

Cronotermostato Digitale CHRONOS

Manuale d'Uso



User Manual
DIGITAL CHRONOTHERMOSTAT



vemer
SPA



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Digital Chronothermostat CHRONOS





- **Summer and winter operating mode**
- **Models available in white and black colours**
- **Battery or 230 V power supply**
- **7 programs available for the heating mode**
7 programs available for cooling mode

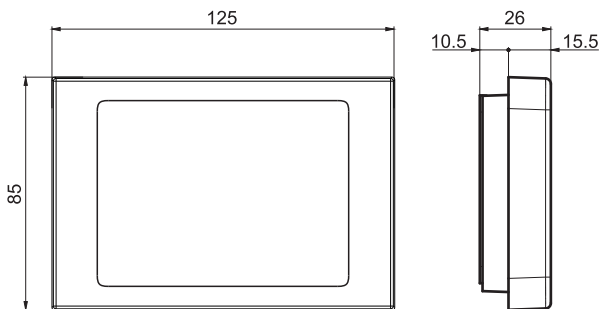


- **Touch screen display of capacitive type (sensible to the fingers' touch)**
- **Wall-mounting or to coverage of box 503**
- **Weekly programming with 3 different settable temperatures**

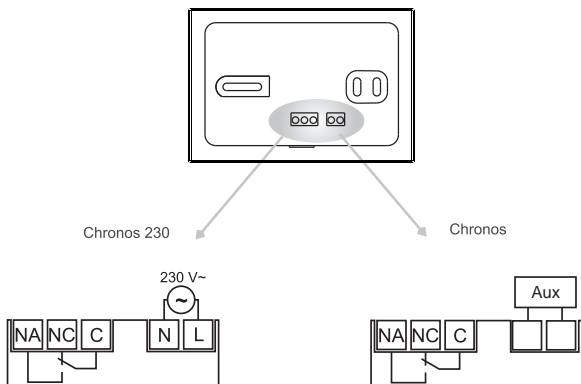
Digital Chronothermostat CHRONOS

| Model | Chronos 230 Bianco | Chronos 230 Nero | Chronos Bianco | Chronos Nero |
|---------------|--|---------------------|--|-----------------|
| Power supply | 230Vac 50/60 Hz  | | batteries 2 x 1,5V (type AAA)  | |
| Display | multicolor red/green/blue | | monocolor (blue) | |
| Digital input | — | | Switch on / switch off with telephone dialler or external temperature probe | |
| Installation | Wall (or to coverage three-module in built box) | | | |

DIMENSIONS



CONNECTION DIAGRAM



Electronic touch screen chronothermostats with wall-mounting suitable for the temperature control in household. Two versions are available:

- **CHRONOS**, battery powered, with backlit monocolour display (blue) and input for external contact configurable for the connection of an external temperature probe or of an auxiliary contact with whom to switch on/to switch off the chronothermostat remotely (by telephone).
- **CHRONOS 230**, mains powered, with backlit monocolour display, which changes tone according to the gap between the environment temperature and the setpoint.

These devices perform actions of 1B type and are intended for operating in environments Pollution degree 2 and Overvoltage Category III (EN 60730-1).

SAFETY WARNINGS

■ **During product installation and operation it is necessary to observe the following instructions:**

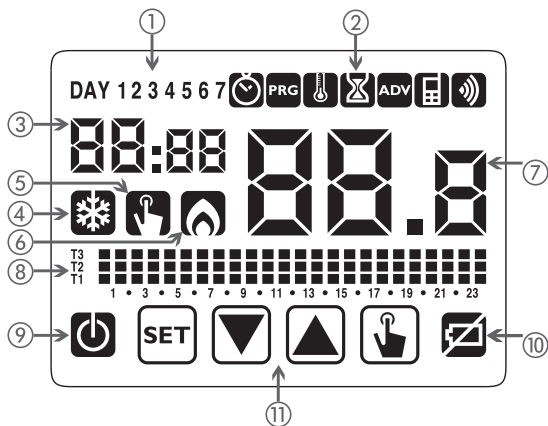
- 1) **The device must be installed by a qualified person, in strict compliance with the connection diagrams.**
- 2) **Do not power or connect the device if any part of it is damaged.**
- 3) **After installation, inaccessibility to the connection terminals without appropriate tools must be guaranteed.**
- 4) **The device must be installed and activated in compliance with current electric system standards.**
- 5) **Before accessing the connection terminals, verify that the leads are not live.**
- 6) **In the electrical system of the building where the device must be installed, a switch and a protection device from the overcurrents must be present (for Chronos 230 models only).**

| Code | Model | Description |
|-----------------|--------------------|--|
| VE451100 | Chronos Bianco | Touchscreen chronothermostat batteries white |
| VE452900 | Chronos Nero | Touchscreen chronothermostat batteries black |
| VE453700 | Chronos 230 Bianco | Touchscreen chronothermostat 230 V white |
| VE454500 | Chronos 230 Nero | Touchscreen chronothermostat 230 V black |

TECHNICAL SPECIFICATIONS

- Power supply Chronos:
 - 2 alkaline batteries 1.5 V (AAA type)
 - battery life: 1 year
 - battery charge level indication
 - charge reserve (for battery replacement): 1 minute
- Power supply Chronos 230:
 - 230Vac (-15% ÷ +10%) 50/60Hz
 - maximum consumption: 6 VA / 230Vac
 - charge reserve (for blackout): 2 days about
- Wall mounting or to coverage three-module in built box
- Terminals Chronos:
 - 3 terminals for 1.5 mm² cable section for bistable output relay 5A / 250 Vac
 - 2 terminals for 1.5 mm² cable section for digital input (on/off with telephone dialler)
- Terminals Chronos 230:
 - 3 terminals for 1.5 mm² cable section for monostable output relay 5A / 250 Vac
 - 2 terminals for 1.5 mm² cable section for power supply
- Temperature regulation:
 - On/off with hysteresis setting between 0,1 °C and 1°C
 - Proportional with settable band and period
- Summer/winter operating mode
- Weekly programming (7 programs available for each operating mode)
- Daily resolution: 1 hour (possibility to set delay activation of 15, 30, 45 minutes independent for each hour)
- 5 settable temperatures:
 - T1, T2, T3 in automatic operation
 - Tm in manual operation
 - Toff in off mode (antifreeze)
- Measured temperature display: 0 ÷ 50 °C
- Measurement precision: ±0.5 °C: ±0.5 °C
- Measured temperature resolution: 0.1°C
- Temperature setting range: 2 ÷ 50 °C
- Clock precision: ±1 second/day
- Key lock by password
- Summer/winter time automatic change (excludable)
- Operating temperature: 0 ÷ +50 °C
- Storage temperature: -10 ÷ +65 °C
- Operating humidity: 20÷90% non condensing
- Protection degree: IP40
- Insulation: reinforced among accessible parts (frontal) and all other terminals

DISPLAY AND KEYBOARD



- ① Day of the week (DAY 1 = Monday)
- ② Programming menu:
 - : date/time and summer time setting
 - : programs change mode (for automatic operating)
 - : temperatures setting T1, T2, T3
 - : timing menu
 - : advanced programming menu
 - : *not used*
 - : *not used*
- ③ Time and minutes
- ④ Load activation in summer mode/ cooling
- ⑤ Manual operation activation
- ⑥ Load activation in winter mode/heating
- ⑦ Measured environment temperature
- ⑧ Program on graphic for the current date (in automatic operation)
- ⑨ Off operation
- ⑩ Depleted battery indication (only battery models)
- ⑪ Keyboard (the keys are active only if the instrument is correctly installed on wall-mounted base)

■ **Keyboard**

The keys carry out different functions on the basis of the device status and they will be described step by step in this user manual.

Multipurpose keys are not built into the instrument, that is to say contemporary pressures of 2 or more keys.

There are two types of pressure:

- brief pressures,
- long pressures, with duration higher than 3 seconds.

During the press of a button, the display is blue.

Attention: press the keys with your fingers, do not use sharp objects!

Attention: the keys are active only if the device is correctly inserted on wall-mounted base

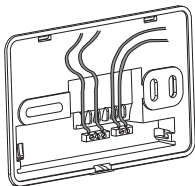
■ **Cleaning the display**

To clean the display use a soft, lint-free cloth, without using excess force.

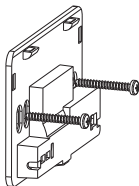
INSTALLATION

- The chronothermostats of Chronos series are designed for wall-mounting. Alternatively they can be installed to cover three-module in built box.
- The chronothermostat must be installed at a height of about 1.5 m above the floor, away from direct sunlight, away from doors, windows, heat sources, locations with excess or total lack of ventilation.

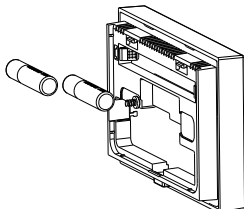
- ① Connect the wires to the terminal blocks of the base, as shown in the “wiring diagrams”.



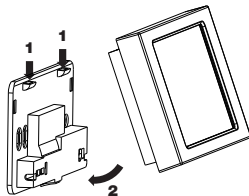
- ② Fix the base on the wall using the screws supplied.



- ③ For battery power supply models only: insert the batteries into the battery compartment on the back of the chronothermostat, respecting the polarity



- ④ Attach the chronothermostat to the base, at first mating teeth on the higher side.



Attention: it's not possible to make no programming or modification of the set parameters until the device is not correctly installed on wall-mounted base

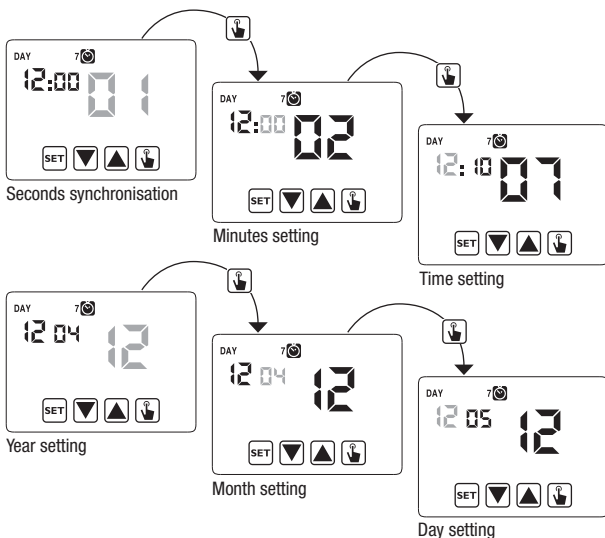
• Clock setting

Once the chronothermostat is mains powered, set the clock (time and date insertion).

The parameters to enter are the following:

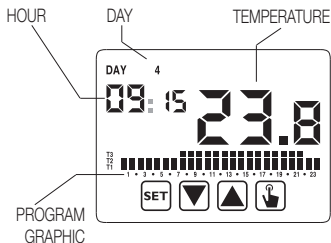
seconds (only synchronisation at value 00), minutes, hours, year, month, day.

Use the keys ▲ and ▼ to increase and decrease the values and the key ⏏ to confirm and to move to the next parameter.




Once all values are set, press for a long time (3 seconds) the key **SET** to exit the menu of the clock synchronisation.

At this point the chronothermostat will begin to operate with the set default parameters (see page 33) displaying the day of the week, the time, the environment temperature and the graphic of the program on.



Attention:

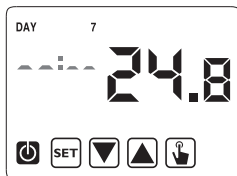
To operate correctly the chronothermostat requires the time and date insertion.

If once mains powered, no value is set within about 30 seconds, the chronothermostat begins to operate in off mode, displayed with the symbol . The time lack is displayed with flashing dashes (_:_:_).

The chronothermostat remains in off

operation condition until when the hour is not inserted, ensuring in this way the saving of the antifreeze temperature (6°C).

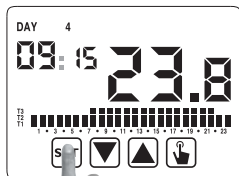
In this condition, the pressure of any key reactivates the menu of date/time insertion for other 40 seconds about.



PROGRAMMING MENU

With this menu it's possible to modify the following operating parameters:




- Date and time
- Automatic operation programs
- Automatic operation temperatures
- Timings
- Advanced functions.








3s

Time and date modification

To modify the hour and the date set:

1. From normal operating display, press for a long time the key  until the symbol  starts flashing on field **(2)**
2. Press the key  to access parameters modification. The seconds field starts flashing. Parameters sequence to set:

seconds* -> minutes -> hours -> month -> day
3. Use the keys  and  to modify the values and the key  to confirm moving to the next parameter.
(* for seconds it's possible only the synchronisation at value 00)
4. Once all parameters are set, to exit and to go back to the programming menu, press a short time the key .
To exit and to go back to the normal operating (automatic, manual) press for a long time  or wait for the time-out expiration (40 seconds about).

Inside this menu it's also possible to modify the parameters for winter/summer time change. The procedure is described in a detailed way in the chapter "Summer time change" on page 25.






Programs modification



This menu allows to modify the programmings of the automatic operation. In default status the chronothermostat is configured to perform the program P1 from




Monday to Friday and P2 on Saturday and on Sunday (the programs profile is described at the end of this manual on page 34-35).



If this programming doesn't satisfy the user needs it's possible to change it.

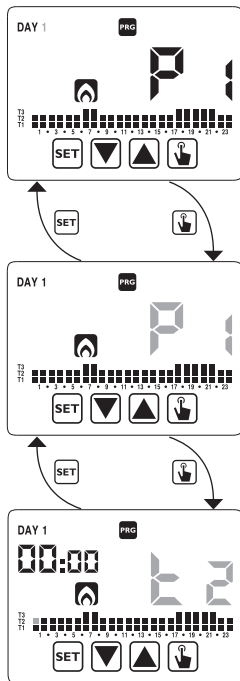
To modify the programming:


1. From the normal operation display, press for a long time the key **SET** until the symbol  starts flashing on field **(2)**
2. Press for a short time the key  until the symbol **PRG** flashes and press the key  to access the parameters modification.
3. The programs page is displayed: the first day of the week (DAY 1) flashing, the current program (for example P1) of the current operating mode ( or ) and the corresponding profile of the program.

- 3.1. If the set program is good, move to the next day with the keys  and .


- 3.2. If the set program is not good, press the key . The set program flashes: choose a different program among the 7 available programs pressing the keys  and .


- 3.2.1. If no program exactly satisfies the user's needs, choose any program which best meet them and press the key  to access the modification of the program profile. On field **(3)**  appears while on field **(7)** flashes the temperature level (T1, T2 o T3) set for that specific time (00:00).

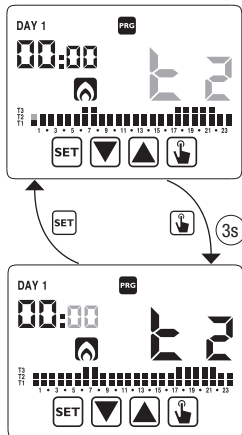




Use the keys ▲ and ▼ to change the temperature level and the key  to move to the next hour. Set like this the desired level temperature for each hour of the day.

- 3.2.1.1. For each hour it's possible to delay the start of the regulation of 15', 30' or 45'

After setting the temperature as described above, press for a long time the key  to set a delay.





The minutes field flashes (field **3**): set with the keys ▲ and ▼ and the delay and press the key  to move to the next hour.






4. When the program satisfies the user's needs, go back to the days pressing twice the key  and repeat for the other days of the week the operations. When all modifications have been performed, exit the programming menu pressing for a long time the key .

Temperatures T1, T2, T3 modification




To modify the 3 temperatures of automatic operation:

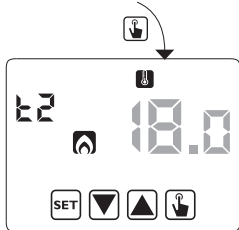
- From the normal operation display, press for a long time the key  until the symbol  starts flashing on field **(2)**
- Press for a short time the key ▲ until the symbol  flashes. Press the key  to access the parameters modification.






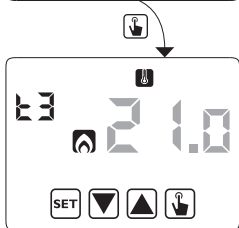
3. The value of the flashing T1 temperature is displayed. Modify the value with the keys  and  and press the key  to move to the modification of T2.





4. The value of the flashing T2 temperature is displayed. Modify the value with the keys  and  and press the key  to move to the modification of T3.



5. The value of the flashing T3 temperature is displayed. Modify the value with the keys  and  and press the key  to go back to the page of T1 temperature.



6. Once all parameters are set, to exit and to go back to the programming menu, press for a short time the key .
To exit and to go back to the normal operation press for a long time the key  or wait for the time-out expiration (40 seconds about).











Attention: the values of set temperatures must respect the condition:
 $T1 \leq T2 \leq T3$.
In cooling mode T1 is not settable and equals off system.

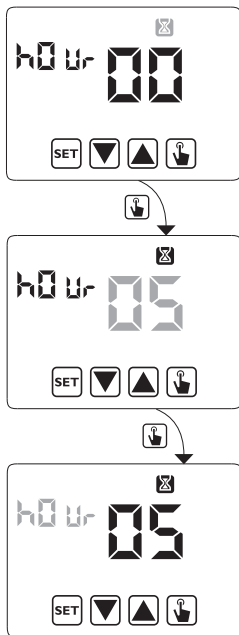
Timing setting

This menu allows the setting of a timing on the current operating mode, expressed in hours and days.

For further information about timings, see the chapter “Timings: what they are” on page 29).

To set a timing:

- From the normal operation display, press for a long time the key  until the symbol  starts flashing on field **(2)**
- Press for a short time the key  until the symbol  flashes and press the key  to access the parameters modification.
- The value of the timing currently set flashes (00= no timing). Enter the timing value (from 1 to 99) with the keys  and  and press the key  to move to the measurement unit change (hours and days).
- The measurement unit starts flashing (*hour* or *day*). Press the keys  and  to choose a timing in hours (*hour*) or days (*day*).



5. Once all parameters are set, to exit and to go back to the programming menu, press for a short time the key **SET**.

To exit and to go back to the normal operation (automatic, manual) press for a long time the key **SET** or wait for the time-out expiration (40 seconds about).

If a timing is active, the display shows the symbol .

To interrupt a timing, access again the menu and set the value .








Advanced functions menu

With the ADV menu it's possible to modify the following operation parameters:

- operating mode (heating or cooling)
- regulation type (on-off or proportional)
- parameters relative to regulation type
- antifreeze temperature
- auxiliary input configuration
- password for key lock
- system operation hours.

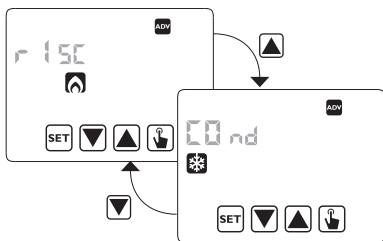


To access the menu ADV:

1. From the normal operation display, press for a long time the key **SET** until the symbol  starts flashing on field **(2)**.
2. Press for a short time the key  until the symbol  starts flashing and press the key  to access the parameters modification.
3. At this point the first parameter of the menu starts flashing: press the keys  and  to modify the parameter and the key  to confirm and to move to the next parameter.
To exit the parameters modification press the key **SET**.

Operating mode

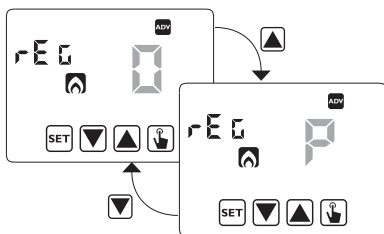
This parameter allows to specify the operating mode of the chronothermostat, between winter-heating (🔥) and summer-cooling (❄️).



For further information about the operating mode see the chapter “Regulation types” on page 27.

Regulation type (only for heating mode)

For heating mode it's possible to choose between on/off regulation (rEG 0) or proportional (rEG P).



For further information about regulation type see the chapter “Regulation types” on page 27.

Regulation parameters

In case of **on/ off** regulation the only parameter to set is the hysteresis (dIF), which can have values between 0.1°C e 1°C .


In case of proportional regulation the parameters to set are the regulation band ($band$) e il periodo di regolazione (PER).

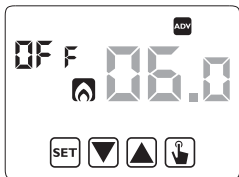
For further information about how to choose these values see the chapter "Regulation types" on page 27.

But remember that the preset settings are suitable for the most part of the situations: to change these settings only if it's really necessary.

Antifreeze temperature (only for heating mode)

For the heating mode it's possible to set a safety temperature (antifreeze temperature – $DIFF$) to maintain also if the chronothermostat is switched off.

It's possible to choose a value between 1°C and 50°C . It's also possible to deactivate the antifreeze function pressing the key  until the display shows " _ _ ". In this case, if the chronothermostat is switched off, no safety temperature is maintained.

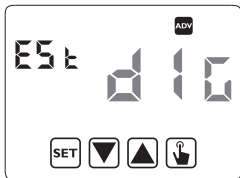


Auxiliary input configuration (only for battery models)

The chronothermostat has a configurable input to connect an external temperature probe or a non-voltage contact if you want to connect a telephone dialler with whom to turn the chronothermostat on or off remotely.

$ES\text{t}$ appears. Choose:

- --- in case nothing is connected to the input
- $d\text{tG}$ in case you want to connect a telephone dialler
- $^{\circ}\text{C}$ in case you want to connect an external temperature probe



The features of this probe are the following:

- Protection degree: IP66
- Cable length: 2 meters (expanding up to 40meters bipolar cable section 1 mm²)
- Operating temperature: -40 °C ÷ +60 °C


| Code | Model | Capacity |
|----------|--------|-----------------|
| VN883500 | X.Temp | -40 °C ÷ +60 °C |

If the input is configurable as external temperature probe, the chronothermostat shows on the display the measured values of the external probe and uses them for the adjustment.

During normal operation of the chronothermostat, to know which probe is used for the adjustment, simply press the key .

Password for key lock

It's possible to set a key lock if the chronothermostat is installed in public places or however if you want to prevent anyone from modifying the operation parameters.



To set a password, enter on field *PAS* a value between 001 and 999. To deactivate the password press the key  until "----" appears.




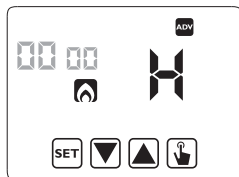
When the keyboard is locked, the thermostat performs all its functions using the set regulation parameters.

If the key lock is active and one key is pressed, the display shows for a few seconds the writing *bl oc* with flashing dashes: enter the password to unlock the keyboard, which will be locked for 30 seconds from the last pressure.

System operation hours

This page shows the total number of hours of the system operation (relais ON) for the current mode (indicated by the icons  ).

The hour meter has got 4 digits and it's resettable pressing for a long time the key  until *0000* appears.







MANUAL OPERATION

During manual operation the chronothermostat performs as a normal thermostat, adjusting on the basis of the Tm temperature (manual setpoint), independently from the day and the time where it is.

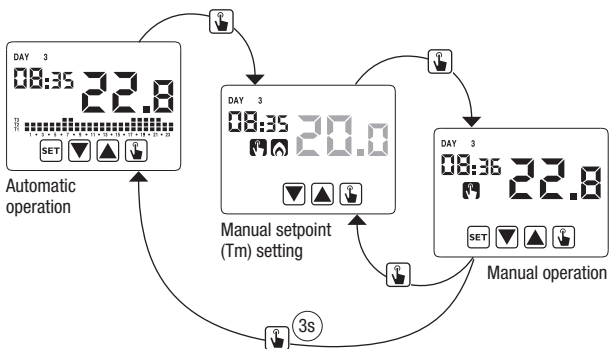
The manual operation is signalled with the switch on of the symbol  on field (5).

To move from the automatic operation to the manual one:

1. press for a short time the key . In the field (7) the setpoint (Tm) currently set flashes
2. set the desired setpoint with the keys  and  and confirm with the key 
3. at this point on field (7) the value of the environment temperature reappears and the chronothermostat operates in manual.

If you want to change the setpoint (Tm) press the key  and repeat the points 2 and 3.

To go back to the automatic operation press for a long time the key  (about 3 seconds).






OFF OPERATION

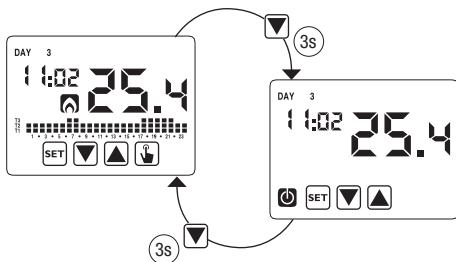
In off mode the chronothermostat doesn't perform any regulation (*) but it continues to display the day, the time and the measured temperature.

(*) When in heating / winter mode the chronothermostat maintains a minimum temperature - Toff antifreeze temperature - to avoid the freezing of the systems where the chronothermostat is installed.

Toff can have values between 1°C and 50°C or it can be completely shut down; in this last case the saving of minimum temperature is not guaranteed. The set default Toff is 6°C but it's possible to modify this value entering the ADV menu (see "Antifreeze temperature" page 19).

To switch the chronothermostat off press the key  until the symbol  is displayed (field **(9)**).

To reactivate the regulation, switching back to the operating (automatic or manual) which is before the switching off, press the key  for about 3 seconds.





Remotely switching off (battery powered models only)

The battery powered Chronos have got an input for the connection to a clean contact to whom to connect for example a telephone dialler to switch on or to switch off remotely the chronothermostat with their own telephone.

The contact can have one of these two positions:

- open → normal operation (according to the programming set by keyboard)
- closed → chronothermostat in off mode

Remotely off status is displayed with the flash of the symbol  on field **(9)** to differentiate it from the keyboard off statu ( fixed on field **(9)**).

Attention: remotely off status (closed contact) is more important than any other programming, so the chronothermostat will be in off status until the contact doesn't switch back to the opened position.

BACKLIGHTING MANAGEMENT

The timed thermostats of the Chronos series have got a backlit display with led. There are some differences between battery powered models and mains powered models.

Battery Chronos

The battery powered models have got a backlighting of blue colour, which is activated only if they are inside the menu of programming or if a key is pressed. In normal operating status the backlighting results off.


This behaviour is not modifiable.

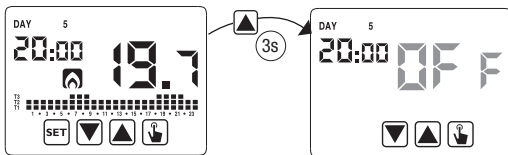
230V~ Chronos

The 230 V models have got a multicolor backlighting which can be configured according to the preferences' user.



The possible configurations for the backlighting are the following:


- RGB (*rGb*) in this case the backlighting changes following the difference between the measured temperature and the set temperature value. In particular, it will be:
 - blue, if the measured temperature is lower than the set temperature value of at least 0.5°C (or we are inside any programming menu)
 - green, if the difference between the measured temperature and the set temperature value is, in absolute value, lower than 0.5°C (or if the chronothermostat is in off mode)
 - red, if the measured temperature is higher than the setpoint of at least 0.5°C (or in case of probe error)
- BLUE (*blUE*) in this case the backlighting will be blue fixed
- GREEN (*GrEE*), in this case the backlighting will be green fixed (blu inside programming menu)
- RED (*rEd*), in this case the backlighting will be red fixed (blu inside programming menu)
- OFF (*OFF*), in this case the backlighting is always off (useful for example in bedrooms) (blu inside programming menu).

It's possible to configure the backlighting pressing the key  for 3 seconds: in this way you access the configuration menu and it's possible to select *OFF*, *BLU*, *RED*, *GRE*, *OFF*.



MINIMUM AND MAXIMUM VALUES

It's possible to display the measured values of minimum and maximum temperature. To display these values press the key  (maximum value h) or  (minimum value L).

During the display it's possible the resetting of these values pressing the key  until --- appear in place of the temperature.

SUMMER TIME CHANGE

Summer time is the convention to step up of one hour the dials of the clocks during the summer period in order to prolong the lighting time in the late afternoon to the loss of the early morning.

In European countries summer time starts the last Sunday of march and ends the last Sunday of october.

















The chronothermostat manages the summer/winter time change as follows:

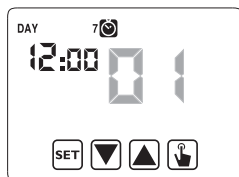
- increasing of one hour to move from winter time to summer time
- decreasing of one hour to move from summer time to winter time

In off status the chronothermostat is configured to move from summer time the last Sunday of march at 02:00 o' clock to go back to winter time the last Sunday of October at 03:00 o' clock in accordance with Europe convention.

However it's possible to deactivate the automatic time change or to change the date and the hour of the time change.

To change settings:

- access the menu of time and date change, pressing for a long time the key  until the symbol  starts flashing.
- press the key  to access the time and date modification. At this point, during the modification of any parameter (seconds, minutes, hour, year, month or day) press for a long time the key  until the display shows the writing *AUTO* appears on field **(3)**.
- Choose with the key  and  the automatic time change activation (*AUTO ON*) or its deactivation (*AUTO OFF*) and confirm with the key .
- If *OFF* we go back to the date/time change; if *ON* the current setting for the passage to summer time is displayed (indicated with the symbol ). In the example:
 - the Sunday (7) of the last week (LA) of march (03) at 2 o' clock (02)
 - if it's necessary change the parameters with the keys  and  and move to the next parameter with the key . The sequence requires the insertion of:
 - day (1...7) of the week
 - the week of the month (first, second, third, fourth, last – LA)
 - the month (1...12)
 - the hour
- press the key  the current setting for the passage to the winter time is displayed (indicated with the symbol ). In the example:
 - the Sunday (7) of the last week (LA) of october (10) at 3 o' clock (03)
 - if it's necessary change the parameters with the keys  and  and move to the next parameter with the key . The sequence requires the insertion of:
 - day (1...7) of the week
 - the week of the month (first, second, third, fourth, last – LA)



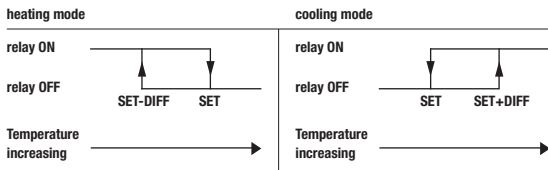
- iii. the month (1...12)
 - iv. the hour
6. Once all parameters are set, to exit and to go back to the programming menu, press for a short time the key **SET**.
To exit and to go back to the normal operation press for a long time the key **SET** or wait for the time-out expiration (40 seconds about).

REGULATION TYPE

The Chronos has got two types of regulation:

On/off regulation

During on/off regulation the chronothermostat measures once a minute the environment temperature and it carries out the regulation on the basis of the following logic:



where SET represents the setpoint and DIFF the hysteresis (useful to avoid continuous switches on/switches off dangerous for the system in proximity to the reaching of the setpoint).

Proportional regulation (only in heating)

In heating mode, the on/off regulation is available and also the proportional regulation which in some systems allows a more precise regulation to obtain a constant temperature.

This regulation requires to specify two parameters:

- the band, which represents the temperature values with whom to perform the proportional regulation. The band is centered on the setpoint and it can have values between 0.5°C and 5°C; outside these values the heating will be always on

(if $\text{setpoint-band} > \text{environment temperature}$) or always off (if $\text{setpoint} + \text{band} < \text{environment temperature}$).

- The regulation period which represents the duration of the regulation cycle (activation time + deactivation time of heating) and it can have values of 10, 20 or 30 minutes.

During the operating, at the beginning of the regulation period, the chronothermostat measures the environment temperature and it compares it with the programmed setpoint; on the basis of this difference the activation time is calculated (and consequently the deactivation time). The more the measured temperature is next to the setpoint value – band, the more the activation time will be predominant in comparison with the deactivation time; on the contrary, the more the measured temperature is next to the setpoint value + band, the more the deactivation time will be predominant in comparison with the activation time).

Once regulation period is passed, the chronothermostat compares again the environment temperature with the setpoint and it updates the activation and deactivation times for the new period.

The result of the proportional regulation is subordinated to the correct selection of the parameters.

Select the value of the regulation type as follows:

- 10' for low thermal inertia systems (fan-coil)
- 20' for medium thermal inertia systems (aluminium radiators)
- 30' for medium thermal inertia systems (aluminium radiators)

Select the regulation band value as follows:

- broad band (5°C) for systems with high thermal gradient
- narrow band (0.5°C) for systems with low thermal gradient

Attention: in default status the chronothermostat is configured to operate in on/off with hysteresis set at 0.3°C. This configuration is suitable for the most part of the situations and for this reason it's advisable to modify it only in particular situations.

To modify the regulation type, hysteresis values (on/off regulation), band and period (proportional regulation) see "Regulation parameters" at page 19).

Emergency regulation (for heating mode only)

The chronothermostat performs a regulation of emergency if an error occurs during the reading of the probe or in case of time loss.

In case of **probe error**, if the antifreeze function is not deactivated, the chronothermostat activates the load for 10 minutes every 4 hours. The display shows the writing *Err* on field **(7)**.

In case of **time loss** (because of depleted batteries or blackout of a duration higher than the charge reserve) the chronothermostat restarts from the off mode, adjusting on the basis of the antifreeze temperature, if it hasn't been deactivated before. Reset date/ time to go back to the normal operation (programs modifications and settings remain memorized).

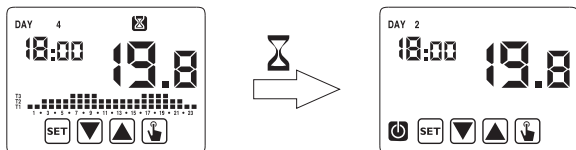
TIMINGS: WHAT THEY ARE

Timings allow to maintain the current operation (automatic, manual, off) for a certain period (times or days) and once passed the chronothermostat changes the operating mode, as explained below.

The timed operations are the following:

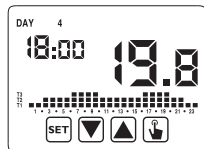
Timed automatic

If in automatic status you set a timing, such off status will be maintained until the end of the timing; operation will then switched to off mode.



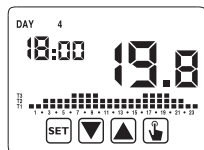
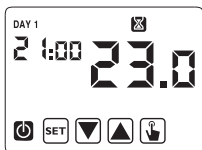
Timed manual

If in manual status you set a timing, such off status will be maintained until the end of the timing; operation will then switched to automatic mode.



Timed off

If in off status you set a timing, such off status will be maintained until the end of the timing; operation will then switched to the one active before the deactivation (automatic or manual).



If you set a timing, the display shows the symbol .

Attention: the timing is calculated in minutes and for this reason if for example you set a timing of 3 days at 12:15 on Tuesday it will expire at 12:15 on Friday.


Attention: the timings can end before their programmed expiration if one of these actions occur:

- time/ date modification (modification of the summer time change included)
- manual modification of the operating mode
- switching of digital input (only for battery models)
- change of the operating logic from winter to summer (or viceversa)

To set a timing, see chapter “Timing setting” at page 16.


CHRONOTHERMOSTAT RESET

If you want to erase all performed settings and to recharge the default values, proceed as follows:

1. to switch off and to switch on the power of the chronothermostat (230 V versions) or to disconnect the time thermostat from the wall-mounted base and reconnect it (battery versions).
2. during the flashing of the keys press the key  until the display shows the writing *dEF*.

Default values are indicated on page 33 of this manual.

BATTERY REPLACEMENT

The models Chronos Bianco and Chronos Nero signal the status of depleted batteries switching on the symbol  (field **(10)**) and making the display to flash.

In this status the regulation is always guaranteed, but it's advisable to replace the batteries as soon as possible! (*)

If the charge level of batteries further decreases, the chronothermostat enters into less consumption mode, it switches off the display and it doesn't perform any regulation.

(*) Remove the depleted batteries and replace them with the new ones in a maximum time of one minute (charge reserve) to avoid to lose the settings of date and time (the performed programmings on the contrary remain memorized even if this limit is surpassed).

Attention: after batteries replacement, the display will switch on within 15 seconds at max.

 **Dispose of the used batteries observing the laws in force in relation to the disposal of hazardous waste.**



REFERENCE STANDARDS

Compliance with Community Directives

2014/35/EU (LVD)

2014/30/EU (EMCD)

is declared in reference to the harmonized standard:

EN 60730-2-7, EN 60730-2-9

DEFAULT VALUES

| Parameter | min | max | step | default |
|----------------------------|---------------|----------------|-------|--|
| winter manual setpoint | 2.0°C | 50.0°C | 0.1°C | 21°C |
| summer manual setpoint | 2.0°C | 50.0°C | 0.1°C | 25°C |
| T1 winter | 2.0°C | T2 | 0.1°C | 15.0°C |
| T2 winter | T1 | T3 | 0.1°C | 18.0°C |
| T3 winter | T2 | 50.0°C | 0.1°C | 21.0°C |
| T2 summer | 10.0°C | T3 | 0.1°C | 23.0°C |
| T3 summer | T2 | 50.0°C | 0.1°C | 25.0°C |
| antifreeze temperature | 1.0°C | 50.0°C | 0.1°C | 6.0°C |
| operating mode | winter | summer | - | winter |
| regulation type | ON/OFF | PROP | - | ON/OFF |
| ON/OFF hysteresis | 0.1°C | 1.0°C | 0.1°C | 0.3°C |
| proportional band | 0.5°C | 5.0°C | 0.1°C | 0.5°C |
| proportional period | 10' | 30' | 10' | 10' |
| password | 0 | 999 | 1 | 000 (deactivated) |
| winter hour meter | 0 | 9999 | 1 | 0 |
| summer hour meter | 0 | 9999 | 1 | 0 |
| summer hour meter, enable | ON | OFF | - | ON |
| winter/summer time change | | | | Summer: LAST DAY7 march 02:00 Winter: LAST DAY7 october 03:00 |
| activation delay | 0' | 45' | 15' | 0' |
| timed operations | 0h | 99d | 1h | 0h |
| input for external contact | digital input | external probe | - | --- |

WINTER PRESET PROGRAMS

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|---|
| P1 | T3 | | | | | | ■ | ■ | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | | | |
| | T2 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | T1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| P2 | T3 | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | T2 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | T1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| P3 | T3 | | | | | | ■ | ■ | | | | ■ | ■ | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| | T2 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | T1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| P4 | T3 | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | T2 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | T1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| P5 | T3 | | | | | | | ■ | ■ | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| | T2 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | T1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |

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|-----------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| P6 | T3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | T2 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | T1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |

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|-----------|----|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| P7 | T3 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | T2 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | T1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |



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