

CHNT

Product Number
500879

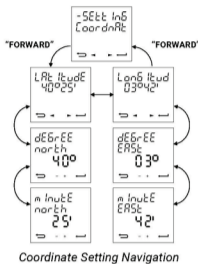
CHD Series Astronomical Time Relay

User Manual

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Coordinate Setting

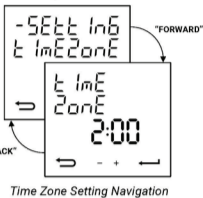
The menu where coordinate setting can be changed.



Latitude and Longitude values are adjusted using the "+" and "-" buttons and confirmed with the "forward" button.

NOTE: When coordinate information is changed, the city code remains as previously set, and only the coordinate information is updated. If a new city is selected again from the city code menu, the coordinates for that city are reloaded.

Time Zone Setting



When the time zone adjustment screen appears, the time zone value is adjusted in 30-minute intervals using the "+" and "-" buttons and confirmed with the "forward" button.

SAFETY WARNINGS

- Electrical connections of the device must be performed by qualified personnel and according to the wiring diagram.
- Disconnect power from the cables before making any connections.
- Do not open the device housing under any circumstances.
- Always disconnect the mains supply before replacing the battery.
- Install the device in a protected indoor location.
- Use only a dry cloth for cleaning the device.
- In case of any issues, contact your authorized technical service.

The manufacturer is not responsible for any damages caused by not complying with the above warnings.

WARNING: Removing the warranty label voids the warranty coverage.

LIST OF GUARANTEED FEATURES

1. WORKING CONDITIONS	
1.1. Height (Altitude)	2.500 m
1.2. Declaration for Degree of Contamination	II
1.3. Over-Voltage Category	III
Ambient Temperature (C)	
1.4. - Highest	60°C
- Lowest	-20°C (Battery inc.)
1.5. Maximum Relative Humidity	
	95% (non-condensing)
2. DESIGN AND STRUCTURAL FEATURES	
2.1. IP Protection Class (for connection terminals)	
	IP20
2.2. IP Protection Class (for other parts)	
	IP40
2.3. Non-Flammability Class	
	V-0
2.4. Battery Life	
	10 Years
2.5. Tolerance time setting range of contacts according to the sunrise and sunset	
	± 599 mins
2.6. Number of Contacts	
	2 pcs
2.7. Real Time Clock Accuracy (at Reference Temperature and Reference Voltage)	
	± 0.5 sec/day

LIST OF GUARANTEED FEATURES

2.7. Sunrise and sunset time daily calculation error tolerance	≤ 1 min
2.8. Supercapacitor Capacity	≥ 24 Hours
2.9. Maximum Size	≤ 2 DIN (35mm)
3. ELECTRICAL FEATURES	
3.1. Electrical Protection Class	
	II
3.2. Rated Voltage (V) AC	
	230 (+10% & -15%)
3.3. Rated Frequency (f)	
	50 Hz
3.4. Current Capacity of Relay Contact/Contacts	
	16 A
3.5. Power of Relay Contact(s)	
	4000 VA
3.6. Resistance of Relay Contact(s)	
Mechanical (Out of Gear)	≥ 100.000 loop
Electrical (On and Off)	≥ 100.000 loop

REFERENCE STANDARDS

STANDARD	DESCRIPTION
TS EN 60730-1	Automatic control schemes - Part 1: General rules
TS EN IEC 60730-2-7	Automatic control schemes - Part 2-7: Special rules for timers and time switches
TS EN 60068-2-1	Environmental resistance tests-Electrotechnics Part 2: Experiments- Experiment A: Cold
TS EN 60068-2-2	Environmental tests - Part 2-2: Tests - Test B: Dry Heat
TS EN IEC 61000-3-2	Electromagnetic compatibility (EMU) Part 3-2: Limits - Limits for harmonic current emissions (equipment carrying ≤ 16 A input current per phase)
TS EN IEC 61000-3-3	Electromagnetic compatibility (EMU) - Part 3-3: Limit values - Limits for voltage changes, voltage fluctuations and flicker in low voltage supply systems for devices with rated current up to (inclusive) 16 A per phase and not subject to conditional connection
TS EN 61000-3-3	Electromagnetic compatibility (EMU) - Part 3-3: Limit values - Limits for voltage changes, voltage fluctuations and flicker in low voltage supply systems for devices with rated current up to (inclusive) 16 A per phase and not subject to conditional connection
TS EN 61000-4-2	Electromagnetic compatibility (EMU) - Part 4-2: Tests and measurement techniques - Electrostatic discharge immunity test

REFERENCE STANDARDS

STANDARD	DESCRIPTION
TS EN 61000-4-3	Electromagnetic compatibility (EMU) - Part 4-3: Test and measurement techniques-Radiant, radio frequency, electromagnetic field, immunity test
TS EN 61000-4-4	Electromagnetic compatibility (EMU) - Part 4-4: Test and measurement techniques-Electrical fast transient / surge immunity test
TS EN 61000-4-5	Electromagnetic compatibility (EMU) - Part 4-5: Test and measurement techniques - Impulse immunity test
TS EN 61000-4-6	Electromagnetic compatibility (EMU): Test and measurement techniques - Immunity to contact disturbances caused by radiofrequency fields
TS EN 61000-4-8	Electromagnetic compatibility (EMU) part 4-8: Test and measurement techniques - Grid frequency magnetic field immunity test
TS EN 61000-4-11	Electromagnetic compatibility (EMC) - Part 4-11: Test and measurement techniques - Voltage dips, short interruptions and voltage fluctuations immunity tests for equipment with input current up to 16 A per phase

STANDARD	DESCRIPTION
TS EN 61000-4-13	Electromagnetic Compatibility and Radio Spectrum Issues (ERM) - Experiment and Measurement Techniques, Harmonics and Interharmonic Signaling at A.C. Power Lines, Low-Frequency Immunity Experiments
TS EN 62054-21	Electricity Meter (a.c.) - Tariff and load control - Part 21: Special rules for time switches
TS EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
TS EN 60529	Degrees of protection provided by enclosures (IP Code)
TS EN 60695-11-10	Fire hazard testing - Part 11-10: Test flames - 50 W horizontal and vertical flame test methods
TS EN 61810-1	Electromechanical elementary relays - Part 1: General and safety requirements
TS EN 61810-2	Electromechanical elementary relays - Part 2: Reliability
TS EN 61810-2-1	Electromechanical elementary relays - Part 2-1: Reliability - Procedure for the verification of B10 values

PRODUCT FEATURES

- English / Spanish menu
- Ability to assign separate programs for each contact
- Ability to set programs to operate on specific days of the week
- Automatic or manual daylight saving time option
- In astronomical programs (P1-P6), sunrise and sunset times can be adjusted ±9:59 (hh:mm) using the offset feature
- Ability to select ±14-hour time zones in 30-minute intervals
- Coordinate setting via 18 city codes or manual entry of latitude and longitude in degrees and minutes
- Manual control of contact outputs
- Even if contact outputs are left in manual mode, the device returns to automatic mode at the next sunrise or sunset
- All settings can be reset using the reset menu
- Monitoring menu shortcut key allows viewing all recorded settings with a single button
- Password protection to prevent unauthorized access

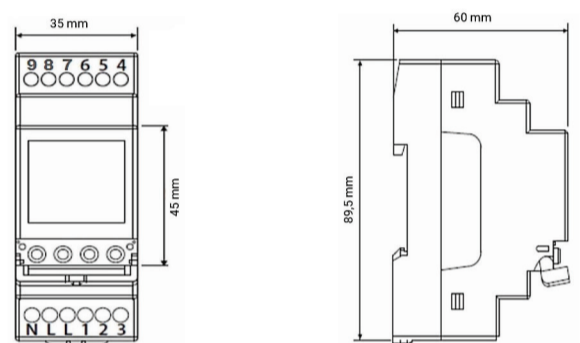
GENERAL INFORMATION

CHD Series Astronomical Time Relays calculate sunrise and sunset times based on coordinates from the selected city code or manually set coordinates.

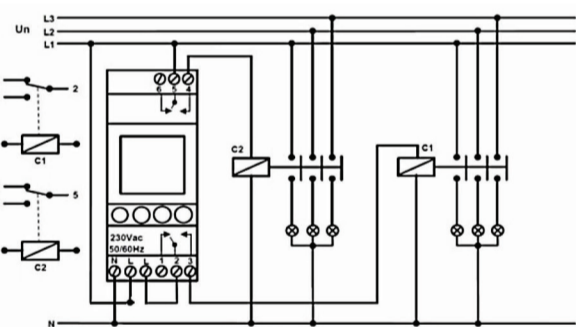
They operate according to the assigned program and can be used in various areas such as street lighting, parks, gardens, field irrigation, ATMs, shop displays, and billboards.

WARNING: If the device is not connected to mains voltage and no buttons are pressed on the main screen for 20 seconds, it enters sleep mode. The screen turns off in this state. Press any button to exit sleep mode.

DIMENSIONS



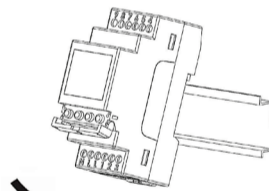
WIRING DIAGRAM



DEVICE INSTALLATION

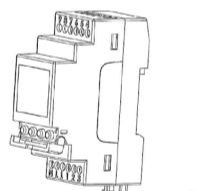
The device can be mounted on both DIN rail and wall.

DIN RAIL MOUNTING



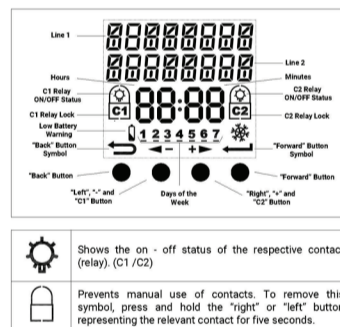
Insert the upper clips of the device into the DIN rail. Then push the lower body of the device into place by hand.

WALL MOUNTING



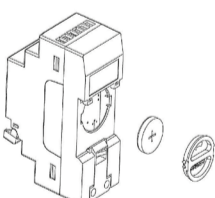
Insert the upper clips into the DIN rail, then push the lower part by hand. Use a screwdriver to pull down the locking mechanism and mount it to the wall with screws as shown.

SCREEN AND BUTTON DESCRIPTIONS



C1	The symbols of the device contacts and are located inside the lock symbols. They indicate which contact is being operated.
C2	Battery warning symbol. It flashes when the battery voltage is low.
1 2 3 4 5 6 7	Showing the days of the week.
U	General Usage: Symbol of the "back" button. It is used to return to the previous operation or for exit operations. Special Usage: If the back button is pressed once while on the main screen, the City Code-Sunrise-Sunset information appears on the screen. If the back button is pressed for 5 seconds on the main screen, the Monitoring Menu appears on the screen and all settings are shown on the screen in a slide format.
U	The "left" button. It provides transition to the previous screen in the menu.
U	The "right" button. It provides access to the next screen in the menu.
-	The "-" (minus) button. It is used to decrease the value in the adjustment screens.
+	The "+" (plus) button. It is used to increase the value in the adjustment screens.
⚙	Shows the on - off status of the respective contact (relay). (C1 / C2)
🔒	Prevents manual use of contacts. To remove this symbol, press and hold the "right" or "left" button representing the relevant contact for five seconds.

- The "forward" button. It is used to enter an internal menu or to confirm a setting.
- The winter time symbol. When the Summer - Winter time application is active, it shows that it is winter time. When the symbol is not lit, it is in summer time application. When the Summer - Winter time application is off, this symbol is always off.
- The seconds symbol. It flashes once a second while on the main screen.



DEVICE STARTUP AND INITIAL SETTINGS

WARNING: Ensure that mains voltage is not connected. If the mains is connected, disconnect the electrical connection.

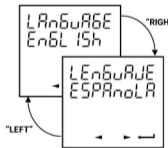
Follow the steps below in sequence:

- Open the battery cover on the back of the device and insert the battery as shown (ensure correct polarity).

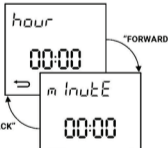
- Once the battery is inserted, all symbols will light up on the screen for 2 seconds. Then, the device will request the settings for Language - Date - Time - City Code.

- During setup:
 - Use the "+" and "-" buttons to change values.
 - Use the "Forward" button to confirm.
 - Use the "Back" button to go back and correct.

Select the language

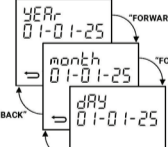


Set the time

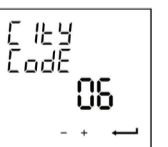


After these settings, the main screen will appear. To change other settings, refer to the "Menus" section.

Set the date



Set the city code



MANUAL CONTROL OF RELAYS

To manually control relays, press and hold the relevant contact button (C1 or C2) for 5 seconds on the main screen, then release. (The lock symbol disappears when manual mode is active.)

To toggle the output state, press and hold the same button for 1 second, then release.

To return to automatic mode, press and hold the button again for 5 seconds and release.

NOTE: Even if the device is left in manual mode, it automatically returns to normal operation at sunrise or sunset.

MENUS

On the main screen, press the "Forward" button to access the menus. Navigate using the left or right buttons.

Settings
Change date, time, city code, offset, coordinates, time zone, daylight saving, and language

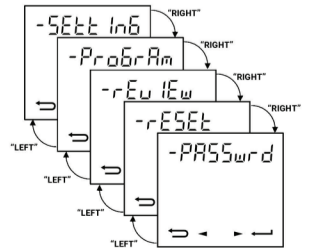
Program
Assign programs to contacts

Review
View all settings of the device

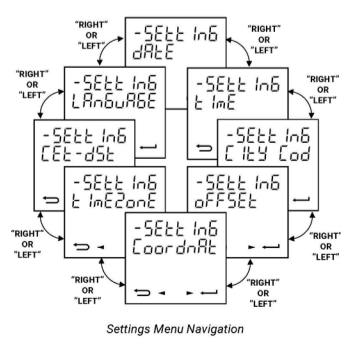
Reset
Restore factory settings

Password
Protects the device from unauthorised users

SETTINGS MENU

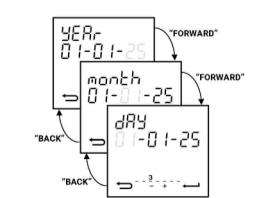


WARNING: If no button is pressed for 20 seconds while in a menu, the device returns to the main screen. To exit a menu without making any changes, wait 20 seconds without pressing any buttons.



Date Setting

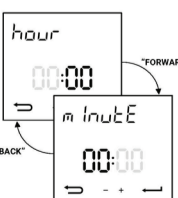
The menu where a new date value is entered.



Use the "+" and "-" to adjust Year, Month, and Day values. Confirm with the "forward" button. Return to the previously set value with the "back" button.

Time Setting

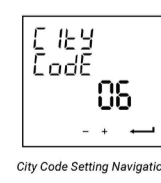
The menu where a new time value is entered.



Use the "+" and "-" buttons to adjust Hour and Minute values. Confirm with the "forward" button. Return to the previously set value with the "back" button.

City Code Setting

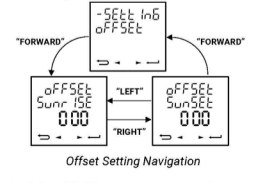
The menu where a city code is selected to easily adjust the preset coordinates.



Use the "+" and "-" buttons to adjust region code. Confirm with the "forward" button.

Offset Setting

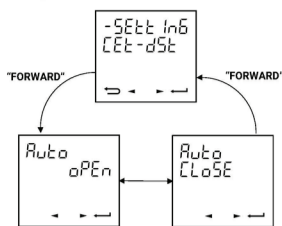
The menu where sunrise and sunset times can be advanced or delayed.



Using the "+" and "-" buttons, morning and evening offset values can be adjusted by up to ± 9 hours 59 minutes. Confirm the setting with the "forward" button. Return to the previous menu with the "back" button. **NOTE:** The evening offset value can be set up to 23:59. The morning offset value can be set down to 00:00. The offset adjustment is limited to the same calendar day. For evening offsets, it does not extend into the next day. For morning offsets, it does not revert to the previous day.

Daylight Saving Time Setting

Enabling this option the time will change automatically the last Sunday of March and October at 2:00AM

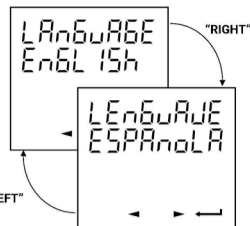


Daylight Saving Time Setting Navigation

The setting is changed using the "right" and "left" buttons and confirmed with the "forward" button.

Language Setting

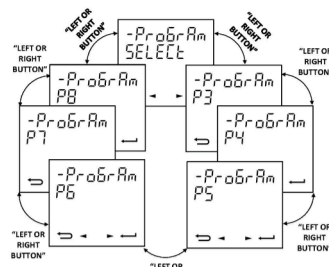
This is the menu where the device language is set.



Language Setting Navigation

The setting is changed using the "right" and "left" buttons and confirmed with the "forward" button.

PROGRAM MENU



Program Menu Navigation

Program Assignment

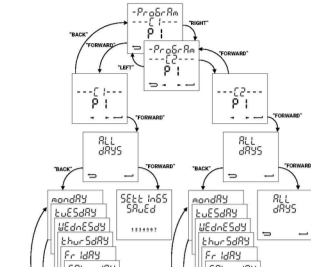
This is the menu where programs to be assigned to contacts are selected, and the days of the week on which the selected program will operate are set.

Programs P1 to P6 are astronomical programs. They activate the contact at sunset and deactivate it at sunrise according to the location of the device, offering different usage options between the on and off times.

Programs P7 and P8 are time programs that activate and deactivate the contact at preprogrammed times, regardless of day or night.

Each of the P7 and P8 programs can perform up to 5 ON/OFF operations within the same day and can be assigned to different contacts. If more than 5 ON/OFF operations are required within a single day, the contacts can be connected sequentially, allowing both contacts together to perform up to 10 ON/OFF operations in one day.

PROGRAM MENU



Program Assignment Menu Navigation

Program Assignment

- On the Program Assignment screen, press the "forward" button to select the contact to which the program will be assigned (C1 or C2).
- Then, use the "right" and "left" buttons to navigate to the desired program (P1-P8).
- Press the "forward" button to assign the program.
- In the final step, specify on which days the assigned program should be active.
 - To have the program operate on all days, confirm on the "All Days" screen by pressing the "forward" button.
 - To assign it to specific days only, go back from the "All Days" screen by pressing the "back" button. Then, use the right, left, and forward buttons to select the desired days. Confirm by pressing and holding the "forward" button for 5 seconds.

After the configuration and programming are complete, the entered settings can be checked via the Monitoring Menu.

PROGRAMS

Program 1 (P1)

The P1 program operates according to the astronomical time. It activates the contact at sunset and deactivates it at sunrise.

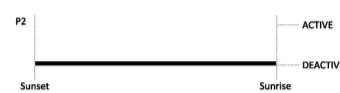


P1 is the primary program for the purpose of managing the lightning.

When using astronomical programs, the offset function can be used to advance or delay the ON and OFF times relative to sunrise and sunset. (See page 16 for details.)

Program 2 (P2)

The P2 program keeps the contact permanently deactivated.

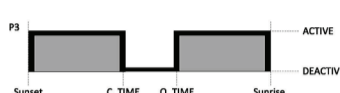


If programs P1, P3, P4, P5, P6, P7, or P8 are programmed to run only on specific days, then on days without an assigned program, P2 runs by default and keeps the contact deactivated.

PROGRAMS

Program 3 (P3)

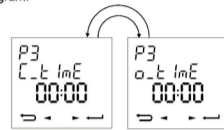
The P3 program deactivates the contact during a defined period between sunset and sunrise. This time period can be adjusted in the P3 menu within the Program Menu.



P3 is useful to prevent unnecessary energy consumption for a specific time interval during the night. The offset function can also be used here, just as with other astronomical programs.

P3 Program Time Interval Entry

This is the menu where OFF and ON times are set for the P3 program.



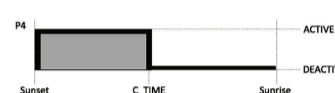
P3 C_TIME: The time when the P3 program turns OFF the contact after sunset.

P3 O_TIME: The time when the P3 program turns ON the contact again after the C_TIME.

PROGRAMS

Program 4 (P4)

The P4 program deactivates the contact at a specified time after sunset. This time period can be set in the P4 menu within the Program Menu.



P4 can be used to activate the contact right after the sunset until a specific time before the sunrise. The offset function can also be used here, just as with other astronomical programs.

P4 Program Deactivation Time Entry

This is the menu where the OFF time of the P4 program is set.

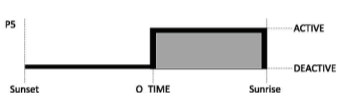


P4 C_TIME: The time when the P4 program will turn OFF the contact after sunset.

PROGRAMS

Program 5 (P5)

The P5 program activates the contact at a specified time after sunset. This time period can be set in the P5 menu within the Program Menu.



P5 can be used to activate the contact at a specific time after the sunset and keep the contact active until sunrise. The offset function can also be used here to adjust the ON/OFF times.

P5 Program Activation Time Entry

This is the menu where the ON time of the P5 program is set.

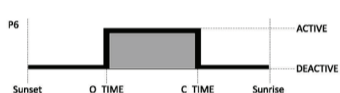


P5 O_TIME: The time when the P5 program will turn ON the contact after sunset.

PROGRAMS

Program 6 (P6)

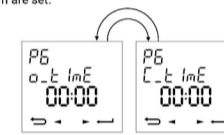
The P6 program activates the contact during a defined period between sunset and sunrise. This time period can be set in the P6 menu within the Program Menu.



P6 can be used to activate the contact at a specific time after the sunset and keep the contact active until a specific time before sunrise. The offset function can also be used here to adjust the ON/OFF times.

P6 Program Time Interval Entry

This is the menu where the ON and OFF times of the P6 program are set.



P6 O_TIME: The time when the P6 program turns ON the contact after sunset.

P6 C_TIME: The time when the P6 program turns OFF the contact after the O_TIME.

PROGRAMS

Programs 7 and 8 (P7 & P8)

P7 and P8 programs are used to activate or deactivate the contact at any time of the day, operating within defined time intervals.



P7 Menu Navigation (Menu refers to program entry for 5 pairs of ON/OFF times.)

P7 O_TIME1: First time of the day when the P7 program activates the contact.

P7 C_TIME1: First time of the day when the P7 program deactivates the contact.

Each of the P7 and P8 programs includes 5 ON times (O_TIME#) and 5 OFF times (C_TIME#).

PROGRAMS

Programs 7 and 8 (P7 & P8)

Important Warnings

In P7 and P8 programs, each ON time (O_TIME) must be earlier than its corresponding OFF time (C_TIME). (Example: ON time = 07:00, OFF time = 08:15)



Exception: Since 24:00 cannot be entered, entering 00:00 will be considered as 24:00.

If the ON time is later than the OFF time, the device will interpret this as an "invalid request" and the program will not operate. (Example: ON time = 12:00, OFF time = 10:00)

If the user wants to activate the contact before midnight and deactivate it after midnight, two separate program entries are required: One for the part before 00:00 and another for the part after 00:00.

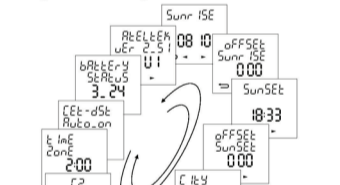
Example: To run a system between 22:00 and 02:00, schedule should be set as:



If there are conflicts in ON/OFF timings among the 1st, 2nd, and 3rd entries, ON function takes priority. (Example: 1st ON = 23:00, 1st OFF = 00:00; 2nd ON = 19:00, 2nd OFF = 00:00) The contact will remain active from 19:00 to 00:00.

REVIEW MENU

This menu allows viewing all settings of the device. Settings cannot be changed in this menu.



Review Menu Navigation

Use "right" and "left" buttons to view settings and exit with the "back" button.

NOTE: You can also access this menu from the main screen by holding down the "back" button for 5 seconds.

RESET MENU

This menu allows resetting the device to factory settings. Follow the reset prompts: "Will Reset" and "Reset Confirm". Approve with the "forward" button. After reset, all symbols on the screen light up for 2 seconds. Then, the device asks for Language - Date - Time - City Code settings again and resumes operation.



Reset Menu Navigation

PASSWORD MENU

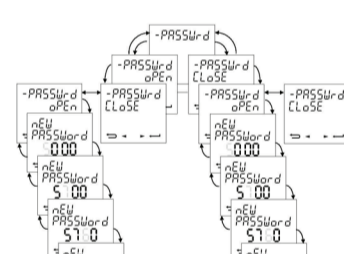
Used to prevent unauthorized access to the device menu.

NOTE: Password protection is disabled by default on the first use. It can be enabled from password menu when necessary.

WARNING: After enabling password protection, be sure to write down the password you created. If you forget the password, you will not be able to access the menu. In case of a forgotten password, contact your authorized technical service.

Creating a New Password

- Example: To create password 5761.
- From the main screen, press the "forward" button.
- Use the "right" or "left" buttons to select Password Menu.
- Press the "forward" button to enter the menu.
- Use the "right" or "left" buttons to select Password ON.
- A new password entry screen will appear.
- Enter and confirm your new password.



Password Menu Screens

From now on, this password must be entered to access the menus.

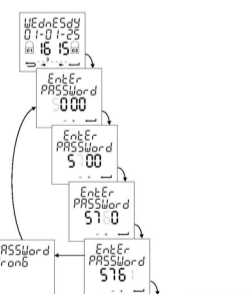
Accessing Menu When Password is Enabled

When password protection is active, attempting to access the menu will prompt for a password.

If the password is entered incorrectly, the entry will be reset and asked again. If the password is entered correctly, the menu will be unlocked.

Since the password will be requested each time you enter the menu, if you plan a long working session, you may temporarily disable the password feature and re-enable it afterwards.

WARNING: If the device is reset, password protection will be disabled, even if it was previously enabled.



Password Entry Screens

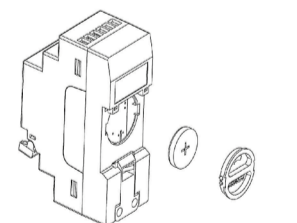
CITY CODES

Code	City Name	Latitude	Longitude
01	Alicante	38° 20' N	00° 29' W
02	Barcelona	41° 23' N	02° 11' E
03	Bilbao	43° 15' N	02° 56' W
04	Córdoba	37° 53' N	04° 46' W
05	Granada	37° 11' N	03° 36' W
06	Las Palmas	28° 07' N	15° 25' W
07	Madrid	40° 25' N	03° 42' W
08	Málaga	36° 43' N	04° 25' W
09	Murcia	37° 59' N	01° 08' W

Code	City Name	Latitude	Longitude
10	Palma	39° 34' N	02° 39' E
11	San Sebastián	43° 19' N	01° 59' W
12	Santander	43° 28' N	03° 48' W
13	Seville	37° 23' N	05° 59' W
14	Toledo	39° 52' N	04° 02' W
15	Valencia	39° 28' N	00° 23' W
16	Valladolid	41° 39' N	04° 43' W
17	Vigo	42° 14' N	08° 43' W
18	Zaragoza	41° 39' N	00° 53' W

BATTERY REPLACEMENT

- When battery voltage reaches a critical level, the battery icon on the screen starts flashing.
- Once flashing begins, disconnect the device from mains power.
- Open the battery cover on the back and replace the old battery with a new CR2032.
- Ensure positive (+) side is facing up.



NOTE: If the battery is dead but the device is connected to mains power, it will continue to operate using internal energy backup.

At the end of the product's life cycle, it must be disposed of separately from regular municipal waste, according to EU regulations. This applies to all equipment marked with the crossed-out wheellie bin symbol.



FACTORY SETTINGS

Offset Sunrise	0:00
Offset Sunset	0:00
Time Zone	+2:00 GMT
C_TIME (P3)	0:00
O_TIME (P3)	0:00
C_TIME (P4)	0:00
O_TIME (P4)	0:00
C_TIME (P5)	0:00
O_TIME (P5)	0:00
C_TIME (P6)	0:00
O_TIME (P6)	0:00
O_TIME# (P7 & P8)	0:00
O_TIME# (P7 & P8)	0:00
Assigned Program to C1	P1
Assigned Program to C2	P1
CET/DST Application	ACTIVE
PIN	DEACTIVE

WARRANTY CONDITIONS

Warranty starts from the delivery date and is valid for 2 years.

All parts are covered unless damage is caused by misuse, incorrect installation, or failure to follow the user manual.

If malfunction occurs within warranty due to material, workmanship, or assembly errors, repairs will be done free of charge.

IMPORTANT:

- Invoice must be presented for warranty service.
- Removing the warranty label voids the warranty.
- Failures caused by voltage drops or surges are not covered.
- Any intervention by unauthorized persons voids the warranty.

CHNT

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