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EV60
FIXED POINT DIGITAL TEMPERATURE CONTROL UNIT FOR SANITARY WATER

USE

The EV60 control unit is suitable to be used on all types of centralised sanitary water regulation plants.
This unit is mainly used for regulating the temperature of sanitary water, however it may also be used for regulating generic temperatures of rooms, greenhouses, swimming-pools, etc...
The EV60 is provided with a special program for thermal sterilization of the system to prevent the risk of Legionellosis (legionnaires' disease).

OPERATION

The EV60 control unit constantly compares the current read temperature with the temperature set (which depends on the current programming) and, based on the proportional band and the integral time, it then determines the position of the regulating mixing valve or controls the two-stages of the output relays.
The control unit output is expressed in percentage, where 0% indicates that the valve shall move to the fully closed position (or stage 1-2 off), and 100% indicates that the valve shall move to the fully open position (or stage 1-2 on).

TO SELECT THE REQUIRED LANGUAGE

During installation the user can select the language

required to display the Menu information. With the control unit off, keep the key + (see figure on page 5) pressed and then switch the control unit on. When the icon "CHOOSE LANGUAGE" is displayed release the key + and scroll the available languages using the keys + and -. Find the required language and then press key > to select it. Menu info will be then displayed in the chosen language.

CHOOSE LANGUAGE:
OUTPUT RELAYS
The three output relays have the following functions:
- Circulation pump command
- Valve opening command or stage 1 command
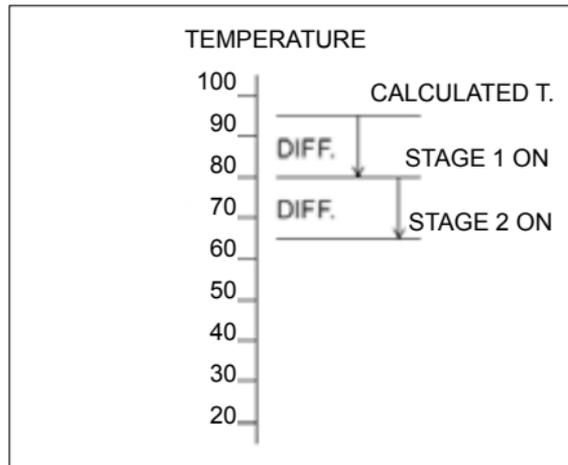- Valve closing command or stage 2 command

CIRCULATION PUMP
(If present) The circulation pump is activated to circulate water in the heating plant and it is turned off automatically when the control unit has no output.
Pump switch-off time may be delayed by the user as required (enter "----" or "0" if no delay is required).

MIXING VALVE COMMAND
The mixing valve is commanded to open/close by the two relays to allow the set temperature to reach the value calculated by the control unit.

2-STAGE COMMAND
Instead of the mixing valve it is possible to turn on/off the burner or another one- or two-stage connected device (see the diagram on the right).

PROGRAMMING SCHEDULE
The EV60 control unit enables to set a weekly programming schedule with three ON and three OFF time bands for each day of the week.

THERMAL STERILIZATION
The EV60 control unit features a special sterilization function to prevent the risk of Legionellosis (infectious disease also known as legionnaires' disease).
This function enables to program the sterilization temperature (which must obviously be higher than the normal water temperature), the day, the cycle length and also the starting and ending times.
You are recommended to program sterilization at night when there is less use of hot water, thereby preventing the risk of burns due to high water temperature.
N.B.: If deciding to use this program it is compulsory to adopt suitable heat protections for the involved water delivering devices in order to stop water delivery over a set temperature or to mix automatically the water of the different delivering devices in order to protect users from scalds. Water temperature over 50 °C can cause burns in a few seconds.

OPERATION PROGRAMS
The EV60 controller works with different programmes selectable by the user:

- Valve Opens or Stage 1-2 ON
The circulation pump is started and the mixing valve is opened manually or both stages are turned on.

- Valve Closes or Stage 1-2 OFF
The circulation pump is shut down and the mixing valve is closed manually or both stages are turned off.

- Always day
The DAYTIME temperature set for calculating the required temperature is used.

- Always night
The NIGHTTIME temperature set for calculating the required temperature is used.
Automatic
The required temperature to be used is selected according to the program set. When the controller is in a "temporary" period (see "Temporary Program" below), the automatic programming is excluded.

Temporary Program
Temporary programs prevail on the automatic program. Four temporary programs are available and

a required temperature value, a starting date, and a stop date is associated with each one.

Should the two dates coincide, only one day of the temporary program will be considered.

During temporary periods the automatic program is cancelled and the temperature is regulated according to this programming.

To exclude a temporary program set the required temperature at "-----" (excluded).

OPERATING MODES

Operating modes are selected automatically by the control unit according to the program selected and they determine: pump operation, system condition and the required temperature. Operating modes are indicated with:

- ------------

It indicates that no mode is selected and it is displayed when setting "valve opens" and "valve closes" or stage 1-2 ON or stage 1-2 OFF.

- DAYTIME

It is displayed when setting the program ALWAYS DAYTIME or when the program selected is AUTO-MATIC and the operating period is within the ON-OFF time band.

The control unit steps in to maintain the temperature set in "DAYTIME" mode.

- NIGHTTIME

It is displayed when setting the program ALWAYS NIGHTTIME or when the program selected is AUTO-MATIC and the operating period is within the OFF-ON time band.

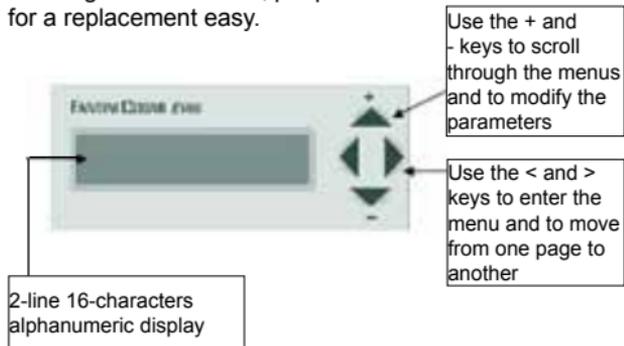The control unit steps in to maintain the temperature set in " NIGHTTIME " mode.

- OFF

It is displayed when setting the temperature at "----" to turn the control unit off. The required ambient temperature is not indicated and the pump is OFF.
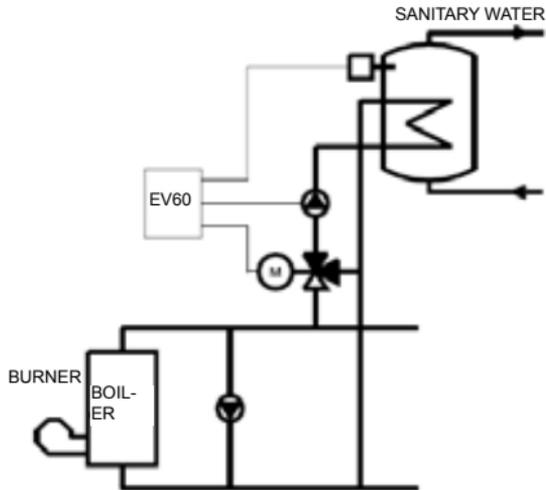
- TEMPORARY

It indicates that the current date is within a temporary program, the required temperature is the one set for the same period.

DETAILS OF PRODUCTION

Housing DIN 6 modules, plaques terminal extractable for a replacement easy.

Use the + and - keys to scroll through the menus and to modify the parameters

Use the < and > keys to enter the menu and to move from one page to another

2-line 16-characters alphanumeric display

EXAMPLE OF SANITARY WATER TEMPERATURE REGULATION PLANT

SANITARY WATER

EV60

BURNER

BOIL-ER

INSTALLATION

INSTALLING THE CONTROL UNIT
Mount the device onto the DIN rail inside a panel in order to provide suitable protection.
Removable terminal boards facilitate wiring and replacement.

INSTALLING THE PROBE
Install the temperature measuring probe (EC15 or EC16) onto the water pipe downstream the mixing valve. Probe EC15 shall be installed onto the water pipe or inside the tank with the clamp provided for the purpose and with heat conducting paste interposed in order to guarantee correct heat conduction. For the same reason the immersion probe EC16 shall be fitted into the sheath filled with mineral oil or silicone. Connecting leads to the control unit must have a section of at least 1 mm2 and a length of 1000 metres.
NB: The control unit also works with probes: EC82 (contact probe) and EC83 (immersion probe).

WIRING DIAGRAM

SETTINGS AND ADJUSTMENTS

FACTORY SETTINGS
The EV60 leaves the factory with all parameters set for standard operation. Should it be necessary to reset factory parameters (default data), turn off the power supply, then turn it on again while pressing the key on the front panel. All data entered will be lost, whereas factory parameters will be reset.

SETTINGS AND ADJUSTMENTS
Use keys "+" and "-" to select the menu item
Use key ">" to open the required menu
Use keys "+" and "-" to change values
A 2-line, 16-character alphanumeric display and MENU screen display facilitate data reading.

CONFIGURATION MENU

MAIN MENU
The main menu contains the list of submenus representing the table of contents relevant to system configuration.
Use keys "+" and "-" to select the required menu.

```
EV60 MENU
>Information
>Program
>Temporary Prog.
>Set Temperature
>Prog. Times
>Set Current Time
>Configuration
>Anti-Legionellosis
>Set Output Relay
>Set Pump Relay

MENU END
```
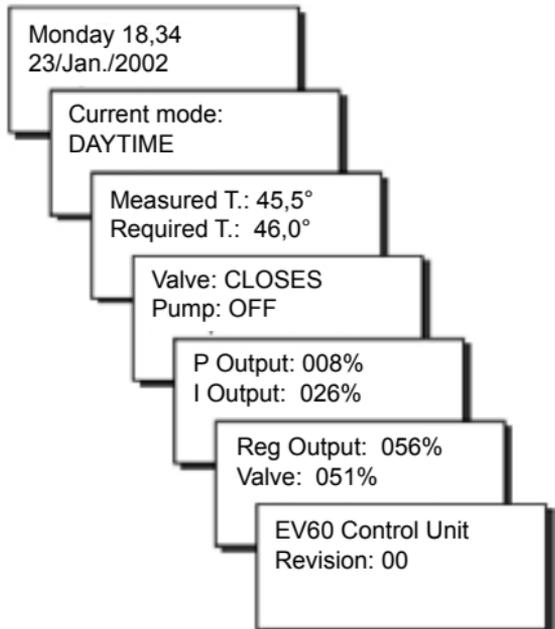
Use keys (< and >) to open the required menu and to move from one page to another

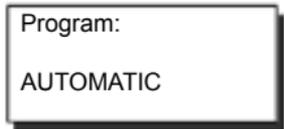Use keys (+ and -) to scroll the menus and to change parameters

INFORMATION SUBMENU

This menu displays information about the unit. Scroll through the pages to display the time, current temperatures, current mode, relay position, parameters set, etc.

Monday 18,34
23/Jan./2002

Current mode:
DAYTIME

Measured T.: 45,5°
Required T.: 46,0°

Valve: CLOSES
Pump: OFF

P Output: 008%
I Output: 026%

Reg Output: 056%
Valve: 051%

EV60 Control Unit
Revision: 00

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PROGRAM SUBMENU

Use this submenu to select the required program:
- VALVEOPENS
- VALVECLOSES
- ALWAYSDAY
- ALWAYSNIGHT
- AUTOMATIC
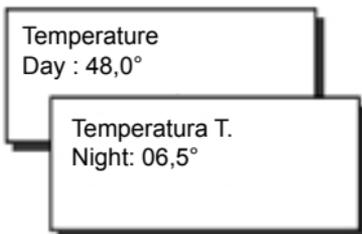
Program:

AUTOMATIC

TEMPORARY PROG. SUBMENU

Use this submenu to set 5 temporary programs to override the automatic program.
N.B. to exclude a program just enter the dashes "----" instead of the temperature value.
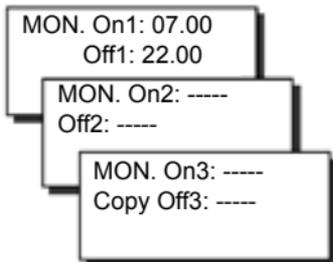
Temp.N:1 ------
01/JAN.

Temp.N:2 09,5°
18/APR. 19/APR.

Temp.N:3 -------
01/JAN.

Temp.N:5 -------
01/JAN.

Temp.N:5 19,5°
24/DEC. 08 /JAN.

SET TEMPERATURE SUBMENU
Use this submenu to set the required daytime and nighttime temperature.

```
Temperature
Day : 48,0°

    Temperatura T.
    Night: 06,5°
```
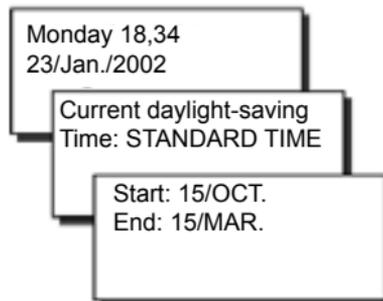
PROGRAMMING TIMES SUBMENU
Use this submenu to set the required switch-on and switch-off times for each day of the week.
Enter the dashes "------" for times not required. Use the "Copy" function to copy a programming to the next day.

```
MON. On1: 07.00
     Off1: 22.00

    MON. On2: -----
    Off2: -----

        MON. On3: -----
        Copy Off3: -----
```

SET CURRENT TIME SUBMENU
The control unit automatically calculates the daylight-saving time.
The control unit works out the period of daylight-saving time at the start of each year, but it may be changed at any time.

```
Monday 18,34
23/Jan./2002

    Current daylight-saving
    Time: STANDARD TIME

        Start: 15/OCT.
        End: 15/MAR.
```

CONFIGURATION SUBMENU
Set the shortest proportional band as possible to prevent the system from swinging.
Set the integral time according to system reply
N.B. to clear the integral action enter the dashes "-----".

Propor. Band:
+/- 03,0°

Integral Time
Minutes: 12,5

ANTI-LEGIONELLOSIS SUBMENU
(STERILIZATION) Select "ENABLED" to enable the sterilization function.

Anti-Legionellosis:
DISABLED

Anti-Legionellosis:
SetTemp.: 70,0°

Activate on: MON.
Time: 12.00-12.30

SET OUTPUT RELAY SUBMENU
Set "VALVE" or "2-STAGE" according to the device to control.
To control a valve set the motor opening time.

Command Type
VALVE

Valve Opening
Seconds : 150

SET PUMP RELAY SUBMENU
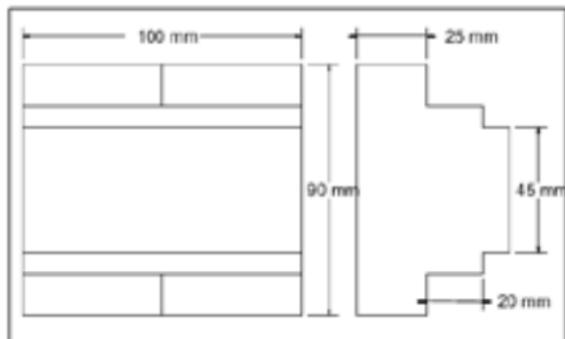Use this submenu to set the minutes of delay before switching off the pump.
Select "-----" to switch off the pump instantly.

Delay Off
Pump Min: 05.30

TECHNICAL DATA

Power supply	230V 50Hz
Consumption	5 VA
Contact rating	8(5)A 250Vac (Ohmic charge) Voltage free contacts
Ambient temperature	T45
Removable terminal boards	for friendly wiring
Direct command	of one mixing valve or 2 stages
Direct command	of one circulation pump
Measuring probe	NTC tipo EC15 o EC16 (Compatible with EC82 e EC83)
Compliance with	EN 60730-1
Protecion degree	IP40 (rear panel mounting)
Pollution degree	2
Impulse voltage	4000V
Software	Class A
ErP classification: ErP Class V; 3% (EU Reg. 811/2013 - 813/2013)	

Dimensions

EAC CE

GB79251B