVES. This operation shall certainly be carried out at first installation, and also each time a new SLAVE module is added. If SLAVE modules are memorised pressing key ">" will open submenu 2 "SLAVE MENU", otherwise you go back to the main menu.

Submenu 2 lists the memorised slave modules use keys ▲ and ▼ to scroll. The SLAVE module to be handled will be highlighted by the blinking cursor.

Press key ► to open the menu relevant to the slave selected. For details on the slave menu refer to the SLAVE instruction sheet.

N.B. Search of connected SLAVE control units is to be performed just once. The SLAVE control unit, identified by an address, is memorised by the EV87 MASTER. This information will be kept also if power supply is lacking.

REMOTE CONTROL AND REMOTE MANAGEMENT

The EV87 controller and the connected SLAVES can be remotely managed via SMS mode or DATA MODE communication, to be selected in the **"Remote Management"** menu.

Connection to the DB9 connector

CONNETTORE DB9
DB9 CONNECTOR
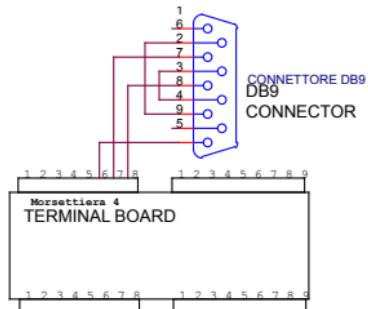
Follow this diagram to connect the serial cable to the modem

Morsettiera 4
TERMINAL BOARD

SMS mode

RS232
Serial Cable
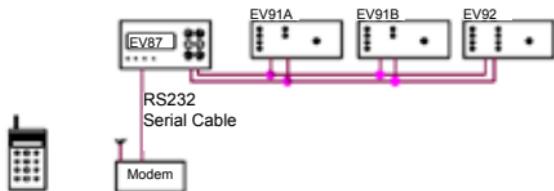
Modem

By connecting the EV87 controller through a serial cable to a GSM modem and setting the SMS mode, the significant parameters of the control unit can be set and read using the SMS commands listed in the following pages. SLAVE control units connected to the MASTER can also be queried via SMS commands. These commands are listed in the instruction sheets relevant to each device.

To properly communicate with the desired device (MASTER or SLAVE), every command must be preceded by two digits identifying the device's address. More particularly, to address commands to the EV87 controller, you must first enter **"00"**.

The GSM modem works with any SIM card. Before using one with the Modem, however, we recommend that you test it in a mobile phone to see if it's working. Particularly:

- Check that no PIN code has been set. If so, ex
  clude it
- Check the remaining credit if the SIM card is of the
  rechargeable credit type
- Send an SMS message and check if it arrives

Remote management SMS commands

These commands may be used through a mobile phone by sending an SMS message containing the command message to the SIM number of the modem connected to the EV87 controller that will answer with a reply message to the phone number that has sent the SMS. To facilitate the reply message reading, the information is enclosed in a "<" and ">" sign. Every reply message is preceded by a description of the EV87 control unit.

• **00ORA=?** Requests information about the state of the EV87 controller
Reply:
**<Desc.EV87><Giorno><ora.min><TE=..,.c><TM=.
.,.c><TL=..,.c>**
**< T x = . . , . c > < 4 . . 2 0 m A = . . , . c > < T .
Remot.=..,.c<Programma><Regime>**

• **00TA=?** Requests the ambient temperatures set (Day-Night-Reduced-Antifreeze)
Reply:

**<Desc.EV87><TAG=..,.c><TAR=..,.c><TAN=..,.c<
TAA=..,.c>**

• **00TM=?** Requests the four delivery temperature values set on the broken regulation curve
Reply:
**<Desc.EV87><TME1=..,.c><TME2=..,.c><TME3=..,
.c><TME4=..,.c>**

• **00PROGG=?** Requests the programme schedule for the day
Reply:
<Desc.EV87>
**<PROGG   ON-OFF><06,00   08,45><12,00
16,30><18,00 22,30>**

• **00PER-I=?** Requests the heating period
Reply:
<Desc.EV87>
<PER-I=01/01 31/12>Start 1st January   End 31st December

• **00PER-E=?** Requests the air-conditioning period
Reply:
<Desc.EV87>
<PER-E=01/05 30/09>Start 1st May   End 30th September

• **00PROG(1-7)S(1-2)=?** Requests the programme

schedule for the weekly programme 1 or 2 for a day.
Example: PROG3S2=? Request the programme schedule for the day Wednesday of the Weekly programme 2
Reply:
\<Desc.EV87>
\<PROG3S2   ON-OFF>\<06,00   08,45>\<12,00 16,30>\<18,00 22,30>

• **00ORA=12.15** Sets the current time
Reply:
\<Desc.EV87>\<Giorno>\<ora.min>\<TE=..,.c>\<TM=. .,.c>\<TL=..,.c>
\< T x = . . , . c > < 4 . . 2 0 m A = . . , . c > < T . Remot.=..,.c\<Programma>\<Regime>

• **00TAG=15.5** Sets the day temperature
• **00TAN=15.5** Sets the night temperature
• **00TAR=15.5** Sets the reduced temperature
• **00TAA=15.5** Sets the antifreeze temperature
Reply for all the above 4 commands:
\<Desc.EV87>\<TAG=..,.c>\<TAR=..,.c>\<TAN=..,.c>\< TAA=..,.c>

• **0000TME1=10.0** Sets the delivery temperature point one on the broken regulation curve
• **00TME2=40.0** Sets the delivery temperature point two on the broken regulation curve
• **00TME3=60.0** Sets the delivery temperature point three on the broken regulation curve
• **00TME4=80.0** Sets the delivery temperature point four on the broken regulation curve
Reply:
\<Desc.EV87>\<TME1=..,.c>\<TME2=..,.c>\<TME3=.., .c>\<TME4=..,.c>

• **00PROGG=10.00 12.00 --.-- --.— 17.00 22.00** Sets the programme schedule for the day
\<Desc.EV87>
\<PROGG   ON-OFF>\<06,00   08,45>\<12,00 16,30>\<18,00 22,30>
• **00PROG(1-7)S(1-2)=10.00 12.00 --.-- --.— 17.00 22.00** Sets the programme schedule for the weekly programmes. **Example: 00PROG2S1=10.00 12.00 --.-- --.— 17.00 22.00** Sets the programme schedule for the Weekly programme 1 of the day Tuesday
Reply:
\<Desc.EV87>
\<PROG2S1   ON-OFF>\<10,00   12,00>\< --,-- --,-->\<17,00 22,00>

• **00PAUT1** Sets the Automatic Weekly 1 Programme
• **00PAUT2** Sets the Automatic Weekly 2 Programme
• **00PAUTG** Sets the Automatic Daily Programme
• **00PNOT** Sets the Night Programme
• **00PGIO** Sets the Day Programme
• **00PANT** Sets the Antifreeze Programme

Reply:
**<Desc.EV87><Giorno><ora.min><TE=..,.c><TM=.
.,.c><TL=..,.c>**
**< T x = . . , . c > < 4 . . 2 0 m A = . . , . c > < T .
Remot.=..,.c<Programma><Regime>**

• **PER-I= 02/01 10/10** Sets the heating period from the 2nd January to the 10th October. Reply as indicated above.
• **PER-E= 01/05 30/07** Sets the air-conditioning period from the 1st May to the 30th July. Reply as indicated above.
N.B. To exclude the air-conditioning period send command:
PER-E= – –

• **RESETTA**
• **SI**
Both messages communicate to the control unit that alarms have been received, the alarm sending cycle can therefore be stopped
Reply:
<Desc.EV87><ALLARMI CANCELLATI>>

Sending ALARMS via SMS messages
The alarmed control unit sends the following message:
<Desc.EV87><ALL.SONDE 1 2 3 4><ALL.INPUT 1

2><SOGLIA AUX.>
<SOGLIA 4..20mA><TEMP.MANDATA NON RAG-GIUNTA>

The message is composed according to the failure present. The above example describes the presence of all possible failures.
Examples:
1. for failure involving just the external probe the message will be:
<Desc.EV87><ALL.SONDE 1 - - ->
2. for failure involving just the digital input 2 the message will be:
<Desc.EV87><ALL.INPUT - 2>
3. for failure involving the external probe and the digital input 1 the message will be:
<Desc.EV87><ALL.SONDE 1 - - -><ALL.INPUT 1 ->
4. for failure involving the external probe, the limit probe and the digital input 1 the message will be:
<Desc.EV87><ALL.SONDE 1 - 3 -><ALL.INPUT 1 ->

Messages "AUX. THRESHOLD exceeded", "4..20mA THRESHOLD exceeded" and "DELIVERY TEMP. NOT REACHED" can only be sent if the relevant function has been enabled in the **"Remote Management"** menu.
When passing from an alarm situation to a ceased

alarm situation, the control unit will send the following message:
<Desc.EV87><NESSUN ALLARME>

DATA mode
By connecting the EV87 controller through a serial cable to a modem and setting the DATA mode, the significant parameters of the control unit can be set and read using a **PC** on which has been installed the operating software called FANVISOR.

The FANVISOR software enables to read and to set the significant parameters of the EV87 controller and the connected SLAVE units. Moreover, it receives automatically all existing failures and it stores them in a file of prompt consultation.

Dimensions
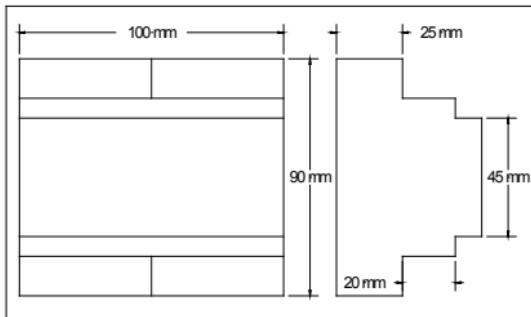
Technical Data

- Power supply: 230 Vac +/- 10%
- Consumption: 5VA
- Protection: IP40
- Contact rating: 5(3) A - 230 Vac
- Ambient temperature: 0...45°C
- Software: Class A
- RS232 serial port for modem connection
- 2 digital inputs
- One 4..20mA input
- One 0..10V output (max load 3mA)
- Data stored for 5 years
- DIN container - 6 modules
- 2 weekly programming with 3 time bands per day
- One daily programming with 3 time bands
- Clock charge: 5 years
- External probe detection range: -30..+40°C
- Delivery/limit/auxiliary probe detection range: 0..+99°C
- ErP classification: ErP Class VI; 4% (EU Reg. 811/2013 - 813/2013)

Contents

EAC CE