INTERRUTTORI CREPUSCOLARI ASTRONOMICI

Manuale d'Uso

memo AST2

Astronomical twilight switches: User Manual

CE

Vemer SPA

Index

English

Astronomical twilight switches

- Instrument to manage electric utilities between the hours of sunset and sunrise, which are automatically calculated by the instrument based on the geographical coordinates inserted.
- Two output relays:
  - relay 1 programmable by choising between 6 pre-set programs
  - relay 2 with fixed programmation in P1

- Large display with text guide to facilitate programming
- Seable cover and possibility to lock keypad through password

Astronomical twilight switches

- IR remote control (available as an accessory) for transferring programmes from and to the instrument

- Possibility of a programmes archive (up to 126) always available

- Cover on the back of the instrument for replacing the battery

SAFETY WARNINGS

1) ***The instrument must be installed and activated by qualified personnel, following the connection diagrams provided in this manual scrupulously.***
2) ***After installation, it must be made impossible to access the terminals without specific tools***
3) ***Before accessing the connection terminals, verify that the leads are not live***
4) ***Do not connect or power the instrument if any part of it is damaged***
5) ***The instrument must be installed and activated in compliance with current electric systems standards.***
6) ***Do not use the instrument for purposes other than those indicated***

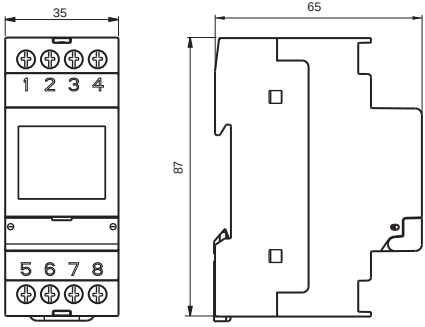
Code	Model	Description
VE343000	memo AST2	Astronomical twilight switch 2 relay

TECHNICAL CHARACTERISTICS

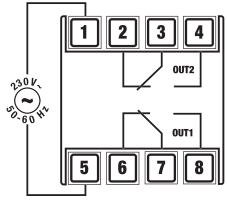
- Power supply: 230Vac ± 10% 50/60Hz
- Absorption: 8VA (2W)
- Replaceable battery
- Output
  - 2 relays with monostable change-over contact 16(10)A / 250Vac
- Type of action: 1B
- Storable programs:
  - 6 pre-set programs
  - 4 periods + 20 holiday days
- Backlit LCD display
- Integrated IR interface with 0.5m capacity with direct sun light (2m when dark)
- IR transmission frequency: 31.25kHz
- Software class: A
- Mounting: DIN rail to backplane
- Container: 2 DIN modules
- Operating temperature: -20°C ÷ +40°C
- Storage temperature -10°C ÷ +70°C
- Pollution level: 2
- Rated impulse voltage: 4kV
- Degree of protection: IP20 at the terminals

English

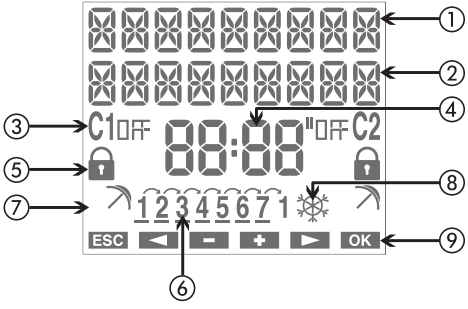
DIMENSIONS



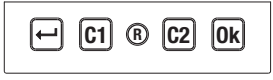
CONNECTION DIAGRAMS



DISPLAY AND KEYPAD DESCRIPTION



① Field **“text1 / day”**
② Field **“text2 / date”**
③ Field **“relay status”**
④ Field **“time”**
⑤ Field **“lock”** (relay switching lock)
⑥ Field **“day of the week”**
⑦ Field **“holiday program”**
⑧ Field **“CET/DST”**
⑨ Field **“key functions”**

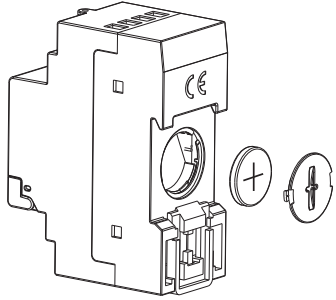


Key **“↵”**: menu/esc/check battery activation
Key **“Ok”**: confirm value/activation IR transmission
Key **“C1”**: decreases the value/menu back/ switching relay 1/lock relay 1
Key **“C2”**: increases the value/menu forward switching relay 2/lock relay 2
Key **“R”**: resets settings

English

INSTALLATION

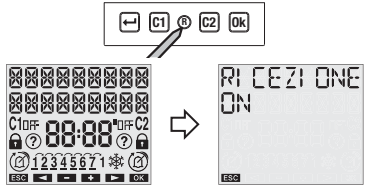
- The instrument is supplied with the battery not installed to prevent useless consumption. Remove the battery from its package and insert it in the housing on the back of the instrument **so that the (+) pole is visible as shown in the "Battery replacement" box**. Then secure the cover, turning it clockwise.



- Connect the load and the power supply as illustrated in the "Connection diagrams" chapter.

- Use a pointed object to press the **"R"** key to reset it. The display segments will turn on for a few seconds, then the instrument will switch to IR reception mode.

Note: in the case of a mains power failure, IR reception is not activated.



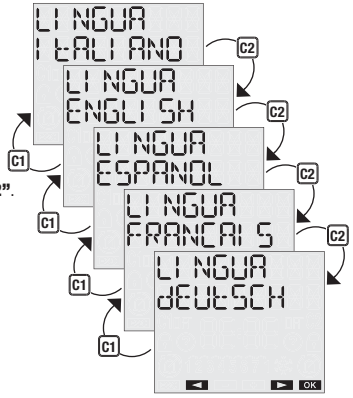
- Press the **"↵"** key to exit the IR reception mode (if you want to transfer programs from the remote control, see the "**IR Interface**" pag. 23)
- At this point, the parameters required for correct instrument operation can be entered:
  - language, date format, date, time, geographical coordinates and any corrections (or simply the province for Italy).

Setting the language

5 languages are available: Italian, English, Spanish, French, German.

➢ Select the language with **“C1”** and **“C2”**.

➢ Confirm with **“Ok”**.

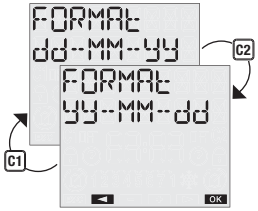


Setting the date format

It is possible to select between the dd-mm-aa and yy-mm-dd formats.

➢ Select the format with **“C1”** and **“C2”**.

➢ Confirm with **“Ok”**.



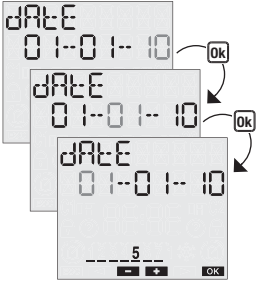
Setting the date

The parameter (year, month, day) being changed will flash.

➢ Select the desired value with **“C1”** and **“C2”**.

➢ Press **“Ok”** to confirm and continue with the next parameter

The insertion sequence is year → month → day



English

When the day is being entered, the display will show
a bar with the corresponding day of the week
(1→ Monday, 7→ Sunday).

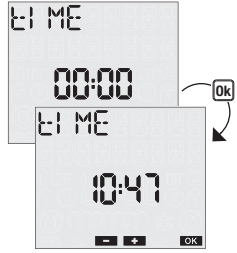
Setting the time

The parameter (hours, minutes) being changed will flash.

➢ Select the desired value with with **"C1"** and **"C2"**.

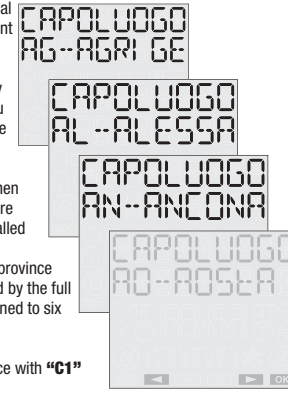
➢ Press **"Ok"** to confirm and continue with the next parameter

The insertion sequence is hours → minutes



Setting the coordinates/province capital

By setting the geographical coordinates, the instrument is able to automatically calculate the sunrise and sunset times for each day during the year. The menu changes depending on the set language:



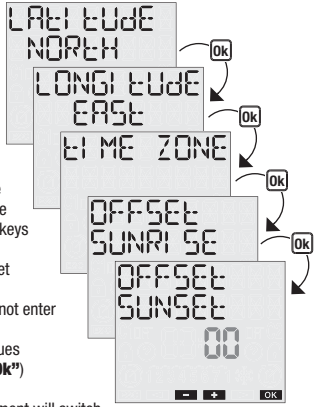
- if Italian is selected, then only the province where the instrument is installed must be entered (the display will show the province abbreviations followed by the full name, possibly shortened to six characters).

  ➢ Select the province with **"C1"** and **"C2"**.

  ➢ Press **"Ok"** to confirm

- if a language other than Italian is selected, the following parameters must be entered:

  - latitude
  - longitude
  - the time zone (a time zone is suggested based on the latitude and longitude values; this value may be changed using the **"C1"** and **"C2"**) keys
  - sunrise and sunset time corrections (in this phase do not enter a correction, leave the two values at 0 and press **"Ok"**)



At this point, the instrument will switch to the normal operating status (main page). The display will show the date, time, relay status, day of the week (in letters on the top row, in numbers at the bottom) and the CET / DST symbol.

Main page

Note: if the instrument is not powered by the mains, instead of the day the following message will appear on the top row NO SUPPLY.
In this condition backlighting is not active and the relay will remain off.

English

English

MANUAL OPERATION

Switching on/off manually

Press the **"C1"** (**"C2"**) key briefly to switch the output relay 1 (relay 2). The status that is reached will be maintained until the next program event.

Switch lock

Activating the lock function, all switches are ignored. The relay remains in the status in which it was found when the lock was set.

➢ Press and hold **"C1"** (**"C2"**) for 3 seconds to activate/deactivate the relay 1 (relay 2)

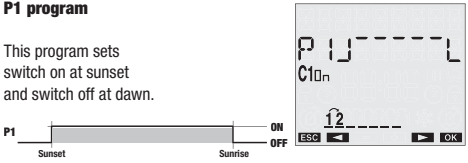
If the function is active, the following symbol will appear 🔒.

PRE-SET PROGRAMS

Memo AST2 is equipped with 6 pre-set programs that allow you to program the instrument's night behaviour.

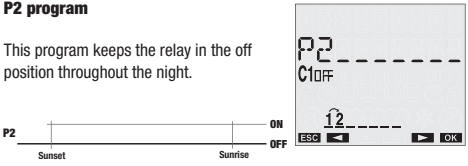
P1 program

This program sets switch on at sunset and switch off at dawn.



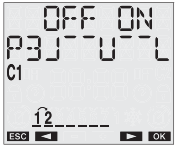
P2 program

This program keeps the relay in the off position throughout the night.



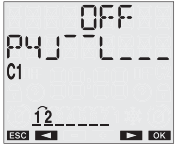
P3 program

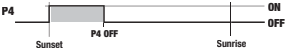
This program sets switch on at sunset and switch off at dawn, with a night-time interruption in which the relay is temporarily in the off position.



P4 program

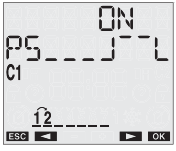
This program sets switch on at sunset and switch off during the night, at a programmable time (before dawn).

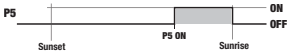




P5 program

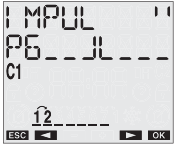
This program sets switch on at a programmable time (after sunset) and switch off at dawn.





P6 program

This program sets an on impulse during the night with programmable initial time and duration of the impulse. The impulse's maximum duration is 59 seconds.



Note: the relay 2 has a program set to P1 (it cannot be modified). The selection of the night-time behaviour is therefore only limited to relay 1.

Note: the dawn and sunset times are automatically calculated by the instrument on the basis of the astronomical coordinates entered and of any time adjustments (see chapter "Settings").

English

AUTOMATIC OPERATION

The default settings are as follows:

- Running program P1 on relay 1
- Running program P1 on relay 2 (cannot be modified)

The “NIGHT PROGRAM C1” menu allows you to program the behaviour of relay 1, by assigning a different program for each day of the week.

The “holiday” menu allows you to enter individual days or holiday periods during which all the set programmes shall not be carried out and the relay shall be in the off position.

1. NIGHT PROGRAM C1 menu

With this menu it is possible to view and change the programs set on relay 1.

1.1 NIGHT C1 display

From the normal operating status:

➢ Press key **“↵”**

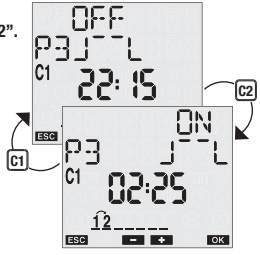
➢ Select PROGRAM with **“C1”** and “**C2”** and confirm with **“Ok”**

➢ Select NIGHT PROGRAM C1 with **“C1”** and **“C2”** and confirm with **“Ok”**

➢ The display shows the set program for the first night of the week (in the P1 example in the night between days 1 and 2, i.e. between Monday and Tuesday). Press **“C1”** and **“C2”** to cycle through the nights of the week and display which program is set for each night

Note: the display of the P3 program is divided into two screen shots, the first one showing the switch off time and the second time the switch back on time.

To go from one screen to the other, press keys "C1" and "C2".



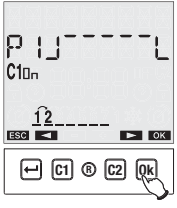
1.2 Change NIGHT C1

Should you wish to change the program assigned to a specific day of the week, follow these steps.

From the day display menu:

➢ Press **"Ok"** to enter into modification

➢ The display shows the currently set program, flashing: press **"C1"** and **"C2"** to choose which program (P1… P6) to set and confirm with **"Ok"**



➢ Enter the parameters relative to the selected program:
P1: no parameter
P2: no parameter
P3: night switch off time, night switch on time
P4: night switch off time
P5: night switch on time
P6: initial time of the impulse, duration of impulse

➢ Press **"Ok"** to confirm. The display will show the words SAVEd C1 and the instrument shall enter normal operation.

English

2. Menu HOLIDAY PROGRAM

2.1 Creating a HOLIDAY program ↗

From the normal operating status:

➢ Press **"↵"**

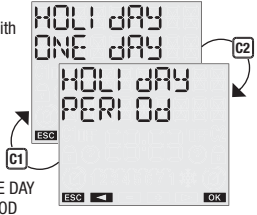
➢ Select PROGRAM with **"C1"** and **"C2"** and confirm with **"Ok"**

➢ Select PROGRAM HOLIDAY with with **"C1"** and **"C2"** and confirm with **"Ok"**

➢ Select HOLIDAY NEW and confirm with **"Ok"**

➢ Choose the relay onto which to carry out the programming

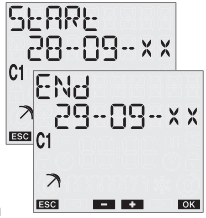
➢ Select between HOLIDAY ONE DAY (single day) or HOLIDAY PERIOD (multiple contiguous days) with **"C1"** and **"C2"**



➢ Enter the date (holiday day) or the holiday day interval (holiday period).

Note: the first and last date are to be considered included in the holiday period

➢ Press **"Ok"** to confirm



Once the programming is confirmed, the following message will appear on the display SAVEd.
During normal operation, the possible execution of a holiday programme is signalled by the symbol ↗ in field (7) on the display.

Note: recursive function

At this point, the instrument activates the recursive function that makes is possible to program multiple holiday days in series (or holiday *periods).*
If you do not want to enter another holiday *day (or period) press* **"↵"** *to end programming.*
The correlation of the programmed holiday events is not controlled with the recursive function: the function must therefore be considered as facilitated programming.

The instrument's memory makes it possible to store up to 4 holiday periods + 20 holiday days.
Once the maximum capacity is reached, an attempt to store an additional program will cause the following message to be displayed MEMORY FULL. In this case, a program stored in the memory must be deleted before entering a new one.

The message ERROR appears on the display if you try to enter a holiday period that overlaps with a period that was already entered, or if the last holiday date is before the start date.

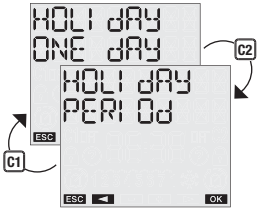
2.2 Checking a program

This menu can be used to display, modify or delete a holiday program saved in the instrument.

2.2.1 Displaying a program HOLIDAY

From the normal operating status:

- ➢ Press **"↵"** to access the menu and select PROGRAM with **"C1"** and **"C2"**
- ➢ Confirm with **"Ok"**
- ➢ Select PROGRAM HOLIDAY and press **"Ok"** to confirm
- ➢ Select HOLIDAY CHECK and press **"Ok"** to confirm
- ➢ Choose the relay onto which to visualize the program holiday with **"C1"** and **"C2"**
- ➢ Select between HOLIDAY ONE DAY and HOLIDAY PERIOD and press **"Ok"** to confirm



In case of HOLIDAY ONE DAY it is possible scrool the programs using **"C1"** and **"C2"** keys. In case of HOLIDAY PERIOD the instrument shows the start day of the first holiday period, press **"C2"** to visualize the end of the period.
At this point, pressing **"Ok"** it is possibile access to options of modify, delete or next holiday period.

2.2.2 Changing a program HOLIDAY

A program can be changed from the program display status.

- ➢ Select the holiday program to change and press **"Ok"**
- ➢ Select MODIFY with **"C1"** and **"C2"** and press **"Ok"** to confirm

English

English

➢ At this point, new program parameters can be entered. The parameter being changed will flash. Use the keys **"C1"** and **"C2"** to set the values and press **"Ok"** to confirm or **"↵"** to exit without changes.

When done with the change, the message SAVEd is displayed and the instrument will return to normal operation.

2.2.3 Deleting a program HOLIDAY

A program can be deleted from the program display status.

➢ Select the holiday program to delete and press **"Ok"**
➢ Select DELETE with **"C1"** and **"C2"** and press **"Ok"** to confirm or **"↵"** to exit without deleting.

The message dELEtEd will appear on the display and the instrument will return to normal operation.

3. Programs reset

Program reset make it possibile to delete all holiday events (days and periods) saved in the instrument and re-load P1 in each relays.

From the normal operating status:

➢ Press **"↵"**
➢ Select PROGRAM with **"C1"** and **"C2"** and confirm with **"Ok"**
➢ Select PROGRAM RESET with **"C1"** and **"C2"** and press **"Ok"** to confirm

➢ Confirm with **"Ok"** or press **"↵"** to exit without resetting

Note: the program reset function can also be accessed from the Reset menu (see **"Reset menu"**) chapter.

SETTINGS MENU

This menu is used to display and change the instrument's general configuration parameters.
These are: language, date, time, automatic CET / DST, position, correction, pin reset.

From the normal operating status:

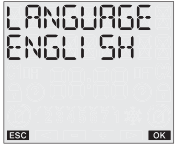
➢ press **"↵"**

➢ select SETTINGS with **"C1"** and **"C2"**

➢ confirm with **"Ok"**.

LANGUAGE menu

The options are:
Italian, English, Spanish, French, German.



➢ select SETTINGS LANGUAGE with **"C1"** and **"C2"**
➢ confirm with **"Ok"**.
The currently set language will be displayed.
➢ press **"Ok"** twice to access the change mode or **"↵"** to exit without changing
➢ select the language with **"C1"** and **"C2"**
➢ confirm with **"Ok"**.
➢ The following message will appear on the display SAVEd.

DATE menu

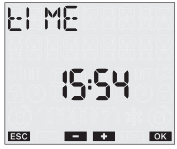
➢ Select SETTINGS DATE with **"C1"** and **"C2"**
➢ confirm with **"Ok"**. The current date is displayed.
➢ Press **"Ok"** twice to access the change mode or **"↵"** to exit without changing
➢ select the format with **"C1"** and **"C2"** (dd-mm-yy or yy-mm-dd)
➢ confirm with **"Ok"**
➢ enter the year, month, day with **"C1"** and **"C2"** and press **"Ok"** to confirm
➢ The following message will appear on the display SAVEd.

TIME menu

➢ Select SETTINGS TIME with **"C1"** and **"C2"**
➢ confirm with **"Ok"**. The current time is displayed
➢ Press **"Ok"** twice to access the change mode or **"↵"** to exit without changing

English

➢ enter the time, minutes with **"C1"** and **"C2"** and press **"Ok"** to confirm
➢ The following message will appear on the display SAVEd.



CET / DST CHANGE menu

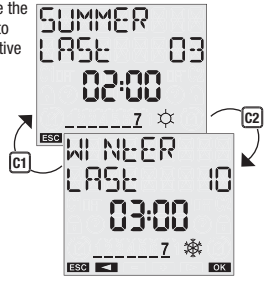
The instrument makes it possible to automatically manage the CET/DST change and vice vers.

To activate/deactivate the function:

➢ select SETTINGS DST with **"C1"** and **"C2"**
➢ confirm with **"Ok"**. The current status will appear on the display (AUtO OFF or AUtO ON)
➢ press **"Ok"** twice to access the change mode
➢ select SET AUTO ON or SET AUTO OFF with **"C1"** and **"C2"**
➢ press **"Ok"** to confirm.

If the function is deactivated (AUTO OFF) then the following message SAVEd will appear on the display and the instrument will return to the main page; if the function is active, press **"C2"** to view/change the DST → CET change.

➢ Press **"Ok"** twice to change the parameters or **"C2"** again to display the parameters relative to the DST → CET change



The following parameters must be entered (for both changes):

- week of the change (1ST first, 2ND second, 3RD third, 4TH fourth, LAST last of the month)
- month of the change
- day of the week (Monday, Tuesday,…)
- time of the change

When all parameters are set, press **"↵"** to exit.

The default values for the time change are:
- winter → summer change: last Sunday in March, 2:00 am
- summer → winter change: last Sunday in October 3:00 am

During normal operation, the symbol ❄ will appear on the display during the CET period (winter) and the symbol ☼ will appear during the DST period (summer).

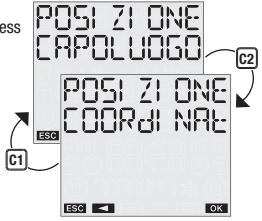
POSITION menu

This menu is used to change the geographical coordinates (latitude, longitude, time zone) that were set during the installation phase.

To change a parameter:

➢ Select SETTINGS POSITION with **"C1"** and **"C2"** and press **"Ok"** to confirm

➢ If Italian is set as the language, it is possible to select to change only the province or make a change using the geographical coordinates:



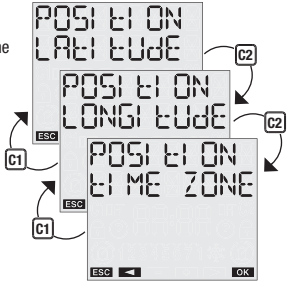
- if you want to change the province, select CAPITAL POSITION and press **"Ok"**. The currently set province will be displayed: press **"Ok"** to access the change mode and select the new province with **"C1"** and **"C2"** and confirm with "Ok". At this point the message SAVEd will be displayed to indicate the change that was made.

➢ Select the parameter to change from among latitude, longitude or time zone and press **"Ok"** to confirm

➢ The parameter value is displayed: press **"Ok"** to access the change mode

➢ Set the new value with **"C1"** and **"C2"** and press **"Ok"** to confirm.

➢ The following message will appear on the display SAVEd.



English

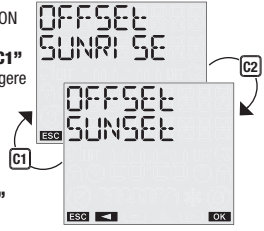
CORRECTION menu

This function is used to change the sunrise and sunset time that is automatically calculated by the system (maximum correction ±120 minutes).

To display the calculated sunrise and sunset times:

➢ From the main page, press **"Ok"**.
The currently calculated sunrise and sunset times will be displayed in sequence.

To change the sunrise and sunset time:



➢ Select SETTINGS CORRECTION and confirm with **"Ok"**
➢ Select the time to correct **"C1"** and **"C2"** l'orario da correggere (sunrise or sunset)
➢ Confirm with **"Ok"**. The currently set correction is displayed. Press **"Ok"** again to change the value.
➢ Set the correction with **"C1"** and **"C2"** and press **"Ok"** to confirm (use negative values to advance the event, positive values to delay the event).
➢ The message SAVEd appears on the display to indicate the change that was made

At this point, pressing **"Ok"** on the main page, the corrected sunrise and sunset times are displayed again.

PIN menu

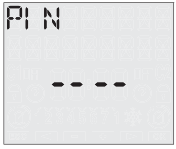
A protection code can be set to prevent anyone from using the instrument.
The PIN code is a 4 digit number that has values between 1 and 4.

To set the pin code:

➢ select SETTINGS PIN with the keys **"C1"** and **"C2"**
➢ confirm with **"Ok"**
➢ the four digits that make up the current PIN code are displayed (0000 corresponds to pin inactive)
➢ confirm with **"Ok"**
  – select CHANGE and press **"Ok"** to enter the new PIN code. Use the keys **"C1"** and **"C2"** to enter the numbers one by one that make up the code and press **"Ok"** to confirm them
  – select RESET to deactivate the PIN code request
➢ press **"Ok"** to confirm.

➢ The following message appears on the display SAVEd (dELEtEd in the case of reset).

If the PIN code request is active, the keypad will be locked approx. 3 minutes after the keypad was last pressed. At this point, when pressed again, a request to enter the PIN code will appear.



To unlock the instrument, enter the PIN code, according to this rule:

- key **“↵”**: 1
- key **“C1”**: 2
- key **“C2”**: 3
- key **“Ok”**: 4

For example, pin: 3411 **“C2” “Ok” “↵” “↵”**

SETTING RESET menu

This menu is used to reset all settings that were made, restoring the factory values:

Date format	dd--mm--yy
CET / DST change - summer time change - winter time change	automatic Last Sunday in March 2:00 am Last Sunday in October 3:00 am
Correction - sunrise - sunset	 0 minutes 0 minutes
PIN request	0000 - deactivated

To reset the settings

➢ select RESET SETTINGS with the **“C1”** and **“C2”** keys

➢ confirm with **“Ok”**

➢ confirm again with **“Ok”**

➢ the following message appears on the display dELEtEd.

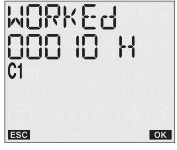
English

HOUR METER MENU

The hour meter function indicates the total time in which the output remained in the on status.
The hour meter range is between 0 and 99999 hours, when the maximum limit is reached, it is automatically reset.

To display the hour meter value:

- ➢ from the main page, press **"↵"**
- ➢ select HOUR CNT with **"C1"** and **"C2"**
- ➢ press **"Ok"** to confirm
- ➢ choose with **"C1"** and **"C2"** the output concerned
- ➢ press **"Ok"**. The total use is displayed
- ➢ press **"Ok"** again to access the hour meter reset option. Press **"Ok"** again to confirm or **"↵"** to exit without resetting.
- ➢ The message dELEtEd appears on the display to indicate the change that was made.



RESET MENU

The instrument's default status can be reset with the reset function.
There are 4 different resets available:
- reset settings: deletes all settings that were made
- reset programmes: deletes all saved programs
- reset hour meter: resets the operating time hour meter
- reset all: reset settings + reset programs + reset hour meter

To perform the reset:
- ➢ press **"↵"** to access the menu
- ➢ select RESET with the keys **"C1"** and **"C2"** and press **"Ok"**
- ➢ use the keys **"C1"** and **"C2"** to select one of the above listed resets and press **"Ok"**
- ➢ press **"Ok"** to confirm.

To perform a complete instrument reset, restoring the factory settings, use a sharp instrument to press the **"R"** *key. This deletes all the settings that were made and restores the default conditions.*

IR INTERFACE

The **memo AST2** has an IR interface that makes it easy to exchange programs between the instrument and its remote control.
Attention: the IR interface can only be activated if **memo AST2** is powered by the mains network.
In this way, an instrument can be programmed, then the program can be copied to a remote control and then duplicated in other instruments, without having to repeat the programming step by step.

The program exchange remote control is not provided with the instrument but can be purchased separately as an accessory:

Code	Model	Description
VE345500	memo.RC1	IR remote control Italy
VE366100	memo.RC2	IR remote control Ita/Eng/Fra/Deu/Esp

There are two basic functions in this operating mode:

- **COPY**: consists in transferring the programs from a **memo AST2** to the remote control
- **PASTE**: consists in transferring the programs from a remote control to one or more than one **memo AST2** instruments at the same time.

Copy function

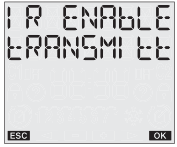
To transfer a program from **memo AST2** to the remote control, first:

➢ generate a program with the traditional method onl **memo AST2** (see “Automatic programming”)

➢ activate the reception mode on the remote control (see the relative instruction sheet)

➢ activate the transmission on **memo AST2**, holding down the **“Ok”** key for **3 seconds**
The following message will appear on the display
IR ENABLE TRANSMIT

3 seconds



➢ press the **“Ok”** key again to confirm the start of transmission or **“↵”** to cancel the transmission

➢ during the transmission, the following message will appear on the display DATA OUT (DATA IN on the remote control display) and the remote control will emit “bips”. When completed, the following message is displayed TRANSMIT DONE.

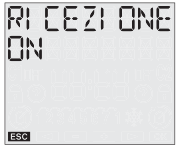
English

Paste function

To transfer a program from the remote control to one or more **memo AST2**, first:

➢ connect the **memo AST2** clock to the mains network

➢ press the **"R"** key to reset the instrument and activate the reception mode. The following message will appear on the display RI CEZI ONE ON



➢ activate the transmission on the remote control and select which program to send (see the instructions for the remote control)

➢ during the transmission, the following message will appear on the display dAtA I N(dAtA OUt on the remote control display) and the remote control will emit "bips". When completed, the following message is displayed tRANSMI tt dONE.

Note: during transmission, point the remote control towards the front of the instrument to facilitate the transmission. A possible problem with the transmission is signalled with the message RECEI VEd FAI LEd *on the clock's display.*

At this point, the programs and date and time settings are transferred to the instrument and it is ready to operate with the transferred parameters.

BATTERY REPLACEMENT

The battery charge level can be checked:
- automatically by the instrument once a week
- manually, hold down the **"↵"** key on the main page for 3 seconds.

If the battery charge level is lower than the specific threshold, the following message will appear on the first row of the display BATTERY. In this case, replace the battery as soon as possible.

To replace the battery:
- disconnect the power supply
- remove the cover from the battery compartment, turning it anticlockwise
- replace the battery and replace the cover, turning it clockwise
- connect the power supply

In order to retain the programming and settings, the time that passes between removing the old battery and inserting the new one must not exceed 60 seconds.

Use CR-2032 batteries only.
Throw away the run down batteries in compliance with current regulations on the disposal of harmful waste.

REFERENCE STANDARDS

Compliance with Community Directives
2006/95/EC (low voltage)
2004/108/EC (E.M.C.)
is declared in reference to the harmonized standard:
- **EN 60730-2-7**

English

V3IS00545-030

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