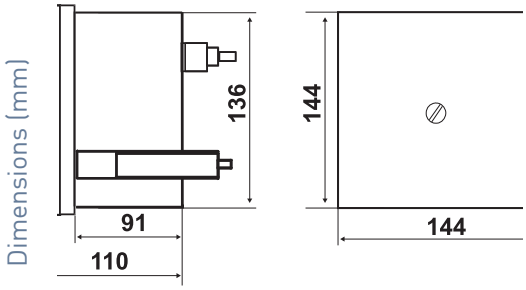
# EV90

## Digital controller for complex technological and thermal systems, local and remote control- MASTER

EV90 remote controller is used in particularly complex systems where several different devices are required to solve heat regulation problems. The system consists of a master device EV90, and one or more slave devices connected to the master through a communication bus called - FANBUS.


### EXPANSION MODULES (SLAVES)

- 1 FANBUS communication channel for connecting the Slaves with Master EV87.
- All parameters are displayed and modified via EV87 Master controller.
- DIN-rail mounting, 6 modules.
- Power supply - 230V 50Hz.
- Consumption: 7 VA.
- Removable terminal block for easy wiring.

EV91A TEMPERATURE CONTROL MODULE WITH EXTERNAL PROBE

- Regulation curve broken in 4 temperatures.
- Weekly programming with 6 on and off schedules for each day.
- Switch-on time optimization.
- 4 relays 5A-250Vac
- 1 analog input for the external temperature (opt.).
- 1 analog input for the delivery temperature.

EV91B FIXED POINT TEMPERATURE CONTROL MODULE FOR SANITARY HOT WATER

- Weekly programming with 6 on and off schedules for each day.
- Water temperature control: 0 ÷ 100°C.
- 3 relays 5A - 250V c.a.
- 1 analog input for temperature measuring.

EV91C CONTROL MODULE FOR TWO CASCADE BOILERS

- Water temperature control: 0 ÷ 100°C.
- Boiler minimum and maximum temperature limits.
- Can be connected up to 8 boilers.
- 4 relays 5A - 250V c.a.
- 2 analog inputs for temperature measuring.

EV91D GENERIC OUTPUT MODULE

- Configuration of each of the 4 relays:
- Relay ON - OFF - timed relay
- Daily programming for each of the 8 outputs.
- 4 relays 5A - 250V c.a.

EV92 DIGITAL INPUTS MODULE

- Active status setting for each of the 8 inputs:
- opening - closing
- Configuration setting for each of the 8 inputs:
- breakdown on-breakdown off-timed breakdown
- Daily programming for each input.
- 8 voltage free digital inputs.

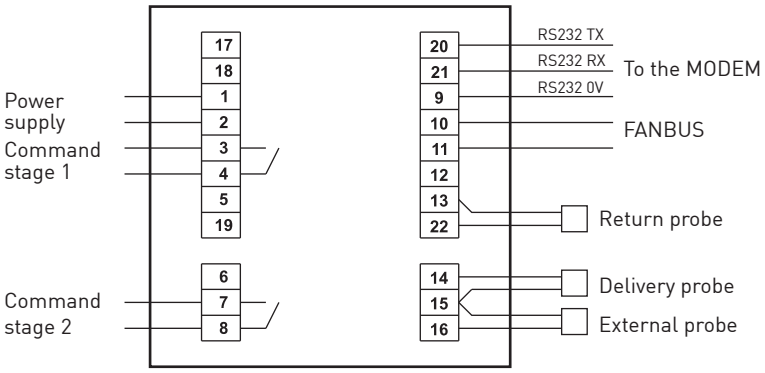
| | Power supply | Contacts rating | Operation admissible temperature | Protection degree |
|---|---|---|---|---|
| EV90 | 230Vac 50 Hz | 5A - 250Vac | 0 ÷ 50 °C | IP40 back-panel |

# ELECTRICAL FEATURES

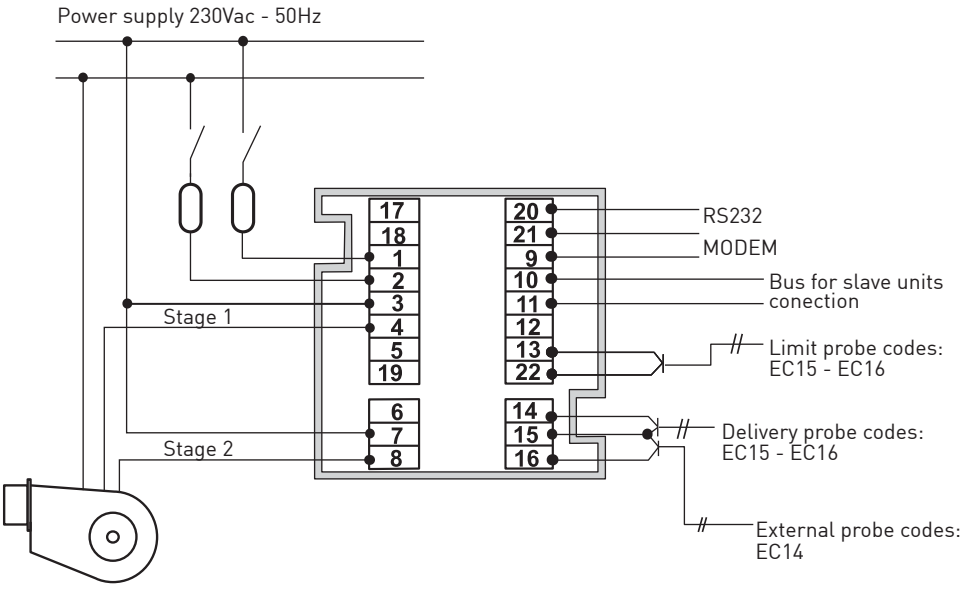
Power supply: 230Vac 50Hz.
Consumption: 5 VA.
2 output relays, contacts rating 5A- 250Vac (resistive load).
3 analog inputs:

- 1 to measure the external temperature;
- 1 to measure the delivery temperature;
- 1 to measure the return temperature.

1 RS232 communication channel for connection to a modem or directly to a computer.
1 communication bus FANBUS for SLAVE management.

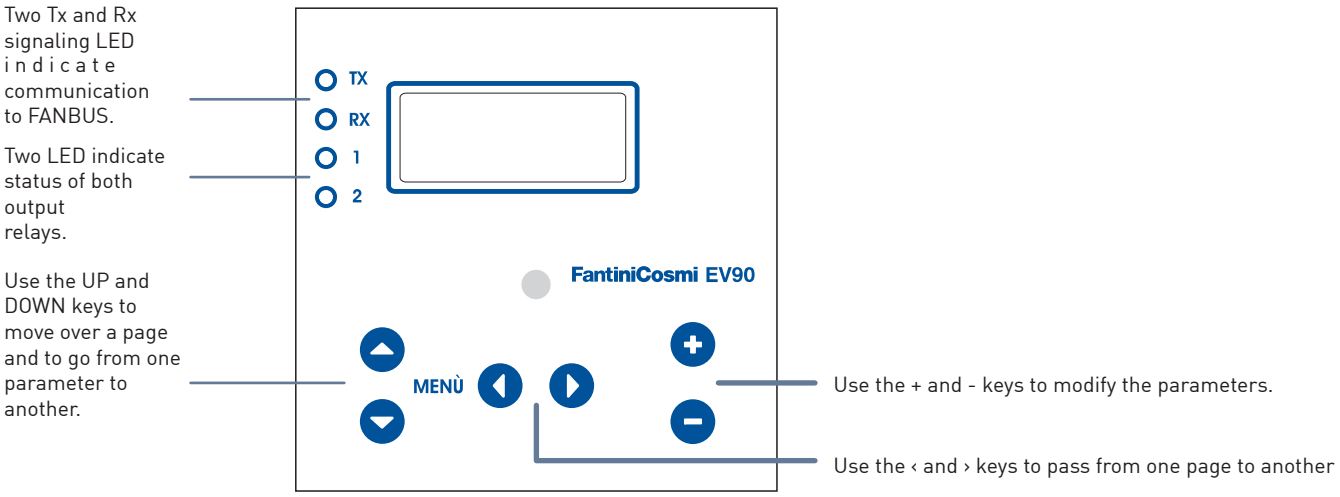



Voltage free relay contacts




# OPERATION

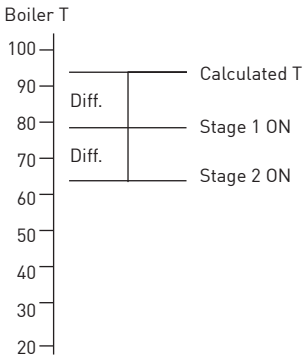
The device operates as a central control unit. Through its display and keyboard the user may display and modify parameters of slave control units connected to the FANBUS. A probe detects the value of the external temperature which is sent by means of the FANBUS to all relevant control units thereby avoiding duplication.
The hour and date, including standard time, may be set directly on the front of the device and used by all devices connected to the BUS. Just one GSM modem lets you remotely manage and modify the parameters of the Master EV90 and all other control units. When an alarm is triggered by a slave, it is first transmitted to the master EV90 and then to a remote station or to an enabled mobile phone. Another function of EV90 is boiler regulation (with 1 or 2 stages); it maintains a high enough boiler temperature to provide all connected users with heat.




## OPERATION AS BOILER CONTROL UNIT

Besides performing the function as the master of a system, the EV90 may be used as the control unit of a boiler with either fixed temperature or sliding temperature, by directly commanding a one- or two-stage burner.
Through a measuring probe the device detects the temperature value of the boiler. If the temperature value drops below differential 1, the first stage is turned on, and if it drops below differential 2 and stays there for a certain period of time, the second stage is also turned on.
The command of the relays is visible on the front of the device.
The boiler may be turned on and off according to a weekly program that may be set on the same control unit.

## 2-STAGE OUTPUT




## CALCULATED BOILER TEMPERATURE

The boiler temperature calculated by the control unit may be fixed or sliding. In first case when it is fixed, the value set will not be changed, but in the second case when it is sliding, the value set is added to the highest temperature value required by connected slaves. In this way it is possible to regulate the boiler with a temperature that continuously varies depending on the requirements of the entire system.
N.B. when is set the desired boiler temperature value, bear in mind that with fixed point regulation it is the value the control unit uses, and with sliding regulation, it represents an increase according to the highest value decided by the various control units of the system.
You may set the highest and lowest boiler temperature limits within which the calculated temperature may vary. The control unit will ensure that these values are not exceeded.

## DIFFERENTIAL 1

Differential of the first stage. It indicates the temperature difference with the one calculated by the control unit below which the first stage of the burner is turned on.

## DIFFERENTIAL 2

Differential of the second stage. It indicates the temperature difference with the one calculated by the control unit below which the second stage of the burner is turned on. To avoid useless or untimely interventions, this situation should persist for a certain length of time (may be set on the control unit).

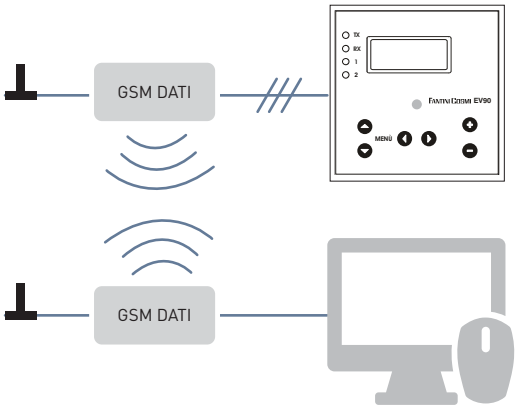
## REMOTE CONTROL

By connecting the EV90 controller to a GSM modem it is possible to receive SMS alarm messages after switching one of the two available alarm contacts.
To connect the controller to a GSM modem, follow the instructions relative to the wiring diagram, or use the TCEV85 cable.
N.B. The maximum length between the controller and the modem is 15 meters.
If the management takes place through a GSM modem is sufficient to use a cell phone.
If is used a GSM modem in data mode, it is necessary to use a Personal Computer with a control software available only in Italian language provided by Fantini Cosmi or downloaded via Internet.
By sending appropriate SMS messages to the modem connected to the controller is possible to read and modify remotely the following parameters:

- times programming;
- day, night and antifreeze temperature settings;

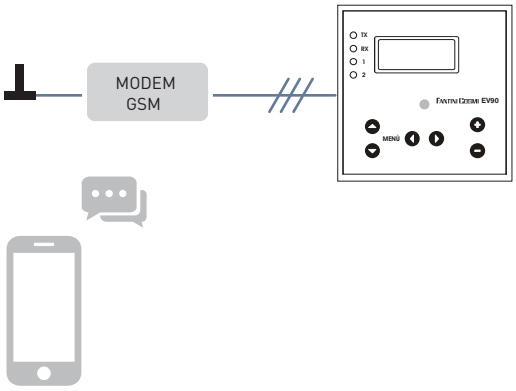
- regulation broken curve values;
- auxiliary preset temperature;
- measured temperatures reading;
- alarm calls cancellation.

DATA CONNECTION




Personal computer

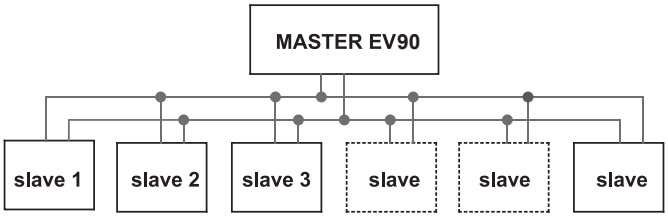
SMS CONNECTION




Mobile phone

## FANBUS

You may connect 15 different types of control units to the FANBUS with maximum 8 control units of the same type (so 15x8 = max of 120 control units).
You may connect the EV90 control unit to the slave with a simple low voltage, polarity free bifilar duplex cable (both wires may be inverted with each other without causing malfunction).
All slaves must be connected in parallel to the BUS.




# STANDARDS AND HOMOLOGATIONS

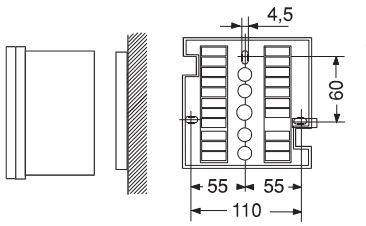
Complies with the law 373, law n.10 dated 9 of January 1991 and D.P.R.412 dated 26 of August 1993.
In conformity with EN 60730-2-9; EN 60730-2-7 standards

CE EAC

# INSTALLATION

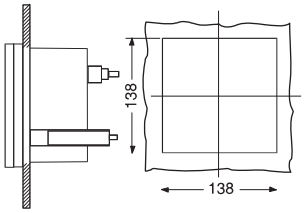
Control unit with fast coupling to the base with FASTON connections. Application possibilities: wall, rear panel and flush mounting.

Wall mounting




With brackets for rear panel mounting type 303326D

Rear panel mounting

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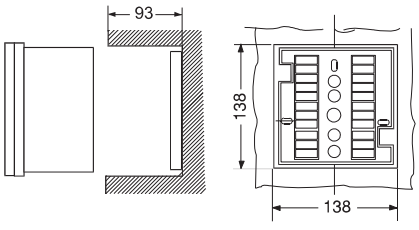



# FEATURES

Alphanumeric display and configuration keys. All commands and functions are selected by means of menu and adjustable via two keys (+ and -).
All parameters values are displayed on a 4-line alphanumeric display with 16 characters per line. Two other keys are used to pass from a parameter to another and to scroll through the configuration menu.
The date and the time, including summer/winter time changing, can be set directly on the MASTER EV90 front and used by all devices connected to the FANBUS.
Transparent protection cover.
Digital clock with charge reserve of 5 years.
Boiler regulation (with 1 or 2 stages) maintaining a high enough boiler temperature in order to provide all connected users with heat.

# ACCESSORIES

EM70S
GSM-modem with power supply unit and antenna.

N70A
Power supply unit and battery charger.

1590029
Rechargeable battery 12V-1,2Ah.

EV91A
Temperature control module with external probe

EV91B
Fixed point temperature control module for sanitary hot water

EV91C
Control module for two cascade boilers

EV91D
Generic output module

EV92
Digital inputs module

EV92
Digital inputs module

EC10
Ambient probe

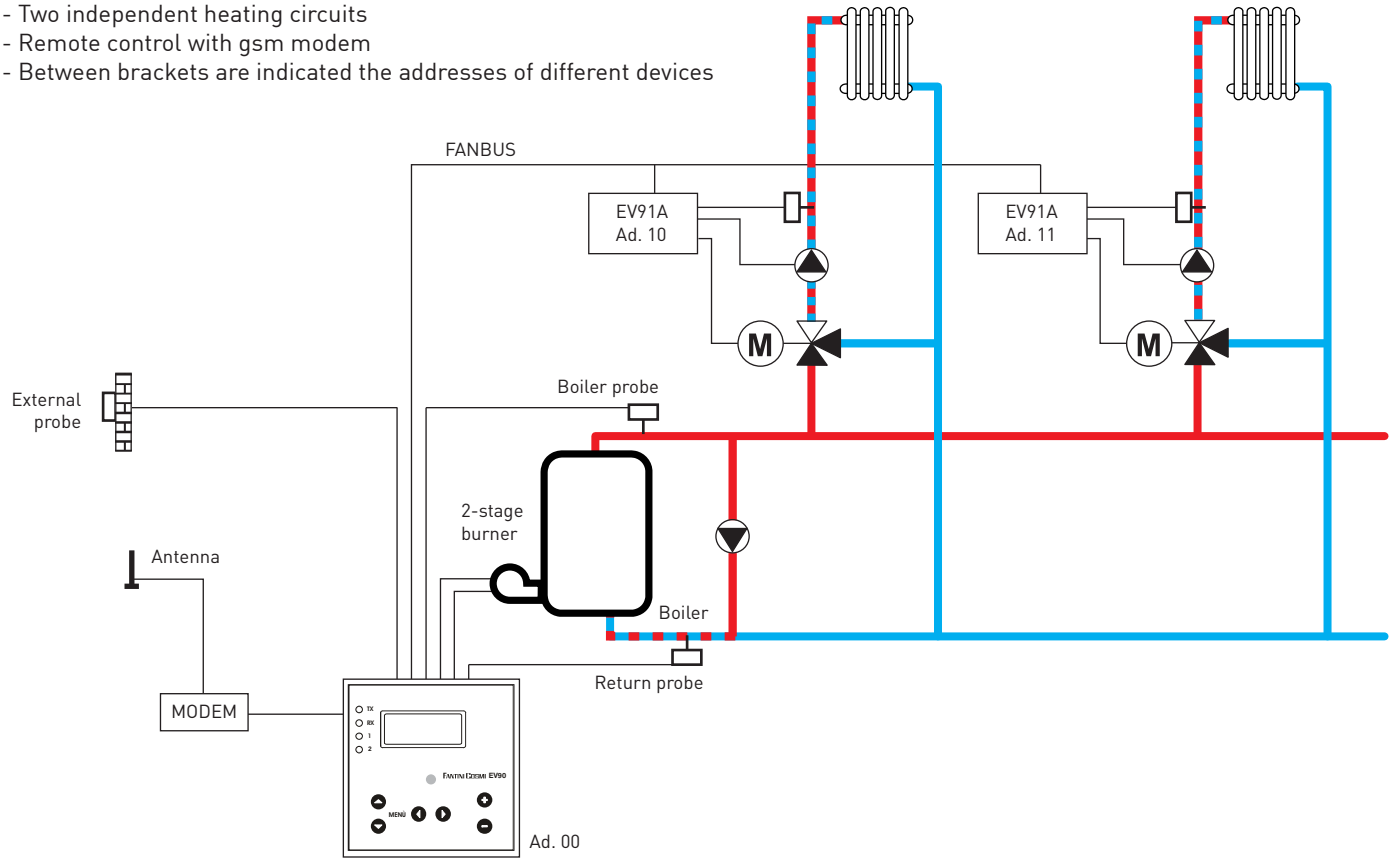
EC14
External probe

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

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

# SYSTEM EXAMPLES

- 2-Stage boiler control
- Two independent heating circuits
- Remote control with gsm modem
- Between brackets are indicated the addresses of different devices




- Two cascade boilers control
- Two heating circuits
- Boiler regulation for sanitary hot water
- Remote control with gsm modem