25.3°C

| ACTION | | | ZONE | | | | | | MODE | | | TYPE | |
| AUTO | MAN | ON | 1 | 2 | 3 | 4 | 5 | PUMP | ANTI | ECON | CONF | HEAT | COOL |

1..5
ZONE

MODE

TEMP

PERIOD

COPY

TIME

+

−

HD97 Five Zones Chronothermostat
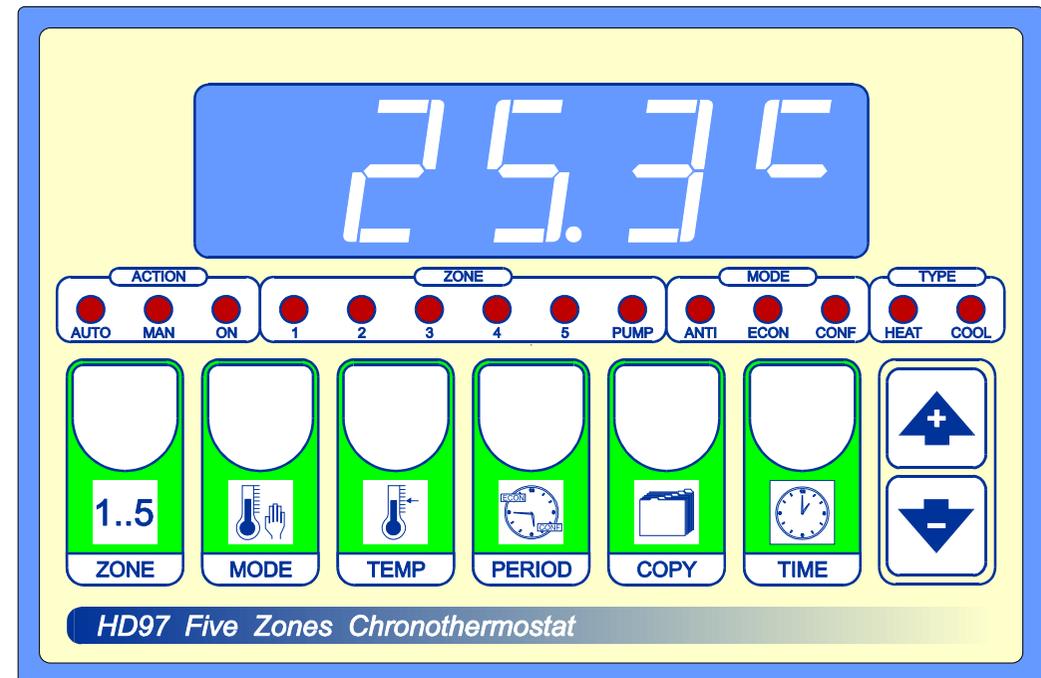
POLA® C E

28.10.10

POLA®

MICROCOMPUTER

EXPANSION

CMU A UB
41 42 43

LINE 230V

Zone 1 command
Zone 2 command
Zone 3 command
Zone 4 command
Zone 5 command
Pump command

LINE no.1 no.2 no.3 no.4 no.5 no.6
L N 3 4 5 6 7 8 9 10 11 12 13 14

14 VA

4A AC1

In.1 In.2 In.3 In.4 In.5 In.6 In.7 In.8
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

Zone 1 temp. probe
Zone 2 temp. probe
Zone 3 temp. probe
Zone 4 temp. probe
Zone 5 temp. probe
Anti-freeze exter. forced
Confort extern. forced
Heat / Cool Action

POLA HD97 C€
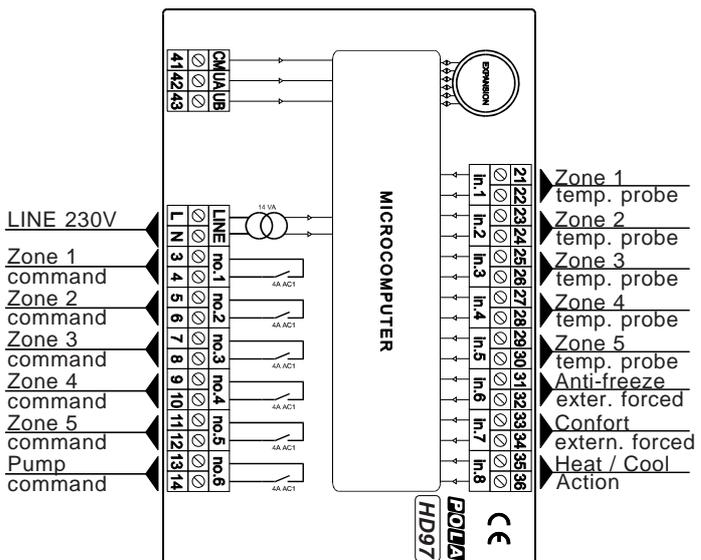
N.O contacts (normally opened free to voltage) max 4AMP AC1.

INSTALLATION

For a correct installation, follow the instructions below very carefully.

You are recommended to install the controller properly so that it complies with current regulations, and also to use a max 4Amp.F fuse to prevent the relay output contacts from getting damaged and ensure they stay in perfect running order.

How to connect the sensors

To mount the **SA** temperature probe make a hole in a blanking plate (any blanking plate model) with a 10mm drill, and fix the temperature probe in to the plate using the nutprovided.

Connect the provided sensors as shown in the diagram (see following page). **For remote connections use a standard 0.5-square millimetre two-pole wire for each sensor**, taking great care over the connections, by insulating and sealing the joins carefully.

-O.C.- is displayed when the temperature sensor wiring is open, **-S.C.-** is displayed when the temperature sensor wiring is short circuit.

How to connect the line

Connect line on terminals **L-N**.

How to connect the contacts

Connect terminals **3-4...13-14** on the terminal block (contacts up to 4AMP.AC1) to the loads as shown in the diagram (see overleaf).

Program's external influence.

State's external influence:
Anti-freeze, Economy or Confort state can be connected for each single zone (**MODE** key), or for all zones by an external contact (31-32 external contact closed to Anti-freeze forced condition, 33-34 external contact closed to Confort forced condition; in the case of wrong closing of two or three contacts, Anti-freeze state is forced).
In COOL condition (35-36 contact closed) forcing Anti-freezer state the zones set off completely. When a state is forced the relative MODE lamp is flashing.
Actioning's external condition:
HEAT or COOL function can be determined to the state of 35-36 terminals.
35-36 terminals open: HEAT working (HEATING)
35-36 terminals closed: COOL working (COOLING).
Relative TYPE lamps view the inserted state.

MAIN SETTINGS *(Run mode)*

ZONE KEY: ZONE'S TEMPERATURE VIEW.
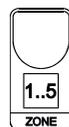
Press **ZONE** several time to move to the required Zone; on display the *Selected zone's temperature* will appear.
ZONE lamp will view the selected zone (**1*).
ACTION lamp will indicate if the zone is in Automatic (**AUTO**), in manual (**MAN**), and if the relay's zone is on (**ON**).

MODE lamp will indicates if the zone is in **ANTI-FREEZE**, **ECONOMY** or in **CONFORT**.

MODE KEY: ZONE'S WORKING MODE.

When the required zone is selected, (**ZONE** key) press **MODE** to choose the zone's working mode:
Press **MODE**:
This message refering to the set condition, will be displayed:
Auto = Automatic,
Conf = always On Confort,
Econ = always On Economy,
Anti = always On Anti-freeze.

Press **+** or **-** to select, press **MODE** to confirm.

TEMP KEY: ZONE'S TEMPERATURE SETTING.
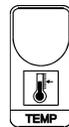
When the zone to program is selected (**ZONE** key), press **TEMP** to set the 2 levels of zone's temperature.
ConF message will be displayed instead of the ° *Set Confort value* .
Press **+** or **-** to modify, press **TEMP** to confirm.
At this point *Econ* message will be diplayed instead of the °*Set Economy value* .
Press **+** or **-** to modify, press **TEMP** to confirm.

Anti-freeze temperature is the same on all zones, and it's possible program it in **COSt**.

PERIOD KEY: ZONE'S <u>DAILY</u> PERIOD SETTING.

When the required zone is selected, (**ZONE** key) press **PERIOD** to set the daily setting's periods of the zone:
n.PEr message will be displayed instead of the *Number of daily period setting*[2].
Press **+** or **-** to modify, press **PERIOD** to confirm.
Press **+** or **-** to modify, press **PERIOD** to confirm.
At this point *On-1* message will be diplayed instead of the
Start hours and minutes of the first period of Confort.
Press **+** or **-** to modify, press **PERIOD** to confirm.
At this point *oF-1* message will be diplayed instead of the
Stop hours and minutes of the first period of Confort.
Press **+** or **-** to modify, press **PERIOD** to confirm.
Settings operation goes on to the last selected period of the day, after that **HD97** returns in normal operation.

You can press **ZONE** to escape and return to the *Run Mode*.

PERIOD KEY: ZONE'S <u>WEEKLY</u> PERIOD SETTING.
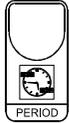
When the required zone is selected, (**ZONE** key) press **PERIOD** to set the zone weekly (if the chronothermostat can program weekly, see COSt, *Prog* function):

dAy.1 message will be displayed instead of the *Number of the first day of the week.*

Press **PERIOD** to confirm (otherwise press **+** o **-** to increase the days of week, after press **PERIOD** to confirm):

n.PEr message will be displayed instead of the

Number of the first day of the week [2].

Press **+** or **-** to modify, press **PERIOD** to confirm.

At this point *On-1* message will be diplayed instead of the

Start hours and minutes of the first period of Confort.

Press **+** or **-** to modify, press **PERIOD** to confirm.

At this point *oF-1* message will be diplayed instead of the

Stop hours and minutes of the first period of Confort.

Press **+** or **-** to modify, press **PERIOD** to confirm.

Settings operation gpes on to the last selected period of the day, after that it turns to the next day (*dAy.2*).

So proceede such as already explained or press **COPY** to copy previous day settings.

At the end of *dAy.7* (last day of the week) **HD97** returns in normal operation. You can press **ZONE** to escape and return to the *Run Mode*.

COPY KEY: VIEWING OF HISTORICAL LOGGED DATA
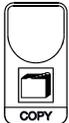
When the required zone is selected, (**ZONE** key) press **COPY**:

day.h message will be displayed instead of the

Yesterday worked hours.

Press **COPY**: *tot.h* message will be displayed instead of the

Total worked hours.

Press **COPY**: *t._ _ _* message will be displayed instead of the

Minimum temperature recording in the previous day.

Press **COPY**: *tine_* message will be displayed instead of the

Minimum temperature time recording in the previous day.

Press **COPY**: *t.- - -* message will be displayed instead of the

Maximum temperature recording in the previous day.

Press **COPY**: *tine-* message will be displayed instead of the

Maximum temperature time recording in the previous day.

Press **COPY** to escape and return to the *Run Mode*.

To clear these values press **COPY** key more than 5 seconds (*CAnC* message will be displayed).

Working diagrams

Example of daily programming for number 3 Confort periods (*n.Per=3*)
Out of the Confort periods an Economy condition is enabled.
For a weekly programming execute a *dAY.1* (monday) to *dAY.7* (Sunday) setting.
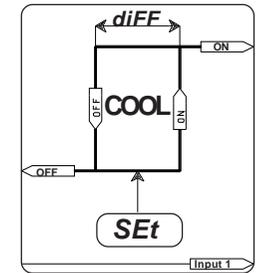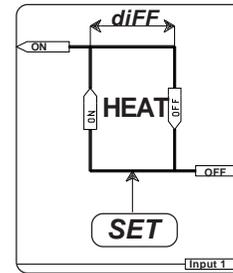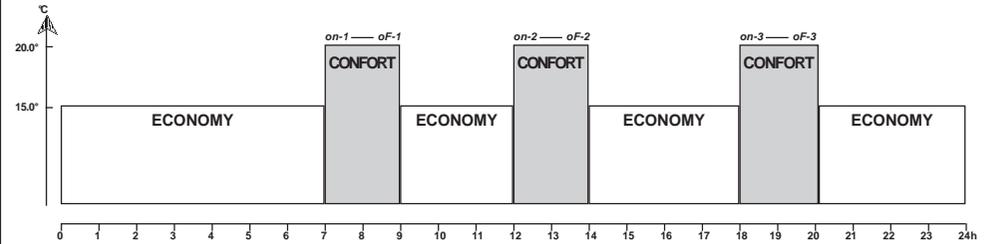
Differential action is symmetric to SET.
HEAT or COOL function can be determined to the state of 35-36 terminals.
35-36 terminals open: HEAT working (HEATING)
35-36 terminals closed: COOL working (COOLING).

PRESET PROGRAMS
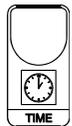
This processor is just programmed with the following (variable) settings.
To return to these settings at any time:
Power off the processor, press **TIME** key and keep it pressed giving power on:
boot message will be displayed (release now **TIME** key).

"HAND" MODE
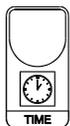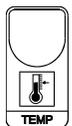
In some start-up conditions may be useful to work in "hand" mode:
Power off the processor, press **TEMP** key and keep it pressed giving power on: **Hand** message will be displayed (release now **TEMP** key).
Push **+** until is displayed number required to be handed (see table *State indication lamps*) and push **TIME** for activating relay.
Pushing again **+** to increase relay number previous relay is disactivated.
You can press **TEMP** to escape and return to the *Run Mode*.

STATE INDICATION LAMPS

The lights situated at the bottom of the display show the state of the various relays as set out below.

Lamp.	State	N° Relay	Contact
AUTO	Zone selected in Automatic mode		
MAN	Zone selected im Manual mode		
ON	Zone's selected relay on		
1	Zone 1 selcted	1 (ON)	3-4
2	Zone 2 selcted	2 (ON)	5-6
3	Zone 3 selcted	3 (ON)	7-8
4	Zone 4 selcted	4 (ON)	9-10
5	Zone 5 selcted	5 (ON)	11-12
PUMP	Pump 1 on *1	6 (ON)	13-14
ANTIG	Zone selected in Anti-freeze mode *2		
ECON	Zone selected in Economy mode		
CONF	Zone selected in Confort mode *2		
HEAT	Heat action *3		
COOL	Cool action *3		

*1) Flashing lamp during pump's insersion delay (see COSt **dEL.P** function).

*2) Flashing lamp if Anti-freeze or Confort condition is forced externally (see *Program's external influence)*.

*3) See *Program's external influence.*

TIME KEY: CLOCK SETTINGS.
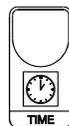
Press **TIME** to enter in the time's setting:
on display will appear *the current Hour and minutes (**hh.mm**).*
Press **+** or **-** to modify, press **TIME** to exit.
On display will appear *the Day of week (**d=**).*
Press **+** or **-** to modify , press **TIME** to exit.

PERIOD+TIME KEY: HOLIDAY FUNCTION.

Press **PERIOD** together **TIME** key to force a certain period of Anti-freeze condition on all the zones , without changing settings (Holiday condition).
Flashing value of count-down is displayed during this condition.
The program begins with **h=1** (hours) and can be changed to lower from **n=59** (minutes) down to **n=1** and over from **h=2** to **h=95** and over **d=4** (days) up to **d=99**. Press **+** or **-** to modify .
After this time is elapsed **HD98** returns in automatic working mode
You can press **ZONE** to escape and return to the *Run Mode*.

(***1**) Pressing for more than 1 second **ZONE** key **HD97** will enter in Scan mode: on display will appear in sequence for a period of 2 seconds each zones.
To return in normal mode press one of the different function keys.

*(2) Maximum **n.PEr=6**.
For example setting **n.Per = 3**, there will be 3 periods daily of Confort and so:
The time of beginning and ending of 1st Confort period, will be set **On-1** and **oF-1** ,
The time of beginning and ending of 2nd Confort period, will be set **On-2** and **oF-2** ,
The time of beginning and ending of 3rd Confort period, will be set **On-3** and **oF-3** ,
Out of these periods Economy condition will be actuated.

WORKING LIKE DAILY/WEEKLY SWITCH.
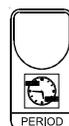
HD97 can be used as general pourpose daily/weekly programmer for lights or other.
In this case instead of temperature sensor **SX** connect a wire bridge on terminals (on display appear **-S.C-** message).
Program settings in order that Confort period coincides with "on" required periods.
Lamp Conf indicates "on" condition, lamp Anti and Econ indicates "off" condition of zone.
A zone works in this mode:
- *It doesn't activate pumps.*
- *It doesn't implement holiday function.*

COST PROGRAMMING (System constants)
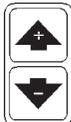
These settings refer to the mode of operation of the system and must be made on initial start-up. Press together **-** / **+** / **ZONE 1..5** for at least one second: the message **C.O.S.t.** will be displayed.

The COST messages are displayed in sequence if you press **+** to go forward or **-** to go back.
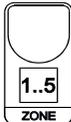
When you reach the messagge required (see table below) press **TIME** to confirm: set value of this variable will be displayed.

Press **+** or **-** to set a new value and then **TIME** to confirm: the next system constant will then appear.

You can press **ZONE 1..5** to escape and return to the *Run Mode*.

Mess.	Value	Meaning	Note
ProG	=1	Daily program (=1) or weekly program (=2)	*1)
CYCL	=1	Five zones setting mode	*2)
Anti	7.0 °	° Set Anti-freeze on 5 zones	*3)
Loc	=5	Number of zones able to work	*4)
tYPE	=1	Type of actioning (=1 normal, =2 with optimization)	*5)
tinE	1h	Maximum hours of optimization intervent	*6)
del.P	0"	Delay pump insertion in seconds	*7)
diFF	0.2 °	°C Zone 1...5 differential	*8)

*1) **PERIOD** key setting mode depends on this setting:
   =1 : Daily programming
   =2 : Weekly programming.

*2) **CYCL =1** : the zones are individually settable (you can program 5 zones in each different mode from one to the other).
   CYCL =2 : only Zone 1 period is settable, the other works referring to this zone. In this mode trying to enter in period setting of zones 2 to 5 **no.oP** message will appear.

*3) Anti-freeze temperature setting is the same for all 5 zones.
   In summer operation condition (35-36 terminals closed) Anti-freezer condition set off referred zone.

*4) It's possible to limitate number of installed zones .
   So pressing **ZONE** key only enabled zones will be selected

*5) **tYPE =1** : Normal chronothermostat mode.
   tYPE =2 : Optimization working mode.
   In this mode **HD97** uses experience acquired in previous warming operation to arrive at required temperature just in time.
   During "anticipation" **CONF** light flashes.
   Press **+** and **COPY** together for view computated anticipation for first morning warm-up or press **-** and **COPY** together to view computated anticipation on lasrt warm-up.

*6) Maximum time (hours) of anticipated optimization working mode.

*7) Delay (seconds) on circulation pump start: positive values imposes an operation delay time from zone on to pump on (during this time pump lamp flashes), negative values impose a delay to zone putting immediately on the pump (during this time on lamp flashes).

*8) For differential action see *Working diagrams.*