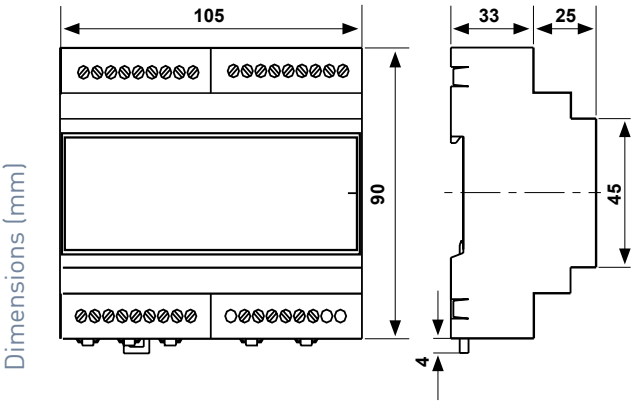
EV91A

Temperature compensator module with external probe - SLAVE

Suitable for all central heating systems, such as those related to residential buildings, schools, hospitals, factories etc. Each setting may be controlled by an EV91A type control unit for maximum eight environments. EV91A module is able to completely manage a mixing valve, a circulation pump and an auxiliary output.



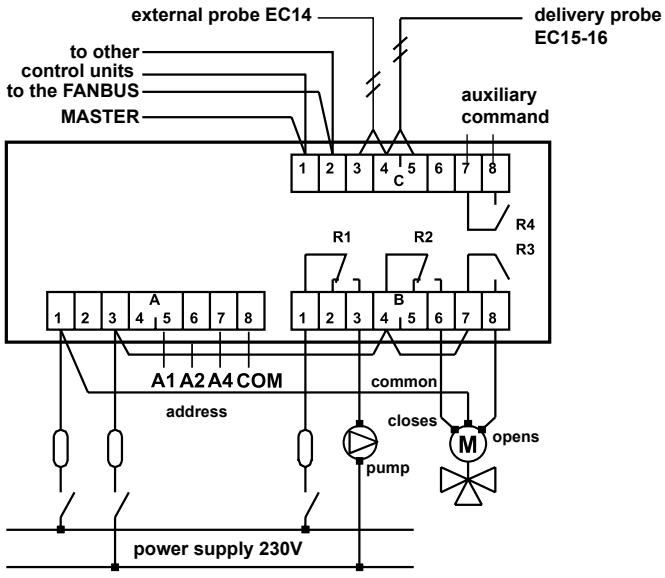
	Contacts rating	Power supply	Operation admissible temperature °C	Protection degree
EV91A	5A - 250Vca	230V 50 Hz	0 ÷ 50	IP40 (back panel)

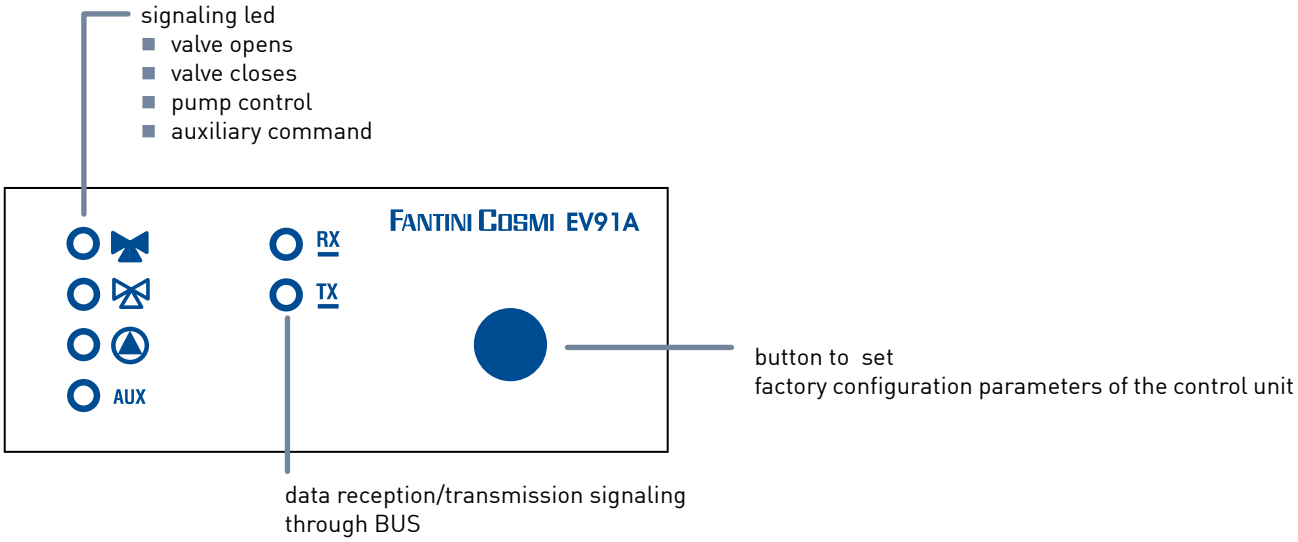
ELECTRICAL FEATURES

Power supply: 230Vca 50Hz.
Consumption: 7 VA.
4 output relays.
- 2 to control the mixing valve.
- 1 to control the circulation pump.
- 1 auxiliary synchronous with the clock.

1 communication channel - FANBUS.
1 analog input for external temperature (optional).
1 analog input for delivery temperature.

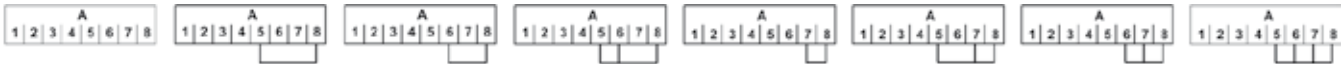
ELECTRICAL WIRING EXAMPLE





CONTROL UNIT ADDRESS

In order to work properly, the control units must be addressed through the terminal board. EV91A address is composed of a high part that corresponds to the number "1" and a low part that may assume a value from "0" to "7". The MASTER starts a progressive search of EV91A SLAVES from address 10 and stops when it gets a reply. It is therefore necessary that connected slaves have different consecutive addresses starting from address "10". The below diagrams show how to set the low part of the address by acting on terminal board 'A':

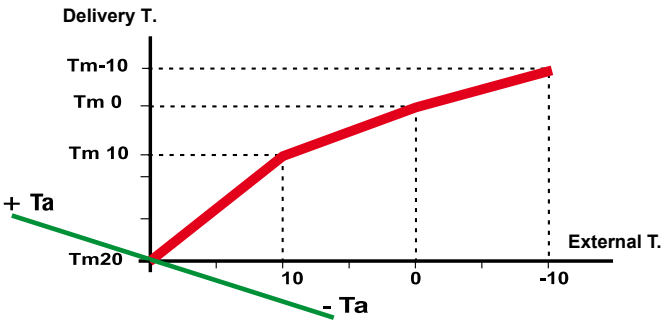


ADDRESS "10" ADDRESS "11" ADDRESS "12" ADDRESS "13" ADDRESS "14" ADDRESS "15" ADDRESS "16" ADDRESS "17"

OPERATION

EV91A scope is to obtain a certain AMBIENT TEMPERATURE by measuring the delivery temperature and the external temperature.

The user sets the ambient temperature through a configuration menu visible on the EV90 or EV87 display, and may assume various values according to the selected program. In the moment the device recognizes a program type, it calculates the DELIVERY TEMPERATURE necessary to obtain the ambient temperature associated with the program. This is calculated through interpolation by using set values of the delivery temperature for four external temperature values (20°;10°; 0°;-10°). This curve represents delivery temperature values based on the external temperature to obtain an ambient temperature of 20°C. For other ambient temperatures, the broken line moves along the straight line "+Ta -Ta".



Slave EV91A works properly only when it is connected to another unit by means of a two-wire serial bus (FANBUS), which has the function to arbitrate bus data and to check the state of all devices connected to it. This unit is called MASTER and may be the control unit EV90 or the control unit EV87.

The MASTER sends to EV91A all information that makes it possible to control the hour, current date, and so on.

OUTPUT RELAYS

The four output relays have the following functions:

- circulation pump control;
- valve opening command;
- valve closing command;
- auxiliary command.

CIRCULATION PUMP (if present)

It is activated in order to allow water circulation inside the heating system and is turned off when the delivery temperature calculated by the control unit decreases below the minimum value set by the user.

MIXING VALVE
The mixing valve is commanded to open and close by means of two relays, in order to allow the delivery temperature to reach temperature value calculated by the control unit.

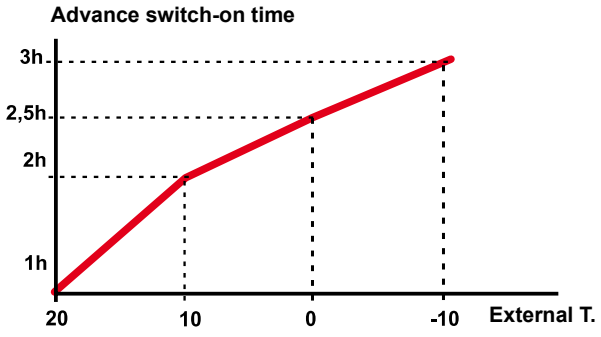
AUXILIARY OUTPUT
The auxiliary relay simply follows the operating mode. Specifically, the relay closes when the operating mode is DAYTIME, FORCED or TEMPORARY. In all other cases it is opened.

OPERATING PROGRAMS
The controller is able to function with different programs selected by the user:
- VALVE OPENS: activates the circulation pump and triggers the mixing valve opening in manual mode.
- VALVE CLOSES: disables the circulation pump operation and triggers the valve closing in manual mode.
- ANTIFREEZE: it uses the ANTIFREEZE temperature set for calculating the delivery temperature.
- NIGHT: it uses the NIGHTTIME temperature set for calculating the delivery temperature.
- DAY: it uses the DAYTIME temperature set for calculating the delivery temperature.
- AUTOMATIC: the ambient temperature to use for calculating the delivery temperature is selected based on programming done.

HEATING
When in the Automatic mode, during the set heating period, the control unit calculates the delivery temperature as a function of Daytime, Nighttime, Antifreeze, Reduced ambient temperatures set in Set Temperature.

TEMPORARY PROGRAM
Four temporary programs are available and to each of them is associated a desired ambient temperature, a switch-on period (month beginning and month ending) and the possibility of including and excluding them. In case of automatic operation during the temporary periods, the requirements of the heating period described above are ignored and is adjusted the ambient temperature required by this programming.

SWITCH-ON TIMES OPTIMIZATION
As per delivery temperature, the advance switch-on time is automatically calculated through an interpolation by using the set values of the advance switch-on times for four outside temperature values (20°; 10°; 0°; -10°).



EXTERNAL PROBE
Use of EC14 type external probe is optional. In fact, if is not connected, the device is able to receive the external temperature value from EV90 Master through the FANBUS. Local use of an external probe may be necessary if the device must regulate the temperature in an environment with an average external temperature higher than other environments (e.g.: exposure to the sun).

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).
To ensure an adequate protection install the device on the DIN-rail within a framework.
The removable terminals facilitate the wiring and a possible replacement.

FEATURES

Weekly programming with 6 ON and OFF schedules for each day of the week.
Heating system activity period setting.
Switch-on time optimization as a function of the external temperature.
Programming for circuit thermal disinfection against legionellosis.
Local programming or via SMS messages (with GSM modem) or via remote computer (with analog PSTN modem) via the communication bus (FANBUS) and the MASTER EV90 or EV87.
Addressing through jumpers on the external terminal board.
TX and RX signaling LED for connection with FANBUS, valve, circulation pump and auxiliary relay control.

ACCESSORIES

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

SYSTEM WITH TWO CONTROL UNITS, ONE OF THEM HAS AN EXTERNAL PROBE